INTERNATIONAL NURSERY REPORT NO. 12

FOOD LEGUME NURSERIES 1987-88

INTERNATIONAL CENTER FOR AGRICULTURAL RESEARCH IN THE DRY AREAS

P.O. Box 5466 Aleppo, Syria

July 1990

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FOOD LEGUME NURSERIES 1987/88

FOOD LEGUME IMPRPOVEMENT PROGRAM

THE INTERNATIONAL CENTER FOR AGRICULTURAL RESEARCH

IN THE DRY AREAS

(ICARDA), P.O. BOX 5466, ALEPPO - SYRIA

JULY 1990

PREFACE

A number of trials and nurseries were supplied by the Food Legume Improvement Program to cooperating scientists within and outside the ICARDA region for 1987/88 growing season. Many of these were also grown at ICARDA sites in Syria and Lebanon. This report summarises the data obtained at ICARDA sites from these trials and nurseries and those returned by the cooperating scientists. The results received from the cooperators till June 30, 1990 have been included.

The report has been prepared by Dr. R.S. Malhotra, International Trials Scientist of the Food Legume Improvement Program. The assistance of Ms. Suheila Arslan and Mr. Murhaf Kharboutly in computerisation of data and Miss Hasna Boustani in word processing of the text portion is sincerely acknowledged.

It is hoped that the information contained in this report will be of interest and use to the cooperating scientists. Any comments on the report and suggestions for future improvement are most welcome.

M.C. Saxena

Leader,

Food Legume Improvement Program

ICARDA, P.O. Box 5466,

Aleppo - Syria.

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Introduction

The international cooperative testing program on food legumes namely faba bean, lentil and kabuli chickpea and peas is co-ordinated by the International Center for Agricultural Research in the Dry Areas (ICARDA). The main objective of the program is to provide the improved genetic materials and production practices to the national programs for testing and use under their local conditions.

The testing aims at evaluating genotypic performance for both seed yield and reaction to biotic and abiotic stresses. It is hoped that through such testing, it will be possible to identify both superior genotypes which are adapted to specific environments, and genotypes which have a wide adaptation. The performance data from a number of widely differing environments will further help the breeder to reduce the number of seasons required for evaluation prior to cultivar release. In addition the program will permit the dissemination of elite germplasm and segregating populations to interested scientists, who can exercise their own selection to develop superior cultivars well adapted to their conditions.

Through the distribution of agronomic trials it is hoped that agronomic research on these legumes will be encouraged and the information on optimum agronomic practices for different agro-ecological conditions would become available.

2. INTERNATIONAL TRIALS AND NURSERIES FOR THE 1987/88 SEASON

2.1. DESCRIPTION

2.1.1. INTERNATIONAL YIELD TRIALS (IYT)

In order to identify heavy yielding genotypes, with either specific or wide adaptation, it is essential to test genetic material emerging from ICARDA and other national breeding programs in a wide range of environments, encompassing the major production zones in different countries.

The IYTs are replicated trials which test advanced materials that have previously shown above average performance. These trials allow the national programs to identify genotypes best adapted to their local conditions, and provide ICARDA with information that will rationalise crossing programs for different countries.

As in the past there were separate large-seeded and small seeded trials on lentil and faba bean. In lentil the large seeded trials comprise entries with a minimum seed size of 4.5 g/100 seed, whereas in faba bean the large seeded trials are composed of *Vicia faba major* types. An IYT for large-seeded kabuli chickpea was provided to meet the needs of the countries where seed size greater than 40 g/100 seed is preferred. In addition, the IYTs in chickpea were split into two on the basis of adaptation for Mediterranean and for Sub-Tropical region and on the basis of season, into Winter and Spring. A trial of tall type (Chickpea International Yield Trial Tall Type - CIYT-T) with entries suitable for mechanical harvesting was also available to the

cooperators. Two new trials on chickpea, Early (CIYT-E) and Dual Season (DS) were introduced this season. The winter trials in chickpea possess tolerance to cold and ascochyta blight. Another trial in faba bean for the southern latitude FBSLRT was also supplied. A new trial in faba bean with determinate growth habit was supplied this season.

For the first time a new trial on peas with improved cultivars from different parts of world was supplied to some cooperators to observe their adaptation under their local conditions.

Breeders desiring to enter lines into an IYT were requested to send to ICARDA, by early October approximately 4 kg of chickpea or peas and/or 2 kg od lentil.

2.1.2. INTERNATIONAL SCREENING NURSERIES (ISN)

The ISNs form an adjunct to the IYTs by providing an initial evaluation of a large number of advanced lines (F_5/F_6) and elite germplasm, encompassing a wide range of genetic diversity, in non-replicated trials in the environments utilized for the IYTs. The results thus provide to the national programs the opportunity to practice selection in a greater range of material than provided in the IYTs and to ICARDA provide a basis on which genotypes can be advanced to the IYTs.

As with the IYT's, the faba bean and lentil ISNs were divided into large and small seeded types. These nurseries are non-replicated and contain about 50 entries. In chickpea, however, the ISNs were divided into spring and winter types.

There was also a screening nursery of early lentil lines available particularly for those countries of a more southern latitude in South Asia and Africa and a nursery of lentil with tall and erect growth habit which can be harvested with a cutter-bar.

A new nursery of determinate type of faba bean was added this season.

2.1.3. INTERNATIONAL F_3/F_4 TRIALS/NURSERIES ($IF_3/F_4T/N$)

Genotypes tested in the IYTs and in the ISNs tend to be relatively advanced breeding material that is approaching homozygosity, so nullifying any chances for re-selection in superior performing genotypes. In contrast the F_3/F_4 bulk trials/nurseries comprise early generation segregating material, thus permitting breeders in the national programs the chance to practice their own selection in the populations best adapted to the local enviornment. In addition the trials/nurseries allow estimates to be made of cross performance and interactions across a range of environments, which will additionally assist in identifying parents to be used in hybridization programs for different countries.

The F_3 or F_4T/Ns for lentil and kabuli chickpea were developed

separately for different major environmental conditions.

2.1.4. INTERNATIONAL STRESS NURSERIES (I-N)

The development of cultivars resistant to biotic and abiotic stresses prevalent in the main legume growing areas is essential if stable seed yields are to be achieved. However, there is presently little information available on the incidence and severity of various stresses in different areas. The International Disease and Insect-Pest Nurseries and Cold Tolerance Nursery have been formulated to rectify this situation. The aim of these nurseries is to test a relatively large number of genotypes, in replicated design, in a range of locations covering a number of countries. The nursery results thus furnish information on the incidence and severity of the stress in differing geographic areas, and provide a means for the identification of resistant genotypes. These together should greatly assist the plant breeder in developing genotypes that combine heavy seed yield with relatively stable resistance to these stresses.

Realizing the importance of different stresses in the region, four nurseries in faba bean (ascochyta blight, rust, and chocolate spot and multiple disease nursery) and in chickpea (ascochyta blight, leaf-miner, fusarium wilt and cold tolerance) four and two in lentil (Ascochyta blight and cold tolerance) have been developed and were supplied. The entries in these nurseries are initially selected on the basis of their resistance/tolerance to the respective stresses at experimental sites of ICARDA. The cooperators desirous to enter lines in stress or screening nurseries were requested to send to ICARDA, by early October approximately 1000 seeds for each entry of chickpea and lentil, and 1500 seeds per entry of faba bean for increase and inclusion in the next year nursery.

2.1.5. INTERNATIONAL AGRONOMY TRIALS

In many countries the legume crops tend to be neglected in favour of other crops, resulting in poorer management and fewer agronomic inputs. To combat this trend it is essential to develop suitable agronomic management practices for legumes that, if adopted, would increase both yields, and a farmer's income, and hence improve economic well-being in a country. Also the use of such practices should permit the full benefit to be gained from the cultivation of the potentially heavy yielding cultivars that emerge from plant breeding programs.

Realising the need for developing information on suitable agronomic management of the food legumes in the region a program of international agronomic trials has been in operation. These trials include, Weed Control Trials, and Fertility-cum-Inoculation Trials. During this year a new trial "Inoculation Response of Improved Rhizobium Strains" was introduced and supplied to cooperators. In this program the cooperators are provided with information on design and conduct of the trial. In addition, the necessary experimental material such as fertilizers, inoculum and pesticides are supplied. No seed is,

however, sent as these trials are to be conducted with the best locally-adapted genotypes. A trial for the chemical control of Orobanche in faba bean has also been available.

2.2. DISTRIBUTION AND LIST OF COOPERATORS

In Table 2.2.1. is given a list of the trials and nurseries distributed from ICARDA to the different countries; in Table 2.2.2. a list of the cooperators, in Table 2.2.3. a list of food legume scientists at ICARDA cooperating in international testing program and in Table 2.2.4. details of latitude, longitude, altitude and rainfall data of the locations at which the trials were conducted. Weather conditions during the cropping season for the locations reporting data are given in Figures as Appendix 1. In total, 1488 sets of trials were distributed to the cooeprators. Data were returned for 751 trials and nurseries, representing 50.5% of the total nurseries distributed. It is worth mentioning that out of 175 agronomic trials distributed, only 52 trials reported back the results.

2.3. DESIGN, ANALYSIS AND MANAGEMENT

2.3.1. DESIGN AND ANALYSIS

The design used for the individual trials and nurseries are given in the crop reports. For the International Screening Nurseries (ISNs) which included both test and check entries, an augmented design, as proposed by Federer (1956)[1] was used. This design permits some adjustment for block differences, and the calculation of standard errors for the comparison of entry means.

The data on seed yield, time to flowering, time to maturity, plant height and 100-seed weight have been analysed statistically, and the term 'significant' has been used to denote a probability level (P) equal or less than 0.05. The co-efficients of variation (CV) given in the different tables were calculated using an error mean square (EMS) from the relevant analysis of variance. The mean square due to error was also used to calculate the appropriate standard error of mean and least significant difference (LSD). The LSD was used to test whether a genotype's performance differed significantly from that of the control/local check. The LSD is not appropriate for testing differences between any pair of genotypes in a trial. The abbreviations ENT> and TEST> were used respectively, for number of entries significantly greater than and number of test entries significantly greater than the local check.

2.3.2. MANAGEMENT

For all except the agronomic trials it was emphasized that the material should be planted at the farmer's normal planting date, and that the locally recommended practices should be used with respect to fertilizer, pesticides, herbicides and irrigation.

Table 2.2.1 Distribution of International Nurseries and Trials to the cooperators in different countries during 1987/88.

COUNTRY	CIYT-SP	CIYT-WMR	CIYT-WSTR	CIYT-L	CIYT-T	CIYT-E	CIYT-DS	CISN-W	CISN-SP	CIF4T	CIABN-A	CIABN-B	CINAFWN	CILMN	CICTN	FBIYT-L	FBIYT-S	FBIYT-D	FBSLRT	FBISN-L	FBISN-S	FISN-D	FBIF4N	FBIABN	FBICSN	FBIRN	FBIMDN
AFGHANISTAN	2	-	2	-	3	-	-	3	3	-	3	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
ALGERIA	4	5	1	5	5	-	1	4	1	2	6	-	1	2	4	3	2	3	-	5	-	1	-	2	1	1	-
ARGENTINA	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
AUSTRALIA	1	1	1	1	1	-	-	-	1	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
AUSTRIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANGLADESH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
BELIZE	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BOLIVIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	2	1	2	-
BRAZIL	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BULGARIA	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
BURMA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANADA	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
CHILE	2	1	-	2	1	-	-	1	-	1	-	-	-	-	-	2	-	1	-	3	3	4	1	1	2	-	-
CHINA	2	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLOMBIA	2	-	-	1	1	-	-	-	-	1	-	1	-	-	-	1	-	-	-	3	1	-	-	-	-	2	-
COSTA RICA	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CYPRUS	-	1	-	1	1	-	-	1	-	-	1	-	-	-	-	1	2	1	-	-	-	-	-	-	-	-	-
CZECHOSLOVAKIA	1	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ECUADOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-
EGYPT	-	1	1	1	-	-	-	1	-	2	1	-	-	-	1	2	3	2	1	1	1	4	2	-	1	1	1
ETHIOPIA	1	-	1	-	-	1	-	1	1	-	-	1	-	-	-	1	1	2	-	1	1	1	2	-	1	1	-
FRANCE	1	1	1	1	1	-	-	5	1	1	1	-	-	-	3	-	-	1	-	-	1	1	-	1	1	-	1
GERMANY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	4	-	1
GREECE	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	1	-	-	-	-	-
HUNGARY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INDIA	-	-	1	2	1	-	-	-	-	2	-	2	-	-	1	-	2	-	2	-	1	-	-	-	-	-	-
IRAN	2	2	-	1	2	-	-	3	2	2	-	4	-	-	4	2	2	2	-	1	1	-	1	-	-	-	-
IRAQ	-	2	-	2	1	-	-	-	-	-	-	-	-	-	1	2	3	-	-	-	-	1	2	1	-	-	-
ITALY	-	2	-	4	3	-	-	1	-	1	2	-	-	-	2	2	2	4	-	4	1	4	1	1	1	1	-
JAPAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
JORDAN	2	2	1	4	4	-	-	3	1	1	1	-	-	2	-	-	2	-	-	3	3	3	1	1	-	1	-
KENYA	-	-	3	-	3	-	-	-	-	2	1	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-

Cont'd. ...

Table 2.2.1. Cont'd. ...

COUNTRY	CIYT-SP	CIYT-WMR	CIYT-WSTR	CIYT-L	CIYT-T	CIYT-E	CIYT-DS	CISN-W	CISN-SP	CIP4T	CIABN-A	CIABN-B	CINAFWN	CILMN	CICTN	FBIYT-L	FBIYT-S	FBIYT-D	FBSLRT	FBISN-L	FBISN-S	FISN-D	FBIF4N	FBIABN	FBICSN	FBIRN	FBIMDN
KUWAIT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LESOTHO	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
LIBYA	1	1	1	-	2	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
MALAWI	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
MEXICO	-	-	1	2	2	-	-	1	-	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-
MOROCCO	1	9	-	5	1	-	3	2	1	2	2	-	1	3	-	3	-	3	-	1	1	3	-	1	1	1	-
NEPAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
NEW ZEALAND	-	-	-	1	1	-	-	1	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
PAKISTAN	-	-	-	-	-	1	-	-	-	2	-	7	-	-	1	-	-	-	3	-	1	-	-	-	-	-	-
PAPUA NEW GUINEA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
PERU	2	-	-	2	-	-	-	-	2	-	-	-	-	-	2	1	-	1	-	-	-	-	2	-	-	-	-
PHILIPPINES	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1	1	-	-	-	-	-
POLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	3	1	-
PORTUGAL	-	1	-	1	1	-	-	2	-	1	-	1	-	-	-	-	-	1	-	-	1	1	-	-	1	-	-
SAUDI ARABIA	1	-	-	1	1	-	-	1	-	-	-	-	-	-	-	-	1	-	-	2	2	1	-	-	-	-	-
SPAIN	-	2	1	4	2	-	-	2	1	-	-	-	1	1	1	-	1	1	-	1	1	1	-	-	-	-	-
SRI LANKA	-	-	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUDAN	2	-	2	-	-	1	-	-	1	-	-	-	-	-	-	-	1	1	2	-	1	-	-	-	-	-	-
SYRIA	7	11	-	7	6	-	-	9	6	-	3	-	-	-	2	5	3	2	-	4	-	2	-	4	3	-	1
SWAZILAND	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TANZANIA	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
THAILAND	2	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
TUNISIA	5	5	5	5	2	5	1	5	9	9	-	6	1	1	1	4	4	3	-	3	3	3	1	1	1	1	-
TURKEY	3	6	1	8	7	-	-	5	5	6	8	1	-	-	6	3	1	1	-	3	-	1	2	1	-	2	-
U.K.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	-	1
U.S.A.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	1	1	-
VENEZUELA	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YEMEN A.R.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
ICARDA-LEBANON	1	1	-	1	1	-	1	1	1	1	-	1	-	1	1	1	1	1	-	1	1	1	-	-	-	-	-
ICARDA-SYRIA	2	2	2	2	2	2	1	2	2	2	-	2	-	2	2	1	1	2	-	1	1	1	1	1	1	1	-
TOTAL	51	56	31	73	58	11	7	60	45	40	32	29	4	12	36	37	35	32	9	50	32	39	18	21	25	17	7

Cont'd. ...

Table 2.2.1 Cont'd. ...

COUNTRY	LIYT-L	LIYT-S	LIYT-E	LISN-L	LISN-S	LISN-E	LISN-T	LIF3T	LIF3T-E	LIABN	LICTN	PIAT	CIFRT	FBIFRT	LIFRT	CIRT	FBIRT	LIRT	CWCT	FBWCT	LWCT	FBOCCT	TOTAL
AFGHANISTAN	-	-	-	1	1	-	-	-	-	-	-	-	3	-	-	-	-	-	3	-	-	-	26
ALGERIA	5	2	-	6	3	1	5	2	-	2	-	1	3	-	2	3	-	2	5	-	5	1	105
ARGENTINA	1	1	-	2	1	1	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	13
AUSTRALIA	3	3	-	1	1	1	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	20
AUSTRIA	2	2	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
BANGLADESH	-	-	2	-	-	-	-	-	3	-	-	-	-	-	1	-	-	1	-	-	-	-	8
BELIZE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
BOLIVIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
BRAZIL	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
BULGARIA	-	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	7
BURMA	1	1	1	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	9
CANADA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	6
CHILE	2	-	-	5	2	1	2	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-	40
CHINA	2	1	-	1	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
COLOMBIA	2	-	1	1	-	2	1	-	1	1	-	1	2	2	2	-	2	-	-	-	-	-	31
COSTA RICA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
CYPRUS	2	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
CZECHOSLOVAKIA	-	-	-	-	-	-	-	1	-	-	-	1	-	1	1	-	1	1	-	-	1	-	11
ECUADOR	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
EGYPT	1	2	1	2	1	1	1	2	2	-	-	-	-	-	-	1	-	-	1	-	1	-	43
ETHIOPIA	1	1	1	2	2	2	2	-	1	1	-	2	2	-	1	3	-	1	-	1	1	-	41
FRANCE	1	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	25
GERMANY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
GREECE	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
HUNGARY	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
INDIA	-	-	2	-	-	3	2	-	3	2	-	-	-	-	-	-	-	1	-	-	2	-	29
IRAN	3	1	-	4	3	1	3	1	-	-	2	1	-	-	-	-	-	-	-	-	1	-	51
IRAQ	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	18
ITALY	3	-	-	3	-	-	3	2	-	-	-	-	-	-	-	-	-	-	1	1	-	1	50
JAPAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
JORDAN	2	2	-	4	2	4	4	1	-	-	-	-	1	1	1	2	1	2	2	2	2	1	69
KENYA	-	-	-	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	14

Cont'd. ...

Table 2.2.1 Cont'd. ...

COUNTRY	LIYT-L	LIYT-S	LIYT-E	LISN-L	LISN-S	LISN-E	LISN-T	LIF3T	LIF3T-E	LIABN	LICTN	PIAT	CIPRT	FBIFRT	LIFRT	CIRT	FBIRRT	LIRT	CWCT	FBWCT	LWCT	FBOCCT	TOTAL
KUWAIT	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
LESOTHO	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
LIBYA	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	13
MALAWI	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
MEXICO	2	-	-	3	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
MOROCCO	3	2	-	1	1	2	1	1	1	-	-	1	4	2	4	3	2	2	2	2	2	6	86
NEPAL	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
NEW ZEALAND	-	-	-	1	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	10
PAKISTAN	3	-	11	1	1	12	2	-	2	2	3	-	-	-	-	-	-	-	6	-	8	-	66
PAPUA NEW GUINEA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
PERU	2	-	-	2	-	2	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	20
PHILIPPINES	-	1	1	1	1	1	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	17
POLAND	-	-	-	-	-	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	10
PORTUGAL	1	1	-	1	1	-	1	-	-	-	-	-	1	-	-	1	-	-	2	1	1	1	23
SAUDI ARABIA	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	13
SPAIN	1	1	-	2	2	-	1	-	-	-	1	1	-	-	-	-	-	-	2	1	-	1	33
SRI LANKA	-	2	2	-	2	4	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	18
SUDAN	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	12
SYRIA	4	4	-	5	5	-	5	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	101
SWAZILAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
TANZANIA	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	3
THAILAND	1	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
TUNISIA	3	3	-	4	4	3	4	2	1	-	-	2	1	-	1	1	-	1	1	1	1	2	119
TURKEY	4	2	-	5	1	5	5	2	1	1	4	-	1	-	-	1	-	-	3	-	4	1	110
U.K.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
U.S.A.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
VENEZUELA	1	1	-	-	-	1	-	-	1	-	-	-	-	-	1	1	1	-	-	-	-	-	9
YEMEN A.R.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	1	-	5
ICARDA-LEBANON	1	1	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
ICARDA-SYRIA	2	2	1	1	1	1	1	1	1	2	1	-	-	-	-	-	-	-	-	-	-	-	50
TOTAL	67	39	24	69	42	59	56	19	20	17	15	16	22	8	18	19	10	15	31	10	31	14	1488

Table 2.2.2. List of Cooperators for FLIP 1987/88 International Nurseries.

Dr. G. M. Bahram
General President
Agricultural Research Institute
Ministry of Agriculture and
Land Reforms, Democratic
Republic of Afghanistan,
KABUL
AFGHANISTAN

Dr. M. Benzaghou
Director General
ITGC, Rue Pasteur
B.P. 16
Al-Harrach
Algiers
ALGERIA

Mrs. Nelida Granval de Millan
Est. Exp. Agrop.
La Consulta INTA, C.C. 8,
5567- La Consulta
Mendoza
ARGENTINA

Ing. J. Vollmann
Institut Fur
Pflanzenbau und Pflanzenzuchtung
Universitat fur Bodenkultur
Gregor Mendel-Strase 33
A-1180 Vienna
AUSTRIA

Dr. J.B. Brower
Grain Legume Breeder
Victorian Crops Research Institute
Natimuk Road
Private Bag 260
Horsham, Vic. 3400
AUSTRALIA

Dr M. Matiur Rahaman
Principal Scientific
Officer and Program Leader, Pulses
BARI, Regional Agricultural Research
Station, P.O.Ishurdi, Dist. Pabna
BANGLADESH

Dr. B. K. Rai
Head of Unit
Caribbean Agricultural Research &
Development Institute,
P.O.Box 2, Ministry of Agriculture
Belmopan
BELIZE
CENTRAL AMERICA

Dr. Nabih I. Ashour
Visiting Professor,
Universite D Oran
Institute des Sciences de la Nature
B.P. 1524 - Oran
ALGERIA

Mr. Labdi Mohamed
Food Legume
Coordinator
ITGC, BP 59
Sidi Bel Abbes
ALGERIA

Ing. Rainer Kunz
Cooperativa de
Tabacaleros de Jujuy Ltda.
P.O.Box No 15
4608 - Perico (Jujuy)
ARGENTINA

Dr. H. Marcellos
Senior Res. Agronomist
Agricultural Research Centre
P.M.B. 944
Tamworth,
N.S.W. -2340
AUSTRALIA

Dr. Ashutosh Sarker
Sr. Scientific Officer
Pulses Breeding Section (BARI)
P.O.BRRI, Joydebpur
Gazipur
BANGLADESH

Dr M.I. Mihov
Institute for Wheat
and Sunflower,
Near General Toshevo -9520
BULGARIA

Dr. Gonzalo Avila
Centro de Investigaciones
Fitotecnicas de Pairumani,
Cassila 128, Cochabamba,
BOLIVIA

Prof. Wilson Manara
CAIXA Postal 5022
UFSM 97119, Santa Maria
Rio Grande Dosul
BRAZIL

Dr. A. E. Slinkard
Crop Development
Centre
University of Saskatchtewan
Saskatoon S7N OWO
CANADA

Director
Estation Experimental
Sociedad Nacional de Agricultura
Tenderini 187
Casilla 40-D
Santiago
CHILE

Dr. Aage Krarup H.
Faculty of Agriculture
University Austral
Casilla 567
Valdivia
CHILE

Dr. Juan Ormeno
Estaçion Experimental
Quilamapu (INIA)
Av. Vicente Mendez 515
Casilla 426
Chillan
CHILE

Dr. Liu Zhicheng
Vice President
Chinese Academy of Agric. Sciences
Peking
PEOPLES REPUBLIC OF CHINA

Prof. Guo Gao Qiu
Head Legumes
Crop Research Institute
Qinghai Academy of Agric. and
Forestry, Xining
PEOPLES REPUBLIC OF CHINA

Dr. Tun Saing
General Manager
Agricultural Research Institute,
Yezin - Pyinmana
BURMA

Dr. C. Bernier
The University of Manitoba
Department of Plant Sciences
Winnipeg, R3T 2N2, Manitoba
CANADA

Dr. Alberto Cubilos
Fidel Oteiza 1956
INIA
Santiago
CHILE

Dr. Jorge Aeschlimann
Production Manager
ANASAC,Agricola Nacional
S.A.C. el.
Almirante Pastene 300
Providencia Cas 336-V, Santiago
CHILE

Prof. Dr. David Contreras Tapia
University of Chile
Faculty of Agronomy
Casilla 1004
Santiago
CHILE

Mr. Yu Huasheng
Shanxi Academy of
Agricultural Sciences
Taiyuan, Shanxi,
CHINA

Mr. Marco A. Castillo
Y/O
Dr. Gustavo A. Ligarreto M.
ICA-TIBAITATA
Apartado Aereo 151123
El Dorado, Bogota
COLOMBIA

Dr. Oscar Eduardo Checa Coral
Ingeniero Agronomo
Seccion Hortalizas CRI Obonuco
Apartado Areo 339
Posto Narino
COLOMBIA

Dr. A.Hadjichristodoulou
Agric. Research Office
Agric. Research Institute
Ministry of Agriculture and
Natural Resources
Nicosia
CYPRUS

Ing. Teodor Sinsky and/or
Ing. Lubomir Pastucha
Vyskumny ustav rastlinnej vyroby
Bratislavska cesta 122
921 68 Piestany
CZECHOSLOVAKIA

Dr. Ahmed O. M. Saad
National Research
Centre - Dokki,
Cairo
EGYPT

Dr. D.S. Darwish
Agronomy Department
Faculty of Agriculture
Cairo University
Giza
EGYPT

Mr. Amare Ghizaw
Acting Leader
Highland Pulses Improvement Program
Institute of Agricultural Research,
Holetta Research Center
P.O.Box 2003
Addis Ababa
ETHIOPIA

Dr. G. Duc
Station d'Amelioration
des Plantes
I.N.R.A. B.V. 1540
21034 Dijon Cedex
FRANCE

Dr. Maria De Los Angeles Alvarez
Fernandez
Escuela De Ciencias Agrarias-
Universidad Nacional
Apdo. 86, Heredia
COSTA RICA

Mrs. Athena Della
Agric. Research Office
Agric. Research Institute
Ministry of Agriculture and
Natural Resources
Nicosia
CYPRUS

Dr. Jose Acuna
INIAP
Estacion Experimental Santa Catalina
Apartado 340
Quito
ECUADOR

Dr. Abdulla Nassib
Director, ARC,
Food Legume Research Section
Field Crops Research Institute
Giza
EGYPT

Mr. Million Eshete
Debre Zeit Agric.
Research Centre
P.O.Box 32
Debre Zeit
ETHIOPIA

Dr. Jacques Wery
Laboratoire d'Etudes
Compares des Systemes Agraires
(LECSA), INRA-GEROAT,
9 - Place Pierre Viala
34060 Montpellier Cedex
FRANCE

Dr. Bernard Tivoli
I.N.R.A.
Station De Pathologie Vegetale
B.P. 29 - 35650 Le'Rheu
FRANCE

DR. G. Caubel
Centre de Recherches
de Rennes Laboratoire de Recherches
de la Chaire de Zoologie
Domain de la Motte-Au-Vicomte
B.P. 29-35650 Le Rheu
FRANCE

Mr. Grenier Claude
U.C.C.S.
BP. 2-26160 La Batie Rolland
FRANCE

Dr. H. Konstsioton (Miss)
Director
Institute for Fodder Crops
and Pastures,
Larissa 41110
GREECE

Prof. Dr. W. Barz
Westf. Wilhelms Univ.
Le Lehrstuhl fur Biochemie
d. Pflanzen
Hindenburgplatz 55
4400 Muenster
W. GERMANY

Prof. H. Weltzien
Institute fur
Pflanzenkrankheiten
Nussallee 9
5300 Bonn 1
W. GERMANY

Dr. Germa Medhin
Institute Fur
Pflanzenkrankheiten
Nussallee 9
5300 Bonn 1
W. GERMANY

M/S Saatzucht Gleisdorf
Gem. M.B.H. & Co. KG.
AM Tieberhof 33, 8200 Gleisdorf
W. GERMANY

Dr. Mengge-Nang Arigena
Agronomist
Department of Agric. & Livestock
ERAP P.O.Box 1984
LAE,
PAPUA NEW GUINEA

Mr. M. Nagy
Director
Research Centre for Agrobotany
H-2766 Tapioszele
HUNGARY

Dr. B. Sharma
Senior Scientist
Division of Genetics
IARI New Delhi
INDIA

Dr. Y. Singh
Professor and Head,
Dept. of Agronomy, College of Agric.
G.B.Pant Univ. of Agric. & Tech.,
Pantnagar - 263145 U.P.
INDIA

Mrs. Indu Swarup
Jr. Scientist
(Plant Breeding & Genetics)
Main Pulse Research Centre
JNKVV-College of Agriculture
SEHORE - 466001 (M.P.)
INDIA

Dr. A.N. Asthana
Project Director
Directorate of Pulses
Research (DPR) ICAR
Kanpur - 208024
INDIA

Dr. M. M. Verma
Senior Pulse Breeder
Department of Plant Breeding
Punjab Agricultural University
Ludhiana 141004, Punjab
INDIA

Dr. C. Abd-Mishani
Director,
Regional Pulse Improvement Project
Faculty of Agriculture
University of Tehran
Karaj
IRAN

Mr. Nosrat Zarepeima
Seed & Plant Imp.
Office
Department of Agric. &
Rural Development
Emam Ave.
Oroumieh
IRAN

Mr. Khaled Ibrahim Abdullah
Nineveh Agricultural
Research Centre
Mosul
IRAQ

Prof. Luigi Stringi
Istituto di Agronomia
Generale E Coltivazioni Erbacee
Viale Delle Scienze - 90100 Palermo
Sicily
ITALY

Dr Paola Crino (Ms)
ENEA, C.R.E. Casaccia
TECAB/BIA/GEN
S.P. Anguillarese, 301
00060 - Roma
ITALY

Dr. Alberto Brunori
ENEA, C.R.E. Casaccia
TECAB/BIA
S.P.Anguillarese, 30, 00060
Roma
ITALY

Dr. Prof. Salvatore Foti
Instituto di Agronomia Generale e
Coltivazioni Erbacee - Facolta di
Agraria - Via Valdisavoia,
5 - 95123 Catania
ITALY

Dr. Hossein Bagheri
Khorasan Agricultural
Research Center
P.O.Box 5444 Post Code 91375
Mashad
IRAN

Mr. Behrooz Sadri
In-Charge,
Food Legume Research Section
Seed & Plant Improvement Section
Ministry of Agric. & Rural Dev.
Mard - Abad Ave.
Karaj
IRAN

Dr. Awad Issa Abbas
State Board For
Applied Research
Forage and Legumes Division
Abu - Ghraib
Baghdad
IRAQ

Dr. Fransesco Saccardo
Cattedra
Migliogramento Genetico
Instituto Agronomia Via Dell'
Universite 100-80055
Portici Napoli
ITALY

Dr. Andrea Filippetti
Institute of
Plant Breeding
Via Amendola, 165/A
Bari
ITALY

Dr. Ciro de Pace
Universita
della Tuscia
Institute di Biologia Agraria
Via S. Camillo De Lellis
01100 Viterbo
ITALY

Dr. Fortunato Calcagno
Stazione Sperimentale
di Granicoltur Per la Sicilia
Via Rossini, 1
Caltagirone (CT)
ITALY

Dr. Ginlia Gallo
Stazione Sperimentale
di Granicoltur Per la Sicilia
Via Rossini,1
Caltagirone (CT)
ITALY

Dr. E. Sgaravati
Seed and Plant
Material Exchange Officer
Seed service
Plant Production and Protection
Division, Via delle Terme Caracalla
00100, Rome
ITALY

Dr. Tokuhiro Momonoki
Chief,
Crop Introduction & Acclimitization
Lab. Tropical Agric. Research Center
Okinawa Branch, Ministry of Agric.,
Forestry and Fisheries
Maesato Ishigaki Okinawa 907-01
JAPAN

Mr. Ali Massadeh
Ministry of Agric.
National Center for Agricultural
Research and Technology Transfer
(NCARTT), P.O.Box 226,
Amman
JORDAN

Dr. Nasri Haddad
Faculty of Agriculture
University of Jordan
Amman
JORDAN

Dr. Abdullah Jaradat
Dept. of
Plant Breeding & Genetics
Jordan University of Science and
Technology,
Irbid
JORDAN

Dr. Wilson K. Rono
NDFRS - Katumani
P.O.Box 340
Machakos
KENYA

Mr. Spencer M. Muthoka
NDFRS - Katumani
P.O.Box 340
Machakos
KENYA

Director General
Agric. Affairs and
Fish Res. Authority,
Kuwait
STATE OF KUWAIT

Mr. Pierre Kiwan
ICARDA Office
Terbol Station
LEBANON

Dr. S.S. Moima
Agricultural Research
Division P.O.Box 829
Maseru 100
LESOTHO
SOUTHERN AFRICA

Dr. Mohamed Ahmed Khalifa
El Marj Research
Station
P.O.Box 132
El Marj
LIBYA

Dr. Fawzi A. Tahir
Agricultural Research
Center P.O.Box 2480
Tripoli
LIBYA

Ms. Elita Mwale
Bvumbwe Research
Station, P.O.Box 5748
Limbe
MALAWI
CENTRAL AFRICA

Dr. Ernesto Samayoa Armienta
Director del Ciano
Apdo Postal 515
85000 CD. Obregon,
Sonora
MEXICO

Mr. Brahim Bouhatous
Department d'Agronomie
et de l'Amerlioration des Plantes
Ecole Nationale d'Agriculture,
BPS/40
Meknes
MOROCCO

Director of INRA
Station Centrale des
Legumineuses Alimentaires, INRA
B. P. 415
Rabat
MOROCCO

Dr. D. S. Goulden
DSIR,
Crop Research Division
Lincoln. Postal: Private Bag,
Christchurch,
NEWZEALAND

Dr. W.A. Jermyn
Leader-Plant Breeding
Dept. Of Scientific & Indust. Res.
Canterbury Agric. & Science Centre
Ellesmere Junction Road
Lincoln, Postal: Private Bag
Christchurch
NEWZEALAND

Dr. Ilyas Ahmad Malik
Principal Scientific
Officer, Mutation Breeding Division
Nuclear Institute for Agriculture &
Biology, Jhang Road
P.O.Box 128, Faisalabad
PAKISTAN

Dr. M.S. Rahman
ICRISAT
Resident Scientist (Chickpea)
P.O.Box 2125
Islamabad
PAKISTAN

Mr. Mohamed Kamel
Food Legume Improve-
ment Program,
Centre Regional de la Research
Agronomique, B.P. 589
Settat
MOROCCO

Dr. R.F. Cartier
Project MIAC
CRRA, KM5, RTE Tertiaire
1400 Settat par Casablanca
MOROCCO

Dr. M. P. Bharati
G.P.O.Box 1336
WI/ARPP
Bakundole, Kathmandu,
NEPAL

Dr. Adnan C. Russell
DSIR,
Private Bag
Christchurch
NEWZEALAND

Dr. John Dyno Keatinge
ICARDA/MART/AZRI
c/o USAID, Quetta, 5A,
Sariab Road, Quetta,
PAKISTAN

Mr. Mohamed Bashir
Acting Coordinator,
Pulses
PARC, National Agricultural
Research Centre
P.O.National Health Laboratories
Islamabad
PAKISTAN

Dr. Mohammad Rahim
Economic Botanist
Agricultural Research Station
(North) Mingora, Swat
N.W.F.P.
PAKISTAN

Dr. Chaudhary Zulfiqar A. Khan
Director General of
Agriculture,
Sariab Road, Quetta
PAKISTAN

Dr. Mohammad Siddiq
Director Research
N.W.F.P. Agricultural University
Peshawar
PAKISTAN

Dr. Cesar Apolitano Sanches
Director Program
NAC. Leguminosas de Grano
Apartado Aereo No. 248
Lima 100
PERU

Dr. Irena Kubok (Miss)
Plant Breeding Station
IHAR, 99-307
Strzelce, Woj.Plock
POLAND

Dr. Elzbieta Zakrzewska
Plant Breeding and
Acclimatization Institute
Radzikow
05-870 Blonie
POLAND

Dr. Andre Mendes Dordio
Instituto Nacional de
Investigacao Agraria
Estacao Agronomica Nacional
Seccao de Forragens, Quinta do
Marques, 2780, Oeiras
PORTUGAL

Dr. M.O. Ghandorah
Head
Plant Production Dept.,
College of Agric.,
King Saud University,
P.O. Box 2460
Riyadh 11451
KINGDOM OF SAUDI ARABIA

Mr. Muhammad Ikramul Haq
Economic Botanist
Agricultural Research Institute
Sariab-Quetta
PAKISTAN

Dr Alfonso Cerrate Valenzuela
Grain Legume Leader
Universidad Nacional Agraria
La Molina , Apartado 456
Lima
PERU

Dr. R.K.Pandey
International Rice
Research Institute
P.O.Box 933, Manila,
PHILIPPINES

Dr. Josef Bochniarz
I.U.N.G. (Institute of
Soil Science and Cultivation
of Plants)
24 - 100 Pulawy
POLAND

Mr. Manuel Tavares de Sousa
Head of Leguminous
Crops, National Plant Breeding
Station,
P.O.Box 6, 7351 Elvas Codex
PORTUGAL

Dr. Abdelsalam Elsayad
Tabuk Agricultural
Development Company (TADCO)
P.O.Box 808
Tabuk
KINGDOM OF SAUDI ARABIA

Dr. Alvaro Ramos
Servicio de
Investigation Agraria
Carretera de Burgos, KM. 118
Valladolid
SPAIN

Dr. M.A. Chamber
Ministerio de
Agricultura
Inst. Nacional de Invest.Agrarias
UNIDAD TECNICA DE APOYO
Apartado de Correos No. 13
S.Jose de la Rinconada, Sevilla
SPAIN

Dr. Teresa Moreno (Mrs.)
Instituto Nacional de
Investigaciones Agrarias
Finca "ALAMEDA DEL OBISPO"
Apartado 240, 14071 Cordoba
SPAIN

Prof. Luis Lopez Bellio
Department de Cultivos
Herbacios Escuela Tecnica Superior
de Ingenieros Agronomos
Apartado 3.048
Universidad de Cordoba
SPAIN

Dr. H. M. E. Herath
Deputy Director/Res.
Dept. of Agriculture
Peradeniya
SRI LANKA

Dr. M. Sikurajapathy
Deputy Director (Res.)
Agricultural Research Station
Maha-Illuppallama
SRI LANKA

Dr. Gaffar El-Sarrag
Agronomist,
Shendi Research Station,
P.O.Box 33
Shendi
SUDAN

Dr. Faruk Ahmed Salih
Shambat Research
Station
P.O.Box 30, Khartoum North
SUDAN

Prof. Y. P. Rao
Crop Production Dept.
University of Swaziland
Luyengo Campus
P.O. Luyengo
SWAZILAND

Mr. Ernesto De Miguel Gordillo
Servicia De Investi-
gaciones Agrarias
Finca La Orden
Apartado 22 - 06080 Badajoz
SPAIN

Dr Jesus Hernando Velasco
Head, Departamento de
Cereal Y Leguminosas
C.R.I.D.A. - 6
Finca "El-Encin"
Apartado de Correos 127
Alcala de Henares, Madrid
SPAIN

Dr. Rafael M. Jimenez Diaz
Departamento de
Patologia Vegetal
Escuela Tecnica Superior de Ing.
Agronomos
Cordoba
SPAIN

Dr. U.P. de S. Waidyanatha
Deputy Director
Institute of Fundamental Studies
Hantana Road, Kandy
SRI LANKA

Dr. Sarath Amarasiri
Deputy Director/(Res.)
Agricultural Research Station
Bandarawela
SRI LANKA

Mr. Abdalla Ibrahim
Hudeiba Res. Station
P.O.Box 31
Ed - Damar
SUDAN

Dr. Abdulla Mohamed Ali
University of Khartoum
Faculty of Agriculture
Depatment of Horticulture
Shambat
SUDAN

Dr. Hasan El-Ahmed
Director of Research
Ministry of Agric. & Agrar. Reforms
ARC, P.O.Box 113, Douma, Damascus
SYRIA

Dr. Peter M. Salema
Sokoine University of
Agriculture Dept. of Soil Science
P.O.Box 3008
Morogora
TANZANIA

Director of INRAT
Avenue de L'Independance
2080 Ariana
TUNISIA

Dr. Dogan Sakr
Director
Bolge Zirai Arastirma
Enstitusu Mudurlugu Bolge Zirai
Arastirma, Diyarbakir
TURKEY

Dr. Ertug Firat
Director
Aegean Agricultural Research
Institute, P.O.Box 9
Mememen Izmir
TURKEY

Mr. Gencer Gokkan
Gukurova Tarimsal
Arastirma Enstitusu Mudurlug
P.K. 300 P.Kod: 01322
Adana
TURKEY

Dr. Baydour Yilmez
Director
Central Anatolian Regional
Agricultural Research Institute
P.O.Box 226, Ulus,
Ankara
TURKEY

Dr. David Bond
Plant Breeding
Institute, Maris Lane
Trumpington Road
Cambridge CB2 2LQ
U.K.

Ing. Manuel Salas
Estacion Experimental
Yaritagua
Km 3 Via El Rodeo-Yaritagua
Yaritagua-Edo-Yaracuy
VENEZUELA

Dr. D. Jalichan
Leader,
Highland Agric. Res. Project
Dept. of Agriculture
Bang Khen, Bangkok 10900
THAILAND

Mr. M. Bouslama
Director
Ecole Superieure d'Agriculture
Ministere de l'Agriculture
Du Kef
TUNISIA

Mr. Engin Kinace
P.O. Box 325
Konya
TURKEY

Mr. Ali Ustun
Director
Blacksea Agricultural Research
Institute, P.O.Box 39
Samsun
TURKEY

Dr. Mujgan Engin (Mrs.)
Cukurova Universitesi
Ziraat Facultesi Tarla
Bitkeleri Bolumu, Balcali-
Adana
TURKEY

Dr. Fahri Altay
Eskisehir Agricultural
Research Institute
P.K. 17, Eskisehir
TURKEY

Ing. John B. Fitzgerald
USAID/Guatemala
APO Miami, Fl. 34024
U.S.A.

Mr. Abdulla Sailan
Food Legume Coordinator
Agricultural Research Authority
P.O.Box 5788, Taiz
YEMEN ARAB REPUBLIC

Table 2.2.3. ICARDA's Food Legume Scientists cooperating in International Testing Program.

1. Dr. R.S. Malhotra
   International Trials Scientist

2. Dr. Douglas P. Beck
   Microbiologist

3. Dr. S.P.S. Beniwal
   Food Legume Pathologist/Breeder (Ethiopia)

4. Dr. William Erskine
   Lentil Breeder

5. Dr. Salim Hanounik
   Faba Bean Pathologist

6. Dr. Mohan C. Saxena
   Program Leader & Agronomist

8. Dr. K.B. Singh
   Chickpea Breeder (ICRISAT)

9. Dr. Mahmoud Solh
   Legume Scientist (North Africa Region)

10. Dr. Sussane Weigand
    Legume Entomologist

11. Dr. Mohammed El-Sherbeeny
    Post Doctoral Research Fellow (Faba Bean Breeding)

12. Dr. Said N. Salim
    Post Doctoral Research Fellow (Agronomy/Physiology)

13. Dr. Akhlaq Hussein
    Post Doctoral Research Fellow (Lentil Breeding)

14. Dr. Karl H. Linke
    Orobanche Specialist

Table 2.2.4 Latitude, longitude, altitude and rainfall for some of the international nursery locations for 1987/88 season.

COUNTRY	LOCATION	LATITUDE		LONGITUDE		ALTITUDE (m)	RAINFALL (mm)
AFGHANISTAN	Bulkh	36.42	N	67.12	E	378	318
AFGHANISTAN	Kabul	34.27	N	69.08	E	1825	37
ALGERIA	Dahmouni-Tiaret	34.36	N	00.12	E	980	415
ALGERIA	Es-Senia	35.77	N	00.80	W	75	NA
ALGERIA	Hassi-Bounif	35.41	N	00.30	W	95	289
ALGERIA	Misserghin	35.37	N	00.54	W	100	211
ALGERIA	Setif	36.09	N	00.51	E	1023	NA
ALGERIA	Sidi Bel Abbes	35.11	N	00.38	E	486	NA
ARGENTINA	Mendoza	33.44	S	67.07	W	940	217
ARGENTINA	Perico	24.23	S	65.05	W	900	67
AUSTRALIA	Horsham	36.44	S	142.13	E	240	229
AUSTRALIA	Tamworth	31	S	151	E	300	275
AUSTRALIA	Walpeup (Mallee)	35.10	S	142.00	E	250	281
AUSTRIA	Grob-Enzersdorf	48.12	N	16.34	E	153	315
BOLIVIA	Cochabamba	17.21	S	66.19	W	2584	106
BRAZIL	Brasilia	15.56	S	48.08	W	1000	NA
BRAZIL	Santa Maria	29.41	S	03.41	W	95	1023
BULGARIA	Toshevo	43.40	N	28.02	E	236	448
CANADA	Morden	49.12	N	98.05	W	NA	NA
CHILE	Graneros	34.00	S	70.00	W	479	207
CHILE	Valdivia	39.45	S	73.14	W	12	394
CHINA	Shanxi	37.47	N	112.33	E	780	321
COLOMBIA	Obonuco	01.80	N	77.16	W	2710	423
COLOMBIA	Pasto	01.80	N	77.16	W	2710	677
COSTA RICA	Heredia	10.16	N	84.71	W	1250	488
CYPRUS	Athalassa	35.08	N	33.24	E	150	327
CYPRUS	Dromolaxia	34.52	N	33.36	E	25	367
CYPRUS	Laxia	35.04	N	33.20	E	150	363
CYPRUS	Morocambos	34.45	N	32.31	E	88	455
ECUADOR	Santa Catalina	00.22	S	78.33	W	3050	NA
EGYPT	Gemmiza	27.39	N	33.35	E	NA	NA
EGYPT	Giza	30.45	N	31.00	E	25	NA
EGYPT	Nubaria	29	N	30	E	18	NA
EGYPT	Sakha	30.45	N	31.00	E	6	78
EGYPT	Shandaweel	26.30	N	31.42	E	45	NA
EGYPT	Sids	31.00	N	23.30	E	30	158
ETHIOPIA	Debre Zeit	08.44	N	38.58	E	1900	752
ETHIOPIA	Denbi	08.46	N	38.59	E	1900	NA
ETHIOPIA	Ginchi	NA		NA		NA	1126
ETHIOPIA	Holetta	09.03	N	38.31	E	2390	1178

Cont'd. ...

Table 2.2.4. Cont'd. ...

FRANCE	Dijon	52.50	N	05.65	E	210	645
FRANCE	Le Rheu	47.28	N	02.52	E	10	886
FRANCE	Montboucher	44.34	N	40.48	E	136	981
FRANCE	Montpellier	43.37	N	01.33	E	49	663
GREECE	Larissa	39.07	N	22.05	E	70	312
INDIA	New Delhi	28.08	N	77.12	E	229	298
INDIA	Ludhiana-Punjab	30.54	N	75.48	E	244	43
IRAN	Fasa-Fars	28.58	N	53.41	E	1383	262
IRAN	Ghazvin	36.26	N	49.30	E	1330	327
IRAN	Gorgan	36.55	N	54.20	E	155	519
IRAN	Hassan Abad	28.29	N	54.55	E	1080	222
IRAN	Karaj	35.48	N	51.02	E	1321	167
IRAN	Maragah	26.51	N	54.19	E	1660	NA
IRAN	Oroumieh	37.55	N	45.01	E	1352	405
IRAQ	Abu Ghraib	33.20	N	44.25	E	35	NA
IRAQ	Atshana	35.28	N	44.24	E	33	NA
IRAQ	Bokrajo	35.33	N	42.27	E	700	280
IRAQ	Dohuk	33.19	N	47.18	E	480	1002
IRAQ	Mosul	36.43	N	43.09	E	226	NA
ITALY	Catania	37.28	N	14.14	E	700	83
ITALY	Gaudino	NA		NA		140	177
ITALY	Medolla	45.20	N	10.30	E	NA	227
ITALY	Tarquinia	46.90	N	13.08	E	80	318
ITALY	Viterbo	42.24	N	12.08	E	300	803
JORDAN	Gor	31.20	N	35.30	E	NA	NA
JORDAN	Jubeiha	32.01	N	35.52	E	980	648
JORDAN	Marow	32.33	N	35.51	E	580	473
JORDAN	Ramtha	32.34	N	36.01	E	520	200
JORDAN	Taiba	NA		NA		NA	NA
LEBANON	Terbol	33.49	N	35.59	E	890	710
LIBYA	El Marg	32.49	N	21.45	E	650	432
MEXICO	Culiacan	24.48	N	107.24	W	40	485
MEXICO	Hermosillo	28.45	N	111.28	W	70	26
MEXICO	Navojoa	27.28	N	109.40	W	39	23
MEXICO	Obregon (Sonora)	27.33	N	110.32	W	40	11
MEXICO	Padilla Tam	24.03	N	97.48	W	153	264
MOROCCO	Dar Bouazza	33.31	N	07.47	W	15	493
MOROCCO	Domaine	NA		NA		NA	499
MOROCCO	Douyet	34.02	N	05.00	W	416	435
MOROCCO	Guich	34.00	N	06.50	W	65	561
MOROCCO	Marchouch	33.33	N	06.42	W	450	416
MOROCCO	Settat	33.00	N	07.35	W	NA	447
MOROCCO	Zememra	25.15	N	12.35	W	450	512
NEPAL	Khumaltar	27.40	N	85.20	E	1360	520

Cont'd. ...

Table 2.2.4. Cont'd. ...

PAKISTAN	Faisalabad (AARI)	31.25	N	73.60	E	182	33
PAKISTAN	Islamabad (NARC)	33.43	N	73.05	E	600	NA
PAKISTAN	Mansehra	34.23	N	73.18	E	NA	NA
PAKISTAN	Peshawar	34.00	N	70.72	E	NA	263
PAKISTAN	Serai Naurang	34	N	71	E	NA	55
PAKISTAN	Tarnab (NWFP)	34.01	N	71.40	E	NA	263
PERU	Ceneta-Lima	11.28	S	76.39	W	NA	NA
PERU	Chiquian-Ancosh	10.09	S	77.09	W	3350	NA
PERU	La Molina-Lima	12.05	S	76.57	W	251	393
POLAND	Pulawy	51.25	N	21.58	E	142	339
POLAND	Radzikow	52.13	N	20.38	E	90	338
POLAND	Strzelce	52.19	N	19.24	E	130	258
PORTUGAL	Elvas	38.53	N	07.09	W	208	639
PORTUGAL	Oeiras	38.41	N	09.19	W	50	905
SAUDIA ARABIA	Dierab	24.42	N	46	E	600	NA
SAUDIA ARABIA	TADCO (Tabuk)	28.22	N	36.35	E	777	158
SPAIN	Alcala de Henares	40.30	N	03.17	W	610	534
SPAIN	Badajoz	38.49	N	06.39	W	200	299
SPAIN	Cordoba	37.51	N	04.51	W	110	768
SPAIN	Sevilla	37.30	N	05.57	W	20	681
SPAIN	Valladolid	41.05	N	04.05	W	700	448
SUDAN	Hudeiba	17.34	N	33.56	E	351	0
SUDAN	Shambat	15.40	N	32.32	E	376	NA
SYRIA	Al Ghab	35.30	N	36.20	E	170	1016
SYRIA	Breda	35.56	N	37.10	E	300	414
SYRIA	Deir-Ez-Zor	32.50	N	36.00	E	NA	270
SYRIA	Gelline	32.80	N	35.60	E	421	430
SYRIA	Hama	35.08	N	36.45	E	316	575
SYRIA	Homs	34.45	N	36.43	E	485	513
SYRIA	Idleb	36.56	N	36.39	E	446	557
SYRIA	Izra'a	32.51	N	36.15	E	575	311
SYRIA	Jableh	35.40	N	35.40	E	7	1030
SYRIA	Jindiress	36.24	N	36.44	E	210	715
SYRIA	Tel Hadya	36.01	N	36.56	E	284	481
SRI LANKA	Bandarawale	06.45	N	81	E	1259	437
SRI LANKA	Dodangolla	07.15	N	80.45	E	367	150
THAILAND	Chiang Rai	19.56	N	99.51	E	1500	NA
THAILAND	Chiang Mai	18.48	N	98.59	E	1400	694
TUNISIA	Beja	36.52	N	09.13	E	NA	NA
TUNISIA	Oued Meliz	37.55	N	09.00	E	NA	NA
TURKEY	Adana	37.23	N	35.05	E	35	919
TURKEY	Amasya	40.75	N	36.50	E	650	397
TURKEY	Ankara	39.55	N	32.45	E	929	388
TURKEY	Diyarbakir	37.55	N	40.12	E	660	344
TURKEY	Eskisehir	40.00	N	30.05	E	800	257
TURKEY	Izmir	38.05	N	27.34	E	100	344
U.K.	Cambridgeshire	52.10	N	00.05	E	15	NA
Y.A.R.	Dhamar	14.32	N	44.24	E	2360	165

NA = not available.

For each trial or nursery, observations were requested on plant stand (1-5; rating 1 = perfect), time to 50% flowering (days), time to maturity (days), plant height (cm) and seed yield (kg/ha). Other characters were optional e.g. plant width (cm), plant type (erect, semi-erect or prostrate), height of lowest pods (cm), disease damage rating (1-5; 1 = free from disease), insect damage rating (1-5; 1 = free from insect damage), lodging (1-5; 1 = no lodging), vigour rating a visual estimate of yield potential (1-5; 1 = very vigorous), shattering (1-5; 1 = no shattering), branching (1-5; 1 = very few branches) and virus (1-5; 1 = free of virus).

In addition, cooperators were requested to send information on the altitude, latitude, longitude, temperature, rainfall, number and dates of irrigations, dates of planting and harvest, herbicides, pesticides and fertilizers applied (indicating type, rate and date of application), names and titles of people conducting the nursery and any other relevant information which could be of value in interpreting the data.

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(1) Federer, W.T. (1956). Augmented designs. Hawaiin Planters Record, 55, 191-208, 1956.

3. CHICKPEA INTERNATIONAL TRIALS AND NURSERIES

Seventeen chickpea international trials and nurseries were available to the cooperators in 1987/88 season. These included yield trials, screening nurseries, segregating populations, stress nurseries including insect-pest, disease and cold tolerance nurseries, and agronomic trials. All nurseries and trials except the agronomic trials are discussed in this section. Cooperators were free to use these materials directly or indirectly for the improvement of chickpea in their own national programs.

3.1. CHICKPEA INTERNATIONAL YIELD TRIAL - SPRING (CIYT-SP)

Material

The Chickpea International Yield Trial - Spring comprised 23 test entries and one local check to be supplied by the cooperator. Twenty two of the test entries were the advanced breeding lines developed through hybridization at ICARDA and one originated from Turkey. These entries were selected on the basis of their superior performance either in international, regional, or local trials.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was 4 rows, each 4 m long. Fifty-one sets were sent to cooperators in 21 countries. The results were, however, received for 21 trials from 14 countries, out of which 19 reported seed yield. The agronomic information received from the cooperators is given in Table 3.1.1.

Results and Discussion

On an average over locations, the entry means ranged from 60 to 75 days for time to flowering (Table 3.1.2.), 106 to 115 days for time to maturity (Table 3.1.3.), and 35 to 47 cm for plant height (Table 3.1.4.). The overall mean for the entries for 100-seed weight, varied from 29 to 38 g, and the entry FLIP 85-78C had the largest seed size (Table 3.1.5.). The location means for 100-seed weight varied from 30 g for Chiang Rai in Thailand and Jindiress in Syria to 38 g for Mountboucher in France.

The highest mean seed yield (Table 3.1.6.) was obtained at Sidi Bel Abbes in Algeria (2193 kg/ha) and was followed by Debre Zeit in Ethiopia (2097 kg/ha), Idleb in Syria (1865 kg/ha) and Valdivia in Chile (1819 kg/ha). The seed yields at La Molina and Genete-Lima in Peru were very poor (<300 kg/ha). On an average over locations FLIP 84-155C gave the highest seed yield (1401 kg/ha) and was closely followed by FLIP 84-182C, FLIP 84-146C, FLIP 81-293C and ILC 482 with seed yields of 1360, 1352, 1347 and 1337 kg/ha, respectively.

The ANOVA for seed yield revealed that the local check was excelled by 1, 4, 1, 5, 10 and 2 entries by a significance margin at 6

Table 3.1.1. Agronomic data for different locations in the CIYT-SP during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
AFGHANISTAN	Kabul	02.03.88	20.07.88	30	60		4	Trichlorofan, Metasystox	Mazar Local Pea
ALGERIA	Sidi Bel Abbes	06.12.87	03.07.88	-			-	-	Rabat 9
CHILE	Valdivia	11.11.88	14.04.89	32	100	50	-	Linuron	California INIA
ETHIOPIA	Debre Zeit	04.08.88	28.12.88	-			-	-	Dubie
FRANCE	Montboucher	09.03.88	30.08.88		125		-	Tribunil	Cascari
JORDAN	Marow	13.02.88	12.06.88	20	40				UJC 107
LEBANON	Terbol	13.04.88	28.07.88		50		-	Kerb, Igran	Lebanese Local
MOROCCO	Marchouch	26.02.88	06.07.88	14	28	14	-	-	Pam 46
PERU	Cenete-Lima	11.01.88	25.05.88	-			3	Tamaron	ILC 135
PERU	La Molina- Lima	10.10.88	10.03.89	-			2	-	ILC 135
SYRIA	Al Ghab	02.04.88	16.07.88	30	50		-	-	Local
SYRIA	Gelline	02.04.88	14.08.88	20	50		-	-	Local
SYRIA	Idleb	07.04.88	10.07.88	20	50		-	-	Local
SYRIA	Jindiress	27.03.88	12.07.88	30	50		-	Kerb, Igran	ILC 1929
SYRIA	Tel Hadya	05.03.88	22.06.88	30	50		-	Kerb, Igran	ILC 1929
THAILAND	Chiang Rai	10.11.87	29.03.88	102	25		4 *	Daconil, Orthocide, Lanate	-
TUNISIA	Beja	25.11.87	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA
TURKEY	Eskisehir	05.05.88	26.08.88	30	70		-		Canitez-87

NA = Not available., * = 4 days per time.

Table 3.1.2. Time to flowering (days) of entries at different locations in the CIYT-SP during 1987/88.

Entry Name	Pedigree	Origin	AFGHANISTAN Kabul	ALGERIA Sidi Bel Abbes	CHILE Valdivia	ETHIOPIA Debre Zeit	JORDAN Marow
FLIP 83- 42C	X 79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	76	124	55	68	65
FLIP 83- 99C	X 80 TH 263/(ILC 72XILC 263)XILC1919	ICARDA/ICRISAT	77	121	57	70	67
FLIP 84- 2C	X 81 TH 116/ILC 191XILC 262	ICARDA/ICRISAT	77	129	62	68	68
FLIP 84- 12C	X 82 TH 154/ILC 202XILC 254	ICARDA/ICRISAT	78	125	65	66	72
FLIP 84- 68C	X 79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	78	-	60	67	74
FLIP 84- 78C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	75	124	61	68	64
FLIP 84- 81C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	78	-	61	69	76
FLIP 84- 82C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	75	128	56	67	74
FLIP 84- 91C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	79	120	61	68	69
FLIP 84- 96C	X 80 TH 181/ILC 3279XILC 1108	ICARDA/ICRISAT	78	-	60	69	68
FLIP 84-146C	X 81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	75	-	59	62	59
FLIP 84-155C	X 81 TH 165/ILC 3279XILC 484	ICARDA/ICRISAT	74	121	54	59	71
FLIP 84-164C	X 82 TH 101/ILC 215(WH)XILC 195(WH)	ICARDA/ICRISAT	74	121	54	62	72
FLIP 84-167C	X 79 TH 123/ILC 1929XILC 200	ICARDA/ICRISAT	75	-	64	69	73
FLIP 84-181C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	75	120	58	65	76
FLIP 84-182C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	79	-	61	67	75
FLIP 85- 3C	X 83 TH 115/FLIP 82-81CXILC 3326	ICARDA/ICRISAT	79	-	57	51	68
FLIP 85- 59C	X 83 TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	78	127	60	68	77
FLIP 85- 68C	X 82 TH 67/ILC 2593XILC 191	ICARDA/ICRISAT	79	129	66	81	71
FLIP 85- 86C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	77	127	63	65	75
FLIP 85- 88C	X 80 TH 263/(ILC 72XILC 263)XILC 1919	ICARDA/ICRISAT	77	-	62	67	69
FLIP 81-293C	Improved check	ICARDA/ICRISAT	78	122	57	67	75
ILC 482	Long term check	Turkey	74	-	55	58	76
Local check	-	-	74	120	55	48	72
Location Mean			**77**	**124**	**59**	**65**	**71**
S.E. of Mean			0.96	One Rep.	1.85	1.89	3.61
L.S.D. at 5%			2.72		5.26	5.39	-
C.V. %			2.16		5.40	5.02	8.80
Error df			46		46	46	46
Significance			*		*	*	NS

Cont'd. ...

Table 3.1.2. Cont'd. ...

Entry Name	LEBANON	MOROCCO	PERU		SYRIA					THAILAND	(1)
	Terbol	Marchouch	Cenete Lima	La Molina Lima	Al Ghab	Idleb	Gelline	Tel Hadya	Jindi-ress	Chiang Rai	Overall Mean
FLIP 83- 42C	59	77	66	77	51	54	60	66	61	81	66
FLIP 83- 99C	57	74	62	82	54	53	57	67	66	83	66
FLIP 84- 2C	60	74	79	86	57	57	65	69	69	92	70
FLIP 84- 12C	61	76	68	80	57	59	68	69	69	83	69
FLIP 84- 68C	56	76	70	79	53	53	71	68	63	83	67
FLIP 84- 78C	46	74	55	71	51	54	58	65	66	77	63
FLIP 84- 81C	60	74	79	87	57	56	65	68	69	88	70
FLIP 84- 82C	54	76	83	85	51	52	61	67	61	84	68
FLIP 84- 91C	59	58	70	78	54	55	60	67	63	83	66
FLIP 84- 96C	59	76	73	84	53	54	63	67	61	82	68
FLIP 84-146C	57	74	61	71	51	53	67	65	57	78	64
FLIP 84-155C	52	74	62	67	50	52	68	62	56	78	63
FLIP 84-164C	46	56	56	75	49	51	57	61	53	75	60
FLIP 84-167C	53	74	74	78	52	54	68	65	67	86	68
FLIP 84-181C	54	74	68	81	50	51	65	64	57	81	66
FLIP 84-182C	60	76	75	77	52	59	71	66	65	81	69
FLIP 85- 3C	47	58	58	60	51	51	56	60	54	95	60
FLIP 85- 59C	55	76	55	78	52	53	61	69	59	83	66
FLIP 85- 68C	62	84	84	94	61	57	70	69	72	96	75
FLIP 85- 86C	60	79	62	81	56	55	58	66	66	82	67
FLIP 85- 88C	57	77	71	82	53	52	65	66	62	82	67
FLIP 81-293C	58	76	69	80	52	52	57	68	59	81	66
ILC 482	46	56	69	75	48	50	58	62	52	75	61
Local check	44	74	67	77	49	51	57	63	51	-	
Location Mean	**55**	**73**	**68**	**79**	**53**	**54**	**63**	**66**	**62**	**83**	
S.E. of Mean	1.27	0.00	7.05	3.76	0.72	1.06	1.61	0.71	0.99	1.28	
L.S.D. at 5%	3.62	0.00	-	10.70	2.06	3.02	4.58	2.01	2.84	3.65	
C.V. %	4.00	0.00	17.92	8.29	2.38	3.42	4.44	1.86	2.81	2.67	
Error df	46	46	46	46	46	46	46	46	46	44	
Significance	*	*	NS	*	*	*	*	*	*	*	

(1) Sidi Bel Abbes was excluded from the overall mean, * = Significant at $P \leq 0.05$,NS = not significant.

Table 3.1.3. Time to maturity (days) of entries at different locations in the CIYT-SP during 1987/88.

	AFGHANISTAN	ALGERIA	ETHIOPIA	JORDAN	LEBANON	MOROCCO	PERU	
Entry Name	Kabul	Sidi Bel Abbes	Debre Zeit	Marow	Terbol	Marchouch	Cenete Lima	La Molina Lima
FLIP 83- 42C	127	-	133	99	94	115	111	135
FLIP 83- 99C	129	181	126	96	94	112	111	134
FLIP 84- 2C	129	182	138	99	94	112	100	140
FLIP 84- 12C	130	-	138	98	94	114	111	118
FLIP 84- 68C	131	-	132	99	93	114	105	136
FLIP 84- 78C	126	-	137	99	94	112	111	137
FLIP 84- 81C	129	180	138	101	94	112	107	143
FLIP 84- 82C	127	182	138	98	92	114	120	131
FLIP 84- 91C	128	179	136	98	94	100	125	129
FLIP 84- 96C	127	-	135	102	92	114	111	148
FLIP 84-146C	126	176	130	95	92	112	108	135
FLIP 84-155C	129	175	126	98	91	112	100	137
FLIP 84-164C	127	-	127	100	90	99	111	131
FLIP 84-167C	130	-	134	98	91	112	107	138
FLIP 84-181C	128	-	137	101	92	112	110	133
FLIP 84-182C	131	179	137	98	94	114	109	137
FLIP 85- 3C	131	179	133	99	95	100	107	143
FLIP 85- 59C	129	180	132	99	94	114	100	128
FLIP 85- 68C	128	182	145	98	96	122	107	132
FLIP 85- 86C	129	180	130	100	94	117	120	139
FLIP 85- 88C	130	-	131	98	93	115	102	130
FLIP 81-293C	128	-	125	97	92	114	107	123
ILC 482	128	175	126	98	90	98	111	123
Local check	127	178	111	98	90	112	112	132
Location Mean	**128**	**179**	**132**	**98**	**93**	**111**	**109**	**134**
S.E. of Mean	1.43	One Rep.	2.45	1.49	0.37	0.27	One Rep.	6.91
L.S.D. at 5%	-		6.97	-	1.04	0.78		-
C.V. %	1.93		3.20	2.61	0.68	0.42		8.95
Error df	46		46	46	46	46		46
Significance	NS		*	NS	*	*		NS

Cont'd. ...

Table 3.1.3. Cont'd. ...

Entry Name	SYRIA					THAILAND	TURKEY	(1) Overall Mean
	Al Ghab	Idleb	Gelline	Tel Hadya	Jindiress	Chiang Rai	Eskisehir	
FLIP 83- 42C	94	89	112	106	100	131	111	111
FLIP 83- 99C	91	87	107	105	100	131	110	110
FLIP 84- 2C	102	91	118	108	104	132	109	113
FLIP 84- 12C	98	91	113	107	102	131	111	111
FLIP 84- 68C	91	87	119	107	100	131	110	111
FLIP 84- 78C	91	88	108	106	102	130	110	111
FLIP 84- 81C	101	91	121	107	104	132	110	114
FLIP 84- 82C	90	86	114	106	99	131	109	111
FLIP 84- 91C	93	89	104	108	100	131	110	111
FLIP 84- 96C	95	88	110	105	100	131	112	112
FLIP 84-146C	89	89	101	103	96	130	110	108
FLIP 84-155C	88	85	101	102	96	130	110	108
FLIP 84-164C	86	85	103	101	96	130	111	107
FLIP 84-167C	91	86	121	102	100	131	110	111
FLIP 84-181C	87	85	104	100	96	130	111	109
FLIP 84-182C	106	91	121	108	103	131	110	114
FLIP 85- 3C	91	88	102	107	101	133	111	110
FLIP 85- 59C	88	88	104	106	97	131	110	109
FLIP 85- 68C	101	92	122	108	108	133	111	115
FLIP 85- 86C	98	88	114	105	102	130	111	113
FLIP 85- 88C	93	87	120	103	100	131	111	111
FLIP 81-293C	87	87	98	105	95	130	110	107
ILC 482	81	87	97	103	95	129	111	106
Local check	80	87	97	99	95	-	111	
Location Mean	**92**	**88**	**109**	**105**	**99**	**131**	**110**	
S.E. of Mean	1.08	1.06	1.54	1.02	0.54	0.35	0.63	
L.S.D. at 5%	3.07	3.00	4.40	2.89	1.53	1.01	-	
C.V.	2.02	2.07	2.43	1.67	0.93	0.47	0.98	
Error df	46	46	46	46	46	44	46	
Significance	*	*	*	*	*	*	NS	

(1) Sidi Bel Abbes was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = not significant.

Table 3.1.4. Plant height (cm) of entries at different locations in the CIYT-SP during 1987/88.

Entry Name	AFGHANISTAN Kabul	ALGERIA Sidi Bel Abbes	ETHIOPIA Debre Zeit	JORDAN Marow	LEBANON Terbol	MOROCCO Marchouch	PERU Cenete-Lima	PERU La Molina Lima
FLIP 83- 42C	37	50	64	40	35	47	53	53
FLIP 83- 99C	42	46	62	34	35	45	47	47
FLIP 84- 2C	47	60	83	44	42	50	58	63
FLIP 84- 12C	43	50	65	34	37	42	51	55
FLIP 84- 68C	45	52	66	40	35	47	57	54
FLIP 84- 78C	35	45	66	43	38	52	53	52
FLIP 84- 81C	43	45	71	38	37	48	53	52
FLIP 84- 82C	38	45	67	35	38	50	60	62
FLIP 84- 91C	35	48	75	36	35	47	57	61
FLIP 84- 96C	40	45	68	41	39	47	53	59
FLIP 84-146C	33	40	68	34	33	42	53	53
FLIP 84-155C	37	50	56	37	31	37	38	49
FLIP 84-164C	35	45	61	40	34	47	45	54
FLIP 84-167C	43	60	62	38	32	38	49	52
FLIP 84-181C	35	50	55	31	34	42	45	51
FLIP 84-182C	45	40	68	40	35	43	49	56
FLIP 85- 3C	40	47	58	36	37	42	46	56
FLIP 85- 59C	45	55	68	41	36	50	55	62
FLIP 85- 68C	38	48	74	42	38	43	49	54
FLIP 85- 86C	38	50	64	36	39	43	48	55
FLIP 85- 88C	35	50	61	37	32	43	35	59
FLIP 81-293C	38	55	65	43	38	47	50	57
ILC 482	37	40	56	39	33	38	44	47
Local check	35	45	42	35	29	42	57	56
Location Mean	**39**	**48**	**64**	**38**	**35**	**45**	**50**	**55**
S.E. of Mean	2.47	One Rep.	3.27	2.82	2.11	2.24	One Rep.	2.80
L.S.D. at 5%	7.02		9.32	-	-	6.38		7.96
C.V. %	10.91		8.81	12.85	10.35	8.71		8.83
Error df	46		46	46	46	46		46
Significance	*		*	NS	NS	*		*

Cont'd. ...

Table 3.1.4. Cont'd. ...

Entry Name	SYRIA					THAILAND	Overall Mean
	Al Ghab	Idleb	Gelline	Tel Hadya	Jindiress	Chiang Rai	
FLIP 83- 42C	38	35	23	33	33	26	41
FLIP 83- 99C	40	32	25	33	32	19	39
FLIP 84- 2C	48	37	26	38	39	28	47
FLIP 84- 12C	38	34	29	31	32	25	41
FLIP 84- 68C	42	35	31	31	32	25	42
FLIP 84- 78C	40	39	29	39	39	36	43
FLIP 84- 81C	40	36	31	31	33	24	41
FLIP 84- 82C	43	40	30	36	37	32	44
FLIP 84- 91C	40	38	25	33	33	24	42
FLIP 84- 96C	40	34	29	34	35	29	42
FLIP 84-146C	35	30	23	30	31	27	38
FLIP 84-155C	35	32	23	29	29	26	36
FLIP 84-164C	37	28	25	30	32	32	39
FLIP 84-167C	37	31	30	33	35	18	40
FLIP 84-181C	33	32	23	26	30	24	37
FLIP 84-182C	38	35	28	32	33	27	41
FLIP 85- 3C	40	31	29	30	33	30	40
FLIP 85- 59C	43	36	30	40	39	24	45
FLIP 85- 68C	42	40	27	35	35	25	42
FLIP 85- 86C	38	40	27	32	36	25	41
FLIP 85- 88C	38	37	26	30	33	28	39
FLIP 81-293C	42	35	27	31	34	23	42
ILC 482	35	29	22	26	27	27	35
Local check	30	27	19	27	28	-	
Location Mean	**39**	**34**	**27**	**32**	**33**	**26**	
S.E. of Mean	1.76	1.96	1.47	1.03	1.58	2.34	
L.S.D. at 5%	5.02	5.57	4.17	2.94	4.49	-	
C.V. %	7.85	9.88	9.55	5.58	8.18	15.44	
Error df	46	46	46	46	46	44	
Significance	*	*	*	*	*	NS	

* = Significant at $P \leq 0.05$, NS = not significant.

Tabale 3.1.5. 100-Seed weight (g) of entries at different locations in the CIYT-SP during 1987/88.

Entry Name	AFGHANISTAN	ETHIOPIA	FRANCE	LEBANON	SYRIA			THAILAND	Overall Mean
	Kabul	Debre Zeit	Montboucher	Terbol	Idleb	Tel Hadya	Jindiress	Chiang Rai	
FLIP 83- 42C	33	35	40	31	33	32	29	35	34
FLIP 83- 99C	33	37	39	31	32	32	29	35	33
FLIP 84- 2C	35	40	40	33	32	33	32	19	33
FLIP 84- 12C	32	41	42	32	33	33	31	35	35
FLIP 84- 68C	34	36	41	32	33	31	30	31	33
FLIP 84- 78C	32	37	42	32	34	37	34	36	36
FLIP 84- 81C	32	36	37	29	28	29	27	32	31
FLIP 84- 82C	31	35	36	29	30	30	27	28	31
FLIP 84- 91C	31	36	37	32	29	28	27	27	31
FLIP 84- 96C	31	38	39	32	30	29	28	28	32
FLIP 84-146C	31	35	38	30	29	30	28	38	32
FLIP 84-155C	35	34	40	34	32	30	30	34	34
FLIP 84-164C	33	36	37	34	29	30	30	31	32
FLIP 84-167C	28	35	37	35	30	31	29	31	31
FLIP 84-181C	32	39	38	34	33	31	32	21	32
FLIP 84-182C	29	37	40	30	31	30	30	30	32
FLIP 85- 3C	42	49	37	34	42	38	40	26	38
FLIP 85- 59C	36	42	41	34	34	36	34	30	36
FLIP 85- 68C	32	38	34	34	34	36	32	31	34
FLIP 85- 86C	30	33	37	32	28	28	26	28	30
FLIP 85- 88C	33	34	36	31	30	30	27	26	31
FLIP 81-293C	29	31	33	32	27	27	26	26	29
ILC 482	30	32	34	28	29	27	26	26	29
Local check	30	22	30	32	40	35	34	-	
Location Mean	32	36	38	32	32	31	30	30	
S.E. of Mean	1.08	0.98	0.79	2.12	0.91	1.13	0.64	3.34	
L.S.D. at 5%	3.06	2.78	2.26	-	2.60	3.22	1.81	9.51	
C.V.	5.77	4.69	3.65	11.50	4.99	6.25	3.69	19.44	
Error df	46	46	46	46	46	46	46	44	
Significance	*	*	*	NS	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = not significant.

Table 3.1.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-SP during 1987/88.

Entry Name	AFGHANISTAN Kabul		ALGERIA Sidi Bel Abbes		CHILE Valdivia		ETHIOPIA Debre Zeit		FRANCE Montboucher		JORDAN Marow		LEBANON Terbol	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 42C	553	22	2004	19	2059	8	1669	20	1622	14	510	21	610	24
FLIP 83- 99C	1503	9	2010	17	1594	18	2035	15	1420	17	1198	5	803	17
FLIP 84- 2C	1033	19	2153	12	1703	15	1538	22	1078	21	1051	10	664	22
FLIP 84- 12C	1234	16	2619	4	2284	3	2319	9	1359	19	1143	8	792	18
FLIP 84- 68C	1401	13	2239	9	1498	22	2107	12	1869	10	786	14	1121	2
FLIP 84- 78C	255	24	1887	20	1489	23	1661	21	1906	7	606	18	655	23
FLIP 84- 81C	1939	4	2010	17	1531	20	2665	2	1826	11	894	13	1017	9
FLIP 84- 82C	1427	12	2072	14	1643	16	1849	19	2203	4	1060	9	1094	3
FLIP 84- 91C	907	20	2668	3	1527	21	2283	10	1895	9	1259	4	1058	5
FLIP 84- 96C	1374	14	2312	8	2212	5	2013	16	1900	8	519	20	716	21
FLIP 84-146C	520	23	2179	10	2305	2	2586	4	2690	1	1146	7	929	14
FLIP 84-155C	1964	3	2679	2	2094	7	2644	3	1812	12	1768	2	910	15
FLIP 84-164C	1163	18	2059	15	1805	11	2322	8	1780	13	949	12	1045	6
FLIP 84-167C	1511	8	1866	21	1794	12	2004	17	983	22	405	23	958	11
FLIP 84-181C	1622	7	2163	11	1730	14	2196	11	1084	20	1825	1	1240	1
FLIP 84-182C	2028	2	2468	6	2214	4	2482	6	2334	2	300	24	1017	8
FLIP 85- 3C	1456	10	1994	23	2406	1	953	24	376	24	598	19	1028	7
FLIP 85- 59C	602	21	2038	16	1574	19	2099	13	2087	5	427	22	758	20
FLIP 85- 68C	1191	17	2483	5	2095	6	1233	23	687	23	702	16	1066	4
FLIP 85- 86C	1436	11	1533	24	1042	24	2349	7	1377	18	665	17	942	13
FLIP 85- 88C	1315	15	2116	13	1872	9	2074	14	1548	15	786	15	776	19
FLIP 81-293C	1725	6	2413	7	1742	13	2828	1	2255	3	1411	3	961	10
ILC 482	2741	1	2804	1	1630	17	2553	5	1493	16	998	11	806	16
Local check	1799	5	1858	22	1806	10	1860	18	2030	6	1148	6	952	12
Location Mean	1362		2193		1819		2097		1650		923		913	
S.E. of Mean	342.86		One Rep.		194.62		254.06		160.40		308.93		151.27	
L.S.D. at 5%	975.97				553.99		723.19		456.57		-		-	
C.V. %	43.59				18.54		20.99		16.83		57.97		0.69	
Error df	46				46		46		46		46		46	
Significance	*				*		*		*		NS		NS	
Test > L. Check	0				1		4		1		-		-	

Cont'd. ...

Table 3.1.6. Cont'd. ...

Entry Name	MOROCCO		PERU				SYRIA					
	Marchouch		Cenete Lima		La Molina Lima		Al Ghab		Gelline		Idleb	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 42C	1875	8	241	9	75	14	614	12	538	17	1919	11
FLIP 83- 99C	1736	14	201	16	52	21	651	11	847	4	2067	4
FLIP 84- 2C	1667	20	144	24	502	1	164	23	506	20	1331	24
FLIP 84- 12C	1736	13	417	3	178	6	434	21	605	15	1894	14
FLIP 84- 68C	1736	15	375	5	76	12	603	14	641	14	1906	13
FLIP 84- 78C	1806	9	222	13	151	8	683	9	677	12	1691	18
FLIP 84- 81C	1528	23	163	19	76	11	407	22	677	13	1907	12
FLIP 84- 82C	1944	5	295	7	94	10	772	5	691	10	1767	17
FLIP 84- 91C	1597	21	229	12	194	5	608	13	543	16	1676	20
FLIP 84- 96C	1736	16	215	15	70	17	571	17	678	11	1842	15
FLIP 84-146C	1458	24	401	4	115	9	683	8	835	5	1666	21
FLIP 84-155C	1944	6	236	10	48	23	746	6	862	3	2085	3
FLIP 84-164C	1806	10	235	11	51	22	847	3	772	8	2061	5
FLIP 84-167C	2014	3	264	8	58	19	582	15	512	19	2232	1
FLIP 84-181C	2014	4	153	22	57	20	693	7	786	7	1953	10
FLIP 84-182C	2153	1	219	14	66	18	524	18	448	21	2057	6
FLIP 85- 3C	1875	7	349	6	301	3	439	20	410	22	1804	16
FLIP 85- 59C	1736	12	427	2	241	4	651	10	772	9	1554	22
FLIP 85- 68C	1528	22	160	20	376	2	148	24	167	24	1485	23
FLIP 85- 86C	1736	17	188	17	74	15	444	19	337	23	2114	2
FLIP 85- 88C	1806	11	146	23	162	7	571	16	816	6	2048	7
FLIP 81-293C	1736	18	500	1	40	24	783	4	521	18	1690	19
ILC 482	1736	19	174	18	72	16	1021	2	1002	2	2042	8
Local check	2083	2	160	21	75	13	1048	1	1216	1	1975	9
Location Mean	1791		255		133		612		661		1865	
S.E. of Mean	138.48		92.30		48.05		75.23		195.69		181.99	
L.S.D. at 5%	–		–		114.79		–		–		–	
C.V. %	13.39		62.74		50.92		21.29		51.29		16.90	
Error df	46		46		23		46		46		46	
Significance	NS		NS		*		NS		NS		NS	
Test > L. Check	–		–		5		–		–		–	

Cont'd. ...

Table 3.1.6. Cont'd. ...

Entry Name	SYRIA				THAILAND		TUNISIA				TURKEY		Overall Mean	
	Jindiress		Tel Hadya		Chiang Rai		Beja		Oued Meliz		Eskisehir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 42C	1353	6	1136	4	1219	3	944	12	1576	17	1090	14	1137	17
FLIP 83- 99C	1232	14	1059	6	1359	1	832	18	1756	11	937	19	1226	11
FLIP 84- 2C	875	23	818	20	19	23	952	11	1564	18	603	24	967	23
FLIP 84- 12C	1256	13	950	16	1040	5	856	16	1960	7	746	21	1254	7
FLIP 84- 68C	1113	21	776	22	700	9	876	15	1800	10	979	18	1189	13
FLIP 84- 78C	1186	17	1249	1	611	11	788	22	1652	14	1323	5	1079	19
FLIP 84- 81C	953	22	1004	11	330	17	980	8	1912	9	894	20	1195	12
FLIP 84- 82C	1376	5	801	21	296	18	960	10	1724	13	1386	3	1235	10
FLIP 84- 91C	1191	16	737	23	489	13	832	17	1640	16	1164	11	1184	14
FLIP 84- 96C	1274	9	1035	10	433	15	748	23	1444	20	1228	7	1175	15
FLIP 84-146C	1157	18	936	17	831	6	932	13	2688	1	1624	1	1352	3
FLIP 84-155C	1263	10	972	14	81	21	1128	4	2104	4	1280	6	1401	1
FLIP 84-164C	1262	11	928	18	641	10	1412	1	1648	15	1333	4	1269	6
FLIP 84-167C	1537	2	952	15	709	8	928	14	1328	22	1180	10	1148	16
FLIP 84-181C	1645	1	1233	2	43	22	816	19	1268	23	1196	9	1248	8
FLIP 84-182C	1398	4	1071	5	1248	2	808	20	1932	8	1058	15	1360	2
FLIP 85- 3C	1310	8	652	24	435	14	648	24	1540	19	1122	13	1037	21
FLIP 85- 59C	1195	15	999	13	537	12	964	9	1964	6	735	22	1124	18
FLIP 85- 68C	738	24	1042	7	236	20	1384	2	2284	3	709	23	1037	22
FLIP 85- 86C	1122	20	1039	8	272	19	792	21	1756	12	1021	17	1065	20
FLIP 85- 88C	1261	12	1038	9	1096	4	1148	3	1404	21	1513	2	1237	9
FLIP 81-293C	1138	19	824	19	809	7	1084	5	2092	5	1048	16	1347	4
ILC 482	1320	7	1001	12	407	16	1056	6	2296	2	1196	8	1337	5
Local check	1514	3	1222	3	–	–	1052	7	1264	24	1132	12		
Location Mean	1236		978		602		955		1775		1104			
S.E. of Mean	101.62		156.90		294.62		174.07		209.45		125.15			
L.S.D. at 5%	289.25		–		839.74		–		500.38		356.24			
C.V. %	14.24		27.79		84.78		25.78		16.69		19.63			
Error df	46		46		44		23		23		46			
Significance	0		NS		*		NS		*		*			
Test > L. Check	0		–		–		–		10		2			

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.1.7. The five heaviest seed yielding entries at the individual locations in the CIYT-SP during 1987/88.

Rank	AFGHANISTAN	ALGERIA	CHILE	ETHIOPIA	FRANCE	JORDAN	LEBANON
	Kabul	Sidi Bel Abbes	Valdivia	Debre Zeit	Montboucher	Marow	Terbol
1	ILC 482	ILC 482	FLIP85- 3C	FLIP81-293C	FLIP84-146C	FLIP84-181C	FLIP84-181C
2	FLIP84-182C	FLIP84-155C	FLIP84-146C	FLIP84- 81C	FLIP84-182C	FLIP84-155C	FLIP84- 68C
3	FLIP84-155C	FLIP84- 91C	FLIP84- 12C	FLIP84-155C	FLIP81-293C	FLIP81-293C	FLIP84- 82C
4	FLIP84- 81C	FLIP84- 12C	FLIP84-182C	FLIP84-146C	FLIP84- 82C	FLIP84- 91C	FLIP85- 68C
5	Local Check	FLIP85- 68C	FLIP84- 96C	ILC 482	FLIP85- 59C	FLIP83- 99C	FLIP84- 91C

Cont'd. ...

Table 3.1.7. Cont'd. ...

Rank	MOROCCO	PERU		SYRIA		
	Marchouch	Cenete Lima	La Molina Lima	Al Ghab	Gelline	Idlob
1	FLIP84-182C	FLIP81-293C	FLIP84- 2C	Local Check	Local Check	FLIP84-167C
2	Local Check	FLIP85- 59C	FLIP85- 68C	ILC 482	ILC 482	FLIP85- 86C
3	FLIP84-167C	FLIP84- 12C	FLIP85- 3C	FLIP84-164C	FLIP84-155C	FLIP84-155C
4	FLIP84-181C	FLIP84-146C	FLIP85- 59C	FLIP81-293C	FLIP83- 99C	FLIP83- 99C
5	FLIP84- 82C] FLIP84-155C]	FLIP84- 68C	FLIP84- 91C	FLIP84- 82C	FLIP84-146C	FLIP84-164C

Cont'd. ...

Table 3.1.7. Cont'd. ...

Rank	SYRIA		THAILAND	TUNISIA		TURKEY
	Jindiress	Tel Hadya	Chiang Rai	Beja	Oued Meliz	Eskisehir
1	FLIP84-181C	FLIP84- 78C	FLIP83- 99C	FLIP84-164C	FLIP84-146C	FLIP84-146C
2	FLIP84-167C	FLIP84-181C	FLIP84-182C	FLIP85- 68C	ILC 482	FLIP85- 88C
3	Local Check	Local Check	FLIP83- 42C	FLIP85- 88C	FLIP85- 68C	FLIP84- 82C
4	FLIP84-182C	FLIP83- 42C	FLIP85- 88C	FLIP84-155C	FLIP84-155C	FLIP84-164C
5	FLIP84- 82C	FLIP84-182C	FLIP84- 12C	FLIP81-293C	FLIP81-293C	FLIP84- 78C

The bracket indicates entries having the same rank.

respective locations, namely, Valdivia in Chile, Debre Zeit in Ethiopia, Montboucher in France, La Molina-Lima in Peru, Oued Meliz in Tunisia and Eskisehir in Turkey.

The five heaviest seed yielders at each location are given in Table 3.1.7. The entry FLIP 84-155C occurred most frequently (8 times) among the top five and seemed more adaptable than others.

On the basis of average over two years among the 15 common entries during 1985/86 and 1986/87 (Table 3.1.8.), FLIP 84-155C ranked number 1 and was followed by ILC 482, FLIP 84-146C and FLIP 84-164C with respective seed yields of 1488, 1457, 1415 and 1378 kg/ha.

Table 3.1.8. The mean seed yield (Y = kg/ha) and rank (R), of the common entries in CIYT-SP conducted during 1986/87 and 1987/88.

Entry Name	1986/87		1987/88		Mean	
	Y	R	Y	R	Y	R
FLIP 83-42C	1421	7	1137	14	1279	10
FLIP 83-99C	1368	10	1226	8	1297	8
FLIP 84-68C	1363	11	1189	10	1276	11
FLIP 84-78C	1243	14	1079	15	1161	15
FLIP 84-81C	1345	12	1195	9	1270	12
FLIP 84-82C	1459	6	1235	7	1347	6
FLIP 84-91C	1393	9	1184	11	1289	9
FLIP 84-96C	1471	5	1175	12	1323	7
FLIP 84-146C	1477	4	1352	2	1415	3
FLIP 84-155C	1575	2	1401	1	1488	1
FLIP 84-164C	1486	3	1269	5	1378	4
FLIP 84-167C	1179	15	1148	13	1164	14
FLIP 84-181C	1253	13	1248	6	1251	13
FLIP 81-293C	1398	8	1347	3	1373	5
ILC 482	1576	1	1337	4	1457	2

3.2. CHICKPEA INTERNATIONAL YIELD TRIAL-WINTER-MEDITERRANEAN REGION (CIYT-W-MR)

Material

The Chickpea International Yield Trial Winter Mediterranean Region (CIYT-W-MR) comprised 23 test entries and one local check to be supplied by the cooperator. Twenty-two entries from these were the advanced breeding lines developed through hybridization at ICARDA. All these lines were selected on the basis of their superior performance at least once either in local, regional or international trials.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was four rows, each 4 m long with an inter row spacing of 45 cm. Fifty six sets of trails were distributed to cooperators in 18 countries. Results were returned from 31 sets covering 14 countries. The agronomic practices employed at different locations are given in Table 3.2.1.

Results and Discussion

The entry means for time to flowering, time to maturity, plant height and 100-seed weight at various locations are given in Tables 3.2.2., 3.2.3., 3.2.4. and 3.2.5., respectively. The time taken to flowering was least at Amasya in Turkey (75 days) and Marchouch in Morocco (77 days). Montboucher in France (180 days) and Madrid in Spain (173 days) were the locations where the entries took maximum time to flower. The entry means across locations for time to flowering ranged from 124 days for ILC 482, to 133 days for FLIP 84-79C and FLIP 84-85C. In general, early flowering locations were earlier in maturity (Table 3.2.4.).

The plant height varied from 52 cm for FLIP 84-79C to 69 cm for FLIP 85-65C. The entries were very tall at Montboucher in France, Al Ghab in Syria, and Zememra in Morocco (81-86cm) and very short at Setif in Algeria (21 cm).

The location means for 100-seed weight (Table 3.2.5) varied from 29g (for Horsham in Australia and Jindiress in Syria), to 42 g (for Amasaya in Turkey). The overall mean for 100-seed weight for entries ranged between 31 and 41g, and the entries FLIP 85-74C and FLIP 85-133C had the largest seed size.

The seed yield and the rank of entries at each location are given in Table 3.2.6. The seed yield varied from 166 kg/ha at Dahmouni (Algeria) to 3336 kg/ha at Elvas (Portugal).

The ANOVA for seed yield revealed that at 14 locations some of the test entries exceeded the respective local check by a significant margin. Across locations, the highest seed yield was recorded for FLIP 94-92C (2079 kg/ha) which was closely followed by FLIP 83-98C, FLIP 83-47C, FLIP 85-93C and FLIP 84-93C with respective yields of 1934, 1915, 1908 and 1859 kg/ha. The top five yielding lines at each location are given in Table 3.2.7. Among these lines FLIP 84-92C occurred most frequently among the top five (20 times) and was closely followed by FLIP 83-47C and FLIP 84-93C (10 times) and these lines were comparatively more adaptable.

On the basis of average over two years for the 15 common entries (Table 3.2.8.), FLIP 84-92C (1944 kg/ha) ranked number 1 in seed yield and was closely followed by FLIP 83-48C (1898 kg/ha) and FLIP 83-47C (1881 kg/ha).

Table 3.2.1. Agronomic data for different locations in the CIMT-W-MR during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Dahmouni	08.12.88	07.07.89	17	90	75	-	Trifluraline	Rabat 9
ALGERIA	Sidi Bel Abbes	30.11.87	06.88	-			-	-	Rabat 9
ALGERIA	Setif	22.11.87	21.05.88	-			-	-	Rabat 9
AUSTRALIA	Horsham	05.07.88	10.01.89		150		-	Trifluraline, Cyanazine, Diquat, Paraquat, Endosulphan	Kaniva
CYPRUS	Laxia	25.11.87	17.06.88	25	60		-	Trifluran	Cyprus Local
FRANCE	Montboucher	19.11.87	17.08.88		125		-	Tribunil	Cascari
IRAQ	Mosul	23.11.88	07.06.89	50	50		-	-	Mahally
ITALY	Catania	26.11.87	30.05.88	45	90		-	-	11 EN
ITALY	Tarquinia	09.01.88	02.08.88	45	130		-	TARGA	Calia
JORDAN	Marow	19.12.88	15.06.89	10	15		-	-	UJC 107
LEBANON	Torbol	21.11.87	07.07.88		50		-	Kerb, Igran	Lebanese Local
MOROCCO	Douyot	22.11.8	17.06.88	30	60		-	-	PCH 46
MOROCCO	Marchouch	26.02.87	06.07.88	28	56	28	-	-	PCH 46
MOROCCO	Zememra	17.11.87	20.06.88	14	13		-	-	PCH 46
MOROCCO	Dar Bouazza	NA	NA	NA			NA	NA	PCH 46
PORTUGAL	Elvas	11.11.87	12.07.88	-			-	-	FLIP 83-15C
SPAIN	Madrid	11.11.87	25.07.38	32	96		-	Terbutryne	G-3 (Alcazaba)
SPAIN	Sevilla	01.02.88	NA	-			-	-	Zegri
SYRIA	Al Ghab	29.11.87	15.06.88	30	50		-	-	Local
SYRIA	Hama	23.11.87	06.06.88	30	80		-	Dorsban	Local from market
SYRIA	Homs	16.12.87	06.88		50				Local
SYRIA	Idleb	25.11.87	02.06.88		60		-	-	Ghab 1
SYRIA	Izra'a	10.01.88	16.06.88	13	17		-	-	Local
SYRIA	Jableh	20.01.88	29.06.88	-			-	-	Local
SYRIA	Jindiress	21.11.87	25.06.88	30	50		-	Kerb, Igran	ILC 3279
SYRIA	Tel Hadya	25.11.87	05.06.88	30	50		-	Kerb, Igran	ILC 3279
TUNISIA	Beja	24.11.87	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA
TURKEY	Amasya	04.04.88	07.09.88	50			-	-	Ispanyol
TURKEY	Adana	15.11.88	24.05.89	30	50		1		NA
TURKEY	Diyarbakir	10.12.88	10.06.89	30	60		-		Canitez - 87

NA = Not available

Table 3.2.2. Time to flowering (days) of entries at different locations in the CIYT-W-MR during 1987/88.

Entry Name	Pedigree	Origin	ALGERIA		AUSTRALIA	CYPRUS	FRANCE	IRAQ
			Dahmouni	Setif	Horsham	Laxia	Mont-boucher	Mosul
FLIP 83- 47C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	123	149	111	113	186	152
FLIP 83- 48C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	120	145	113	115	185	151
FLIP 83- 71C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	122	143	123	114	190	150
FLIP 83- 97C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	124	149	123	116	186	152
FLIP 83- 98C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	122	145	111	115	178	150
FLIP 84- 79C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	120	149	113	115	192	151
FLIP 84- 80C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	124	144	-	114	179	150
FLIP 84- 85C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	122	148	113	116	179	150
FLIP 84- 92C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	123	145	118	113	179	150
FLIP 84- 93C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	122	149	118	114	188	152
FLIP 84- 99C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	120	143	118	112	170	150
FLIP 84-102C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	125	147	113	115	186	151
FLIP 84-158C	X 81 TH 247/ILC 482XILC2956	ICARDA/ICRISAT	124	149	118	115	168	155
FLIP 85- 43C	X 82 TH 66/ILC2593XILC3279	ICARDA/ICRISAT	121	148	118	117	170	154
FLIP 85- 48C	X 83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	120	144	113	114	182	150
FLIP 85- 65C	X 83 TH 25/FLIP 82-69CXFLIP 82-81C	ICARDA/ICRISAT	124	149	113	116	182	152
FLIP 85- 74C	X 83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	122	145	113	113	173	152
FLIP 85- 78C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	120	148	113	116	172	151
FLIP 85- 93C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	120	145	111	112	183	151
FLIP 85-133C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	121	148	-	117	188	151
FLIP 85-148C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	122	144	115	113	184	151
FLIP 81-293C	Improved check	ICARDA/ICRISAT	122	144	111	112	179	152
ILC 482	Long term check	Turkey	123	141	110	-	163	150
Local check	-	-	124	145	111	-	185	154
Location Mean			**122**	**146**	**115**	**114**	**180**	**151**
S.E. of Mean			1.52	0.34	One Rep.	0.59	2.83	0.97
LSD at .05			-	0.97		1.69	8.06	2.76
C.V. %			2.15	0.40		0.89	2.72	1.11
Error df			46	46		42	46	46
Significance			NS	*		*	*	*

Cont'd. ...

Table 3.2.2. Cont'd. ...

Entry Name	ITALY		LEBANON	MOROCCO			PORTUGAL	SPAIN		SYRIA	
	Catania	Tarquinia	Terbol	Douyet	Marchouch	Zememra	Elvas	Madrid	Sevilla	Al Ghab	Hama
FLIP 83- 47C	149	116	154	129	87	119	105	175	85	141	141
FLIP 83- 48C	148	114	154	126	79	119	105	179	86	141	135
FLIP 83- 71C	148	118	155	129	80	119	105	179	90	143	139
FLIP 83- 97C	150	114	154	126	79	119	105	176	86	139	142
FLIP 83- 98C	148	108	151	125	75	103	101	168	84	135	133
FLIP 84- 79C	151	120	155	125	77	122	107	178	90	141	140
FLIP 84- 80C	149	112	152	126	73	117	103	174	87	137	135
FLIP 84- 85C	150	114	155	124	70	120	109	188	86	144	140
FLIP 84- 92C	150	119	154	124	83	118	105	176	86	144	137
FLIP 84- 93C	150	112	155	126	77	120	106	179	86	144	138
FLIP 84- 99C	147	108	152	126	77	117	101	167	84	136	135
FLIP 84-102C	147	113	155	124	75	119	104	168	84	143	135
FLIP 84-158C	150	113	154	129	83	117	105	164	86	134	133
FLIP 85- 43C	151	113	155	125	77	118	107	168	90	136	135
FLIP 85- 48C	147	113	153	125	83	116	102	172	90	136	136
FLIP 85- 65C	151	112	157	126	70	119	114	180	90	141	136
FLIP 85- 74C	148	112	152	125	83	118	104	170	90	135	132
FLIP 85- 78C	150	112	155	126	73	118	101	179	90	139	136
FLIP 85- 93C	148	108	152	129	83	115	101	160	86	136	131
FLIP 85-133C	150	113	156	125	75	119	105	181	90	145	140
FLIP 85-148C	147	108	153	123	75	117	104	178	85	136	135
FLIP 81-293C	148	109	151	128	77	113	104	172	86	138	135
ILC 482	141	104	150	129	75	98	100	155	83	129	127
Local check	149	106	150	126	73	106	102	167	84	131	129
Location Mean	149	112	154	126	77	116	104	173	87	139	136
S.E. of Mean	0.48	1.87	0.46	0.28	0.05	1.93	1.08	1.51	0.61	1.02	0.89
LSD at .05	1.36	5.32	1.30	0.79	0.15	5.51	3.06	4.19	1.74	2.90	2.53
C.V. %	0.56	2.89	0.52	0.38	0.09	2.88	1.79	1.51	1.22	1.27	1.14
Error df	46	46	46	46	23	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.2.2. Cont'd. ...

Entry Name	SYRIA						TURKEY			(1) Overall Mean
	Homs	Idleb	Izra'a	Jableh	Jindiress	Tel Hadya	Amasya	Adana	Diyarbakir	
FLIP 83- 47C	128	161	105	97	157	151	71	147	128	132
FLIP 83- 48C	129	160	102	97	160	150	74	146	130	131
FLIP 83- 71C	128	161	105	97	161	150	78	147	129	132
FLIP 83- 97C	131	161	107	98	161	149	68	146	128	132
FLIP 83- 98C	128	157	100	97	146	144	78	145	129	127
FLIP 84- 79C	130	160	106	98	161	151	78	147	129	133
FLIP 84- 80C	128	161	102	98	151	146	78	148	129	130
FLIP 84- 85C	130	163	107	97	160	154	78	148	129	133
FLIP 84- 92C	129	160	105	97	159	150	68	144	129	130
FLIP 84- 93C	130	160	105	97	160	147	71	148	129	132
FLIP 84- 99C	129	160	101	96	146	143	66	146	129	127
FLIP 84-102C	128	160	102	97	150	149	74	144	129	130
FLIP 84-158C	130	157	105	98	149	144	74	146	129	129
FLIP 85- 43C	130	159	106	99	152	145	68	145	128	129
FLIP 85- 48C	129	159	105	99	151	145	74	145	128	130
FLIP 85- 65C	131	160	106	99	153	148	84	144	130	132
FLIP 85- 74C	128	158	108	98	148	144	78	146	128	130
FLIP 85- 78C	130	161	104	99	153	148	78	146	129	130
FLIP 85- 93C	129	157	101	97	149	143	78	146	129	129
FLIP 85-133C	132	159	108	100	153	151	84	145	128	132
FLIP 85-148C	130	159	101	96	153	145	78	145	129	130
FLIP 81-293C	128	160	101	95	148	144	78	144	128	129
ILC 482	125	155	99	90	144	138	74	145	127	124
Local check	128	155	100	97	161	157	78	145	129	
Location Mean	129	159	104	97	154	147	75	146	129	
S.E. of Mean	0.35	0.77	1.02	0.79	1.48	1.52	0.68	0.49	0.55	
LSD at .05	0.99	2.19	2.91	2.26	4.21	4.33	1.94	1.38	-	
C.V. %	0.47	0.84	1.71	1.41	1.67	1.79	1.56	0.58	0.74	
Error df	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	NS	

(1) Horsham and Laxia were excluded from the overall mean. * = Significant at $P \leq .05$, NS = Not significant.

Table 3.2.3. Time to maturity (days) of entries at different locations in the CIYT-W-MR during 1987/88.

Entry Name	ALGERIA		FRANCE	IRAQ	ITALY		LEBANON	MOROCCO			PORTUGAL	SPAIN	SYRIA
	Dahmouni	Setif	Montbou-cher	Mosul	Cata-nia	Tarqui-nia	Terbol	Douyet	Marchouch	Zememra	Elvas	Madrid	AL - Ghab
FLIP 83- 47C	180	173	242	187	200	181	193	187	133	159	216	256	180
FLIP 83- 48C	180	176	242	187	197	179	193	189	125	177	216	257	183
FLIP 83- 71C	180	180	239	186	197	186	194	186	126	182	217	260	183
FLIP 83- 97C	180	178	242	188	200	186	196	189	125	184	218	255	186
FLIP 83- 98C	180	173	242	186	198	186	193	185	121	177	216	254	182
FLIP 84- 79C	180	176	242	190	197	188	194	190	123	177	215	257	183
FLIP 84- 80C	180	181	242	188	198	184	194	186	119	184	219	258	182
FLIP 84- 85C	180	178	243	186	197	186	195	186	116	184	212	260	183
FLIP 84- 92C	180	180	239	187	199	181	195	188	129	182	213	258	184
FLIP 84- 93C	180	174	242	186	197	184	195	188	123	177	216	257	185
FLIP 84- 99C	180	173	234	185	198	179	194	186	123	177	212	247	183
FLIP 84-102C	180	179	239	186	197	188	196	192	121	182	215	250	184
FLIP 84-158C	180	178	243	186	197	179	193	186	129	177	215	245	180
FLIP 85- 43C	180	177	239	187	197	191	197	189	123	182	218	254	185
FLIP 85- 48C	180	181	239	186	197	179	197	186	129	182	217	245	184
FLIP 85- 65C	180	172	237	188	200	179	197	192	116	177	218	250	185
FLIP 85- 74C	180	178	239	185	199	179	196	186	129	184	216	249	185
FLIP 85- 78C	180	173	242	186	197	179	197	186	119	177	215	257	182
FLIP 85- 93C	180	177	234	186	198	184	195	184	129	177	216	249	184
FLIP 85-133C	180	174	240	189	199	191	205	195	121	195	215	253	188
FLIP 85-148C	180	175	242	187	197	191	196	187	121	177	218	252	185
FLIP 81-293C	180	173	242	185	197	179	193	186	123	177	216	250	181
ILC 482	180	173	242	185	197	179	195	181	121	177	217	243	178
Local check	180	181	239	185	199	184	193	188	119	177	217	235	184
Location Mean	180	176	240	187	198	183	195	187	123	179	216	252	183
S.E. of Mean	0.00	0.34	1.66	0.71	0.59	1.76	0.77	0.40	0.05	4.52	1.06	2.58	0.90
LSD at .05	-	0.97	4.72	2.03	1.68	5.02	2.19	1.14	0.15	12.85	3.02	7.35	2.56
C.V. %	0.00	0.33	1.20	0.66	0.52	1.67	0.68	0.37	0.06	4.37	0.85	1.77	0.85
Error df	46	46	46	46	46	46	46	46	23	46	46	46	46
Significance	NS	*	*	*	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.2.3. Cont'd. ...

Entry Name	SYRIA							TURKEY			Overall Mean
	Hama	Homs	Idleb	Izra'a	Jableh	Jindiress	Tel Hadya	Amasya	Adana	Diyarbakir	
FLIP 83- 47C	183	173	200	146	134	204	193	139	188	176	183
FLIP 83- 48C	182	176	201	146	135	204	192	138	186	175	184
FLIP 83- 71C	181	173	201	147	130	205	193	138	188	174	185
FLIP 83- 97C	183	174	202	146	134	205	193	140	186	176	186
FLIP 83- 98C	181	175	200	144	133	203	193	137	187	175	184
FLIP 84- 79C	183	176	197	147	134	208	193	139	186	175	185
FLIP 84- 80C	183	172	202	146	133	204	193	139	188	174	185
FLIP 84- 85C	182	176	202	146	132	204	192	138	190	176	185
FLIP 84- 92C	183	176	201	146	133	203	193	138	185	175	185
FLIP 84- 93C	183	175	200	146	135	204	193	138	190	176	185
FLIP 84- 99C	178	171	199	141	129	199	190	137	188	175	182
FLIP 84-102C	183	173	201	145	132	203	193	140	186	176	185
FLIP 84-158C	178	172	198	145	132	200	191	137	187	173	183
FLIP 85- 43C	181	176	200	146	135	202	193	137	186	177	185
FLIP 85- 48C	180	175	199	144	132	200	192	137	187	176	184
FLIP 85- 65C	181	175	199	145	131	201	192	137	186	176	183
FLIP 85- 74C	179	174	197	145	132	199	192	137	187	176	184
FLIP 85- 78C	180	175	200	146	133	202	192	138	187	176	183
FLIP 85- 93C	180	172	199	145	130	202	192	137	186	174	183
FLIP 85-133C	184	178	202	149	133	205	195	140	186	177	187
FLIP 85-148C	182	175	201	145	135	204	193	141	186	177	185
FLIP 81-293C	179	172	199	141	133	200	191	137	186	174	182
ILC 482	177	169	197	142	130	198	188	137	186	174	182
Local check	182	173	197	142	134	202	193	137	185	175	
Location Mean	181	174	200	145	133	203	192	138	187	175	
S.E. of Mean	0.41	0.28	1.04	0.73	1.93	0.62	0.32	0.41	0.92	0.37	
LSD at .05	1.17	0.80	2.96	2.08	-	1.75	0.92	1.16	2.63	1.04	
C.V. %	0.39	0.28	0.90	0.87	2.52	0.53	0.29	0.51	0.86	0.36	
Error df	46	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	NS	*	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.2.4. Plant height (cm) of entries at different locations in the CIYT-W-MR during 1987/88.

Entry Name	ALGERIA			AUSTRALIA	CYPRUS	FRANCE	IRAQ	ITALY		LEBANON	MOROCCO			PORTUGAL
	Dahmouni	Sidi Bel Abbes	Setif	Horsham	Laxia	Mont-boucher	Mosul	Cata-nia	Tarqui-nia	Terbol	Douyet	Marc-houch	Zem-emra	Elvas
FLIP 83- 47C	39	45	20	52	47	87	57	57	67	43	65	43	73	57
FLIP 83- 48C	38	39	20	50	48	85	50	55	65	45	75	50	72	67
FLIP 83- 71C	43	43	19	50	48	88	55	56	62	46	75	45	65	68
FLIP 83- 97C	35	40	18	41	53	86	55	52	67	43	65	43	85	60
FLIP 83- 98C	45	39	21	45	49	85	62	57	68	48	80	45	85	72
FLIP 84- 79C	42	40	20	48	45	74	42	54	63	42	60	45	67	62
FLIP 84- 80C	40	43	19	-	46	81	57	57	58	43	50	45	70	55
FLIP 84- 85C	45	40	22	60	55	88	58	58	68	47	70	43	80	70
FLIP 84- 92C	36	40	21	51	44	89	57	57	70	42	75	40	75	70
FLIP 84- 93C	44	39	18	45	51	91	47	56	68	49	80	45	77	68
FLIP 84- 99C	44	50	23	50	53	85	50	62	67	48	86	45	88	72
FLIP 84-102C	39	43	21	50	53	88	53	60	67	46	75	50	70	63
FLIP 84-158C	41	45	22	50	50	80	45	59	68	46	70	48	87	68
FLIP 85- 43C	46	53	23	51	49	80	65	64	65	56	75	40	90	65
FLIP 85- 48C	44	50	22	55	55	85	60	65	73	54	85	40	95	73
FLIP 85- 65C	49	60	28	65	57	95	60	63	73	56	100	48	100	77
FLIP 85- 74C	41	55	24	41	56	92	53	60	65	54	85	48	92	67
FLIP 85- 78C	42	47	23	50	54	89	58	61	68	55	80	48	83	65
FLIP 85- 93C	39	47	17	40	48	81	57	58	53	44	70	40	75	60
FLIP 85-133C	40	45	20	-	56	95	60	58	68	52	80	43	93	68
FLIP 85-148C	38	45	19	56	48	81	53	53	62	42	85	40	82	63
FLIP 81-293C	38	43	22	50	48	85	55	55	60	45	70	43	83	68
ILC 482	39	40	21	55	-	75	45	54	53	43	80	43	75	70
Local check	37	50	22	44	-	93	53	60	65	45	60	50	87	63
Location Mean	41	45	21	50	50	86	54	53	65	47	75	44	81	66
S.E. of Mean	1.27	One Rep.	1.65	One Rep.	2.12	2.94	4.84	0.89	3.52	2.41	4.17	4.04	4.34	4.34
LSD at .05	3.63		4.69		5.08	8.38	-	2.53	10.02	6.86	9.95	-	12.35	-
C.V. %	5.40		13.63		5.93	5.95	15.39	2.66	9.35	8.82	7.87	12.87	9.26	11.33
Error df	46		46		21	46	46	46	46	46	23	23	46	46
Significance	*		*		*	*	NS	*	*	*	*	NS	*	NS

Cont'd. ...

Table 3.2.4. Cont'd. ...

Entry Name	SPAIN		SYRIA								TURKEY			(1) Overall Mean
	Madrid	Sevilla	Al Ghab	Hama	Homs	Idleb	Izra'a	Jableh	Jindiress	Tel Hadya	Amasya	Adana	Diyar-bakir	
FLIP 83- 47C	73	67	78	65	53	37	44	62	50	48	79	60	32	56
FLIP 83- 48C	67	70	82	65	57	30	44	56	48	49	75	61	33	56
FLIP 83- 71C	69	68	75	67	55	37	42	61	46	48	77	59	32	56
FLIP 83- 97C	71	68	82	63	58	41	49	66	50	52	81	53	34	57
FLIP 83- 98C	72	73	83	77	60	43	42	67	58	52	79	67	32	61
FLIP 84- 79C	65	58	77	60	55	28	41	66	35	51	65	64	31	52
FLIP 84- 80C	76	73	73	63	58	34	46	62	47	46	73	58	32	55
FLIP 84- 85C	71	78	87	72	67	52	48	68	59	59	83	55	35	61
FLIP 84- 92C	76	70	85	73	57	39	44	59	55	52	73	56	33	58
FLIP 84- 93C	72	71	85	70	57	43	42	64	50	52	76	65	31	59
FLIP 84- 99C	67	71	85	72	65	43	48	68	58	55	75	69	31	61
FLIP 84-102C	69	69	80	67	62	31	45	64	54	53	68	68	31	58
FLIP 84-158C	72	70	82	68	55	40	43	61	51	47	74	66	30	58
FLIP 85- 43C	79	77	82	77	60	58	48	67	60	53	77	55	33	62
FLIP 85- 48C	79	72	87	83	65	62	50	71	67	64	80	65	35	65
FLIP 85- 65C	76	80	88	83	63	60	52	76	69	68	79	61	38	69
FLIP 85- 74C	71	66	87	83	63	56	49	71	62	59	72	61	33	63
FLIP 85- 78C	71	70	87	75	58	47	48	64	60	53	74	68	32	61
FLIP 85- 93C	76	67	78	68	55	48	44	56	51	51	66	62	31	56
FLIP 85-133C	78	75	85	78	58	49	48	66	64	59	77	65	33	63
FLIP 85-148C	64	64	80	67	57	32	42	63	49	45	67	58	32	56
FLIP 81-293C	73	69	78	75	57	42	45	59	54	49	75	63	32	58
ILC 482	65	58	73	63	55	30	38	61	37	39	73	62	29	53
Local check	68	73	80	62	58	36	43	67	69	69	78	61	33	
Location Mean	72	70	82	71	59	42	45	64	54	53	75	62	32	
S.E. of Mean	2.52	2.84	2.57	2.40	1.33	2.66	1.40	2.77	3.04	1.52	2.94	1.05	1.69	
LSD at .05	7.19	8.10	7.30	6.83	3.77	7.56	4.00	7.88	8.66	4.33	8.36	3.00	-	
C.V. %	6.11	7.06	5.44	5.88	3.91	10.84	5.37	7.46	9.73	4.96	6.80	2.95	9.04	
Error df	46	46	46	46	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	*	*	*	*	NS	

(1) Horsham and Laxia were excluded from the overall mean., * = Significant at $P \leq .05$, NS = Not significant.

Table 3.2.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-W-MR during 1987/88.

Entry Name	ALGERIA						AUSTRALIA		CYPRUS		FRANCE		IRAQ		ITALY			
	Dahmouni		Sidi Bel Abbes		Setif		Horsham		Laxia		Montboucher		Mosul		Tarquinia		Catania	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 47C	160	14	1783	2	548	10	2144	4	1726	8	2260	8	402	20	3984	2	1759	3
FLIP 83- 48C	165	13	1567	13	550	9	2367	1	1851	4	2452	5	508	16	3243	9	1365	17
FLIP 83- 71C	203	7	1702	7	766	2	1450	6	1469	17	2208	12	850	2	2878	13	1619	7
FLIP 83- 97C	122	19	1622	10	499	13	2189	3	1740	7	2108	14	253	24	2757	18	1874	2
FLIP 83- 98C	240	2	1926	1	567	6	900	12	1250	20	2250	9	625	8	3254	8	1666	6
FLIP 84- 79C	224	4	1416	17	447	19	1006	11	1813	5	1566	20	677	3	3291	6	1320	20
FLIP 84- 80C	111	22	1731	5	563	7	–	–	1566	14	1867	16	557	11	2815	15	1527	11
FLIP 84- 85C	139	17	1645	9	633	4	550	15	1566	13	2409	6	525	14	2481	20	1435	14
FLIP 84- 92C	122	18	1689	8	781	1	1783	5	1585	12	2491	4	375	21	3762	3	1690	4
FLIP 84- 93C	208	6	1317	21	440	21	1261	8	1882	3	2603	2	472	17	4042	1	1597	8
FLIP 84- 99C	232	3	1783	3	436	22	689	14	2021	2	2245	10	632	7	2254	22	1550	9
FLIP 84-102C	167	11	1708	6	449	18	1061	10	2253	1	2157	13	543	13	3085	12	1550	10
FLIP 84-158C	150	16	1421	16	546	11	1200	9	1340	19	2071	15	550	12	3299	5	1250	22
FLIP 85- 43C	116	20	1614	11	665	3	894	13	1073	22	1432	22	860	1	3132	11	1412	15
FLIP 85- 48C	156	15	1569	12	542	12	467	17	1471	16	1680	18	633	6	2704	19	1366	16
FLIP 85- 65C	181	8	1361	19	554	8	289	21	1417	18	1647	19	673	4	1741	24	856	24
FLIP 85- 74C	115	21	1328	20	574	5	311	20	1546	15	1450	21	657	5	2312	21	1320	19
FLIP 85- 78C	178	9	1733	4	470	15	439	18	1708	9	2402	7	468	18	2831	14	1457	13
FLIP 85- 93C	247	1	1257	22	442	20	333	19	1751	6	2229	11	515	15	2810	16	1898	1
FLIP 85-133C	104	23	1168	23	366	24	–	–	1195	21	1041	23	307	22	2079	23	1365	18
FLIP 85-148C	167	12	1538	15	432	23	511	16	1597	11	949	24	307	23	2778	17	1505	12
FLIP 81-293C	168	10	1379	18	457	17	1394	7	1639	10	2538	3	575	9	3259	7	1689	5
ILC 482	215	5	1556	14	497	14	2333	2	0	23	1786	17	572	10	3651	4	1320	21
Local check	93	24	697	24	466	16	244	22	0	24	2632	1	423	19	3138	10	1250	23
Location Mean	166		1521		529		1083		1477		2020		540		2582		1485	
S.E. of Mean	13.18		One Rep.		74.38		One Rep.		91.59		200.95		50.55		349.36		104.91	
LSD at .05	37.50				211.72				260.73		572.02		143.88		994.47		298.63	
C.V. %	13.76				24.36				10.74		17.23		16.22		20.29		12.24	
Error df	46				46				46		46		46		46		46	
Significance	*				*				*		*		*		*		*	
Test > L. Check	17				2				22		0		10		0		10	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	JORDAN		LEBANON		MOROCCO						PORTUGAL		SPAIN			
	Marow		Terbol		Douyet		Marchouch		Zememra		Elvas		Madrid		Sevilla	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83 47C	978	5	1780	11	3667	7	1771	7	2171	20	3397	11	2643	3	1558	2
FLIP 83 48C	1052	3	1766	12	3222	14	1771	5	2508	9	3830	6	2311	10	1235	12
FLIP 83 71C	714	14	1879	3	3444	9	1354	21	2856	3	4157	2	2140	14	1254	11
FLIP 83- 97C	789	10	1879	4	3167	15	1979	1	2614	7	2949	17	2109	15	1263	10
FLIP 83- 98C	684	17	1715	14	5000	1	1458	15	1520	24	3699	9	2398	7	1369	4
FLIP 84- 79C	747	12	1823	9	3889	4	1250	24	2178	19	3251	14	2790	1	1283	9
FLIP 84- 80C	922	6	1860	6	3167	16	1667	9	2674	5	3728	8	2342	9	1369	3
FLIP 84- 85C	1192	1	1738	13	2778	19	1563	13	2338	15	3038	16	1865	18	1129	19
FLIP 84- 92C	575	19	1919	2	4278	2	1458	19	3132	2	4240	1	2654	2	1846	1
FLIP 84- 93C	198	22	1879	5	2667	21	1354	22	2304	17	3995	3	2579	5	1283	8
FLIP 84- 99C	1051	4	1633	17	3333	12	1667	10	2351	13	2919	18	2016	16	1321	7
FLIP 84-102C	768	11	1843	7	3389	10	1563	14	1784	23	3241	15	2456	6	1363	5
FLIP 84-158C	502	20	1617	18	2944	18	1458	16	2527	8	2872	19	2286	13	1221	15
FLIP 85- 43C	803	9	1928	1	2667	20	1458	17	3328	1	2385	24	2308	11	1156	18
FLIP 85- 48C	731	13	1685	15	3778	5	1667	8	2502	10	3306	12	1798	20	1033	21
FLIP 85- 65C	917	7	1369	22	2333	22	1458	20	2357	12	2597	22	1602	23	723	24
FLIP 85- 74C	1129	2	1237	24	3556	8	1458	18	2331	16	2823	20	1871	17	894	22
FLIP 85- 78C	691	16	1586	20	3889	3	1771	4	2627	6	3298	13	2599	4	1092	20
FLIP 85- 93C	434	21	1477	21	3778	6	1354	23	2823	4	3903	5	2393	8	1235	13
FLIP 85-133C	868	8	1258	23	2111	24	1771	6	1970	21	2425	23	1783	21	815	23
FLIP 85-148C	627	18	1614	19	3222	13	1875	3	1936	22	2774	21	1772	22	1221	14
FLIP 81-293C	708	15	1780	10	3167	17	1979	2	2424	11	3806	7	2298	12	1196	17
ILC 482	-	-	1837	8	3333	11	1563	11	2344	14	3930	4	1827	19	1329	6
Local check	-	-	1668	16	2167	23	1563	12	2261	18	3508	10	881	24	1210	16
Location Mean	776		1699		3289		1593		2411		3336		2155		1225	
S.E. of Mean	151.44		112.74		392.66		282.33		328.08		351.21		117.26		95.12	
LSD at .05	432.23		320.91		1117.72		-		-		999.73		333.80		270.47	
C.V. %	33.78		11.49		20.68		25.07		23.57		18.23		9.43		13.44	
Error df	42		46		46		23		46		46		46		46	
Significance	*		*		*		NS		NS		*		*		*	
Test > L. Check	1		0		12		-		-		0		23		2	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	SYRIA															
	Al Ghab		Hama		Homs		Idleb		Izra'a		Jableh		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 47C	2794	4	2370	13	2238	13	1724	6	1497	6	1884	12	2132	2	2504	2
FLIP 83- 48C	2709	8	2381	11	2794	1	1068	23	1714	2	2042	6	1595	16	2188	8
FLIP 83- 71C	2656	11	2333	14	2230	14	1652	8	1392	10	1767	17	1421	23	2182	9
FLIP 83- 97C	2418	19	2302	16	1723	20	1313	21	1577	5	1810	14	1664	15	1863	19
FLIP 83- 98C	2714	7	2259	19	2729	2	1369	16	1333	15	2868	1	1865	5	2069	14
FLIP 84- 79C	2921	2	2608	7	2201	15	1058	24	1296	19	1767	16	1466	21	2513	1
FLIP 84- 80C	2349	21	2376	12	2545	3	1421	14	1772	1	1566	20	1585	18	1895	17
FLIP 84- 85C	2423	18	2238	20	2490	4	1495	12	1349	12	2307	3	1590	17	2066	15
FLIP 84- 92C	2466	17	2418	10	2476	5	1775	4	1344	14	2233	5	2029	3	2389	3
FLIP 84- 93C	2619	14	2556	8	2102	16	1794	3	1127	22	2296	4	1683	13	2280	6
FLIP 84- 99C	2741	5	2307	15	2450	6	1379	15	1360	11	1915	10	1714	12	2158	11
FLIP 84-102C	2640	12	2667	6	2072	17	1330	20	1323	17	1894	11	1810	6	2248	7
FLIP 84-158C	2804	3	2979	1	2283	10	1240	22	1307	18	1799	15	1921	4	2284	5
FLIP 85- 43C	2164	23	2556	9	2280	11	1554	10	1471	7	1947	7	2251	1	2094	13
FLIP 85- 48C	2497	16	2275	17	2368	8	1883	1	1254	20	1513	22	1714	11	1754	21
FLIP 85- 65C	2259	22	2106	22	1630	21	1368	17	1011	23	1545	21	1230	24	1698	23
FLIP 85- 74C	2397	20	2698	4	1608	23	1697	7	1344	13	1037	24	1770	9	1705	22
FLIP 85- 78C	2693	9	2275	18	1730	19	1347	19	1159	21	1598	18	1775	8	1995	16
FLIP 85- 93C	2619	13	2757	3	2412	7	1811	2	1646	3	1566	19	1717	10	2128	12
FLIP 85-133C	1704	24	1947	24	1575	24	1490	13	1323	16	1164	23	1680	14	1876	18
FLIP 85-148C	2667	10	2175	21	2350	9	1358	18	1460	8	1873	13	1431	22	2379	4
FLIP 81-293C	2735	6	2090	23	1630	22	1517	11	1614	4	1926	9	1810	7	1760	20
ILC 482	3000	1	2772	2	1998	18	1752	5	1402	9	2677	2	1556	19	2160	10
Local check	2577	15	2698	5	2254	12	1582	9	831	24	1926	8	1542	20	1625	24
Location Mean	2565		2423		2174		1499		1371		1872		1706		2076	
S.E. of Mean	165.58		193.47		244.86		230.27		159.72		225.14		161.40		115.99	
LSD at .05	471.34		–		697.00		–		454.65		640.86		459.44		330.17	
C.V. %	11.18		13.83		19.51		26.60		20.18		20.83		16.38		9.68	
Error df	46		46		46		46		46		46		46		46	
Significance	*		NS		*		NS		*		*		*		*	
Test > L. Check	0		–		0		–		19		2		3		16	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	TUNISIA				TURKEY						(1) Overall Mean	
	Beja		Oued Meliz		Amasya		Adana		Diyarbakir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 47C	2081	9	1719	17	1148	23	705	17	1198	7	1915	3
FLIP 83- 48C	1369	23	2638	5	1286	19	677	19	1049	17	1852	7
FLIP 83- 71C	1406	21	1706	18	1529	12	1306	4	1217	6	1842	8
FLIP 83- 97C	2081	10	3150	1	1519	13	688	18	1077	16	1790	14
FLIP 83- 98C	1569	19	2888	2	1265	20	891	10	1378	1	1934	2
FLIP 84- 79C	1819	16	2450	10	1630	7	1179	7	1017	19	1827	9
FLIP 84- 80C	1906	15	1550	21	1836	3	1043	8	1123	10	1805	11
FLIP 84- 85C	1675	18	2050	15	1460	14	728	14	1131	9	1724	19
FLIP 84- 92C	2669	1	2863	3	1705	5	527	23	1284	2	2079	1
FLIP 84- 93C	2294	3	1131	24	1249	21	1231	5	1094	14	1859	5
FLIP 84- 99C	1813	17	1444	22	1947	1	1181	6	958	22	1777	16
FLIP 84-102C	2188	7	1963	16	1566	9	1584	1	1084	15	1854	6
FLIP 84-158C	2188	8	2525	8	1661	6	713	16	1262	3	1803	12
FLIP 85- 43C	1956	13	1625	19	1164	22	778	12	1180	8	1735	18
FLIP 85- 48C	1938	14	2563	6	1545	11	553	22	968	21	1739	17
FLIP 85- 65C	1231	24	2463	9	958	24	635	20	751	24	1420	22
FLIP 85- 74C	2250	4	1363	23	1434	15	787	11	830	23	1586	21
FLIP 85- 78C	2213	5	2694	4	1889	2	625	21	1015	20	1826	10
FLIP 85- 93C	2075	11	2544	7	1778	4	1027	9	1235	5	1908	4
FLIP 85-133C	1394	22	2425	11	1312	18	317	24	1109	12	1396	23
FLIP 85-148C	1513	20	2081	14	1587	8	726	15	1030	18	1655	20
FLIP 81-293C	2188	6	2194	12	1333	17	1343	3	1119	11	1785	15
ILC 482	2025	12	2181	13	1382	16	1469	2	1101	13	1795	13
Local check	2538	2	1619	20	1564	10	762	13	1240	4		
Location Mean	**1933**		**2159**		**1489**		**895**		**1102**			
S.E. of Mean	275.18		400.00		241.73		106.56		105.39			
LSD at .05	–		–		–		303.33		300.01			
C.V. %	31.47		41.92		28.11		20.63		16.57			
Error df	23		23		46		46		46			
Significance	NS		NS		NS		*		*			
Test > L. Check	–		–		–		7		0			

(1) Horsham and Marow were excluded from the overall mean., * = Significant at $P \leq 0.05$, NS= Not significant.

Table 3.2.5. 100-Seed weight (g) of entries at different locations in the CIYT-W-MR during 1987/88.

Entry Name	ALGERIA		AUSTRALIA	CYPRUS	FRANCE	IRAQ	ITALY		LEBANON	MOROCCO	PORTUGAL
	Dahmouni	Setif	Horsham	Laxia	Mont-boucher	Mosul	Cata-nia	Tar-quinia	Terbol	Dar-Bouazza	Elvas
FLIP 83- 47C	33	29	29	27	40	30	29	40	37	34	35
FLIP 83- 48C	33	29	30	28	39	32	29	38	36	32	34
FLIP 83- 71C	35	32	28	29	41	33	29	38	36	31	34
FLIP 83- 97C	34	32	31	28	42	29	32	42	35	33	35
FLIP 83- 98C	34	33	31	29	40	26	33	45	36	30	37
FLIP 84- 79C	33	29	29	28	40	31	29	40	35	26	32
FLIP 84- 80C	34	27	-	27	39	32	29	37	35	28	34
FLIP 84- 85C	33	28	26	30	40	31	30	37	35	25	32
FLIP 84- 92C	33	34	31	29	40	28	33	41	37	36	37
FLIP 84- 93C	33	37	26	30	42	30	32	41	36	35	34
FLIP 84- 99C	34	30	31	31	40	34	32	40	38	31	37
FLIP 84-102C	33	27	28	30	41	30	31	40	35	31	35
FLIP 84-158C	32	29	28	28	40	30	26	38	36	27	34
FLIP 85- 43C	37	39	31	34	50	38	38	49	43	31	43
FLIP 85- 48C	41	38	29	33	43	38	37	45	41	32	40
FLIP 85- 65C	40	34	25	33	44	35	35	44	40	30	36
FLIP 85- 74C	44	40	-	36	47	42	39	48	42	35	41
FLIP 85- 78C	34	33	28	31	43	31	32	40	40	32	37
FLIP 85- 93C	40	35	25	33	45	37	37	44	44	31	40
FLIP 85-133C	40	39	-	31	43	28	41	51	44	39	42
FLIP 85-148C	36	37	27	31	37	26	35	46	39	34	40
FLIP 81-293C	30	29	25	26	34	27	28	35	31	35	33
ILC 482	31	28	29	-	35	27	26	34	31	29	32
Local check	35	27	35	-	33	30	31	38	39	29	33
Location Mean	35	30	29	30	41	31	32	41	38	32	36
S.E. of Mean	1.03	One Rep.	One Rep.	0.71	0.91	0.80	0.51	0.87	0.70	One Rep.	1.11
LSD at .05	2.93			1.71	2.58	2.27	1.46	2.46	1.98		3.16
C.V. %	5.07			3.35	3.85	4.38	2.76	3.63	3.21		5.31
Error df	46			21	46	46	46	46	46		46
Significance	*			*	*	*	*	*	*		*

Cont'd. ...

Table 3.2.5. Cont'd. ...

Entry Name	SPAIN	SYRIA					TURKEY		(1) Overall Mean
	Madrid	Homs	Idleb	Jableh	Jindiress	Tel Hadya	Amasya	Adana	
FLIP 83- 47C	35	35	29	43	27	29	37	32	34
FLIP 83- 48C	35	35	29	41	27	29	41	25	33
FLIP 83- 71C	36	36	30	40	28	30	38	27	34
FLIP 83- 97C	34	39	31	39	29	31	46	33	36
FLIP 83- 98C	37	37	29	40	28	31	39	26	34
FLIP 84- 79C	35	37	26	40	28	30	43	28	33
FLIP 84- 80C	35	35	27	38	27	28	38	29	32
FLIP 84- 85C	30	36	28	42	27	29	41	31	33
FLIP 84- 92C	37	37	30	46	30	31	41	29	35
FLIP 84- 93C	37	38	31	43	30	31	39	32	36
FLIP 84- 99C	37	36	31	38	26	30	38	27	34
FLIP 84-102C	35	35	28	37	28	30	42	34	34
FLIP 84-158C	34	36	28	39	25	25	37	28	32
FLIP 85- 43C	41	45	37	48	34	37	45	29	40
FLIP 85- 48C	38	38	35	46	33	35	41	32	39
FLIP 85- 65C	37	41	34	47	34	34	45	28	37
FLIP 85- 74C	42	40	39	47	38	38	50	30	41
FLIP 85- 78C	38	41	33	43	30	33	40	26	36
FLIP 85- 93C	40	43	37	43	35	36	44	30	37
FLIP 85-133C	37	46	37	44	41	43	54	31	41
FLIP 85-148C	36	39	34	46	33	35	47	34	38
FLIP 81-293C	30	29	27	34	24	25	36	31	31
ILC 482	33	32	28	34	22	24	39	29	31
Local check	18	36	24	36	23	23	44	29	
Location Mean	35	38	31	41	29	31	42	30	
S.E. of Mean	0.94	1.65	1.39	1.90	0.66	0.52	1.98	0.42	
LSD at .05	2.11	4.71	3.94	5.40	1.87	1.47	5.62	1.18	
C.V. %	4.58	7.61	7.76	7.95	3.86	2.88	8.16	2.42	
Error df	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	

(1) Horsham and Laxia were excluded from the overall mean., * = Significant at $P \leq 0.5$.

Table 3.2.7. The five heaviest seed yielding entries at the individual locations in the CIYT-W-MR during 1987/88.

	ALGERIA			AUSTRALIA	CYPRUS	FRANCE	IRAQ	ITALY
Rank	Dahmouni	Sidi Bel Abbes	Setif	Horsham	Laxia	Montboucher	Mosul	Catania
1	FLIP85- 93C	FLIP83- 98C	FLIP84- 92C	FLIP83- 48C	FLIP84-102C	Local Check	FLIP85- 43C	FLIP85- 93C
2	FLIP83- 98C	FLIP83- 47C	FLIP83- 71C	ILC 482	FLIP84- 99C	FLIP84- 93C	FLIP83- 71C	FLIP83- 97C
3	FLIP84- 99C	FLIP84- 99C	FLIP85- 43C	FLIP83- 97C	FLIP84- 93C	FLIP81-293C	FLIP84- 79C	FLIP84- 47C
4	FLIP84- 79C	FLIP85- 78C	FLIP84- 85C	FLIP83- 47C	FLIP83- 48C	FLIP84- 92C	FLIP85- 65C	FLIP84- 92C
5	ILC 482	FLIP84- 80C	FLIP85- 74C	FLIP85- 92C	FLIP84- 79C	FLIP83- 48C	FLIP85- 74C	FLIP81-293C

Cont'd. ...

Table 3.2.7. Cont'd. ...

	ITALY	JORDAN	LEBANON	MOROCCO			PORTUGAL	SPAIN
Rank	Tarquinia	Marow	Terbol	Douyet	Marchouch	Zememra	Elvas	Madrid
1	FLIP84- 93C	FLIP84- 85C	FLIP85- 43C	FLIP83- 98C	FLIP83- 97C	FLIP85- 43C	FLIP84- 92C	FLIP84- 79C
2	FLIP83- 47C	FLIP85- 74C	FLIP84- 92C	FLIP84- 92C	FLIP81-293C	FLIP84- 92C	FLIP83- 71C	FLIP84- 92C
3	FLIP84- 92C	FLIP83- 48C	FLIP83- 71C	FLIP85- 78C	FLIP85-148C	FLIP83- 71C	FLIP84- 93C	FLIP83- 47C
4	ILC 482	FLIP84- 99C	FLIP83- 97C	FLIP84- 79C	FLIP85- 78C	FLIP85- 93C	ILC 482	FLIP85- 78C
5	FLIP84-158C	FLIP83- 47C	FLIP84- 93C	FLIP85- 48C FLIP85- 93C	FLIP83- 48C FLIP85-133C FLIP83- 47C	FLIP84- 80C	FLIP85- 93C	FLIP84- 93C

Cont'd. ...

Table 3.2.7. Cont'd. ...

	SPAIN	SYRIA					
Rank	Sevilla	Al Ghab	Hama	Homs	Idleb	Izra'a	Jableh
1	FLIP84- 92C	ILC 482	FLIP84-158C	FLIP83- 43C	FLIP85- 48C	FLIP84- 80C	FLIP83- 98C
2	FLIP83- 47C	FLIP84- 79C	ILC 482	FLIP83- 98C	FLIP85- 93C	FLIP83- 48C	ILC 482
3	FLIP84- 80C	FLIP84-158C	FLIP85- 93C	FLIP84- 80C	FLIP84- 93C	FLIP85- 93C	FLIP84- 85C
4	FLIP83- 98C	FLIP83- 47C	FLIP85- 74C	FLIP84- 85C	FLIP84- 92C	FLIP81-293C	FLIP84- 93C
5	FLIP84-102C	FLIP84- 99C	Local Check	FLIP84- 92C	ILC 482	FLIP83- 97C	FLIP84- 92C

Cont'd. ...

Table 3.2.7. Cont'd. ...

	SYRIA		TUNISIA		TURKEY		
Rank	Jindiress	Tel Hadya	Beja	Oued Meliz	Amasya	Adana	Diyarbakir
1	FLIP85- 43C	FLIP84- 79C	FLIP84- 92C	FLIP83- 97C	FLIP84- 99C	FLIP84-102C	FLIP83- 98C
2	FLIP83- 47C	FLIP83- 47C	Local Check	FLIP83- 98C	FLIP85- 78C	ILC 482	FLIP84- 92C
3	FLIP84- 92C	FLIP84- 92C	FLIP84- 93C	FLIP84- 92C	FLIP84- 80C	FLIP81-293C	FLIP84-158C
4	FLIP84-158C	FLIP85-148C	FLIP85- 74C	FLIP85- 78C	FLIP85- 93C	FLIP83- 71C	Local Check
5	FLIP83- 98C	FLIP84-158C	FLIP85- 78C	FLIP83- 48C	FLIP84- 92C	FLIP84- 93C	FLIP85- 93C

The brackets indicate entries having the same rank.

Table 3.2.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-W-MR during 1986/87 and 1987/88.

Entry Name	1986/87		1987/88		Overall Mean	
	Y	R	Y	R	Y	R
FLIP 83-47C	1846	8	1915	3	1881	3
FLIP 83-48C	1944	1	1852	6	1989	2
FLIP 83-71C	1853	6	1842	7	1848	9
FLIP 83-97C	1765	12	1790	12	1778	12
FLIP 83-98C	1794	11	1932	2	1865	5
FLIP 84-79C	1888	4	1827	8	1858	7
FLIP 84-80C	1739	14	1805	9	1772	13
FLIP 84-85C	1704	15	1724	15	1714	15
FLIP 84-92C	1908	3	2079	1	1994	1
FLIP 84-93C	1871	5	1859	4	1865	4
FLIP 84-99C	1821	10	1777	14	1799	11
FLIP 84-102C	1849	7	1854	5	1852	8
FLIP 84-158C	1919	2	1803	10	1861	6
FLIP 81-293C	1742	13	1785	13	1764	14
ILC 482	1846	9	1795	11	1821	10

3.3. CHICKPEA INTERNATIONAL YIELD TRIAL-WINTER SUB TROPICAL REGION (CIYT-W-STR)

Material

The material for the Chickpea International Yield Trial-Winter Sub Tropical Region comprised 23 test entries, and one local check to be supplied by the cooperator. The test entries were resistant to ascochyta blight and were selected from the local and regional yield trials based on their superior yield performance. Out of these 23 test entries, 22 were developed through hybridization at ICARDA.

Methods and Management

The trial design was a randomized complete block with four replications. The suggested plot size was four rows each 4 m long with an inter- and intra row spacing of 30- and 10 cm, respectively.

Thirty one sets of trial were distributed to cooperators in 12 countries and the result were returned from 12 sets covering 11 countries. The agronomic practices employed at different locations are shown in Table 3.3.1.

Results and Discussion

Mean for time to flowering, time to maturity, plant height, and 100-seed weight are compiled in Tables 3.3.2., 3.3.3., 3.3.4. and 3.3.5., respectively. Time to flowering ranged from 118 days for ILC 482 to

126 days for FLIP 84-188C. The location means for time to flowering varied from 65 days at Debre Zeit in Ethiopia to 168 days at Montboucher in France. The locations which flowered earlier were also earlier in maturity. The entry FLIP 84-75C matured earliest in 182 days and was closely followed by FLIP 84-62C, FLIP 84-64C, FLIP 85-136C, and FLIP 85-145C maturing in 183 days.

The plant height data revealed that the entry FLIP 84-64C (70cm) was the tallest and was closely followed by FLIP 85-136C (69cm). Among the locations, the entries were tallest at Sonora in Mexico (93cm). The 100-seed weight for entries varied from 25 g (for FLIP 84-112C and FLIP 84-178C) to 35 g (for FLIP 85-149C), and for locations from 24 g (for Jindiress in Syria) to 36 g (for Sonora in Mexico).

The mean seed yield at different locations (Table 3.3.6.) revealed that highest seed yield per hectare was obtained at Cordoba in Spain (3283 kg/ha) and was followed by Perico in Argentina (2751 kg/ha) and Kabul in Afghanistan (2684 kg/ha). The seed yield at Horsham in Australia was lowest (268 kg/ha). The coefficient of variation at various locations was between 10.33 and 35.84 per cent. The ANOVA of the seed yield revealed that 1, 9, 5, 6, 14 and 4 entries, respectively, at Kabul in Afghanistan, Perico in Argentina, Sonora in Mexico, Jindiress and Tel Hadya in Syria, and Adana in Turkey outyielded the respective local check by a significant margin. The five heaviest yielders at different locations are given in Table 3.3.7. Two entries namely FLIP 85-145C and FLIP 83-22C occurred most frequently among the top five heaviest yielders and were comparatively more stable.

On the basis of average over two years (Table 3.3.8), the entry FLIP 81-293C ranked number 1 and was followed by FLIP 83-73C, FLIP 84-62C and ILC 482 with the respective seed yields of 1847, 1839, 1823 and 1786 kg/ha.

Table 3.3.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-W-STR during 1986/87 and 1987/88.

Entry Name	1986/87		1987/88		Overall Mean	
	Y	R	Y	R	Y	R
FLIP 83-22C	1320	11	2114	2	1717	7
FLIP 83-73C	1623	1	2054	4	1839	2
FLIP 84-62C	1552	5	2093	3	1823	3
FLIP 84-64C	1396	9	1947	9	1672	10
FLIP 84-75C	1336	10	2034	5	1685	9
FLIP 84-112C	1452	7	1728	11	1590	11
FLIP 84-133C	1296	12	1604	12	1450	12
FLIP 84-163C	1558	4	1898	10	1728	6
FLIP 84-178C	1414	8	1985	6	1700	8
FLIP 84-188C	1508	6	1957	8	1733	5
FLIP 81-293C	1569	3	2124	1	1847	1
ILC 482	1609	2	1962	7	1786	4

Table 3.3.1. Agronomic data for different locations in the CIYT-W-STR during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
AFGHANISTAN	Kabul	16.12.87	15.07.88	30	60		4	Trichlorofan, Metasystox	Herat (Large Seeded Variety)
ARGENTINA	Perico	05.05.88	02.11.88	-			-	Metribuzin, Lambdacihzlot-rinz	Blanco Lechosa
AUSTRALIA	Horsham	05.07.88	10.01.89		150		-	Trifluraline, Cyanazine, Diquat, Paraquat, Endosulphan	Kaniva
ETHIOPIA	Debre Zeit	04.08.88	28.12.88	-			-	-	Dubie
FRANCE	Montboucher	02.12.87	18.08.88		125		-	Methabenzthiazuron (Tribunil)	Cascari
MEXICO	Obregon (Sonora)	25.11.87	18.04.88	90	46		7	Piretroide Decis	Surutato 77
SPAIN	Cordoba	30.12.87	NA	0	14	7	1	-	3972
SYRIA	Jindiress	21.11.87	14.06.88	30	50		-	Kerb, Igran	ILC 3279
SYRIA	Tel Hadya	25.11.87	04.06.88	30	50		-	Kerb, Igran	ILC 3279
TURKEY	Adana	15.11.88	24.05.89	30	50		1	-	-

Table 3.3.2. Time to flowering (days) of entries at different locations in the CIYT-W-STR during 1987/88.

Entry Name	Pedigree	Origin	AFGHANISTAN	ARGENTINA	AUSTRALIA
			Kabul	Perico	Horsham
FLIP 83- 22C	X 80 TH 177/ILC 195XILC 482	ICARDA/ICRISAT	147	91	111
FLIP 83- 73C	X 80 TH 177/ILC 195XILC 482	ICARDA/ICRISAT	147	96	112
FLIP 84- 62C	X 81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	147	92	111
FLIP 84- 64C	X 81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	145	95	112
FLIP 84- 75C	X 80 TH 264/(ILC 480XILC 72)XILC 263	ICARDA/ICRISAT	149	95	111
FLIP 84- 87C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	146	103	111
FLIP 84-112C	X 81 TH 53/ILC1920XILC2506	ICARDA/ICRISAT	149	105	111
FLIP 84-133C	X 81 TH 129/ILC 202XILC 262	ICARDA/ICRISAT	150	91	111
FLIP 84-163C	X 81 TH 113/ILC 191XILC 484	ICARDA/ICRISAT	147	95	111
FLIP 84-178C	X 80 TH 113/ILC 192XILC 202	ICARDA/ICRISAT	149	102	112
FLIP 84-188C	X 81 TH 48/ILC1920XILC 201	ICARDA/ICRISAT	148	107	110
FLIP 85- 79C	X 83 TH 81/ILC2593XFLIP 81-67C	ICARDA/ICRISAT	148	89	112
FLIP 85- 87C	X 80 TH 263/(ILC 72XILC 263)XILC 1919	ICARDA/ICRISAT	150	96	111
FLIP 85- 94C	X 81 TH 248/ILC 482XILC 3279	ICARDA/ICRISAT	148	89	111
FLIP 85-114C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	148	89	111
FLIP 85-116C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	148	104	111
FLIP 85-128C	ICCC 25XILC 202	ICARDA/ICRISAT	149	88	111
FLIP 85-136C	X 81 TH 120/ILC 200XILC 484	ICARDA/ICRISAT	149	90	111
FLIP 85-137C	X 80 TH 177/ILC 195XILC 482	ICARDA/ICRISAT	146	90	111
FLIP 85-145C	X 80 TH 177/ILC 195XILC 482	ICARDA/ICRISAT	147	111	112
FLIP 85-149C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	147	101	113
FLIP 81-293C	Improved check	ICARDA/ICRISAT	149	97	111
ILC 482	Long-term check	Turkey	147	90	112
Local check		-	149	89	112
Location Mean			**148**	**96**	**111**
S.E. of Mean			0.81	1.40	One Rep.
L.S.D. at 5%			2.29	3.95	
C.V. %			1.10	2.93	
Error df			69	69	
Significance			*	*	

Cont'd. ...

Table 3.3.2. Cont'd. ...

Entry Name	ETHIOPIA	FRANCE	MEXICO	SYRIA		TURKEY	Overall Mean
	Debre Zeit	Montboucher	Sonora	Jindiress	Tel Hadya	Adana	
FLIP 83- 22C	63	163	81	147	141	148	121
FLIP 83- 73C	68	165	84	154	143	146	124
FLIP 84- 62C	65	166	76	146	142	148	121
FLIP 84- 64C	66	165	84	147	143	146	123
FLIP 84- 75C	68	174	82	147	142	146	124
FLIP 84- 87C	65	167	82	147	142	145	123
FLIP 84-112C	67	170	86	146	141	148	125
FLIP 84-133C	69	165	83	150	142	148	123
FLIP 84-163C	68	161	84	147	142	146	122
FLIP 84-178C	69	170	81	151	143	146	125
FLIP 84-188C	68	175	80	151	144	147	126
FLIP 85- 79C	69	170	83	148	141	146	123
FLIP 85- 87C	69	170	84	156	145	144	125
FLIP 85- 94C	66	167	80	145	141	148	122
FLIP 85-114C	62	168	81	147	142	145	121
FLIP 85-116C	61	175	71	147	145	148	123
FLIP 85-128C	58	165	76	147	142	147	120
FLIP 85-136C	67	164	82	146	141	148	122
FLIP 85-137C	67	168	83	148	143	148	123
FLIP 85-145C	66	167	82	150	145	144	125
FLIP 85-149C	65	174	66	147	142	144	122
FLIP 81-293C	66	177	81	154	145	146	125
ILC 482	61	160	66	143	138	144	118
Local check	50	175	54	162	157	144	
Location Mean	65	168	79	149	143	146	
S.E. of Mean	1.36	1.25	1.99	0.93	0.46	0.53	
L.S.D. at 5%	3.87	3.52	5.61	2.64	1.29	1.10	
C.V. %	3.62	1.48	5.05	1.26	0.64	0.51	
Error df	46	69	69	69	69	23	
Significance	*	*	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.3.3. Time to maturity (days) of entries at different locations in the CIYT-W-STR during 1987/88.

Entry Name	AFGHANISTAN	AUSTRALIA	ETHIOPIA	FRANCE	MEXICO	SYRIA		TURKEY	Overall Mean
	Kabul	Horsham	Debre Zeit	Montboucher	Sonora	Jindiress	Tel Hadya	Adana	
FLIP 83- 22C	204	166	133	255	150	202	191	184	186
FLIP 83- 73C	204	171	131	254	151	199	189	185	186
FLIP 84- 62C	204	160	127	249	150	199	190	187	183
FLIP 84- 64C	207	160	129	246	148	198	190	185	183
FLIP 84- 75C	201	154	127	253	150	198	189	181	182
FLIP 84- 87C	205	165	127	255	150	199	190	181	184
FLIP 84-112C	205	166	128	255	149	200	190	187	185
FLIP 84-133C	204	162	130	255	150	202	190	187	185
FLIP 84-163C	203	171	132	250	150	200	190	186	185
FLIP 84-178C	203	174	128	253	151	200	191	185	185
FLIP 84-188C	205	163	126	255	149	200	190	181	184
FLIP 85- 79C	203	159	133	255	150	201	192	181	184
FLIP 85- 87C	205	163	129	255	152	204	195	181	185
FLIP 85- 94C	203	162	127	255	149	199	189	187	184
FLIP 85-114C	206	165	134	255	150	189	190	183	184
FLIP 85-116C	206	174	126	253	150	202	192	187	186
FLIP 85-128C	203	170	131	255	149	201	189	185	185
FLIP 85-136C	204	161	127	254	149	199	190	185	183
FLIP 85-137C	206	157	130	255	148	200	190	187	184
FLIP 85-145C	206	161	128	250	149	201	191	181	183
FLIP 85-149C	206	175	129	255	150	202	192	181	186
FLIP 81-293C	203	174	128	255	149	201	192	181	185
ILC 482	203	169	127	255	149	197	189	181	184
Local check	205	171	118	244	139	203	193	181	
Location Mean	204	165	129	253	149	200	190	184	
S.E. of Mean	0.84	0.96	2.28	1.79	1.03	2.43	0.38	0.78	
L.S.D. at 5%	2.36	2.72	6.49	5.05	2.90	–	1.08	1.61	
C.V. %	0.82	1.17	3.07	1.41	1.38	2.43	0.40	0.60	
Error df	69	69	46	69	69	69	69	23	
Significance	*	*	*	*	*	NS	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.3.4. Plant height (cm) of entries at different locations in the CIYT-W-STR during 1987/88.

Entry Name	AFGHANISTAN	ARGENTINA	AUSTRALIA	ETHIOPIA	MEXICO	SYRIA		TURKEY	Overall Mean
	Kabul	Perico	Horsham	Debre Zeit	Sonora	Jindiress	Tel Hadya	Adana	
FLIP 83- 22C	40	82	57	71	101	50	49	56	63
FLIP 83- 73C	40	89	55	76	100	56	51	61	66
FLIP 84- 62C	46	86	60	79	92	62	55	59	67
FLIP 84- 64C	48	91	50	84	103	64	57	60	70
FLIP 84- 75C	44	81	55	75	97	61	55	62	66
FLIP 84- 87C	41	79	45	74	91	51	45	54	60
FLIP 84-112C	39	81	45	63	98	48	44	55	59
FLIP 84-133C	40	80	50	67	103	48	48	58	62
FLIP 84-163C	45	84	50	72	94	52	45	57	62
FLIP 84-178C	36	78	55	73	89	54	47	59	61
FLIP 84-188C	41	79	48	74	92	56	57	55	63
FLIP 85- 79C	40	80	60	70	91	55	50	59	63
FLIP 85- 87C	34	87	55	67	95	50	47	56	61
FLIP 85- 94C	46	80	60	74	90	58	57	60	65
FLIP 85-114C	35	80	60	60	99	48	45	54	60
FLIP 85-116C	48	89	53	72	89	55	51	63	65
FLIP 85-128C	36	81	50	60	85	48	49	57	58
FLIP 85-136C	47	90	58	80	96	61	58	65	69
FLIP 85-137C	44	88	62	71	98	48	45	59	64
FLIP 85-145C	43	76	40	81	96	55	50	63	63
FLIP 85-149C	39	79	55	67	87	54	48	60	61
FLIP 81-293C	43	89	50	69	84	50	47	58	61
ILC 482	33	73	45	62	93	41	40	57	55
Local check	32	72	45	53	81	63	66	57	
Location Mean	**41**	**82**	**53**	**71**	**93**	**53**	**50**	**58**	
S.E. of Mean	2.88	3.88	3.79	4.66	1.59	0.00	3.05	1.88	
L.S.D. at 5%	8.11	11.04	10.70	-	4.48	0.00	8.61	4.63	
C.V. %	14.11	9.51	9.24	9.97	6.35	0.00	11.42	5.56	
Error df	69	46	69	69	69	0	69	46	
Significance	*	*	*	NS	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.3.5. 100-Seed weight (g) of entries at different locations in the CIYT-W-STR during 1987/88.

Entry Name	AFGHANISTAN Kabul	ARGENTINA Perico	AUSTRALIA Horsham	ETHIOPIA Debre - Zeit	FRANCE Montbou - cher	MEXICO Sonora	SYRIA Jindiress	SYRIA Tel Hadya	TURKEY Adana	overall Mean
FLIP 83- 22C	33	23	27	33	35	34	23	24	26	29
FLIP 83- 73C	30	27	27	31	32	31	22	23	26	28
FLIP 84- 62C	35	29	30	34	36	38	25	26	28	31
FLIP 84- 64C	36	29	30	35	37	35	25	25	30	31
FLIP 84- 75C	33	28	32	31	37	36	23	22	27	30
FLIP 84- 87C	32	29	30	33	35	35	23	23	26	30
FLIP 84-112C	25	22	27	27	28	29	21	23	27	25
FLIP 84-133C	26	26	24	32	28	36	23	25	26	27
FLIP 84-163C	30	26	31	29	31	31	22	24	28	28
FLIP 84-178C	28	25	23	27	26	29	21	21	27	25
FLIP 84-188C	29	24	24	27	29	32	21	22	32	27
FLIP 85- 79C	35	36	38	33	38	39	29	30	28	34
FLIP 85- 87C	31	28	31	31	34	33	30	34	27	31
FLIP 85- 94C	35	29	26	31	37	35	23	24	27	30
FLIP 85-114C	33	32	28	32	36	34	25	26	30	31
FLIP 85-116C	33	30	27	35	36	38	27	28	33	32
FLIP 85-128C	27	26	27	32	31	33	23	23	28	28
FLIP 85-136C	33	31	30	34	37	36	25	26	29	31
FLIP 85-137C	28	24	24	30	28	34	22	22	25	26
FLIP 85-145C	30	28	23	32	32	39	23	24	25	28
FLIP 85-149C	30	36	33	39	41	41	30	30	34	35
FLIP 81-293C	31	28	27	31	32	35	24	24	25	29
ILC 482	32	26	32	32	33	32	22	24	28	29
Local check	22	62	35	21	31	58	22	24	30	
Location Mean	31	29	29	31	33	36	24	25	28	
S.E. of Mean	1.17	1.27	One Rep.	0.65	0.55	1.45	0.42	0.39	1.19	
L.S.D. at 5%	3.31	3.58		1.84	1.55	3.58	1.19	1.10	2.92	
C.V. %	7.67	8.69		3.56	3.30	7.07	3.54	3.14	7.31	
Error df	69	69		46	69	46	69	69	46	
Significance	*	*		*	*	*	*	*	*	

* = Significant at $P \leq 0.05$.

Table 3.3.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-W-STR during 1987/88.

Entry Name	AFGHANISTAN Kabul		ARGENTINA Perico		AUSTRALIA Horsham		ETHIOPIA Debre Zeit		FRANCE Montboucher	
	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 22C	3254	4	2621	14	369	5	1874	19	1906	10
FLIP 83- 73C	2352	14	2259	20	420	3	1985	13	2635	2
FLIP 84- 62C	2811	12	3113	6	264	13	1979	14	1935	9
FLIP 84- 64C	3061	7	3142	5	174	17	1963	15	1670	15
FLIP 84- 75C	2302	16	3658	1	399	4	2225	7	2078	8
FLIP 84- 87C	2255	18	3046	8	296	11	1928	16	1522	19
FLIP 84-112C	2218	20	2650	13	306	10	1696	22	2204	5
FLIP 84-133C	1960	22	2596	15	194	16	2122	9	1632	16
FLIP 84-163C	2563	13	2988	10	368	6	1751	21	1687	14
FLIP 84-178C	1920	23	2979	11	480	2	2106	10	2095	7
FLIP 84-188C	2060	21	3092	7	230	15	1911	18	2635	1
FLIP 85- 79C	2288	17	3046	9	271	12	1379	24	1194	23
FLIP 85- 87C	1853	24	2521	17	136	21	1865	20	1502	20
FLIP 85- 94C	3250	5	2058	22	257	14	2100	11	1713	13
FLIP 85-114C	3506	2	3433	4	159	19	1686	23	1174	24
FLIP 85-116C	3387	3	1988	23	94	23	2188	8	1490	21
FLIP 85-128C	2332	15	2517	18	168	18	2011	12	1898	11
FLIP 85-136C	3011	8	2717	12	143	20	1925	17	1322	22
FLIP 85-137C	2997	9	3437	3	532	1	2287	4	1585	17
FLIP 85-145C	2895	10	2283	19	80	24	2632	2	2619	3
FLIP 85-149C	2862	11	2567	16	322	9	2281	5	1761	12
FLIP 81-293C	3820	1	3488	2	328	8	2361	3	2189	6
ILC 482	3213	6	1704	24	337	7	2651	1	1546	18
Local check	2251	19	2125	21	97	22	2253	6	2338	4
Location Mean	2684		2751		268		2048		1847	
S.E. of Mean	481.04		311.93				297.00		143.29	
L.S.D. at 5%	–		879.89		One Rep.		–		404.20	
C.V. %	35.84		22.68				25.11		15.52	
Error df	69		69				46		69	
Significance	NS		*				NS		*	
Entry > L. Check	–		9				–		0	

Cont'd. ...

Table 3.3.6. Cont'd. ...

Entry Name	MEXICO		SPAIN		SYRIA				TURKEY		Overall Mean	
	Sonora		Cordoba		Jindiress		Tel Hadya		Adana			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 22C	1664	5	3977	3	2111	2	2085	4	1276	6	2114	3
FLIP 83- 73C	1772	3	3719	6	2054	3	2115	3	1233	8	2054	5
FLIP 84- 62C	1228	15	3862	4	2254	1	2286	1	1201	9	2093	4
FLIP 84- 64C	1083	17	3380	11	1716	10	1837	13	1444	3	1947	11
FLIP 84- 75C	1809	1	2984	16	1869	7	1774	16	1238	7	2034	6
FLIP 84- 87C	1242	12	3432	9	2054	4	1966	6	969	14	1871	12
FLIP 84-112C	1089	16	2667	22	1694	12	1861	9	896	18	1728	19
FLIP 84-133C	1239	13	2370	24	1377	23	1831	14	717	21	1604	21
FLIP 84-163C	1033	19	3672	7	1796	9	1843	12	1276	5	1898	13
FLIP 84-178C	1539	6	3995	2	1544	18	1691	19	1499	2	1985	8
FLIP 84-188C	1397	9	3792	5	1659	16	1900	7	899	17	1957	7
FLIP 85- 79C	967	20	2539	23	1687	14	1733	18	1004	12	1611	23
FLIP 85- 87C	942	22	2880	19	1696	11	1746	17	715	22	1586	22
FLIP 85- 94C	1333	11	2758	21	1671	15	1852	11	976	13	1797	17
FLIP 85-114C	942	21	3104	14	1690	13	1878	8	714	23	1829	14
FLIP 85-116C	1236	14	3354	12	1179	24	1562	22	692	24	1717	18
FLIP 85-128C	1697	4	3648	8	1643	17	1585	21	857	20	1836	15
FLIP 85-136C	894	24	2883	18	1397	20	1592	20	935	16	1682	20
FLIP 85-137C	900	23	2818	20	1450	19	1485	24	1098	10	1859	16
FLIP 85-145C	1492	7	4279	1	1974	5	2019	5	1508	1	2178	1
FLIP 85-149C	1431	8	3063	15	1950	6	1854	10	889	19	1898	10
FLIP 81-293C	1389	10	3424	10	1383	22	1786	15	1068	11	2124	2
ILC 482	1792	2	2930	17	1869	8	2235	2	1345	4	1962	9
Local check	1056	18	3268	13	1393	21	1552	23	960	15		
Location Mean	1299		3283		1713		1836		1059			
S.E. of Mean	211.01		382.29		195.46		94.87		115.21			
L.S.D. at 5%	595.22		1078.36		551.36		267.60		324.98			
C.V. %	32.50		23.29		22.82		10.33		21.76			
Error df	69		69		69		69		69			
Significance	*		*		*		*		*			
Entry > L. Check	5		0		6		14		4			

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.3.7. The five heaviest seed yielding entries at the individual locations in the CIYT-W-STR during 1987/88.

	AFGHANISTAN	ARGENTINA	AUSTRALIA	ETHIOPIA	FRANCE
Rank	Kabul	Perico	Horsham	Debre Zeit	Montboucher
1	FLIP81-293C	FLIP84- 75C	FLIP85-137C	ILC 482	FLIP84-188C
2	FLIP85-114C	FLIP81-293C	FLIP84-178C	FLIP85-145C	FLIP83- 73C
3	FLIP85-116C	FLIP85-137C	FLIP83- 73C	FLIP81-293C	FLIP85-145C
4	FLIP83- 22C	FLIP85-114C	FLIP84- 75C	FLIP85-137C	Local Check
5	FLIP85- 94C	FLIP84- 64C	FLIP83- 22C	FLIP85-149C	FLIP84-112C

Cont'd. ...

Table 3.3.7. Cont'd. ...

	MEXICO	SPAIN	SYRIA		TURKEY
Rank	Sonora	Cordoba	Jindiress	Tel Hadya	Adana
1	FLIP84- 75C	FLIP85-145C	FLIP84- 62C	FLIP84- 62C	FLIP85-145C
2	ILC 482	FLIP84-178C	FLIP83- 22C	ILC 482	FLIP84-178C
3	FLIP83- 73C	FLIP83- 22C	FLIP83- 73C	FLIP83- 73C	FLIP84- 64C
4	FLIP85-128C	FLIP84- 62C	FLIP84- 87C	FLIP83- 22C	ILC 482
5	FLIP83- 22C	FLIP84-188C	FLIP85-145C	FLIP85-145C	FLIP84-163C]
					FLIP83- 22C]

The bracket indicates entries having the same rank.

3.4. CHICKPEA INTERNATIONAL YIELD TRIAL-LARGE SEED (CIYT-L)

Material

The Chickpea International Yield Trial-Large Seed comprised of 15 test entries and one local check to be supplied by the cooperator. The test entries were derived through hybridization at ICARDA and were selected on the basis of their superior performance in regional, or local trials.

Methods and Management

The trial design was randomized complete block with three replications. The suggested plot size was 4 rows, each 4 meter long with inter row spacing of 45 cm.

Seventy three sets were sent to cooperators in 46 countries. The results were, however, received for 46 trials from 24 countries, out of which 39 were worth analysis and are reported. The agronomic information received from the cooperators is given in Table 3.4.1.

Results and Discussion

The location means for time to flowering (Table 3.4.2.), time to maturity (Table 3.4.3.), and plant height (Table 3.4.4.) ranged from 63 days (for Badajoz, Spain) to 175 days (for Madrid, Spain), 101 days (for Marow, Jordan) to 247 days (for Madrid, Spain), and 25 cm (for Setif, Algeria) to 113 cm (for Sonora, Mexico), respectively. On an average over locations, the entry means ranged from 108 to 116 days for time to flowring, 163 to 168 days for time to maturity, and 61 to 66 cm for plant height. The overall mean for 100-seed weight, for the entries varied from 40 to 47 g, the largest being for FLIP 85-1C and FLIP 85-5C (Table 3.4.5.). Also wide variation in location means were observed for 100-seed weight, Horsham in Australia exhibiting 31 g and Tarquinia in Italy exhibiting 50 g.

The highest mean seed yield (Table 3.4.6.) was obtained at Douyet in Morocco (2948 kg/ha) and followed by Elvas in Portugal (2907 kg/ha), Sidi Bel Abbes in Algeria (2659 kg/ha), Tarquinia in Italy (2644 kg/ha) and Zememra in Morocco (2637 kg/ha). The seed yields at Dahmouni and Setif in Algeria, Heredia in Costa Rica and Cenete-Lima in Peru were extremely poor (ranging between 69 and 389 kg/ha). One of the entries, FLIP 85-15C at La Molina-Lima, Peru gave as high as 4884 kg/ha. On an average over locations, the five best entries included FLIP 85-17C, FLIP 85-14C, FLIP 84-19C, FLIP 85-60C, and FLIP 85-5C with respective seed yields of 1725, 1711, 1705, 1702 and 1698 kg/ha. The ANOVA for seed yield revealed that the local check was excelled by a significant margin ($P \leq 0.05$) by some entries at 13 locations (Table 3.4.6.).

The five best entries in each of the locations are given in Table 3.4.7. The entry FLIP 84-19C occurred most frequently (18 times) among the five heaviest yielders and was followed by FLIP 85-5C, FLIP 85-15C and FLIP 85-60C (17 times). These lines were comparatively better in

Table 3.4.1. Agronomic data for different locations in the CIYT-L during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irrigation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Dahmouni	08.12.87	06.07.88	17	90	75	-	Trifluraline	Rabat 9
ALGERIA	Sidi Bel Abbes	06.12.87	06.88	-			-	-	"
ALGERIA	Setif	22.11.87	21.05.88	-			-	-	"
ARGENTINA	Perico	05.05.88	02.11.88	-			3	Metribuzin, Lambda Cihalotrina	Blanco Lechozo
AUSTRALIA	Horsham	05.07.88	10.01.89		150		-	Trifluraline, Cyanazine, Diquat, Paraquat, Endosulphan	LANIVA
COSTA RICA	Heredia	15.10.87	01.88	23	65	23	-	Sencor, Acefato, Malathion, Lannate	-
CYPRUS	Laxia	25.11.87	17.06.88	25	60		-	Trifluran	Cyprus Local
EGYPT	Nubaria	19.11.87	30.05.88	48	72		4	Stomp 500	Giza 88
FRANCE	Montboucher	08.03.88	31.08.88		125		-	Methabenzthiazuron	Cascari
GREECE	Larissa	15.03.88	04.07.88		60		-	Phosdrin	Gravia
INDIA	Ludhiana	30.11.88	29.04.88	15	20		1	-	GL 769, PBGI, L550
IRAQ	Mosul	13.11.87	07.06.88	50	50		-	-	Mahally
ITALY	Gaudiano	08.02.88	05.07.88	25	78		-	-	Turkish chickpea in rep 1 & Sowth Italy Pop. in Rep 2,3
ITALY	Medolla	03.03.88	15.07.88	40	100		-	Pirimicarp, Chlorotalonil	"
ITALY	Tarquinia	09.01.88	06.08.88	45	130		-	Targa	Principe
JORDAN	Marow	13.02.88	13.08.88	20	40		-	-	UJC 107
LEBANON	Terbol	21.11.87	07.07.88		50		-	Kerb, Igran	
MEXICO	Sonora (Obregon)	25.11.87	18.04.88	90	46		7	Piretroide, Decis	Surutato 77
MEXICO	Sonora (Hermosillo)	11.87	05.88	60			2	Sepauax	Tubutama
MOROCCO	Douyet	15.11.87	14.06.88	30	60		-	-	PCH 37
MOROCCO	Dar Bouazza	NA	NA	NA			NA	NA	PCH 37
MOROCCO	Marchouch	23.11.87	27.06.88	28	56	28	-	-	PCH 37
MOROCCO	Zemomra	17.11.87	21.06.88	9	9		-	-	PCH 37
PERU	Canete (Lima)	11.01.88	25.05.88	-			3	Tamaron	ACC 19, ILC 135
PERU	La Molina (Lima)	26.08.88	15.01.89	-			2	Parathion	ILC 135
PORTUGAL	Elvas	12.11.87	14.07.88	-			-	-	FLIP 83-15C
SAUDI ARABIA	TADCO	21.11.87	06.88	150	200		S*	-	Local from Market
SPAIN	Badajoz	23.03.88	09.08.88	-			-	Terbutrina	Pedrosillano
SPAIN	Madrid	12.11.87		32	96		-	Terbutrina	G-3 (Alcazaba)
SPAIN	Sevilla-1	01.02.88	12.08.88	-			-	-	Zegri
SPAIN	Sevilla-2	13.11.87	07.07.88		60		1	Alachlor, Linuron	Blanca Volla
SYRIA	Hama	24.11.87	02.06.88	30	80		-	Dorsban	From the Market
SYRIA	Homs	16.12.87	06.88		50		-	-	Local
SYRIA	Idleb	25.11.87	02.06.88		60		-	-	Local
SYRIA	Izra'a	10.01.88	16.06.88	13	17		-	-	Local
SYRIA	Jindiress	20.11.87	14.06.88	30	50		-	Kerb, Igran	ILC 3279
SYRIA	Tel Hadya	26.11.87	11.06.88	30	50		-	Kerb, Igran	ILC 482
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA
TURKEY	Adana	24.11.88	24.05.89	30	50		1		
TURKEY	Amasya	05.04.88	07.09.88	50			-	-	Ispanyol
TURKEY	Ankara	28.03.88	30.07.88	30	70		-	-	-
TURKEY	Diyarbakir	05.04.88	25.06.88	40	60		-	-	Sarisi-482
TURKEY	Eskisehir	04.05.88	26.08.88	30	70		-	-	Canitez-87

NA = Not available, S% = Frequent irrigation depending upon weather conditions.

Table 3.4.2. Time to flowering (days) of entries at different locations in the CIYT-L during 1987/88.

Entry Name	Pedigree	Origin	ALGERIA			ARGENTINA	AUSTRALIA	COSTA RICA
			Dahmouni	Sidi Bel Abbes	Setif	Perico	Horsham	Heredia
FLIP 84- 17C	X79TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	127	135	153	94	113	67
FLIP 84- 18C	X79TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	131	130	144	98	118	64
FLIP 84- 19C	X79TH 221/ILC 72XILC 1922	ICARDA ICRISAT	125	130	144	90	113	64
FLIP 85- 1C	X82TH 60/ILC 95XILC 2956	ICARDA ICRISAT	132	-	153	114	-	66
FLIP 85- 4C	X82TH 66/ILC2593XILC 3279	ICARDA ICRISAT	132	-	151	120	113	65
FLIP 85- 5C	X81TH 199/ILC 202(WH)XILC 3355	ICARDA ICRISAT	135	-	150	105	113	66
FLIP 85- 14C	X83TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA ICRISAT	133	135	147	104	113	63
FLIP 85- 15C	X83TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA ICRISAT	132	-	152	106	112	66
FLIP 85- 16C	X83TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA ICRISAT	132	135	153	109	111	64
FLIP 85- 17C	X83TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA ICRISAT	133	-	153	96	120	64
FLIP 85- 46C	X79TH 221/ILC 72XILC 1922	ICARDA ICRISAT	133	-	145	111	118	65
FLIP 85- 55C	X83TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA ICRISAT	129	130	142	95	118	64
FLIP 85- 65C	X83TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA ICRISAT	132	-	145	98	113	64
FLIP 85- 60C	X83TH 25/FLIP 82-69CXFLIP 82-81C	ICARDA ICRISAT	129	135	145	94	123	68
FLIP 85-135C	X79TH 221/ILC 72XILC 1922	ICARDA ICRISAT	133	-	148	106	113	65
Local Check			126	129	144	83	112	-
Location Mean			**131**	**132**	**148**	**102**	**115**	**65**
S.E. of Mean			2.33	One Rep.	0.96	0.92	One Rep.	0.59
L.S.D. at 5%			-		2.76	2.66		1.70
C.V. %			3.09		1.12	1.57		1.57
Error df			30		30	30		28
Significance			NS		*	*		*

Cont'd. ...

Table 3.4.2. Cont'd. ...

Entry Name	CYPRUS	EGYPT	FRANCE	GREECE	IRAQ	ITALY			JORDAN	LEBANON	MEXICO
	Laxia	Nubaria	Montboucher	Larissa	Mosul	Gaudiano	Medolla	Tarquinia	Marow	Terbol	Sonora (Obregon)
FLIP 84- 17C	120	111	102	65	155	103	90	128	74	159	91
FLIP 84- 18C	121	103	98	64	153	102	89	118	71	159	89
FLIP 84- 19C	115	103	99	64	155	102	89	108	75	154	88
FLIP 85- 1C	119	107	99	66	154	101	88	112	74	159	92
FLIP 85- 4C	123	102	102	69	155	103	90	123	74	162	93
FLIP 85- 5C	121	107	99	65	153	102	89	114	75	157	92
FLIP 85- 14C	112	97	95	69	153	102	85	112	75	152	83
FLIP 85- 15C	111	96	97	69	155	102	86	111	75	152	81
FLIP 85- 16C	113	91	95	68	155	101	87	113	73	153	83
FLIP 85- 17C	112	93	95	69	154	102	86	109	76	151	82
FLIP 85- 46C	121	104	102	65	155	101	90	119	77	160	91
FLIP 85- 55C	111	100	95	69	153	103	87	112	74	154	84
FLIP 85- 65C	112	92	97	69	154	102	86	111	76	153	83
FLIP 85- 60C	112	110	93	68	153	102	85	111	73	153	84
FLIP 85-135C	120	102	102	65	153	103	90	119	74	161	90
Local Check	-	73	102	63	153	103	85	106	75	152	63
Location Mean	116	99	98	67	154	102	88	114	75	156	85
S.E. of Mean	1.04	1.86	One Rep.	0.49	0.79	0.32	0.47	2.38	1.36	0.64	4.25
L.S.D. at 5%	3.02	5.38		1.42	-	0.92	1.37	6.87	-	1.85	12.27
C.V. %	1.55	3.25		1.28	0.89	0.54	0.94	3.61	3.17	0.71	8.61
Error df	28	30		30	30	30	30	30	30	30	30
Significance	*	*		*	NS	*	*	*	NS	*	*

Cont'd. ...

Table 3.5.2. Cont'd. ...

Entry Name	MEXICO	MOROCCO			PERU		PORTUGAL	SAUDI ARABIA	SPAIN		
	Sonora	Douyet	Marchouch	Zememra	Canete Lima	La Molina Lima	Elvas	TADCO	Badajoz	Sevilla-1 (Carmona)	Madrid
FLIP 84- 17C	88	128	125	122	69	78	107	113	61	91	192
FLIP 84- 18C	89	130	130	120	87	76	111	119	62	91	191
FLIP 84- 19C	84	130	115	117	71	74	105	105	59	86	170
FLIP 85- 1C	93	129	115	118	97	69	104	115	62	91	180
FLIP 85- 4C	92	130	132	123	84	101	110	117	67	93	188
FLIP 85- 5C	93	129	125	119	100	74	108	116	62	91	180
FLIP 85- 14C	89	129	117	113	76	63	103	108	65	91	163
FLIP 85- 15C	89	130	115	115	84	59	104	108	65	91	162
FLIP 85- 16C	90	130	117	117	56	68	106	113	66	91	164
FLIP 85- 17C	88	129	117	115	93	57	103	107	64	91	163
FLIP 85- 46C	89	130	132	120	66	90	110	112	61	87	191
FLIP 85- 55C	89	128	117	115	62	72	103	112	66	91	165
FLIP 85- 65C	89	127	115	113	56	65	102	112	65	91	162
FLIP 85- 60C	89	128	117	113	77	61	103	110	65	91	162
FLIP 85-135C	88	130	130	122	83	86	108	117	60	87	195
Local Check	89	130	136	117	55	65	99	107	58	85	167
Location Mean	89	129	122	117	76	72	105	112	63	90	175
S.E. of Mean	2.33	0.04	0.08	0.23	11.19	4.80	1.32	3.56	0.84	0.38	0.87
L.S.D. at 5%	-	0.12	0.24	0.67	-	13.86	3.82	-	2.41	1.09	2.52
C.V. %	4.52	0.06	0.12	0.34	25.53	11.48	2.18	5.51	2.30	0.72	0.86
Error df	30	30	30	30	30	30	30	30	30	30	30
Significance	NS	*	*	*	NS	*	*	NS	*	*	*

Cont'd. ...

Table 3.4.2. Cont'd. ...

Entry Name	SPAIN	SYRIA						TURKEY			(1) Overall Mean
	Sevilla-2	Hama	Homs	Idleb	Izra'a	Jindiress	Tel Hadya	Adana	Amasya	Ankara	
FLIP 84- 17C	132	149	134	160	109	163	157	137	80	66	114
FLIP 84- 18C	129	148	134	158	106	162	157	137	83	67	114
FLIP 84- 19C	125	138	129	161	104	149	148	137	83	66	109
FLIP 85- 1C	126	139	128	159	106	152	152	137	83	67	113
FLIP 85- 4C	129	145	134	163	108	162	156	137	80	69	116
FLIP 85- 5C	128	139	130	160	106	154	151	137	77	68	113
FLIP 85- 14C	129	131	128	157	104	149	146	137	73	67	109
FLIP 85- 15C	126	131	128	157	106	148	142	137	80	66	109
FLIP 85- 16C	127	130	128	157	108	147	142	137	70	67	109
FLIP 85- 17C	128	132	127	157	106	148	142	140	83	67	109
FLIP 85- 46C	130	151	134	158	110	163	157	137	86	66	114
FLIP 85- 55C	127	131	128	157	106	149	146	136	77	67	109
FLIP 85- 65C	129	132	128	155	107	147	142	137	67	68	108
FLIP 85- 60C	127	133	128	156	105	150	147	137	67	68	109
FLIP 85-135C	131	149	134	160	108	163	157	140	83	67	115
Local Check	121	132	125	156	101	162	139	134	83	–	
Location Mean	128	138	130	158	106	154	149	137	78	67	
S.E. of Mean	0.80	0.79	0.27	1.26	0.91	0.74	1.67	0.23	0.00	0.70	
L.S.D. at 5%	2.30	2.27	0.78	3.63	2.63	2.12	4.83	0.66	0.00	–	
C.V. %	1.08	0.99	0.36	1.38	1.48	0.83	1.95	0.29	0.00	1.81	
Error df	30	30	30	30	30	30	30	30	30	28	
Significance	*	*	*	*	*	*	*	*	*	NS	

(1) Sidi Bel Abbes and Horsham were excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.4.3. Time to maturity (days) of entries at different locations in the CIYT-L during 1987/88.

Entry Name	ALGERIA			ARGENTINA	COSTA-RICA	EGYPT	GREECE	IRAQ	ITALY			JORDAN
	Dahmouni	Sidi Bel-Abbes	Seif	Perico	Heredia	Nubaria	Larissa	Mosul	Gaudiano	Medolla	Tarquinia	Marow
FLIP 84- 17C	180	189	180	170	117	179	104	188	161	155	193	101
FLIP 84- 18C	180	188	178	176	118	172	103	186	160	158	194	101
FLIP 84- 19C	180	186	180	157	118	170	103	188	159	154	184	103
FLIP 85- 1C	180	189	178	172	128	171	114	187	159	154	184	102
FLIP 85- 4C	180	190	177	176	123	170	120	188	160	157	186	101
FLIP 85- 5C	180	189	180	159	124	176	113	187	161	158	179	102
FLIP 85- 14C	180	187	173	169	116	157	105	187	161	151	179	98
FLIP 85- 15C	180	188	177	163	118	159	105	188	160	150	179	103
FLIP 85- 16C	180	192	174	171	126	159	105	188	159	150	179	102
FLIP 85- 17C	180	188	177	156	118	156	105	188	160	152	179	101
FLIP 85- 46C	180	190	180	173	119	172	104	188	159	155	196	100
FLIP 85- 55C	180	187	175	174	117	166	105	186	160	152	179	100
FLIP 85- 65C	180	-	177	169	119	159	106	186	160	150	179	100
FLIP 85- 60C	180	188	177	165	121	177	105	186	160	148	179	99
FLIP 85-135C	180	189	179	170	118	167	103	187	161	155	194	99
Local Check	180	188	179	160	-	152	103	186	161	152	188	101
Location Mean	180	189	178	167	120	166	106	187	160	153	184	101
S.E. of Mean	0.00	One Rep.	0.21	0.97	1.52	2.68	0.36	0.60	0.21	1.36	1.15	1.22
L.S.D. at 5%	-		0.60	2.82	4.39	7.74	1.05	-	0.61	3.91	3.33	-
C.V. %	0.00		0.20	1.01	2.19	2.79	0.59	0.56	0.23	1.53	1.08	2.10
Error df	30		30	30	28	30	30	30	30	30	30	30
Significance	NS		*	*	*	*	*	NS	*	*	*	NS

Cont'd. ...

Table 3.4.3. Cont'd. ...

Entry Name	LEBANON	MEXICO		MOROCCO			PERU		PORTUGAL	SAUDI - ARABIA	SPAIN	
	Terbol	Sonora (Obregon)	Sonora (Hermosillo)	Douyet	Marchouch	Zememra	Canete Lima	La Molina Lima	Elvas	TADCO	Badajoz	Madrid
FLIP 84- 17C	206	156	147	198	205	184	112	113	216	174	124	259
FLIP 84- 18C	210	152	147	192	200	189	114	108	217	174	132	256
FLIP 84- 19C	198	153	143	198	192	184	116	97	211	172	126	239
FLIP 85- 1C	201	154	155	198	192	184	129	99	213	171	127	252
FLIP 85- 4C	205	155	158	194	192	179	122	121	212	174	132	258
FLIP 85- 5C	200	154	152	194	192	184	125	97	217	172	125	246
FLIP 85- 14C	197	153	143	195	192	177	120	98	214	171	123	243
FLIP 85- 15C	198	150	143	196	192	177	117	97	215	172	125	244
FLIP 85- 16C	198	152	145	199	192	184	112	97	215	171	123	244
FLIP 85- 17C	198	151	143	194	192	177	111	97	209	170	124	246
FLIP 85- 46C	207	155	148	197	205	184	111	114	216	173	129	257
FLIP 85- 55C	197	151	144	192	192	177	99	100	209	170	125	240
FLIP 85- 65C	198	153	144	192	192	177	125	97	209	172	125	239
FLIP 85- 60C	197	153	143	196	192	177	125	106	214	170	123	244
FLIP 85-135C	212	154	147	197	205	189	115	111	214	174	128	258
Local Check	194	142	141	196	192	187	112	98	210	172	122	236
Location Mean	**201**	**152**	**147**	**196**	**195**	**182**	**117**	**103**	**213**	**172**	**126**	**247**
S.E. of Mean	1.07	1.42	2.35	0.25	0.09	0.74	One Rep.	4.90	1.64	1.25	1.10	1.87
L.S.D. at 5%	3.10	4.10	6.77	0.71	0.27	2.13		14.15	4.75	-	3.18	5.40
C.V. %	0.92	1.61	2.77	0.22	0.08	0.70		8.22	1.34	1.26	1.52	1.31
Error df	30	30	30	30	30	30		30	30	30	30	30
Significance	*	*	*	*	*	*		*	*	NS	*	*

Cont'd. ...

Table 3.4.3. Cont'd. ...

Entry	SPAIN	SYRIA						TURKEY				(1) Overall Mean
	Sevilla-2	Hama	Homs	Idleb	Izra'a	Jindiress	Tel Hadya	Adana	Amasya	Ankara	Eskisehir	
FLIP 84- 17C	226	185	179	195	147	208	198	181	142	117	110	168
FLIP 84- 18C	227	185	177	186	148	208	198	182	140	116	109	167
FLIP 84- 19C	201	181	171	189	142	201	192	181	141	117	109	163
FLIP 85- 1C	226	181	173	190	148	205	194	181	139	120	110	167
FLIP 85- 4C	228	185	178	186	153	206	195	181	139	122	110	168
FLIP 85- 5C	226	181	175	199	148	203	193	181	138	121	109	166
FLIP 85- 14C	203	179	172	197	145	201	192	181	137	118	109	163
FLIP 85- 15C	213	179	172	198	145	199	190	184	137	116	109	163
FLIP 85- 16C	211	180	172	197	145	200	190	181	137	118	112	164
FLIP 85- 17C	218	179	171	198	145	199	190	186	137	120	111	163
FLIP 85- 46C	224	185	179	188	148	209	198	181	142	117	109	168
FLIP 85- 55C	207	180	171	195	146	200	192	181	137	118	111	163
FLIP 85- 65C	212	180	173	198	144	200	190	181	137	121	110	163
FLIP 85- 60C	209	180	173	198	146	203	192	181	137	120	110	164
FLIP 85-135C	228	185	179	192	148	209	198	184	142	119	111	168
Local Check	197	180	171	188	144	202	189	176	144	-	111	
Location Mean	**216**	**182**	**174**	**193**	**146**	**203**	**193**	**181**	**139**	**119**	**110**	
S.E. of Mean	3.27	0.51	0.33	4.84	0.58	0.94	0.91	0.67	0.66	1.42	0.90	
L.S.D. at 5%	9.45	1.47	0.96	-	1.69	2.71	2.63	1.93	1.92	4.13	-	
C.V. %	2.63	0.49	0.33	4.34	0.69	0.80	0.82	0.64	0.83	2.08	1.42	
Error df	30	30	30	30	30	30	30	30	30	28	30	
Significance	*	*	*	NS	*	*	*	*	*	*	NS	

(1) Sidi Bel Abbes was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.4.4. Plant height (cm) of entries at different locations in the CIYT-L during 1987/88.

Entry Name	ALGERIA			ARGENTINA	AUSTRALIA	COSTA-RICA	CYPRUS	EGYPT	GREECE	INDIA
	Dahmouni	Sidi Bel Abbes	Setif	Perico	Horsham	Heredia	Laxia	Nubaria	Larissa	Punjab
FLIP 84- 17C	39	-	27	77	61	51	53	97	45	62
FLIP 84- 18C	43	47	25	84	55	48	58	97	47	45
FLIP 84- 19C	43	48	27	75	65	47	58	87	43	49
FLIP 85- 1C	38	48	24	77	-	45	50	88	48	46
FLIP 85- 4C	41	67	24	84	61	55	58	88	52	54
FLIP 85- 5C	39	53	27	76	65	50	48	87	48	58
FLIP 85- 14C	47	50	21	80	50	51	58	100	50	48
FLIP 85- 15C	40	63	23	84	50	48	60	92	48	48
FLIP 85- 16C	41	60	21	80	50	42	60	87	48	50
FLIP 85- 17C	43	-	24	88	50	53	55	102	45	48
FLIP 85- 46C	37	53	27	67	60	52	55	93	45	51
FLIP 85- 55C	46	52	22	80	45	46	58	93	52	46
FLIP 85- 65C	45	60	24	79	50	56	58	98	50	49
FLIP 85- 60C	45	60	24	83	46	52	58	100	52	33
FLIP 85-135C	35	50	27	72	50	51	58	90	47	50
Local Check	41	50	26	72	50	-	-	90	47	55
Location Mean	41	54	25	79	54	50	56	93	48	50
S.E. of Mean	0.65	One Rep.	0.24	5.28	One Rep.	1.91	2.00	4.88	1.63	One Rep.
L.S.D. at 5%	1.89		0.69	-		5.54	4.95	-	4.70	
C.V. %	2.74		1.69	11.63		6.64	5.04	9.09	5.88	
Error df	30		30	30		28	14	30	30	
Significance	*		*	NS		*	*	NS	*	

Cont'd. ...

Table 3.4.4. Cont'd. ...

Entry Name	IRAQ	ITALY			JORDAN	LEBANON	MEXICO		MOROCCO	
	Mosul	Gaudiano	Medolla	Tarquinia	Marow	Terbol	Sonora (Obregon)	Sonora (Hermosillo)	Douyet	Marchouch
FLIP 84- 17C	45	60	100	70	37	48	111	59	75	63
FLIP 84- 18C	43	60	90	68	39	50	108	55	80	77
FLIP 84- 19C	60	52	100	63	42	51	117	53	70	35
FLIP 85- 1C	47	60	100	63	37	48	119	60	80	58
FLIP 85- 4C	55	60	113	73	37	50	117	62	70	53
FLIP 85- 5C	50	63	110	70	33	53	131	51	82	47
FLIP 85- 14C	45	51	90	73	40	52	120	68	80	77
FLIP 85- 15C	43	59	90	72	39	54	102	68	85	83
FLIP 85- 16C	47	65	100	68	39	54	111	67	80	87
FLIP 85- 17C	40	53	100	72	40	52	113	70	80	92
FLIP 85- 46C	47	60	110	68	37	47	104	58	75	70
FLIP 85- 55C	55	60	100	70	43	52	114	60	70	72
FLIP 85- 65C	52	55	90	70	38	53	117	70	90	88
FLIP 85- 60C	53	50	93	68	38	51	117	73	80	80
FLIP 85-135C	42	55	100	70	32	47	110	60	80	68
Local Check	55	55	100	65	33	42	93	43	70	22
Location Mean	49	57	99	69	38	50	113	61	78	67
S.E. of Mean	5.41	1.03	1.20	2.60	3.16	1.59	4.45	2.66	0.83	6.15
L.S.D. at 5%	-	2.97	3.46	-	-	4.58	12.86	7.68	2.41	17.75
C.V. %	19.26	3.11	2.09	6.51	14.48	5.46	6.85	7.55	1.85	15.89
Error df	30	30	30	30	30	30	30	30	30	30
Significance	NS	*	*	NS	NS	*	*	*	*	*

Cont'd. ...

Table 3.4.4. Cont'd. ...

Entry Name	MOROCCO	PERU		PORTUGAL	SAUDI ARABIA	SPAIN				SYRIA
	Zememra	Canete Lima	La Molina Lima	Elvas	TADCO	Badajoz	Sevilla-1	Madrid	Sevilla-2	Hama
FLIP 84- 17C	87	42	71	70	90	44	73	77	57	75
FLIP 84- 18C	82	52	69	68	88	43	73	78	60	72
FLIP 84- 19C	80	44	56	68	102	43	71	82	55	78
FLIP 85- 1C	77	43	68	68	93	43	72	75	63	75
FLIP 85- 4C	83	51	79	70	95	48	74	80	63	78
FLIP 85- 5C	80	46	69	68	101	48	75	83	63	78
FLIP 85- 14C	90	59	84	68	95	47	67	82	63	80
FLIP 85- 15C	92	50	72	68	95	47	67	80	68	78
FLIP 85- 16C	93	53	81	65	90	43	64	77	67	82
FLIP 85- 17C	87	59	67	70	92	48	61	79	68	78
FLIP 85- 46C	73	45	72	63	90	42	70	74	62	73
FLIP 85- 55C	88	64	77	68	97	50	67	80	70	78
FLIP 85- 65C	83	62	78	73	97	43	65	78	70	75
FLIP 85- 60C	92	57	73	70	90	47	65	81	67	83
FLIP 85-135C	83	44	72	67	80	43	67	76	60	77
Local Check	80	42	54	67	90	40	73	70	50	62
Location Mean	84	51	71	68	93	45	69	78	63	76
S.E. of Mean	4.28	One Rep.	3.77	2.64	6.07	1.98	2.69	2.21	2.59	2.32
L.S.D. at 5%	–		10.88	–	–	5.73	7.78	6.40	7.48	6.69
C.V. %	8.79		9.15	6.70	11.35	7.64	6.78	4.91	7.13	5.25
Error df	30		30	30	30	30	30	30	30	30
Significance	NS		*	NS	NS	*	*	*	*	*

Cont'd. ...

Table 3.4.4. Cont'd. ...

Entry Name	SYRIA					TURKEY			(1) Overall Mean
	Homs	Idleb	Izra'a	Jindiress	Tel Hadya	Adana	Amasya	Ankara	
FLIP 84- 17C	65	56	44	65	59	65	79	27	63
FLIP 84- 18C	58	58	45	64	57	55	74	32	62
FLIP 84- 19C	58	61	44	63	58	60	78	29	61
FLIP 85- 1C	58	51	43	59	53	55	74	32	61
FLIP 85- 4C	63	63	49	72	60	67	83	29	65
FLIP 85- 5C	67	59	46	68	61	66	89	37	65
FLIP 85- 14C	67	61	48	66	59	67	69	27	65
FLIP 85- 15C	65	58	50	67	64	66	76	32	65
FLIP 85- 16C	62	59	46	72	63	61	74	28	65
FLIP 85- 17C	67	61	50	73	61	63	75	30	65
FLIP 85- 46C	65	57	43	66	60	55	77	30	62
FLIP 85- 55C	63	59	51	77	63	64	66	31	65
FLIP 85- 65C	63	58	47	72	62	63	72	26	66
FLIP 85- 60C	65	59	49	68	61	62	78	26	65
FLIP 85-135C	67	59	44	72	59	64	77	29	62
Local Check	53	44	40	72	40	50	80	-	
Location Mean	63	58	46	69	59	62	76	30	
S.E. of Mean	1.71	3.11	1.42	3.61	1.54	1.66	4.35	2.20	
L.S.D. at 5%	4.93	8.97	4.10	-	-	4.79	-	-	
C.V. %	4.70	9.33	5.33	9.13	4.54	4.67	9.86	12.87	
Error df	30	30	30	30	30	30	30	28	
Significance	*	*	*	NS	NS	*	NS	NS	

(1) Horsham was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.4.5. 100-Seed weight (g) of entries at different locations in the CIYT-L during 1987/88.

Entry Name	ALGERIA		ARGENTINA	AUSTRALIA	COSTA RICA	CYPRUS	EGYPT	FRANCE	GREECE
	Dahmouni	Setif	Perico	Horsham	Heredia	Laxia	Nubaria	Montboucher	Larissa
FLIP 84- 17C	40	35	45	31	49	32	35	46	40
FLIP 84- 18C	46	43	45	36	49	30	40	46	40
FLIP 84- 19C	41	43	46	36	42	36	40	39	39
FLIP 85- 1C	46	44	45	-	48	39	39	50	49
FLIP 85- 4C	45	-	44	38	50	37	36	50	46
FLIP 85- 5C	48	49	45	41	51	40	35	51	47
FLIP 85- 14C	43	42	40	32	41	33	35	43	41
FLIP 85- 15C	44	43	37	18	43	35	33	43	41
FLIP 85- 16C	41	40	36	31	46	34	32	41	42
FLIP 85- 17C	39	42	37	33	44	37	33	41	42
FLIP 85- 46C	40	45	39	34	46	35	36	46	40
FLIP 85- 55C	42	40	37	32	41	36	33	41	41
FLIP 85- 65C	39	40	31	35	42	34	33	40	42
FLIP 85- 60C	41	41	35	32	43	34	33	40	41
FLIP 85-135C	40	43	46	32	46	33	39	45	41
Local Check	36	30	66	34	-	0	25	32	38
Location Mean	**42**	**41**	**42**	**31**	**45**	**33**	**35**	**43**	**42**
S.E. of Mean	1.21	0.10	2.25	One Rep.	1.34	1.86	1.53	0.86	0.50
L.S.D. at 5%	3.50	0.28	6.51		3.89	4.59	4.41	2.48	1.45
C.V. %	5.00	0.41	9.25		5.12	8	7.59	3.43	2.07
Error df	30	28	30		28	15	30	30	30
Significance	*	*	*		*	*	*	*	*

Cont'd. ...

Table 3.4.5. Cont'd. ...

Entry Name	IRAQ	ITALY	LEBANON	MEXICO		MOROCCO	PERU	PORTUGAL	SAUDI ARABIA
	Mosul	Tarquinia	Terbol	Sonora (Obregon)	Sonora (Hermosillo)	Dar Bouazza	La Molina Lima	Elvas	TADCO
FLIP 84- 17C	45	52	50	50	41	33	47	47	39
FLIP 84- 18C	49	53	49	47	40	44	52	48	40
FLIP 84- 19C	47	50	47	44	45	46	49	46	38
FLIP 85- 1C	41	56	56	49	51	45	48	50	38
FLIP 85- 4C	48	55	52	48	49	44	50	45	38
FLIP 85- 5C	49	58	45	46	48	47	49	52	42
FLIP 85- 14C	45	47	42	41	44	30	48	43	33
FLIP 85- 15C	45	48	41	44	44	26	47	44	31
FLIP 85- 16C	43	48	44	42	41	43	47	42	38
FLIP 85- 17C	50	47	42	40	40	28	46	43	33
FLIP 85- 46C	41	45	48	50	42	47	51	49	40
FLIP 85- 55C	39	47	46	40	45	38	47	38	36
FLIP 85- 65C	41	48	43	39	40	30	47	43	36
FLIP 85- 60C	34	48	43	41	42	28	45	45	33
FLIP 85-135C	49	53	49	48	45	40	49	48	40
Local Check	39	50	38	48	57	36	53	34	38
Location Mean	44	50	46	45	45	38	48	45	37
S.E. of Mean	1.07	1.77	1.51	1.41	1.93	One Rep.	1.98	1.75	2.31
L.S.D. at 5%	3.08	5.10	4.37	4.07	5.58		-	5.06	-
C.V. %	4.19	6.10	5.70	5.45	7.48		7.08	6.75	10.82
Error df	30	30	30	30	30		30	30	30
Significance	*	*	*	*	*		NS	*	NS

Cont'd. ...

Table 3.4.5. Cont'd. ...

Entry Name	SPAIN			SYRIA				TURKEY		(1) Overall Mean
	Badajoz	Madrid	Sevilla-2	Homs	Idleb	Jindiress	Tel Hadya	Adana	Amasya	
FLIP 84- 17C	40	35	45	51	46	41	46	43	49	44
FLIP 84- 18C	41	33	46	46	44	41	46	41	51	44
FLIP 84- 19C	40	32	46	48	47	41	43	43	50	44
FLIP 85- 1C	44	42	52	53	48	42	48	49	55	47
FLIP 85- 4C	45	40	49	52	46	44	46	45	55	46
FLIP 85- 5C	47	43	50	49	47	40	43	46	56	47
FLIP 85- 14C	38	38	45	47	44	34	38	41	45	41
FLIP 85- 15C	35	38	45	46	42	33	38	40	46	40
FLIP 85- 16C	36	40	44	46	43	34	37	43	46	41
FLIP 85- 17C	37	37	43	48	43	37	38	44	44	41
FLIP 85- 46C	39	33	47	49	45	40	47	46	51	44
FLIP 85- 55C	40	37	46	47	45	35	38	44	45	41
FLIP 85- 65C	38	35	44	49	44	35	38	44	46	40
FLIP 85- 60C	36	38	44	45	42	31	38	43	49	40
FLIP 85-135C	39	36	45	48	43	43	46	41	50	44
Local Check	28	16	50	41	41	23	24	39	52	-
Location Mean	**39**	**36**	**46**	**48**	**44**	**37**	**41**	**43**	**49**	
S.E. of Mean	1.13	1.30	1.37	1.76	1.42	1.18	0.48	1.67	2.04	
L.S.D. at 5%	3.27	3.75	3.97	5.08	4.09	3.40	1.39	4.84	5.88	
C.V. %	5.04	6.29	5.14	6.36	5.53	5.48	2.04	6.70	7.14	
Error df	30	30	30	30	30	30	30	30	30	
Significance	*	*	*	*	*	*	*	*	*	

(1) Setif and Horsham were excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.4.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-L during 1987/88.

Entry Name	ALGERIA						ARGENTINA		AUSTRALIA		COSTA RICA		CYPRUS		EGYPT	
	Dahmouni		Sidi Bel Abbes		Setif		Perico		Horsham		Heredia		Laxia		Nubaria	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 17C	42	13	2283	15	347	4	1328	13	506	10	550	2	1111	12	926	16
FLIP 84- 18C	91	4	2504	11	233	13	1294	15	722	5	464	4	1037	14	1505	14
FLIP 84- 19C	112	3	2964	4	355	3	1622	9	644	8	416	7	1597	6	2600	4
FLIP 85- 1C	58	9	2299	14	230	15	1617	10	-	-	227	14	1257	10	3028	2
FLIP 85- 4C	63	7	3499	1	286	7	2383	4	789	4	291	11	1326	9	1616	12
FLIP 85- 5C	40	14	3010	3	375	2	1333	12	2222	2	234	13	580	15	2139	8
FLIP 85- 14C	79	6	2346	13	416	1	1922	6	333	14	292	10	1660	5	2449	5
FLIP 85- 15C	55	11	3015	2	246	10	2700	2	3322	1	437	6	1699	4	1769	11
FLIP 85- 16C	56	10	2504	11	231	14	1822	7	689	7	154	15	1847	2	2884	3
FLIP 85- 17C	29	16	2916	6	241	12	2578	3	594	9	832	1	1806	3	2042	9
FLIP 85- 46C	44	12	2629	7	245	11	722	16	1061	3	373	9	1148	11	1051	15
FLIP 85- 55C	141	1	2559	9	285	8	1967	5	389	13	243	12	1910	1	2037	10
FLIP 85- 65C	59	8	2505	10	301	6	1800	8	689	6	498	3	1594	7	2412	6
FLIP 85- 60C	120	2	2616	8	301	5	1544	11	272	15	376	8	1559	8	2162	7
FLIP 85-135C	32	15	2929	5	197	16	1322	14	483	11	448	5	1069	13	1551	13
Local Check	86	5	1968	16	248	9	3044	1	478	12	-	-	0	16	3463	1
Location Mean	69		2659		284		1813		826		389		1325		2102	
S.E. of Mean	12.47		One Rep.		43.54		522.49		One Rep.		69.05		126.95		209.11	
L.S.D. at 5%	36.01				125.73		-				199.98		367.61		603.88	
C.V. %	31.22				26.59		49.93				30.74		16.60		17.23	
Error df	30				30		30				28		30		30	
Significance	*				*		NS				*		*		*	
Test > L. Check	1				2		-				-		15		0	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	FRANCE Montboucher		GREECE Larissa		IRAQ Mosul		ITALY Tarquinia		JORDAN Marow		LEBANON Terbol		MEXICO Sonora (Obregon)		MEXICO Sonora (Hermosillo)	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 17C	1104	10	2192	8	3148	2	2069	13	433	12	1271	16	769	13	1249	13
FLIP 84- 18C	1047	11	2217	6	2130	12	1772	15	532	10	1281	15	1042	11	1262	12
FLIP 84- 19C	440	16	2417	2	3093	3	2698	9	1021	1	1562	8	1258	9	1589	2
FLIP 85- 1C	654	13	1750	15	2667	7	3079	3	417	13	1505	11	1004	12	1003	15
FLIP 85- 4C	578	15	1646	16	3352	1	2989	5	498	11	1637	5	404	16	858	16
FLIP 85- 5C	620	14	2033	12	1954	13	3799	1	886	2	1901	1	733	14	1211	14
FLIP 85- 14C	1739	3	2075	10	2519	9	2772	7	302	15	1509	10	1709	3	1397	10
FLIP 85- 15C	1222	7	2083	9	1454	16	2804	6	813	3	1559	9	1864	1	1446	6
FLIP 85- 16C	1850	1	2033	13	1491	15	2704	8	802	4	1701	3	1849	2	1437	7
FLIP 85- 17C	1262	6	2042	11	1778	14	3069	4	656	7	1585	6	1460	6	1423	8
FLIP 85- 46C	1158	8	2308	3	2685	6	1603	16	792	5	1388	14	1300	8	1373	11
FLIP 85- 55C	1147	9	2000	14	3019	4	2323	12	289	16	1579	7	1658	4	1486	3
FLIP 85- 65C	1431	5	2208	7	2167	10	2646	10	629	8	1422	13	1651	5	1453	5
FLIP 85- 60C	1549	4	2275	5	2157	11	3513	2	365	14	1665	4	1302	7	1481	4
FLIP 85-135C	927	12	2300	4	2919	5	1942	14	751	6	1432	12	1109	10	1420	9
Local Check	1847	2	2550	1	2648	8	2524	11	629	9	1756	2	556	15	1945	1
Location Mean	1161		2133		2449		2644		613		1547		1229		1377	
S.E. of Mean	141.81		89.93		225.62		251.52		181.80		98.98		215.90		112.26	
L.S.D. at 5%	409.52		259.70		651.55		726.33		-		285.85		623.47		324.19	
C.V. %	21.16		7.30		15.96		16.48		51.34		11.08		30.42		14.12	
Error df	30		30		30		30		30		30		30		30	
Significance	*		*		*		*		NS		*		*		*	
Test > L. Check	0		0		1		2		-		0		9		0	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	MOROCCO						PERU				PORTUGAL		SAUDI ARABIA		SPAIN	
	Douyet		Marchouch		Zememra		Canete Lima		La Molina Lima		Elvas		TADCO		Badajoz	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84 17C	2556	12	2222	10	2296	13	172	14	802	10	2626	14	1667	13	748	14
FLIP 84 18C	2556	13	1389	15	2327	12	536	4	510	16	2678	12	1333	16	1077	5
FLIP 84 19C	3278	5	2917	4	2935	5	639	2	1021	3	3415	2	1583	14	758	13
FLIP 85- 1C	2722	11	2778	7	2654	9	175	13	880	8	2602	15	2250	7	746	15
FLIP 85- 4C	2722	10	2153	12	2543	10	156	16	755	11	2710	9	2000	10	909	9
FLIP 85- 5C	3389	4	2222	11	2891	6	161	15	740	12	2442	16	2417	5	1514	1
FLIP 85- 14C	3167	8	3194	1	2794	7	278	9	688	14	3050	6	2750	1	1116	3
FLIP 85- 15C	3667	2	2847	5	2938	4	233	11	859	9	3118	5	1917	12	763	12
FLIP 85- 16C	2778	9	3056	2	3312	2	356	7	984	4	2631	13	2417	4	501	16
FLIP 85- 17C	3278	6	2431	9	2971	3	240	10	974	5	3237	3	2583	2	1089	4
FLIP 85- 46C	2111	16	1389	14	2155	15	601	3	891	6	2703	10	2000	11	785	11
FLIP 85- 55C	3389	3	2847	6	2211	14	480	5	1078	2	2689	11	2167	9	998	7
FLIP 85- 65C	3222	7	2639	8	2690	8	851	1	1307	1	3033	7	2250	8	1069	6
FLIP 85- 60C	4000	1	3056	3	3355	1	385	6	885	7	3138	4	2333	6	953	8
FLIP 85-135C	2111	15	1597	13	2336	11	226	12	578	15	2914	8	1417	15	877	10
Local Check	2222	14	–	–	1782	16	301	8	693	13	3525	1	2500	3	1158	2
Location Mean	2948		2449		2637		362		1102		2907		2099		941	
S.E. of Mean	415.76		230.57		335.08		139.74		1064.96		206.30		377.77		161.25	
L.S.D. at 5%	–		667.80		–		403.55		–		595.77		–		465.67	
C.V. %	24.43		16.31		22.01		66.92		167.40		12.29		31.17		29.67	
Error df	30		28		30		30		30		30		30		30	
Significance	NS		*		NS		*		NS		*		NS		*	
Test > L. Check	–		–		–		1		–		0		–		0	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	SPAIN						SYRIA									
	Sevilla-1		Madrid		Sevilla-2		Hama		Homs		Idleb		Izra'a		Jindiress	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84 17C	1038	3	724	13	2126	4	1016	14	1654	14	942	15	947	7	1365	12
FLIP 84 18C	973	7	473	15	2535	2	1164	13	1381	16	1108	13	984	5	1275	16
FLIP 84 19C	896	13	1019	11	1930	8	2275	11	2199	4	2013	3	1079	1	1913	6
FLIP 85 1C	746	15	1548	8	1626	15	2386	8	2434	2	1969	5	868	11	1701	10
FLIP 85 4C	729	16	1502	9	1787	11	2138	12	2262	3	2045	2	847	15	2447	1
FLIP 85 5C	965	9	1441	10	1924	9	2635	2	2707	1	2085	1	1032	4	2024	3
FLIP 85 14C	998	4	2117	1	2036	6	2476	4	1648	15	1833	9	968	6	1516	11
FLIP 85 15C	967	8	1659	7	1823	10	2413	6	1762	13	1406	12	878	10	1981	4
FLIP 85 16C	865	14	1845	2	1750	12	2704	1	1780	12	1638	11	915	9	1974	5
FLIP 85- 17C	942	10	1660	6	2079	5	2302	10	1979	7	1986	4	1074	2	2169	2
FLIP 85- 46C	1079	2	486	14	2602	1	926	16	1781	11	992	14	852	12	1296	15
FLIP 85- 55C	981	6	1766	3	1695	14	2365	9	1785	10	1922	7	1032	3	1799	8
FLIP 85- 65C	910	12	1707	5	1730	13	2439	5	1820	9	1891	8	847	14	1831	7
FLIP 85- 60C	992	5	1758	4	2131	3	2407	7	2088	5	1939	6	852	13	1354	13
FLIP 85-135C	925	11	882	12	2033	7	942	15	1866	8	855	16	915	8	1325	14
Local Check	1338	1	389	16	756	16	2603	3	2012	6	1679	10	566	16	1741	9
Location Mean	959		1311		1910		2074		1947		1644		916		1732	
S.E. of Mean	95.54		156.08		243.69		104.62		169.54		181.09		83.36		241.19	
L.S.D. at 5%	275.90		450.73		703.74		302.11		489.60		522.94		240.73		696.51	
C.V. %	17.26		20.62		22.10		8.74		15.08		19.08		15.76		24.12	
Error df	30		30		30		30		30		30		30		30	
Significance	*		*		*		*		*		*		*		*	
Test > L. Check	0		12		15		0		1		0		15		1	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	SYRIA		TUNISIA				TURKEY								(1) Overall Mean	
	Tel Hadya		Beja		Oued Meliz		Adana		Amasya		Diyarbakir		Eskisehir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 17C	1235	14	440	16	780	7	1502	15	1312	9	1185	10	1143	4	1293	15
FLIP 84- 18C	1280	13	720	14	652	11	1659	12	1815	1	1222	7	1116	5	1306	14
FLIP 84- 19C	2058	7	824	10	564	12	2269	8	1079	14	1083	12	1153	3	1705	3
FLIP 85- 1C	2083	6	940	7	920	4	1772	10	1079	15	935	15	968	12	1578	10
FLIP 85- 4C	2476	1	976	5	1108	1	1949	9	1693	3	620	16	820	15	1574	11
FLIP 85- 5C	2293	3	1132	3	732	9	4646	1	989	16	1059	14	720	16	1698	5
FLIP 85- 14C	1902	11	872	8	896	5	2998	2	1614	5	1250	6	947	13	1711	2
FLIP 85- 15C	2354	2	1136	2	540	14	2854	4	1741	2	1324	5	1042	8	1682	7
FLIP 85- 16C	2186	4	824	11	692	10	1616	13	1534	7	1503	3	1074	7	1667	8
FLIP 85- 17C	1935	8	1116	4	928	3	2687	6	1153	13	1361	4	884	14	1725	1
FLIP 85- 46C	1230	15	832	9	776	8	1592	14	1566	6	1208	9	1101	6	1307	13
FLIP 85- 55C	1911	10	572	15	528	15	2716	5	1159	12	1181	11	968	11	1626	9
FLIP 85- 65C	2095	5	744	12	884	6	2956	3	1238	11	1524	2	979	10	1695	6
FLIP 85- 60C	1650	12	1212	1	560	13	2281	7	1651	4	1060	13	1021	9	1702	4
FLIP 85-135C	1142	16	944	6	944	2	1739	11	1305	10	1222	8	1291	1	1352	12
Local Check	1935	9	724	13	460	16	860	16	1479	8	1542	1	1153	2		
Location Mean	1860		876		748		2256		1401		1205		1024			
S.E. of Mean	180.82		213.97		153.82		234.82		225.54		170.56		118.39			
L.S.D. at 5%	522.17		-		-		-		-		-		-			
C.V. %	16.84		34.56		29.09		18.03		27.89		24.52		20.03			
Error df	30		15		15		30		30		30		30			
Significance	*		NS		NS		NS		NS		NS		NS			
Test > L. Check	1		-		-		-		-		-		-			

(1) Horsham was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.4.7. The five heaviest seed yielding entries at the individual locations in the CIYT-L during 1987/88.

Rank	ALGERIA			ARGENTINA	AUSTRALIA	COSTA RICA	CYPRUS	EGYPT	FRANCE	GREECE
	Dahmouni	Sidi Bel Abbes	Setif	Perico	Horsham	Heredia	Laxia	Nubaria	Montbouchor	Larissa
1	FLIP85- 55C	FLIP85- 4C	FLIP85- 14C	Local Check	FLIP85- 15C	FLIP85- 17C	FLIP85- 55C	Local Check	FLIP85- 16C	Local Check
2	FLIP85- 60C	FLIP85- 15C	FLIP85- 5C	FLIP85- 15C	FLIP85- 5C	FLIP84- 17C	FLIP85- 16C	FLIP85- 1C	Local Check	FLIP84- 19C
3	FLIP84- 19C	FLIP85- 5C	FLIP84- 19C	FLIP85- 17C	FLIP85- 46C	FLIP85- 65C	FLIP85- 17C	FLIP85- 16C	FLIP85- 14C	FLIP85- 46C
4	FLIP84- 18C	FLIP84- 19C	FLIP84- 17C	FLIP85- 4C	FLIP85- 4C	FLIP84- 18C	FLIP85- 15C	FLIP84- 19C	FLIP85- 60C	FLIP85-135C
5	Local Check	FLIP85-135C	FLIP85- 60C] FLIP85- 65C	FLIP85- 55C	FLIP84- 18C	FLIP85-135C	FLIP85- 14C	FLIP85- 14C	FLIP85- 65C	FLIP85- 60C

Table 3.4.7. Cont'd. ...

Cont'd . ...

Rank	IRAQ	ITALY	JORDAN	LEBANON	MEXICO		MOROCCO			PERU
	Mosul	Tarquinia	Marow	Terbol	Obregon	Hermosillo	Douyet	Marchouch	Zemamra	Canete Lima
1	FLIP85- 4C	FLIP85- 5C	FLIP84- 19C	FLIP85- 5C	FLIP85- 15C	Local Check	FLIP85- 60C	FLIP85- 14C	FLIP85- 60C	FLIP85- 65C
2	FLIP84- 17C	FLIP85- 60C	FLIP85- 5C	Local Check	FLIP85- 16C	FLIP84- 19C	FLIP85- 15C	FLIP85- 16C	FLIP85- 16C	FLIP84- 19C
3	FLIP84- 19C	FLIP85- 1C	FLIP85- 15C	FLIP85- 16C	FLIP85- 14C	FLIP85- 55C	FLIP85- 55C	FLIP85- 60C	FLIP85- 17C	FLIP85- 46C
4	FLIP85- 55C	FLIP85- 17C	FIP85- 16C	FLIP85- 60C	FLIP85- 55C	FLIP85- 60C	FLIP85- 5C	FLIP84- 19C	FLIP85- 15C	FLIP84- 18C
5	FLIP85-135C	FLIP85- 4C	FLIP85- 46C	FLIP85- 4C	FLIP85- 65C	FLIP85- 65C	FLIP84- 19C] FLIP85- 17C	FLIP85- 15C] FLIP85- 55C	FLIP84- 19C	FLIP85- 55C

Table 3.4.7. Cont'd. ...

Cont'd. ...

Rank	PERU	PORTUGAL	SAUDI ARABIA	SPAIN				SYRIA		
	La Molina	Elvas	TADCO	Badajoz	Madrid	Sevilla-1	Sevilla-2	Hama	Homs	Idleb
1	FLIP85- 15C	Local Check	FLIP85- 14C	FLIP85- 5C	FLIP85- 14C	Local Check	FLIP85- 46C	FLIP85- 16C	FLIP85- 5C	FLIP85- 5C
2	FLIP85- 65C	FLIP84- 19C	FLIP85- 17C	Local Check	FLIP85- 16C	FLIP85- 46C	FLIP84- 18C	FLIP85- 5C	FLIP85- 1C	FLIP85- 4C
3	FLIP85- 55C	FLIP85- 17C	Local Check	FLIP85- 14C	FLIP85- 55C	FLIP84- 17C	FLIP85- 60C	Local Check	FLIP85- 4C	FLIP84- 19C
4	FLIP84- 19C	FLIP85- 60C	FLIP85- 16C	FLIP85- 17C	FLIP85- 60C	FLIP85- 14C	FLIP84- 17C	FLIP85- 14C	FLIP84- 19C	FLIP85- 17C
5	FLIP85- 16C	FLIP85- 15C	FLIP85- 5C	FLIP84- 18C	FLIP85- 65C	FLIP85- 60C	FLIP85- 17C	FLIP85- 65C	FLIP85- 60C	FLIP85- 1C

Table 3.4.7. Cont'd. ...

Cont'd. ...

Rank	SYRIA			TUNISIA		TURKEY			
	Izra'a	Jindiress	Tel Hadya	Boja	Oued Meliz	Adana	Amasya	Diyarbakir	Eskisehir
1	FLIP84- 19C	FLIP85- 4C	FLIP85- 4C	FLIP85- 60C	FLIP85- 4C	FLIP85- 5C	FLIP84- 18C	Local Check	FLIP85-135C
2	FLIP85- 17C	FLIP85- 17C	FLIP85- 15C	FLIP85- 15C	FLIP85-135C	FLIP85- 14C	FLIP85- 15C	FLIP85- 65C	Local Check
3	FLIP85- 55C	FLIP85- 5C	FLIP85- 5C	FLIP85- 5C	FLIP85- 17C	FLIP85- 65C	FLIP85- 4C	FLIP85- 16C	FLIP84- 19C
4	FLIP85- 5C	FLIP85- 15C	FLIP85- 16C	FLIP85- 17C	FLIP85- 1C	FLIP85- 15C	FLIP85- 60C	FLIP85- 17C	FLIP84- 17C
5	FLIP84- 18C	FLIP85- 16C	FLIP85- 65C	FLIP85- 4C	FLIP85- 14C	FLIP85- 55C	FLIP85- 14C	FLIP85- 15C	FLIP84- 18C

The brackets indicate entries having the same rank.

adaptation.

On the basis of average of common entries over two years (Table 3.4.8.), FLIP 85-5C (1674 kg/ha) ranked number 1 and was closely followed by FLIP 84-19C (1648 kg/ha) and FLIP 85-17C (1620 kg/ha).

Table 3.4.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-L during 1986/87 and 1987/88.

Entry Name	1986/87		1987/88		Overall Mean	
	Y	R	Y	R	Y	R
FLIP 84-18C	1384	5	1306	6	1345	6
FLIP 84-19C	1590	2	1705	2	1648	2
FLIP 85- 5C	1649	1	1698	3	1674	1
FLIP 85-17C	1514	4	1725	1	1620	3
FLIP 85-55C	1528	3	1626	4	1577	4
FLIP 85-135C	1374	6	1352	5	1363	5

3.5. CHICKPEA INTERNATIONAL YIELD TRIAL-TALL (CIYT-T)

Material

The Chickpea International Yield Trial-Tall comprised of 23 test entries and one local check to be supplied by the cooperators. Twenty-one of the test entries originated from the material developed through hybridization at ICARDA. All these lines were selected on the basis of their superior performance at least once in international, regional, or local trials.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was 4 rows, each 4 meter long with inter- and intra row spacings of 45 and 10cm, respectively. Fifty-eight sets were sent to cooperators in 32 countries. The results were, however, received for 32 trials from 20 countries. The agronomic information received from the cooperators is given in Table 3.5.1.

Results and Discussion

The location means for time to flowering (Table 3.5.2.), time to maturity (Table 3.5.3.), plant height (Table 3.5.4.) and 100-seed weight (Table 3.5.5.) ranged from 69 days (for Culiacan, Mexico) to 182 days (for Montboucher, France), 130 days (for Culiacan, Mexico) to 257 days (for Montboucher, France), 26 cm (for Setif, Algeria) to 100 cm (for Tabuk, Saudi Arabia), and 27 g/100 seed (for Horsham, Australia) to 40 g/100-seed (for Montboucher in France, Tarquinia in Italy, Culiacan in Mexico, and Amasaya in Turkey), respectively. On an

Table 3.5.1. Agronomic data for different locations in the CIYT-T during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
AFGHANISTAN	Kabul	16.12.87	18.07.88	30	60		4	Trichlorophant, Metasystox, Hand Weeding	Herat Small Seed
ALGERIA	Dahmouni	08.12.87	06.07.88	17	90	75	-	Trifluraline	Rabat 9
ALGERIA	Setif	22.11.87	21.05.88	-			-	-	"
ALGERIA	Sidi Bel Abbes	30.11.87	06.88	-			-	-	"
AUSTRALIA	Horsham	05.07.88	10.01.89		150		-	Trifluraline, Cyanazine, Diquat, Paraquat, Endosulphan	KANIVA
CYPRUS	Laxia	25.11.87	17.06.88	25	60		-	Trifluran	Cyprus Local
FRANCE	Montboucher	20.11.87	18.08.88		125			Methabenzthiazuron	NA
IRAN	Gorgan	07.12.87	23.05.88	-			-	-	Korosh
IRAQ	Mosul	23.11.87	07.06.88	50	50		-	-	Mahally
ITALY	Catania	25.11.87	30.05.88	45	90		-	-	11 EN
ITALY	Tarquinia	09.01.88	02.08.88	45	130		-	Targa	CALIA
JORDAN	Marow	15.11.87	23.05.88	20	40				UJC 107
LEBANON	Terbol	21.11.87	07.07.88		50		-	Kerb, Igran	
LIBYA	El Marj	07.12.87	13.07.88	-			-	-	ILC 484
MEXICO	Culiacan	25.11.87	25.04.88				1		
MEXICO	Hermosillo	11.87	05.88	60			2	Seed Treatment (Sepavax)	Tubutama
MOROCCO	Marchouch	21.11.87	27.06.88	28	56	28	-	-	PCH 46
PORTUGAL	Elvas	10.11.87	11.07.88	-			-	-	FLIP 83-15C
SAUDI ARABIA	TADCO (Tabuk)	21.11.87	06.88	150	200		S*	-	Local from market
SPAIN	Cordoba	01.12.87	NA	0	14	7	1		
SPAIN	Sevilla	13.12.87	06.07.88		60		1	Alachlor, Linuron, Tecto	Blanco Lechoro
SYRIA	Al Ghab	29.11.87	15.06.88	30	50		-	-	Local
SYRIA	Idleb	25.11.87	02.06.88		60		-	-	Ghab 2
SYRIA	Izra'a	10.01.88	16.06.88	13	17		-	-	Local
SYRIA	Jindiress	21.11.87	15.06.88	30	50		-	Kerb, Igran	ILC 482
SYRIA	Tel Hadya	26.11.87	09.06.88	30	50		-	Kerb,Igran	ILC 482
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA
TURKEY	Adana	24.11.88	24.05.89	30	50		1	-	NA
TURKEY	Amasya	04.04.88	07.09.88	50			-	-	Ispanyol
TURKEY	Diyarbakir	10.12.88	10.06.89	30	60		-	-	Sarisi-482

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 3.5.2. Time to flowering (days) of entries at different locations in the CIYT-T during 1987/88.

Entry Name	Pedigree	Origin	AFGHANISTAN Kabul	ALGERIA Dahmouni	ALGERIA Setif	AUSTRALIA Horsham	CYPRUS Laxia
FLIP 83- 7C	X80TH 264/(ILC480XILC72)XILC263	ICARDA/ICRISAT	149	126	145	113	116
FLIP 83- 41C	X79TH 221/ILC 72XILC1922	ICARDA/ICRISAT	147	132	146	113	114
FLIP 84- 22C	X81TH 55/ILC1920XILC2956	ICARDA/ICRISAT	148	132	146	-	120
FLIP 84- 28C	X81TH 104/ILC 72XILC 482	ICARDA/ICRISAT	148	127	143	111	116
FLIP 84- 46C	X81TH 55/ILC1920XILC2956	ICARDA/ICRISAT	149	127	149	113	120
FLIP 84- 48C	X81TH 55/ILC1920XILC2956	ICARDA/ICRISAT	147	128	148	-	114
FLIP 85- 4C	X82TH 66/ILC2593XILC3279	ICARDA/ICRISAT	150	132	147	-	124
FLIP 85- 12C	X83TH 19/FLIP 82-65CXPLIP 82-69C	ICARDA/ICRISAT	146	131	147	123	112
FLIP 85- 13C	X83TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	148	128	144	112	113
FLIP 85- 18C	X83TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	148	131	144	118	118
FLIP 85- 19C	X83TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	146	128	145	120	115
FLIP 85- 44C	X82TH 77/ILC3346XILC 464	ICARDA/ICRISAT	150	132	151	-	124
FLIP 85- 45C	X82TH 146/(ILC445XILC482)XILC202	ICARDA/ICRISAT	149	130	144	118	120
FLIP 85- 49C	X83TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	150	132	144	113	123
FLIP 85- 57C	X83TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	148	128	147	118	115
FLIP 85- 58C	X83TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	148	130	145	-	123
FLIP 85- 62C	X83TH 29/FLIP 82-60CXFLIP 82-64C	ICARDA/ICRISAT	150	129	145	-	124
FLIP 85-112C	X81TH 125/ILC 202XILC 482	ICARDA/ICRISAT	147	128	146	118	121
FLIP 85-142C	X83TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	148	127	149	113	117
FLIP 85-146C	X79TH 181/ILC3279XILC1108	ICARDA/ICRISAT	147	130	146	123	115
FLIP 85-151C	L 550XILC 72	ICARDA/ICRISAT	147	125	146	113	116
ILC 195	-	USSR	148	129	148	123	116
ILC3279	-	USSR	149	129	148	113	119
Local check	-	-	149	130	142	111	-
Location Mean			**148**	**129**	**146**	**116**	**118**
S.E. of Mean			1.09	1.63	0.34	One Rep.	1.04
LSD at 5%			-	-	0.97		2.97
C.V. %			1.27	2.19	0.40		1.53
Error df			46	46	46		44
Significance			NS	NS	*		*

Cont'd. ...

Table 3.5.2. Cont'd. ...

Entry Name	FRANCE	IRAN	IRAQ	ITALY		JORDAN	LEBANON	MEXICO		MOROCCO	PORTUGAL
	Montboucher	Gorgan	Mosul	Catania	Tarquinia	Marow	Terbol	Culiacan	Hermosillo	Marchouch	Elvas
FLIP 83- 7C	183	136	154	152	114	152	154	69	87	118	107
FLIP 83- 41C	170	136	154	153	112	152	155	68	90	112	104
FLIP 84- 22C	178	124	153	152	114	154	154	68	87	118	105
FLIP 84- 28C	185	136	155	151	110	152	154	63	85	118	104
FLIP 84- 46C	188	136	154	152	114	154	156	69	88	122	108
FLIP 84- 48C	185	136	151	152	112	154	152	69	87	113	111
FLIP 85- 4C	190	141	157	155	118	157	158	83	94	122	115
FLIP 85- 12C	177	124	151	152	112	154	152	67	87	115	113
FLIP 85- 13C	175	124	151	151	112	151	152	67	87	118	104
FLIP 85- 18C	183	136	155	153	113	152	154	70	89	118	105
FLIP 85- 19C	183	136	150	152	113	150	153	70	90	118	107
FLIP 85- 44C	190	141	155	156	127	155	157	77	95	127	109
FLIP 85- 45C	177	136	154	152	112	152	154	69	90	112	105
FLIP 85- 49C	187	141	155	153	118	154	158	71	90	122	109
FLIP 85- 57C	182	124	153	151	113	150	154	67	88	118	106
FLIP 85- 58C	185	136	154	153	114	156	156	68	88	122	109
FLIP 85- 62C	190	141	153	156	125	154	160	78	90	127	113
FLIP 85-112C	180	124	151	152	118	154	156	64	88	122	107
FLIP 85-142C	185	141	157	152	110	153	154	66	90	113	107
FLIP 85-146C	180	124	151	152	115	152	155	65	89	118	111
FLIP 85-151C	180	124	155	151	109	154	154	65	81	112	106
ILC 195	174	124	153	153	116	151	155	65	88	110	111
ILC 3279	190	141	154	155	124	152	158	69	91	123	111
Local check	182	141	159	152	105	152	149	63	89	119	101
Location Mean	**182**	**133**	**154**	**153**	**115**	**153**	**155**	**69**	**89**	**118**	**108**
S.E. of Mean	2.19	0.00	0.32	0.64	1.95	1.62	0.69	1.83	0.78	0.00	1.25
LSD at 5%	6.23	0.00	0.90	1.82	5.60	-	1.96	5.22	2.23	0.00	3.55
C.V. %	2.08	0.00	0.36	0.73	2.95	1.83	0.77	4.61	1.53	0.00	2.00
Error df	46	46	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	NS	*	*	*	*	*

Cont'd. ...

Table 3.5.2. Cont'd. ...

Entry Name	SAUDI ARABIA	SPAIN	SYRIA					TURKEY			Overall Mean (1)
	Tabuk	Sevilla	Al Ghab	Idleb	Izra'a	Jindiress	Tel Hadya	Adana	Amasya	Diyar-bakir	
FLIP 83- 7C	112	127	140	161	105	152	149	135	71	132	130
FLIP 83- 41C	117	123	136	159	107	151	148	140	68	132	129
FLIP 84- 22C	115	126	143	160	105	154	147	135	78	133	130
FLIP 84- 28C	111	123	137	160	107	154	144	140	68	132	129
FLIP 84- 46C	115	126	146	162	109	159	150	130	68	133	132
FLIP 84- 48C	116	128	141	160	107	159	149	140	71	132	130
FLIP 85- 4C	129	130	147	164	108	161	157	137	71	132	135
FLIP 85- 12C	110	128	134	158	106	153	144	140	68	133	129
FLIP 85- 13C	109	128	135	158	107	149	146	140	66	131	128
FLIP 85- 18C	113	126	145	161	108	152	150	137	68	133	130
FLIP 85- 19C	116	125	139	158	108	151	144	137	71	133	129
FLIP 85- 44C	121	128	146	162	109	160	155	137	78	133	135
FLIP 85- 45C	117	125	139	159	105	153	147	135	74	132	130
FLIP 85- 49C	120	132	142	162	109	162	157	137	83	134	134
FLIP 85- 57C	112	127	139	159	107	152	150	140	71	132	129
FLIP 85- 58C	114	129	144	163	108	156	150	135	74	133	132
FLIP 85- 62C	118	132	145	163	108	161	156	140	78	132	135
FLIP 85-112C	115	124	139	161	105	156	151	137	78	132	130
FLIP 85-142C	113	125	140	160	109	153	147	140	78	134	130
FLIP 85-146C	117	126	140	159	107	151	153	137	74	131	130
FLIP 85-151C	111	126	136	162	108	153	147	137	78	133	129
ILC 195	119	127	136	157	104	151	146	135	68	131	129
ILC 3279	119	128	145	161	107	161	156	135	78	133	134
Local check	108	122	130	163	101	142	138	135	68	130	
Location Mean	**115**	**127**	**140**	**160**	**107**	**154**	**149**	**137**	**73**	**132**	
S.E. of Mean	1.65	0.78	1.23	0.82	0.92	1.74	1.46	0.00	0.00	0.66	
LSD at 5%	4.69	2.22	3.49	2.34	2.60	4.95	4.17	0.00	0.00	1.87	
C.V. %	2.48	1.07	1.51	0.89	1.48	1.95	1.70	0.00	0.00	0.86	
Error df	46	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	*	*	

(1) Horsham was excluded from the overall mean, * = Significant at $P \leq 0.05$,NS = not significant.

Table 3.5.3. Time to maturity (days) of entries at different locations in the CIYT-T during 1987/88.

	AFGHANISTAN	ALGERIA		FRANCE	IRAN	IRAQ	ITALY		JORDAN	LEBANON	MEXICO	
Entry Name	Kabul	Dahmouni	Setif	Montboucher	Gorgan	Mosul	Catania	Tarquinia	Marow	Terbol	Culiacan	Hermosillo
FLIP 83- 7C	206	180	172	257	172	188	202	184	179	197	129	148
FLIP 83- 41C	205	180	181	250	172	186	202	179	180	196	131	149
FLIP 84- 22C	205	180	173	260	169	187	202	186	181	199	131	149
FLIP 84- 28C	205	180	177	253	174	186	202	179	179	197	131	146
FLIP 84- 46C	206	180	172	260	171	188	202	186	181	199	127	149
FLIP 84- 48C	204	180	179	250	172	186	202	179	180	193	127	143
FLIP 85- 4C	204	180	180	260	177	188	202	188	179	202	140	155
FLIP 85- 12C	205	180	174	260	169	186	202	179	179	194	125	144
FLIP 85- 13C	205	180	174	250	170	186	202	179	180	198	127	146
FLIP 85- 18C	204	180	174	250	172	187	202	184	181	197	129	150
FLIP 85- 19C	205	180	172	257	172	185	202	184	179	194	128	148
FLIP 85- 44C	204	180	174	260	180	186	205	186	180	202	141	152
FLIP 85- 45C	206	180	180	257	172	187	202	181	179	199	136	149
FLIP 85- 49C	205	180	176	260	177	187	202	186	178	200	130	149
FLIP 85- 57C	205	180	171	260	169	187	199	186	177	199	128	146
FLIP 85- 58C	206	180	178	260	172	187	202	188	181	202	129	149
FLIP 85- 62C	204	180	178	257	177	188	202	179	179	198	132	148
FLIP 85-112C	204	180	174	260	170	186	202	184	179	195	129	149
FLIP 85-142C	205	180	173	253	180	185	202	181	179	198	128	149
FLIP 85-146C	203	180	173	260	169	184	199	179	180	193	130	144
FLIP 85-151C	205	180	176	253	169	185	202	179	183	195	130	145
ILC 195	205	180	174	260	169	187	202	184	181	194	131	147
ILC3279	202	180	173	260	175	186	202	179	180	194	132	149
Local check	204	180	181	257	175	185	202	184	181	193	127	133
Location Mean	205	180	175	257	173	186	202	183	180	197	130	147
S.E. of Mean	0.77	0.00	0.17	1.82	1.24	0.90	0.00	1.94	0.96	1.05	0.79	1.34
LSD at 5%	-	-	0.48	5.17	3.52	-	0.00	5.51	-	3.00	2.24	3.81
C.V. %	0.66	0.00	0.17	1.23	1.24	0.84	0.00	1.84	0.92	0.93	1.04	1.57
Error df	46	46	46	46	46	46	46	46	46	46	46	46
Significance	NS	NS	*	*	*	NS	*	*	NS	*	*	*

Cont'd. ...

Table 3.5.3. Cont'd. ...

Entry Name	MORROCO Marchouch	PORTUGAL Elvas	SAUDI ARABIA Tabuk	SPAIN Sevilla	SYRIA Al Ghab	SYRIA Idleb	SYRIA Izra'a	SYRIA Jindiress	SYRIA Tel Hadya	TURKEY Adana	TURKEY Amasya	TURKEY Diyar-bakir	Overall Mean
FLIP 83- 7C	187	218	174	215	184	200	145	203	191	178	137	176	185
FLIP 83- 41C	185	212	172	216	182	199	146	200	191	182	137	176	183
FLIP 84- 22C	190	220	174	215	186	201	147	204	194	177	137	177	185
FLIP 84- 28C	187	215	171	205	182	200	142	202	190	185	137	175	183
FLIP 84- 46C	191	214	174	224	186	200	146	204	193	180	138	176	185
FLIP 84- 48C	181	217	172	219	181	198	144	200	190	181	137	176	183
FLIP 85- 4C	196	218	177	227	188	201	152	206	195	180	140	177	188
FLIP 85- 12C	187	217	171	223	183	198	145	201	191	184	137	176	184
FLIP 85- 13C	187	212	172	217	185	200	145	201	192	182	137	176	183
FLIP 85- 18C	187	217	174	218	187	201	147	203	193	181	137	177	185
FLIP 85- 19C	189	222	171	214	184	199	146	202	191	181	138	176	184
FLIP 85- 44C	196	216	176	223	188	201	150	205	194	182	140	176	187
FLIP 85- 45C	180	216	171	213	185	200	147	203	191	179	138	176	184
FLIP 85- 49C	191	214	174	191	186	201	147	205	194	181	137	177	185
FLIP 85- 57C	187	223	173	224	185	200	146	203	193	184	137	176	185
FLIP 85- 58C	196	211	171	224	187	201	148	206	194	178	137	176	186
FLIP 85- 62C	196	216	173	226	185	200	146	203	193	185	137	176	186
FLIP 85-112C	187	219	172	211	181	200	142	201	190	180	137	175	184
FLIP 85-142C	180	221	172	211	188	201	149	202	193	182	137	176	185
FLIP 85-146C	187	216	174	213	180	197	142	200	190	180	137	174	183
FLIP 85-151C	180	217	171	209	181	200	144	201	190	181	137	175	183
ILC 195	191	216	170	213	178	198	143	200	191	177	134	175	184
ILC3279	196	219	173	226	181	200	146	203	191	178	137	176	185
Local check	190	217	172	200	183	200	144	197	188	178	137	173	
Location Mean	**189**	**217**	**173**	**216**	**184**	**200**	**146**	**202**	**192**	**181**	**137**	**176**	
S.E. of Mean	1.52	2.61	0.90	8.38	0.93	0.59	0.68	0.65	0.56	0.18	0.26	0.66	
LSD at 5%	4.33	–	2.56	–	2.65	1.69	1.93	1.85	1.59	3.37	0.73	–	
C.V. %	1.40	2.08	0.90	6.73	0.88	0.51	0.81	0.56	0.51	1.13	0.32	0.65	
Error df	46	46	46	46	46	46	46	46	46	46	46	46	
Significance	*	NS	*	NS	*	*	*	*	*	*	*	NS	

* = Significant at $P \leq 0.05$, NS = not significant.

Table 3.5.4. Plant height (cm) of entries at different locations in the CIYT-T during 1987/88.

Entry Name	AFGHANISTAN	ALGERIA			AUSTRALIA	CYPRUS	IRAN	IRAQ	ITALY		JORDAN	LEBANON	LIBYA	MEXICO
	Kabul	Dahmouni	Setif	Sidi-Bel Abbes	Horsham	Laxia	Gorgan	Mosul	Catania	Tarquinia	Marow	Terbol	El Marj	Culiacan
FLIP 83- 7C	58	50	25	55	60	54	56	65	67	75	53	56	54	96
FLIP 83- 41C	48	45	26	54	55	57	63	53	66	68	50	50	50	103
FLIP 84- 22C	54	51	28	65	-	55	61	65	64	75	54	54	46	101
FLIP 84- 28C	52	48	26	50	62	57	64	52	66	68	45	50	56	88
FLIP 84- 46C	58	50	23	55	45	56	62	52	64	72	48	51	50	98
FLIP 84- 48C	57	49	22	50	-	58	65	60	62	73	52	55	49	96
FLIP 85- 4C	50	47	24	53	-	57	55	62	67	72	53	56	53	89
FLIP 85- 12C	52	52	26	53	66	57	60	65	64	78	45	55	58	97
FLIP 85- 13C	47	52	28	59	55	58	63	57	64	73	63	51	58	93
FLIP 85- 18C	58	55	27	58	50	58	61	75	60	85	62	57	56	103
FLIP 85- 19C	53	46	23	50	45	55	57	60	67	78	48	54	48	98
FLIP 85- 44C	55	55	25	53	-	53	61	62	66	73	51	53	49	92
FLIP 85- 45C	52	52	29	55	55	60	52	65	70	73	55	57	49	98
FLIP 85- 49C	60	52	28	70	55	59	60	58	68	83	53	56	58	98
FLIP 85- 57C	53	50	27	58	55	53	52	70	63	77	61	55	53	97
FLIP 85- 58C	53	51	31	45	-	57	65	70	67	92	43	60	56	95
FLIP 85- 62C	53	51	29	47	-	57	57	65	65	77	44	60	58	105
FLIP 85-112C	53	47	26	47	65	55	63	63	66	72	38	51	48	99
FLIP 85-142C	57	53	23	50	60	54	60	65	66	75	58	53	57	99
FLIP 85-146C	50	48	27	55	60	54	60	57	63	75	53	53	49	109
FLIP 85-151C	60	48	27	45	60	53	60	63	66	68	48	51	54	101
ILC 195	48	52	26	55	55	53	58	60	64	65	43	48	50	99
ILC 3279	60	59	28	65	56	61	50	62	73	82	54	57	55	106
Local check	38	42	22	40	65	-	60	60	62	65	45	45	40	97
Location Mean	53	50	25	54	57	56	59	62	65	75	51	54	52	98
S.E. of Mean	3.94	1.64	1.30	One Rep.	One Rep.	1.94	3.81	5.98	2.14	3.17	4.66	2.64	3.19	3.16
LSD at 5%	-	4.67	3.70			-	-	-	-	9.03	13.26	7.51	9.07	9.01
C.V. %	12.80	5.66	8.63			4.91	11.11	16.75	5.66	7.35	15.86	8.52	10.55	5.58
Error df	46	46	46			22	46	46	46	46	46	46	46	46
Significance	NS	*	*			NS	NS	NS	NS	*	*	*	*	*

Cont'd. ...

Table 3.5.4. Cont'd. ...

Entry Name	MEXICO	MOROOCO	SPAIN	SAUDI ARABIA	PORTUGAL	SYRIA					TURKEY			Overall Mean (1)
	Hermosillo	March - ouch	Elvas	Tabuk	Sevilla	Al Ghab	Idleb	Izra'a	Jindiress	Tel - Hadya	Adana	Amasya	Diya-rbakir	
FLIP 83- 7C	72	63	68	98	70	85	55	51	64	66	62	94	37	64
FLIP 83- 41C	75	57	73	98	62	82	55	55	63	64	64	93	37	62
FLIP 84- 22C	74	87	80	107	73	83	61	52	65	67	58	88	33	65
FLIP 84- 28C	68	67	82	90	60	85	49	50	68	69	71	81	37	61
FLIP 84- 46C	77	83	73	96	73	82	62	51	69	64	62	90	38	63
FLIP 84- 48C	73	78	72	99	63	82	57	49	63	68	68	97	38	63
FLIP 85- 4C	70	60	75	103	68	87	58	50	67	65	65	88	34	63
FLIP 85- 12C	76	98	75	107	70	87	56	51	73	69	67	87	39	66
FLIP 85- 13C	77	70	73	92	73	83	59	51	70	69	65	80	38	64
FLIP 85- 18C	76	100	78	106	75	90	64	52	76	74	59	93	42	69
FLIP 85- 19C	78	92	70	98	70	85	60	52	72	70	68	94	39	64
FLIP 85- 44C	80	70	77	100	68	88	55	53	68	68	66	97	37	64
FLIP 85- 45C	67	68	78	106	68	87	56	54	69	67	70	90	43	65
FLIP 85- 49C	69	70	75	94	68	87	63	55	68	67	57	95	40	66
FLIP 85- 57C	76	75	70	102	70	87	57	52	66	68	66	92	39	65
FLIP 85- 58C	73	82	75	101	73	90	51	55	70	70	65	96	42	66
FLIP 85- 62C	67	72	77	121	77	88	63	54	63	65	69	99	40	66
FLIP 85-112C	73	50	79	100	45	82	51	52	62	64	63	92	36	61
FLIP 85-142C	77	95	77	106	63	88	62	54	72	76	73	89	41	67
FLIP 85-146C	72	72	65	94	65	80	57	50	63	62	59	85	37	62
FLIP 85-151C	68	77	72	95	63	85	45	51	70	65	64	89	33	62
ILC 195	63	40	75	97	55	85	51	51	62	64	62	82	34	59
ILC 3279	77	77	80	100	70	92	58	56	68	71	73	96	36	67
Local check	48	52	72	92	52	67	60	37	48	42	59	-	29	
Location Mean	**72**	**73**	**75**	**100**	**67**	**85**	**57**	**52**	**67**	**66**	**65**	**87**	**37**	
S.E. of Mean	3.63	11.71	3.67	3.78	1.96	2.47	3.03	1.09	3.70	1.36	2.01	3.24	1.81	
LSD at 5%	10.34	-	-	10.76	5.58	7.03	8.62	3.11	10.54	3.86	5.72	9.23	5.15	
C.V. %	8.76	27.77	8.51	6.55	5.11	5.05	9.24	3.67	9.61	3.53	5.37	6.46	8.38	
Error df	46	46	46	46	46	46	46	46	46	46	46	46	46	
Significance	*	NS	NS	*	*	*	*	*	*	*	*	*	*	

(1) Horsham is excluded from the Overall mean, * = Significant at $P \leq 0.05$, NS = not significant.

Table 3.5.5. 100-Seed weight (g) of entries at different locations in the CIYT-T during 1987/88.

	AFGHANISTAN	ALGERIA		AUSTRALIA	CYPRUS	FRANCE	IRAN	IRAQ	ITALY		LEBANON
Entry Name	Kabul	Dahmouni	Setif	Horsham	Laxia	Montboucher	Gorgan	Mosul	Catania	Tarquinia	Terbol
FLIP 83- 7C	35	35	36	28	29	42	38	34	33	42	39
FLIP 83- 41C	37	37	36	32	32	40	37	33	35	38	44
FLIP 84- 22C	32	32	31	-	29	37	40	32	30	36	36
FLIP 84- 28C	32	39	28	23	27	36	33	32	28	33	34
FLIP 84- 46C	34	34	34	27	28	39	38	45	32	39	37
FLIP 84- 48C	34	36	31	-	28	40	41	32	31	35	36
FLIP 85- 4C	42	43	44	-	37	50	44	43	45	53	52
FLIP 85- 12C	33	34	31	26	30	41	35	32	32	38	40
FLIP 85- 13C	36	40	40	29	36	42	37	38	38	45	43
FLIP 85- 18C	35	38	36	33	29	42	44	35	37	43	41
FLIP 85- 19C	35	36	36	31	30	39	40	35	35	42	39
FLIP 85- 44C	41	43	41	-	37	46	43	36	39	48	45
FLIP 85- 45C	39	36	40	23	36	45	43	35	37	43	40
FLIP 85- 49C	34	36	28	31	30	40	38	34	34	40	40
FLIP 85- 57C	39	36	34	32	30	43	40	36	34	41	40
FLIP 85- 58C	38	33	36	-	31	42	43	36	35	42	40
FLIP 85- 62C	38	39	-	-	34	44	35	36	38	45	41
FLIP 85-112C	30	28	28	24	25	36	37	27	26	34	31
FLIP 85-142C	38	33	34	24	31	42	42	36	33	41	47
FLIP 85-146C	34	32	26	28	26	39	38	31	28	37	35
FLIP 85-151C	35	33	32	27	31	38	35	34	30	37	34
ILC 195	26	34	26	22	22	31	36	24	23	29	30
ILC 3279	29	30	25	24	25	36	38	26	26	32	32
Local check	21	37	27	26	-	32	40	30	32	39	40
Location Mean	**35**	**35**	**33**	**27**	**30**	**40**	**39**	**34**	**33**	**40**	**39**
S.E. of Mean	1.35	2.61	One Rep.	One Rep.	1.40	1.01	2.82	2.89	0.94	1.38	1.95
LSD at 5%	3.83	7.43			3.35	2.88	-	8.22	2.68	3.92	5.54
C.V. %	6.75	12.74			6.56	4.37	12.54	14.80	4.95	6.00	8.66
Error df	46	46			22	46	46	46	46	46	46
Significance	*	*			*	*	NS	*	*	*	*

Cont'd. ...

Table 3.5.5. Cont'd. ...

Entry Name	MEXICO		PORTUGAL	SPAIN	SYRIA			TURKEY		Overall Mean (1)
	Culiacan	Hermosillo	Elvas	Sevilla	Idleb	Jindiress	Tel Hadya	Adana	Amasya	
FLIP 83- 7C	39	36	39	35	36	33	33	28	43	36
FLIP 83- 41C	41	38	36	36	35	28	31	34	42	37
FLIP 84- 22C	36	34	38	34	30	27	29	28	39	33
FLIP 84- 28C	34	36	35	33	28	24	25	35	35	32
FLIP 84- 46C	37	39	35	36	30	29	31	31	42	35
FLIP 84- 48C	36	31	34	36	28	26	28	26	38	33
FLIP 85- 4C	52	46	47	44	44	42	46	38	53	45
FLIP 85- 12C	39	36	36	37	32	28	29	36	40	35
FLIP 85- 13C	44	43	40	40	38	35	36	33	43	40
FLIP 85- 18C	45	42	43	41	36	35	35	31	44	38
FLIP 85- 19C	41	38	39	39	34	32	33	39	40	37
FLIP 85- 44C	47	40	45	42	40	37	38	37	50	42
FLIP 85- 45C	45	42	43	38	39	35	35	37	48	40
FLIP 85- 49C	37	38	36	36	36	33	33	35	41	36
FLIP 85- 57C	41	41	37	35	36	31	32	33	45	38
FLIP 85- 58C	40	41	36	38	32	32	33	31	41	37
FLIP 85- 62C	45	37	42	42	38	36	39	36	49	40
FLIP 85-112C	31	29	31	30	26	23	24	30	39	30
FLIP 85-142C	46	46	36	42	41	33	41	36	48	39
FLIP 85-146C	33	33	32	35	29	25	25	30	36	33
FLIP 85-151C	36	34	38	37	31	28	30	28	41	33
ILC 195	30	26	28	29	23	21	22	29	29	27
ILC 3279	33	30	31	32	25	23	22	30	36	30
Local check	47	55	34	50	26	24	23	40	-	
Location Mean	**40**	**38**	**37**	**37**	**33**	**30**	**31**	**33**	**40**	
S.E. of Mean	1.19	1.95	1.55	1.18	1.33	1.19	0.58	1.43	2.11	
LSD at 5%	3.38	5.55	4.42	3.35	3.79	3.40	1.99	4.08	5.99	
C.V. %	5.17	8.90	7.24	5.46	6.99	6.21	3.21	7.54	9.12	
Error df	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	*	

(1) Horsham and Setif were excluded from the overall mean., * = Significant at $P \leq 0.05$,NS = not significant.

Table 3.5.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-T during 1987/88.

	AFGHANISTAN		ALGERIA						AUSTRALIA		CYPRUS		FRANCE		IRAN		IRAQ	
	Kabul		Dahmouni		Setif		Sidi Bel Abbes		Horsham		Laxia		Montboucher		Gorgan		Mosul	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 7C	21	9	156	9	548	19	1478	15	656	11	1074	19	1472	19	1257	11	3296	6
FLIP 83- 41C	17	20	116	21	408	22	1226	22	800	6	1757	2	1541	16	1190	18	2917	15
FLIP 84- 22C	23	8	132	17	681	5	1707	7	–	–	1094	17	1483	18	1433	3	2444	21
FLIP 84- 28C	21	10	134	15	544	20	1715	6	689	9	1458	9	2022	4	1170	19	3037	11
FLIP 84- 46C	25	6	163	7	529	21	1551	12	456	15	1444	10	1555	14	1223	13	3435	4
FLIP 84- 48C	21	12	158	8	649	7	1463	16	–	–	1686	4	1805	7	1350	6	3148	8
FLIP 85- 4C	13	24	114	22	641	10	1663	9	–	–	1092	18	952	22	1260	10	2454	20
FLIP 85- 12C	15	23	164	5	563	17	1520	14	233	17	1931	1	2454	1	1510	2	2639	16
FLIP 85- 13C	18	18	173	3	726	3	1932	2	578	12	1476	7	1654	10	1237	12	2130	24
FLIP 85- 18C	20	14	133	16	404	23	1890	3	672	10	1021	21	1107	20	1360	5	2546	18
FLIP 85- 19C	19	17	195	1	616	12	1650	10	956	5	1592	6	1612	11	1140	20	3102	9
FLIP 85- 44C	19	16	122	19	565	16	1408	19	–	–	986	22	943	23	1217	16	4148	1
FLIP 85- 45C	27	5	116	20	584	14	1414	18	467	14	1340	14	1565	12	1320	8	3000	12
FLIP 85- 49C	21	13	137	14	648	9	1971	1	800	7	1417	12	2004	5	1520	1	3056	10
FLIP 85- 57C	24	7	141	13	578	15	1814	4	378	16	1376	13	1777	8	1340	7	3509	2
FLIP 85- 58C	16	22	108	23	789	1	1348	20	–	–	1111	16	1544	15	720	24	3194	7
FLIP 85- 62C	16	21	164	4	648	8	1585	11	–	–	740	23	597	24	1307	9	2241	23
FLIP 85-112C	35	1	164	6	612	13	1421	17	1472	1	1056	20	1490	17	1220	15	2343	22
FLIP 85-142C	19	15	153	10	307	24	1265	21	150	18	1302	15	1003	21	1030	21	3389	5
FLIP 85-146C	27	3	143	12	557	18	1677	8	700	8	1424	11	1747	9	1200	17	2500	19
FLIP 85-151C	21	11	132	18	690	4	921	24	1006	3	1694	3	1561	13	903	23	2917	13
ILC 195	27	4	187	2	758	2	1530	13	1006	4	1462	8	2267	2	1417	4	2917	14
ILC 3279	17	19	152	11	671	6	1749	5	1283	2	1667	5	2027	3	947	22	2593	17
Local check	32	2	39	24	629	11	1007	23	544	13	–	–	1958	6	1223	14	3472	3
Location Mean	**21**		**141**		**597**		**1538**		**714**		**1356**		**1589**		**1229**		**2934**	
S.E. of Mean	3.34		12.46		75.06		One Rep.		One Rep.		100.30		155.68		115.08		236.98	
LSD at 5%	9.49		35.47		213.65						285.88		443.15		327.58		674.56	
C.V. %	26.98		15.25		21.75						12.81		16.97		16.22		13.99	
Error df	46		46		46						44		46		46		46	
Significance	*		*		*						*		*		*		*	
Entry > L. Check	0		23		0						–		1		0		1	

Cont'd. ...

Table 3.5.6. Cont'd. ...

	ITALY				JORDAN		LEBANON		LIBYA		MEXICO				MOROCCO	
	Catania		Tarquinia		Marow		Terbol		El Marj		Culiacan		Hermosillo		Marchouch	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 7C	1480	15	2016	21	1314	5	2093	23	981	5	2286	4	1115	14	2708	17
FLIP 83- 41C	1435	18	2153	19	714	18	2214	13	701	24	2141	9	949	19	2708	16
FLIP 84- 22C	1365	23	2328	17	722	16	2178	15	790	18	1848	18	1131	13	2292	22
FLIP 84- 28C	1458	16	1931	23	1170	7	2180	14	920	11	2252	6	1404	3	3056	7
FLIP 84- 46C	1365	22	2354	15	595	22	2098	20	823	16	2089	13	1048	16	2500	21
FLIP 84- 48C	1550	10	2519	8	416	24	2303	9	831	15	2159	8	1153	11	2847	14
FLIP 85- 4C	1760	1	2910	2	463	23	2417	5	743	21	1627	24	701	24	2500	20
FLIP 85- 12C	1574	7	2429	13	1638	2	2423	4	1097	1	2633	1	1333	4	3333	4
FLIP 85- 13C	1458	17	1968	22	1725	1	2319	8	943	9	2092	12	1417	2	2986	9
FLIP 85- 18C	1597	4	2365	14	889	13	2399	6	808	17	1781	20	1300	5	2569	19
FLIP 85- 19C	1643	3	2450	12	1035	11	2234	12	930	10	2132	10	1029	17	2986	8
FLIP 85- 44C	1597	5	2471	10	900	12	2873	1	759	20	1639	23	778	23	2708	15
FLIP 85- 45C	1480	14	2111	20	1098	9	2502	2	833	14	1839	19	885	20	2986	10
FLIP 85- 49C	1643	2	2286	18	714	17	2148	17	952	7	1685	22	975	18	2569	18
FLIP 85- 57C	1526	12	2503	9	1395	4	2360	7	975	6	2627	2	1052	15	3194	5
FLIP 85- 58C	1596	6	2450	11	678	20	1946	24	888	13	2355	3	1200	9	3056	6
FLIP 85- 62C	1434	19	1524	24	1094	10	2425	3	981	4	1999	15	872	21	2917	13
FLIP 85-112C	1388	21	2349	16	754	15	2246	10	944	8	1893	16	1179	10	2917	12
FLIP 85-142C	1434	20	2868	3	608	21	2132	18	901	12	2107	11	835	22	2222	23
FLIP 85-146C	1551	8	2841	4	1438	3	2093	22	715	23	2255	5	1227	8	2917	11
FLIP 85-151C	1528	11	2545	7	1178	6	2093	21	727	22	1863	17	1290	6	3403	3
ILC 195	1551	9	3212	1	1168	8	2155	16	1009	3	2210	7	1232	7	3542	1
ILC 3279	1157	24	2746	6	794	14	2112	19	783	19	1721	21	1145	12	3472	2
Local Check	1504	13	2783	5	706	19	2238	11	1088	2	2065	14	1564	1	1250	24
Location Mean	**1503**		**2421**		**967**		**2257**		**880**		**2054**		**1117**		**2818**	
S.E. of Mean	81.57		320.00		276.81		198.27		107.22		144.73		128.56		204.18	
LSD at 5%	232.19		–		–		–		–		411.97		365.95		581.21	
C.V. %	9.40		22.89		49.58		15.21		21.10		12.20		19.93		12.55	
Error df	46		46		46		46		46		46		46		46	
Significance	*		NS		NS		NS		NS		*		*		*	
Entry > L. Check	1		–		–		–		–		2		0		23	

Cont'd. ...

Table 3.5.6. Cont'd. ...

	PORTUGAL		SAUDI ARABIA		SPAIN				SYRIA					
	Elvas		Tabuk		Cordoba		Sevilla		Al Ghab		Idleb		Izra'a	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 7C	3267	5	2750	14	3819	7	2337	7	2143	22	1544	11	1127	11
FLIP 83- 41C	2327	22	2917	10	4111	2	1888	16	2503	13	1742	6	1354	1
FLIP 84- 22C	2539	20	2417	20	3865	6	2767	3	1942	24	1328	18	1079	16
FLIP 84- 28C	3133	10	3000	9	4045	3	1705	21	2640	10	1332	17	1011	18
FLIP 84- 46C	3152	9	2500	17	2708	19	2579	4	2153	21	1532	12	820	22
FLIP 84- 48C	3122	12	3083	6	4038	4	2257	9	2407	15	1903	3	947	20
FLIP 85- 4C	2305	23	2000	23	2431	21	1635	22	2577	11	1293	20	831	21
FLIP 85- 12C	2949	15	3417	4	3698	10	2500	5	2915	2	1584	9	1122	13
FLIP 85- 13C	3561	3	2667	16	4142	1	2843	1	2640	9	1387	16	1354	2
FLIP 85- 18C	2854	16	2417	18	3337	13	1882	17	2376	17	1448	14	974	19
FLIP 85- 19C	3615	2	2917	11	3753	8	2821	2	2407	16	1803	5	1106	15
FLIP 85- 44C	2439	21	2167	21	2906	17	1564	23	2672	6	1965	1	1180	9
FLIP 85- 45C	2987	14	3083	7	3385	12	1921	15	2661	8	1927	2	1265	3
FLIP 85- 49C	2785	18	2750	15	2184	22	1990	14	2217	20	1401	15	1196	6
FLIP 85- 57C	3497	4	2833	12	3715	9	2354	6	2339	19	1877	4	1180	8
FLIP 85- 58C	3129	11	2833	13	2684	20	2177	10	2354	18	1016	23	1185	7
FLIP 85- 62C	2574	19	2167	22	1816	24	2083	11	2450	14	1560	10	1148	10
FLIP 85-112C	3157	8	3667	2	3403	11	1713	20	2799	4	1212	21	1243	4
FLIP 85-142C	2850	17	2417	19	2101	23	1846	19	2026	23	1308	19	810	23
FLIP 85-146C	3082	13	4000	1	3882	5	2312	8	2545	12	1516	13	1122	14
FLIP 85-151C	2244	24	3583	3	2889	18	1865	18	2672	7	1666	7	1074	17
ILC 195	3232	7	3167	5	3240	14	2021	13	2862	3	1603	8	1122	12
ILC 3279	3259	6	3000	8	2944	16	2077	12	2799	5	1010	24	1212	5
Local Check	3815	1	1750	24	3059	15	754	24	2989	1	1085	22	677	24
Location Mean	2995		2813		3257		2079		2504		1502		1089	
S.E. of Mean	281.65		256.56		455.58		225.89		164.51		205.02		108.86	
LSD at 5%	801.73		730.30		1296.81		643.01		468.27		583.60		309.88	
C.V. %	16.29		15.80		24.23		18.82		11.38		23.65		17.31	
Error df	46		46		46		46		46		46		46	
Significance	*		*		*		*		*		*		*	
Entry > L. Check	0		17		0		23		0		6		18	

Cont'd. ...

Table 3.5.6. Cont'd. ...

	SYRIA				TUNISIA				TURKEY						Overall Mean (1)	
	Jindiress		Tel Hadya		Beja		Oued Meliz		Adana		Amasya		Diyarbakir			
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 7C	1767	12	1885	14	1148	9	1068	17	469	24	1614	12	1160	14	1702	13
FLIP 83- 41C	1693	18	2030	8	964	18	1688	2	1089	14	1852	4	1240	11	1709	12
FLIP 84- 22C	1481	22	1804	20	1080	11	1108	11	705	19	1485	18	1148	16	1599	20
FLIP 84- 28C	1333	24	2014	10	1248	6	1772	1	1691	1	1571	14	1289	7	1801	7
FLIP 84- 46C	1593	20	1904	13	1348	2	1332	6	1131	13	1762	6	1281	9	1674	16
FLIP 84- 48C	1410	23	1757	22	1004	16	1160	9	941	17	1608	13	953	23	1746	8
FLIP 85- 4C	2228	3	2366	3	940	19	1080	14	617	21	1085	23	1370	4	1519	22
FLIP 85- 12C	1693	17	2019	9	1036	13	648	23	1484	3	1181	21	1136	17	1883	1
FLIP 85- 13C	1899	8	1821	18	888	20	1408	3	1439	4	1455	19	1230	13	1826	5
FLIP 85- 18C	1992	7	1824	17	1148	8	1112	10	1235	9	1735	7	1422	2	1653	17
FLIP 85- 19C	2270	2	2186	4	1340	3	948	20	1344	7	1656	10	1363	5	1858	3
FLIP 85- 44C	2212	4	2439	2	1052	12	1340	5	1180	12	1323	20	1296	6	1685	15
FLIP 85- 45C	2148	5	2181	5	556	24	1388	4	853	18	2032	2	1059	19	1742	9
FLIP 85- 49C	1730	15	1789	21	968	17	884	22	1281	8	1714	8	1101	18	1646	18
FLIP 85- 57C	1788	11	1756	23	1180	7	984	19	991	16	1529	16	1264	10	1843	4
FLIP 85- 58C	1577	21	1844	16	828	22	1060	18	617	20	1661	9	919	24	1616	19
FLIP 85- 62C	1802	10	2040	7	688	23	920	21	1568	2	1159	22	1432	1	1515	23
FLIP 85-112C	1659	19	2131	6	1008	15	1104	12	1197	11	1624	11	1235	12	1694	14
FLIP 85-142C	1706	16	1943	11	1036	14	1080	15	1042	15	1566	15	1015	20	1527	21
FLIP 85-146C	1833	9	1848	15	1316	4	1284	8	580	22	1910	3	1407	3	1825	6
FLIP 85-151C	1746	14	1933	12	1260	5	1076	16	1370	5	1788	5	1005	21	1711	11
ILC 195	2032	6	1726	24	1116	10	1284	7	1363	6	1524	17	1158	15	1864	2
ILC 3279	1754	13	1817	19	872	21	1084	13	1219	10	2175	1	954	22	1721	10
Local Check	2479	1	2552	1	1480	1	452	24	540	23	-	-	1286	8		
Location Mean	**1826**		**1984**		**1063**		**1136**		**1081**		**1542**		**1197**			
S.E. of Mean	196.63		98.07		163.43		262.60		98.86		182.70		138.48			
LSD at 5%	559.71		279.16		-		-		281.41		520.05		-			
C.V. %	18.65		8.56		21.75		32.69		15.84		20.52		20.04			
Error df	46		46		23		23		46		46		46			
Significance	*		*		NS		NS		*		*		NS			
Entry > L. Check	0		0		-		-		18		-		-			

(1) Kabul and Horsham were excluded from the overall mean, * = Significant at $P \leq 0.05$, NS = not significant.

Table 3.5.7. The five heaviest seed yielding entries at the individual locations in the CIYT-T during 1987/88.

	AFGHANISTAN	ALGERIA			AUSTRALIA	CYPRUS	FRANCE	IRAN
Rank	Kabul	Dahmouni	Setif	Sidi Bel Abbes	Horsham	Laxia	Montboucher	Gorgan
1	FLIP85-112C	FLIP85- 19C	FLIP85- 58C	FLIP85- 49C	FLIP85-112C	FLIP85- 12C	FLIP85- 12C	FLIP85- 49C
2	Local Check	ILC 195	ILC 195	FLIP85- 13C	ILC 3279	FLIP83- 41C	ILC 195	FLIP85- 12C
3	FLIP85-146C	FLIP85- 13C	FLIP85- 13C	FLIP85- 18C	FLIP85-151C	FLIP85-151C	ILC 3279	FLIP84- 22C
4	ILC 195	FLIP85- 62C	FLIP85-151C	FLIP85- 57C	ILC 195	FLIP84- 48C	FLIP84- 28C	ILC 195
5	FLIP85- 45C	FLIP85- 12C] FLIP85-112C]	FLIP85- 22C	ILC 3279	FLIP85- 19C	ILC 3279	FLIP85- 49C	FLIP85- 18C

Cont'd. ...

Table 3.5.7. Cont'd. ...

	IRAQ	ITALY		JORDAN	LEBANON	LIBYA	MEXICO	
Rank	Mosul	Catania	Tarquinia	Marow	Terbol	El Marj	Culiacan	Hermosillo
1	FLIP85- 44C	FLIP85- 4C	ILC 195	FLIP85- 13C	FLIP85- 44C	FLIP85- 12C	FLIP85- 12C	Local Check
2	FLIP85- 57C	FLIP85- 49C	FLIP85- 4C	FLIP85- 12C	FLIP85- 45C	Local Check	FLIP85- 57C	FLIP85- 13C
3	Local Check	FLIP85- 19C	FLIP85-142C	FLIP85-146C	FLIP85- 62C	ILC 195	FLIP85- 58C	FLIP84- 28C
4	FLIP84- 46C	FLIP85- 18C	FLIP85-146C	FLIP85- 57C	FLIP85- 12C	FLIP82- 62C	FLIP83- 7C	FLIP85- 12C
5	FLIP85-142C	FLIP85- 44C	Local Check	FLIP83- 7C	FLIP85- 4C	FLIP83- 7C	FLIP85-146C	FLIP85- 18C

Cont'd. ...

Table 3.5.7. Cont'd. ...

	MOROCCO	PORTUGAL	SAUDI ARABIA	SPAIN		SYRIA		
Rank	Marchouch	Elvas	Tabuk	Cordoba	Sevilla	Al Ghab	Idleb	Izra'a
1	ILC 195	Local Check	FLIP85-146C	FLIP85- 13C	FLIP85- 13C	Local Check	FLIP85- 44C	FLIP83- 41C
2	ILC 3279	FLIP85- 19C	FLIP85-112C	FLIP83- 41C	FLIP85- 19C	FLIP85- 12C	FLIP85- 45C	FLIP85- 13C
3	FLIP85-151C	FLIP85- 13C	FLIP85-151C	FLIP84- 28C	FLIP84- 22C	ILC 195	FLIP84- 48C	FLIP85- 45C
4	FLIP85- 12C	FLIP85- 57C	FLIP85- 12C	FLIP84- 48C	FLIP84- 46C	FLIP85-112C	FLIP85- 57C	FLIP85-112C
5	FLIP85- 57C	FLIP83- 7C	ILC 195	FLIP85-146C	FLIP85- 12C	ILC 3279	FLIP85- 19C	ILC 3279

Cont'd. ...

Table 3.5.7. Cont'd. ...

	SYRIA		TUNISIA		TURKEY		
Rank	Jindiress	Tel Hadya	Beja	Oued Meliz	Adana	Amasya	Diyarbakir
1	Local Check	Local Check	Local Check	FLIP84- 28C	FLIP84- 28C	ILC 3279	FLIP85- 62C
2	FLIP85- 19C	FLIP85- 44C	FLIP84- 46C	FLIP83- 41C	FLIP85- 62C	FLIP85- 45C	FLIP85- 18C
3	FLIP85- 4C	FLIP85- 4C	FLIP85- 19C	FLIP85- 13C	FLIP85- 12C	FLIP85-146C	FLIP85-146C
4	FLIP85- 44C	FLIP85- 19C	FLIP85-146C	FLIP85- 45C	FLIP85- 13C	FLIP83- 41C	FLIP85- 4C
5	FLIP85- 45C	FLIP85- 45C	FLIP85-151C	FLIP85- 44C	FLIP85-151C	FLIP85-151C	FLIP85- 19C

The bracket indicates entries having the same rank.

average over locations, the entry means ranged from 128 to 135 days for time to flowering, 183 to 187 days for time to maturity, 59 to 69 cm for plant height, and 27 to 45 g for 100-seed weight. The tallest entry across locations was FLIP 85-18C.

The highest mean seed yield (Table 3.5.6.) was obtained at Cordoba in Spain (3257 kg/ha) and was followed by Elvas in Portugal (2995 kg/ha), Mosul in Iraq (2934 kg/ha), Marchouch in Morocco (2818 kg/ha) and Tabuk in Saudi Arabia (2813 kg/ha). The seed yields at Kabul in Afghanistan and Dahmouni in Algeria were extremely poor (<150 kg/ha). The entries FLIP 85-44C at Mosul in Iraq and FLIP 85-13C at Cordoba in Spain gave more than 4100 kg/ha. On an average over locations, the entries, FLIP 85-12C, ILC 195, FLIP 85-19C, FLIP 85-57C and FLIP 85-13C with respective seed yields of 1883, 1864, 1858, 1843 and 1826 kg/ha were among the five best yielders. The ANOVA for seed yield revealed that the local check was excelled by a significant margin ($P \leq 0.05$) by some entries at 11 locations. The five heaviest yielding entries in each of the locations are given in Table 3.5.7. The relative frequency of occurence of entries among the top five heaviest yielders revealed that FLIP 85-13C and ILC 195 were relatively more adaptable.

3.6. CHICKPEA INTERNATIONAL YIELD TRIAL-EARLY (CIYT-E)

Material

The material for CIYT-E comprised of 7 test entries, and one local check to be supplied by the cooperator. The test entries were resistant to ascochyta blight and were selected from the local and regional yield trials based on their superior yield performance. All of these test entries, were developed through hybridization at ICARDA.

Methods and Manangement

The trial design was a randomized complete block with three replications. The suggested plot size was four rows 4 m long with an inter-and intra row spacing of 30- and 10 cm respectively.

Eleven sets of trials were distributed to cooperators in 6 countries and the results were returned from 4 sets covering 3 countries. The agronomic practices employed at different locations are shown in Table 3.6.1.

Results and Discussion

Mean for time to flowering, time to maturity, plant height, and 100-seed weight are compiled in Tables 3.6.2., 3.6.3., 3.6.4. and 3.6.5., respectively. Time to flowering ranged from 107 days (for FLIP 85-105C and FLIP 85-108C) to 111 days (for FLIP 81-293C and FLIP 85-137C). The location means for time to flowering varied from 63 days at Debre Zeit in Ethiopia to 147 days at Breda in Syria. The time to maturity ranged from 153 days for FLIP 85-108C to 157 days for FLIP 81-293C. The entry

Table 3.6.1. Agronomic data for different locations in the CIYT-E during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ETHIOPIA	Debre Zeit	02.08.88	28.12.88	-			-	-	Dubie
SUDAN	Hudeiba	07.11.87	03.88	43			10	-	Local
SYRIA	Breda	19.11.87	31.05.88	-			-	-	
SYRIA	Tel Hadya	25.11.87	04.06.88	30	50		-	Kerb, Igran	ILC 482

Table 3.6.2. Time to flowering (days) of entries at different locations in the CIYT-E during 1987/88.

Entry Name	Pedigree	Origin	ETHIOPIA	SUDAN	SYRIA		Overall Mean
			Debre Zeit	Hudeiba	Breda	Tel Hadya	
FLIP 81-293C	X 79 TH 8/ILC 1919XILC 496	ICARDA/ICRISAT	68	84	148	145	111
FLIP 84-124C	X 81 TH 53/ILC 1920XILC 2506	ICARDA/ICRISAT	66	83	147	141	109
FLIP 85- 82C	X 83 TH 114/FLIP 82-81CXILC 451	ICARDA/ICRISAT	67	83	147	142	110
FLIP 85-105C	X 81 TH 165/ILC 3279XILC 484	ICARDA/ICRISAT	63	77	147	142	107
FLIP 85-108C	X 83 TH 116/FLIP 82-64CXFLIP 82-87C	ICARDA/ICRISAT	65	75	147	142	107
FLIP 85-136C	X 81 TH 120/ILC 200XILC 484	ICARDA/ICRISAT	64	84	147	141	109
FLIP 85-137C	X 79 TH 177/ILC 195XILC 482	ICARDA/ICRISAT	66	85	149	143	111
Local Check			47	61	144	139	-
Location mean			**63**	**79**	**147**	**142**	
S.E. of Mean			1.10	4.18	1.09	0.49	
LSD at 5%			3.33	12.68	-	1.47	
C.V. %			3.00	9.16	1.28	0.59	
Error df			14	14	14	14	
Significance			*	*	NS	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.6.3. Time to maturity (days) of entries at different locations in the CIYT-E during 1987/88.

Entry Name	ETHIOPIA	SUDAN	SYRIA		Overall Mean
	Debre Zeit	Hudeiba	Breda	Tel Hadya	
FLIP 81-293C	124	119	192	192	157
FLIP 84-124C	125	119	190	189	156
FLIP 85- 82C	126	119	190	189	156
FLIP 85-105C	126	115	190	191	155
FLIP 85-108C	121	114	189	189	153
FLIP 85-136C	126	118	190	188	156
FLIP 85-137C	124	118	190	189	155
LOCAL CHECK	114	96	188	189	
Location mean	**123**	**115**	**190**	**189**	
S.E. of Mean	1.87	1.06	0.52	0.45	
LSD at 5%	5.66	3.21	1.57	1.35	
C.V. %	2.62	1.60	0.47	0.41	
Error df	14	14	14	14	
Significance	*	*	*	*	

* = Significant at $P \leq 0.05$.

Table 3.6.4. Plant height (cm) of entries at different locations in the CIYT-E during 1987/88.

Entry Name	ETHIOPIA	SYRIA		Overall Mean
	Debre Zeit	Breda	Tel Hadya	
FLIP 81-293C	73	46	50	56
FLIP 84-124C	65	43	50	53
FLIP 85- 82C	67	51	51	56
FLIP 85-105C	53	52	52	53
FLIP 85-108C	61	44	42	49
FLIP 85-136C	76	56	55	62
FLIP 85-137C	71	47	46	55
Local Check	53	45	40	-
Location mean	**65**	**48**	**48**	
S.E. of Mean	5.79	1.60	0.65	
LSD at 5%	-	4.85	1.98	
C.V. %	15.49	5.76	2.35	
Error df	14	14	14	
Significance	NS	*	*	

* = Significant at $P \leq 0.05$, NS = Not significnat.

Table 3.6.5. 100-Seed weight (g) of entries at different locations in the CIYT-E during 1987/88.

Entry Name	ETHIOPIA	SYRIA		Overall Mean
	Debre Zeit	Breda	Tel Hadya	
FLIP 81-293C	29	27	25	27
FLIP 84-124C	28	23	25	25
FLIP 85- 82C	35	31	32	33
FLIP 85-105C	29	26	26	27
FLIP 85-108C	32	29	29	30
FLIP 85-136C	34	27	25	29
FLIP 85-137C	27	24	23	25
Local Check	24	26	24	-
Location mean	**30**	**27**	**26**	
S.E. of Mean	0.76	0.42	0.48	
LSD at 5%	2.30	1.26	1.44	
C.V. %	4.44	2.70	3.13	
Error df	14	14	14	
Significance	*	*	*	

* = Significant at $P \leq 0.05$.

Table 3.6.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-E during 1987/88.

Entry Name	ETHIOPIA		SUDAN		SYRIA				Overall Mean	
	Debre Zeit		Hudeiba		Breda		Tel Hadya			
	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 81-293C	2501	3	466	2	1209	6	1810	4	1497	2
FLIP 84-124C	2063	8	192	5	1077	8	1970	3	1326	5
FLIP 85- 82C	3068	1	271	3	1432	2	2016	1	1697	1
FLIP 85-105C	2242	5	85	6	1215	5	1793	5	1338	4
FLIP 85-108C	2257	4	237	4	1369	3	1719	7	1396	3
FLIP 85-136C	2067	7	34	8	1202	7	1724	6	1257	7
FLIP 85-137C	2114	6	61	7	1231	4	1665	8	1268	6
Local Check	3067	2	1229	1	1642	1	1998	2	-	-
Location mean	**2422**		**322**		**1297**		**1837**			
S.E. of Mean	379.23		73.30		87.03		113.97			
LSD at 5%	-		222.35		264.00		-			
C.V. %	27.12		39.44		11.62		10.75			
Error df	14		14		14		14			
Significance	NS		*		*		NS			
Entry > L. Check	-		0		0		-			

* = Significant at $P \leq 0.05$, NS = Not significnat.

FLIP 85-136C was tallest (62cm). The 100-seed weight for entries varied from 25 g for FLIP 84-124C and FLIP 86-137C to 33 g for FLIP 85-82C.

The highest seed yield was obtained at Debre Zeit in Ethiopia (2422 kg/ha) and was followed by Tel Hadya (1837 kg/ha) and Breda (1297 kg/ha) in Syria (Table 3.6.6.). Hudeiba in Sudan was the poor yielding location (322 kg/ha) where most of the test entries performed very poor. The LSD estimates revealed that none of the test entries out yielded the respective local check by a significant margin. On an average over locations the three best entries included FLIP 85-82C, FLIP 81-293C, and FLIP 85-108C.

3.7. CHICKPEA INTERNATIONAL YIELD TRIAL-DUAL SEASON (CIYT-DS)

Introduction

The CIYT-DS was initiated this season. The main objective of supply of this trial was to find any high yielding entry which is suitable for both the seasons (winter and spring).

Material

The material for CIYT-DS comprised of 23 test entries, out of which 22 were developed through hybridization at ICARDA and one local check to be supplied by the cooperator. The test entries were resistant to ascochyta blight and were selected from the local and regional yield trials based on their superior yield performance.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was four rows 4 m long with an inter-and intra row spacing of 45- and 10cm, respectively.

Seven sets of trials were distributed to cooperators in 5 countries and the results were returned for 3 complete sets covering 3 countries. The agronomic practices employed at different locations are shown in Table 3.7.1.

Results and Discussion

Mean for time to flowering, time to maturity, plant height, and 100-seed weight are compiled in Tables 3.7.2., 3.7.3., 3.7.4 and 3.7.5, respectively. Time to flowering ranged from 138 days (for FLIP 84-109C and FLIP 84-145C) to 148 days (for FLIP 85-62C and FLIP 85-135C)) in winter, and it varied from 76 days (for ILC 482) to 87 days (for FLIP 85-62C) in spring. The entries which flowered earlier were, in general, also earlier in maturity and the entry FLIP 85-62C was tallest. The 100-seed weight for entries varied from 26 g for (FLIP 84-124C) to 47 g (for FLIP 85-135C) in winter; and from 25 g (for FLIP

Table 3.7.1. Agronomic data for different locations in the CIYT-DS during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
LEBANON	Terbol (W)	21.11.87	07.07.88		50		-	Kerb, Igran	Lebanese Local
LEBANON	Terbol (S)	13.04.88	28.07.88		50		-	Kerb, Igran	Lebanese Local
MOROCCO	Douyet (W)	22.11.87	29.06.88	30	60		-	Daconil	PCH 46
MOROCCO	Douyet (S)	05.02.88	13.07.88	30	60		-	Daconil	PCH 46
MOROCCO	Domaine (W)	11.11.87	16.05.88	20	50		-	-	PCH 46
TUNISIA	Beja (W)	25.11.87	NA	NA			NA	NA	NA
SYRIA	Tel Hadya (W)	26.11.87	08.06.88	30	50		-	Kerb, Igran	ILC 482
SYRIA	Tel Hadya (S)	06.03.88	26.06.88	30	50		-	Kerb, Igran	ILC 1929

NA = Not available

Table 3.7.2. Time to flowering (days) of entries at different locations in the CIYT-DS during 1987/88.

Entry Name	Pedigree	Origin	LEBANON		MOROCCO
			Terbol (W)	Terbol (S)	Douyet (W)
ILC 482	-	TURKEY	150	46	129
FLIP 81-293C	X79 TH 8/ILC 191XILC 496	ICARDA/ICRISAT	151	57	129
FLIP 82-150C	X79 TH 101/ILC 523XILC 183	ICARDA/ICRISAT	150	54	128
FLIP 83- 7C	X80 TH 264/(ILC 480XILC 72)XILC 263	ICARDA/ICRISAT	154	58	129
FLIP 83- 47C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	154	60	129
FLIP 83- 48C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	153	59	125
FLIP 84- 8C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	151	47	129
FLIP 84- 46C	X81 TH 55/ILC 1920XILC 2956	ICARDA/ICRISAT	153	57	128
FLIP 84- 60C	X81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	151	57	125
FLIP 84- 72C	X79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	151	57	127
FLIP 84- 99C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	152	48	125
FLIP 84-109C	X81 TH 44/ILC 1920XILC 187	ICARDA/ICRISAT	150	55	127
FLIP 84-120C	X81 TH 15/ILC 480XILC 2956	ICARDA/ICRISAT	155	61	129
FLIP 84-124C	X81 TH 53/ILC 1920XILC 2506	ICARDA/ICRISAT	152	60	127
FLIP 84-145C	X81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	151	59	125
FLIP 84-163C	X81 TH 113/ILC 191XILC 484	ICARDA/ICRISAT	151	60	127
FLIP 84-181C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	154	55	129
FLIP 84-182C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	154	60	126
FLIP 85- 16C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	151	57	126
FLIP 85- 62C	X83 TH 29/FLIP 82-60CXFLIP 82-64C	ICARDA/ICRISAT	159	59	129
FLIP 85- 92C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	155	57	129
FLIP 85-108C	X83 TH 116/FLIP 82-64CXFLIP 82-87C	ICARDA/ICRISAT	151	46	129
FLIP 85-135C	X79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	159	53	129
Local Check	-	-	149	46	129
Location Mean			**153**	**55**	**128**
S.E. of Mean			0.41	1.31	0.00
LSD at 5%			1.17	3.70	0.00
C.V. %			0.47	4.08	0.00
Error df			46	46	46
Significance			*	*	*

Cont'd. ...

Table 3.7.2. Cont'd. ...

Entry Name	MOROCCO		SYRIA		(1) Overall Mean	
	Douyet (s)	Domaine (W)	Tel Hadya (W)	Tel Hadya (S)	Winter	Spring
ILC 482	122	134	138	62	139	76
FLIP 81-293C	123	111	145	68	142	83
FLIP 82-150C	123	111	144	65	140	81
FLIP 83- 7C	126	111	149	69	144	84
FLIP 83- 47C	126	111	151	67	144	84
FLIP 83- 48C	126	111	153	67	143	84
FLIP 84- 8C	125	113	142	63	141	78
FLIP 84- 46C	128	113	151	70	144	85
FLIP 84- 60C	124	110	142	67	139	83
FLIP 84- 72C	126	113	144	66	141	83
FLIP 84- 99C	127	113	143	62	140	79
FLIP 84-109C	126	113	139	66	138	82
FLIP 84-120C	129	113	154	69	146	86
FLIP 84-124C	129	110	141	70	139	86
FLIP 84-145C	126	137	141	63	138	83
FLIP 84-163C	126	116	143	65	140	84
FLIP 84-181C	123	114	146	63	143	80
FLIP 84-182C	129	116	147	67	143	85
FLIP 85- 16C	123	117	144	70	140	84
FLIP 85- 62C	129	116	156	72	148	87
FLIP 85- 92C	129	116	154	70	145	85
FLIP 85-108C	123	112	144	65	141	78
FLIP 85-135C	126	115	157	69	148	82
Local Check	129	111	156	63	-	-
Location Mean	**126**	**115**	**147**	**67**		
S.E. of Mean	0.36	One Rep.	0.98	0.72		
LSD at 5%	1.03		2.79	2.05		
C.V. %	0.50		1.16	1.87		
Error df	46		46	46		
Significance	*		*	*		

* = Significant at $P \leq 0.05$, NS = Not significant, (W) = Winter, (S) = Spring.
(1) Domaine (W) was not included for calculation of average mean for winter.

Table 3.7.3. Time to maturity (days) of entries at different locations in the CIYT-DS during 1987/88.

Entry Name	LEBANON		MOROCCO			SYRIA		(1) Overall Mean	
	Terbol (Winter)	Terbol (Spring)	Douyet (Winter)	Douyet (Spring)	Domaine (Winter)	Tel Hadya (Winter)	Tel Hadya (Spring)	Winter	Spring
ILC 482	193	90	183	159	176	188	103	188	117
FLIP 81-293C	193	91	184	160	180	190	103	189	118
FLIP 82-150C	193	92	188	160	178	189	105	190	119
FLIP 83- 7C	196	93	190	159	180	191	108	192	120
FLIP 83- 47C	194	95	190	159	180	191	107	192	120
FLIP 83- 48C	193	95	188	159	190	191	109	191	121
FLIP 84- 8C	193	91	193	159	185	191	108	192	119
FLIP 84- 46C	198	93	186	161	178	193	109	193	121
FLIP 84- 60C	193	93	186	161	180	188	106	189	120
FLIP 84- 72C	193	91	187	158	182	189	105	190	118
FLIP 84- 99C	193	91	186	158	180	188	100	189	116
FLIP 84-109C	196	91	187	156	182	190	103	191	116
FLIP 84-120C	194	96	190	162	185	189	109	192	122
FLIP 84-124C	193	93	189	161	180	189	107	191	120
FLIP 84-145C	193	94	184	161	180	189	104	189	120
FLIP 84-163C	193	93	187	159	180	189	105	189	119
FLIP 84-181C	194	93	191	156	180	190	101	192	116
FLIP 84-182C	196	95	191	152	190	192	108	193	118
FLIP 85- 16C	197	93	185	156	190	190	109	191	119
FLIP 85- 62C	198	94	188	152	190	191	109	193	118
FLIP 85- 92C	198	94	188	152	180	193	108	193	118
FLIP 85-108C	193	91	185	156	186	190	104	189	117
FLIP 85-135C	202	92	191	159	190	196	109	197	120
Local Check	193	90	188	152	182	191	104	-	-
Location Mean	**195**	**93**	**188**	**158**	**183**	**190**	**106**		
S.E. of Mean	0.84	0.56	0.90	0.23	One Rep.	0.80	1.47		
LSD at 5%	2.38	1.61	2.57	0.64		2.28	4.19		
C.V. %	0.74	1.05	0.83	0.25		0.73	2.41		
Error df	46	46	46	46		46	46		
Significance	*	*	*	*		*	*		

(1) Domaine (W) was not included for calculation of average mean for winter, * = Significant at $P \leq 0.05$.

Table 3.7.4. Plant height (cm) of entries at different locations in the CIYT-DS during 1987/88.

Entry Name	LEBANON		MOROCCO			SYRIA		(1) Overall Mean	
	Terbol (Winter)	Terbol (Spring)	Douyet (Winter)	Douyet (Spring)	Domaine (Winter)	Tel Hadya (Winter)	Tel Hadya (Spring)	Winter	Spring
ILC 482	47	31	80	40	75	46	27	58	33
FLIP 81-293C	46	35	81	42	80	56	31	61	36
FLIP 82-150C	49	33	75	35	62	54	30	59	33
FLIP 83- 7C	60	40	86	45	100	68	37	71	40
FLIP 83- 47C	47	36	75	35	50	53	33	58	35
FLIP 83- 48C	49	36	80	40	62	54	32	61	36
FLIP 84- 8C	48	32	90	60	40	59	30	65	41
FLIP 84- 46C	52	40	80	40	90	69	35	67	39
FLIP 84- 60C	48	36	90	45	55	55	29	64	37
FLIP 84- 72C	47	40	85	40	65	55	29	62	37
FLIP 84- 99C	54	36	88	45	100	60	36	68	39
FLIP 84-109C	44	30	74	60	60	52	25	56	38
FLIP 84-120C	52	42	88	45	50	60	30	67	39
FLIP 84-124C	51	36	96	62	60	55	30	68	43
FLIP 84-145C	46	36	75	35	50	57	31	59	34
FLIP 84-163C	51	38	90	60	45	49	34	64	44
FLIP 84-181C	44	35	77	30	55	46	26	55	30
FLIP 84-182C	49	37	85	65	50	56	31	63	44
FLIP 85- 16C	55	41	80	45	55	68	37	68	41
FLIP 85- 62C	59	47	95	61	75	66	38	74	49
FLIP 85- 92C	51	39	90	65	70	67	35	69	46
FLIP 85-108C	46	33	95	55	80	47	26	63	38
FLIP 85-135C	54	33	75	50	85	63	32	64	38
Local Check	43	28	90	55	92	72	24	-	-
Location Mean	**50**	**36**	**84**	**48**	**67**	**58**	**31**		
S.E. of Mean	2.31	2.11	1.82	0.16	One Rep.	1.35	1.26		
LSD at 5%	6.58	6.00	5.18	0.46		3.85	3.57		
C.V. %	8.06	10.05	3.75	0.58		4.05	6.96		
Error df	46	46	46	46		46	46		
Significance	*	*	*	*		*	*		

(1) Domaine (W) was not included for calculation of average mean for winter, * = Significant at $P \leq 0.05$.

Table 3.7.5. 100-Seed weight (g) of entries at different locations in the CIYT-DS during 1987/88.

Entry Name	LEBANON		SYRIA		Overall Mean	
	Terbol (W)	Terbol (S)	Tel Hadya (W)	Tel Hadya(S)	Winter	Spring
ILC 482	32	30	24	26	28	28
FLIP 81-293C	32	30	25	27	29	28
FLIP 82-150C	31	25	25	25	28	25
FLIP 83- 7C	38	33	32	31	35	32
FLIP 83- 47C	37	29	29	27	33	28
FLIP 83- 48C	33	30	29	27	31	29
FLIP 84- 8C	37	34	31	30	34	32
FLIP 84- 46C	37	30	30	27	34	28
FLIP 84- 60C	35	29	26	26	31	28
FLIP 84- 72C	35	30	27	27	31	28
FLIP 84- 99C	38	33	30	31	34	32
FLIP 84-109C	36	29	30	26	33	28
FLIP 84-120C	32	28	26	24	29	26
FLIP 84-124C	27	29	25	21	26	25
FLIP 84-145C	35	33	27	30	31	31
FLIP 84-163C	32	26	23	25	28	26
FLIP 84-181C	37	32	31	32	34	32
FLIP 84-182C	36	32	32	31	34	31
FLIP 85- 16C	40	41	37	38	39	39
FLIP 85- 62C	43	37	40	34	42	36
FLIP 85- 92C	41	34	35	32	38	33
FLIP 85-108C	35	29	29	27	32	28
FLIP 85-135C	47	41	47	39	47	40
Local Check	38	34	23	32	-	-
Location Mean	**36**	**32**	**30**	**29**		
S.E. of Mean	1.20	0.99	0.53	1.24		
LSD at 5%	3.41	2.82	1.51	3.52		
C.V. %	5.77	5.43	3.07	7.40		
Error df	46	46	46	46		
Significance	*	*	*	*		

* = Significant at $P \leq 0.05$, (W) = Winter, (S) = Spring.

Table 3.7.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-DS during 1987/88.

Entry Name	LEBANON				MOROCCO					
	Terbol (Winter)		Terbol (Spring)		Douyet (Winter)		Douyet (Spring)		Domaine (Winter)	
	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 482	1824	3	1080	4	5111	4	3053	4	2004	5
FLIP 81-293C	1695	9	911	14	4444	12	3256	2	1750	15
FLIP 82-150C	1839	1	1116	3	5167	3	2728	13	1742	16
FLIP 83- 7C	1373	23	1071	6	3444	20	2656	16	1646	19
FLIP 83- 47C	1746	5	944	12	5067	5	2822	10	2167	2
FLIP 83- 48C	1571	16	896	18	4167	15	2800	12	2021	4
FLIP 84- 8C	1728	7	986	11	4833	8	3374	1	2200	1
FLIP 84- 46C	1487	19	847	22	3333	21	2517	17	1667	18
FLIP 84- 60C	1656	12	808	23	5333	1	2656	15	1971	7
FLIP 84- 72C	1683	10	910	15	5000	6	2817	11	1692	17
FLIP 84- 99C	1663	11	1147	2	4667	9	2922	7	1792	13
FLIP 84-109C	1458	20	1065	7	4167	14	2833	9	1917	8
FLIP 84-120C	1833	2	756	24	3444	19	2467	20	1813	11
FLIP 84-124C	1653	13	936	13	4611	11	2956	6	1917	9
FLIP 84-145C	1771	4	1020	9	4944	7	2500	18	1983	6
FLIP 84-163C	1637	15	849	21	5278	2	3144	3	1896	10
FLIP 84-181C	1705	8	1151	1	2500	22	2683	14	1788	14
FLIP 84-182C	1740	6	856	19	4667	10	2489	19	2021	3
FLIP 85- 16C	1551	17	853	20	3556	18	2089	22	1792	12
FLIP 85- 62C	1535	18	900	16	4333	13	2911	8	1525	23
FLIP 85- 92C	1389	21	1080	5	3944	17	2356	21	1521	24
FLIP 85-108C	1376	22	900	17	4000	16	3033	5	1625	20
FLIP 85-135C	1210	24	997	10	1556	23	1956	23	1533	22
Local Check	1646	14	1064	8	833	24	1856	24	1563	21
Location Mean	**1615**		**964**		**4100**		**2703**		**1814**	
S.E. of Mean	83.43		70.54		447.12		229.96		140.48	
LSD at 5%	237.49		200.79		1272.75		654.59		399.88	
C.V. %	8.95		12.67		18.89		14.74		13.41	
Error df	46		46		46		46		46	
Significance	*		*		*		*		*	
Entry > L. Check	0		0		22		17		7	

Cont'd. ...

Table 3.7.6. Cont'd. ...

Entry Name	TUNISIA		SYRIA				(1) Overall Mean			
	Beja (Winter)		Tel Hadya (W)		Tel Hadya (S)		Winter		Spring	
	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 482	1320	2	2270	4	803	13	3069	2	1645	4
FLIP 81-293C	928	16	1906	18	746	16	2682	12	1637	5
FLIP 82-150C	808	21	2406	1	1004	5	3137	1	1616	7
FLIP 83- 7C	960	14	2065	13	876	11	2295	20	1534	11
FLIP 83- 47C	1256	4	2275	3	1057	4	3029	4	1608	8
FLIP 83- 48C	936	15	2222	6	944	7	2653	12	1547	10
FLIP 84- 8C	1440	1	2175	9	692	18	2912	9	1684	1
FLIP 84- 46C	1020	11	1840	20	665	21	2219	21	1343	20
FLIP 84- 60C	1044	10	2161	10	690	20	3050	3	1385	18
FLIP 84- 72C	912	17	2184	8	732	17	2955	6	1486	16
FLIP 84- 99C	964	13	1998	15	923	8	2776	10	1664	2
FLIP 84-109C	812	20	2013	14	862	12	2545	15	1587	9
FLIP 84-120C	1052	9	1969	16	788	14	2415	16	1337	21
FLIP 84-124C	972	12	1842	19	624	23	2702	11	1505	14
FLIP 84-145C	1244	5	2207	7	1074	3	2974	5	1531	12
FLIP 84-163C	1268	3	1953	17	888	10	2955	7	1627	6
FLIP 84-181C	1140	8	2234	5	1143	1	2146	22	1659	3
FLIP 84-182C	736	23	2344	2	1089	2	2918	8	1478	17
FLIP 85- 16C	1208	6	2078	12	783	15	2395	17	1242	23
FLIP 85- 62C	676	24	2113	11	649	22	2660	13	1487	15
FLIP 85- 92C	1144	7	1752	22	691	19	2362	19	1375	19
FLIP 85-108C	848	19	1712	23	612	24	2362	18	1515	13
FLIP 85-135C	896	18	1166	24	921	9	1310	23	1291	22
Local Check	764	22	1759	21	983	6	-		-	
Location Mean	**1015**		**2027**		**843**					
S.E. of Mean	164.80		97.72		150.16					
LSD at 5%	-		278.17		-					
C.V. %	22.97		8.35		30.85					
Error df	23		46		46					
Significance	NS		*		NS					
Entry > L. Check	-		13		-					

* = Significant at $P \leq 0.05$, NS = Not significant, (W) = Winter, (S) = Spring.
(1) Domaine (W) and Beja (W) were not included for calculation of overall mean for winter.

82-150C and FLIP 84-124C) to 40 g (for FLIP 85-135C) in spring.

The highest seed yield (Table 3.7.6) was obtained at Douyet in Morocco, both in winter (4100 kg/ha) and spring (2703 kg/ha). The LSD estimates revealed that 22, 7 and 13 entries in winter at Douyet and Domaine in Morocco, and Tel Hadya in Syria; and 17 and 13 entries in spring at Domaine in Morocco and Tel Hadya in Syria, outyielded the respective local check by a significant margin.

The perusal of Table 3.7.6. revealed that the entries, namely, FLIP 82-150C, and ILC 482 at Terbol in Lebanon; ILC 482 and FLIP 84-163C at Douyet in Morocco; FLIP 82-150C, FLIP 83-47C, FLIP 84-181C and FLIP 84-182C at Tel Hadya in Syria were among the heaviest yielders for dual season.

3.8. CHICKPEA INTERNATIONAL SCREENING NURSERY-WINTER (CISN-W)

Material

The Chickpea International Screening Nursery-Winter comprised 60 test entries which originated from the materials developed through hybridization at ICARDA. The nursery also included three checks namely FLIP 81-293C, ILC 482 and one local check to be supplied by the cooperator. All the test entries were almost homozygous and had shown superior performance in local or regional trials at ICARDA.

Methods and Management

The entries were sown in single row non-replicated plots of 4m length. The three checks were repeatedly sown in each block with 12 test entries. The suggested spacings between and within rows were 45- and 10 cm, respectively.

Sixty sets of nursery were distributed to cooperators in 24 countries and the results were received from 36 locations in 20 countries. The agronomic details received from the cooperators are given in Table 3.8.1.

Results and Discussion

The data on time to flowering, time to maturity, plant height and 100-seed weight are given in Tables 3.8.2, 3.8.3, 3.8.4, and 3.8.5, respectively. The location mean for time to flowering, time to maturity, plant height, and 100-seed weight, ranged from 45 days at Karaj in Iran to 214 days at Toshevo in Bulgaria; 105 days at Shandweel in Egypt to 268 days at Toshevo in Bulgaria; 22 cm at Chiang Rai in Thailand to 101 cm at Tabuk in Saudi Arabia; and 36 g at Madrid in Spain and Adana in Turkey to 43 g at Chiang Mai in Thailand and Oeiras in Portugal; respectively. On the basis of average over all locations, the entries ILC 482 and FLIP 86-43C were among the earliest to flower and ILC 482 was earlier to mature. The entries FLIP 86-65C, FLIP 86-66C, FLIP 86-78C, and FLIP 86-84C were among the tallest; and entries,

Table 3.8.1. Agronomic data for different locations in the CISN-W during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
AFGHANISTAN	Bulkh	15.04.88	05.07.88	50	40		5	-	Mazar
AFGHANISTAN	Kabul	16.12.87	19.07.88	30	60		4	Trichlorofan, Metasystox	Herat
ALGERIA	Setif	22.11.87	21.05.88	-			-	-	Rabat 9
BULGARIA	Toshevo	11.11.87	02.08.88	30	60		-	Gusagard	Stopnoj-1
CYPRUS	Laxia	25.11.87	17.06.88	25	60		-	Trifluran	Local Check
EGYPT	Shandaweel	23.11.87	15.05.88	15	30		1	Igran	G 12a-88
ETHIOPIA	Debre Zeit	13.08.88	28.12.88	-			-	-	Dubie
FRANCE	Montpellier 1	10.12.87	21.07.88		100		-	-	S 236
FRANCE	Montpellier 2	06.01.88	21.07.88		100		-	-	s 236
FRANCE	Montpellier 3	16.11.87	21.07.88		100		-	-	S 236
IRAN	Karaj	08.03.88	20.07.88	24	72		7	Treflan	Jam
IRAN	Oroumieh	11.11.87	15.07.88	18	46		1	Novacron, Basoudin	GAZVIN
ITALY	Tarquinia	11.01.88	06.08.88	45	130		-	Targa	CALIA
JORDAN	Marow	15.11.87	23.05.88	20	40		-	-	UJC 107
LEBANON	Terbol	04.12.87	08.07.88		50		-	Kerb, Igran	Lebanese Local
MEXICO	Hermosillo	15.11.87	15.05.88	60			2	Sepavox	NA
MOROCCO	Marchouch	20.11.87	28.06.88	28	56	28	-	-	PCH 46
MOROCCO	Zememra	17.11.87	24.06.88				-	-	PCH 46
PORTUGAL	Elvas	11.11.87	19.07.88	-			-	-	FLIP 83-15C
PORTUGAL	Oeiras	07.03.88	28.07.88	21	63	63	-	-	O. Deinhas
SAUDI ARABIA	Tabuk (TADCO)	21.11.87	15.06.88	150	200		S*	-	Local
SPAIN	Madrid	12.11.87		32	96		-	Terbutryne	G - 3
SPAIN	Sevilla	01.02.88	12.08.88	-			-	-	ZEGRI
SYRIA	Al Ghab	29.11.87	16.06.88	30	50				ILC 3279 (Ghab2)
SYRIA	Hama	05.12.87	04.06.88	30	80		-	Dorspan-4	Ghab 2
SYRIA	Izra'a	14.01.88	06.06.88	13	17		-	-	Ghab 2
SYRIA	Jableh	11.01.88	22.06.88	-			-	-	Ghab 2
SYRIA	Jindiress	22.11.87	16.06.88	30	50		-	Kerb, Igran	ILC 3279
SYRIA	Tel Hadya	25.11.87	06.06.88	30	50		-	Kerb, Igran	ILC 3279
SYRIA	Aleppo	26.11.87	19.06.88		50		-	-	-
THAILAND	Chiang Mai	11.10.87	15.04.88	23	45		12	Azodrine, Benlate	-
THAILAND	Chiang Rai	11.10.87	29.03.88	101	25		4	Daconil, Lanate	-
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TURKEY	Adana	24.11.88	24.05.89	30	50		-	-	NA
TURKEY	Diyarbakir	10.12.88	10.06.89	30	60		-	-	Canitez-87

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 3.8.2. Adjusted time to flowering (days) of entries at different locations in the CISN-W during 1987/88.

Entry Name	Pedigree	Origin	AFGHANISTAN Kabul	ALGERIA Setif	BULGARIA Toshevo	CYPRUS Laxia	EGYPT Shandaweel
FLIP 84- 5C	X81 TH 129/ILC 202XILC 262	ICARDA/ICRISAT	150	150	212	119	99
FLIP 84- 6C	X80 TH 265/(ILC 72XILC 196)XILC 262	ICARDA/ICRISAT	150	149	206	120	-
FLIP 84- 7C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	150	147	218	119	86
FLIP 84- 33C	X81 TH 146/ILC 72XILC 73	ICARDA/ICRISAT	148	152	-	122	-
FLIP 85- 2C	X82 TH 60/ILC 95XILC 2956	ICARDA/ICRISAT	148	150	210	121	98
FLIP 85- 66C	X83 TH 25/FLIP 82-69CXFLIP 82-81C	ICARDA/ICRISAT	147	148	214	115	89
FLIP 85- 72C	X83 TH 5/FLIP 81-41WXFLIP 82-72C	ICARDA/ICRISAT	149	151	209	115	87
FLIP 85- 75C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	149	148	214	115	88
FLIP 85- 90C	X83 TH 4/FLIP 81-42CXFLIP 82-69C	ICARDA/ICRISAT	147	152	210	114	102
FLIP 85- 99C	X81 TH 49/ILC 1920XILC 202	ICARDA/ICRISAT	148	151	215	113	99
FLIP 85-100C	X81 TH 15/ILC 480XILC 2956	ICARDA/ICRISAT	148	150	210	115	95
FLIP 85-110C	X83 TH 6/FLIP 81-41CXFLIP 82-81C	ICARDA/ICRISAT	149	149	211	114	87
FLIP 85-132C	X82 TH 66/ILC 2593XILC 3279	ICARDA/ICRISAT	149	151	210	122	-
FLIP 85-141C	X80 TH 69/ILC 263XILC 200	ICARDA/ICRISAT	146	150	210	116	100
FLIP 85-147C	X79 TH 69/ILC 263XILC 200	ICARDA/ICRISAT	148	153	217	122	95
FLIP 86- 2C	X81 TH 179/ILC 112XILC 191	ICARDA/ICRISAT	148	148	214	125	99
FLIP 86- 3C	X81 TH 179/ILC 112XILC 191	ICARDA/ICRISAT	149	152	210	121	101
FLIP 86- 4C	X81 TH 179/ILC 112XILC 191	ICARDA/ICRISAT	149	151	210	117	98
FLIP 86- 5C	X81 TH 199/ILC 202(WH)XILC 3355	ICARDA/ICRISAT	147	151	213	121	84
FLIP 86- 6C	X81 TH 203/ILC 3279(WH)XILC 3355	ICARDA/ICRISAT	147	153	212	114	101
FLIP 86- 7C	X81 TH 203/ILC 3279(WH)XILC 3355	ICARDA/ICRISAT	149	152	-	117	100
FLIP 86- 10C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	151	148	212	116	87
FLIP 86- 11C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	149	150	207	122	85
FLIP 86- 12C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	149	151	214	116	100
FLIP 86- 14C	X83 TH 6/FLIP 81-41CXFLIP 82-81C	ICARDA/ICRISAT	147	151	208	113	86
FLIP 86- 15C	X83 TH 7/FLIP 81-41CXFLIP 82-78C	ICARDA/ICRISAT	147	148	207	117	75
FLIP 86- 16C	X83 TH 25/FLIP 92-69CXFLIP 82-81C	ICARDA/ICRISAT	148	149	213	114	87
FLIP 86- 25C	X83 TH 164/ILC 4090XILC 195	ICARDA/ICRISAT	148	152	214	117	97
FLIP 86- 26C	X82 TH 60/ILC 95XILC 2956	ICARDA/ICRISAT	147	152	209	116	101
FLIP 86- 33C	X82 TH 136/(ILC 92XILC 484)XILC 3279	ICARDA/ICRISAT	150	151	211	120	98
FLIP 86- 34C	X82 TH 161/(ILC 610XILC 482)XILC 2956	ICARDA/ICRISAT	147	149	207	119	101
FLIP 86- 36C	X83 TH 6/FLIP 81-41CXFLIP 82-81C	ICARDA/ICRISAT	149	152	206	117	101
FLIP 86- 38C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	150	149	213	114	84
FLIP 86- 39C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	148	150	202	115	98
FLIP 86- 40C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	148	151	205	117	101
FLIP 86- 41C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	148	150	208	113	89

Cont'd. ...

Table 3.8.2. Cont'd. ..

Entry Name	Pedigree	Origin	AFGHANISTAN Kabul	ALGERIA Setif	BULGARIA Toshevo	CYPRUS Laxia	EGYPT Shandaweel
FLIP 86- 43C	X83 TH 3/FLIP 81-41CXFLIP 82-68C	ICARDA/ICRISAT	147	151	210	114	89
FLIP 86- 46C	X82 TH 145/(ILC 136XILC 482)XILC 72	ICARDA/ICRISAT	151	150	215	120	-
FLIP 86- 50C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	147	150	199	114	97
FLIP 86- 51C	X83 TH 159/UC 5XFLIP 81-59C	ICARDA/ICRISAT	149	150	-	120	98
FLIP 86- 58C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	149	150	211	115	-
FLIP 86- 59C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	147	148	212	115	85
FLIP 86- 61C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	151	153	214	121	99
FLIP 86- 62C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	147	149	214	121	102
FLIP 86- 63C	X83 TH 111/FLIP 81-82CXFLIP 81-60C	ICARDA/ICRISAT	150	152	218	123	99
FLIP 86- 65C	X83 TH 116/FLIP 82-64CXFLIP 82-87C	ICARDA/ICRISAT	151	152	216	121	102
FLIP 86- 66C	X83 TH 124/FLIP 82-64CXILC 7	ICARDA/ICRISAT	151	148	218	124	100
FLIP 86- 68C	X83 TH 3/FLIP 81-41CXFLIP 82-65C	ICARDA/ICRISAT	146	150	204	116	83
FLIP 86- 69C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	148	151	208	112	89
FLIP 86- 70C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	147	150	210	116	95
FLIP 86- 71C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	149	148	212	117	98
FLIP 86- 72C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	150	150	206	115	98
FLIP 86- 76C	X83 TH 114/FLIP 82-81CXILC 451	ICARDA/ICRISAT	149	151	214	119	101
FLIP 86- 77C	X83 TH 23/FLIP 82-65CXFLIP 82-72C	ICARDA/ICRISAT	150	148	-	120	100
FLIP 86- 78C	X83 TH 23/FLIP 82-65CXFLIP 82-72C	ICARDA/ICRISAT	150	151	215	121	87
FLIP 86- 79C	X83 TH 23/FLIP 82-65CXFLIP 82-72C	ICARDA/ICRISAT	149	147	-	116	87
FLIP 86- 81C	X82 TH 77/ILC 3346XILC 464	ICARDA/ICRISAT	146	151	209	122	85
FLIP 86- 82C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	148	148	210	115	98
FLIP 86- 83C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	149	151	218	122	99
FLIP 86- 84C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	148	150	213	115	87
FLIP 81-293C	Improved check	ICARDA/ICRISAT	148	148	210	113	88
ILC 482	Long term check	Turkey	146	148	207	-	85
Local check	-	-	-	149	211	-	71
Location Mean			**148**	**150**	**214**	**102**	**91**
S.E. of Mean			0.90	0.42	1.14	0.18	1.13
L.S.D. AT 5% for :							
Checks			3.52	1.36	3.71	0.60	3.70
T.E. in S.B.			7.88	3.04	8.29	1.33	8.27
T.E. in D.B.			9.65	3.51	9.58	1.54	9.55
Check Vs T.E.			7.47	2.72	7.42	1.19	7.40
C.V. %			1.35	0.62	1.29	0.40	3.01

Table 3.8.2. Cont'd. ...

Entry Name	ETHIOPIA	IRAN		ITALY	JORDAN	LEBANON	MEXICO	MOROCCO		PORTUGAL		SAUDI ARABIA
	Debre Zeit	Karaj	Oroumieh	Tarquinia	Marow	Terbol	Hermosillo	Marchouch	Zememra	Elvas	Oeiras	Tabuk
FLIP 84- 5C	85	48	187	111	160	161	91	118	119	108	82	114
FLIP 84- 6C	79	43	187	127	158	163	83	120	119	106	71	114
FLIP 84- 7C	78	47	187	127	158	163	92	135	123	117	76	121
FLIP 84- 33C	70	41	187	127	154	152	89	128	119	113	79	111
FLIP 85- 2C	80	43	184	124	156	160	90	128	119	113	79	104
FLIP 85- 66C	77	46	188	124	153	156	85	127	118	107	70	115
FLIP 85- 72C	78	44	187	113	154	157	92	127	119	107	76	121
FLIP 85- 75C	76	45	183	111	150	151	87	115	118	103	77	118
FLIP 85- 90C	79	43	188	113	153	154	89	119	118	114	79	122
FLIP 85- 99C	80	48	188	124	151	158	88	127	116	102	77	115
FLIP 85-100C	80	39	184	113	154	156	90	128	119	101	71	104
FLIP 85-110C	77	44	184	113	153	157	92	127	117	119	76	121
FLIP 85-132C	83	43	187	113	155	158	97	128	119	111	71	114
FLIP 85-141C	82	48	187	111	155	157	89	112	115	108	73	123
FLIP 85-147C	77	49	187	111	153	161	91	118	118	115	73	123
FLIP 86- 2C	-	48	186	111	151	163	99	130	118	103	77	129
FLIP 86- 3C	76	44	186	122	153	159	96	130	118	110	68	121
FLIP 86- 4C	-	46	183	111	145	159	92	130	118	108	77	118
FLIP 86- 5C	85	51	188	113	155	158	77	131	118	114	77	129
FLIP 86- 6C	82	49	184	111	157	161	93	122	118	115	73	120
FLIP 86- 7C	85	43	187	122	161	163	95	112	113	108	73	123
FLIP 86- 10C	76	43	186	111	149	157	92	122	119	117	77	114
FLIP 86- 11C	79	41	184	113	155	160	86	128	119	111	79	96
FLIP 86- 12C	83	49	187	125	161	161	90	122	115	106	73	123
FLIP 86- 14C	80	46	184	113	154	158	85	110	118	113	78	114
FLIP 86- 15C	75	41	187	113	151	161	92	127	117	119	67	109
FLIP 86- 16C	60	44	184	113	153	155	86	127	117	119	76	118
FLIP 86- 25C	76	56	189	122	150	155	91	130	118	115	75	115
FLIP 86- 26C	79	45	188	124	153	154	64	119	119	107	79	115
FLIP 86- 33C	83	36	186	118	145	161	92	122	119	108	75	115
FLIP 86- 34C	79	46	188	124	154	154	90	125	119	109	79	115
FLIP 86- 36C	78	42	188	113	151	160	89	119	118	109	79	122
FLIP 86- 38C	78	44	187	113	159	155	92	119	117	119	67	110
FLIP 86- 39C	62	41	187	113	154	152	86	114	119	111	71	99
FLIP 86- 40C	85	50	185	124	151	158	90	131	118	107	70	122
FLIP 86- 41C	79	46	188	113	153	152	90	119	118	107	79	122

Cont'd. ...

Table 3.8.2. Cont'd. ...

	ETHIOPIA	IRAN		ITALY	JORDAN	LEBANON	MEXICO	MOROCCO		PORTUGAL		SAUDI ARABIA
Entry Name	Debir Zeit	Karaj	Oroumieh	Tarquinia	Marow	Terbol	Hermosillo	Marchouch	Zememra	Elvas	Oeiras	Tabuk
FLIP 86- 43C	83	46	184	111	155	157	88	112	119	113	73	-
FLIP 86- 46C	80	52	184	127	159	163	85	128	119	106	71	114
FLIP 86- 50C	83	45	184	113	152	152	90	113	120	113	78	114
FLIP 86- 51C	75	58	189	122	153	163	89	128	119	115	77	115
FLIP 86- 58C	67	46	184	107	153	153	87	127	118	110	76	121
FLIP 86- 59C	77	45	187	120	151	155	91	131	117	102	76	114
FLIP 86- 61C	66	50	184	122	156	161	90	126	118	115	73	114
FLIP 86- 62C	81	50	188	113	154	158	90	133	121	114	70	122
FLIP 86- 63C	83	44	187	122	157	163	95	126	118	106	82	127
FLIP 86- 65C	89	49	185	124	159	158	64	135	118	104	70	122
FLIP 86- 66C	-	48	186	122	149	163	73	130	118	110	68	124
FLIP 86- 68C	60	39	187	107	154	152	79	114	119	101	72	96
FLIP 86- 69C	78	46	188	107	153	150	90	119	118	102	77	115
FLIP 86- 70C	79	43	184	113	159	152	86	113	117	113	78	104
FLIP 86- 71C	75	32	189	111	147	157	91	115	118	115	77	109
FLIP 86- 72C	82	41	187	105	159	155	80	112	118	106	82	113
FLIP 86- 76C	82	54	184	122	160	161	90	126	120	115	73	123
FLIP 86- 77C	-	50	186	111	147	163	99	130	118	117	77	114
FLIP 86- 78C	93	44	187	113	151	163	99	135	119	102	67	121
FLIP 86- 79C	79	37	187	113	151	163	85	127	119	112	67	115
FLIP 86- 81C	77	38	187	107	153	159	91	131	118	117	76	124
FLIP 86- 82C	-	43	186	111	151	155	92	115	116	117	77	115
FLIP 86- 83C	82	49	184	125	156	168	90	126	119	108	73	123
FLIP 86- 84C	80	49	187	113	158	159	92	131	118	119	76	121
FLIP 81-293C	74	46	186	113	153	156	87	119	117	108	73	114
ILC 482	61	37	184	105	153	152	81	115	117	104	75	107
Local check	46	44	186	108	153	151	89	126	119	102	71	107
Location Mean	**75**	**45**	**186**	**113**	**154**	**157**	**88**	**123**	**118**	**109**	**75**	**115**
S.E. of Mean	2.71	1.00	0.62	1.47	0.67	0.99	0.55	1.53	0.59	1.87	1.91	0.95
L.S.D. at 5% for:												
Checks	8.83	3.24	2.04	4.80	2.19	3.22	1.81	4.98	1.91	6.11	6.21	3.11
T.E. in S.B.	19.75	7.26	4.55	10.74	4.89	7.19	4.04	11.13	4.27	13.65	13.89	6.96
T.E. in D.B.	22.80	8.38	5.26	12.40	5.65	8.31	4.66	12.85	4.93	15.77	16.04	8.03
Check Vs T.E.	17.67	6.49	4.07	9.61	4.38	6.44	3.61	9.95	3.82	12.21	12.43	6.22
C.V. %	8.75	4.97	0.75	2.91	0.98	1.41	1.41	2.77	1.11	3.83	5.71	1.88

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry Name	SPAIN		SYRIA							THAILAND		(1)
	Madrid	Sevilla	Al Ghab	Hama	Izra'a	Jableh	Jindiress	Tel Hadya-1	Tel Hadya-2	Chiang Mai	Chiang Rai	**Overall Mean**
FLIP 84- 5C	179	90	145	146	117	104	160	153	125	57	97	121
FLIP 84- 6C	182	90	144	139	117	103	161	147	127	98	90	120
FLIP 84- 7C	179	92	146	143	119	104	162	157	131	110	88	124
FLIP 84- 33C	183	90	142	139	117	103	159	157	126	98	93	121
FLIP 85- 2C	182	90	146	143	118	103	160	153	128	98	92	121
FLIP 85- 66C	163	90	146	143	118	102	159	150	129	88	94	119
FLIP 85- 72C	174	92	143	141	119	101	161	152	125	91	113	121
FLIP 85- 75C	175	87	135	134	115	98	151	144	121	104	79	116
FLIP 85- 90C	161	90	137	134	118	108	159	143	124	88	94	119
FLIP 85- 99C	179	90	144	142	118	105	157	148	128	88	101	120
FLIP 85-100C	179	85	143	138	116	101	157	151	124	105	90	119
FLIP 85-110C	157	92	143	137	116	101	158	145	128	89	87	119
FLIP 85-132C	179	90	141	139	117	104	160	148	125	98	91	120
FLIP 85-141C	165	90	138	135	115	100	152	153	124	57	96	118
FLIP 85-147C	174	90	145	145	121	106	163	153	128	88	87	121
FLIP 86- 2C	178	94	144	144	117	104	156	154	125	104	103	122
FLIP 86- 3C	178	89	143	142	117	105	159	151	124	85	95	121
FLIP 86- 4C	177	94	142	142	116	103	159	152	124	-	94	120
FLIP 86- 5C	181	90	145	142	120	104	163	151	127	88	94	121
FLIP 86- 6C	179	90	144	144	119	105	158	156	127	88	79	119
FLIP 86- 7C	178	90	144	140	119	105	158	155	124	57	89	123
FLIP 86- 10C	167	94	145	139	116	101	159	145	125	99	103	120
FLIP 86- 11C	183	90	145	139	117	101	160	154	129	98	91	119
FLIP 86- 12C	186	90	146	142	118	106	161	157	131	57	97	125
FLIP 86- 14C	169	90	139	136	118	101	150	143	121	103	90	118
FLIP 86- 15C	160	86	142	138	120	105	156	144	127	98	98	118
FLIP 86- 16C	168	92	137	137	121	103	161	147	129	88	97	120
FLIP 86- 25C	180	94	146	144	118	107	159	156	128	99	88	122
FLIP 86- 26C	181	90	141	138	119	100	155	141	126	83	89	119
FLIP 86- 33C	175	94	146	138	119	104	158	143	124	104	96	119
FLIP 86- 34C	177	90	139	139	116	102	160	143	126	69	91	121
FLIP 86- 36C	180	90	139	142	116	101	160	143	130	88	90	121
FLIP 86- 38C	161	92	135	137	120	98	153	145	125	115	101	118
FLIP 86- 39C	176	90	138	138	115	101	157	147	127	110	90	115
FLIP 86- 40C	182	90	147	145	118	106	164	153	129	61	90	122
FLIP 86- 41C	171	90	139	134	117	102	155	142	127	69	102	119

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry Name	SPAIN		SYRIA							THAILAND		(1)
	Madrid	Sevilla	Al Ghab	Hama	Izra'a	Jableh	Jindiress	Tel Hadya-1	Tel Hadya-2	Chiang Mai	Chiang Rai	**Overall Mean**
FLIP 86- 43C	167	90	137	135	117	103	150	142	124	57	94	111
FLIP 86- 46C	190	90	146	146	118	107	160	158	128	103	81	122
FLIP 86- 50C	169	90	145	136	118	102	150	144	123	93	91	118
FLIP 86- 51C	183	89	143	143	116	103	159	156	127	104	89	122
FLIP 86- 58C	160	92	137	135	118	101	160	147	127	88	85	119
FLIP 86- 59C	177	92	142	140	120	104	161	145	130	115	86	118
FLIP 86- 61C	178	90	147	144	118	107	161	157	130	76	89	123
FLIP 86- 62C	182	90	139	144	116	105	164	155	131	88	94	120
FLIP 86- 63C	187	90	147	147	117	106	162	157	132	57	89	124
FLIP 86- 65C	180	90	146	146	121	106	164	154	130	61	95	123
FLIP 86- 66C	186	94	148	146	121	107	161	156	132	104	102	123
FLIP 86- 68C	178	90	141	136	115	101	150	147	126	98	83	115
FLIP 86- 69C	162	90	137	132	118	97	152	139	122	69	103	117
FLIP 86- 70C	174	90	143	138	116	101	158	146	128	74	84	119
FLIP 86- 71C	175	94	143	138	114	101	155	144	123	104	94	116
FLIP 86- 72C	165	90	136	139	117	98	149	145	124	57	98	117
FLIP 86- 76C	179	90	146	143	116	105	161	156	128	57	94	125
FLIP 86- 77C	179	94	147	139	118	105	158	153	129	104	96	123
FLIP 86- 78C	175	92	146	144	121	105	162	155	131	115	100	121
FLIP 86- 79C	177	92	144	137	119	101	160	148	134	96	98	120
FLIP 86- 81C	176	92	143	140	121	103	161	157	129	91	87	121
FLIP 86- 82C	168	94	139	136	118	102	154	144	123	104	96	116
FLIP 86- 83C	185	90	147	148	118	107	161	157	131	57	90	125
FLIP 86- 84C	179	92	143	142	118	105	162	149	128	96	99	121
FLIP 81-293C	172	90	140	137	117	101	157	149	126	84	87	118
ILC 482	155	88	130	128	111	96	143	138	114	92	78	108
Local check	169	91	145	144	121	107	161	156	-	-	92	
Location Mean	**173**	**90**	**142**	**139**	**117**	**103**	**157**	**149**	**127**	**88**	**92**	
S.E. of Mean	1.72	1.07	0.86	0.65	0.50	0.59	1.24	1.28	0.67	3.51	1.43	
L.S.D. at 5% for :												
Checks	5.61	3.47	2.82	2.13	1.64	1.92	4.03	4.18	2.63	13.78	5.62	
T.E. in S.B.	12.54	7.76	6.30	4.76	3.67	4.29	9.01	9.36	5.89	30.82	12.57	
T.E. in D.B.	14.48	8.96	7.28	5.50	4.24	4.96	10.40	10.80	7.21	37.75	15.39	
Check Vs T.E.	11.22	6.94	5.64	4.26	3.28	3.84	8.06	8.37	5.59	29.24	11.92	
C.V. %	2.22	2.63	1.36	1.05	0.96	1.28	1.76	1.92	1.19	8.93	3.49	

(1) Toshevo, Shandaweel, Chiang Rai and Debre Zeit were excluded from the overall mean
T.E. = Test entries, S.B. = same block, D.B. = different block.

Table 3.8.3. Adjusted time to maturity (days) of entries at different locations in the CISN-W during 1987/88.

Entry Name	AFGHANISTAN	BULGARIA	EGYPT	IRAN		ITALY	JORDAN	LEBANON	MEXICO	MOROCCO		PORTUGAL
	Kabul	Toshevo	Shand-aweel	Karaj	Oroum-ieh	Targu-inia	Marow	Terbol	Hermo-sillo	March-ouch	Zememra	Elvas
FLIP 84- 5C	198	260	117	115	229	179	183	196	150	187	189	222
FLIP 84- 6C	200	266	-	105	235	179	-	199	143	189	184	222
FLIP 84- 7C	198	264	101	114	231	181	184	198	148	206	184	222
FLIP 84- 33C	196	-	-	103	235	179	180	199	151	197	184	219
FLIP 85- 2C	200	264	96	105	235	193	182	209	151	197	189	220
FLIP 85- 66C	197	265	100	107	231	177	182	200	143	195	186	219
FLIP 85- 72C	198	263	101	109	231	181	182	200	148	197	184	224
FLIP 85- 75C	198	262	109	113	228	177	181	196	146	184	184	218
FLIP 85- 90C	195	265	100	110	228	177	182	200	146	187	186	219
FLIP 85- 99C	199	265	104	114	231	177	182	194	143	195	186	217
FLIP 85-100C	150	258	93	103	230	179	-	197	147	197	184	219
FLIP 85-110C	196	263	103	109	228	181	182	196	148	197	184	219
FLIP 85-132C	200	266	-	105	235	179	180	199	150	197	184	222
FLIP 85-141C	194	262	118	115	226	179	183	200	150	181	189	217
FLIP 85-147C	196	260	113	113	229	193	179	196	150	187	184	222
FLIP 86- 2C	200	261	103	111	231	184	181	200	152	199	184	221
FLIP 86- 3C	200	266	113	107	231	191	181	198	152	199	192	218
FLIP 86- 4C	200	268	112	111	231	184	181	198	150	199	184	218
FLIP 86- 5C	201	265	85	112	231	177	182	200	146	199	186	219
FLIP 86- 6C	196	262	119	113	234	179	183	202	152	191	184	222
FLIP 86- 7C	198	-	118	110	234	186	183	214	153	181	189	219
FLIP 86- 10C	198	268	106	106	231	177	183	200	152	191	184	218
FLIP 86- 11C	200	264	83	103	235	186	180	205	144	197	184	220
FLIP 86- 12C	198	267	118	115	234	193	183	208	150	191	189	219
FLIP 86- 14C	198	261	110	110	230	179	180	197	143	180	184	222
FLIP 86- 15C	198	262	94	109	231	174	182	202	148	197	184	224
FLIP 86- 16C	196	264	105	112	228	174	182	200	145	197	184	219
FLIP 86- 25C	196	-	96	104	231	184	181	198	150	199	184	223
FLIP 86- 26C	201	263	97	108	231	177	182	198	146	187	186	217
FLIP 86- 33C	198	266	103	101	231	177	183	196	159	191	184	218
FLIP 86- 34C	195	260	95	107	228	177	184	196	147	193	186	220
FLIP 86- 36C	195	260	90	108	228	177	184	200	146	187	186	219
FLIP 86- 38C	198	263	106	109	231	174	-	198	148	189	184	224
FLIP 86- 39C	198	262	96	103	230	179	180	193	143	183	189	219
FLIP 86- 40C	201	262	107	112	231	184	180	202	146	199	186	217
FLIP 86- 41C	199	261	104	110	228	177	180	198	146	187	186	217

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry Name	AFGHANISTAN	BULGARIA	EGYPT	IRAN		ITALY	JORDAN	LEBANON	MEXICO	MOROCCO		PORTUGAL
	Kabul	Toshevo	Shand-aweel	Karaj	Oroum-ieh	Tarqu-inia	Marow	Terbol	Hermo-sillo	March-ouch	Zememra	Elvas
FLIP 86- 43C	196	264	107	110	229	186	181	200	146	181	189	218
FLIP 86- 46C	200	266	-	105	235	179	182	205	143	197	189	219
FLIP 86- 50C	198	264	112	112	230	179	182	199	147	182	184	220
FLIP 86- 51C	196	-	96	106	231	184	181	200	146	197	184	223
FLIP 86- 58C	198	262	100	109	228	181	180	198	145	197	184	224
FLIP 86- 59C	198	262	109	110	231	188	184	206	148	201	184	224
FLIP 86- 61C	196	264	117	109	234	179	181	200	150	195	184	220
FLIP 86- 62C	195	265	97	107	228	184	184	202	147	201	186	219
FLIP 86- 63C	198	266	117	103	229	179	183	200	152	195	184	222
FLIP 86- 65C	201	265	106	112	231	177	180	202	146	204	197	222
FLIP 86- 66C	200	266	112	111	231	177	181	200	150	199	184	221
FLIP 86- 68C	196	262	81	103	230	186	180	195	143	183	189	220
FLIP 86- 69C	201	260	107	112	228	177	180	194	146	187	186	217
FLIP 86- 70C	198	264	107	107	230	179	182	197	143	182	184	219
FLIP 86- 71C	200	268	96	131	231	177	181	200	150	184	184	223
FLIP 86- 72C	194	262	116	110	234	179	183	200	150	181	189	222
FLIP 86- 76C	196	264	119	113	234	179	183	202	152	195	195	220
FLIP 86- 77C	200	-	106	113	231	177	181	200	157	199	184	223
FLIP 86- 78C	198	264	101	109	231	181	178	202	148	206	184	220
FLIP 86- 79C	198	-	99	112	231	188	184	206	145	197	184	222
FLIP 86- 81C	196	262	108	134	231	181	184	202	148	201	184	220
FLIP 86- 82C	198	263	111	106	231	177	183	198	150	184	184	219
FLIP 86- 83C	198	267	117	113	234	193	183	-	150	195	184	217
FLIP 86- 84C	198	264	102	114	231	174	184	202	148	201	184	220
FLIP 81-293C	196	262	103	112	227	177	181	194	143	188	184	219
ILC 482	195	260	96	109	228	177	180	194	145	184	183	220
Local check	-	261	98	111	228	183	181	193	133	195	195	219
Location Mean	**197**	**268**	**105**	**110**	**230**	**180**	**183**	**196**	**147**	**192**	**186**	**220**
S.E. of Mean	0.28	0.85	2.52	1.47	0.46	1.51	0.50	0.46	1.18	1.49	0.81	0.98
L.S.D. at 5% for :												
Checks	1.11	2.78	8.23	4.78	1.49	4.93	1.64	1.51	3.84	4.84	2.64	3.21
T.E. in S.B.	2.48	6.22	18.40	10.68	3.34	11.03	3.67	3.37	8.58	10.83	5.89	7.17
T.E. in D.B.	3.04	7.18	21.25	12.34	3.86	12.73	4.24	3.89	9.91	12.51	6.81	8.28
Check Vs T.E.	2.36	5.56	16.46	9.56	2.99	9.86	3.28	3.01	7.68	9.69	5.27	6.41
C.V. %	0.32	0.79	5.76	2.98	0.45	1.88	0.65	0.53	1.79	1.73	0.97	1.00

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry Name	PORTUGAL	SPAIN	SYRIA							THAILAND		TURKEY	
	Oeiras	Madrid	Al Ghab	Hama	Izra'a	Jableh	Jindi-ress	Tel-Hadya-1	Tel-Hadya-2	Chiang Mai	Chiang Rai	Diyar-bakir	(1) Overall Mean
FLIP 84- 5C	141	247	184	181	154	135	202	192	163	191	133	177	178
FLIP 84- 6C	143	256	185	184	158	139	203	194	164	179	128	177	178
FLIP 84- 7C	143	258	187	183	157	139	204	193	165	179	131	178	180
FLIP 84- 33C	143	255	185	184	159	142	202	194	168	179	133	177	179
FLIP 85- 2C	143	248	190	185	160	138	204	194	167	179	132	178	180
FLIP 85- 66C	139	241	186	183	154	136	201	192	166	179	133	175	177
FLIP 85- 72C	143	243	185	179	155	138	203	193	161	179	136	176	178
FLIP 85- 75C	141	243	182	181	155	136	202	190	161	179	129	175	176
FLIP 85- 90C	139	240	181	182	154	135	203	193	167	179	133	176	176
FLIP 85- 99C	141	238	184	182	152	137	201	190	162	179	134	175	177
FLIP 85-100C	143	253	181	179	158	137	199	191	159	179	132	176	174
FLIP 85-110C	143	236	187	179	154	135	200	191	165	191	131	176	177
FLIP 85-132C	143	257	187	183	159	139	203	194	166	191	132	177	180
FLIP 85-141C	141	249	184	179	154	135	201	191	159	191	133	176	176
FLIP 85-147C	143	235	184	183	157	138	203	191	163	179	131	176	178
FLIP 86- 2C	141	247	186	183	157	140	202	191	162	179	134	177	179
FLIP 86- 3C	141	240	182	185	156	139	202	191	164	179	133	177	179
FLIP 86- 4C	139	251	184	185	154	137	202	191	166	-	132	175	179
FLIP 86- 5C	141	249	187	183	154	138	204	193	167	179	132	176	179
FLIP 86- 6C	141	236	186	183	157	139	203	192	163	191	129	176	178
FLIP 86- 7C	141	256	188	181	155	141	202	192	165	191	131	178	179
FLIP 86- 10C	141	250	184	186	156	137	203	193	166	179	134	177	178
FLIP 86- 11C	143	254	186	185	158	139	204	194	168	191	132	177	179
FLIP 86- 12C	143	256	190	184	155	141	204	194	165	191	133	178	181
FLIP 86- 14C	141	250	185	182	155	134	201	193	162	179	132	177	177
FLIP 86- 15C	141	235	187	179	155	141	202	190	165	179	133	176	177
FLIP 86- 16C	141	242	184	180	156	136	203	193	166	179	133	177	177
FLIP 86- 25C	141	250	184	182	154	135	204	192	163	179	131	178	178
FLIP 86- 26C	141	241	186	182	154	136	203	192	166	179	131	176	177
FLIP 86- 33C	141	243	176	178	157	134	203	190	161	179	133	176	176
FLIP 86- 34C	139	242	184	177	155	136	201	190	163	179	132	175	176
FLIP 86- 36C	139	241	184	179	156	136	204	192	166	191	132	176	176
FLIP 86- 38C	141	234	187	180	157	133	199	190	164	179	134	176	176
FLIP 86- 39C	143	248	187	181	158	136	201	193	167	179	132	178	177
FLIP 86- 40C	141	247	186	184	156	141	205	193	165	179	131	187	179
FLIP 86- 41C	141	246	186	180	154	136	203	192	162	179	134	176	177

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry Name	PORTUGAL Oeiras	SPAIN Madrid	SYRIA Al Ghab	Hama	Izra'a	Jableh	Jindi-ress	Tel-Hadya-1	Tel-Hadya-2	THAILAND Chiang Mai	Chiang Rai	TURKEY Diyar-bakir	(1) Overall Mean
FLIP 86- 43C	141	244	184	178	154	136	201	191	165	191	132	176	177
FLIP 86- 46C	143	261	185	184	160	140	203	194	166	179	130	177	179
FLIP 86- 50C	141	248	187	181	155	137	202	194	159	179	132	177	177
FLIP 86- 51C	141	253	184	182	154	135	204	193	164	179	132	177	178
FLIP 86- 58C	143	242	185	180	155	137	202	193	161	179	131	175	177
FLIP 86- 59C	141	254	187	180	156	142	205	193	164	179	131	176	180
FLIP 86- 61C	141	250	184	182	155	139	202	192	164	179	131	177	178
FLIP 86- 62C	141	245	186	183	157	139	205	193	168	179	133	177	179
FLIP 86- 63C	141	246	186	180	154	137	203	192	169	191	131	179	178
FLIP 86- 65C	141	242	181	181	157	142	205	193	166	191	133	177	179
FLIP 86- 66C	139	257	178	182	157	142	204	193	165	179	134	177	179
FLIP 86- 68C	141	255	185	180	158	136	200	193	168	179	130	178	177
FLIP 86- 69C	141	242	186	182	152	134	201	190	162	179	134	175	177
FLIP 86- 70C	141	238	185	180	156	141	200	193	167	179	131	177	176
FLIP 86- 71C	139	240	177	182	155	137	202	191	164	179	132	176	178
FLIP 86- 72C	141	245	183	181	154	135	200	191	161	191	133	177	177
FLIP 86- 76C	141	253	187	182	155	139	203	191	165	179	132	177	179
FLIP 86- 77C	139	253	186	182	156	142	203	193	165	179	133	176	180
FLIP 86- 78C	141	247	185	184	158	139	204	193	166	179	134	178	179
FLIP 86- 79C	141	258	180	184	157	142	204	193	166	191	133	177	180
FLIP 86- 81C	141	245	187	183	157	140	203	193	165	179	131	177	180
FLIP 86- 82C	141	242	184	185	156	137	202	191	162	179	133	175	177
FLIP 86- 83C	141	258	190	185	157	139	205	194	166	191	131	176	180
FLIP 86- 84C	143	257	187	180	157	138	201	190	164	179	133	177	179
FLIP 81-293C	142	238	181	179	154	134	201	191	159	179	131	176	175
ILC 482	141	237	181	176	153	134	199	188	156	179	129	175	174
Local check	141	236	180	180	159	140	201	192	-	-	-	175	
Location Mean	**141**	**245**	**184**	**181**	**156**	**137**	**202**	**192**	**163**	**182**	**132**	**176**	
S.E. of Mean	0.40	1.34	1.01	0.44	0.47	0.55	0.46	0.33	0.71	0.00	0.28	0.27	
L.S.D. at 5% for :													
Checks	1.30	4.38	3.28	1.43	1.54	1.81	1.51	1.07	2.78	0.00	1.11	0.86	
T.E. in S.B.	2.92	9.80	7.33	3.21	3.45	4.04	3.37	2.38	6.21	0.00	2.48	1.93	
T.E. in D.B.	3.37	11.32	8.46	3.70	3.98	4.66	3.89	2.75	7.60	0.00	3.04	2.23	
Check Vs T.E.	2.61	8.77	6.56	2.87	3.08	3.61	3.01	2.13	5.89	0.00	2.36	1.73	
C.V. %	0.63	1.23	1.22	0.54	0.68	0.90	0.51	0.38	0.97	0.00	0.48	0.34	

(1) Toshevo, Shandaweel, Marow, Terbol and Chiang Mai were excluded from the overall mean
T.E. = Test entries, S.B. = same block, D.B. = different block.

Table 3.8.4. Adjusted plant height (cm) of entries at different locations in the CISN-W during 1987/88.

Entry Name	AFGHANISTAN		ALGERIA	BULGARIA	CYPRUS	EGYPT	ETHIOPIA	IRAN		ITALY
	Bulkh	Kabul	Setif	Toshevo	Laxia	Shandaweel	Debre Zeit	Karaj	Oroumieh	Tarquinia
FLIP 84- 5C	29	46	25	41	50	31	-	47	39	62
FLIP 84- 6C	26	50	30	63	40	10	76	31	28	82
FLIP 84- 7C	36	30	22	66	56	79	54	28	35	72
FLIP 84- 33C	18	52	34	-	50	10	-	32	33	77
FLIP 85- 2C	16	35	32	82	50	95	-	33	26	77
FLIP 85- 66C	24	38	28	69	50	104	63	42	32	74
FLIP 85- 72C	26	37	23	59	51	89	64	39	28	77
FLIP 85- 75C	29	38	20	54	55	116	69	39	27	64
FLIP 85- 90C	31	38	25	60	50	89	55	28	34	64
FLIP 85- 99C	21	58	27	72	40	99	62	40	32	69
FLIP 85-100C	21	35	26	75	50	100	86	35	31	77
FLIP 85-110C	21	37	24	71	51	79	63	31	29	67
FLIP 85-132C	26	55	33	69	45	10	-	38	34	97
FLIP 85-141C	29	41	23	33	45	31	-	41	35	67
FLIP 85-147C	29	36	18	67	45	31	-	26	24	67
FLIP 86- 2C	24	38	20	60	30	86	-	33	23	74
FLIP 86- 3C	24	33	20	56	30	85	64	38	32	74
FLIP 86- 4C	24	43	23	66	45	91	-	42	29	64
FLIP 86- 5C	26	58	30	79	40	49	63	36	29	74
FLIP 86- 6C	34	41	26	65	30	51	-	27	25	72
FLIP 86- 7C	29	46	33	-	50	26	-	38	28	77
FLIP 86- 10C	24	53	20	63	55	106	-	39	27	74
FLIP 86- 11C	16	38	29	67	45	105	72	24	30	82
FLIP 86- 12C	34	36	28	77	65	60	-	43	32	82
FLIP 86- 14C	21	40	24	59	50	75	47	39	33	67
FLIP 86- 15C	21	42	25	52	46	69	61	29	38	62
FLIP 86- 16C	31	40	29	62	51	94	64	28	33	82
FLIP 86- 25C	24	38	25	-	50	91	70	30	27	69
FLIP 86- 26C	36	53	24	67	30	64	58	33	27	69
FLIP 86- 33C	19	48	20	62	45	101	-	31	29	74
FLIP 86- 34C	26	38	28	82	40	114	70	34	36	79
FLIP 86- 36C	26	43	27	81	45	54	61	31	32	74
FLIP 86- 38C	21	44	27	57	51	99	65	27	35	67
FLIP 86- 39C	21	40	25	70	50	95	69	30	33	77
FLIP 86- 40C	26	68	25	87	55	104	55	50	32	69
FLIP 86- 41C	31	43	20	59	55	69	55	30	27	64

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	AFGHANISTAN		ALGERIA	BULGARIA	CYPRUS	EGYPT	ETHIOPIA	IRAN		ITALY
	Bulkh	Kabul	Setif	Toshevo	Laxia	Shandaweel	Debre Zeit	Karaj	Oroumieh	Tarquinia
FLIP 86- 43C	29	36	23	60	50	81	-	35	34	72
FLIP 86- 46C	26	50	35	72	55	10	73	42	33	87
FLIP 86- 50C	21	38	22	70	50	95	58	38	33	67
FLIP 86- 51C	24	38	22	-	50	86	64	38	24	74
FLIP 86- 58C	26	32	19	56	51	79	48	28	25	67
FLIP 86- 59C	21	52	29	69	56	94	64	47	33	82
FLIP 86- 61C	26	36	29	67	60	66	72	44	25	77
FLIP 86- 62C	31	48	27	84	55	74	67	37	40	89
FLIP 86- 63C	29	56	28	61	60	51	-	45	37	72
FLIP 86- 65C	26	68	27	89	45	104	70	55	37	89
FLIP 86- 66C	24	63	23	-	45	116	-	50	32	74
FLIP 86- 68C	20	48	30	66	50	120	81	31	34	82
FLIP 86- 69C	26	43	22	58	45	74	52	33	24	69
FLIP 86- 70C	21	48	26	67	55	89	60	37	30	72
FLIP 86- 71C	24	53	21	76	55	61	64	46	32	69
FLIP 86- 72C	24	36	24	68	55	36	-	43	34	72
FLIP 86- 76C	29	51	28	75	55	41	72	46	24	82
FLIP 86- 77C	29	53	20	-	55	96	62	42	24	74
FLIP 86- 78C	56	47	28	57	61	99	65	49	31	82
FLIP 86- 79C	21	37	27	-	61	69	65	37	33	72
FLIP 86- 81C	31	37	27	64	56	84	60	38	27	87
FLIP 86- 82C	24	48	20	55	55	86	-	40	22	74
FLIP 86- 83C	34	46	28	60	50	76	-	48	29	82
FLIP 86- 84C	31	47	27	57	56	109	63	48	33	82
FLIP 81-293C	24	39	24	60	49	80	61	33	27	69
ILC 482	27	32	22	59	-	55	53	26	27	64
Local check	26	-	22	61	-	77	51	30	30	64
Location Mean	**26**	**43**	**25**	**66**	**43**	**75**	**63**	**36**	**30**	**73**
S.E. of Mean	1.23	1.62	0.96	3.08	0.58	5.99	1.36	1.00	1.70	2.74
L.S.D. at 5% for :										
Checks	3.99	6.37	3.13	10.03	1.88	19.53	4.43	3.26	5.53	8.93
T.E. in S.B.	8.93	14.23	7.01	22.42	4.21	43.67	9.91	7.28	12.36	19.97
T.E. in D.B.	10.31	17.43	8.09	25.89	4.86	50.42	11.44	8.41	14.27	23.06
Check Vs T.E.	7.99	13.51	6.27	20.06	3.77	39.06	8.86	6.51	11.06	17.86
C.V. %	10.56	8.39	8.57	11.76	3.02	17.88	6.67	6.25	12.54	8.40

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	JORDAN	LEBANON	MEXICO	MOROCCO		PORTUGAL		SAUDI ARABIA	SPAIN	
	Marow	Terbol	Hermosillo	Marchuoch	Zomemra	Elvas	Oieras	Tabuk	Madrid	Sevilla
FLIP 84- 5C	-	51	52	37	84	64	14	85	69	67
FLIP 84- 6C	-	59	64	75	94	70	38	116	66	75
FLIP 84- 7C	42	48	56	74	89	85	45	108	68	59
FLIP 84- 33C	49	54	79	75	104	70	35	96	70	67
FLIP 85- 2C	42	54	54	35	74	90	30	102	70	62
FLIP 85- 66C	53	54	71	77	95	72	40	102	70	64
FLIP 85- 72C	37	48	36	89	79	60	40	110	68	63
FLIP 85- 75C	-	37	77	87	79	69	35	89	68	68
FLIP 85- 90C	48	54	51	32	75	57	50	94	68	61
FLIP 85- 99C	47	57	61	72	80	57	25	91	76	69
FLIP 85-100C	-	54	74	90	84	80	42	97	64	72
FLIP 85-110C	42	43	66	64	79	70	55	107	66	60
FLIP 85-132C	35	49	64	95	89	80	47	104	68	57
FLIP 85-141C	38	55	52	27	79	64	34	101	69	61
FLIP 85-147C	54	48	27	67	74	64	39	118	67	57
FLIP 86- 2C	37	47	52	27	74	59	25	103	65	59
FLIP 86- 3C	58	42	57	72	94	59	40	106	65	74
FLIP 86- 4C	-	49	57	77	74	64	40	102	71	64
FLIP 86- 5C	44	52	66	67	80	52	45	126	80	66
FLIP 86- 6C	44	58	57	92	84	69	44	106	73	64
FLIP 86- 7C	39	53	57	57	84	59	34	109	77	66
FLIP 86- 10C	56	42	77	92	79	74	30	95	79	64
FLIP 86- 11C	49	61	74	60	89	80	25	91	76	73
FLIP 86- 12C	42	68	72	82	94	84	34	112	87	68
FLIP 86- 14C	51	44	54	55	74	65	50	118	72	62
FLIP 86- 15C	50	53	71	79	59	85	45	113	75	71
FLIP 86- 16C	52	53	71	104	94	75	35	117	76	69
FLIP 86- 25C	59	47	57	87	94	69	25	109	69	61
FLIP 86- 26C	46	52	76	37	80	52	30	96	76	76
FLIP 86- 33C	48	42	62	57	69	69	40	86	73	57
FLIP 86- 34C	49	52	71	62	95	72	55	96	70	75
FLIP 86- 36C	52	52	61	52	85	57	45	97	68	63
FLIP 86- 38C	-	58	76	89	89	80	50	109	67	53
FLIP 86- 39C	39	54	64	90	94	80	35	11	58	55
FLIP 86- 40C	42	57	66	67	85	57	40	101	82	80
FLIP 86- 41C	44	47	51	27	90	67	30	99	74	63

Cont'd. ...

Table 3.8.4. Cont'd. ...

	JORDAN	LEBANON	MEXICO	MOROCCO		PORTUGAL		SAUDI ARABIA	SPAIN	
Entry Name	Marow	Terbol	Hermosillo	Marchuoch	Zememra	Elvas	Oieras	Tabuk	Madrid	Sevilla
FLIP 86- 43C	26	58	52	67	84	74	19	-	77	58
FLIP 86- 46C	47	54	74	85	94	80	40	103	70	60
FLIP 86- 50C	36	44	49	70	84	75	40	111	72	56
FLIP 86- 51C	45	37	77	82	79	79	35	115	65	67
FLIP 86- 58C	47	46	46	74	69	70	50	107	70	49
FLIP 86- 59C	48	43	76	84	94	85	35	96	76	56
FLIP 86- 61C	29	61	57	97	94	79	39	101	83	60
FLIP 86- 62C	45	54	66	72	105	77	45	95	82	67
FLIP 86- 63C	-	63	62	72	99	79	19	112	81	65
FLIP 86- 65C	52	74	71	87	100	57	55	102	83	83
FLIP 86- 66C	-	35	97	102	94	79	40	103	81	78
FLIP 86- 68C	51	49	64	80	104	75	40	92	56	70
FLIP 86- 69C	40	47	46	47	75	57	25	104	72	65
FLIP 86- 70C	33	47	69	80	94	80	45	100	74	70
FLIP 86- 71C	-	52	72	87	79	79	45	107	83	61
FLIP 86- 72C	-	59	67	72	89	74	44	96	73	74
FLIP 86- 76C	37	63	62	77	99	74	33	104	85	93
FLIP 86- 77C	-	49	67	97	89	74	30	114	85	54
FLIP 86- 78C	52	53	86	99	89	80	50	117	78	62
FLIP 86- 79C	45	48	51	94	84	75	35	96	60	64
FLIP 86- 81C	47	58	66	94	84	80	35	90	68	59
FLIP 86- 82C	53	45	57	77	94	64	25	95	71	62
FLIP 86- 83C	33	53	67	87	79	74	34	97	75	86
FLIP 86- 84C	46	46	66	89	79	80	45	100	76	60
FLIP 81-293C	45	47	62	65	81	68	40	99	67	65
ILC 482	43	44	42	43	72	68	42	97	62	56
Local check	44	47	38	33	68	70	39	95	70	64
Location Mean	**46**	**51**	**60**	**68**	**83**	**71**	**38**	**101**	**72**	**64**
S.E. of Mean	2.44	2.11	2.62	4.19	3.06	3.66	3.69	2.15	1.49	3.57
L.S.D. at 5% for :										
Checks	7.95	6.89	8.54	13.67	9.96	11.94	12.02	7.02	4.85	11.65
T.E. in S.B.	17.78	15.40	19.09	30.57	22.28	26.71	26.87	15.71	10.85	26.05
T.E. in D.B.	20.53	17.79	22.04	35.30	25.72	30.84	31.03	18.14	12.53	30.07
Check Vs T.E.	15.91	13.78	17.08	27.35	19.93	23.89	24.04	14.05	9.70	23.30
C.V. %	14.26	9.35	9.74	13.78	8.20	11.57	21.42	4.86	4.64	12.39

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	SYRIA							THAILAND		
	Al Ghab	Hama	Izra'a	Jableh	Jindi-ress	Tel Hadya-1	Tel Hadya-2	Chiang Mai	Chiang Rai	Overall Mean (1)
FLIP 84- 5C	80	65	38	70	55	56	49	83	21	51
FLIP 84- 6C	83	73	57	89	76	62	49	51	23	56
FLIP 84- 7C	95	60	43	67	57	60	37	67	26	56
FLIP 84- 33C	83	78	51	90	79	64	52	33	26	57
FLIP 85- 2C	93	78	51	78	71	56	52	33	26	55
FLIP 85- 66C	87	77	51	76	69	67	55	69	18	60
FLIP 85- 72C	85	85	45	62	54	60	45	63	21	55
FLIP 85- 75C	90	75	50	80	70	65	57	56	15	59
FLIP 85- 90C	82	72	43	74	58	57	56	58	19	53
FLIP 85- 99C	82	77	46	83	64	60	59	62	22	57
FLIP 85-100C	83	78	50	71	79	63	49	25	26	59
FLIP 85-110C	85	70	42	77	57	60	50	58	26	55
FLIP 85-132C	88	73	53	78	71	61	71	59	28	59
FLIP 85-141C	75	65	46	74	52	52	48	88	22	51
FLIP 85-147C	90	70	41	70	67	56	59	70	20	50
FLIP 86- 2C	75	70	49	79	55	57	51	64	13	50
FLIP 86- 3C	90	70	47	73	53	52	54	64	17	54
FLIP 86- 4C	85	70	44	80	53	53	50	-	18	55
FLIP 86- 5C	92	77	50	72	64	61	56	71	25	55
FLIP 86- 6C	90	75	53	84	70	58	63	34	30	58
FLIP 86- 7C	80	70	49	72	64	65	59	73	29	54
FLIP 86- 10C	85	75	51	81	65	67	60	58	10	58
FLIP 86- 11C	83	83	55	86	81	62	56	12	28	61
FLIP 86- 12C	90	75	52	91	67	73	65	92	27	61
FLIP 86- 14C	88	63	47	63	61	54	57	28	19	54
FLIP 86- 15C	90	75	47	70	77	61	45	68	25	57
FLIP 86- 16C	95	70	52	79	74	60	51	66	25	62
FLIP 86- 25C	95	75	51	80	56	56	47	66	24	56
FLIP 86- 26C	92	77	47	79	62	56	42	66	23	54
FLIP 86- 33C	75	75	40	70	60	60	46	59	8	54
FLIP 86- 34C	87	72	25	74	67	63	54	76	22	59
FLIP 86- 36C	87	77	44	67	60	62	52	63	23	55
FLIP 86- 38C	95	75	49	77	77	61	42	78	23	59
FLIP 86- 39C	83	73	50	84	76	63	73	46	22	60
FLIP 86- 40C	87	67	53	75	64	55	59	70	20	60
FLIP 86- 41C	82	77	43	69	52	55	47	58	17	52

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	SYRIA							THAILAND		(1)
	Al Ghab	Hama	Izra'a	Jableh	Jindi-ress	Tel Hadya-1	Tel Hadya-2	Chiang Mai	Chiang Rai	Overall Mean
FLIP 86- 43C	70	75	41	78	52	59	52	61	19	53
FLIP 86- 46C	88	78	54	89	81	67	72	34	28	59
FLIP 86- 50C	83	68	44	70	69	57	55	30	11	55
FLIP 86- 51C	90	70	50	82	55	63	53	63	24	57
FLIP 86- 58C	90	70	42	63	55	56	48	56	20	52
FLIP 86- 59C	90	75	46	79	74	63	52	66	24	61
FLIP 86- 61C	85	70	53	87	70	64	61	64	34	61
FLIP 86- 62C	87	77	48	83	69	69	56	73	21	62
FLIP 86- 63C	95	70	47	87	70	71	54	76	22	61
FLIP 86- 65C	97	82	54	97	67	70	88	89	19	68
FLIP 86- 66C	95	85	52	89	63	68	71	71	13	64
FLIP 86- 68C	88	78	49	67	76	63	56	33	27	61
FLIP 86- 69C	77	77	45	72	59	51	50	55	19	50
FLIP 86- 70C	88	73	49	76	76	66	79	24	19	61
FLIP 86- 71C	90	75	52	77	68	66	58	58	17	60
FLIP 86- 72C	80	70	49	81	65	60	53	82	23	57
FLIP 86- 76C	90	85	46	86	67	70	59	61	22	62
FLIP 86- 77C	90	75	50	70	63	72	72	75	15	61
FLIP 86- 78C	95	75	51	79	82	67	50	77	24	66
FLIP 86- 79C	90	70	50	86	74	65	49	71	34	58
FLIP 86- 81C	95	75	49	71	57	64	46	74	17	58
FLIP 86- 82C	85	70	50	79	61	65	58	53	11	56
FLIP 86- 83C	70	75	50	92	67	66	61	70	24	61
FLIP 86- 84C	95	80	50	86	85	68	54	81	26	63
FLIP 81-293C	79	70	40	68	58	51	42	60	22	53
ILC 482	77	63	38	68	49	47	37	48	23	46
Local check	94	82	52	85	73	66	-	-	-	
Location Mean	**86**	**73**	**47**	**77**	**65**	**60**	**53**	**60**	**22**	
S.E. of Mean	1.16	1.53	0.90	2.88	2.05	1.10	1.46	8.39	1.08	
L.S.D. at 5% for :										
Checks	3.77	4.98	2.93	9.40	6.69	3.59	5.73	32.92	4.25	
T.E. in S.B.	8.42	11.14	6.55	21.01	14.97	8.03	12.81	73.62	9.50	
T.E. in D.B.	9.72	12.86	7.56	24.27	17.28	9.27	15.69	90.17	11.63	
Check Vs T.E.	7.53	9.96	5.86	18.80	13.39	7.18	12.15	69.85	9.01	
C.V. %	3.00	4.65	4.26	8.38	7.08	4.10	6.14	31.27	11.18	

(1) Toshevo, Debre Zeit, Marow and Tabuk were excluded from the overall mean.
T.E. = Test entries, S.B. = same block, D.B. = different block.

Table 3.8.5. Adjusted 100-Seed weight (g) of entries at different locations in the CISN-W during 1987/88.

Entry Name	ALGERIA	BULGARIA	ETHIOPIA	IRAN		ITALY	LEBANON	MEXICO
	Setif	Toshevo	Debre Zeit	Karaj	Oroumieh	Tarquinia	Terbol	Hermosillo
FLIP 84- 5C	38	42	-	31	42	42	39	31
FLIP 84- 6C	35	33	41	37	33	44	40	40
FLIP 84- 7C	36	41	-	47	44	46	42	44
FLIP 84- 33C	40	-	-	41	40	45	38	42
FLIP 85- 2C	57	51	-	55	58	54	59	55
FLIP 85- 66C	36	32	39	41	42	42	37	43
FLIP 85- 72C	36	38	37	33	34	43	36	35
FLIP 85- 75C	29	65	47	44	50	45	43	44
FLIP 85- 90C	42	45	44	44	44	46	43	41
FLIP 85- 99C	37	41	39	37	40	40	35	37
FLIP 85-100C	43	36	33	30	34	35	30	33
FLIP 85-110C	41	43	40	42	38	50	40	39
FLIP 85-132C	45	42	-	44	44	46	39	39
FLIP 85-141C	32	30	-	35	32	39	31	29
FLIP 85-147C	39	31	-	46	44	48	43	31
FLIP 86- 2C	37	44	-	49	54	53	42	47
FLIP 86- 3C	47	49	-	52	52	53	41	41
FLIP 86- 4C	35	50	-	49	50	56	49	43
FLIP 86- 5C	49	60	-	50	50	60	52	57
FLIP 86- 6C	48	43	-	48	56	53	53	47
FLIP 86- 7C	52	-	-	48	50	48	49	45
FLIP 86- 10C	32	47	-	43	46	49	44	33
FLIP 86- 11C	34	39	39	40	44	50	47	46
FLIP 86- 12C	47	41	-	52	40	52	48	45
FLIP 86- 14C	40	37	40	37	42	48	40	35
FLIP 86- 15C	38	39	31	43	40	45	42	38
FLIP 86- 16C	35	40	42	42	40	48	43	43
FLIP 86- 25C	35	-	39	39	44	44	41	37
FLIP 86- 26C	36	49	38	39	44	45	42	46
FLIP 86- 33C	33	37	-	41	39	41	33	32
FLIP 86- 34C	33	41	35	43	38	38	35	36
FLIP 86- 36C	37	35	37	32	34	41	36	36
FLIP 86- 38C	42	43	41	46	46	52	45	41
FLIP 86- 39C	40	43	41	41	42	43	41	40
FLIP 86- 40C	40	43	-	37	44	47	42	38
FLIP 86- 41C	36	37	35	38	38	43	43	38

Cont'd. ...

Table 3.8.5. Cont'd. ...

	ALGERIA	BULGARIA	ETHIOPIA	IRAN		ITALY	LEBANON	MEXICO
Entry Name	Setif	Toshevo	Debre Zeit	Karaj	Oroumieh	Tarquinia	Terbol	Hermosillo
FLIP 86- 43C	36	37	-	37	40	43	39	34
FLIP 86- 46C	31	41	39	35	40	42	38	39
FLIP 86- 50C	40	41	-	47	44	44	42	43
FLIP 86- 51C	37	-	49	37	45	45	34	37
FLIP 86- 58C	46	46	36	45	36	47	42	46
FLIP 86- 59C	38	34	40	37	40	42	39	41
FLIP 86- 61C	38	43	40	40	42	40	42	41
FLIP 86- 62C	36	41	-	34	44	43	44	45
FLIP 86- 63C	36	-	-	40	40	44	38	32
FLIP 86- 65C	41	45	-	38	47	45	33	46
FLIP 86- 66C	33	-	-	39	46	48	43	38
FLIP 86- 68C	41	-	34	39	36	41	38	37
FLIP 86- 69C	36	36	38	36	30	41	37	36
FLIP 86- 70C	44	45	46	39	46	47	44	44
FLIP 86- 71C	38	44	41	41	46	51	44	37
FLIP 86- 72C	43	42	-	40	44	46	46	40
FLIP 86- 76C	30	41	44	36	42	43	43	35
FLIP 86- 77C	32	-	-	49	45	49	44	38
FLIP 86- 78C	39	42	-	46	47	48	46	43
FLIP 86- 79C	37	-	-	41	42	44	42	41
FLIP 86- 81C	44	44	33	40	-	55	46	46
FLIP 86- 82C	32	35	-	44	48	50	44	43
FLIP 86- 83C	37	40	-	43	42	47	31	39
FLIP 86- 84C	46	45	41	46	46	52	46	45
FLIP 81-293C	33	32	32	33	33	36	30	30
ILC 482	32	33	30	33	34	35	31	29
Local check	31	31	22	35	45	39	41	61
Location Mean	**37**	**41**	**38**	**40**	**41**	**44**	**40**	**40**
S.E. of Mean	1.78	1.39	0.35	1.93	0.44	0.73	0.53	0.87
L.S.D. at 5% for :								
Checks	5.81	4.53	1.13	6.30	1.43	2.39	1.74	2.83
T.E. in S.B.	12.99	10.12	2.53	14.08	3.21	5.34	3.89	6.33
T.E. in D.B.	15.00	11.69	2.92	16.25	3.70	6.17	4.49	7.31
Check Vs T.E.	11.62	9.06	2.26	12.59	2.87	4.78	3.48	5.66
C.V. %	10.67	8.92	3.54	10.85	2.39	3.70	2.99	4.84
Test > L. Check	13	35	31	9	8	40	14	0

Cont'd. ...

Table 3.8.5. Cont'd. ...

Entry Name	PORTUGAL		SAUDI ARABIA	SPAIN	SYRIA		THAILAND	TURKEY	Overall Mean
	Elvas	Oieras	Tabuk	Madrid	Jableh	Tel Hadya-2	Chiang Mai	Adana	
FLIP 84- 5C	37	43	37	40	45	34	38	23	38
FLIP 84- 6C	34	35	40	30	44	31	55	47	38
FLIP 84- 7C	34	45	38	42	46	35	58	39	42
FLIP 84- 33C	39	40	38	37	41	33	40	36	40
FLIP 85- 2C	52	50	41	42	57	46	50	49	52
FLIP 85- 66C	27	37	34	38	43	33	28	38	38
FLIP 85- 72C	34	45	32	38	36	39	58	38	37
FLIP 85- 75C	42	40	40	41	40	39	38	32	41
FLIP 85- 90C	30	42	36	40	44	38	28	35	42
FLIP 85- 99C	28	37	28	36	40	31	38	37	36
FLIP 85-100C	32	25	41	26	38	25	50	34	33
FLIP 85-110C	37	35	34	38	39	39	-	35	40
FLIP 85-132C	40	40	38	40	48	36	40	-	42
FLIP 85-141C	31	33	37	32	37	29	33	40	34
FLIP 85-147C	39	43	39	32	48	41	-	22	41
FLIP 86- 2C	43	30	44	44	53	43	28	42	44
FLIP 86- 3C	51	50	45	39	53	46	43	-	47
FLIP 86- 4C	44	45	46	44	47	44	38	47	46
FLIP 86- 5C	39	47	37	41	52	42	43	40	49
FLIP 86- 6C	-	48	34	39	53	42	48	37	47
FLIP 86- 7C	-	48	34	44	51	43	43	37	46
FLIP 86- 10C	37	45	45	40	55	40	45	30	43
FLIP 86- 11C	40	45	37	39	52	37	53	35	43
FLIP 86- 12C	50	43	40	38	55	43	30	22	46
FLIP 86- 14C	40	45	36	39	50	36	53	33	41
FLIP 86- 15C	35	30	36	36	43	36	73	42	39
FLIP 86- 16C	39	40	37	43	45	39	48	42	41
FLIP 86- 25C	37	35	37	34	40	36	38	28	38
FLIP 86- 26C	29	32	32	38	44	36	43	40	39
FLIP 86- 33C	32	45	46	33	36	31	38	29	37
FLIP 86- 34C	21	32	35	35	37	31	-	36	35
FLIP 86- 36C	25	42	35	35	38	33	-	37	36
FLIP 86- 38C	-	35	38	45	44	38	50	52	43
FLIP 86- 39C	36	40	42	33	44	36	-	44	40
FLIP 86- 40C	-	37	29	36	43	37	33	33	39
FLIP 86- 41C	27	42	30	41	41	35	38	49	39

Cont'd. ...

Table 3.8.5. Cont'd. ...

Entry Name	PORTUGAL		SAUDI ARABIA	SPAIN	SYRIA		THAILAND	TURKEY	Overall Mean
	Elvas	Oieras	Tabuk	Madrid	Jableh	Tel Hadya-2	Chiang Mai	Adana	
FLIP 86- 43C	38	33	-	34	37	34	-	34	36
FLIP 86- 46C	35	45	38	32	48	34	35	36	38
FLIP 86- 50C	44	45	39	40	46	39	53	34	43
FLIP 86- 51C	42	45	38	39	42	39	-	33	39
FLIP 86- 58C	41	55	37	41	38	36	-	40	43
FLIP 86- 59C	36	35	35	38	47	38	43	55	39
FLIP 86- 61C	41	38	29	37	43	36	33	24	38
FLIP 86- 62C	30	32	37	41	49	32	33	38	39
FLIP 86- 63C	41	43	39	31	41	36	-	35	38
FLIP 86- 65C	-	32	35	36	47	32	33	43	38
FLIP 86- 66C	-	35	42	36	42	37	50	41	39
FLIP 86- 68C	38	35	39	34	38	31	23	31	37
FLIP 86- 69C	26	32	29	41	38	32	35	38	36
FLIP 86- 70C	41	45	42	37	46	41	33	46	43
FLIP 86- 71C	-	45	42	40	41	38	58	45	42
FLIP 86- 72C	45	43	38	42	45	39	43	20	42
FLIP 86- 76C	42	43	35	36	43	36	28	23	38
FLIP 86- 77C	41	40	43	40	48	40	53	31	42
FLIP 86- 78C	40	35	43	46	48	38	63	53	43
FLIP 86- 79C	37	45	38	40	46	36	68	48	41
FLIP 86- 81C	44	45	43	39	47	37	38	50	44
FLIP 86- 82C	-	45	43	38	46	40	38	42	42
FLIP 86- 83C	37	48	39	33	44	36	63	36	40
FLIP 86- 84C	39	35	44	47	49	43	36	43	45
FLIP 81-293C	37	35	33	28	31	27	49	38	31
ILC 482	30	35	36	31	33	26	43	39	32
Local check	31	40	38	21	36	35	-	35	
Location Mean	**37**	**40**	**38**	**36**	**42**	**37**	**43**	**36**	
S.E. of Mean	3.45	0.91	1.91	0.77	1.24	1.54	26.95	2.18	
L.S.D. at 5% for :									
Checks	11.25	2.98	6.23	2.81	4.03	3.45	58.55	7.09	
T.E. in S.B.	25.16	6.66	13.94	5.60	9.02	4.22	71.71	15.86	
T.E. in D.B.	29.06	7.69	16.10	6.47	10.41	3.27	55.56	18.31	
Check Vs T.E.	22.51	5.95	12.47	5.01	8.07	2.48	39.51	14.19	
C.V. %	23.90	5.16	11.59	4.79	6.07	59.00	0.00	13.35	
Test > L. Check	0	7	0	60	32	0	-	6	

Table 3.8.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-W during 1987/88.

	AFGHANISTAN				ALGERIA		BULGARIA		CYPRUS		EGYPT		ETHIOPIA		FRANCE	
	Bulkh		Kabul		Setif		Toshevo		Laxia		Shandaweel		Debre Zeit		Montpellier-1	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 5C	469	20	1355	4	614	18	51	54	1072	33	-	-	-	-	1788	40
FLIP 84- 6C	703	5	819	22	605	20	1194	25	544	49	44	36	392	21	1557	43
FLIP 84- 7C	-	-	569	37	284	61	559	41	1442	15	54	31	283	28	3565	6
FLIP 84- 33C	1011	2	536	42	770	7	-	-	344	56	44	37	-	-	1772	41
FLIP 85- 2C	1178	1	358	48	593	24	559	42	369	55	183	7	-	-	1807	39
FLIP 85- 66C	414	40	-	-	965	2	590	40	1175	26	128	10	355	24	1347	51
FLIP 85- 72C	428	28	569	38	436	52	2463	6	1375	18	54	28	958	3	3896	3
FLIP 85- 75C	344	47	611	35	694	12	717	34	1475	14	322	6	257	33	1874	37
FLIP 85- 90C	372	46	-	-	737	9	1606	15	1883	5	44	43	394	20	2465	24
FLIP 85- 99C	706	4	-	-	610	19	1003	27	1175	27	44	41	519	10	1527	44
FLIP 85-100C	428	31	291	53	580	26	432	46	1036	36	72	20	504	11	1239	53
FLIP 85-110C	428	27	569	39	461	49	1797	12	758	44	26	50	425	17	2085	30
FLIP 85-132C	428	33	-	-	694	11	1352	21	436	53	44	38	-	-	1495	45
FLIP 85-141C	428	30	1422	3	525	39	210	53	622	46	-	-	-	-	1487	46
FLIP 85-147C	344	48	833	21	595	23	-	-	972	37	-	-	-	-	3390	9
FLIP 86- 2C	544	11	1338	6	377	55	876	30	-	-	72	24	-	-	294	62
FLIP 86- 3C	386	41	572	36	605	21	1384	20	25	58	100	17	-	-	193	63
FLIP 86- 4C	469	19	1166	8	554	33	1225	24	25	59	378	3	-	-	327	61
FLIP 86- 5C	456	24	447	45	749	8	2495	5	575	48	17	53	308	27	1972	34
FLIP 86- 6C	386	42	1061	16	296	60	-	-	22	60	146	9	-	-	416	60
FLIP 86- 7C	469	21	1088	12	271	63	-	-	1081	32	-	-	-	-	835	57
FLIP 86- 10C	594	9	1166	9	428	53	1575	16	1592	11	72	25	-	-	1581	42
FLIP 86- 11C	428	32	558	41	339	57	1702	13	953	38	100	13	431	16	1977	33
FLIP 86- 12C	469	22	1066	15	461	50	-	-	1064	34	146	8	-	-	2360	27
FLIP 86- 14C	469	23	558	40	504	43	1289	23	1178	25	100	14	31	41	1971	35
FLIP 86- 15C	-	-	808	23	372	56	241	52	817	42	26	48	480	13	2490	23
FLIP 86- 16C	-	-	641	32	563	30	552	44	1125	30	54	30	483	12	2843	15
FLIP 86- 25C	553	10	788	25	631	17	-	-	1342	19	44	47	349	25	3434	7
FLIP 86- 26C	497	14	308	50	444	51	1448	19	508	52	100	15	394	19	2008	32
FLIP 86- 33C	636	6	1766	2	567	27	1892	11	625	45	378	4	-	-	4224	1
FLIP 86- 34C	456	25	-	-	838	4	3511	1	425	54	17	52	411	18	2051	31
FLIP 86- 36C	331	51	-	-	851	3	1003	28	942	39	17	51	672	8	1947	36
FLIP 86- 38C	-	-	1069	14	487	46	305	50	1383	17	54	33	372	23	2570	19
FLIP 86- 39C	386	45	469	43	516	40	2844	4	1811	7	100	12	212	36	3741	5
FLIP 86- 40C	414	39	308	49	635	15	2400	7	1300	20	44	42	261	32	2370	26
FLIP 86- 41C	414	36	641	31	546	35	2083	8	1758	9	44	44	564	9	2302	28

Cont'd. ...

Table 3.8.6. Cont'd. ...

	AFGHANISTAN				ALGERIA		BULGARIA		CYPRUS		EGYPT		ETHIOPIA		FRANCE	
	Bulkh		Kabul		Setif		Toshevo		Laxia		Shandaweel		Debre Zeit		Montpellier-1	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 43C	303	52	1072	13	703	10	1575	17	1139	28	-	-	-	-	2215	29
FLIP 86- 46C	428	34	252	54	834	5	-	-	928	41	44	39	198	39	2556	20
FLIP 86- 50C	428	35	791	24	554	32	1924	10	1719	10	656	1	-	-	3877	4
FLIP 86- 51C	428	29	616	34	821	6	-	-	525	51	72	26	249	34	1474	47
FLIP 86- 58C	494	15	763	27	538	36	1289	22	1800	8	54	29	728	6	3312	11
FLIP 86- 59C	-	-	786	26	563	31	305	49	1908	3	81	19	453	14	3341	10
FLIP 86- 61C	386	44	855	20	588	25	559	43	1189	24	-	-	198	38	1382	50
FLIP 86- 62C	414	37	302	51	533	38	1575	18	2108	2	72	23	205	37	2538	21
FLIP 86- 63C	386	43	1355	5	601	22	-	-	772	43	-	-	-	-	1034	55
FLIP 86- 65C	831	3	-	-	546	34	686	35	525	50	44	40	269	31	1467	48
FLIP 86- 66C	528	12	905	19	491	45	-	-	92	57	378	2	-	-	1424	49
FLIP 86- 68C	344	50	297	52	631	16	2876	3	1103	31	72	22	1001	2	2727	17
FLIP 86- 69C	414	38	8	55	533	37	1606	14	2133	1	322	5	941	4	2402	25
FLIP 86- 70C	636	7	1047	17	504	42	844	31	1411	16	72	21	215	35	2781	16
FLIP 86- 71C	494	16	1116	10	567	28	1987	9	1575	12	44	46	313	26	1001	56
FLIP 86- 72C	511	13	933	18	474	47	940	29	1289	21	-	-	-	-	2525	22
FLIP 86- 76C	344	49	694	29	2188	1	1098	26	1131	29	7	54	192	40	595	59
FLIP 86- 77C	486	18	1777	1	466	48	-	-	1558	13	100	18	-	-	3232	13
FLIP 86- 78C	261	56	630	33	411	54	273	51	1233	22	54	35	280	29	3395	8
FLIP 86- 79C	-	-	-	-	334	58	-	-	1225	23	54	32	275	30	3240	12
FLIP 86- 81C	261	55	463	44	512	41	305	48	1050	35	54	34	444	15	3904	2
FLIP 86- 82C	494	17	1255	7	326	59	813	32	1867	6	100	16	-	-	1301	52
FLIP 86- 83C	453	26	699	28	284	62	-	-	622	47	-	-	-	-	689	58
FLIP 86- 84C	-	-	-	-	563	29	305	47	942	40	26	49	389	22	2693	18
FLIP 81-293C	292	53	1102	11	681	14	3029	2	1900	4	44	45	718	7	2857	14
ILC 482	292	54	663	30	681	13	552	45	-	-	61	27	861	5	1818	38
Local check	617	8	-	-	493	44	762	33	-	-	111	11	1917	1	1223	54
Location Mean	**485**		**818**		**587**		**1289**		**984**		**120**		**461**		**2104**	
S.E. of Mean	146.21		333.04		104.63		356.80		112.99		23.95		177.17		277.45	
L.S.D. at 5% for:																
Checks	476.74		1307.29		341.18		1163.41		368.42		78.09		577.70		904.67	
T.E. in S.B.	1066.03		2923.18		762.90		2601.47		823.81		174.62		1291.77		2022.91	
T.E. in D.B.	1230.95		3580.15		880.92		3003.92		951.25		201.63		1491.61		2335.86	
Check Vs T.E.	954.63		2773.59		682.46		2327.18		736.95		156.21		1155.57		1809.62	
C.V. %	83.40		107.28		39.85		75.16		26.15		68.53		98.61		29.49	
Test > L. Check	0		-		1		1		-		6		0		13	

Cont'd. ...

Table 3.8.6. Cont'd. ...

	FRANCE				IRAN				ITALY		JORDAN		LEBANON	
	Montpellier-2		Montpellier-3		Karaj		Oroumieh		Tarquinia		Marow		Terbol	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 5C	2100	26	3035	5	2084	4	575	47	3841	3	-	-	2134	29
FLIP 84- 6C	1706	42	1248	53	1084	41	757	36	614	61	-	-	2406	17
FLIP 84- 7C	3068	1	3060	4	1246	29	1032	8	1513	34	291	15	473	60
FLIP 84- 33C	1478	51	1387	44	490	60	795	33	233	62	185	38	2913	6
FLIP 85- 2C	2346	14	977	58	473	61	1341	1	1312	44	404	6	3056	5
FLIP 85- 66C	1322	54	1620	36	1574	16	782	34	3217	9	218	32	2042	33
FLIP 85- 72C	2387	13	1775	29	1240	32	664	44	1354	42	272	21	1325	48
FLIP 85- 75C	2156	24	2079	23	1046	43	410	53	1418	37	-	-	1808	41
FLIP 85- 90C	1874	37	385	61	2008	5	960	17	4233	1	123	44	2693	11
FLIP 85- 99C	628	61	940	59	1437	22	820	29	2265	17	123	45	1894	37
FLIP 85-100C	2006	31	1255	52	838	48	935	19	1122	54	-	-	2776	10
FLIP 85-110C	1504	50	1504	40	1886	8	892	20	1323	43	358	10	2014	35
FLIP 85-132C	1401	52	1208	54	730	51	744	38	741	60	290	17	3794	2
FLIP 85-141C	2195	22	1579	38	2656	2	1146	6	2222	18	424	5	2351	19
FLIP 85-147C	2752	6	1683	34	547	56	270	60	1492	35	186	37	1879	39
FLIP 86- 2C	798	59	787	60	1143	37	194	63	751	59	272	20	3086	4
FLIP 86- 3C	338	63	293	62	738	50	676	42	1228	47	377	7	186	63
FLIP 86- 4C	438	62	156	63	1538	17	321	57	1196	51	-	-	808	58
FLIP 86- 5C	2245	19	1385	45	1659	12	858	24	3122	10	294	13	2265	24
FLIP 86- 6C	2221	21	2745	9	558	55	219	62	2000	23	234	30	2048	31
FLIP 86- 7C	1334	53	2212	18	1696	11	359	56	2667	14	281	18	5057	1
FLIP 86- 10C	1672	47	2430	13	1052	42	435	51	1767	30	291	14	1300	50
FLIP 86- 11C	1774	39	1445	42	1256	28	1011	9	931	58	309	12	2828	8
FLIP 86- 12C	2044	28	1712	32	1370	26	588	46	1873	28	234	29	2394	18
FLIP 86- 14C	1542	49	1371	47	1244	30	871	23	1249	46	280	19	2193	25
FLIP 86- 15C	1313	55	1323	49	1086	40	1299	2	1989	25	291	16	214	62
FLIP 86- 16C	2253	18	2143	20	1412	23	943	18	1481	36	100	49	1127	52
FLIP 86- 25C	1957	34	2313	16	492	59	549	49	1894	27	2130	1	845	57
FLIP 86- 26C	2243	20	1043	57	1608	15	820	28	2011	22	199	35	1820	40
FLIP 86- 33C	2624	9	4480	1	1200	35	676	43	1767	29	368	9	1673	45
FLIP 86- 34C	1714	41	1373	46	1219	33	808	32	3534	5	170	40	2265	23
FLIP 86- 36C	2118	25	2125	21	1894	7	960	16	3312	7	246	26	1894	38
FLIP 86- 38C	2898	4	1324	48	846	47	1007	10	1672	31	-	-	1500	47
FLIP 86- 39C	2550	11	3536	3	4770	1	833	27	1630	32	166	42	2072	30
FLIP 86- 40C	1614	48	1701	33	1374	24	782	35	2201	19	27	59	2487	16
FLIP 86- 41C	2271	17	1865	28	1534	18	833	26	1979	26	342	11	2134	28

Cont'd. ...

Table 3.8.6. Cont'd. ...

	FRANCE				IRAN				ITALY		JORDAN		LEBANON	
	Montpellier-2		Montpellier-3		Karaj		Oroumieh		Tarquinia		Marow		Terbol	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 43C	1926	36	1425	43	1638	14	1197	4	3079	11	377	8	2307	22
FLIP 86- 46C	2004	32	2057	24	501	58	998	11	201	63	185	39	2628	13
FLIP 86- 50C	2478	12	1312	50	1644	13	985	12	963	57	499	4	2331	20
FLIP 86- 51C	779	60	1914	25	1503	20	422	52	1291	45	244	27	1031	55
FLIP 86- 58C	2927	2	1884	26	2178	3	841	25	1418	38	224	31	1084	54
FLIP 86- 59C	1972	33	1273	51	355	62	968	15	1228	49	272	22	1301	49
FLIP 86- 61C	2016	30	2293	17	930	44	753	37	3556	4	205	33	1715	44
FLIP 86- 62C	1675	46	2756	8	1179	36	808	31	2741	13	123	46	1672	46
FLIP 86- 63C	1684	45	3600	2	1107	38	638	45	3238	8	-	-	2177	26
FLIP 86- 65C	1282	56	1641	35	1242	31	681	41	1376	41	113	47	2015	34
FLIP 86- 66C	1278	57	2662	10	1103	39	295	58	1005	56	-	-	1804	42
FLIP 86- 68C	2611	10	2757	7	724	52	1239	3	1185	52	261	24	2517	15
FLIP 86- 69C	2672	7	1487	41	1534	19	871	22	3026	12	199	34	2042	32
FLIP 86- 70C	2027	29	2362	15	1216	34	274	59	1058	55	261	23	2628	12
FLIP 86- 71C	1944	35	1158	56	766	49	448	50	1989	24	-	-	1238	51
FLIP 86- 72C	2159	23	2806	6	1701	10	397	55	4222	2	-	-	3307	3
FLIP 86- 76C	2068	27	2120	22	1901	6	816	30	3524	6	519	3	2826	9
FLIP 86- 77C	901	58	2465	12	898	45	397	54	1228	48	-	-	1031	56
FLIP 86- 78C	2288	16	2392	14	623	54	1184	5	1228	50	34	58	1103	53
FLIP 86- 79C	1697	44	1190	55	875	46	968	14	1386	40	243	28	257	61
FLIP 86- 81C	2811	5	2196	19	-	-	562	48	2434	15	167	41	1770	43
FLIP 86- 82C	2656	8	2528	11	623	53	219	61	1164	53	101	48	1934	36
FLIP 86- 83C	1817	38	1773	30	1450	21	702	40	1556	33	567	2	2557	14
FLIP 86- 84C	1700	43	1866	27	532	57	1070	7	1418	39	148	43	605	59
FLIP 81-293C	2913	3	1749	31	1829	9	980	13	2063	21	261	25	2166	27
ILC 482	2318	15	1519	39	1371	25	876	21	2063	20	186	36	2308	21
Local check	1757	40	1582	37	1333	27	706	39	2413	16	45	52	2839	7
Location Mean	**1989**		**1809**		**1328**		**770**		**1938**		**268**		**2056**	
S.E. of Mean	231.99		337.65		246.09		79.31		211.93		34.45		419.91	
L.S.D. at 5% for:														
Checks	753.17		1100.97		802.41		258.61		691.04		112.32		1369.20	
T.E. in S.B.	1684.14		2461.85		1794.24		578.27		1545.21		251.15		3061.62	
T.E. in D.B.	1944.68		2842.70		2071.81		667.73		1784.26		290.00		3535.25	
Check Vs T.E.	1506.57		2202.28		1605.06		517.30		1382.29		224.67		2738.81	
C.V. %	25.96		41.74		42.26		23.05		24.45		34.03		45.67	
Test > L. Check	0		1		1		3		3		22		0	

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	MEXICO Hermosillo Y	MEXICO Hermosillo R	MOROCCO Marchouch Y	MOROCCO Marchouch R	PORTUGAL Elvas Y	PORTUGAL Elvas R	PORTUGAL Oeiras Y	PORTUGAL Oeiras R	SAUDI ARABIA Tabuk Y	SAUDI ARABIA Tabuk R	SPAIN Madrid Y	SPAIN Madrid R
FLIP 84- 5C	1304	23	3667	18	2160	27	740	38	1182	6	1143	46
FLIP 84- 6C	1333	19	3528	23	2180	25	321	56	607	36	305	62
FLIP 84- 7C	1413	10	3042	41	3848	4	1712	2	398	56	2348	11
FLIP 84- 33C	746	55	2486	55	1102	52	464	51	557	42	1055	50
FLIP 85- 2C	250	63	2486	56	2471	19	64	61	657	30	836	57
FLIP 85- 66C	1445	9	3319	33	2977	13	534	49	445	53	1864	25
FLIP 85- 72C	846	51	3875	12	2164	26	798	37	460	50	2156	14
FLIP 85- 75C	1403	12	2278	62	1590	43	807	36	1075	9	1890	22
FLIP 85- 90C	1456	8	3111	38	3430	10	1105	19	570	41	2818	2
FLIP 85- 99C	1609	4	2486	57	3829	5	820	34	695	25	2577	4
FLIP 85-100C	926	48	2903	44	2590	17	492	50	832	18	492	61
FLIP 85-110C	1353	17	3042	40	2110	28	398	54	460	49	1517	38
FLIP 85-132C	913	49	2903	45	1638	42	921	24	657	31	2006	19
FLIP 85-141C	977	44	2625	51	2493	18	1254	9	857	15	2618	3
FLIP 85-147C	651	60	3875	10	1374	47	626	47	507	47	1042	51
FLIP 86- 2C	935	47	3319	30	2424	20	693	42	388	58	670	59
FLIP 86- 3C	824	52	4153	5	1710	39	1436	6	388	57	1093	48
FLIP 86- 4C	672	59	3319	28	1858	36	1207	11	450	51	921	55
FLIP 86- 5C	1351	18	3528	24	2817	16	1563	4	382	59	3225	1
FLIP 86- 6C	709	58	2625	50	791	58	654	46	632	34	733	58
FLIP 86- 7C	1011	41	3667	19	642	60	397	55	682	29	524	60
FLIP 86- 10C	1074	37	3736	15	2019	32	321	57	1450	3	1547	35
FLIP 86- 11C	579	61	3111	37	1007	54	178	60	857	14	1036	52
FLIP 86- 12C	1205	26	2625	52	2071	30	1197	12	832	19	1081	49
FLIP 86- 14C	1366	16	3319	31	936	55	692	44	507	46	891	56
FLIP 86- 15C	1146	30	3042	42	2003	33	712	40	585	37	1825	27
FLIP 86- 16C	1201	28	3875	11	1700	40	1226	10	960	11	1809	28
FLIP 86- 25C	343	62	3319	29	2245	24	921	25	888	12	1683	33
FLIP 86- 26C	1795	2	4153	7	2263	23	1163	16	507	48	1781	29
FLIP 86- 33C	1855	1	4361	4	2870	15	1150	17	2638	1	1718	31
FLIP 86- 34C	1385	13	3528	25	1370	48	1477	5	257	63	2025	17
FLIP 86- 36C	1104	33	3319	34	1757	38	1048	20	632	33	2063	16
FLIP 86- 38C	885	50	3250	35	1182	50	541	48	523	43	1403	42
FLIP 86- 39C	1024	39	4569	2	1263	49	35	62	832	17	1032	53
FLIP 86- 40C	1213	25	2486	59	579	61	820	35	320	61	2503	5
FLIP 86- 41C	1598	5	3319	32	3686	7	1191	14	695	26	2502	6

Cont'd. ...

Table 3.8.6. Cont'd. ...

	MEXICO		MOROCCO		PORTUGAL				SAUDI ARABIA		SPAIN	
	Hermosillo		Marchouch		Elvas		Oeiras		Tabuk		Madrid	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 43C	749	54	3875	9	3267	11	1169	15	-	-	1970	20
FLIP 86- 46C	760	53	3736	16	1960	34	-	-	682	28	1886	23
FLIP 86- 50C	730	56	3736	17	1835	37	1035	21	707	24	2077	15
FLIP 86- 51C	1322	21	2486	54	1531	45	436	53	575	39	243	63
FLIP 86- 58C	1017	40	3875	13	3539	9	941	23	398	55	2292	13
FLIP 86- 59C	1128	32	2833	48	3557	8	884	27	835	16	1397	43
FLIP 86- 61C	957	45	3042	39	910	56	454	52	882	13	2478	7
FLIP 86- 62C	1306	22	2486	58	1448	46	1134	18	382	60	2389	9
FLIP 86- 63C	1499	7	3667	20	2083	29	883	29	1020	10	1906	21
FLIP 86- 65C	1102	34	2903	47	394	63	905	26	445	54	1652	34
FLIP 86- 66C	1065	38	3111	36	829	57	1264	8	1075	8	1335	45
FLIP 86- 68C	1187	29	2903	46	4150	3	692	43	1107	7	1830	26
FLIP 86- 69C	1223	24	4153	6	3192	12	705	41	570	40	2408	8
FLIP 86- 70C	1077	36	4778	1	2352	21	235	59	632	32	1368	44
FLIP 86- 71C	1768	3	3736	14	656	59	1664	3	1325	4	1534	36
FLIP 86- 72C	1531	6	4500	3	1088	53	712	39	807	20	2303	12
FLIP 86- 76C	1409	11	2625	53	1910	35	969	22	732	21	1687	32
FLIP 86- 77C	1144	31	3528	22	1573	44	1293	7	450	52	2022	18
FLIP 86- 78C	944	46	2417	61	2277	22	312	58	710	23	2378	10
FLIP 86- 79C	1385	14	2833	49	2033	31	855	33	1898	2	1408	41
FLIP 86- 81C	1085	35	3667	21	2973	14	855	32	523	45	1098	47
FLIP 86- 82C	711	57	2903	43	412	62	2264	1	1325	5	1019	54
FLIP 86- 83C	1205	27	2417	60	1112	51	654	45	732	22	1884	24
FLIP 86- 84C	1374	15	4083	8	1658	41	884	28	523	44	1524	37
FLIP 81-293C	1326	20	3500	27	4583	2	1194	13	618	35	1746	30
ILC 482	993	43	3500	26	3815	6	866	31	584	38	1444	39
Local check	1010	42	875	63	4694	1	874	30	693	27	1426	40
Location Mean	**1123**		**3172**		**2471**		**888**		**720**		**1625**	
S.E. of Mean	114.02		243.85		478.74		231.36		83.53		162.97	
L.S.D. at 5% for:												
Checks	371.79		795.11		1561.01		754.38		272.35		531.41	
T.E. in S.B.	831.34		1777.92		3490.53		1686.85		608.99		1188.26	
T.E. in D.B.	959.95		2052.97		4030.52		1947.81		703.20		1372.08	
Check Vs T.E.	743.69		1590.46		3122.50		1509.00		544.78		1062.97	
C.V. %	22.71		17.19		43.32		59.26		26.19		22.42	
Test > L. Check	3		57		0		0		5		6	

Cont'd. ...

Table 3.8.6. Cont'd. ...

	SPAIN		SYRIA											
	Sevilla		Al Ghab		Hama		Izra'a		Jableh		Jindiress		Tel Hadya-2	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 84- 5C	2210	27	1558	53	1230	54	724	52	1357	53	735	63	1679	47
FLIP 84- 6C	1802	40	2267	25	1473	46	745	45	1907	29	1772	30	1419	54
FLIP 84- 7C	2677	13	2637	13	2828	5	925	24	2542	5	2273	13	1889	30
FLIP 84- 33C	1277	54	1695	47	1378	49	745	46	1589	43	2591	5	1806	35
FLIP 85- 2C	427	63	1663	50	2044	21	1113	5	2796	3	2604	4	2466	4
FLIP 85- 66C	2002	34	2849	11	1187	55	745	47	1505	49	1308	51	1992	25
FLIP 85- 72C	2452	20	2002	33	2605	10	734	49	1462	51	1848	27	2828	1
FLIP 85- 75C	1935	37	2626	16	1981	23	798	35	1515	48	1232	53	2196	14
FLIP 85- 90C	2602	16	3039	3	1981	25	808	34	1822	33	1207	54	1573	50
FLIP 85- 99C	1527	47	2880	9	1314	51	681	56	1441	52	1029	61	1688	44
FLIP 85-100C	2002	35	1632	51	1378	50	967	17	1843	32	2470	10	1774	38
FLIP 85-110C	2202	28	1780	41	2701	8	830	32	2351	11	1505	44	1812	34
FLIP 85-132C	2327	23	2267	26	1981	24	935	20	1970	26	2648	3	1990	26
FLIP 85-141C	510	62	2447	20	1388	47	851	30	1230	56	1655	34	1019	60
FLIP 85-147C	1310	52	1177	59	1928	27	724	51	849	63	1903	24	2409	6
FLIP 86- 2C	1985	36	2944	5	1029	59	1211	2	1769	34	1969	21	1789	37
FLIP 86- 3C	2985	2	1484	55	2235	16	1211	3	2404	9	1410	48	2380	10
FLIP 86- 4C	2735	9	1928	36	1537	43	957	18	1769	35	1569	40	2100	18
FLIP 86- 5C	2702	12	3357	1	3346	3	1062	10	2521	6	2483	9	2037	23
FLIP 86- 6C	2285	25	2383	22	2119	20	1105	6	2499	8	2748	2	1254	55
FLIP 86- 7C	985	59	1621	52	1865	30	629	60	1103	58	1630	37	1127	57
FLIP 86- 10C	2135	31	2182	31	1283	52	1020	15	2150	16	934	62	2183	15
FLIP 86- 11C	927	61	1441	58	1632	39	1062	8	2796	2	2464	11	2003	24
FLIP 86- 12C	1535	46	1970	35	1738	33	819	33	1992	24	1674	33	2143	17
FLIP 86- 14C	2727	11	1822	40	1092	58	904	26	1970	25	2019	19	2047	22
FLIP 86- 15C	3077	1	2510	17	3526	1	988	16	1494	50	1937	22	1730	42
FLIP 86- 16C	2202	29	2891	6	2574	11	703	54	1335	55	2045	18	1578	49
FLIP 86- 25C	2010	33	2944	4	1790	31	1115	4	2214	15	1829	28	2151	16
FLIP 86- 26C	2552	19	2626	15	2171	18	1031	14	2140	20	1359	49	2075	20
FLIP 86- 33C	2735	10	1039	60	2298	15	766	43	1611	42	1645	35	2399	8
FLIP 86- 34C	1102	58	2468	19	838	61	681	55	1632	40	1531	41	1103	58
FLIP 86- 36C	1802	38	2214	28	1283	53	745	48	2140	19	2178	15	2240	13
FLIP 86- 38C	1802	39	2224	27	2542	12	734	50	2954	1	1766	31	1559	51
FLIP 86- 39C	1777	43	1695	48	1949	26	1221	1	1970	27	2559	7	1686	46
FLIP 86- 40C	2652	14	2119	32	1156	57	904	27	1346	54	1124	59	964	61
FLIP 86- 41C	2752	8	2880	10	2679	9	777	41	1663	38	1245	52	2608	2

Cont'd. ...

Table 3.8.6. Cont'd. ...

	SPAIN		SYRIA											
	Sevilla		Al Ghab		Hama		Izra'a		Jableh		Jindiress		Tel Hadya-2	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 43C	1435	49	1780	42	-	-	787	39	1865	31	1205	55	1964	29
FLIP 86- 46C	2852	6	1441	57	1917	29	872	29	1653	39	2521	8	2276	11
FLIP 86- 50C	1352	51	1917	37	1727	35	904	25	2320	12	2331	12	2409	7
FLIP 86- 51C	2885	4	976	61	965	60	607	61	1515	47	1073	60	2069	21
FLIP 86- 58C	2627	15	2637	14	3177	4	1052	11	1526	46	1988	20	2492	3
FLIP 86- 59C	2577	18	2320	23	2383	14	798	37	1018	61	1613	38	1546	52
FLIP 86- 61C	1110	57	1716	46	1484	45	565	63	912	62	1643	36	1660	48
FLIP 86- 62C	1502	48	2880	8	1632	40	935	21	2140	21	1340	50	1948	28
FLIP 86- 63C	1435	50	1875	38	1706	36	946	19	1547	45	1471	47	1870	31
FLIP 86- 65C	2602	17	1992	34	1663	38	777	40	1124	57	1200	56	1707	43
FLIP 86- 66C	1185	55	1484	56	1156	56	671	57	1674	37	1150	57	1846	32
FLIP 86- 68C	2827	7	1759	43	1537	44	1062	9	2288	13	1873	25	2428	5
FLIP 86- 69C	2852	5	1865	39	2235	17	935	22	2013	23	1683	32	1764	39
FLIP 86- 70C	2052	32	1505	54	1568	42	1031	13	2351	10	2578	6	1755	40
FLIP 86- 71C	1785	41	1738	44	1568	41	1052	12	2150	18	1480	46	1688	45
FLIP 86- 72C	1635	44	2320	24	1992	22	660	59	2499	7	1509	43	905	62
FLIP 86- 76C	2310	24	2193	29	1388	48	597	62	1039	59	1935	23	2257	12
FLIP 86- 77C	2410	22	2499	18	1917	28	766	42	2150	17	1512	42	2386	9
FLIP 86- 78C	977	60	1685	49	2796	7	766	44	1589	44	2121	16	1825	33
FLIP 86- 79C	1302	53	923	62	2447	13	703	53	1970	28	2058	17	835	63
FLIP 86- 81C	1777	42	2637	12	3494	2	1084	7	1018	60	1804	29	1190	56
FLIP 86- 82C	1585	45	1738	45	1727	34	925	23	1896	30	1588	39	2088	19
FLIP 86- 83C	1110	56	637	63	658	62	660	58	2023	22	1128	58	1051	59
FLIP 86- 84C	2427	21	2891	7	2796	6	798	36	2637	4	2756	1	1793	36
FLIP 81-293C	2215	26	2190	30	1676	37	844	31	2235	14	1490	45	1742	41
ILC 482	2200	30	2425	21	2133	19	883	28	1613	41	1870	26	1980	27
Local check	2890	3	3137	2	1752	32	794	38	1683	36	2235	14	1506	53
Location Mean	**2078**		**2179**		**1895**		**860**		**1843**		**1792**		**1834**	
S.E. of Mean	352.86		106.84		220.98		42.08		193.56		138.76		82.24	
L.S.D. at 5% for:														
Checks	1150.58		348.38		720.54		137.20		631.15		452.44		268.15	
T.E. in S.B.	2572.77		778.99		1611.18		306.78		1411.30		1011.69		599.59	
T.E. in D.B.	2970.77		899.51		1860.43		354.24		1629.63		1168.20		692.35	
Check Vs T.E.	2301.50		696.86		1441.30		274.43		1262.49		905.02		536.37	
C.V. %	37.978		10.96		26.57		10.94		23.49		17.31		10.03	
Test > L. Check	0		0		3		7		1		0		22	

Cont'd. ...

Table 3.8.6. Cont'd. ...

	SYRIA		THAILAND				TUNISIA		TURKEY					
	Tel Hadya-1		Chiang Mai		Chiang Rai		Beja		Adana		Diyarbakir		(1) Overall Mean	
Entry Name	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 5C	1118	21	2733	1	283	4	693	56	585	18	988	36	1653	28
FLIP 84- 6C	740	52	608	19	268	7	2143	8	142	60	-	-	1464	49
FLIP 84- 7C	914	39	511	28	28	43	1110	41	420	42	1284	14	1954	6
FLIP 84- 33C	1189	17	858	11	198	14	1968	13	195	58	1299	12	1394	54
FLIP 85- 2C	961	33	1081	7	128	29	2993	3	462	37	1010	34	1654	27
FLIP 85- 66C	811	49	358	42	283	5	1068	44	526	28	1173	21	1688	24
FLIP 85- 72C	731	53	761	13	-	-	1285	36	682	11	796	48	1748	18
FLIP 85- 75C	1012	27	678	16	58	42	1610	24	513	31	1144	24	1555	42
FLIP 85- 90C	1707	1	164	57	113	33	1468	25	551	23	929	42	1950	7
FLIP 85- 99C	1054	25	553	25	183	18	1368	31	520	29	684	54	1571	38
FLIP 85-100C	890	40	636	18	158	21	2568	4	364	52	1033	30	1573	36
FLIP 85-110C	1184	18	344	43	128	31	1260	37	526	27	818	47	1566	40
FLIP 85-132C	1314	10	581	22	-	-	1893	14	-	-	1144	23	1637	29
FLIP 85-141C	1374	6	2150	3	193	15	718	55	413	44	1077	27	1524	45
FLIP 85-147C	1352	7	612	61	-	-	1718	19	557	22	633	56	1554	43
FLIP 86- 2C	1011	28	289	51	-	-	1360	33	485	35	1255	17	1411	52
FLIP 86- 3C	955	34	372	40	-	-	1135	39	-	-	1144	25	1260	59
FLIP 86- 4C	1078	24	-	-	-	-	1385	29	604	16	1477	5	1238	60
FLIP 86- 5C	1296	12	331	45	103	34	2043	11	748	5	1218	18	2092	1
FLIP 86- 6C	836	46	289	48	-	-	1118	40	390	47	633	55	1473	47
FLIP 86- 7C	974	31	2594	2	283	6	268	60	388	48	699	53	1366	56
FLIP 86- 10C	1285	13	594	20	-	-	1035	46	870	2	988	37	1592	33
FLIP 86- 11C	874	44	914	9	248	8	3043	1	298	55	1388	7	1454	50
FLIP 86- 12C	918	37	928	8	103	35	168	63	501	33	1255	15	1507	46
FLIP 86- 14C	1319	9	581	21	238	10	2018	12	45	61	1099	26	1558	41
FLIP 86- 15C	1111	22	428	36	-	-	1035	48	621	14	1173	20	1578	34
FLIP 86- 16C	730	54	511	27	-	-	960	51	774	4	929	41	1659	26
FLIP 86- 25C	1108	23	289	50	-	-	1435	26	718	9	1721	1	1740	19
FLIP 86- 26C	885	43	469	33	113	32	1393	28	581	20	1351	9	1755	16
FLIP 86- 33C	759	51	372	41	-	-	1760	17	863	3	1366	8	2024	3
FLIP 86- 34C	848	45	303	47	133	28	1368	30	589	17	529	57	1613	32
FLIP 86- 36C	1160	19	108	59	183	19	1643	22	681	12	1018	32	1817	13
FLIP 86- 38C	631	56	206	55	-	-	1110	43	432	41	1196	19	1572	37
FLIP 86- 39C	1149	20	831	12	148	26	2293	6	178	59	921	43	1869	10
FLIP 86- 40C	988	30	136	58	153	23	1668	20	412	45	951	40	1541	44
FLIP 86- 41C	1545	2	469	32	233	11	2118	9	676	13	1040	28	1970	4

Connt'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	SYRIA		THAILAND				TUNISIA		TURKEY				(1) Overall Mean	
	Tel Hadya-1		Chiang Mai		Chiang Rai		Beja		Adana		Diyarbakir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 43C	1335	8	1400	5	333	2	1043	45	404	46	833	46	1728	22
FLIP 86- 46C	924	36	331	44	148	27	2518	5	287	56	1610	4	1753	17
FLIP 86- 50C	1514	3	497	30	248	9	1793	15	542	25	1677	3	1802	14
FLIP 86- 51C	419	60	289	49	8	44	935	53	457	38	1033	31	1214	61
FLIP 86- 58C	1232	16	233	54	78	41	1360	32	446	39	996	35	1907	9
FLIP 86- 59C	615	57	261	53	128	30	860	54	582	19	396	61	1576	35
FLIP 86- 61C	989	29	372	39	333	3	568	58	543	24	766	49	1471	48
FLIP 86- 62C	370	61	192	56	153	22	1318	35	517	30	1018	33	1668	25
FLIP 86- 63C	329	62	1094	6	-	-	243	61	474	36	899	44	1617	31
FLIP 86- 65C	819	47	81	60	153	24	1343	34	1009	1	507	58	1384	55
FLIP 86- 66C	473	59	567	24	-	-	1110	42	746	6	1321	10	1284	58
FLIP 86- 68C	1241	15	886	10	518	1	3018	2	728	8	-	-	2054	2
FLIP 86- 69C	1382	5	469	31	233	12	2093	10	528	26	1040	29	1961	5
FLIP 86- 70C	1494	4	386	38	148	25	1768	16	698	10	433	60	1826	12
FLIP 86- 71C	886	42	289	52	-	-	1410	27	376	50	1321	11	1433	51
FLIP 86- 72C	889	41	2094	4	223	13	993	49	238	57	855	45	1850	11
FLIP 86- 76C	934	35	317	46	183	16	518	59	382	49	699	52	1698	23
FLIP 86- 77C	1252	14	567	23	-	-	1185	38	360	53	1255	16	1627	30
FLIP 86- 78C	915	38	678	17	-	-	985	50	413	43	1151	22	1567	39
FLIP 86- 79C	664	55	456	34	-	-	635	57	565	21	951	39	1321	57
FLIP 86- 81C	507	58	733	14	-	-	935	52	740	7	707	51	1737	20
FLIP 86- 82C	814	48	400	37	-	-	1660	21	368	51	1299	13	1395	53
FLIP 86- 83C	770	50	706	15	-	-	193	62	329	54	455	59	1196	62
FLIP 86- 84C	1299	11	539	26	-	-	1035	47	490	34	751	50	1737	21
FLIP 81-293C	1044	26	506	29	180	20	1725	18	507	32	956	38	1931	8
ILC 482	970	32	433	35	86	37	1635	23	618	15	1440	6	1780	15
Local check	-	-	-	-	-	-	2145	7	443	40	1680	2		
Location Mean	**999**		**612**		**180**		**1484**		**494**		**1064**			
S.E. of Mean	77.97		106.97		25.16		106.24		64.91		141.23			
L.S.D. at 5% for:														
Checks	306.05		419.89		98.76		346.42		211.64		460.50			
T.E. in S.B.	684.35		938.91		220.83		774.63		473.24		1029.72			
T.E. in D.B.	838.16		1149.92		270.46		894.46		546.45		1189.02			
Check Vs T.E.	649.33		890.86		209.53		692.95		423.34		921.15			
C.V. %	17.45		39.77		53.51		16.01		29.40		29.67			
Test > L. Check	-		-		-		3		2		0			

(1) Bulkh, Kabul, Toshevo, Laxia, Shandaweel, Debre Zeit, Karaj, Marow, Oeiras, Tabuk, Hama, Chiang Mai, Chiang Rai, Adana and Diyarbakir were excluded from the overall mean.
T.E. = Test entries, S.B. = same block, D.B. = different block.

Table 3.8.7. The five heaviest seed yielding entries at the individual locations in the CISN-W during 1987/88.

Rank	AFGHANISTAN Bulkh	AFGHANISTAN Kabul	ALGERIA Setif	BULGARIA Toshevo	CYPRUS Laxia	EGYPT Shandaweel	ETHIOPIA Deber Zeit	FRANCE Montpellier-1	FRANCE Montpellier-2
1	FLIP85- 2C	FLIP86- 77C	FLIP86- 76C	FLIP86- 34C	FLIP86- 69C	FLIP86- 50C	Local Check	FLIP86- 33C	FLIP84- 7C
2	FLIP84- 33C	FLIP86- 33C	FLIP85- 66C	FLIP81-293C	FLIP86- 62C	FLIP86- 66C	FLIP86- 68C	FLIP86- 81C	FLIP86- 58C
3	FLIP86- 65C	FLIP85-141C	FLIP86- 36C	FLIP86- 68C	FLIP86- 59C	FLIP86- 4C	FLIP85- 72C	FLIP85- 72C	FLIP81-293C
4	FLIP85- 99C	FLIP84- 5C	FLIP86- 34C	FLIP86- 39C	FLIP81-293C	FLIP86- 33C	FLIP86- 69C	FLIP86- 50C	FLIP86- 38C
5	FLIP84- 6C	FLIP86- 63C	FLIP86- 46C	FLIP86- 5C	FLIP85- 90C	FLIP86- 69C FLIP85- 75C	ILC 482	FLIP86- 39C	FLIP86- 81C

Cont'd. ...

Table 3.8.7. Cont'd. ...

Rank	FRANCE Montpellier-3	IRAN Karaj	IRAN Oroumieh	ITALY Tarquinia	JORDAN Marow	LEBANON Torbol	MEXICO Hermosillo	MOROCCO Marchouch	PORTUGAL Elvas
1	FLIP86- 33C	FLIP86- 39C	FLIP85- 2C	FLIP85- 90C	FLIP86- 25C	FLIP86- 7C	FLIP86- 33C	FLIP86- 70C	Local Check
2	FLIP86- 63C	FLIP85-141C	FLIP86- 15C	FLIP86- 72C	FLIP86- 83C	FLIP85-132C	FLIP86- 26C	FLIP86- 39C	FLIP81-293C
3	FLIP86- 39C	FLIP86- 58C	FLIP86- 68C	FLIP84- 5C	FLIP86- 76C	FLIP86- 72C	FLIP86- 71C	FLIP86- 72C	FLIP86- 68C
4	FLIP84- 7C	FLIP84- 5C	FLIP86- 43C	FLIP86- 61C	FLIP86- 50C	FLIP86- 2C	FLIP85- 99C	FLIP86- 33C	FLIP84- 7C
5	FLIP84- 5C	FLIP85- 90C	FLIP86- 78C	FLIP86- 34C	FLIP85-141C	FLIP85- 2C	FLIP86- 41C	FLIP86- 3C FLIP86- 69C FLIP86- 26C	FLIP85- 99C

Cont'd. ...

Table 3.8.7. Cont'd. ...

Rank	PORTUGAL Oeiras	SAUDI ARABIA Tabuk	SPAIN Madrid	SPAIN Sevilla	SYRIA Al Ghab	SYRIA Hama	SYRIA Izra'a	SYRIA Jableh
1	FLIP86- 82C	FLIP86- 33C	FLIP86- 5C	FLIP86- 15C	FLIP86- 5C	FLIP86- 15C	FLIP86- 39C	FLIP86- 38C
2	FLIP84- 7C	FLIP86- 79C	FLIP85- 90C	FLIP86- 3C	Local Check	FLIP86- 81C	FLIP86- 2C	FLIP86- 11C
3	FLIP86- 71C	FLIP86- 10C	FLIP85-141C	Local Check	FLIP85- 90C	FLIP86- 5C	FLIP86- 3C	FLIP85- 2C
4	FLIP86- 5C	FLIP86- 71C	FLIP85- 99C	FLIP86- 51C	FLIP86- 25C	FLIP86- 58C	FLIP86- 25C	FLIP86- 84C
5	FLIP86- 34C	FLIP86- 82C	FLIP86- 40C	FLIP86- 69C FLIP86- 46C	FLIP86- 2C	FLIP84- 7C	FLIP85- 2C	FLIP84- 7C

Cont'd. ...

Table 3.8.7. Cont'd. ...

Rank	SYRIA Jindiress	SYRIA Tel Hadya-1	SYRIA Tel Hadya-2	THAILAND Chiang Mai	THAILAND Chiang Rai	TUNISIA Beja	TURKEY Adana	TURKEY Diyarbakir
1	FLIP86- 84C	FLIP85- 72C	FLIP85- 90C	FLIP84- 5C	FLIP86- 68C	FLIP86- 11C	FLIP86- 65C	FLIP86- 25C
2	FLIP86- 6C	FLIP86- 41C	FLIP86- 41C	FLIP86- 7C	FLIP86- 43C	FLIP86- 68C	FLIP86- 10C	Local Check
3	FLIP85-132C	FLIP86- 58C	FLIP86- 50C	FLIP85-141C	FLIP86- 61C	FLIP85- 2C	FLIP86- 33C	FLIP86- 50C
4	FLIP85- 2C	FLIP85- 2C	FLIP86- 70C	FLIP86- 72C	FLIP84- 5C	FLIP85-100C	FLIP86- 16C	FLIP86- 46C
5	FLIP84- 33C	FLIP86- 68C	FLIP86- 69C	FLIP86- 43C	FLIP85- 66C FLIP86- 7C	FLIP86- 46C	FLIP86- 5C	FLIP86- 4C

The brackets indicate entries having the same rank.

FLIP 85-2C, FLIP 86-3C, FLIP 86-4C, FLIP 86-5C, FLIP 86-6C, FLIP 86-7C, FLIP 86-12C, FLIP 86-84C had the largest seed size (equal or more than 45g/100-seed).

The adjusted seed yields of entries are presented in Table 3.8.6. Seed yields were high at Marchouch in Morocco (3172 kg/ha), Elvas in Portugal (2471 kg/ha), Al-Ghab in Syria (2179 kg/ha), Montpellier in France (2104 kg/ha), Sevilla in Spain (2078 kg/ha), and Terbol in Lebanon (2056 kg/ha). The ANOVA for seed yield revealed that at 23 locations, some of the test entries excelled the respective local check by a significant margin. The five heaviest seed yielding entries are given in Table 3.8.7. It was observed that FLIP 85-2C and FLIP 86-33C occurred most frequently among the top five heaviest yielders and were relatively more adaptable.

3.9. CHICKPEA INTERNATIONAL SCREENING NURSERY-SPRING (CISN-SP)

Material

The Chickpea International Screening Nursery-Spring comprised of 48 test entries which originated from the materials developed through hybridization at ICARDA. The nursery also included three checks namely ILC 482, FLIP 81-293C and one local check to be supplied by the cooperator. All these entries were almost homozygous and had shown superior performance in local or regional trials.

Methods and Management

The entries were planted in single row non-replicated plots of 4m length. The three checks were repeatedly grown in blocks of 12 test entries. The spacings between and within rows were 45- and 10cm, respectively.

Forty-five sets of nursery were distributed to cooperators in 20 countries and the results were received from 27 locations in 15 countries. The agronomic details received from the cooperators are given in Table 3.9.1.

Results and Discussion

Mean time to flowering (Table 3.9.2), time to maturity (Table 3.9.3), plant height (Table 3.9.4) and 100-seed weight (Table 3.9.5) for different locations varied from 42 to 120 days, 81 to 156 days, 25 to 62 cms and 29 to 42 g/100-seeds, respectively. The entry FLIP 86-24C flowered earliest in 59 days and was also among the earliest to mature. The maximum plant height of 43 cm was obtained for FLIP 85-50C and largest seed size of 45 g for FLIP 84-1C.

The adjusted seed yields for the entries are given in Table 3.9.6. On the basis of overall mean, FLIP 86-23C gave the highest yield (1413 kg/ha) and was followed by FLIP 86-53C (1273 kg/ha), FLIP 86-19C (1262 kg/ha), FLIP 86-13C (1260 kg/ha) and FLIP 86-47C (1254 kg/ha) etc. The

Table 3.9.1. Agronomic data for different locations in the CISN-SP during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irrigation	Insecticide/Fungicide/ Herbicide	Local Check
AFGHANISTAN	Bulkh	15.04.88	05.07.88	50	40		5	-	Mazar Local
AFGHANISTAN	Kabul	05.03.88	17.07.88	30	60		4	Trichlorofan, Metasystox	Herat Large seed
ARGENTINA	Perico	05.05.88	28.10.88	-			3	Metribuzin, Lambda - Cyhalotrina	Blanco Lechose
BRAZIL	Santa Maria	03.06.88	23.11.88	8	60	50	-	-	-
ETHIOPIA	Debre Zeit	13.03.88	28.12.88	-			-	-	Dubie
FRANCE	Montboucher	09.03.88	30.08.88		125		-	Tribunil	Cascari
IRAN	Karaj	08.03.88	20.07.88	24	72		7	Treflan, Metasystox	Jam
IRAN	Oroumieh	27.03.88	23.07.88	18	46		1	Novacron, Basoudin	GAZVIN
JORDAN	Marow	13.02.88	13.08.88	20	40				UJC 107
LEBANON	Terbol	13.04.88	28.07.88		50		-	Kerb, Igran	
PERU	La Molina	10.11.88	03.03.89	-			2	Tamaron, Noviambre	ACV-005
SPAIN	Madrid	14.04.88	05.08.88	32	96		-	Igran	1472
SYRIA	Al Ghab	02.04.88	16.07.88				-	-	Local
SYRIA	Gelline	05.04.88	05.08.88	20	50		-	-	Local
SYRIA	Hama	27.02.88	14.06.88	30	80		-	Dorsban, Hand Weeding	From the Market
SYRIA	Idleb	04.04.88	10.07.88		60		-	-	Local
SYRIA	Jindiress	27.03.88	12.07.88	30	50		-	Kerb, Igran	ILC 1929
SYRIA	Tel Hadya	05.03.88	10.06.88	30	50		-	Kerb, Igran	ILC 1929
THAILAND	Chiang Rai	10.11.87	29.03.88	102	25		S*	Daconil, Orthoeide, Lanate	-
THAILAND	Chiang Mai	10.11.87	29.03.88	102	25		S*	Daconil, Orthoeide, Lanate	-
TUNISIA	Beja	28.11.87	NA	NA			NA	NA	NA
TUNISIA	Oued Maliz	NA	NA	NA			NA	NA	NA
TURKEY	Ankara	28.03.88	30.07.88	30	70		-	-	-
TURKEY	Diyarbakir	04.04.88	23.06.88	40	60		-	-	Yerli Nohut
TURKEY	Eskisehir	05.04.88	26.08.88	30	70		-	-	Canitez-87
TURKEY	Adana	NA	NA	NA			NA	NA	NA

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 3.9.2. Adjusted time to flowering (days) of entries at different locations in the CISN-SP during 1987/88.

Entry Name	Pedigree	Origin	AFGHANISTAN Kabul	ARGENTINA Perico	BRAZIL Santa Maria	ETHIOPIA Debre Zeit
FLIP 84- 1C	X81 TH 116/ILC 191XILC 262	ICARDA/ICRISAT	75	97	145	95
FLIP 85- 11C	X83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	76	90	143	79
FLIP 85- 42C	X82 TH 66/ILC 2593XILC 3279	ICARDA/ICRISAT	75	86	118	83
FLIP 85- 50C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	75	94	118	79
FLIP 85- 63C	X83 TH 25/FLIP 81-69CXFLIP 82-81C	ICARDA/CIRISAT	80	-	117	78
FLIP 85- 64C	X83 TH 25/FLIP 81-69CXFLIP 82-81C	ICARDA/ICRISAT	79	93	143	82
FLIP 85- 76C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	82	96	145	80
FLIP 85- 92C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	80	-	143	92
FLIP 85-109C	X80 TH 181/ILC 3279XILC 1108	ICARDA/ICRISAT	72	-	143	78
FLIP 85-118C	X82 TH 146/ILC 72XILC 73	ICARDA/ICRISAT	77	105	137	93
FLIP 85-119C	X82 TH 137/(ILC 87XILC 194)XILC 2956	ICARDA/ICRISAT	72	101	118	69
FLIP 85-126C	GL 609XILC 72	ICARDA/ICRISAT	76	105	117	78
FLIP 85-134C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	80	110	117	-
FLIP 86- 8C	X82 TH 146/(ILC 445XILC 482)XILC 202	ICARDA/ICRISAT	72	101	117	89
FLIP 86- 9C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	78	-	138	78
FLIP 86- 13C	X83 TH 56/ILC 3346XILC 604	ICARDA/ICRISAT	72	105	117	79
FLIP 86- 17C	X83 TH 115/FLIP 82-81CXILC 3326	ICARDA/ICRISAT	69	-	102	52
FLIP 86- 18C	X82 TH 127/ILC 482XILC 196	ICARDA/ICRISAT	70	91	113	75
FLIP 86- 19C	X82 TH 101/ILC 215(WH)XILC 195(WH)	ICARDA/ICRISAT	72	106	145	78
FLIP 86- 20C	X82 TH 157/(ILC 73XILC 482)XILC 249	ICARDA/ICRISAT	75	92	90	79
FLIP 86- 21C	X83 TH 71/ILC 136XFLIP 81-59CW	ICARDA/ICRISAT	73	99	117	69
FLIP 86- 22C	X83 TH 87/ILC 3395XFLIP 81-67C	ICARDA/ICRISAT	66	103	99	43
FLIP 86- 23C	X83 TH 101/ILC 196XILC 576	ICARDA/ICRISAT	70	99	117	69
FLIP 86- 24C	X83 TH 160/ILC 4296XFLIP 81-49C	ICARDA/ICRISAT	68	88	78	43
FLIP 86- 27C	X84 TH 21/FLIP 82-219CXILC 202	ICARDA/ICRISAT	71	103	110	75
FLIP 86- 28C	X84 TH 21/FLIP 82-219CXILC 202	ICARDA/ICRISAT	71	97	110	77
FLIP 86- 29C	X84 TH 21/FLIP 82-219CXILC 202	ICARDA/ICRISAT	73	100	108	76
FLIP 86- 30C	X84 TH 21/FLIP 82-219CXILC 202	ICARDA/ICRISAT	73	96	118	69

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	Pedigree	Origin	AFGHANISTAN Kabul	ARGENTINA Perico	BRAZIL Santa Maria	ETHIOPIA Debre Zeit
FLIP 86- 31C	X82 TH 91/ILC 202XILC 464	ICARDA/ICRISAT	73	101	117	78
FLIP 86- 32C	X82 TH 121/ILC 182XILC 484	ICARDA/ICIRSAT	75	92	90	74
FLIP 86- 35C	X83 TH 1/FLIP 81-41CXFLIP 81-56C	ICARDA/ICRISAT	71	103	137	77
FLIP 86- 37C	Unknown	ICARDA/ICRISAT	75	101	118	80
FLIP 86- 42C	X83 TH 80/ILC 2593XFLIP 81-59C	ICARDA/ICRISAT	71	97	117	80
FLIP 86- 44C	X82 TH 88/ILC 3279XILC 1407	ICARDA/ICRISAT	73	98	118	69
FLIP 86- 45C	X82 TH 101/ILC 215(WH)XILC 195(WH)	ICARDA/ICRISAT	71	97	117	73
FLIP 86- 47C	X82 TH 149/(ILC 272XILC 482)XILC 2956	ICARDA/ICRISAT	69	98	120	72
FLIP 86- 48C	X82 TH 157/(ILC 73XILC 482)XILC 249	ICARDA/ICRISAT	73	100	117	77
FLIP 86- 49C	X82 TH 111/ILC 200XILC 482	ICARDA/ICRISAT	71	-	115	76
FLIP 86- 52C	X83 TH 165/ILC 4090XILC 482	ICARDA/ICRISAT	72	88	114	53
FLIP 86- 53C	X83 TH 177/ILC 4090XILC 2912	ICARDA/ICRISAT	68	108	111	59
FLIP 86- 54C	X81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	75	91	90	69
FLIP 86- 55C	X82 TH 101/(ILC 215(WH)XILC 195(WH)	ICARDA/ICRISAT	72	91	118	59
FLIP 86- 60C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	75	-	145	79
FLIP 86- 64C	X83 TH 115/FLIP 82-81CXILC 3326	ICARDA/ICRISAT	79	107	112	77
FLIP 86- 73C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	75	91	145	79
FLIP 86- 74C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	73	107	117	80
FLIP 86- 75C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	76	-	143	80
FLIP 86- 80C	X81 TH 120/ILC 200XILC 484	ICARDA/ICRISAT	75	93	145	80
FLIP 81-293C	Check	ICARDA/ICRISAT	75	94	117	78
ILC 482	-	Turkey	70	97	115	71
Local Check	-	-	71	95	-	45
Location Mean			**73**	**84**	**120**	**73**
S.E. of Mean			0.98	2.37	2.37	0.65
L.S.D. at 5%	for: Checks		3.38	8.20	10.66	2.25
	Test entries in the same block		6.75	16.39	21.32	4.50
	Test entries in different blocks		7.79	18.93	26.12	5.20
	Checks Vs test entries		6.16	14.97	20.65	4.11
C.V. %			2.66	5.62	3.94	1.82

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	FRANCE	IRAN		JORDAN	LEBANON	PERU	SPAIN	SYRIA	
	Montboucher	Karaj	Oroumieh	Marow	Terbol	La Molina	Madrid	Al Ghab	Gelline
FLIP 84- 1C	95	49	66	74	60	103	66	-	44
FLIP 85- 11C	94	46	68	72	55	83	67	51	68
FLIP 85- 42C	95	53	72	76	61	83	75	52	57
FLIP 85- 50C	95	53	69	74	61	77	72	49	58
FLIP 85- 63C	95	43	66	73	53	77	68	57	64
FLIP 85- 64C	96	49	65	74	57	80	63	51	70
FLIP 85- 76C	95	46	66	77	62	92	67	56	53
FLIP 85- 92C	94	49	68	71	61	83	71	56	71
FLIP 85-109C	94	47	68	74	61	97	62	51	73
FLIP 85-118C	96	44	65	75	61	92	69	52	70
FLIP 85-119C	95	46	69	74	59	79	67	53	49
FLIP 85-126C	93	48	66	75	57	80	73	52	65
FLIP 85-134C	95	51	69	73	57	98	72	56	66
FLIP 86- 8C	93	50	66	73	-	86	65	52	65
FLIP 86- 9C	91	44	65	71	57	86	67	52	67
FLIP 86- 13C	95	53	66	73	53	84	69	57	51
FLIP 86- 17C	95	56	66	74	43	72	54	49	43
FLIP 86- 18C	88	42	63	78	49	88	54	48	64
FLIP 86- 19C	90	45	66	74	54	84	64	55	64
FLIP 86- 20C	95	50	69	76	53	75	72	54	59
FLIP 86- 21C	90	38	66	77	54	90	69	49	67
FLIP 86- 22C	89	32	54	72	44	78	50	46	46
FLIP 86- 23C	88	38	63	74	47	84	-	47	57
FLIP 86- 24C	88	34	66	76	42	67	56	54	34
FLIP 86- 27C	90	46	69	78	49	84	65	51	58
FLIP 86- 28C	90	50	66	75	49	84	67	51	62
FLIP 86- 29C	90	44	66	75	55	80	66	52	53
FLIP 86- 30C	93	45	72	71	57	81	66	52	56

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	FRANCE	IRAN		JORDAN	LEBANON	PERU	SPAIN	SYRIA	
	Montboucher	Karaj	Oroumieh	Marow	Terbol	La Molina	Madrid	Al Ghab	Gelline
FLIP 86- 31C	95	50	66	75	57	92	64	59	65
FLIP 86- 32C	90	48	69	76	59	86	70	56	57
FLIP 86- 35C	94	43	68	74	53	88	68	49	48
FLIP 86- 37C	93	48	69	73	59	74	63	58	44
FLIP 86- 42C	90	38	63	74	54	84	55	48	60
FLIP 86- 44C	90	48	72	71	53	81	63	53	57
FLIP 86- 45C	93	43	66	70	56	82	66	49	54
FLIP 86- 47C	89	44	62	75	50	93	52	47	48
FLIP 86- 48C	95	53	66	73	57	84	66	57	67
FLIP 86- 49C	94	43	65	78	57	93	54	49	57
FLIP 86- 52C	88	36	66	76	48	77	52	49	34
FLIP 86- 53C	91	44	54	77	48	82	48	48	64
FLIP 86- 54C	95	43	72	76	57	77	68	56	58
FLIP 86- 55C	90	43	66	77	46	85	59	54	36
FLIP 86- 60C	93	47	66	72	56	82	67	50	62
FLIP 86- 64C	88	42	69	75	-	88	67	59	67
FLIP 86- 73C	95	44	66	76	60	86	66	57	66
FLIP 86- 74C	95	48	69	76	55	80	73	59	61
FLIP 86- 75C	94	49	68	75	61	83	65	57	70
FLIP 86- 80C	93	44	66	78	60	82	76	56	46
FLIP 81-293C	92	48	66	74	58	83	64	55	65
ILC 482	88	41	65	75	52	86	53	48	58
Local Check	95	47	66	76	48	87	-	49	54
Location Mean	**92**	**45**	**66**	**75**	**54**	**84**	**64**	**52**	**58**
S.E. of Mean	0.43	1.45	1.50	1.53	1.19	2.86	0.73	0.55	2.40
L.S.D. at 5% for:									
Checks	1.50	5.03	5.19	5.29	4.11	9.88	3.28	1.91	8.32
T.E. in the S.B.	3.00	10.06	10.38	10.59	8.22	19.77	6.86	3.83	16.63
T.E. in D.B.	3.46	11.61	11.99	12.22	9.49	22.83	8.03	4.42	19.21
Checks Vs T.E.	2.74	9.18	9.48	9.67	7.50	18.05	6.35	3.49	15.19
C.V. %	0.94	6.40	4.56	4.10	4.55	6.81	2.33	2.15	8.30

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	SYRIA				THAILAND		TURKEY		Overall Mean (1)
	Hama	Idleb	Jindiress	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	Eskisehir	
FLIP 84- 1C	76	55	73	70	87	99	65	43	77
FLIP 85- 11C	74	42	62	68	76	83	65	43	73
FLIP 85- 42C	77	51	70	72	104	93	66	44	76
FLIP 85- 50C	76	51	69	73	98	96	65	33	74
FLIP 85- 63C	79	48	67	73	101	97	65	45	75
FLIP 85- 64C	78	43	66	70	93	93	67	44	76
FLIP 85- 76C	76	50	71	71	93	86	-	43	76
FLIP 85- 92C	77	47	66	71	86	92	66	45	77
FLIP 85-109C	74	46	68	68	45	94	66	44	74
FLIP 85-118C	74	43	71	68	76	91	65	40	75
FLIP 85-119C	74	49	66	70	99	86	66	43	72
FLIP 85-126C	76	49	61	70	95	76	64	44	73
FLIP 85-134C	78	48	68	73	103	92	64	44	77
FLIP 86- 8C	75	51	62	70	83	77	64	42	72
FLIP 86- 9C	76	48	68	69	78	100	66	45	75
FLIP 86- 13C	75	47	68	69	90	78	65	43	72
FLIP 86- 17C	65	48	48	58	92	86	67	35	67
FLIP 86- 18C	73	47	61	64	75	62	65	41	68
FLIP 86- 19C	73	46	71	71	91	77	66	42	74
FLIP 86- 20C	73	47	69	68	105	87	68	44	72
FLIP 86- 21C	70	47	63	64	87	64	65	40	70
FLIP 86- 22C	65	46	40	55	55	52	-	36	58
FLIP 86- 23C	70	47	60	62	78	69	-	40	67
FLIP 86- 24C	64	41	54	56	88	55	65	35	59
FLIP 86- 27C	73	43	62	67	91	74	65	42	70
FLIP 86- 28C	73	45	61	66	91	74	64	42	70
FLIP 86- 29C	73	46	61	66	105	74	65	40	70
FLIP 86- 30C	73	46	58	66	99	85	65	44	72

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	SYRIA				THAILAND		TURKEY		Overall Mean (1)
	Hama	Idleb	Jindiress	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	Eskisehir	
FLIP 86- 31C	76	46	69	70	83	86	65	44	74
FLIP 86- 32C	73	49	66	68	86	88	67	40	70
FLIP 86- 35C	71	46	62	67	84	83	65	44	72
FLIP 86- 37C	74	50	61	72	86	95	66	44	71
FLIP 86- 42C	70	47	56	63	87	70	65	40	68
FLIP 86- 44C	72	46	68	67	84	81	66	39	71
FLIP 86- 45C	72	53	65	66	74	74	66	42	69
FLIP 86- 47C	72	49	58	63	74	66	65	40	68
FLIP 86- 48C	75	46	69	69	90	85	64	43	74
FLIP 86- 49C	73	49	66	68	74	72	66	39	70
FLIP 86- 52C	66	46	52	64	106	68	65	40	66
FLIP 86- 53C	71	54	55	63	75	67	67	40	67
FLIP 86- 54C	72	49	63	66	83	86	67	38	69
FLIP 86- 55C	70	46	62	65	85	96	66	40	69
FLIP 86- 60C	74	50	64	71	100	87	68	43	76
FLIP 86- 64C	78	45	68	72	95	91	65	45	74
FLIP 86- 73C	75	47	69	71	85	88	65	44	75
FLIP 86- 74C	75	46	62	70	90	86	66	43	72
FLIP 86- 75C	77	46	63	71	87	99	65	44	76
FLIP 86- 80C	73	52	73	67	88	75	67	43	73
FLIP 81-293C	74	47	63	70	87	84	66	44	73
ILC 482	71	47	56	65	76	70	68	40	68
Local Check	70	47	55	65	-	-	-	44	-
Location Mean	**73**	**48**	**63**	**67**	**86**	**81**	**62**	**42**	
S.E. of Mean	0.86	0.96	1.83	0.58	5.14	3.01	0.71	0.58	
L.S.D. at 5% for:									
Checks	2.98	3.31	6.34	2.02	9.63	13.53	3.18	2.00	
T.E. in the S.B.	5.97	6.63	12.67	4.04	19.27	27.06	6.36	4.00	
T.E. in D.B.	6.89	7.6	14.63	4.66	23.60	33.14	7.79	4.61	
Checks Vs T.E.	5.45	6.05	11.57	3.69	18.66	26.20	6.16	3.65	
C.V. %	2.37	4.02	5.85	1.74	4.98	7.40	2.27	2.75	

(1) Perico, Debre Zeit, Terbol, Madrid, Al Ghab and Ankara were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 3.9.3. Adjusted time to maturity (days) of entries at different locations in the CISN-SP during 1987/88.

Entry Name	AFGHANISTAN	ARGENTINA	IRAN		JORDAN	LEBANON	PERU	SPAIN	SYRIA
	Kabul	Perico	Karaj	Oroumieh	Marow	Terbol	La Molina	Madrid	Al Ghab
FLIP 84- 1C	123	178	103	113	104	91	136	112	-
FLIP 85- 11C	122	177	99	114	104	94	132	109	96
FLIP 85- 42C	123	183	100	112	105	101	144	107	104
FLIP 85- 50C	123	185	100	112	-	97	139	114	100
FLIP 85- 63C	121	-	100	117	102	91	138	111	90
FLIP 85- 64C	125	177	102	110	99	90	108	106	95
FLIP 85- 76C	123	173	91	113	104	99	141	113	90
FLIP 85- 92C	122	-	97	114	108	94	127	104	95
FLIP 85-109C	125	-	102	110	104	96	120	109	96
FLIP 85-118C	125	187	97	114	108	100	139	108	105
FLIP 85-119C	123	178	98	112	105	101	121	109	95
FLIP 85-126C	121	182	100	113	102	99	136	111	92
FLIP 85-134C	121	182	103	117	101	95	143	106	92
FLIP 86- 8C	121	182	105	113	103	-	143	108	92
FLIP 86- 9C	125	-	97	114	108	94	124	110	90
FLIP 86- 13C	124	182	105	111	102	95	131	111	91
FLIP 86- 17C	123	-	96	109	104	87	100	-	82
FLIP 86- 18C	123	173	103	107	104	89	138	110	85
FLIP 86- 19C	123	183	101	109	104	93	136	112	100
FLIP 86- 20C	123	185	102	112	105	93	132	113	93
FLIP 86- 21C	123	183	101	109	104	91	131	111	87
FLIP 86- 22C	130	182	99	110	104	96	124	-	83
FLIP 86- 23C	123	178	101	107	103	89	118	-	82
FLIP 86- 24C	123	173	102	110	105	89	144	110	85
FLIP 86- 27C	121	182	100	111	108	89	136	111	84
FLIP 86- 28C	121	177	105	111	108	89	123	111	80
FLIP 86- 29C	121	177	98	111	102	89	124	110	85
FLIP 86- 30C	123	173	97	110	103	93	125	114	86

Cont'd. ...

Table 3.9.3. Cont'd. ...

Entry Name	AFGHANISTAN	ARGENTINA	IRAN		JORDAN	LEBANON	PERU	SPAIN	SYRIA
	Kabul	Perico	Karaj	Oroumieh	Marow	Terbol	La Molina	Madrid	Al Ghab
FLIP 86- 31C	121	177	105	113	102	99	136	110	101
FLIP 86- 32C	123	184	100	110	105	93	139	115	91
FLIP 86- 35C	125	187	99	114	102	92	140	110	89
FLIP 86- 37C	123	176	100	112	103	93	125	107	93
FLIP 86- 42C	123	176	101	107	103	91	116	108	85
FLIP 86- 44C	123	178	102	110	105	91	137	109	88
FLIP 86- 45C	123	181	97	107	109	91	136	113	91
FLIP 86- 47C	127	180	104	114	101	92	106	110	89
FLIP 86- 48C	126	177	105	113	-	95	143	111	101
FLIP 86- 49C	125	-	99	110	108	92	148	112	96
FLIP 86- 52C	123	186	100	110	-	93	147	109	83
FLIP 86- 53C	130	192	99	110	108	94	139	106	88
FLIP 86- 54C	123	178	100	110	105	93	144	114	92
FLIP 86- 55C	123	173	100	110	103	91	144	111	84
FLIP 86- 60C	123	-	103	113	104	91	141	111	91
FLIP 86- 64C	121	182	125	113	102	-	136	109	93
FLIP 86- 73C	123	176	98	113	104	93	138	110	90
FLIP 86- 74C	121	177	100	113	108	93	-	110	86
FLIP 86- 75C	122	-	102	114	108	94	127	108	97
FLIP 86- 80C	123	178	103	113	104	91	138	113	92
FLIP 81-293C	122	178	103	111	104	92	130	106	89
ILC 482	122	180	101	110	106	92	123	105	84
Local Check	124	182	103	111	104	91	136	-	82
Location Mean	**123**	**156**	**101**	**111**	**105**	**93**	**132**	**110**	**90**
S.E. of Mean	0.72	2.24	0.95	1.11	1.40	0.50	6.16	0.50	0.38
L.S.D. at 5% for:									
Checks	2.51	7.74	3.30	3.83	4.83	1.73	21.32	2.25	1.32
T.E. In the S.B.	5.01	15.49	6.60	7.65	9.67	3.46	43.63	4.50	2.64
T.E. in D.B.	5.79	17.88	7.62	8.83	11.16	4.00	49.23	5.51	3.05
Checks Vs T.E.	4.58	14.14	6.03	6.99	8.83	3.16	38.92	4.36	2.41
C.V. %	1.18	2.87	1.89	1.99	2.82	1.11	9.49	0.97	0.87

Cont'd. ...

Table 3.9.3. Cont'd. ...

Entry Name	SYRIA					THAILAND		TURKEY	(1) Overall Mean
	Gelline	Hama	Idleb	Jindiress	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	
FLIP 84- 1C	100	106	85	102	109	131	133	116	111
FLIP 85- 11C	104	103	78	98	108	129	130	115	108
FLIP 85- 42C	107	108	90	103	114	134	132	121	112
FLIP 85- 50C	105	108	85	102	114	134	133	117	112
FLIP 85- 63C	107	108	84	99	107	134	133	113	111
FLIP 85- 64C	107	106	82	99	107	132	132	119	110
FLIP 85- 76C	101	109	88	104	113	132	131	-	111
FLIP 85- 92C	108	108	80	100	107	132	131	119	110
FLIP 85-109C	109	104	80	101	107	122	132	118	109
FLIP 85-118C	113	108	82	106	107	129	130	116	111
FLIP 85-119C	98	106	85	102	115	134	131	120	110
FLIP 85-126C	109	107	80	98	106	132	129	112	110
FLIP 85-134C	112	108	84	100	106	135	132	110	112
FLIP 86- 8C	112	103	85	100	107	131	129	112	111
FLIP 86- 9C	106	109	82	99	104	129	133	117	110
FLIP 86- 13C	101	107	84	102	107	132	129	112	110
FLIP 86- 17C	101	102	79	89	95	132	130	119	106
FLIP 86- 18C	110	102	79	101	102	128	126	117	108
FLIP 86- 19C	107	104	85	102	113	131	129	118	111
FLIP 86- 20C	108	102	85	100	109	134	131	120	111
FLIP 86- 21C	111	102	79	97	106	131	126	115	109
FLIP 86- 22C	98	103	76	90	102	124	123	-	105
FLIP 86- 23C	104	102	79	97	100	129	127	-	107
FLIP 86- 24C	89	99	79	94	102	131	124	119	105
FLIP 86- 27C	107	102	78	98	102	132	128	111	108
FLIP 86- 28C	108	101	78	97	102	132	128	112	108
FLIP 86- 29C	101	101	84	97	106	137	128	114	108
FLIP 86- 30C	103	102	79	95	104	134	131	117	108

Cont'd. ...

Table 3.9.3. Cont'd. ...

Entry Name	SYRIA					THAILAND		TURKEY	(1) Overall Mean
	Gelline	Hama	Idleb	Jindiress	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	
FLIP 86- 31C	114	107	87	103	106	131	130	113	112
FLIP 86- 32C	106	102	85	99	107	130	131	118	109
FLIP 86- 35C	104	103	80	99	107	130	130	117	109
FLIP 86- 37C	92	107	85	96	110	130	133	118	109
FLIP 86- 42C	107	102	79	96	100	131	127	119	108
FLIP 86- 44C	103	101	79	99	102	130	129	116	108
FLIP 86- 45C	103	103	85	101	112	127	128	117	109
FLIP 86- 47C	100	102	80	99	101	128	126	117	108
FLIP 86- 48C	114	107	87	103	106	132	130	113	112
FLIP 86- 49C	104	103	82	101	107	128	127	117	109
FLIP 86- 52C	87	101	79	94	103	134	127	126	106
FLIP 86- 53C	106	103	82	97	107	128	126	118	109
FLIP 86- 54C	105	102	79	99	107	130	131	120	109
FLIP 86- 55C	89	101	79	99	103	130	133	120	107
FLIP 86- 60C	109	107	79	99	113	133	130	123	111
FLIP 86- 64C	107	107	78	95	106	133	132	113	112
FLIP 86- 73C	111	108	79	100	113	130	131	117	111
FLIP 86- 74C	105	107	84	98	106	132	130	113	110
FLIP 86- 75C	108	108	82	98	108	132	133	116	111
FLIP 86- 80C	103	104	85	102	107	131	128	118	110
FLIP 81-293C	109	103	80	96	105	131	131	117	109
ILC 482	106	102	78	98	105	129	127	117	108
Local Check	104	102	81	98	109	-	-	-	-
Location Mean	**105**	**104**	**81**	**99**	**106**	**131**	**130**	**110**	
S.E. of Mean	1.47	0.22	0.69	0.82	1.44	0.46	0.60	1.62	
L.S.D. at 5% for:									
Checks	5.09	0.76	2.38	2.83	4.97	2.05	2.72	7.27	
T.E. In the S.B.	10.17	1.53	4.76	5.65	9.94	4.11	5.43	14.54	
T.E. in D.B.	11.74	1.76	5.49	6.52	11.48	5.03	6.66	17.81	
Checks Vs T.E.	9.29	1.39	4.34	5.16	9.07	3.98	5.26	14.08	
C.V. %	2.80	0.42	1.69	1.65	2.70	0.70	0.93	2.93	

(1) Perico, Marow, Terbol, La Molina, Madrid, Al Ghab and Ankara were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 3.9.4. Adjusted plant height (cm) of entries at different locations in the CISN-SP during 1987/88.

Entry Name	AFGHANISTAN		BRAZIL	ETHIOPIA	IRAN		JORDAN	LEBANON	PERU	SPAIN
	Bulkh	Kabul	Santa Maria	Debre Zeit	Karaj	Oroumieh	Marow	Terbol	La Molina	Madrid
FLIP 84- 1C	31	40	56	-	32	43	36	38	61	60
FLIP 85- 11C	29	50	53	-	43	46	40	51	49	72
FLIP 85- 42C	29	45	40	14	38	40	39	20	65	61
FLIP 85- 50C	31	35	48	14	50	39	-	50	75	52
FLIP 85- 63C	24	49	49	-	44	42	28	49	79	71
FLIP 85- 64C	21	45	58	-	43	42	36	41	64	74
FLIP 85- 76C	26	50	54	-	39	37	35	32	52	71
FLIP 85- 92C	24	50	50	-	47	44	40	42	48	67
FLIP 85-109C	27	50	56	61	33	42	45	45	38	73
FLIP 85-118C	23	50	52	-	40	44	38	41	51	65
FLIP 85-119C	26	35	41	14	42	43	40	37	52	49
FLIP 85-126C	34	49	56	-	44	45	32	39	53	69
FLIP 85-134C	29	49	48	-	43	34	32	47	57	69
FLIP 86- 8C	24	44	42	-	40	41	38	-	62	70
FLIP 86- 9C	24	50	49	-	41	40	38	41	43	60
FLIP 86- 13C	19	44	58	-	40	44	32	46	47	68
FLIP 86- 17C	36	45	45	-	31	31	35	33	32	-
FLIP 86- 18C	26	40	40	45	29	36	36	29	55	65
FLIP 86- 19C	31	35	68	47	26	33	30	44	69	74
FLIP 86- 20C	29	40	27	14	40	37	35	37	45	59
FLIP 86- 21C	26	30	41	47	38	41	36	31	53	62
FLIP 86- 22C	29	30	34	-	27	37	44	34	37	-
FLIP 86- 23C	21	35	44	50	26	33	39	36	55	-
FLIP 86- 24C	29	35	27	14	33	45	34	28	33	49
FLIP 86- 27C	24	34	50	41	27	36	-	41	49	56
FLIP 86- 28C	24	39	44	-	27	39	54	39	57	68
FLIP 86- 29C	24	34	51	50	30	41	38	35	59	63
FLIP 86- 30C	23	35	34	77	38	30	30	28	43	45

Cont'd. ...

Table 3.9.4. Cont'd. ...

Entry Name	AFGHANISTAN		BRAZIL	ETHIOPIA	IRAN		JORDAN	LEBANON	PERU	SPAIN
	Bulkh	Kabul	Santa Maria	Debre Zeit	Karaj	Oroumieh	Marow	Terbol	La Molina	Madrid
FLIP 86- 31C	24	39	41	-	33	35	38	44	50	59
FLIP 86- 32C	26	35	21	14	28	35	35	27	32	52
FLIP 86- 35C	29	40	43	51	31	37	40	32	53	51
FLIP 86- 37C	29	45	39	14	46	34	30	30	48	53
FLIP 86- 42C	26	35	41	-	26	41	40	31	51	54
FLIP 86- 44C	26	35	33	75	42	28	29	29	49	45
FLIP 86- 45C	26	35	40	49	32	31	39	27	54	63
FLIP 86- 47C	19	40	43	49	27	40	35	37	34	57
FLIP 86- 48C	34	49	49	-	44	46	-	45	70	69
FLIP 86- 49C	23	40	45	-	39	39	40	36	37	65
FLIP 86- 52C	31	35	32	14	33	36	-	33	34	45
FLIP 86- 53C	23	45	43	48	28	41	39	37	52	60
FLIP 86- 54C	31	35	36	14	37	33	40	35	55	52
FLIP 86- 55C	21	40	26	70	30	33	29	32	53	58
FLIP 86- 60C	21	50	53	-	44	36	36	36	49	70
FLIP 86- 64C	34	49	52	-	40	31	33	-	51	60
FLIP 86- 73C	26	45	52	-	30	31	34	42	43	66
FLIP 86- 74C	29	44	47	-	37	31	29	47	50	63
FLIP 86- 75C	19	50	49	-	45	41	35	42	41	62
FLIP 86- 80C	26	40	49	-	49	45	35	39	57	76
FLIP 81-293C	28	41	44	54	36	41	36	36	48	61
ILC 482	26	36	37	45	27	37	35	34	44	59
Local Check	26	34	-	49	29	39	38	32	49	-
Location Mean	**26**	**41**	**44**	**40**	**35**	**38**	**37**	**37**	**50**	**62**
S.E. of Mean	1.91	1.44	2.76	5.31	1.34	1.15	1.11	1.32	1.40	2.20
L.S.D. at 5% for:										
Checks	6.59	4.99	12.42	18.39	4.65	3.99	3.84	4.57	4.84	9.89
T.E. In the	13.19	9.99	24.83	36.77	9.30	7.97	7.67	9.14	9.68	19.78
T.E. in D.B.	15.23	11.53	30.41	42.46	10.74	9.20	8.86	10.55	11.18	24.23
Checks Vs T.E.	12.04	9.12	24.05	33.58	8.49	7.28	7.01	8.34	8.84	19.16
C.V. %	14.46	7.07	12.51	46.76	7.66	6.03	6.57	7.50	5.58	7.59

Cont'd. ...

Table 3.9.4. Cont'd. ...

Entry Name	SYRIA						THAILAND		TURKEY	(1) Overall Mean
	Al Ghab	Gelline	Hama	Idleb	Jindiress	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	
FLIP 84- 1C	-	19	39	40	39	33	27	24	35	39
FLIP 85- 11C	42	31	52	38	32	32	27	26	31	40
FLIP 85- 42C	34	24	41	51	37	30	19	20	35	38
FLIP 85- 50C	44	20	56	53	43	34	22	32	36	43
FLIP 85- 63C	45	32	48	41	39	31	24	27	40	41
FLIP 85- 64C	42	31	47	41	38	28	22	24	31	39
FLIP 85- 76C	39	21	49	38	29	36	22	25	-	38
FLIP 85- 92C	42	27	47	38	43	39	30	27	31	41
FLIP 85-109C	42	35	47	34	28	29	33	31	33	37
FLIP 85-118C	37	24	44	36	37	28	25	24	35	38
FLIP 85-119C	34	19	51	46	42	36	27	27	37	39
FLIP 85-126C	45	24	53	41	44	29	23	41	36	42
FLIP 85-134C	45	37	48	46	36	37	15	33	40	39
FLIP 86- 8C	40	35	38	33	36	34	17	37	30	37
FLIP 86- 9C	47	25	47	34	33	39	32	24	31	38
FLIP 86- 13C	50	27	48	47	38	34	26	39	30	40
FLIP 86- 17C	39	30	44	45	39	32	40	62	36	40
FLIP 86- 18C	34	25	34	30	22	23	27	26	25	32
FLIP 86- 19C	39	28	39	40	25	31	31	38	40	39
FLIP 86- 20C	34	24	46	39	36	27	23	24	29	35
FLIP 86- 21C	44	27	39	42	31	27	26	28	25	35
FLIP 86- 22C	32	24	37	26	32	32	32	34	-	32
FLIP 86- 23C	34	22	34	30	25	26	26	27	-	32
FLIP 86- 24C	39	-	46	47	35	28	46	41	29	37
FLIP 86- 27C	30	23	33	33	31	24	23	33	30	33
FLIP 86- 28C	35	23	38	31	33	24	23	35	38	34
FLIP 86- 29C	35	20	38	36	33	25	25	32	30	36
FLIP 86- 30C	39	19	36	37	26	24	23	22	29	31

Cont'd. ...

Table 3.9.4. Cont'd. ...

Entry Name	SYRIA						THAILAND		TURKEY	(1) Overall Mean
	Al Ghab	Gelline	Hama	Idleb	Jindiress	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	
FLIP 86- 31C	35	31	38	39	31	26	22	22	27	33
FLIP 86- 32C	39	20	41	41	33	23	21	21	26	30
FLIP 86- 35C	32	26	39	34	33	22	23	25	28	34
FLIP 86- 37C	39	22	51	47	40	33	20	23	29	38
FLIP 86- 42C	34	26	34	28	31	26	23	30	30	33
FLIP 86- 44C	34	19	41	35	23	20	30	27	29	32
FLIP 86- 45C	29	25	34	38	30	24	25	37	35	34
FLIP 86- 47C	37	24	40	28	26	24	28	26	22	31
FLIP 86- 48C	45	26	48	41	31	29	33	33	35	42
FLIP 86- 49C	37	28	37	33	27	23	33	31	34	34
FLIP 86- 52C	34	11	36	31	25	21	22	31	25	31
FLIP 86- 53C	37	22	37	26	28	27	35	31	22	35
FLIP 86- 54C	39	19	41	39	36	25	20	24	29	34
FLIP 86- 55C	39	16	41	39	26	28	27	22	29	32
FLIP 86- 60C	44	27	54	42	34	41	25	42	34	41
FLIP 86- 64C	45	31	48	43	36	37	14	33	26	39
FLIP 86- 73C	44	29	54	46	31	38	25	32	32	38
FLIP 86- 74C	40	26	48	41	36	31	18	34	33	37
FLIP 86- 75C	42	34	50	41	43	39	33	25	34	40
FLIP 86- 80C	44	26	44	42	31	33	28	38	34	40
FLIP 81-293C	40	26	40	36	31	32	26	26	35	36
ILC 482	33	25	39	29	26	21	22	29	22	31
Local Check	34	23	39	29	25	24	-	-	-	-
Location Mean	**38**	**25**	**42**	**37**	**32**	**29**	**26**	**30**	**29**	
S.E. of Mean	0.93	2.09	1.00	1.13	1.73	0.60	1.42	2.02	0.74	
L.S.D. at 5% for:										
Checks	3.22	7.23	3.45	3.92	5.99	2.08	6.37	9.07	3.32	
T.E. in the S.B.	6.45	14.46	6.90	7.84	11.99	4.16	12.74	18.14	6.64	
T.E. in D.B.	7.45	16.70	7.96	9.06	13.84	4.80	15.60	22.22	8.13	
Checks Vs T.E.	5.89	13.21	6.30	7.16	10.94	3.80	12.34	17.57	6.43	
C.V. %	4.96	17.00	4.70	6.12	10.87	4.18	11.08	13.51	5.03	

(1) Debre Zeit, Marow, Terbol, Madrid, Al Ghab, Gelline and Ankara were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 3.9.5. djusted 100-Seed weight (g) of entries at different locations in the CISN-SP during 1987/88.

Entry Name	AFGHANISTAN	BRAZIL	ETHIOPIA	FRANCE	IRAN		LEBANON	SPAIN	SYRIA	THAILAND	(1) Overall Mean
	Kabul	Santa-Maria	Debre - Zeit	Mont-boucher	Karaj	Oroumieh	Terbol	Madrid	Idleb	Chiang-Mai	
FLIP 84- 1C	43	31	-	42	48	53	38	40	27	49	45
FLIP 85- 11C	29	27	3	38	38	43	36	32	41	32	34
FLIP 85- 42C	34	29	-	49	39	51	20	34	34	41	39
FLIP 85- 50C	28	28	-	41	38	52	28	29	29	34	36
FLIP 85- 63C	32	29	0	44	40	44	39	29	35	32	35
FLIP 85- 64C	29	33	3	44	41	43	34	32	26	41	38
FLIP 85- 76C	25	28	-	37	34	43	33	32	26	36	33
FLIP 85- 92C	39	30	3	39	45	43	36	35	34	31	37
FLIP 85-109C	24	23	37	30	33	49	29	25	33	27	31
FLIP 85-118C	28	31	3	37	42	44	36	32	33	34	36
FLIP 85-119C	29	27	-	42	35	47	38	34	37	31	34
FLIP 85-126C	28	27	0	33	33	38	29	28	35	31	31
FLIP 85-134C	27	30	0	42	39	40	41	34	22	44	36
FLIP 86- 8C	29	28	0	47	44	52	-	37	23	36	38
FLIP 86- 9C	35	35	3	42	40	45	40	37	35	38	38
FLIP 86- 13C	37	38	0	44	55	52	40	38	24	37	44
FLIP 86- 17C	29	36	-	-	39	49	41	-	35	30	37
FLIP 86- 18C	34	25	31	33	29	35	27	29	42	27	30
FLIP 86- 19C	23	33	38	40	35	39	35	31	29	35	33
FLIP 86- 20C	29	29	-	37	37	37	30	26	29	29	32
FLIP 86- 21C	29	27	31	31	29	39	33	28	31	31	31
FLIP 86- 22C	30	34	3	-	39	47	39	-	29	36	37
FLIP 86- 23C	38	29	35	-	37	37	34	-	26	30	34
FLIP 86- 24C	21	27	-	1	38	44	31	32	-	37	34
FLIP 86- 27C	37	28	34	-	37	44	31	28	21	34	36
FLIP 86- 28C	35	28	0	37	35	44	31	28	23	29	34
FLIP 86- 29C	37	27	34	-	37	43	17	30	23	29	35
FLIP 86- 30C	31	26	27	40	36	40	30	30	25	27	32

Cont'd. ...

Table 3.9.5. Cont'd. ...

Entry Name	AFGHANISTAN Kabul	BRAZIL Santa-Maria	ETHIOPIA Debre - Zeit	FRANCE Mont-boucher	IRAN Karaj	IRAN Oroumieh	LEBANON Terbol	SPAIN Madrid	SYRIA Idleb	THAILAND Chiang-Mai	(1) Overall Mean
FLIP 86- 31C	26	26	0	37	38	40	33	26	20	26	31
FLIP 86- 32C	26	26	-	34	35	33	26	27	36	24	29
FLIP 86- 35C	25	29	34	33	38	41	40	17	25	32	33
FLIP 86- 37C	28	26	-	47	47	52	42	40	32	40	39
FLIP 86- 42C	36	35	-	42	45	45	35	31	30	35	39
FLIP 86- 44C	24	19	24	30	26	28	22	21	36	25	25
FLIP 86- 45C	28	26	33	34	33	39	35	27	34	28	31
FLIP 86- 47C	28	25	31	32	32	39	28	28	30	22	29
FLIP 86- 48C	28	26	0	36	34	42	31	29	25	32	32
FLIP 86- 49C	28	30	3	39	39	47	34	32	28	31	35
FLIP 86- 52C	32	25	-	34	33	38	32	29	28	24	31
FLIP 86- 53C	25	28	36	31	33	37	32	12	30	31	31
FLIP 86- 54C	29	28	-	40	35	44	31	33	41	26	33
FLIP 86- 55C	30	23	28	35	35	39	31	33	37	27	31
FLIP 86- 60C	31	34	-	41	36	37	38	33	35	35	35
FLIP 86- 64C	31	28	26	-	32	38	-	17	21	35	33
FLIP 86- 73C	39	36	-	44	43	40	38	38	26	36	39
FLIP 86- 74C	39	30	0	43	42	48	41	34	38	39	40
FLIP 86- 75C	32	35	3	42	44	35	32	35	27	36	36
FLIP 86- 80C	31	29	-	40	37	43	31	33	41	34	35
FLIP 81-293C	28	28	31	32	30	35	31	24	30	28	30
ILC 482	31	25	31	33	33	37	29	28	31	26	30
Local Check	27	-	22	29	34	48	37	-	31	-	
Location Mean	**30**	**29**	**14**	**33**	**37**	**42**	**33**	**30**	**31**	**32**	
S.E. of Mean	1.46	1.38	0.66	0.46	1.18	0.71	2.11	0.45	1.57	0.97	
L.S.D. at 5% for:											
Checks	5.04	6.22	2.28	1.60	4.08	2.46	7.28	2.04	5.42	4.38	
T.E. in the S.B.	10.07	12.44	4.56	3.19	8.16	4.93	14.57	4.07	10.84	8.76	
T.E. in D.B.	11.63	15.24	5.26	3.69	9.42	5.69	16.82	4.99	12.51	10.73	
Checks Vs T.E.	9.20	12.05	4.16	2.92	7.45	4.50	13.30	3.95	9.89	8.48	
C.V. %	9.65	9.68	9.75	2.82	6.46	3.39	13.16	3.22	10.45	6.08	
Test > L. Check	8	-	13	37	9	1	0	-	2	-	

(1) Debre Zeit, Montboucher, Terbol, Madrid and Idleb were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 3.9.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-SP during 1987/88.

Entry Name	AFGHANISTAN				ARGENTINA		BRAZIL		ETHIOPIA		FRANCE	
	Bulkh		Kabul		Perico		Santa Maria		Debre Zeit		Montboucher	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 1C	176	45	1297	19	179	46	244	39	-	-	476	22
FLIP 85- 11C	1043	9	208	50	1537	22	727	7	482	17	393	33
FLIP 85- 42C	710	22	1145	28	1070	33	679	12	-	-	695	7
FLIP 85- 50C	818	16	973	35	2203	15	629	16	-	-	827	2
FLIP 85- 63C	29	51	562	44	614	37	0	47	-	-	659	11
FLIP 85- 64C	585	27	958	36	1337	27	225	40	482	24	636	13
FLIP 85- 76C	385	36	902	38	0	49	429	31	-	-	768	3
FLIP 85- 92C	751	18	391	48	403	40	263	37	482	20	279	39
FLIP 85-109C	1376	3	1630	7	403	43	575	24	594	16	531	18
FLIP 85-118C	1001	10	1719	4	1137	31	454	29	482	23	473	23
FLIP 85-119C	1210	5	773	42	937	35	641	14	-	-	478	21
FLIP 85-126C	946	13	917	37	1548	21	2552	1	-	-	454	26
FLIP 85-134C	362	37	778	41	681	36	0	49	-	-	359	35
FLIP 86- 8C	71	48	1106	30	1448	25	0	50	-	-	497	20
FLIP 86- 9C	710	23	508	46	403	41	98	45	482	18	583	16
FLIP 86- 13C	987	11	1156	27	3481	2	63	46	-	-	689	8
FLIP 86- 17C	660	26	758	43	0	51	308	34	-	-	0	48
FLIP 86- 18C	218	44	1408	15	512	38	829	3	837	7	289	38
FLIP 86- 19C	735	20	1263	23	2512	13	441	30	829	9	710	6
FLIP 86- 20C	251	42	1323	17	2137	17	762	5	-	-	520	19
FLIP 86- 21C	243	43	1125	29	1312	28	581	23	173	26	408	32
FLIP 86- 22C	1335	4	0	51	1403	26	263	36	482	22	0	51
FLIP 86- 23C	735	19	1530	12	4612	1	606	19	1320	2	0	47
FLIP 86- 24C	418	34	523	45	0	47	603	20	-	-	0	49
FLIP 86- 27C	504	30	1628	8	2748	6	292	35	803	11	0	46
FLIP 86- 28C	154	46	1773	3	2614	9	489	27	-	-	416	30
FLIP 86- 29C	71	47	1512	13	3148	3	330	33	833	8	0	44
FLIP 86- 30C	710	21	1278	21	1937	19	648	13	694	14	432	29

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	AFGHANISTAN				ARGENTINA		BRAZIL		ETHIOPIA		FRANCE	
	Bulkh		Kabul		Perico		Santa Maria		Debre Zeit		Montboucher	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 31C	29	50	1645	6	1448	24	210	42	-	-	467	24
FLIP 86- 32C	251	41	1300	18	2603	10	730	6	-	-	330	37
FLIP 86- 35C	1376	2	1286	20	1137	30	714	8	660	15	0	50
FLIP 86- 37C	1043	8	839	40	1503	23	540	25	-	-	669	10
FLIP 86- 42C	860	14	1080	32	1112	32	632	15	-	-	643	12
FLIP 86- 44C	1168	7	1178	26	2537	12	679	11	697	13	631	14
FLIP 86- 45C	343	38	1413	14	1046	34	397	32	773	12	441	28
FLIP 86- 47C	1460	1	1269	22	2070	18	829	4	1038	4	201	41
FLIP 86- 48C	29	49	1073	33	2748	7	152	44	-	-	456	25
FLIP 86- 49C	460	33	2208	1	403	42	194	43	482	21	128	43
FLIP 86- 52C	1210	6	1684	5	2537	11	616	18	-	-	185	42
FLIP 86- 53C	418	35	1197	25	2403	14	708	9	1066	3	259	40
FLIP 86- 54C	293	40	1906	2	2937	5	698	10	-	-	337	36
FLIP 86- 55C	293	39	1612	9	303	44	590	22	258	25	448	27
FLIP 86- 60C	576	28	858	39	0	50	492	26	-	-	681	9
FLIP 86- 64C	487	32	273	49	1214	29	0	48	844	6	0	45
FLIP 86- 73C	751	17	1097	31	279	45	479	28	-	-	577	17
FLIP 86- 74C	671	25	1017	34	2948	4	222	41	-	-	740	4
FLIP 86- 75C	501	31	402	47	403	39	251	38	482	19	363	34
FLIP 86- 80C	551	29	1575	11	0	48	594	21	-	-	600	15
FLIP 81-293C	677	24	1367	16	2658	8	624	17	958	5	727	5
ILC 482	852	15	1251	24	1902	20	875	2	812	10	411	31
Local Check	975	12	1578	10	2150	16	-	-	1522	1	1024	1
Location Mean	666		1205		1574		522		410		560	
S.E. of Mean	243.86		109.52		727.62		111.53		145.98		39.31	
L.S.D. at 5% for:												
Checks	843.78		378.95		2517.59		501.80		505.11		136.01	
T.E. In the S.B	1687.56		757.90		5035.18		1003.59		1010.21		272.02	
T.E. in D.B.	1948.63		875.144		5814.13		1229.14		1166.49		314.10	
Checks Vs T.E.	1540.76		691.97		4597.17		971.87		922.33		248.35	
C.V. %	73.19		18.60		92.45		42.73		71.28		16.53	
Test > L. Check	0		0		0		-		0		0	

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	IRAN				JORDAN		LEBANON		PERU		SPAIN	
	Karaj		Oroumieh		MAROW		Terbol		La Molina		Madrid	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 1C	3196	1	951	33	214	36	1810	21	313	5	1233	22
FLIP 85- 11C	2210	7	1232	21	367	22	2184	16	484	4	2314	6
FLIP 85- 42C	954	41	1033	30	154	38	898	45	184	9	1064	26
FLIP 85- 50C	183	51	576	43	-	-	2527	5	171	10	93	48
FLIP 85- 63C	1480	30	0	51	522	10	1534	28	886	2	2369	4
FLIP 85- 64C	1661	23	712	39	0	45	2628	4	-	-	2171	7
FLIP 85- 76C	1008	38	354	47	62	42	2199	14	580	3	2492	1
FLIP 85- 92C	1781	20	1156	26	0	44	1295	37	-	-	908	29
FLIP 85-109C	2495	5	1004	31	329	23	939	44	-	-	2365	5
FLIP 85-118C	2004	13	1156	27	138	39	739	48	96	31	2408	3
FLIP 85-119C	680	46	932	35	240	33	1283	38	138	20	470	37
FLIP 85-126C	1274	34	1038	29	675	4	2423	8	198	7	206	45
FLIP 85-134C	1309	33	22	49	646	5	2290	11	165	13	1397	18
FLIP 86- 8C	2514	4	707	40	932	1	-	-	148	17	323	43
FLIP 86- 9C	1764	21	648	42	167	37	850	46	96	32	1576	15
FLIP 86- 13C	1703	22	1101	28	694	3	2201	13	165	12	2010	10
FLIP 86- 17C	968	39	443	45	424	17	3755	2	-	-	-	-
FLIP 86- 18C	1848	18	1649	5	0	46	1755	24	118	26	580	35
FLIP 86- 19C	2168	10	2437	1	452	15	1755	23	168	11	1469	16
FLIP 86- 20C	457	48	1160	25	325	24	1905	19	117	27	1046	27
FLIP 86- 21C	2699	2	1205	22	252	32	1699	25	-	-	792	30
FLIP 86- 22C	1855	16	1397	11	424	16	0	51	71	33	-	-
FLIP 86- 23C	2590	3	1598	6	462	14	1533	29	-	-	-	-
FLIP 86- 24C	566	47	995	32	316	25	1490	31	34	38	451	38
FLIP 86- 27C	949	43	1253	19	-	-	1608	26	-	-	1202	24
FLIP 86- 28C	2011	12	1368	14	741	2	1534	27	-	-	1241	21
FLIP 86- 29C	1583	26	1342	17	570	8	1312	35	-	-	1241	20
FLIP 86- 30C	446	49	1719	3	316	26	1361	34	-	-	687	32

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	IRAN				JORDAN		LEBANON		PERU		SPAIN	
	Karaj		Oroumieh		MAROW		Terbol		La Molina		Madrid	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 31C	2171	9	796	37	513	11	1312	36	-	-	1324	19
FLIP 86- 32C	1166	37	944	34	106	41	2472	7	117	28	1702	12
FLIP 86- 35C	1472	31	1372	13	52	43	1369	33	138	21	385	41
FLIP 86- 37C	949	42	690	41	373	20	2898	3	217	6	1016	28
FLIP 86- 42C	1636	25	1294	18	376	19	1088	43	-	-	417	40
FLIP 86- 44C	417	50	1351	16	373	21	1905	18	117	29	1583	14
FLIP 86- 45C	1853	17	786	38	262	29	1385	32	134	22	1793	11
FLIP 86- 47C	1581	27	1410	10	233	34	1221	40	-	-	651	33
FLIP 86- 48C	1223	36	847	36	-	-	1164	42	165	14	2028	8
FLIP 86- 49C	1867	15	1385	12	252	31	1517	30	-	-	1405	17
FLIP 86- 52C	714	45	1503	7	-	-	2527	6	130	24	129	46
FLIP 86- 53C	1558	28	2032	2	0	44	850	47	-	-	338	42
FLIP 86- 54C	2229	6	1427	8	125	40	1898	20	130	23	616	34
FLIP 86- 55C	1423	32	1186	24	278	28	2194	15	126	25	526	36
FLIP 86- 60C	2139	11	367	46	595	7	2422	9	926	1	1641	13
FLIP 86- 64C	960	40	9	50	494	12	-	50	198	8	103	47
FLIP 86- 73C	1522	29	443	44	300	27	2255	12	143	18	1217	23
FLIP 86- 74C	891	44	352	48	379	18	2053	17	152	16	423	39
FLIP 86- 75C	1250	35	1245	20	214	35	3961	1	17	45	1102	25
FLIP 86- 80C	1888	14	1192	23	595	6	1199	41	-	-	2024	9
FLIP 81-293C	1784	19	1417	9	536	9	1774	22	-	-	2474	2
ILC 482	1650	24	1692	4	257	30	2306	10	163	15	724	31
Local Check	2206	8	1362	15	479	13	1249	39	139	19	-	-
Location Mean	**1597**		**1152**		**394**		**1816**		**209**		**1241**	
S.E. of Mean	204.16		182.24		88.57		424.15		7.93		76.03	
L.S.D. at 5% for:	706.40		630.55		306.47		1467.58		27.43		342.07	
T.E. in S.B.	1412.79		1261.10		612.94		2935.16		54.86		684.15	
T.E. in D.B.	1631.35		1456.20		707.76		3389.23		63.34		837.91	
Checks Vs T.E.	1289.89		1151.40		559.62		2697.82		50.09		662.52	
C.V. %	25.57		32.39		51.81		49.82		11.50		13.01	
Test > L. Check	0		0		0		1		8		-	

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	SYRIA											
	Al Ghab		Gelline		Hama		Idleb		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 1C	-	48	231	37	1198	26	1468	20	985	7	878	14
FLIP 85- 11C	722	22	409	22	722	46	2550	2	669	32	878	13
FLIP 85- 42C	331	38	679	2	1103	32	1517	16	837	16	643	39
FLIP 85- 50C	204	44	618	5	722	45	1460	21	773	21	707	29
FLIP 85- 63C	257	41	342	29	754	44	998	45	881	12	629	41
FLIP 85- 64C	754	19	225	39	532	49	1077	44	663	35	567	44
FLIP 85- 76C	437	36	437	15	468	51	1589	14	661	37	567	45
FLIP 85- 92C	849	11	548	8	1135	31	1274	31	892	11	1120	3
FLIP 85-109C	754	21	459	14	881	41	1134	43	568	44	954	5
FLIP 85-118C	278	40	125	45	1167	29	1223	36	860	13	643	38
FLIP 85-119C	331	39	690	1	1325	21	1263	32	735	26	853	15
FLIP 85-126C	225	43	292	33	1230	23	2294	3	849	15	483	48
FLIP 85-134C	415	37	270	36	1008	37	573	49	849	14	775	23
FLIP 86- 8C	98	46	287	34	1802	4	1557	15	938	8	546	46
FLIP 86- 9C	754	20	353	27	500	50	1483	18	688	29	1177	1
FLIP 86- 13C	669	24	487	10	1706	7	1437	25	1084	5	698	30
FLIP 86- 17C	468	34	159	44	1040	36	1468	19	356	47	675	32
FLIP 86- 18C	1103	2	92	48	1516	14	1843	7	667	33	789	20
FLIP 86- 19C	849	12	320	30	1611	10	1170	40	318	50	910	11
FLIP 86- 20C	934	10	224	40	1802	5	1314	29	627	38	885	12
FLIP 86- 21C	976	8	37	50	1421	20	1259	33	826	19	713	28
FLIP 86- 22C	976	7	270	35	1579	11	956	47	612	40	777	21
FLIP 86- 23C	1040	4	420	21	1103	33	1329	27	705	28	929	8
FLIP 86- 24C	458	35	-	-	913	39	-	-	214	51	459	49
FLIP 86- 27C	225	42	309	31	1770	6	1671	10	760	23	667	36
FLIP 86- 28C	828	14	348	28	1516	12	1837	9	1008	6	914	10
FLIP 86- 29C	511	33	464	13	1516	13	1919	4	900	10	946	6
FLIP 86- 30C	775	18	674	3	1167	28	1453	22	1116	3	770	24

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	SYRIA											
	Al Ghab		Gelline		Hama		Idleb		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 31C	0	51	198	43	1167	27	1176	38	665	34	248	50
FLIP 86- 32C	585	29	518	9	1230	24	1174	39	621	39	720	27
FLIP 86- 35C	659	25	364	26	1484	15	1401	26	917	9	796	19
FLIP 86- 37C	648	27	429	17	1071	34	1485	17	792	20	758	26
FLIP 86- 42C	817	16	425	18	1484	17	1887	5	1093	4	834	17
FLIP 86- 44C	553	30	435	16	1452	18	1155	41	322	49	681	31
FLIP 86- 45C	627	28	464	12	2913	1	1862	6	362	46	669	34
FLIP 86- 47C	817	15	425	19	1897	2	962	46	676	31	529	47
FLIP 86- 48C	0	50	220	41	849	43	1595	13	684	30	140	51
FLIP 86- 49C	532	31	364	25	1008	38	1445	23	612	41	758	25
FLIP 86- 52C	997	6	612	6	1421	19	1326	28	767	22	662	37
FLIP 86- 53C	1103	1	381	23	1833	3	829	48	1222	1	1126	2
FLIP 86- 54C	839	13	568	7	1230	25	552	50	837	17	923	9
FLIP 86- 55C	997	5	624	4	1135	30	1441	24	341	48	777	22
FLIP 86- 60C	132	45	225	38	1484	16	1614	12	591	42	675	33
FLIP 86- 64C	0	49	98	47	595	47	1144	42	570	43	571	43
FLIP 86- 73C	659	26	0	51	1262	22	1189	37	661	36	929	7
FLIP 86- 74C	66	47	370	24	849	42	2935	1	837	18	622	42
FLIP 86- 75C	532	32	292	32	563	48	1286	30	758	24	802	18
FLIP 86- 80C	722	23	42	49	913	40	1837	8	407	45	631	40
FLIP 81-293C	810	17	200	42	1063	35	1244	35	740	25	835	16
ILC 482	937	9	476	11	1611	9	1257	34	727	27	668	35
Local Check	1087	3	422	20	1683	8	1637	11	1157	2	1100	4
Location Mean	**703**		**368**		**1275**		**1428**		**754**		**764**	
S.E. of Mean	77.17		94.56		87.30		124.86		125.56		103.17	
L.S.D. at 5% for:												
Checks	267.03		327.17		302.07		432.03		434.44		356.96	
T.E. in the S.B.	534.06		654.34		604.14		864.06		868.89		713.92	
T.E. in D.B.	616.67		755.57		697.60		997.73		1003.31		824.37	
Checks Vs T.E.	487.60		597.42		551.58		788.90		793.30		651.82	
C.V. %	24.00		53.27		13.70		17.89		33028		27.02	
Test > L. Check	0		0		1		2		0		0	

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	THAILAND				TUNISIA				TURKEY				Overall Mean (1)	
	Chiang Rai		Chiang mai		Beja		Oued Meliz		Diyarbakir		Eskisehir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 1C	–	–	176	47	1140	30	1360	25	–	–	999	11	915	25
FLIP 85- 11C	738	2	631	32	790	44	710	47	409	25	830	28	913	30
FLIP 85- 42C	0	48	0	50	1840	4	1777	14	–	–	644	44	873	41
FLIP 85- 50C	38	44	706	28	1540	13	1502	19	–	29	676	41	872	38
FLIP 85- 63C	178	32	576	39	881	40	1402	24	1539	2	796	30	605	46
FLIP 85- 64C	188	30	1031	16	815	42	1060	32	–	–	571	43	799	37
FLIP 85- 76C	238	21	6	49	1215	26	960	41	–	–	1063	9	602	48
FLIP 85- 92C	288	16	481	43	1165	28	760	44	576	19	957	16	829	40
FLIP 85-109C	688	4	581	37	1040	34	1360	26	409	23	957	15	1000	26
FLIP 85-118C	288	15	531	41	1740	5	385	48	409	24	735	35	1048	22
FLIP 85-119C	38	45	136	48	1590	11	1827	13	–	–	771	32	851	42
FLIP 85-126C	138	38	1256	5	1731	6	2502	5	1094	6	701	40	1152	12
FLIP 85-134C	–	–	656	30	906	39	1252	28	594	18	0	51	593	47
FLIP 86- 8C	738	3	1106	13	1531	14	1302	27	983	10	923	23	1015	16
FLIP 86- 9C	188	31	631	34	1190	27	935	42	409	26	703	37	739	43
FLIP 86- 13C	218	23	1126	12	1631	9	2077	10	928	13	955	17	1260	5
FLIP 86- 17C	318	13	1746	1	540	49	385	49	–	–	841	26	641	45
FLIP 86- 18C	–	–	736	26	1015	35	1160	30	–	–	1063	8	964	19
FLIP 86- 19C	308	14	906	23	1265	24	985	38	–	–	1126	4	1262	3
FLIP 86- 20C	508	7	1606	2	1065	33	2052	11	–	–	898	25	1038	14
FLIP 86- 21C	278	17	1176	7	1515	15	1035	34	–	–	111	48	1026	17
FLIP 86- 22C	488	8	481	42	965	36	735	45	520	21	798	29	882	34
FLIP 86- 23C	248	19	1506	3	1365	21	985	37	–	–	1095	7	1413	1
FLIP 86- 24C	638	5	776	24	815	43	2252	8	–	–	707	36	538	49
FLIP 86- 27C	–	–	1186	6	1331	23	1727	15	594	17	987	13	1083	13
FLIP 86- 28C	–	–	956	22	1356	22	2677	4	1094	5	1114	5	1207	4
FLIP 86- 29C	–	–	1156	9	1431	17	3052	2	1539	3	701	38	1126	8
FLIP 86- 30C	–	–	456	44	640	47	3402	1	–	–	612	46	918	24

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	THAILAND				TUNISIA				TURKEY				Overall Mean (1)	
	Chiang Rai		Chiang mai		Beja		Oued Meliz		Diyarbakir		Eskisehir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 31C	1768	1	956	21	881	41	1477	22	706	16	765	34	881	27
FLIP 86- 32C	38	43	1156	10	715	46	2302	7	–	–	676	42	957	18
FLIP 86- 35C	238	22	981	20	2065	2	885	43	520	20	925	21	1117	20
FLIP 86- 37C	0	46	706	27	915	37	2377	6	–	–	612	45	853	36
FLIP 86- 42C	238	20	1006	19	1240	25	1210	29	–	–	111	49	1002	21
FLIP 86- 44C	388	11	256	46	265	51	1602	18	–	–	930	20	913	28
FLIP 86- 45C	408	10	1026	17	1140	29	1485	21	–	–	936	18	1025	15
FLIP 86- 47C	138	37	1081	14	2465	1	1860	12	1465	4	830	27	1254	10
FLIP 86- 48C	148	36	606	36	906	38	–	–	928	12	479	47	784	32
FLIP 86- 49C	208	29	681	29	2065	3	1035	33	1687	1	1179	3	996	29
FLIP 86- 52C	0	47	1056	15	1115	31	2827	3	–	–	1406	1	1144	9
FLIP 86- 53C	608	6	1131	11	1415	18	360	50	465	22	1243	2	1273	2
FLIP 86- 54C	488	9	406	45	1565	12	2202	9	–	–	771	33	1197	6
FLIP 86- 55C	0	49	576	38	615	48	1602	17	–	–	771	31	775	35
FLIP 86- 60C	–	–	1006	18	1515	16	1010	36	–	–	936	19	871	33
FLIP 86- 64C	168	33	606	35	506	50	1152	31	983	11	0	50	446	50
FLIP 86- 73C	258	18	756	25	1415	19	1010	35	–	–	904	24	852	39
FLIP 86- 74C	158	34	1506	4	1381	20	727	46	1039	7	701	39	980	23
FLIP 86- 75C	208	28	631	33	790	45	960	40	1020	9	925	22	683	44
FLIP 86- 80C	–	–	656	31	1090	32	1460	23	–	–	968	14	851	31
FLIP 81-293C	370	12	1175	8	1719	7	1494	20	1031	8	1030	10	1217	7
ILC 482	155	35	538	40	1631	10	1656	16	753	15	992	12	1138	11
Local Check	–	–	–	–	1644	8	981	39	778	14	1103	6		
Location Mean	**344**		**838**		**1301**		**1427**		**499**		**885**			
S.E. of Mean	74.69		276.65		250.31		228.26		110		135.21			
L.S.D. at 5% for:														
Checks	336.07		1244.76		866.10		789.78		381.11		467.83			
T.E. in the S.B.	672.15		2489.51		1732.19		1579.56		762.23		935.67			
T.E. in D.B.	823.21		3049.01		2000.16		1823.92		880.14		1080.42			
Checks Vs T.E.	650.90		2410.82		1581.51		1442.15		695.92		854.27			
C.V. %	56.95		67.55		38.47		31.99		44.11		31.85			
Test > L. Check	–		–		0		5		3		0			

(1) Marow, Terbol, La Molina, Madrid, Al Ghab, Idleb, Gelline, Chiang Rai, Diyarbakir and Oued Meliz were excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 3.9.7. The five heaviest seed yielding entries at the individual locations in the CISN-SP during 1987/88.

Rank	AFGHANISTAN		ARGENTINA	BRAZIL	ETHIOPIA	FRANCE	IRAN	
	Bulkh	Kabul	Perico	Santa Maria	Debre Zeit	Montboucher	Karaj	Oroumieh
1	FLIP86- 47C	FLIP86- 49C	FLIP86- 23C	FLIP85-126C	Local Check	Local Check	FLIP84- 1C	FLIP86- 19C
2	FLIP86- 35C	FLIP86- 54C	FLIP86- 13C	ILC 482	FLIP86- 23C	FLIP85- 50C	FLIP86- 21C	FLIP86- 53C
3	FLIP85-109C	FLIP86- 28C	FLIP86- 29C	FLIP86- 18C	FLIP86- 53C	FLIP85- 76C	FLIP86- 23C	FLIP86- 30C
4	FLIP86- 22C	FLIP85-118C	FLIP86- 74C	FLIP86- 74C	FLIP86- 47C	FLIP86- 74C	FLIP86- 8C	ILC 482
5	FLIP85-119C] FLIP86- 52C	FLIP86- 52C	FLIP86- 54C	FLIP86- 20C	FLIP81-293C	FLIP81-293C	FLIP85-109C	FLIP86- 18C

Cont'd. ...

Table 3.9.7. Cont'd. ...

Rank	JORDAN	LEBANON	PERU	SPAIN	SYRIA			
	Marow	Terbol	La Molina	Madrid	Al Ghab	Gelline	Hama	Idleb
1	FLIP86- 8C	FLIP86- 75C	FLIP86- 60C	FLIP85- 76C	FLIP86- 53C	FLIP85-119C	FLIP86- 45C	FLIP86- 74C
2	FLIP86- 28C	FLIP86- 17C	FLIP85- 63C	FLIP81-293C	FLIP86- 18C	FLIP85- 42C	FLIP86- 47C	FLIP85- 11C
3	FLIP86- 13C	FLIP86- 37C	FLIP85- 76C	FLIP85-118C	Local Check	FLIP86- 30C	FLIP86- 53C	FLIP85-126C
4	FLIP85-126C	FLIP85- 64C	FLIP85- 11C	FLIP85- 63C	FLIP86- 23C	FLIP86- 55C	FLIP86- 8C	FLIP86- 29C
5	FLIP85-134C	FLIP85- 50C] FLIP86- 52C	FLIP84- 1C	FLIP85-109C	FLIP86- 55C] FLIP86- 52C	FLIP85- 50C	FLIP86- 20C	FLIP86- 42C

Cont'd. ...

Table 3.9.7. Cont'd. ...

Rank	SYRIA		THAILAND		TUNISIA		TURKEY	
	Jindiross	Tel Hadya	Chiang Rai	Chiang Mai	Beja	Oued Meliz	Diyarbakir	Eskisehir
1	FLIP86- 53C	FLIP86- 9C	FLIP86- 31C	FLIP86- 17C	FLIP86- 47C	FLIP86- 30C	FLIP86- 49C	FLIP86- 52C
2	Local Check	FLIP86- 53C	FLIP85- 11C	FLIP86- 20C	FLIP86- 35C	FLIP86- 29C	FLIP85- 63C	FLIP86- 53C
3	FLIP86- 30C	FLIP85- 92C	FLIP86- 8C	FLIP86- 23C	FLIP86- 49C	FLIP86- 52C	FLIP86- 29C	FLIP86- 49C
4	FLIP86- 42C	Local Check	FLIP85-109C	FLIP86- 74C	FLIP85- 42C	FLIP86- 28C	FLIP86- 47C	FLIP86- 19C
5	FLIP86- 13C	FLIP85-109C	FLIP86- 24C	FLIP85-126C	FLIP85-118C	FLIP85-126C	FLIP86- 28C] FLIP85-126C	FLIP86- 28C

The brackets indicate entries having the same rank.

location mean was highest for Terbol in Lebanon (1816 kg/ha) and was followed by Karaj in Iran (1597 kg/ha), Perico in Argentina (1574 kg/ha), Idleb in Syria (1428 kg/ha) and Oued Meliz in Tunisia (1427 kg/ha) etc. The ANOVA of the experimental design exhibited that at 8 locations some of the test entries exceeded the respective local check by a significant margin. The five heaviest seed yielding entries at different locations are given in Table 3.9.7. The entries FLIP 86-53C and FLIP 86-47C occurred most frequently (7 and 6 times, respectively) among the top five heaviest yielders at varying locations and were relatively more adaptable.

3.10. CHICKPEA INTERNATIONAL F_4 TRIAL (CIF_4T)

Material

The material for the Chickpea International F_4 Trial comprised 21 F_4 populations which were derived from different crosses, and three checks. Two of the checks, namely ILC 482 and ILC 3279 were supplied by ICARDA and the third was to be added by the cooperator. The material was assumed to provide a wide range of variation within which the cooperators were free to practice their own selection.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was 4 rows, 4 meter long with an inter- and intra row spacings of 30 - and 10 cm, respectively. Forty sets of the trial were distributed to cooperators in 19 countries. The results were, however, received back for 18 trials from 14 countries. The agronomic details supplied by the cooperators are given in Table 3.10.1.

Results and Discussion

The data on time to flowering, time to maturity, plant height and 100-seed weight are given in Tables 3.10.2, 3.10.3, 3.10.4, and 3.10.5, respectively. The entry means averaged over locations for F_4 populations ranged from 104 to 114 days for time to flowering, 170 to 174 days for time to maturity, 48 to 64cm for plant height, and 32 to 41 g for 100-seed weight.

The mean seed yields of the F_4 populations and checks at each locations are given in Table 3.10.6. Elvas (Portugal) was the highest yielding location and was closely followed by Tarquinia in Italy, and Marchouch and Douyet in Morocco with location means of 2931, 2905, 2629 and 2253 kg/ha, respectively. In general, a large number of F_4 populations exceeded the respective local check at different locations. On the basis of average over locations the cross, X85TH278 gave the highest yield (1770 kg/ha). Three crosses namely, X85TH116, X85TH186 and X85TH278 occured most frequently among the top five heaviest yielders and were most adaptable than others. The top five heaviest

Table 3.10.1. Agronomic data for different locations in the CIF4T during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Sidi Bel Abbes	30.11.87	06.88	-			-	-	Rabat 9
EGYPT	Shandaweel	23.11.87	15.04.88	15	30		1	Igran	Giza 88
FRANCE	Montboucher	11.03.88	05.09.88	-			-	-	Cascari
INDIA	Ludhiana (Punjab)	30.11.88	29.04.88	15	20		1	-	GL769,PBG1,L550
IRAN	Karaj	08.03.88	20.07.88	24	72		7	Treflan, Metasystox	Jam
ITALY	Tarquinia	09.01.88	06.08.88	45	130		-	TARGA	CALIA
JORDAN	Marow	15.11.87	23.05.88	20	40				UJC 107
LEBANON	Terbol	21.11.87	07.07.88		50		-	Kerb, Igran	Lebanese Local
MEXICO	Hermosillo	11.87	05.88	60			2	Sepavax	Tubutama
MOROCCO	Douyet	21.11.87	14.06.88	30	60		-	-	PCH 46
MOROCCO	Marchouch	21.11.87	15.07.88	28	56	28	-	-	PCH 46
PORTUGAL	Elvas	11.11.87	14.07.88	-			-	-	FLIP 83-15C
SYRIA	Tel Hadya	25.11.87	07.06.88	30	50		-	Kerb, Igran	ILC 1929
TUNISIA	Beja	25.11.87	NA	NA			NA	NA	NA
TURKEY	Adana	24.11.88	24.05.89	30	50		1	-	-
TURKEY	Ankara	28.03.88	30.07.88	30	70				-
TURKEY	Diyarbakir	05.04.88	25.06.88	40	60		-	-	Yerli Nohut
TURKEY	Eskisehir	05.05.88	26.08.88	30	70				Canitez87

NA = Not available

Table 3.10.2. Time to flowering (days) of entries at different locations in the CIF4T during 1987/88.

Entry Name	Pedigree	Origin	ALGERIA	EGYPT	FRANCE	IRAN	ITALY	JORDAN
			Sidi Bel-Abbes	Shanda-weel	Montbou-cher	Karaj	Tarquinia	Marow
X85 TH 106	ILC 100XFLIP 81-293C	ICARDA/ICRISAT	123	83	88	50	112	150
X85 TH 109	ILC 100XFLIP 82-127C	ICARDA/ICRISAT	123	88	86	52	112	152
X85 TH 116	ILC 165XFLIP 83- 46C	ICARDA/ICRISAT	119	84	84	45	105	146
X85 TH 122	ILC 171XFLIP 81-293C	ICARDA/ICRISAT	-	87	86	50	110	149
X85 TH 123	ILC 171XFLIP 82- 59C	ICARDA/ICRISAT	-	94	88	51	113	149
X85 TH 138	ILC 620XFLIP 81-293C	ICARDA/ICRISAT	126	85	88	47	114	151
X85 TH 141	ILC 629XFLIP 82-127C	ICARDA/ICRIST	-	79	86	48	114	148
X85 TH 142	ILC 629XFLIP 82-130C	ICARDA/ICRISAT	121	96	86	51	110	152
X85 TH 144	ILC 629XFLIP 82-191C	ICARDA/ICRISAT	117	95	88	51	118	150
X85 TH 186	ILC4295XFLIP 82-144C	ICARDA/ICRISAT	119	85	82	45	106	147
X85 TH 242	ILC3397XFLIP 82-130C	ICARDA/ICRIST	118	68	84	38	97	145
X85 TH 243	ILC 3398XFLIP 82-144C	ICARDA/ICRISAT	-	67	82	40	95	152
X85 TH 247	ILC3398XFLIP 83- 15C	ICARDA/ICRISAT	116	69	85	41	95	149
X85 TH 254	ILC3546XFLIP 81-293C	ICARDA/ICRISAT	118	69	84	40	98	150
X85 TH 270	ILC3779XFLIP 81-293C	ICARDA/ICRISAT	-	68	84	39	100	147
X85 TH 271	ILC3779XFLIP 82- 59C	ICARDA/ICRISAT	118	66	80	41	97	145
X85 TH 278	ILC3843XFLIP 83- 13C	ICARDA/ICRISAT	124	65	82	38	98	148
X85 TH 286	ILC 4291XFLIP 81-293C	ICARDA/ICRISAT	117	66	82	41	100	147
X85 TH 289	ILC4291XFLIP 82-127C	ICARDA/ICRISAT	122	68	88	46	107	150
X85 TH 297	ILC 142XFLIP 81-293C	ICARDA/ICRISAT	121	67	88	39	100	149
X85 TH 298	ILC 142XFLIP 82- 59C	ICARDA/ICRISAT	119	68	86	40	98	150
ILC 482	-	Turkey	116	84	78	44	103	149
ILC 3279		USSR	-	92	88	53	124	150
Local Check		-	117	67	80	50	108	148
Location Mean			**120**	**77**	**85**	**45**	**106**	**149**
S.E. of Mean			One Rep.	2.11	One Rep.	1.52	1.56	1.72
L.S.D. at 5%				6.01		4.32	4.45	-
C.V. %				4.72		5.83	2.56	2.00
Error df				46		46	46	46
Significance				*		*	*	NS

Cont'd. ...

Table 3.10.2. Cont'd. ...

Entry Name	LEBANON	MEXICO	MOROCCO		PORTUGAL	SYRIA	TURKEY		(1) Overall Mean
	Terbol	Hermosillo	Douyet	Marchouch	Elvas	Tel Hadya	Adana	Ankara	
X85 TH 106	153	90	130	120	105	146	130	91	111
X85 TH 109	153	80	130	122	107	146	130	91	111
X85 TH 116	148	77	129	116	103	139	133	93	108
X85 TH 122	153	79	130	120	105	142	133	91	110
X85 TH 123	154	87	127	118	104	145	133	91	112
X85 TH 138	152	88	130	118	106	145	130	92	111
X85 TH 141	154	80	130	126	107	149	130	91	111
X85 TH 142	153	88	128	118	105	149	133	91	112
X85 TH 144	152	81	128	126	110	153	132	92	113
X85 TH 186	150	81	130	119	103	140	133	93	109
X85 TH 242	146	66	130	118	101	135	131	91	104
X85 TH 243	143	77	130	126	101	136	133	93	106
X85 TH 247	149	65	128	120	100	138	131	92	105
X85 TH 254	154	68	130	120	104	139	130	91	106
X85 TH 270	154	70	127	126	102	139	131	92	106
X85 TH 271	144	73	129	120	100	137	130	93	104
X85 TH 278	146	68	130	125	100	136	133	93	105
X85 TH 286	147	76	130	122	102	139	133	92	106
X85 TH 289	155	77	126	120	107	144	131	91	109
X85 TH 297	146	75	130	118	105	137	133	92	106
X85 TH 298	146	75	128	119	101	138	132	93	106
ILC 482	150	76	128	116	99	138	130	92	107
ILC 3279	158	81	130	120	114	157	130	91	114
Local Check	150	89	127	126	102	149	130	–	
Location Mean	**150**	**78**	**129**	**121**	**104**	**142**	**131**	**92**	
S.E. of Mean	1.48	5.08	0.07	0.00	1.40	1.06	0.50	0.63	
L.S.D. at 5%	4.22	14.46	0.19	0.00	3.99	3.01	1.43	–	
C.V. %	1.71	11.32	0.09	0.00	2.34	1.29	0.66	1.20	
Error df	46	46	46	46	46	46	46	44	
Significance	*	*	*	*	*	*	*	NS	

(1) Sidi Bel Abbes was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.10.3. Time to maturity (days) of entries at different locations in the CIF4T during 1987/88.

Entry Name	ALGERIA	EGYPT	IRAN	ITALY	JORDAN	LEBANON	MEXICO
	Sidi Bel Abbes	Shandaweel	Karaj	Tarquinia	Marow	Terbol	Hermosillo
X85 TH 106	178	109	124	188	175	200	151
X85 TH 109	181	103	123	193	177	199	149
X85 TH 116	-	107	124	191	178	204	150
X85 TH 122	178	107	123	195	175	196	146
X85 TH 123	-	104	123	193	179	201	151
X85 TH 138	177	106	123	192	179	196	151
X85 TH 141	177	107	123	193	177	198	150
X85 TH 142	178	104	124	197	178	204	151
X85 TH 144	181	105	125	197	174	211	150
X85 TH 186	-	102	123	193	179	204	150
X85 TH 242	180	103	123	188	177	196	146
X85 TH 243	-	100	124	191	180	201	147
X85 TH 247	-	103	125	193	177	200	148
X85 TH 254	181	102	123	193	179	203	148
X85 TH 270	-	108	122	193	175	200	147
X85 TH 271	178	105	124	188	175	196	148
X85 TH 278	180	107	123	188	176	196	146
X85 TH 286	177	104	122	188	178	201	146
X85 TH 289	179	106	123	188	177	198	147
X85 TH 297	180	100	121	191	179	200	146
X85 TH 298	-	105	123	193	178	200	147
ILC 482	-	100	125	181	179	195	146
ILC 3279	-	107	124	179	180	197	149
Local Check	180	103	126	181	176	196	133
Location Mean	**179**	**104**	**123**	**190**	**177**	**200**	**148**
S.E. of Mean	One Rep.	2.35	0.76	1.71	1.68	1.54	1.27
L.S.D. at 5%		-	2.16	4.87	-	4.39	3.60
C.V. %		3.89	1.07	1.56	1.64	1.34	1.49
Error df		46	46	46	46	46	46
Significance		NS	*	*	NS	*	*

Cont'd. ...

Table 3.10.3. Cont'd. ...

Entry Name	MOROCCO		PORTUGAL	SYRIA	TURKEY		(1) Overall Mean
	Douyet	Marchouch	Elvas	Tel Hadya	Adana	Ankara	
X85 TH 106	187	197	218	192	178	141	172
X85 TH 109	187	199	217	192	179	143	172
X85 TH 116	187	194	225	193	181	146	173
X85 TH 122	188	197	219	191	181	142	172
X85 TH 123	187	195	218	192	180	142	172
X85 TH 138	188	195	219	192	179	143	172
X85 TH 141	187	203	222	192	180	141	173
X85 TH 142	191	195	217	193	180	143	173
X85 TH 144	188	203	222	193	180	143	174
X85 TH 186	187	196	225	192	180	145	173
X85 TH 242	187	195	215	191	181	143	170
X85 TH 243	185	203	224	191	181	147	173
X85 TH 247	185	197	226	192	179	146	173
X85 TH 254	187	197	216	193	179	143	172
X85 TH 270	185	203	213	192	180	145	172
X85 TH 271	185	197	222	192	178	147	171
X85 TH 278	187	202	221	191	181	146	172
X85 TH 286	187	199	212	192	181	145	171
X85 TH 289	187	197	217	192	180	143	171
X85 TH 297	187	195	221	192	181	145	172
X85 TH 298	187	196	224	192	180	145	172
ILC 482	185	193	218	188	179	144	170
ILC 3279	185	197	218	192	178	141	171
Local Check	187	203	211	191	178	-	
Location Mean	**187**	**198**	**219**	**192**	**180**	**144**	
S.E. of Mean	0.00	0.14	1.89	0.24	0.74	1.15	
L.S.D. at 5%	0.00	0.39	5.37	0.68	2.11	3.29	
C.V. %	0.00	0.12	1.49	0.22	0.71	1.39	
Error df	46	46	46	46	46	44	
Significance	*	*	*	*	*	*	

(1) Sidi Bel Abbes was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not Sig.

Table 3.10.4. Plant height (cm) of entries at different locations in the CIF4T during 1987/88.

Entry Name	ALGERIA	EGYPT	INDIA	ITALY	JORDAN	LEBANON	MEXICO	MOROCCO
	Sidi Bel Abbes	Shandaweel	Ludhiana	Tarquinia	Marow	Terbol	Hermosillo	Douyet
X85 TH 106	45	77	48	65	57	50	59	70
X85 TH 109	46	80	46	70	43	49	62	70
X85 TH 116	45	75	55	68	47	51	57	70
X85 TH 122	50	82	50	68	41	43	58	65
X85 TH 123	48	75	61	68	47	54	51	80
X85 TH 138	45	63	57	65	44	45	56	81
X85 TH 141	45	67	45	70	47	47	65	85
X85 TH 142	45	68	48	70	46	50	52	80
X85 TH 144	48	75	55	67	43	48	59	85
X85 TH 186	48	78	52	65	52	47	48	70
X85 TH 242	50	80	52	67	47	51	57	85
X85 TH 243	45	80	53	67	52	51	61	80
X85 TH 247	48	75	43	68	49	48	52	80
X85 TH 254	40	70	39	68	38	46	54	70
X85 TH 270	53	68	48	68	45	47	55	75
X85 TH 271	45	72	44	67	45	51	47	75
X85 TH 278	50	78	60	63	48	53	48	85
X85 TH 286	35	67	44	67	50	48	57	70
X85 TH 289	48	77	36	70	43	53	58	75
X85 TH 297	40	68	53	70	48	50	55	68
X85 TH 298	45	77	50	68	50	52	57	80
ILC 482	40	62	-	67	43	44	42	65
ILC 3279	60	82	-	83	53	58	76	70
Local Check	45	77	55	65	46	46	43	70
Location Mean	**46**	**74**	**50**	**68**	**47**	**49**	**55**	**75**
S.E. of Mean	One Rep.	7.86	One Rep.	2.85	3.73	2.66	4.02	0.14
L.S.D. at 5%		-		8.11	-	-	11.45	0.39
C.V. %		18.44		7.24	13.82	9.36	12.61	0.31
Error df		46		46	46	46	46	46
Significance		NS		*	NS	NS	*	*

Cont'd. ...

Table 3.10.4. Cont'd. ...

Entry Name	MOROCCO	PORTUGAL	SYRIA	TURKEY		Overall Mean
	Marchouch	Elvas	Tel Hadya	Adana	Ankara	
X85 TH 106	37	65	46	49	25	54
X85 TH 109	55	72	48	60	27	57
X85 TH 116	47	70	45	54	27	55
X85 TH 122	72	65	49	49	32	56
X85 TH 123	70	68	47	59	30	58
X85 TH 138	53	63	47	51	26	53
X85 TH 141	48	68	46	54	29	56
X85 TH 142	55	67	46	57	31	55
X85 TH 144	55	73	49	58	28	57
X85 TH 186	57	67	50	56	22	55
X85 TH 242	35	68	46	61	25	56
X85 TH 243	57	70	46	59	23	58
X85 TH 247	62	75	50	57	27	58
X85 TH 254	63	68	47	50	29	54
X85 TH 270	60	65	48	55	28	56
X85 TH 271	53	68	46	50	22	53
X85 TH 278	38	67	46	54	25	55
X85 TH 286	33	65	45	47	26	51
X85 TH 289	47	67	47	54	29	55
X85 TH 297	58	60	47	58	29	54
X85 TH 298	73	73	48	53	30	59
ILC 482	45	58	40	53	21	48
ILC 3279	30	88	65	65	41	64
Local Check	53	67	48	49	–	
Location Mean	**52**	**68**	**48**	**55**	**27**	
S.E. of Mean	13.92	4.55	1.06	0.80	2.21	
L.S.D. at 5%	–	–	3.02	2.29	6.31	
C.V. %	46.06	11.54	3.86	2.54	13.97	
Error df	46	46	46	46	44	
Significance	NS	NS	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.10.5. 100-Seed weight (g) of entries at different locations in the CIF4T during 1987/88.

Entry Name	FRANCE	IRAN	ITALY	LEBANON	MEXICO	PORTUGAL	TURKEY	Overall Mean
	Montboucher	Karaj	Tarquinia	Terbol	Hermosillo	Elvas	Adana	
X85 TH 106	37	41	46	41	40	38	36	40
X85 TH 109	33	35	46	37	34	37	35	37
X85 TH 116	38	38	46	40	40	35	37	39
X85 TH 122	31	33	41	38	36	34	33	35
X85 TH 123	38	39	45	42	35	38	43	40
X85 TH 138	32	34	40	37	37	34	28	35
X85 TH 141	30	35	40	35	32	32	30	33
X85 TH 142	37	34	40	35	29	35	35	35
X85 TH 144	35	41	44	41	36	34	46	40
X85 TH 186	34	34	49	36	36	35	34	37
X85 TH 242	30	31	38	33	29	30	37	33
X85 TH 243	31	35	45	38	38	33	38	37
X85 TH 247	41	43	43	42	43	37	36	41
X85 TH 254	32	37	43	38	36	32	33	36
X85 TH 270	33	36	42	36	36	30	35	35
X85 TH 271	40	40	41	39	39	32	29	37
X85 TH 278	38	37	48	40	40	37	36	40
X85 TH 286	32	38	43	41	35	34	26	36
X85 TH 289	32	34	37	36	35	32	38	35
X85 TH 297	39	41	44	40	41	35	43	40
X85 TH 298	32	34	43	39	35	33	36	36
ILC 482	35	30	39	32	31	30	25	32
ILC 3279	32	30	34	32	31	30	32	32
Local Check	30	35	37	41	51	33	37	
Location Mean	34	36	42	38	36	34	35	
S.E. of Mean	One Rep.	1.57	2.03	1.05	2.12	1.70	1.55	
L.S.D. at 5%		4.45	5.78	2.98	6.04	4.85	4.40	
C.V. %		7.54	8.32	4.80	10.09	8.74	7.67	
Error df		46	46	46	46	46	46	
Significance		*	*	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.10.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIF4T during 1987/88.

Entry Name	ALGERIA Sidi Bel Abbes		EGYPT Shandaweel		FRANCE Montboucher		IRAN Karaj		ITALY Tarquinia	
	Y	R	Y	R	Y	R	Y	R	Y	R
X85 TH 106	1864	15	343	1	668	16	1856	12	2238	24
X85 TH 109	2497	2	38	18	1101	11	2197	7	2767	17
X85 TH 116	1890	14	46	14	1401	5	2394	4	2979	9
X85 TH 122	1765	18	93	5	818	14	1950	11	2688	19
X85 TH 123	2348	4	62	8	1242	7	1581	18	2984	8
X85 TH 138	1809	17	46	15	1078	12	2059	10	3148	5
X85 TH 141	2218	5	93	6	1114	10	2572	3	2894	12
X85 TH 142	1981	13	35	20	1209	8	1570	19	2317	23
X85 TH 144	2150	10	120	4	475	22	1622	17	2683	20
X85 TH 186	2176	9	19	24	404	24	1372	22	3222	3
X85 TH 242	1523	22	60	9	739	15	1418	21	2587	22
X85 TH 243	2468	3	35	21	439	23	1529	20	2884	13
X85 TH 247	2080	12	38	17	928	13	1308	24	2656	21
X85 TH 254	2189	8	48	11	537	19	1663	15	2958	10
X85 TH 270	2200	7	139	3	668	17	1732	13	2952	11
X85 TH 271	1736	19	46	12	1394	6	2176	8	3190	4
X85 TH 278	1705	21	46	13	1711	3	1649	16	2783	16
X85 TH 286	1215	24	83	7	537	20	1727	14	2841	15
X85 TH 289	2116	11	56	10	1174	9	2583	2	2698	18
X85 TH 297	1729	20	38	16	480	21	2103	9	3307	2
X85 TH 298	2213	6	185	2	540	18	1350	23	2847	14
ILC 482	2523	1	34	23	1668	4	2277	5	4000	1
ILC 3279	1817	16	35	22	2353	1	2244	6	3074	6
Local Check	1280	23	37	19	2294	2	2930	1	3016	7
Location Mean	**1979**		**74**		**1040**		**1911**		**2905**	
S.E. of Mean	One Rep.		24.52		160.25		279.60		320.27	
L.S.D. at 5%			69.81		456.14		795.90		–	
C.V. %			57.43		26.68		25.34		19.10	
Error df			46		46		46		46	
Significance			*		*		*		NS	
Entry > L. Check			4		0		0		–	

Cont'd. ...

Table 3.10.6. Cont'd. ...

Entry Name	JORDAN		LEBANON		MEXICO		MOROCCO			
	Marow		Terbol		Hermosillo		Douyet		Marchouch	
	Y	R	Y	R	Y	R	Y	R	Y	R
X85 TH 106	1046	3	1769	5	1290	20	2389	10	2500	16
X85 TH 109	340	23	1677	8	1261	22	2056	18	2569	15
X85 TH 116	817	8	1451	21	1569	4	2333	11	2674	12
X85 TH 122	429	20	1506	19	1369	14	2556	5	2743	11
X85 TH 123	543	16	1584	10	1578	3	2333	12	2465	18
X85 TH 138	408	21	1778	4	1429	11	1889	21	2639	13
X85 TH 141	976	4	1543	13	1434	9	2500	6	1979	22
X85 TH 142	1173	2	1442	22	1279	21	2778	2	1493	24
X85 TH 144	765	10	1375	23	1537	5	1444	23	3299	1
X85 TH 186	1500	1	1706	7	1128	24	2389	9	2986	6
X85 TH 242	868	6	1367	24	1320	18	2944	1	2847	8
X85 TH 243	829	7	1509	18	1338	16	2056	19	2396	19
X85 TH 247	567	15	1541	15	1300	19	2667	4	2604	14
X85 TH 254	246	24	1530	16	1378	13	2444	7	2500	17
X85 TH 270	468	17	1542	14	1347	15	1833	22	2743	10
X85 TH 271	344	22	1633	9	1502	7	2167	16	3021	4
X85 TH 278	905	5	1842	1	1472	8	2333	13	3160	2
X85 TH 286	438	18	1723	6	1591	2	2278	14	3090	3
X85 TH 289	678	13	1495	20	1391	12	2444	8	1875	23
X85 TH 297	749	11	1568	11	1645	1	1139	24	2951	7
X85 TH 298	437	19	1544	12	1322	17	2222	15	2396	20
ILC 482	770	9	1839	2	1513	6	2722	3	2986	5
ILC 3279	733	12	1527	17	1252	23	2000	20	2778	9
Local Check	597	14	1802	3	1431	10	2167	17	2396	21
Location Mean	**693**		**1596**		**1403**		**2253**		**2629**	
S.E. of Mean	187.53		116.35		116.08		369.69		412.51	
L.S.D. at 5%	533.81		-		-		-		-	
C.V. %	46.89		12.63		14.33		28.42		27.18	
Error df	46		46		46		46		46	
Significance	*		NS		NS		NS		NS	
Entry > L. Check	2		-		-		-		-	

Cont'd. ...

Table 3.10.6. Cont'd. ...

Entry Name	PORTUGAL Elvas		SYRIA Tel Hadya		TUNISIA Beja		TURKEY Adana		TURKEY Eskisehir		Overall Mean	
X85 TH 106	2513	17	1859	12	1204	2	475	22	1466	10	1565	17
X85 TH 109	3340	9	1875	10	756	19	1070	10	1175	22	1648	8
X85 TH 116	3913	1	2041	1	744	20	584	19	1503	8	1756	3
X85 TH 122	2867	12	1830	13	1188	3	763	17	1550	4	1608	13
X85 TH 123	3431	7	1738	16	852	14	843	11	1508	7	1673	6
X85 TH 138	3048	10	1805	15	1236	1	819	15	1233	20	1628	10
X85 TH 141	2715	13	1601	21	644	23	794	16	1164	23	1616	11
X85 TH 142	2422	18	1657	19	856	13	835	12	1561	2	1507	21
X85 TH 144	3445	6	1536	23	868	12	834	13	1370	14	1568	15
X85 TH 186	2214	23	2030	2	992	9	1537	3	1556	3	1682	5
X85 TH 242	2351	19	1903	8	912	10	1270	7	1265	19	1558	19
X85 TH 243	2624	14	1994	4	652	22	1184	9	1577	1	1568	16
X85 TH 247	2319	20	1887	9	1000	8	1331	6	1418	12	1576	14
X85 TH 254	2312	21	1864	11	1112	5	834	14	1429	11	1536	20
X85 TH 270	2982	11	1983	5	884	11	1410	5	1344	16	1615	12
X85 TH 271	2535	16	1950	6	1172	4	427	24	1365	15	1644	9
X85 TH 278	3734	4	1922	7	772	17	1238	8	1280	18	1770	2
X85 TH 286	2213	24	1711	17	764	18	458	23	1381	13	1470	22
X85 TH 289	3506	5	1630	20	804	16	1569	2	1323	17	1689	4
X85 TH 297	2594	15	1678	18	696	21	1500	4	1206	21	1559	18
X85 TH 298	2302	22	1595	22	636	24	556	20	1475	9	1441	23
ILC 482	3734	3	2022	3	1080	6	1619	1	1540	6	2022	1
ILC 3279	3410	8	1344	24	832	15	692	18	857	24	1663	7
Local Check	3810	2	1811	14	1004	7	481	21	1545	5		
Location Mean	**2931**		**1803**		**903**		**964**		**1379**			
S.E. of Mean	365.80		117.70		231.31		89.03		111.83			
L.S.D. at 5%	1041.27		335.05		-		253.41		318.34			
C.V. %	21.62		11.31		36.25		16.00		14.05			
Error df	46		46		23		46		46			
Significance	*		*		NS		*		*			
Entry > L. Check	0		0		-		17		0			

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 3.10.7. The five heaviest seed yielding entries at the individual locations in the CIF4T during 1987/88.

Rank	ALGERIA Sidi Bel - Abbes	EGYPT Shandaweel	FRANCE Montboucher	IRAN Karaj	ITALY Tarquinia	JORDAN Marow	LEBANON Terbol	MEXICO Hermosillo
1	ILC 482	X85 TH 106	ILC 3279	Local Check	ILC 482	X85 TH 186	X85 TH 278	X85 TH 297
2	X85 TH 109	X85 TH 298	Local Check	X85 TH 289	X85 TH 297	X85 TH 142	ILC 482	X85 TH 286
3	X85 TH 243	X85 TH 270	X85 TH 278	X85 TH 141	X85 TH 186	X85 TH 106	Local Check	X85 TH 123
4	X85 TH 123	X85 TH 144	ILC 482	X85 TH 116	X85 TH 271	X85 TH 141	X85 TH 138	X85 TH 116
5	X85 TH 141	X85 TH 122] X85 TH 141]	X85 TH 116	ILC 482	X85 TH 138	X85 TH 278	X85 TH 106	X85 TH 144

Cont'd. ...

Table 3.10.7. Cont'd. ...

Rank	MOROCCO Douyet	MOROCCO Marchouch	PORTUGAL Elvas	SYRIA Tel Hadya	TUNISIA Beja	TURKEY Adana	TURKEY Eskisehir
1	X85 TH 242	X85 TH 144	X85 TH 116	X85 TH 116	X85 TH 138	ILC 482	X85 TH 243
2	X85 TH 142	X85 TH 278	Local Check	X85 TH 186	X85 TH 106	X85 TH 289	X85 TH 142
3	ILC 482	X85 TH 286	ILC 482	ILC 482	X85 TH 122	X85 TH 186	X85 TH 186
4	X85 TH 247	X85 TH 271	X85 TH 278	X85 TH 243	X85 TH 271	X85 TH 297	X85 TH 122
5	X85 TH 122	ILC 482] X85TH 186]	X85 TH 289	X85 TH 270	X85 TH 254	X85 TH 270	Local Check

The brackets indicate entries having the same rank.

yielders at various locations are given in Table 3.10.7.

3.11. CHICKPEA INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (CIABN)

Material

Two Chickpea International Ascochyta Blight Nurseries CIABN-A (for kabuli types) and CIABN-B (for kabuli and desi types) were developed. CIABN-A included 40 test entries which were all kabuli types; and CIABN-B included 60 entries out of which 40 entries were same as that of CIABN-A and 20 entries were of desi types. In both these trials 26 common test entries were from the materials developed through hybridization at ICARDA. In addition, in CIABN-B eight desi entries were also from the materials developed through hybridization at ICARDA. The susceptible check was ILC 263.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 4 m long accomodating 40 plants. The susceptible check was repeatedly sown after every two test entries/rows to serve as an indicator cum spreader row. The cooperators in the Mediterranean region were advised to sow the nursery in the winter season instead of the usual spring season to get high disease pressure. Otherwise the nurseries were managed as per the local agronomic practices. In the absence of natural infestation, the cooperators were advised to do the artificial inoculation of the nursery with the blight disease either by scattering the diseased debris collected from the previous season or by supplementing the natural infection by spraying the spore suspension prepared from the freshly infected plants in the fields. A 1-9 scale was recommended for scoring the disease severity at least at two times, first in the vegetative stage and the second at the podding stage. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Thirty-two sets of CIABN-A and 29 sets of CIABN-B were distributed to cooperators in 14 and 13 countries, respectively. The results were, however, received for 14 sets for CIABN-A and 9 sets for CIABN-B.

Results and Discussion

The performance of the entries in each location is presented in Table 3.11.1. and discussed as under:

Morocco: The nursery was conducted at Dar Bouazza. None of the entries was rated less than 7.

Cyprus: The nursery was conducted at Laxia. All the test entries except, FLIP 82-172C, FLIP 85-67C, FLIP 84-86C, FLIP 85-110C, and FLIP 85-21C (which took rating between 6 and 9) were rated between 1 and 5. The susceptible check took rating of 9.

Table 3.11.1. Reaction of chickpea entries to ascochyta blight in CIABN during 1987/88.

Entry Name	Pedigree	Origin	BULGARIA Toshevo	CYPRUS Laxia	FRANCE Montbou-cher	INDIA Ludhiana-1
ILC 72	Lot No. 4	Spain	1	1	4	1
ILC 191	Vysokorosky 30	USSR	7	1	7	1
ILC 194	Vysokorosky	USSR	7	1	9	5
ILC 200	Stepnoj 1	USSR	5	3	6	1
ILC 201	-	USSR	5	1	5	1
ILC 202	VYR 32	USSR	1	1	3	1
ILC 484	Acc. No. 26783-68	Turkey	0	3	9	5
ILC 2506	-	USSR	7	2	9	3
ILC 2956	-	USSR	1	1	4	3
ILC 3279	-	USSR	1	1	4	1
ILC 3856	-	Morocco	1	1	9	3
ILC 3868	Plovdiv 8	Bulgaria	3	1	7	7
ILC 4421	-	USSR	7	2	6	3
ILC 5928	-	Morocco	1	1	8	1
FLIP 82-150C	X79 TH 101/ILC 523XILC 183	ICARDA/ICRISAT	3	1	7	5
FLIP 82-172C	X79 TH 220/ILC 72XILC 480	ICARDA/ICRISAT	5	4	6	7
FLIP 82-186C	X79 TH 215/ILC 391XILC 72	ICARDA/ICRISAT	9	2	7	7
FLIP 83- 46C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	5	1	7	5
FLIP 83- 47C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	7	1	7	3
FLIP 83- 48C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3	1	5	3
FLIP 83- 49C	X80 TH 181/ILC3279XILC1108	ICARDA/ICRISAT	3	1	5	3
FLIP 83- 72C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	7	1	8	5
FLIP 83- 97C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	7	1	4	5
FLIP 84- 22C	X81 TH 55/ILC1920XILC2956	ICARDA/ICRISAT	5	2	5	7
FLIP 84- 28C	X81 TH 104/ILC 72XILC 482	ICARDA/ICRISAT	5	2	4	5
FLIP 84- 78C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3	2	4	5
FLIP 84- 79C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	1	8	5
FLIP 84- 80C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	9	1	7	5
FLIP 84- 81C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	2	7	5
FLIP 84- 83C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	7	1	6	5
FLIP 84- 85C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	5	2	5	3

Table 3.11.1. Cont'd. ...

Entry Name	Pedigree	Origin	BULGARIA Toshevo	CYPRUS Laxia	FRANCE Montbou-cher	INDIA Ludhiana-1
FLIP 84- 86C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	2	9	9
FLIP 84- 87C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	5	4	9	7
FLIP 84- 91C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	7	1	5	7
FLIP 84- 92C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	1	6	5
FLIP 84- 93C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	1	7	3
FLIP 84-137C	X81 TH 241/ILC 482XILC 201	ICARDA/ICRISAT	5	1	5	5
FLIP 84-182C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	9	2	6	7
FLIP 85- 67C	X82 TH 61/ILC 95XILC 191	ICARDA/ICRISAT	7	2	9	5
FLIP 85-110C	X83 TH 6/FLIP 81-41XFLIP 82-81	ICARDA/ICRISAT	7	3	7	7
FLIP 85- 21C	X82 TH 171/C 44XICC 1772	ICARDA/ICRISAT	5	9	9	7
FLIP 85- 24C	X82 TH 172/CM 68XICC 1772	ICARDA/ICRISAT	3	NT	NT	7
FLIP 85- 26C	X82 TH 176/C 44XNEC 138-2	ICARDA/ICRISAT	9	NT	NT	7
FLIP 85- 31C	X81 TH 106/ILC 72XICC 4935	ICARDA/ICRISAT	1	NT	NT	5
FLIP 85- 32C	X81 TH 106/ILC 72XICC 4935	ICARDA/ICRISAT	5	NT	NT	5
FLIP 85- 38C	X82 TH 171/C 44XICC 1772	ICARDA/ICRISAT	3	NT	NT	5
FLIP 85- 39C	X82 TH 173/CM 72XICC 1772	ICARDA/ICRISAT	5	NT	NT	7
FLIP 85- 40C	X82 TH 177/CM 68XNEC 138-2	ICARDA/ICRISAT	1	NT	NT	5
ICC 3932	-	Iran	0	NT	NT	3
ICC 4181	-	-	3	NT	NT	1
ICC 4475	-	-	7	NT	NT	3
ICC 6945	-	Iran	1	NT	NT	1
ICC 8486	-	-	7	NT	NT	3
ICC 9189	-	-	3	NT	NT	1
ICC 9514	-	-	3	NT	NT	3
ICC 11871	-	-	3	NT	NT	5
ICC 12023	-	-	3	NT	NT	5
CAM 66	-	-	3	NT	NT	5
CAM 68	-	-	3	NT	NT	7
CAM 94	-	-	3	NT	NT	7
ILC 263	(Susceptible repeated check)		9	NT	NT	9

Cont'd. ...

Table 3.11.1. Cont'd. ...

Entry Name	INDIA	IRAN	ITALY	LEBANON	MOROCCO	PORTUGAL	SYRIA	TURKEY		
	Ludhiana-2	Fasa-Fars	Tarquinia	Terbol	Dar-Bouazza	Elvas	Al-Ghab	Amasya	Ankara	Eskisehir
ILC 72	2	5	2	1	9	3	1	5	3	4
ILC 191	2	3	2	1	9	3	1	7	3	7
ILC 194	5	5	5	1	9	7	5	9	7	9
ILC 200	2	9	3	1	9	3	3	7	3	6
ILC 201	2	7	3	1	7	2	3	5	3	4
ILC 202	2	3	3	1	7	2	1	5	3	6
ILC 484	6	9	7	1	7	7	1	9	7	9
ILC 2506	3	9	3	1	7	5	1	7	1	6
ILC 2956	3	3	2	1	9	2	3	5	3	4
ILC 3279	2	7	3	1	9	3	1	3	1	4
ILC 3856	3	9	3	1	9	5	3	7	3	7
ILC 3868	6	9	4	1	7	4	1	7	3	6
ILC 4421	4	9	3	1	9	5	1	7	3	6
ILC 5928	2	9	3	1	7	4	1	7	3	7
FLIP 82-150C	5	9	3	1	9	7	1	7	3	7
FLIP 82-172C	7	9	3	1	9	4	1	7	3	6
FLIP 82-186C	6	3	3	1	9	4	1	7	7	8
FLIP 83- 46C	5	3	3	1	9	2	1	7	1	7
FLIP 83- 47C	3	3	3	1	7	4	1	7	3	8
FLIP 83- 48C	4	3	3	1	7	3	1	7	1	6
FLIP 83- 49C	3	9	4	1	9	3	1	7	3	7
FLIP 83- 72C	5	1	4	1	9	3	1	7	3	6
FLIP 83- 97C	5	3	3	1	9	2	1	7	1	8
FLIP 84- 22C	6	1	4	1	9	3	1	5	3	6
FLIP 84- 28C	5	5	3	1	9	2	1	7	3	7
FLIP 84- 78C	5	1	3	1	9	5	1	7	3	7
FLIP 84- 79C	5	3	3	1	7	3	1	7	3	7
FLIP 84- 80C	5	1	3	1	9	3	1	7	3	6
FLIP 84- 81C	5	3	5	1	7	3	1	7	3	6
FLIP 84- 83C	5	7	2	1	7	8	1	7	3	7
FLIP 84- 85C	5	3	3	1	9	3	1	5	1	6

Table 3.11.1. Cont'd. ...

Entry Name	INDIA	IRAN	ITALY	LEBANON	MOROCCO	PORTUGAL	SYRIA	TURKEY		
	Ludhiana-2	Fasa-Fars	Tarqui-nia	Terbol	Dar-Bouazza	Elvas	Al-Ghab	Amasya	Ankara	Eskisehir
FLIP 84- 86C	7	7	2	1	9	3	1	7	3	8
FLIP 84- 87C	6	5	3	1	9	4	1	7	3	6
FLIP 84- 91C	6	5	3	1	9	3	1	7	1	7
FLIP 84- 92C	5	3	3	1	9	2	1	5	3	6
FLIP 84- 93C	4	1	3	1	7	3	1	7	1	8
FLIP 84-137C	6	5	4	1	7	5	1	7	3	7
FLIP 84-182C	6	7	3	1	7	3	1	5	3	7
FLIP 85- 67C	5	3	6	1	7	5	5	7	3	7
FLIP 85-110C	7	9	3	1	9	7	1	7	5	8
FLIP 85- 21C	6	9	9	1	9	7	9	9	9	9
FLIP 85- 24C	6	9	NT	1	NT	5	NT	NT	NT	NT
FLIP 85- 26C	7	3	NT	1	NT	6	NT	NT	NT	NT
FLIP 85- 31C	5	3	NT	1	NT	3	NT	NT	NT	NT
FLIP 85- 32C	5	3	NT	1	NT	3	NT	NT	NT	NT
FLIP 85- 38C	5	7	NT	1	NT	5	NT	NT	NT	NT
FLIP 85- 39C	7	9	NT	1	NT	5	NT	NT	NT	NT
FLIP 85- 40C	6	7	NT	1	NT	3	NT	NT	NT	NT
ICC 3932	3	3	NT	1	NT	6	NT	NT	NT	NT
ICC 4181	5	3	NT	1	NT	7	NT	NT	NT	NT
ICC 4475	7	9	NT	1	NT	5	NT	NT	NT	NT
ICC 6945	7	9	NT	1	NT	9	NT	NT	NT	NT
ICC 8486	6	9	NT	1	NT	2	NT	NT	NT	NT
ICC 9189	3	9	NT	1	NT	4	NT	NT	NT	NT
ICC 9514	3	9	NT	1	NT	3	NT	NT	NT	NT
ICC 11871	2	3	NT	1	NT	5	NT	NT	NT	NT
ICC 12023	2	9	NT	1	NT	5	NT	NT	NT	NT
CAM 66	4	9	NT	1	NT	4	NT	NT	NT	NT
CAM 68	5	9	NT	1	NT	5	NT	NT	NT	NT
CAM 94	5	9	NT	1	NT	7	NT	NT	NT	NT
ILC 263	9	9	NT	1	NT	9	NT	NT	NT	NT

NT = Not tested.

France: The trial was conducted at Montboucher. Seven entries namely, ILC 72, ILC 202, ILC 2956, ILC 3279, FLIP 83-97C, FLIP 84-28C, and FLIP 84-78C took ratings between 1 and 4, and 8 other lines took rating of 5. The remaining were rated between 6 and 9.
Italy: The nursery was sown at Tarquinia. Two entries, ILC 484, and FLIP 85-67C took rating of more than 6, and other entries were rated between 1 and 5. Susceptible check was rated at 9.
Syria: The nursery was sown at Al-Ghab. All entries except susceptible check (which rated 9), were rated between 1 and 5.
Iran: The nursery was sown at Fasa Fars. Eighteen desi and 11 kabuli lines were rated between 1 and 5. The ratings for all others were between 6 and 9.
Lebanon: The nursery was sown at Terbol. There was no disease infection.
Portugal: The nursery was sown at Elvas. Twenty nine kabuli and 7 desi lines were rated as resistant (between 1 and 4 rating); 6 kabuli and 7 desi lines as tolerant (rating 5) and others as susceptible.
Turkey: The nursery was sown at Eskisehir, Amasya and Ankara. At Eskisehir four entries namely ILC 72, ILC 201, ILC 2956, and ILC 3279 were rated as resistant. The susceptible check took rating of 9.

At Amasya all the test entries except ILC 3279 (which took rating of 3) and ILC 72, ILC 201, ILC 202, ILC 2956, FLIP 84-22C, FLIP 84-85C, FLIP 84-92C, FLIP 84-182C (which took rating of 5) took rating between 6 and 9.

At Ankara, all the entries, except three, namely ILC 194, ILC 484, FLIP 82-186C (which took rating of 7) were rated between 1 and 5. The suscetible check was rated at 9.

Bulgaria: The nursery was conducted at Toshevo. Sixteen kabuli and 13 desi lines were rated between 1 and 3; 9 kabuli and 4 desi lines were rated at 5; and remaining entries were rated between 6 and 9.
India: The nursery was conducted at Ludhiana under laboratory and field conditions. Eleven kabuli and 10 desi lines were rated between 6 and 9, and all others between 1 and 5.

The frequency of occurence of the lines among the resistant (ratings between 1 and 4) at various locations revealed that ILC 2956, ILC 3279, ILC 72, ILC 202, FLIP 83-48C, FLIP 84-93C were the best resistant sources among kabuli types, and ICC 9189, ICC 9514 were the best among the desi types.

3.12. CHICKPEA INTERNATIONAL FUSARIUM WILT NURSERY FOR THE NORTH AFRICAN REGION (CIFWNAR)

Introduction

This nursery was initiated for the first time and distributed on a limited scale.

Material

The CIFWNAR included 23 test entries and one susceptible check repeated after every two test entries (Table 3.12.1).

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 4m long accomdating 40 plants. The susceptible check was repeatedly sown after two test entries/rows to serve as an indicator cum spreader row. A 1-9 scale was recommended for scoring disease severity. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Four sets of nursery were sent to cooperators but the results were received back from only one location, Zememra in Morocco.

Results and Discussion

No data were recorded on disease reaction.

Table 3.12.1. List of entries in Chickpea International Fusarium Wilt Nursery for the North African Region - 1988.

Entry No.	Name	Pedigree	Origin
1	ILC 837	RPIP (K) 12-071-03794	IRAN
2	ILC 848	RPIP (K) -	IRAN
3	ILC 850	RPIP (K) 12-071-03809	IRAN
4	ILC 851	RPIP (K) 12-071-03810	IRAN
5	ILC 857	RPIP (K) 12-071-03815	IRAN
6	ILC 858	RPIP (K) 12-071-03816	IRAN
7	ILC 860	RPIP (K) 12-071-03819	IRAN
8	ILC 871	RPIP (K) 12-071-03836	IRAN
9	ILC 904	RPIP (K) 12-071-03875	IRAN
10	ILC 911	RPIP (K) 12-071-03884	IRAN
11	FLIP 82- 78C	X70 TH 219/ILC 201X ILC 3279	ICARDA/ICRISAT
12	FLIP 82-180C	X79 TH 220/ILC 72X ILC 480	ICARDA/ICRISAT
13	FLIP 84- 32C	X81 TH 105/ILC 72X ILC 484	ICARDA/ICRISAT
14	FLIP 84- 34C	X81 TH 9/ILC 480X ILC 202	ICARDA/ICRISAT
15	FLIP 84- 46C	X81 TH 55/ILC1920X ILC 2956	ICARDA/ICRISAT
16	FLIP 84- 88C	X80 TH 177/ILC 195XILC 482	ICARDA/ICRISAT
17	FLIP 84- 97C	X80 TH 181/ILC 3279XILC 1108	ICARDA/ICRISAT
18	FLIP 85- 20C	BG 209X ILC 72	ICARDA/ICRISAT
19	FLIP 85- 29C	X81 TH 106/ILC 72XICC 4935	ICARDA/ICRISAT
20	FLIP 85- 30C	X81 TH 106/ILC 72XICC 4935	ICARDA/ICRISAT
21	FLIP 85- 32C	X81 TH 106/ILC 72XICC 4935	ICARDA/ICRISAT
22	FLIP 85- 33C	X81 TH 114/ILC191XICC 4935	ICARDA/ICRISAT
23	FLIP 85- 35C	X81 TH 114/ILC191XICC 4935	ICARDA/ICRISAT
24	ILC 4090 (Amdoun)	Repeated Susceptible check	-

3.13. CHICKPEA INTERNATIONAL LEAFMINER NURSERY (CIIMN)

Material

The Chickpea International Leaf Miner Nursery comprised 40 test entries and one susceptible check, ILC 3397.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 4 m long accomodating 40 plants. The susceptible check was repeatedly sown after every two test entries to serve as an indicator row. A 1-9 scale was recommended for scoring the severity at the vegetative, flowering and mid podding stage. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Twelve sets of leaf miner nursery were distributed to cooperators in 7 countries and the results were received for 4 sets from 3 countries. Except Badajoz in Spain, none of the locations reported scores for leaf miner reaction.

Results and Discussion

At Badajoz in Spain thirty three entries (Table 3.13.1) showed rating of 2 or 3, 6 showed rating of 4 or 5, and one showed rating of 6. The reaction to leaf miner for susceptible check was rated at only 7.

3.14. CHICKPEA INTERNATIONAL COLD TOLERANCE NURSERY (CICIN)

Material

The Chickpea International Cold Tolerance Nursery (CICIN) comprised 40 test entries and one susceptible check, ILC 533. These test entries were selected on the basis of their reaction to cold under Tel Hadya conditions.

Methods and Management

The suggested experimetnal design was randomized complete block with two replications. The suggested plot size was one row 2 m long accomodating 20 plants. The susceptible check was repeatedly sown after every two test entries/rows to serve as an indicator row. The cooperators in the Mediterranean region were advised to sow the nursery early in to the winter or autumn instead of the usual spring season to get better expression of cold. Otherwise the nurseries were managed as per the local agronomic practices. It was suggested to record the number of plants germinated before the onset of severe winter.

A 1-9 scale was recommended for scoring the cold severity at

Table 3.13.1. Reaction of chickpea entries to leaf miner in CILMN during 1987/88.

Entry Name	Pedigree	Origin	SPAIN Badajoz
ILC 3800	L-1852	Mexico	5
ILC 3828	Pch 65	Morocco	2
ILC 4454	Torozos, Valledolid	Spain	5
ILC 5351	PRT 82-A-140-B	Portugal	3
ILC 5574	X80TH265/(ILC 72XILC 196)XILC 262	ICARDA/ICRISAT	3
ILC 5580	ARI 00379	Cyprus	3
ILC 5583	ARI 00382	Cyprus	3
ILC 5591	PARC 1030-1	Pakistan	3
ILC 5594	PARC 1033-1	Pakistan	4
ILC 5600	PARC 1041-1	Pakistan	3
ILC 5608	PARC 1042-2	Pakistan	3
ILC 5609	PARC 1042-3	Pakistan	6
ILC 5614	PARC 1045-1	Pakistan	3
ILC 5615	PARC 1046-1	Pakistan	3
ILC 5616	PARC 1046-2	Pakistan	3
ILC 5620	PARC 1049-1	Pakistan	3
ILC 5621	PARC 1049-2	Pakistan	3
ILC 5624	PARC 1051-2	Pakistan	3
ILC 5635	PARC 1056-1	Pakistan	3
ILC 5641	PARC 1060-3	Pakistan	3
ILC 5646	PARC 1062-3	Pakistan	3
ILC 5648	PARC 1062-5	Pakistan	3
ILC 5651	PARC 1064-2	Pakistan	3
ILC 5652	PARC 1-64-3	Pakistan	3
ILC 5655	PARC 1067-2	Pakistan	4
ILC 5661	PARC 1071-1	Pakistan	3
ILC 5664	PARC 1071-4	Pakistan	3
ILC 5665	PARC 1071-5	Pakistan	3
ILC 5667	PARC 1071-7	Pakistan	3
ILC 5668	PARC 1071-8	Pakistan	3
ILC 5674	PARC 1072-2	Pakistan	3
ILC 5675	PARC 1073-1	Pakistan	3
ILC 5681	PARC 1079-1	Pakistan	5
ILC 5682	PARC 1079-2	Pakistan	3
ILC 5901	K-1154	USSR	2
FLIP 81-293C	X79 TH 8/ILC 191XILC 496	ICARDA/ICRISAT	4
FLIP 82- 3C	X79 TH 216/ILC 202XILC 577	ICARDA/ICRISAT	3
FLIP 83- 49C	X80 TH 181/ILC 3279XILC 1108	ICARDA/ICRISAT	3
FLIP 84- 92C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3
FLIP 86- 23C	X83 TH 101/ILC 196XILC 576	ICARDA/ICRISAT	3
ILC 3397	(Repeated Susceptible Check)	-	7

different stages of cold occurrence. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Thirty-six sets of CICIN were distributed to cooperators in eighteen countries, however, the results were received for 17 sets from 12 countries.

Results and Discussion

Out of 17 locations returning the data books, the cold tolerance reaction was recorded only at Toshevo in Bulgaria, Karaj in Iran, Bakraja in Iraq, Madrid in Spain and Tel Hadya in Syria (Table 3.14.1). The results are discussed as under:

At Toshevo in Bulgaria, only one entry ILC 3791 was tolerant and all others susceptible or highly susceptible.

At Karaj in Iran, the entries FLIP 82-85C and FLIP 85-81C showed resistant reaction and the entries, ILC 1455, ILC 1464, ILC 1875, ILC 3791, ILC 3857, FLIP 84-72C, FLIP 84-90C and FLIP 85-133C showed tolerant reaction. All other entries were rated either susceptible or highly susceptible.

At Bakraja in Iraq, and Madrid in Spain the susceptible check took a rating of 5, thus the results were not considered for deriving any conclusions.

At Tel Hadya, Syria, two entries took rating between 3 and 4, 11 entries took rating of 5 and all other were rated at 6 or more.

On the basis of overall performance FLIP 82-85C was the best source of resistance to cold.

Table 3.14.1. Reaction of chickpea entries to cold tolerance in CICTN during 1987/88.

Entry Name	Origin	BULGARIA Toshevo	IRAN Karaj	IRAQ Bakrajo	SPAIN Madrid	SYRIA Tel-Hadya
ILC 794	Iran	9	9	3	2	3
ILC 1071	Iran	7	9	3	3	4
ILC 1134	Iran	9	9	1	3	5
ILC 1244	Turkey	9	9	5	3	4
ILC 1251	Turkey	9	9	3	3	4
ILC 1256	Afghanistan	9	9	3	3	4
ILC 1444	Afghanistan	9	9	3	3	5
ILC 1455	Afghanistan	9	5	5	3	4
ILC 1464	Afghanistan	7	5	3	4	4
ILC 1767	Chile	9	7	3	3	4
ILC 1875	India	9	5	5	3	4
ILC 2645	Pakistan	9	7	3	3	6
ILC 3287	Pakistan	7	7	3	3	4
ILC 3465	Spain	9	7	3	3	3
ILC 3468	Spain	9	7	3	3	4
ILC 3598	India	9	7	3	3	6
ILC 3677	Chile	7	7	1	2	4
ILC 3746	Nepal	9	7	5	4	6
ILC 3747	Nepal	9	7	5	3	8
ILC 3791	India	5	5	1	1	6
ILC 3826	Morocco	9	7	1	2	5
ILC 3857	Morocco	9	5	5	4	4
ILC 3861	Morocco	9	9	3	5	4
FLIP 81- 32C	ICARDA/ICRISAT	9	9	1	3	5
FLIP 82- 85C	ICARDA/ICRISAT	9	3	3	2	4
FLIP 82- 114C	ICARDA/ICRISAT	9	9	1	2	4
FLIP 82- 131C	ICARDA/ICRISAT	9	7	3	1	4
FLIP 83- 66C	ICARDA/ICRISAT	9	7	5	2	4
FLIP 83- 82C	ICARDA/ICRISAT	7	9	1	2	5
FLIP 83- 99C	ICARDA/ICRISAT	9	9	3	3	4
FLIP 84- 112C	ICARDA/ICRISAT	9	7	1	3	4
FLIP 85- 4C	ICARDA/ICRISAT	7	7	3	2	5
FLIP 85- 5C	ICARDA/ICRISAT	9	7	3	2	4
FLIP 85- 49C	ICARDA/ICRISAT	9	7	1	1	5
FLIP 84- 72C	ICARDA/ICRISAT	9	5	3	1	4
FLIP 85- 79C	ICARDA/ICRISAT	9	7	5	2	5
FLIP 85- 81C	ICARDA/ICRISAT	9	3	3	3	5
FLIP 85- 90C	ICARDA/ICRISAT	7	5	3	1	5
FLIP 85- 92C	ICARDA/ICRISAT	9	7	1	2	5
FLIP 85- 133C	ICARDA/ICIRSAT	9	5	1	3	3
ILC 533 (Repeated Susceptible Check)	EGYPT	9	9	5	5	9

4. FABA BEAN INTERNATIONAL TRIALS AND NURSERIES

Introduction

Sixteen sets of trials and nurseries were available to cooperators. These included yield trials, screening nurseries, F_4 nurseries, disease nurseries and agronomy trials. Except for agronomy trials all other nurseries and trials are discussed in this section. The cooperators were free to use these materials in their breeding programs or for release as cultivars. The results reported by the cooperators are presented in the following pages.

4.1. FABA BEAN INTERNATIONAL YIELD TRIAL-LARGE SEED (FBIYT-L)

Material

The Faba Bean International Yield Trial-Large Seed (FBIYT-L) comprised 23 test entries and one local check to be supplied by the cooperator. These entries were selected on the basis of their performance either in International Screening Nursery-Large Seed or FBIYT-L conducted during the previous season.

Methods and Management

The material was suggested to be sown in a randomized complete block design with 3 replications. The suggested plot size was 4 rows 4 m long with inter row spacings of 0.5 m accomodating 100 seeds per plot. Thirty seven sets of trial were distributed to cooperators in 18 countries. Results were reported from 24 trials covering 15 countries. Agronomic data received from the cooperators are presented in Table 4.4.1.

Results and Discussion

The location mean for time to flowering ranged from 58 days for Sakha (Egypt) to 124 days for Sidi Bel Abbes (Algeria) (Table 4.1.2.). The overall mean for entries for time to flowering ranged from 86 days for 80S 80135 to 91 days for ILB 1815, ILB 3187 and PAM 1. In general, early flowering locations were earlier in maturity also (Tables 4.1.2. and 4.1.3.). At Kabul in Afghanistan the mean plant height (Table 4.1.4) was minimum (45cm) and was closely followed by Mosul in Iraq (51cm) and Sidi Bel Abbes in Algeria (53cm). The location mean for plant height was, however, very high at Holetta, Ethiopia (125cm) and Hama (124 cm) and Tel Hadya (124 cm) in Syria, and Gorgan (120 cm) in Iran. The range in plant height among entries was from 76 cm for Reina Blanca to 94cm for FLIP 83-17FB and 80S 80135.

The mean seed yield and rank of entries at different locations are given in Table 4.1.5. The mean seed yield at Gorgan in Iran was maximum (5979 kg/ha) and was followed by Hama (5025 kg/ha), and Tel Hadya (4258 kg/ha) in Syria. A few more locations, Es-Senia in

Table 4.1.1. Agronomic data for different locations in the FBIYT-L during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
AFGHANISTAN	Kabul	03.03.88	10.07.88	30	60		4	Trichlorophan, Metasystox	Nirkh Maidan
ALGERIA	Es-Senia	09.12.87	15.05.88	24	36	36	4	-	Senia
ALGERIA	Sidi Bel Abbes	14.11.87	05.06.88	-			-	-	Sevilla - (T)
ARGENTINA	Perico	05.05.88	20.10.88	-			-	Metribuzin, Lambdzcihz, Lotrina	Tezioromz
CYPRUS	Athalassa	26.11.87	31.05.88	21	48		1	Treflan, Pirimor	ARI 00139
EGYPT	Sakha	NA	NA	NA			NA	NA	Giza 3
EGYPT	Sids	NA	NA	NA			NA	NA	Giza 402
ETHIOPIA	Holetta	19.06.88	30.11.88	25	100		-	-	CZ 20 DK
IRAN	Gorgan	15.11.87	11.06.88	-			-	Methasystox	Barakat
IRAN	Hassan Abad	20.12.87	22.05.88		120		8	Methasystox	Zohreh
IRAQ	Mosul	23.11.87	05.06.88	50	50		-	-	Aquadulce
ITALY	Gaudiano	21.12.87	16.05.88	25	78		-	Azinphos Methyl, Folipat, Ossieloruro	-
ITALY	Medolla	04.03.88	17.06.88	40	100		-	Pirimicarb, Chlorothalonil	Slugro
LEBANON	Terbol	19.11.87	02.07.88		50		2	Kerb, Igran	Lebanese Local
MOROCCO	Douyet	15.11.87	03.06.88	30	60		-	Glyphosate	Aquadulce
SYRIA	Deir-Ez-Zor	02.88	01.06.88		17		6	Sembush	Local
SYRIA	Gelline	13.01.88	28.05.88	-			-	-	-
SYRIA	Hama	23.11.87	25.05.88	29	80		1	Decis, Baylton	Local from market
SYRIA	Homs	20.12.87	10.06.88	-			-	-	Local
SYRIA	Tel Hadya	02.11.87	30.04.88		50		4	Tribunol, Fusilade, Lancer, Gramaxone	ILB 1814
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TUNISIA	El Kef	NA	NA	NA			NA	NA	NA
TURKEY	Izmir (Menemen)	23.11.88	15.06.89	30	60		-	Endosulfan	Fcesen-87

NA = Not available.

Table 4.1.2. Time to flowering (days) of entries at different locations in the FBIYT-L during 1987/88.

Pedigree	ILB/ Cross No.	AFGHANISTAN	ALGERIA	ARGENTINA	CYPRUS	EGYPT		ETHIOPIA	IRAN		IRAQ
		Kabul	S.B.A.	Perico	Athalassa	Sakha	Sids	Holetta	Gorgan	Hassan-Abad	Mosul
FLIP 82-25 FB	X79S74	59	123	71	89	55	74	65	81	96	91
FLIP 82-27 FB	X79S131	60	127	69	89	62	71	65	85	95	94
FLIP 82-28 FB	X79S178	61	125	74	89	60	66	66	85	97	93
FLIP 82-29 FB	X79L25	60	126	72	90	55	73	65	81	96	93
FLIP 82-30 FB	X79L130	60	125	71	89	58	71	66	85	96	93
FLIP 82-45 FB	1817	60	124	64	87	55	64	59	81	95	94
FLIP 82-53 FB	23	60	125	75	89	50	66	56	81	94	92
FLIP 82-54 FB	41	59	125	74	90	52	67	67	85	95	91
FLIP 83- 6 FB	29	60	123	71	89	48	67	56	81	94	94
FLIP 83- 17 FB	S81066	62	127	71	90	63	70	68	85	96	94
FLIP 83-43 FB	80L90222	60	124	74	90	52	66	64	85	97	92
74TA 22	9	60	121	71	90	55	67	64	85	96	93
79S 4	1814	59	125	75	91	58	47	66	81	95	93
80S 44027	X77TA64	60	122	66	89	58	68	65	85	95	92
80S 80135	X79S171	61	124	61	89	50	63	54	85	95	92
Lattakia Local	1815	61	124	76	87	70	73	66	81	94	93
New Mammoth	1269	61	123	72	90	60	71	65	85	96	93
Reina Blanca	1270	63	126	74	91	62	73	70	85	96	91
Turkish Local	1821	62	128	75	90	62	75	67	85	97	91
Gemini	-	60	126	75	91	63	76	66	81	96	93
Pam 1	-	60	123	74	91	62	76	69	81	97	92
ILB 3187	3187	60	121	74	90	65	75	71	81	96	92
ILB 1814	1814	61	124	69	91	62	73	67	85	94	93
Local Check	-	60	123	65	97	45	57	62	85	96	94
Location Mean		**60**	**124**	**71**	**90**	**58**	**69**	**65**	**83**	**96**	**93**
S.E. of Mean		0.66	One Rep.	0.71	0.82	2.92	4.44	One Rep.	0.00	0.95	0.85
L.S.D. at 5%		1.87		2.03	2.34	8.30	12.64		0.00	-	-
C.V. %		1.88		1.73	1.59	8.78	11.19		0.00	1.72	1.58
Error df		46		46	46	46	46		46	46	46
Significance		*		*	*	*	*		*	NS	NS

Cont'd. ...

Table 4.1.2. Cont'd. ...

Pedigree	ILB/ Cross No.	LEBANON	MOROCCO	SYRIA					TURKEY	(1) Overall Mean
		Terbol	Douyet	Deir-Ez-Zor	Gelline	Hama	Homs	Tel Hadya	Izmir	
FLIP 82-25 FB	X79S74	120	99	96	83	99	100	119	112	89
FLIP 82-27 FB	X79S131	120	100	96	82	98	100	118	112	90
FLIP 82-28 FB	X79S178	120	101	96	84	94	99	117	112	90
FLIP 82-29 FB	X79L25	120	99	96	82	98	99	114	112	89
FLIP 82-30 FB	X79L130	120	95	95	81	99	100	115	-	89
FLIP 82-45 FB	1817	120	95	95	83	95	100	109	-	87
FLIP 82-53 FB	23	118	94	93	80	96	99	110	108	87
FLIP 82-54 FB	41	119	92	95	82	98	99	113	112	88
FLIP 83- 6 FB	29	119	99	95	82	96	100	112	110	87
FLIP 83- 17 FB	S81066	120	90	97	82	97	100	118	112	90
FLIP 83-43 FB	80L90222	120	99	95	83	96	99	113	110	89
74TA 22	9	120	98	96	83	98	100	115	-	89
79S 4	1814	120	95	97	84	99	100	118	-	88
80S 44027	X77TA64	120	100	96	84	97	99	114	-	89
80S 80135	X79S171	118	90	93	83	92	98	107	-	86
Lattakia Local	1815	120	100	96	84	98	99	119	-	91
New Mammoth	1269	120	103	97	84	99	99	116	112	90
Reina Blanca	1270	120	89	96	83	97	99	118	-	90
Turkish Local	1821	120	89	96	80	98	99	116	-	90
Gemini	-	120	92	97	84	99	100	117	114	90
Pam 1	-	120	99	97	83	98	100	119	114	91
ILB 3187	3187	120	102	99	84	97	100	116	116	91
ILB 1814	1814	120	89	96	82	98	99	115	-	89
Local Check	-	119	98	99	83	96	100	111	112	
Location Mean		**120**	**96**	**96**	**83**	**97**	**99**	**115**	**112**	
S.E. of Mean		0.24	0.56	0.46	1.28	1.05	0.33	1.80	1.79	
L.S.D. at 5		0.68	1.60	1.30	-	2.99	-	5.11	-	
C.V.		0.35	1.01	0.83	2.68	1.87	0.57	2.71	2.77	
Error df		46	46	46	46	46	46	46	26	
Significance		*	*	*	NS	*	NS	*	NS	

(1) Izmir was excluded from the overall mean.
* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.1.3. Time to maturity (days) of entries at different locations in the FBIYT-L during 1987/88.

Pedigree	ILB/ Cross No.	AFGHANISTAN	ALGERIA	ARGENTINA	ETHIOPIA	IRAN		IRAQ	ITALY	
		Kabul	Es-Senia	Perico	Holetta	Gorgan	Hassan Abad	Mosul	Gavdiano	Medolla
FLIP 82-25 FB	X79S74	119	146	150	159	168	191	167	147	103
FLIP 82-27 FB	X79S131	122	144	146	159	168	193	171	145	105
FLIP 82-28 FB	X79S178	122	146	142	159	168	195	169	149	101
FLIP 82-29 FB	X79L25	121	143	147	159	168	191	169	146	102
FLIP 82-30 FB	X79L130	121	146	151	157	168	194	168	149	105
FLIP 82-45 FB	1817	120	148	141	156	168	192	171	147	101
FLIP 82-53 FB	23	122	144	149	158	168	194	168	149	104
FLIP 82-54 FB	41	121	144	152	159	168	193	166	145	103
FLIP 83- 6 FB	29	121	142	151	158	168	194	171	145	104
FLIP 83- 17 FB	S81066	123	145	148	159	168	192	171	147	107
FLIP 83-43 FB	80L90222	121	144	151	158	168	193	168	147	103
74TA 22	9	120	144	149	159	168	190	169	147	102
79S 4	1814	121	144	151	157	168	192	169	147	105
80S 44027	X77TA64	124	146	141	158	168	191	168	145	101
80S 80135	X79S171	122	147	140	159	168	194	170	147	101
Lattakia Local	1815	122	145	149	158	168	193	170	145	103
New Mammoth	1269	121	147	148	160	168	191	168	146	102
Reina Blanca	1270	122	145	152	161	168	196	167	147	101
Turkish Local	1821	122	147	144	160	168	196	165	147	105
Gemini	-	123	148	153	161	168	190	169	147	103
Pam 1	-	120	151	151	161	168	192	167	145	99
ILB 3187	3187	120	147	149	154	168	192	168	145	103
ILB 1814	1814	124	148	149	159	168	191	170	147	105
Local Check	-	122	145	141	158	168	192	169	145	105
Location Mean		**121**	**146**	**148**	**159**	**168**	**193**	**169**	**146**	**103**
S.E. of Mean		0.94	1.36	0.87	One Rep.	0.00	1.26	1.25	0.25	0.26
L.S.D. at 5%		-	3.88	2.47		-	-	-	0.72	0.73
C.V.%		1.33	1.62	1.02		0.00	1.13	1.29	0.30	0.43
Error df		46	46	46		46	46	46	46	46
Significance		NS	*	*		NS	NS	NS	*	*

Cont'd. ...

Table 4.1.3. Cont'd....

Pedigree	ILB/ Cross No.	LEBANON	MOROCCO	SYRIA					TURKEY	(1) Overall Mean
		Terbol	Douyet	Deir-Ez-Zor	Gelline	Hama	Homs	Tel Hadya	Izmir	
FLIP 82-25 FB	X79S74	189	182	147	108	171	157	197	171	156
FLIP 82-27 FB	X79S131	187	181	147	107	171	158	197	171	156
FLIP 82-28 FB	X79S178	187	182	148	109	169	157	195	170	156
FLIP 82-29 FB	X79L25	188	181	147	105	171	156	195	171	156
FLIP 82-30 FB	X79L130	186	182	149	108	172	157	194	-	157
FLIP 82-45 FB	1817	188	183	147	106	170	160	194	-	156
FLIP 82-53 FB	23	188	181	146	107	170	160	196	171	156
FLIP 82-54 FB	41	189	185	147	106	172	157	195	171	156
FLIP 83- 6 FB	29	186	182	146	109	171	160	196	170	157
FLIP 83- 17 FB	S81066	190	182	149	110	171	160	195	169	157
FLIP 83-43 FB	80L90222	186	183	148	108	172	162	195	170	157
74TA 22	9	190	181	147	105	171	160	195	-	156
79S 4	1814	189	183	151	107	171	162	195	-	157
80S 44027	X77TA64	186	183	148	107	171	157	196	-	156
80S 80135	X79S171	189	182	148	108	170	157	195	-	156
Lattakia Local	1815	189	186	148	107	171	162	197	-	157
New Mammoth	1269	186	181	145	108	170	157	195	168	156
Reina Blanca	1270	185	181	145	109	170	156	195	-	156
Turkish Local	1821	189	183	150	107	170	160	196	-	157
Gemini	-	189	182	149	109	170	160	198	171	157
Pam 1	-	188	185	145	109	171	162	197	171	157
ILB 3187	3187	187	183	147	107	170	157	190	171	155
ILB 1814	1814	190	186	149	107	170	157	197	-	157
Local Check	-	188	181	149	115	170	158	196	170	
Location Mean		**188**	**183**	**148**	**108**	**171**	**159**	**196**	**170**	
S.E. of Mean		0.87	0.00	1.23	1.06	0.62	0.00	0.78	1.06	
L.S.D. at 5 %		2.48	0.00	-	3.02	-	0.00	2.23	-	
C.V. %		0.80	0.00	1.44	1.70	0.63	0.00	0.69	1.08	
Error df		46	46	46	46	46	46	46	26	
Significance		*	*	NS	*	NS	*	*	NS	

(1) Izmie was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = not significant.

Table 4.1.4. Plant height (cm) of entries at different locations in the FBIYT-L during 1987/88.

Pedigree	ILB/ Cross No.	AFGHANISTAN	ALGERIA	ARGENTINA	CYPRUS	ETHIOPIA	IRAN		IRAQ	ITALY	
		Kabul	S.B.A.	Perico	Athalassa	Holetta	Gorgan	Hassan Abad	Mosul	Gavdi-ano	Medo-lla
FLIP 82-25 FB	X79S74	45	-	94	73	145	115	105	47	63	107
FLIP 82-27 FB	X79S131	44	55	93	66	112	117	105	50	72	100
FLIP 82-28 FB	X79S178	45	50	74	65	125	123	93	40	68	110
FLIP 82-29 FB	X79L25	42	-	88	67	135	132	105	47	79	90
FLIP 82-30 FB	X79L130	45	60	88	68	123	119	93	53	68	100
FLIP 82-45 FB	1817	45	52	79	73	120	122	99	52	71	107
FLIP 82-53 FB	23	45	55	82	67	120	106	96	42	70	120
FLIP 82-54 FB	41	44	60	75	66	127	120	91	58	62	100
FLIP 83- 6 FB	29	43	46	85	67	140	122	109	53	75	110
FLIP 83- 17 FB	S81066	50	55	95	71	135	128	102	55	61	112
FLIP 83-43 FB	80L90222	45	50	90	67	127	119	96	60	63	110
74TA 22	9	45	-	85	66	132	121	94	62	68	80
79S 4	1814	46	62	84	67	113	123	102	53	73	110
80S 44027	X77TA64	46	60	83	64	107	121	101	52	66	110
80S 80135	X79S171	46	55	85	69	152	119	93	60	65	117
Lattakia Local	1815	45	55	93	69	115	122	95	50	65	120
New Mammoth	1269	40	50	85	64	135	115	93	52	60	100
Reina Blanca	1270	39	49	67	60	103	105	81	47	52	83
Turkish Local	1821	43	45	78	70	116	125	104	48	73	78
Gemini	-	42	45	88	63	120	111	66	45	63	83
Pam 1	-	40	52	75	67	122	125	88	55	62	108
ILB 3187	3187	47	46	90	77	127	120	93	48	69	100
ILB 1814	1814	45	50	87	69	113	120	103	52	70	100
Local Check	-	54	-	70	67	132	121	93	47	77	58
Location Mean		**45**	**53**	**84**	**68**	**125**	**120**	**96**	**51**	**67**	**101**
S.E. of Mean		2.09	One Rep.	5.76	2.77	One Rep.	4.77	8.52	5.87	1.23	1.52
L.S.D. at 5 %		5.96		16.39	7.89		-	-	-	3.49	4.34
C.V. %		8.11		11.88	7.10		6.91	15.39	19.88	3.16	2.62
Error df		46.00		46	46		46	46	46	46	46
Significance		*		*	*		NS	NS	NS	*	*

Cont'd. ...

Table 4.1.4. Cont'd. ...

Pedigree	ILB/ Cross No.	LEBANON	MOROCCO	SYRIA					TURKEY	(1) Overall Mean
		Terbol	Douyet	Deir-Ez-Zor	Gelline	Hama	Homs	Tel Hadya	Izmir	
FLIP 82-25 FB	X79S74	92	107	63	74	127	76	123	76	91
FLIP 82-27 FB	X79S131	83	105	67	68	122	69	123	67	87
FLIP 82-28 FB	X79S178	82	116	78	82	125	76	128	66	89
FLIP 82-29 FB	X79L25	97	100	63	80	123	68	120	69	90
FLIP 82-30 FB	X79L130	90	100	78	64	127	77	125	-	89
FLIP 82-45 FB	1817	95	105	67	63	125	81	125	-	89
FLIP 82-53 FB	23	87	110	65	74	122	77	130	74	88
FLIP 82-54 FB	41	97	115	65	73	132	80	113	71	89
FLIP 83- 6 FB	29	87	107	58	72	118	73	132	71	91
FLIP 83- 17 FB	S81066	90	105	77	78	123	82	133	73	94
FLIP 83-43 FB	80L90222	90	110	73	81	128	80	128	76	92
74TA 22	9	98	104	67	70	128	74	123	-	89
79S 4	1814	93	110	72	72	125	78	117	-	90
80S 44027	X77TA64	88	115	72	82	130	79	112	-	89
80S 80135	X79S171	85	115	78	70	127	79	137	-	94
Lattakia Local	1815	85	112	63	81	120	75	128	-	90
New Mammoth	1269	90	116	58	64	123	69	110	69	86
Reina Blanca	1270	75	104	50	65	112	60	112	-	76
Turkish Local	1821	90	103	80	70	128	75	127	-	88
Gemini	-	87	110	58	65	120	68	133	66	83
Pam 1	-	90	112	58	71	125	75	115	64	87
ILB 3187	3187	93	107	68	74	117	73	108	68	88
ILB 1814	1814	88	110	72	69	132	79	137	-	90
Local Check	-	100	105	68	69	113	74	125	76	
Location Mean		**90**	**108**	**68**	**72**	**124**	**75**	**124**	**70**	
S.E. of Mean		3.86	0.86	4.14	1.73	4.45	4.30	5.49	4.47	
L.S.D. at 5 %		10.99	2.45	11.79	4.93	-	-	15.62	-	
C.V. %		7.46	1.38	10.63	4.15	6.22	9.96	7.69	11.00	
Error df		46	46	46	46	46	46	46	26	
Significance		*	*	*	*	NS	NS	*	NS	

(1) Sidi Bel Abbes and Izmir were excluded from the overall Mean.
* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.1.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBIYT-L during 1987/88.

Pedigree	ILB/ Cross No.	AFGHANISTAN		ALGERIA				ARGENTINA		CYPRUS		EGYPT	
		Kabul		Es-Senia		Sidi Bel Abbes		Perico		Athalassa		Sakha	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82-25 FB	X79S74	1173	17	3810	9	1374	7	2344	4	1778	14	3311	16
FLIP 82-27 FB	X79S131	1578	1	2720	22	1166	14	2450	1	1564	22	3244	19
FLIP 82-28 FB	X79S178	1282	9	3440	15	1218	11	1744	18	1883	10	3767	6
FLIP 82-29 FB	X79L25	1191	15	3053	19	1351	8	2344	3	1801	11	2900	22
FLIP 82-30 FB	X79L130	1226	12	3990	7	1395	6	2161	8	1936	7	3167	20
FLIP 82-45 FB	1817	1185	16	4479	3	1432	5	2067	11	2283	1	4133	4
FLIP 82-53 FB	23	1046	21	4337	6	1505	2	1756	17	1512	23	3511	12
FLIP 82-54 FB	41	1379	6	3051	20	1439	4	2000	12	1924	8	3378	15
FLIP 83- 6 FB	29	1433	3	2341	23	981	19	2128	9	1771	16	3500	13
FLIP 83- 17 FB	S81066	1383	4	3988	8	905	21	1583	21	1724	18	3444	14
FLIP 83-43 FB	80L90222	1366	8	4428	4	1002	18	1994	13	1603	21	4233	3
74TA 22	9	1211	13	3216	16	1585	1	2444	2	1783	13	3633	11
79S 4	1814	1464	2	3647	14	926	20	1783	16	1983	3	3111	21
80S 44027	X77TA64	1378	7	3200	17	1023	16	2322	5	1799	12	3633	10
80S 80135	X79S171	1257	11	3742	11	1049	15	1617	20	1969	4	3667	8
Lattakia Local	1815	1380	5	3703	12	1199	13	2261	6	1967	5	2700	23
New Mammoth	1269	978	23	4357	5	1270	10	1839	15	1950	6	3856	5
Reina Blanca	1270	1041	22	4993	2	1012	17	1672	19	1714	19	4556	1
Turkish Local	1821	1262	10	2988	21	874	22	1978	14	2047	2	3267	18
Gemini	-	1120	20	5571	1	1293	9	2089	10	1769	17	4433	2
Pam 1	-	1143	18	3788	10	1478	3	2256	7	1684	20	3711	7
ILB 3187	3187	837	24	2206	24	739	24	600	24	941	24	2022	24
ILB 1814	1814	1133	19	3153	18	801	23	1567	22	1777	15	3300	17
Local Check	-	1207	14	3670	13	1205	12	717	23	1898	9	3644	9
Location Mean		**1236**		**3661**		**1176**		**1905**		**1794**		**3505**	
S.E. of Mean		164.14		507.33		One Rep.		248.58		197.27		280.56	
L.S.D. at 5 %		-		1444.12				707.59		-		798.63	
C.V. %		23.01		24.00				22.60		19.04		13.86	
Error df		46		46				46		46		46	
Significance		NS		*				*		NS		*	
Ent. > L. Check		-		1				22		-		1	

Cont'd. ...

Table 4.1.5. Cont'd. ...

Pedigree	ILB/ Cross No.	EGYPT Sids Y	EGYPT Sids R	ETHIOPIA Holetta Y	ETHIOPIA Holetta R	IRAN Gorgan Y	IRAN Gorgan R	IRAN Hassan Abad Y	IRAN Hassan Abad R	IRAQ Mosul Y	IRAQ Mosul R
FLIP 82-25 FB	X79S74	944	21	158	20	6257	10	3361	10	722	23
FLIP 82-27 FB	X79S131	1000	17	118	23	5938	16	2830	20	900	19
FLIP 82-28 FB	X79S178	1333	8	605	3	5813	19	3017	17	1111	13
FLIP 82-29 FB	X79L25	1167	14	393	9	6410	5	3778	3	1256	6
FLIP 82-30 FB	X79L130	1389	7	280	15	6375	6	3444	8	1306	4
FLIP 82-45 FB	1817	1222	13	208	17	6368	7	2897	19	1133	11
FLIP 82-53 FB	23	1222	12	228	16	5333	21	3372	9	467	24
FLIP 82-54 FB	41	2167	3	425	7	6458	4	3300	11	1278	5
FLIP 83- 6 FB	29	1056	16	193	18	5681	20	3517	6	1167	9
FLIP 83- 17 FB	S81066	889	23	593	4	6007	14	3233	12	806	21
FLIP 83-43 FB	80L90222	1667	5	303	12	5847	17	2328	23	944	18
74TA 22	9	2222	2	288	13	4986	23	3494	7	1333	3
79S 4	1814	889	22	365	10	6583	1	3233	13	1178	8
80S 44027	X77TA64	1056	15	440	6	6146	11	3094	16	889	20
80S 80135	X79S171	1278	9	335	11	6500	3	3567	5	978	14
Lattakia Local	1815	611	24	153	22	5069	22	2697	21	1111	12
New Mammoth	1269	2000	4	555	5	6264	9	3122	14	967	15
Reina Blanca	1270	1278	10	643	2	6049	12	4100	1	1167	10
Turkish Local	1821	1444	6	283	14	6028	13	3106	15	1700	1
Gemini	-	1278	11	408	8	6299	8	3641	4	1589	2
Pam 1	-	1000	20	160	19	5826	18	2494	22	944	17
ILB 3187	3187	1000	18	78	24	4750	24	1922	24	1244	7
ILB 1814	1814	1000	19	155	21	5951	15	2928	18	778	22
Local Check	-	3056	1	1393	1	6569	2	3794	2	944	16
Location Mean		**1340**		**365**		**5979**		**3178**		**1080**	
S.E. of Mean		476.71		One Rep.		438.29		402.91		218.28	
L.S.D. at 5 %		-				-		-		-	
C.V. %		61.61				12.70		21.96		35.02	
Error df		46				46		46		46	
Significance		NS				NS		NS		NS	
Ent. > L. Check		-				-		-		-	

Cont'd. ...

Table 4.1.5. Cont'd. ...

Pedigree	ILB/ Cross No.	LEBANON		MOROCCO		SYRIA					
		Terbol		Douyet		Deir-Ez-Zor		Gelline		Hama	
		Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82-25 FB	X79S74	2981	11	3167	12	3222	15	2578	8	4689	19
FLIP 82-27 FB	X79S131	2673	22	3111	13	3433	13	2028	20	4717	18
FLIP 82-28 FB	X79S178	2944	14	3500	5	4678	1	2350	12	4400	23
FLIP 82-29 FB	X79L25	2883	17	2722	21	2817	21	1989	21	5028	12
FLIP 82-30 FB	X79L130	2920	15	3000	16	3000	18	2228	16	4939	15
FLIP 82-45 FB	1817	2975	12	3056	15	3478	12	2594	7	5606	2
FLIP 82-53 FB	23	3123	6	3278	9	3000	19	2189	18	5122	10
FLIP 82-54 FB	41	2988	10	3111	14	3928	6	2611	6	5306	9
FLIP 83- 6 FB	29	3093	7	2444	23	3506	11	2320	14	4950	14
FLIP 83- 17 FB	S81066	2920	16	2778	19	3967	5	2283	15	5361	7
FLIP 83-43 FB	80L90222	2821	20	3222	11	3400	14	1972	22	4889	16
74TA 22	9	3130	5	2889	17	3067	16	2744	3	4600	21
79S 4	1814	2675	21	2667	22	2744	23	2917	1	5578	3
80S 44027	X77TA64	3130	4	3333	8	4272	2	2906	2	5522	4
80S 80135	X79S171	3222	1	3622	2	3867	7	2444	10	5339	8
Lattakia Local	1815	2648	23	2833	18	3578	10	2194	17	4850	17
New Mammoth	1269	3191	3	3389	7	4167	4	2622	5	5506	5
Reina Blanca	1270	3216	2	3611	3	3689	8	2683	4	5394	6
Turkish Local	1821	3056	8	3444	6	3633	9	2394	11	5011	13
Gemini	-	2833	19	3222	10	2778	22	2483	9	5061	11
Pam 1	-	2877	18	3611	4	3044	17	2328	13	4678	20
ILB 3187	3187	1235	24	2056	24	2889	20	978	23	3650	24
ILB 1814	1814	3025	9	2778	20	2667	24	2103	19	4450	22
Local Check	-	2963	13	3722	1	4189	3	422	24	5956	1
Location Mean		**2897**		**3107**		**3459**		**2265**		**5025**	
S.E. of Mean		216.74		254.09		398.02		247.46		283.79	
L.S.D. at 5 %		616.95		723.27		1132.97		704.39		807.81	
C.V. %		12.96		14.16		19.93		18.92		9.78	
Error df		46		46		46		46		46	
Significance		*		*		*		*		*	
Ent. > L. Check		0		0		0		22		0	

Cont'd. ...

Table 4.1.5. Cont'd. ...

Pedigree	ILB/ Cross No.	SYRIA				TUNISIA				TURKEY		Overall Mean (1)	
		Homs		Tel Hadya		Beja		El Kef		Izmir			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82-25 FB	X79S74	978	11	4113	17	1913	16	2463	16	2883	13	2567	16
FLIP 82-27 FB	X79S131	578	23	3844	23	1738	20	2013	22	3099	12	2382	21
FLIP 82-28 FB	X79S178	722	20	4222	11	1688	21	2663	10	3130	11	2619	9
FLIP 82-29 FB	X79L25	906	14	4432	8	2150	7	2625	15	3290	8	2560	17
FLIP 82-30 FB	X79L130	1017	9	4183	13	1750	18	1963	23	-	-	2583	12
FLIP 82-45 FB	1817	1333	2	4136	16	1963	14	2663	12	-	-	2761	6
FLIP 82-53 FB	23	861	16	4188	12	1750	19	2625	14	3432	6	2521	19
FLIP 82-54 FB	41	1117	6	3868	21	2088	8	2325	19	3549	3	2707	7
FLIP 83- 6 FB	29	939	12	5071	1	2300	5	3388	4	3438	5	2589	11
FLIP 83- 17 FB	S81066	856	17	4233	10	1975	13	2663	11	3136	10	2580	13
FLIP 83-43 FB	80L90222	922	13	4805	3	2063	10	2375	18	3469	4	2609	10
74TA 22	9	689	21	4599	6	1975	12	2850	9	-	-	2637	8
79S 4	1814	844	18	4696	4	1663	22	2150	21	-	-	2555	18
80S 44027	X77TA64	1528	1	3996	19	1838	17	3725	3	-	-	2761	5
80S 80135	X79S171	1089	8	4663	5	2550	1	3013	8	-	-	2788	4
Lattakia Local	1815	1156	4	4148	14	2088	9	3163	7	-	-	2475	20
New Mammoth	1269	1150	5	4568	7	2413	2	3375	5	3179	9	2877	2
Reina Blanca	1270	1017	10	4985	2	2325	4	3788	2	-	-	2947	1
Turkish Local	1821	1106	7	4144	15	1338	23	2388	17	-	-	2575	14
Gemini	-	828	19	4266	9	1913	15	3988	1	3809	2	2843	3
Pam 1	-	867	15	3855	22	2338	3	3300	6	3346	7	2569	15
ILB 3187	3187	667	22	3217	24	463	24	1138	24	1802	14	1632	23
ILB 1814	1814	1294	3	4000	18	2225	6	2225	20	-	-	2365	22
Local Check	-	561	24	3948	20	2058	11	2638	13	4167	1		
Location Mean		**959**		**4258**		**1940**		**2729**		**3266**			
S.E. of Mean		241.12		399.10		409.08		381.82		379.35			
L.S.D. at 5 %		-		-		-		912.19		-			
C.V. %		43.54		16.24		29.82		19.79		20.12			
Error df		46		46		23		23		26			
Significance		NS		NS		NS		*		NS			
Ent. > L. Check		-		-		-		3		-			

(1) Izmir was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = not significant.

Table 4.1.6. The five heaviest seed yielding entries at the individual locations in the FBIYT-L during 1987/88.

Rank	AFGHANISTAN	ALGERIA		ARGENTINA	CYPRUS	EGYPT		ETHIOPIA
	Kabul	Es-Senia	Sidi Bel Abbes	Perico	Athalassa	Sakha	Sids	Holetta
1	FLIP82- 27FB	Gemini	74 TA 22	FLIP82- 27FB	FLIP82- 45FB	ILB 1270	Local Check	Local Check
2	79S 4	ILB 1270	FLIP82- 53FB	74 TA 22	ILB 1821	Gemini	74 TA 22	ILB 1270
3	FLIP83- 6FB	FLIP82- 45FB	Pam 1	FLIP82- 29FB	79S 4	FLIP83- 43FB	FLIP82- 54FB	FLIP82- 28FB
4	FLIP83- 17FB	FLIP83- 43FB	FLIP82- 54FB	FLIP82- 25FB	80S 80135	FLIP82- 45FB	ILB 1269	FLIP83- 17FB
5	ILB 1815	ILB 1269	FLIP82- 45FB	80S 44027	ILB 1815	ILB 1269	FLIP83- 43FB	ILB 1269

Table 4.1.6. Cont'd. ...

Cont'd. ...

Rank	IRAN		IRAQ	LEBANON	MOROCCO	SYRIA	
	Gorgan	Hassan Abad	Mosul	Terbol	Douyet	Deir-Ez-Zor	Gelline
1	79S 4	ILB 1270	ILB 1821	80S 80135	Local Check	FLIP82- 28FB	79S 4
2	Local Check	Local Check	Gemini	ILB 1270	80S 80135	80S 44027	80S 44027
3	80S 80135	FLIP82- 29FB	74 TA 22	ILB 1269	ILB 1270	Local Check	74 TA 22
4	FLIP82- 54FB	Gemini	FLIP82- 30FB	80S 44027	Pam 1	ILB 1269	ILB 1270
5	FLIP82- 29FB	80S 80135	FLIP82- 54FB	74 TA 22	FLIP82- 28FB	FLIP83- 17FB	ILB 1269

Table 4.1.6. Cont'd. ...

Cont'd. ...

Rank	SYRIA			TUNISIA		TURKEY
	Hama	Homs	Tel Hadya	Beja	El Kef	Izmir
1	Local Check	80S 44027	FLIP83- 6FB	80S 80135	Gemini	Local Check
2	FLIP82- 45FB	FLIP82- 45FB	ILB 1270	ILB 1269	ILB 1270	Gemini
3	79S 4	ILB 1814	FLIP83- 43FB	Pam 1	80S 44027	FLIP82- 54FB
4	80S 44027	ILB 1815	79S 4	ILB 1270	FLIP83- 6FB	FLIP83- 43FB
5	ILB 1269	ILB 1269	80S 80135	FLIP83- 6FB	ILB 1269	FLIP83- 17FB

Algeria, Sakha in Egypt, Hasan Abad in Iran, Deir-ez-Zor in Syria, Izmir in Turkey and Douyet in Morocco gave also quite high yields (ranging between 3107 and 3661 kg/ha). The ANOVA for the experimental design for seed yield revealed that the differences between entry means were significant at 9 out of 19 locations analysed for seed yield (Table 4.1.5.). At five locations, Es-Senia in Algeria, Perico in Argenina, Sakha in Egypt, Gelline in Syria, and El-Kef in Tunisia, 1,22,1,22 and 3 entries exceeded the respective local check in seed yields by a significant margin. Reina Blanca yielded the highest (2947 kg/ha) across the locations and was followed by New Mammoth, Gemini, 80S 80135, and 80S 44027 with seed yields of 2877, 2843, 2788 and 2761 kg/ha, respectively. The five heaviest yielders at each location are presented in Table 4.1.6. The frequency of occurrence of the entries among the top five yielders was highest for New Mammoth, and was followed by Reina Blanca.

On the basis of overall mean over two years (1986/87 and 1987/88) Reina Blanca ranked number 1 and was followed by FLIP 82-45FB, FLIP 82-54FB, 80S 80135 and 80S 44027 with seed yields of 2980, 2781, 2778, 2768 and 2715 kg/ha, respectively (Table 4.1.7).

Table 4.1.7. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in FBIYT-L during 1986/87 adn 1987/88.

Entry Name	1986/87		1987/88		Mean	
	Y	R	Y	R	Y	R
FLIP 82-25 FB	2624	16	2567	14	2596	6
FLIP 82-27 FB	2702	13	2382	19	2542	18
FLIP 82-28 FB	2771	6	2619	8	2695	6
FLIP 82-29 FB	2673	5	2560	15	2617	14
FLIP 82-30 FB	2714	11	2583	11	2649	10
FLIP 82-45 FB	2801	3	2761	5	2781	2
FLIP 82-53 FB	2752	8	2521	17	2637	12
FLIP 82-54 FB	2848	2	2707	6	2778	3
FLIP 83- 6 FB	2774	4	2589	10	2682	8
FLIP 83-17 FB	2620	17	2580	12	2600	15
FLIP 83-43 FB	2664	15	2609	9	2637	12
74TA 22	2750	9	2637	7	2694	7
79S 4	2757	7	2555	16	2656	9
80S 44027	2669	14	2761	4	2715	5
80S 80135	2748	10	2788	3	2768	4
Lattakia local	2614	18	2475	18	2545	17
Reina Blanca	3013	1	2947	1	2980	1
Turkish local	2705	12	2575	13	2640	11
ILB 3187	1529	20	1632	21	1581	20
Syrian local large Pod	2613	9	2365	20	2489	19

Table 4.2.1. Agronomic data for different locations in the FBIYT-S during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Sidi Bel Abbes	17.11.87	12.06.88	-			-	-	-
CYPRUS	Morokambos	07.12.87	06.06.88	21	48		-	Treflan, Pirimor	Local (ARI 00139)
CYPRUS	Dromolaxia	01.12.87	03.06.88	21	48		-	Treflan, Pirimor	Local (ARI 00139)
EGYPT	Sakha	NA	NA	NA			NA	NA	Giza 3
EGYPT	Sids	NA	NA	NA			NA	NA	Giza 402
ETHIOPIA	Holetta	19.06.88	30.11.88	25	100		-	-	CZ 20 WK
GREECE	Larissa	26.11.87	15.06.88				-	Thiodan	Polycarpi
IRAN	Gorgan	15.11.87	11.06.88	-			-	Methasystox	Barakat
IRAN	Hassan Abad	20.12.87	22.05.88		120		10	Methasystox, Simazina	Zohreh
ITALY	Catania	29.11.87	30.05.88	45	90			Propyzamide	Sicania
ITALY	Tarquinia	04.01.88	27.06.88	45	130		-	Gusathion	Tarquinia
JORDAN	Gor	27.10.87	16.05.88	40	40		-	-	NA
JORDAN	Taiba	03.01.88	25.05.88	10	15		-	-	Local
LEBANON	Terbol	20.11.87	02.07.88		50		2	Kerb, Igran	Lebanese Local
SAUDI ARABIA	TADCO	21.11.87	06.88	150	200		S*	NA	Local from market
SPAIN	Cordoba	03.11.87	NA		56	28	1	Rogor	Palacio
SYRIA	Aleppo	16.11.87	29.05.88	-			-	-	
SYRIA	Deir-Ez-Zor	02.88	01.06.88		17		6	Sembush	Local
SYRIA	Tel Hadya-1 (Rainfed)	31.10.87	11.05.88		50		-	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
SYRIA	Tel Hadya-2 (Irrigated)	31.10.87	30.04.88		50		4	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TUNISIA	El Kef	NA	NA	NA			NA	NA	NA

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 4.2.2. Time to flowering (days) of entries at different locations in the FBIYT-S during 1987/88.

Pedigree	ILB/ Cross no.	ALGERIA	CYPRUS		EGYPT		ETHIOPIA	GREECE
		Sidi Bel Abbes	Morokambos	Dromolaxia	Sakha	Sids	Holetta	Larissa
FLIP 82- 9 FB	X75TA43	118	74	77	50	62	57	118
FLIP 82- 12 FB	X75TA105	118	74	77	53	72	60	118
FLIP 82- 35 FB	X75TA14	118	76	80	52	69	62	120
FLIP 83- 1 FB	5	121	76	79	53	69	60	118
FLIP 83- 3 FB	X79S 12	-	74	77	52	67	60	119
FLIP 83- 50 FB	S81047	118	73	78	55	67	61	118
FLIP 83- 88 FB	S81232	118	75	81	55	71	61	120
FLIP 83- 95 FB	Sd77061	121	73	80	52	67	62	118
FLIP 83- 96 FB	Sd77061	117	72	77	52	64	58	118
FLIP 83-100 FB	80S 44358	121	75	79	55	72	60	120
FLIP 83-105 FB	79S 33024	118	74	78	47	65	56	117
FLIP 83-106 FB	1814	118	72	77	50	64	59	118
FLIP 83-127 FB	1266	119	74	79	58	70	64	121
FLIP 84- 46 FB	S82097	118	76	82	55	71	65	120
FLIP 84- 48 FB	S82099	118	74	78	53	70	62	117
74TA 91	32	121	75	82	60	71	60	118
76TA 56267	1817	118	76	81	55	72	64	119
80S 46121	X77Sd70	119	76	80	57	74	64	121
80S 50088	X75TA150	121	77	82	53	72	64	119
ILB 3188	3188	118	76	86	65	75	66	116
MS125VTT	-	118	74	80	58	75	64	120
Syrian Local Short Pod	1812	121	75	80	58	74	66	121
Giza 3	1819	119	70	78	52	66	61	119
Local Check	-	118	64	69	43	57	63	134
Location Mean		**119**	**74**	**79**	**54**	**69**	**62**	**120**
S.E. of Mean		One Rep.	1.59	0.61	1.84	0.98	0.91	0.88
L.S.D. at 5%			4.53	1.74	5.23	2.79	2.60	2.52
C.V. %			3.72	1.34	5.91	2.46	2.57	1.28
Error d.f.			46	46	46	46	46	46
Significance			*	*	*	*	*	*

Cont'd. ...

Table 4.2.2. Cont'd. ...

Pedigree	ILB/ Cross No.	IRAN		ITALY		JORDAN	LEBANON
		Gorgan	Hassan Abad	Catania	Tarquinia	Gor	Terbol
FLIP 82- 9 FB	X75TA43	83	87	117	86	66	119
FLIP 82- 12 FB	X75TA105	90	91	120	90	70	120
FLIP 82- 35 FB	X75TA14	83	91	119	88	69	120
FLIP 83- 1 FB	5	83	89	118	88	71	120
FLIP 83- 3 FB	X79S 12	83	90	118	86	71	120
FLIP 83- 50 FB	S81047	83	89	119	86	69	119
FLIP 83- 88 FB	S81232	83	92	118	88	70	119
FLIP 83- 95 FB	Sd77061	83	92	117	86	64	120
FLIP 83- 96 FB	Sd77061	90	91	119	88	65	120
FLIP 83-100 FB	80S 44358	83	91	120	86	71	120
FLIP 83-105 FB	79S 33024	90	89	120	86	67	119
FLIP 83-106 FB	1814	83	91	117	88	69	120
FLIP 83-127 FB	1266	83	94	119	90	73	120
FLIP 84- 46 FB	S82097	90	90	120	92	75	120
FLIP 84- 48 FB	S82099	83	93	117	88	73	120
74TA 91	32	83	91	119	88	70	120
76TA 56267	1817	83	93	120	92	73	120
80S 46121	X77Sd70	90	93	121	90	72	122
80S 50088	X75TA150	83	93	120	90	67	120
ILB 3188	3188	83	91	120	92	78	120
MS125VTT	-	90	93	119	95	76	120
Syrian Local Short Pod	1812	90	92	120	92	70	120
Giza 3	1819	83	95	117	86	68	119
Local Check	-	90	93	119	92	74	120
Location Mean		**85**	**91**	**119**	**89**	**70**	**120**
S.E. of Mean		0.00	0.10	0.97	1.41	2.51	0.30
L.S.D. at 5%		0.00	0.28	-	4.01	7.14	0.86
C.V. %		0.00	0.19	1.41	2.75	6.17	0.44
Error d.f.		46	46	46	46	46	46
Significance		*	*	NS	*	*	*

Cont'd. ...

Table 4.2.2. Cont'd. ...

Pedigree	ILB/ Cross No.	SAUDI ARABIA	SYRIA				(1) Overall Mean
		TADCO	Aleppo	Dier-Ez-Zor	Tel Hadya-1	Tel Hadya-2	
FLIP 82- 9 FB	X75TA43	76	121	94	109	110	89
FLIP 82- 12 FB	X75TA105	77	122	96	109	112	91
FLIP 82- 35 FB	X75TA14	79	123	97	110	110	91
FLIP 83- 1 FB	5	78	122	96	111	114	91
FLIP 83- 3 FB	X79S 12	78	122	95	110	110	90
FLIP 83- 50 FB	S81047	79	123	96	110	111	90
FLIP 83- 88 FB	S81232	79	122	96	111	111	91
FLIP 83- 95 FB	Sd77061	81	121	95	110	108	90
FLIP 83- 96 FB	Sd77061	77	122	97	107	107	90
FLIP 83-100 FB	80S 44358	80	121	98	112	114	92
FLIP 83-105 FB	79S 33024	73	121	93	109	108	89
FLIP 83-106 FB	1814	78	122	95	108	108	89
FLIP 83-127 FB	1266	79	123	97	110	114	92
FLIP 84- 46 FB	S82097	79	122	97	111	112	93
FLIP 84- 48 FB	S82099	78	122	96	111	112	91
74TA 91	32	78	122	97	112	115	92
76TA 56267	1817	79	122	96	113	116	93
80S 46121	X77Sd70	81	122	99	115	115	94
80S 50088	X75TA150	82	122	97	111	113	92
ILB 3188	3188	85	124	99	113	119	95
MS125VTT	–	80	121	97	114	115	93
Syrian Local Short Pod	1812	81	122	97	115	117	94
Giza 3	1819	78	121	96	110	109	90
Local Check	–	79	122	98	111	111	
Location Mean		**79**	**122**	**97**	**111**	**112**	
S.E. of Mean		1.25	0.66	0.83	0.94	1.25	
L.S.D. at 5%		3.56	1.87	2.37	2.68	3.56	
C.V. %		2.75	0.93	1.50	1.47	1.93	
Error d.f.		46	46	46	46	46	
Significance		*	*	*	*	0	

(1) Sidi Bel Abbes excluded from the overall mean.
* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.2.3. Time to maturity (days) of entries at different locations in the FBIYT-S during 1987/88.

Pedigree	ILB/ Cross No.	ALGERIA	ETHIOPIA	GREECE	IRAN		ITALY	
		Sidi Bel Abbes	Holetta	Larissa	Gorgan	Hassan Abad	Catania	Tarquinia
FLIP 82- 9 FB	X75TA43	194	158	178	168	190	185	160
FLIP 82- 12 FB	X75TA105	192	156	181	171	190	185	156
FLIP 82- 35 FB	X75TA14	-	156	182	168	190	186	155
FLIP 83- 1 FB	5	194	158	176	168	188	185	154
FLIP 83- 3 FB	X79S 12	194	158	181	168	189	186	155
FLIP 83- 50 FB	S81047	192	157	176	168	191	185	154
FLIP 83- 88 FB	S81232	194	157	181	168	190	185	154
FLIP 83- 95 FB	Sd77061	188	162	178	168	190	185	156
FLIP 83- 96 FB	Sd77061	186	158	177	171	190	185	154
FLIP 83-100 FB	80S 44358	194	155	179	175	192	185	155
FLIP 83-105 FB	79S 33024	194	158	176	171	189	185	158
FLIP 83-106 FB	1814	187	155	179	168	192	185	154
FLIP 83-127 FB	1266	194	160	178	168	191	186	154
FLIP 84- 46 FB	S82097	188	155	181	171	191	185	154
FLIP 84- 48 FB	S82099	193	156	178	168	193	185	155
74TA 91	32	194	156	178	168	192	185	154
76TA 56267	1817	186	160	181	168	192	185	154
80S 46121	X77Sd70	189	155	181	171	193	186	159
80S 50088	X75TA150	194	161	181	168	194	186	154
ILB 3188	3188	191	153	177	168	192	183	155
MS125VTT	-	192	161	178	171	191	185	158
Syrian Local Short Pod	1812	194	158	183	171	193	186	158
Giza 3	1819	-	156	178	168	160	185	155
Local Check	-	194	153	186	171	192	185	154
Location Mean		**192**	**157**	**179**	**169**	**190**	**185**	**155**
S.E. of Mean		One Rep.	1.18	0.25	1.36	6.84	0.19	1.26
L.S.D. at 5%			3.36	0.71	3.87	-	0.55	3.59
C.V. %			1.30	0.24	1.39	6.24	0.18	1.41
Error d.f.			46	46	46	46	46	46
Significance			*	*	*	NS	*	*

Cont'd. ...

Table 4.2.3. Cont'd. ...

Pedigree	ILB/ Cross No.	LEBANON	SAUDI ARABIA	SYRIA				(1) Overall Mean
		Terbol	TADCO	Aleppo	Deir-Ez-Zor	Tel Hadya-1	Tel Hadya-2	
FLIP 82- 9 FB	X75TA43	186	189	191	147	192	197	178
FLIP 82- 12 FB	X75TA105	188	188	190	149	194	197	179
FLIP 82- 35 FB	X75TA14	189	191	193	147	193	196	179
FLIP 83- 1 FB	5	186	191	193	145	194	197	178
FLIP 83- 3 FB	X79S 12	186	189	192	147	192	196	178
FLIP 83- 50 FB	S81047	186	186	193	147	197	198	178
FLIP 83- 88 FB	S81232	187	189	193	147	195	198	179
FLIP 83- 95 FB	Sd77061	185	193	194	145	190	198	179
FLIP 83- 96 FB	Sd77061	185	186	193	150	194	197	178
FLIP 83-100 FB	80S 44358	185	189	191	146	194	198	179
FLIP 83-105 FB	79S 33024	188	187	193	146	192	197	179
FLIP 83-106 FB	1814	186	183	191	145	190	196	177
FLIP 83-127 FB	1266	187	192	190	148	194	197	179
FLIP 84- 46 FB	S82097	189	183	190	149	192	197	178
FLIP 84- 48 FB	S82099	185	187	191	144	192	196	178
74TA 91	32	186	188	193	147	195	198	178
76TA 56267	1817	185	189	191	146	193	197	178
80S 46121	X77Sd70	188	189	191	148	193	197	179
80S 50088	X75TA150	188	186	189	149	189	198	179
ILB 3188	3188	187	188	190	147	186	190	176
MS125VTT	-	185	191	189	146	194	198	179
Syrian Local Short Pod	1812	190	187	187	150	192	198	179
Giza 3	1819	188	187	191	146	195	197	176
Local Check	-	186	183	189	149	194	198	
Location Mean		**187**	**188**	**191**	**147**	**193**	**197**	
S.E. of Mean		0.62	2.16	0.99	0.91	0.39	0.56	
L.S.D. at 5%		1.77	-	2.82	2.58	1.11	1.60	
C.V. %		0.58	1.99	0.90	1.07	0.35	0.49	
Error d.f.		46	46	46	46	46	46	
Significance		*	NS	*	*	*	*	

(1) Sidi Bel Abbes excluded from the overall mean.
* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.2.4. Plant height (cm) of entries at different locations in the FBIYT-S during 1987/88.

Pedigree	ILB/ Cross No.	ALGERIA	CYPRUS		ETHIOPIA	GREECE	IRAN		ITALY
		Sidi Bel Abbes	Moro-kambos	Dromo-laxia	Holetta	Larissa	Gorgan	Hassan Abad	Catania
FLIP 82- 9 FB	X75TA43	65	117	81	113	58	117	112	65
FLIP 82- 12 FB	X75TA105	40	115	90	127	52	109	94	67
FLIP 82- 35 FB	X75TA14	62	120	89	106	63	117	101	67
FLIP 83- 1 FB	5	55	111	79	119	57	118	102	67
FLIP 83- 3 FB	X79S 12	63	116	96	128	57	113	106	63
FLIP 83- 50 FB	S81047	70	112	86	138	57	122	107	67
FLIP 83- 88 FB	S81232	60	122	95	122	53	118	100	64
FLIP 83- 95 FB	Sd77061	45	115	79	119	58	122	101	64
FLIP 83- 96 FB	Sd77061	-	124	99	125	60	122	111	67
FLIP 83-100 FB	80S 44358	55	108	86	114	60	110	99	62
FLIP 83-105 FB	79S 33024	67	117	96	129	60	118	113	66
FLIP 83-106 FB	1814	-	113	93	119	55	119	102	66
FLIP 83-127 FB	1266	55	122	100	116	57	123	112	67
FLIP 84- 46 FB	S82097	46	117	97	113	62	117	101	66
FLIP 84- 48 FB	S82099	62	110	89	115	58	115	94	64
74TA 91	32	55	116	91	106	55	110	99	67
76TA 56267	1817	-	120	82	117	55	117	98	68
80S 46121	X77Sd70	-	114	89	121	60	122	105	67
80S 50088	X75TA150	62	119	96	141	53	122	101	67
ILB 3188	3188	47	95	88	112	53	117	89	66
MS125VTT	-	63	115	93	120	50	113	101	65
Syrian Local Short Pod	1812	50	116	80	108	57	117	103	65
Giza 3	1819	55	115	86	116	57	118	101	67
Local Check	-	60	132	89	122	65	110	90	65
Location Mean		**57**	**116**	**90**	**119**	**57**	**117**	**102**	**66**
S.E. of Mean		One Rep.	6.79	7.40	6.23	3.45	4.40	5.27	1.44
L.S.D. at 5%			-	-	17.72	-	-	-	-
C.V. %			10.15	14.30	9.03	10.46	6.51	8.98	3.79
Error d.f.			46	46	46	46	46	46	46
Significance			NS	NS	*	NS	NS	NS	NS

Cont'd. ...

Table 4.2.4. Cont'd. ...

Pedigree	ILB/ Cross No.	ITALY	LEBANON	SAUDI ARABIA	SPAIN	SYRIA				(1) Overall Mean
		Tarquinia	Terbol	TADCO	Cordoba	Aleppo	Deir-Ez-Zor	Tel Hadya 1	Tel Hadya 2	
FLIP 82- 9 FB	X75TA43	98	90	106	107	57	68	103	120	94
FLIP 82- 12 FB	X75TA105	99	95	135	100	63	57	123	135	97
FLIP 82- 35 FB	X75TA14	105	98	127	105	57	67	120	122	98
FLIP 83- 1 FB	5	105	97	108	102	55	65	108	120	94
FLIP 83- 3 FB	X79S 12	104	97	97	97	55	62	108	132	95
FLIP 83- 50 FB	S81047	107	92	95	105	48	63	98	138	96
FLIP 83- 88 FB	S81232	103	95	93	94	48	62	105	128	94
FLIP 83- 95 FB	Sd77061	98	85	125	98	57	70	103	128	95
FLIP 83- 96 FB	Sd77061	106	92	96	102	57	72	102	125	97
FLIP 83-100 FB	80S 44358	98	85	99	104	53	60	105	123	91
FLIP 83-105 FB	79S 33024	106	95	96	107	62	77	133	132	100
FLIP 83-106 FB	1814	100	92	91	91	57	62	112	127	93
FLIP 83-127 FB	1266	110	97	124	110	63	67	117	137	101
FLIP 84- 46 FB	S82097	99	92	94	91	70	70	113	125	95
FLIP 84- 48 FB	S82099	97	80	109	96	65	62	110	133	93
74TA 91	32	103	87	102	98	58	65	115	128	93
76TA 56267	1817	97	95	106	103	58	62	122	137	96
80S 46121	X77Sd70	102	98	99	98	68	62	110	143	97
80S 50088	X75TA150	108	90	116	110	67	68	93	137	99
ILB 3188	3188	92	90	103	86	68	70	100	108	89
MS125VTT	-	99	87	125	94	72	63	100	117	94
Syrian Local Short Pod	1812	104	97	92	107	62	77	118	132	95
Giza 3	1819	104	107	112	103	58	72	113	122	97
Local Check	-	95	85	98	96	63	58	93	147	
Location Mean		**102**	**92**	**106**	**100**	**60**	**66**	**109**	**129**	
S.E. of Mean		2.96	3.25	11.99	4.55	4.05	4.46	9.28	6.52	
L.S.D. at 5%		8.44	9.26	-	12.94	11.52	-	-	18.56	
C.V. %		5.05	6.11	16.00	7.86	11.67	11.75	14.68	8.76	
Error d.f.		46	46	23	46	46	46	46	46	
Significance		*	*	NS	*	*	NS	NS	*	

(1) Sidi Bel Abbes excluded from the overall mean.
* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.2.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBIYT-S during 1987/88.

Pedigree	ILB/ Cross No.	ALGERIA		CYPRUS				EGYPT				ETHIOPIA	
		Sidi Bel Abbes		Morokambos		Dromolaxia		Sakha		Sids		Holetta	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82- 9 FB	X75TA43	1517	16	3491	18	1454	18	1458	2	4167	3	468	11
FLIP 82- 12 FB	X75TA105	1515	17	3391	20	1867	9	1171	18	2278	16	256	21
FLIP 82- 35 FB	X75TA14	1856	7	4168	5	1408	19	1292	10	1944	18	218	22
FLIP 83- 1 FB	5	1770	11	3791	14	1277	21	1175	17	3333	8	459	13
FLIP 83- 3 FB	X79S 12	1981	5	3608	16	2144	2	1396	5	3944	4	783	2
FLIP 83- 50 FB	S81047	1804	8	3338	21	1954	7	1254	14	4222	2	603	4
FLIP 83- 88 FB	S81232	2057	4	4449	3	2066	4	1371	6	3056	9	554	5
FLIP 83- 95 FB	Sd77061	1270	19	4161	6	1046	22	1225	15	3556	7	425	15
FLIP 83- 96 FB	Sd77061	1786	10	3427	19	1979	6	1050	22	2944	11	488	10
FLIP 83-100 FB	80S 44358	1345	20	4032	9	1830	10	904	23	1611	23	461	12
FLIP 83-105 FB	79S 33024	2239	1	4038	7	1707	14	1413	3	3833	5	539	7
FLIP 83-106 FB	1814	1583	15	3931	12	1796	13	1358	7	2611	13	538	8
FLIP 83-127 FB	1266	1765	12	4659	1	2114	3	1054	21	1722	22	159	23
FLIP 84- 46 FB	S82097	1728	13	3841	13	1818	11	1304	9	2111	17	355	17
FLIP 84- 48 FB	S82099	2135	3	4189	4	1811	12	1188	16	3556	6	303	19
74TA 91	32	2223	2	3680	15	1614	15	1283	11	2500	14	364	16
76TA 56267	1817	900	23	4018	10	1542	17	1271	13	2444	15	604	3
80S 46121	X77Sd70	945	22	4037	8	950	23	1075	20	1889	19	322	18
80S 50088	X75TA150	1340	21	3956	11	2014	5	1096	19	1833	20	489	9
ILB 3188	3188	645	24	1678	24	903	24	713	24	1778	21	281	20
MS125VTT	-	1687	14	4630	2	1897	8	1538	1	2667	12	551	6
Syrian Local Short Pod	1812	1507	18	3580	17	1369	20	1279	12	1389	24	153	24
Giza 3	1819	1796	9	3196	22	1609	16	1404	4	3056	10	427	14
Local Check	-	1981	5	3069	23	3957	1	1350	8	5111	1	957	1
Location Mean		**1641**		**3765**		**1755**		**1234**		**2815**		**448**	
S.E. of Mean		One Rep.		339.44		281.10		101.15		800.47		107.16	
L.S.D. at 5%				966.23		800.15		287.93		-		305.03	
C.V. %				15.62		27.74		14.20		49.26		41.41	
Error d.f.				46		46		46		46		46	
Significance				*		*		*		NS		*	
Ent. > L. Check				8		0		0		-		0	

Cont'd. ...

Table 4.2.5. Cont'd. ...

Pedigree	ILB/ Cross No.	GREECE		IRAN				ITALY				JORDAN	
		Larissa		Gorgan		Hassan Abad		Catania		Tarquinia		Gor	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82- 9 FB	X75TA43	1967	12	6215	7	3422	7	2710	21	5083	19	3156	2
FLIP 82- 12 FB	X75TA105	1956	13	4931	22	2778	23	3001	13	4833	22	2644	5
FLIP 82- 35 FB	X75TA14	2167	4	6250	6	3094	16	3209	3	5711	11	1500	21
FLIP 83- 1 FB	5	2411	1	6083	10	3261	12	3168	4	5461	15	2267	10
FLIP 83- 3 FB	X79S 12	1767	21	6181	9	4144	2	3043	6	5783	9	3211	1
FLIP 83- 50 FB	S81047	2033	10	6063	11	3411	8	2917	16	5667	14	2280	9
FLIP 83- 88 FB	S81232	1911	16	5674	17	4056	3	3043	7	6450	1	2233	11
FLIP 83- 95 FB	Sd77061	2078	7	6250	5	3094	15	3042	9	5094	18	1387	23
FLIP 83- 96 FB	Sd77061	1856	18	6521	3	3400	9	2626	23	6028	5	1789	18
FLIP 83-100 FB	80S 44358	1811	20	5257	20	3400	10	2668	22	5078	20	1389	22
FLIP 83-105 FB	79S 33024	1911	15	5597	18	3167	13	2792	20	6056	4	3089	3
FLIP 83-106 FB	1814	2178	3	6486	4	3361	11	2918	15	6000	6	2389	7
FLIP 83-127 FB	1266	1811	19	4924	23	2778	22	3251	1	4817	23	1875	17
FLIP 84- 46 FB	S82097	1989	11	6201	8	2989	19	2834	17	5672	13	1667	20
FLIP 84- 48 FB	S82099	2333	2	5535	19	4239	1	3209	2	5267	16	1967	14
74TA 91	32	2078	8	5722	15	3100	14	3042	8	5700	12	2356	8
76TA 56267	1817	2089	6	6951	1	3544	5	3046	5	5822	8	2400	6
80S 46121	X77Sd70	2111	5	5799	13	3094	17	3001	12	4917	21	3042	4
80S 50088	X75TA150	2056	9	5222	21	3078	18	2833	19	6289	2	1950	15
ILB 3188	3188	711	24	3924	24	1661	24	1584	24	3589	24	2004	13
MS125VTT	-	1867	17	5688	16	3606	4	3042	10	5739	10	1344	24
Syrian Local Short Pod	1812	1600	22	5799	14	2961	21	3001	14	5939	7	1733	19
Giza 3	1819	1933	14	5826	12	2972	20	2834	18	5106	17	2189	12
Local Check	-	1500	23	6847	2	3444	6	3042	11	6178	3	1889	16
Location Mean		1922		5831		3252		2911		5512		2156	
S.E. of Mean		225.87		357.56		353.11		154.56		384.49		556.33	
L.S.D. at 5%		642.94		1017.80		1005.15		439.97		1094.46		-	
C.V. %		20.36		10.62		18.81		9.20		12.08		44.69	
Error d.f.		46		46		46		46		46		46	
Significance		*		*		*		*		*		NS	
Ent. > L. Check		4		0		0		0		0		-	

Cont'd

Table 4.2.5. Cont'd. ...

Pedigree	ILB/ Cross No.	JORDAN Taiba		LEBANON Terbol		SAUDI ARABIA TADCO		SPAIN Cordoba		SYRIA Aleppo		SYRIA Deir-Ez-Zor	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82- 9 FB	X75TA43	6176	3	2926	6	7583	14	2568	1	2361	22	3289	12
FLIP 82- 12 FB	X75TA105	4431	16	2691	12	7250	16	1830	20	2583	19	2911	17
FLIP 82- 35 FB	X75TA14	4509	15	2593	16	9167	1	2018	11	2533	21	4000	2
FLIP 83- 1 FB	5	4750	12	2414	22	8333	7	1848	19	2267	23	2511	24
FLIP 83- 3 FB	X79S 12	4120	17	2605	15	7750	11	2271	3	2556	20	3522	6
FLIP 83- 50 FB	S81047	5727	5	2580	17	7750	12	1896	17	1767	24	2867	18
FLIP 83- 88 FB	S81232	5583	6	3130	1	7833	10	2065	8	2650	17	3433	8
FLIP 83- 95 FB	Sd77061	5509	7	2827	7	7417	15	1967	14	2844	16	3756	4
FLIP 83- 96 FB	Sd77061	5144	9	2667	13	5833	21	1854	18	2983	12	3033	15
FLIP 83-100 FB	80S 44358	3685	21	2759	8	8417	5	1955	15	3611	5	3700	5
FLIP 83-105 FB	79S 33024	4977	11	3019	5	6917	19	2125	7	3528	6	3833	3
FLIP 83-106 FB	1814	6292	2	2735	11	8333	6	2155	5	3744	4	2756	19
FLIP 83-127 FB	1266	4690	13	2414	21	8250	8	1702	23	2889	14	2567	22
FLIP 84- 46 FB	S82097	3708	20	3056	3	5583	23	1994	12	3794	3	2967	16
FLIP 84- 48 FB	S82099	6755	1	2642	14	8417	4	1905	16	3500	7	3344	10
74TA 91	32	3915	18	3062	2	7083	17	2045	10	2883	15	3300	11
76TA 56267	1817	5005	10	2494	19	7667	13	2057	9	3389	9	2756	20
80S 46121	X77Sd70	3542	22	2352	23	7000	18	1795	21	3267	10	2733	21
80S 50088	X75TA150	3528	23	2506	18	6250	20	1732	22	2978	13	3033	14
ILB 3188	3188	1431	24	642	24	2725	24	1259	24	2622	18	2533	23
MS125VTT	-	3829	19	2747	9	8500	3	2336	2	4428	1	3100	13
Syrian Local Short Pod	1812	5310	8	3043	4	5833	22	2155	4	3417	8	3367	9
Giza 3	1819	4528	14	2747	10	7833	9	1979	13	3039	11	3511	7
Local Check	-	6102	4	2457	20	8917	2	2146	6	4233	2	4100	1
Location Mean		**4718**		**2629**		**7360**		**1986**		**3078**		**3205**	
S.E. of Mean		669.55		206.48		771.64		127.16		323.17		441.30	
L.S.D. at 5%		1905.88		587.75		2196.50		361.97		919.90		-	
C.V. %		24.58		13.60		18.16		11.09		18.19		23.85	
Error d.f.		46		46		46		46		46		46	
Significance		*		*		*		*		*		NS	
Ent. > L. Check		0		3		0		1		0		-	

Cont'd. ...

Table 4.2.5. Cont'd. ...

Pedigree	ILB/ Cross No.	SYRIA				TUNISIA				Overall Mean	
		Tel Hadya-1		Tel Hadya-2		Beja		Oued Meliz			
		Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82- 9 FB	X75TA43	3191	14	3594	15	1500	21	3050	17	3243	7
FLIP 82- 12 FB	X75TA105	3505	4	4103	6	1813	13	2763	19	2932	20
FLIP 82- 35 FB	X75TA14	3504	5	3812	10	2075	7	2625	21	3166	10
FLIP 83- 1 FB	5	3223	13	3490	17	1488	22	2675	20	3066	13
FLIP 83- 3 FB	X79S 12	3395	9	3633	13	1900	8	3563	8	3332	4
FLIP 83- 50 FB	S81047	2852	20	3204	21	1738	14	3525	10	3157	11
FLIP 83- 88 FB	S81232	3499	6	4669	1	1825	12	4075	3	3440	2
FLIP 83- 95 FB	Sd77061	3367	10	4203	4	1725	16	3550	9	3172	9
FLIP 83- 96 FB	Sd77061	3037	17	3407	18	1525	20	3950	4	3060	14
FLIP 83-100 FB	80S 44358	3738	1	3917	7	1900	9	2625	22	3004	16
FLIP 83-105 FB	79S 33024	3488	7	4272	3	1463	23	3213	13	3328	5
FLIP 83-106 FB	1814	3621	2	3684	12	2288	3	4700	1	3430	3
FLIP 83-127 FB	1266	3039	16	3337	19	1863	11	3138	15	2946	18
FLIP 84- 46 FB	S82097	2624	22	3141	23	2200	4	4088	2	2985	17
FLIP 84- 48 FB	S82099	3546	3	4340	2	2175	6	3875	6	3465	1
74TA 91	32	2777	21	4133	5	1713	17	3113	16	3077	12
76TA 56267	1817	3408	8	3783	11	2288	2	3913	5	3245	6
80S 46121	X77Sd70	2963	19	3836	9	2188	5	3238	12	2913	21
80S 50088	X75TA150	1900	24	3497	16	1875	10	3313	11	2853	22
ILB 3188	3188	2103	23	2551	24	663	24	1413	24	1701	23
MS125VTT	-	3175	15	3595	14	1738	15	3200	14	3223	8
Syrian Local Short Pod	1812	3324	11	3268	20	1588	19	2975	18	2936	19
Giza 3	1819	3224	12	3856	8	1663	18	1988	23	3033	15
Local Check	-	2996	18	3171	22	2488	1	3738	7		
Location Mean		**3146**		**3687**		**1820**		**3263**			
S.E. of Mean		254.52		333.86		280.94		394.35			
L.S.D. at 5%		724.49		950.34		-		942.14			
C.V. %		14.01		15.68		21.83		17.09			
Error d.f.		46		46		23		23			
Significance		*		*		NS		*			
Ent. > L. Check		1		5		-		1			

* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.2.6. The five heaviest seed yielding entries at the individual locations in the FBIYT-S during 1987/88.

	ALGERIA	CYPRUS		EGYPT		ETHIOPIA	GREECE	IRAN
Rank	Sidi Bel Abbes	Morokambos	Dromolaxia	Sakha	Sids	Holetta	Larissa	Gorgan
1	FLIP83-105FB	FLIP83-127FB	Local Check	MS 125 VTT	Local Check	Local Check	FLIP83- 1FB	76 TA 56267
2	74 TA 91	MS 125 VTT	FLIP83- 3FB	FLIP82- 9FB	FLIP83- 50FB	FLIP83- 3FB	FLIP84- 48FB	Local Check
3	FLIP84- 48FB	FLIP83- 88FB	FLIP83-127FB	FLIP83-105FB	FLIP82- 9FB	76 TA 56267	FLIP83-106FB	FLIP83- 96FB
4	FLIP83- 88FB	FLIP84- 48FB	FLIP83- 88FB	Giza 3	FLIP83- 3FB	FLIP83- 50FB	FLIP82- 35FB	FLIP83-106FB
5	Local Check] FLIP83- 3FB]	FLIP82- 35FB	80S 50088	FLIP83- 3FB	FLIP83-105FB	FLIP83- 88FB	80S 46121	FLIP83- 95FB] FLIP82- 35FB]

Cont'd. ...

Table 4.2.6. Cont'd. ...

	IRAN	ITALY		JORDAN		LEBANON	SAUDI ARABIA
Rank	Hassan Abad	Catania	Tarquinia	Gor	Taiba	Terbol	TADCO
1	FLIP84- 48FB	FLIP83-127FB	FLIP83- 88FB	FLIP83- 3FB	FLIP84- 48FB	FLIP83- 88FB	FLIP82- 35FB
2	FLIP83- 3FB	FLIP84- 48FB	80S 50088	FLIP82- 9FB	FLIP83-106FB	74 TA 91	Local Check
3	FLIP83- 88FB	FLIP82- 35FB	Local Check	FLIP83-105FB	FLIP82- 9FB	FLIP84- 46FB	MS 125 VTT
4	MS 125 VTT	FLIP83- 1FB	FLIP83-105FB	80S 46121	Local Check	ILB 1812	FLIP84- 48FB
5	76 TA 56267	76 TA 56267	FLIP83- 96FB	FLIP82- 12FB	FLIP83- 50FB	FLIP83-105FB	FLIP83-100FB

Cont'd. ...

Table 4.2.6. Cont'd. ...

	SPAIN	SYRIA				TUNISIA	
Rank	Cordoba	Aleppo	Deir-Ez-Zor	Tel Hadya-1	Tel Hadya-2	Beja	Oued Meliz
1	FLIP82- 9FB	MS 125 VTT	Local Check	FLIP83-100FB	FLIP83- 88FB	Local Check	FLIP83-106FB
2	MS 125 VTT	Local Check	FLIP82- 35FB	FLIP83-106FB	FLIP84- 48FB	76 TA 56267	FLIP84- 46FB
3	FLIP83- 3FB	FLIP84- 46FB	FLIP83-105FB	FLIP84- 48FB	FLIP83-105FB	FLIP83-106FB	FLIP83- 88FB
4	ILB 1812	FLIP83-106FB	FLIP83- 95FB	FLIP82- 12FB	FLIP83- 95FB	FLIP84- 46FB	FLIP83- 96FB
5	FLIP83-106FB	FLIP83-100FB	FLIP83-100FB	FLIP82- 35FB	74 TA 91	80S 46121	76 TA 56267

The brackets indicate entries having the same rank.

Table 4.2.7. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in FBIYT-S during 1986/87 and 1987/88.

Entry Name	1986/87		1987/88		Mean	
	Y	R	Y	R	Y	R
FLIP 82-9 FB	2096	14	3243	2	2670	5
FLIP 82-12 FB	2154	9	2932	13	2543	13
FLIP 82-35 FB	2269	3	3166	4	2718	2
FLIP 83- 1 FB	2194	6	3066	7	2630	6
FLIP 83-50 FB	2001	15	3157	5	2579	10
FLIP 83-95 FB	2323	1	3172	3	2748	1
FLIP 83-96 FB	2304	2	3060	8	2682	4
FLIP 83-100 FB	2208	4	3004	10	2606	8
FLIP 83-127 FB	2185	8	2946	11	2566	11
74 TA 91	2131	12	3077	6	2604	9
76 TA 56267	2137	11	3245	1	2691	3
80 S 46121	2189	7	2913	14	2551	12
80 S 50088	2143	10	2853	15	2498	15
ILB 3188	1196	16	1701	16	1449	16
Syria local short pod (ILB 1812)	2110	13	2936	12	2523	14
Giza 3	2204	5	3033	9	2619	7

4.3. FABA BEAN INTERNATIONAL YIELD TRIAL-DETERMINATE (FBIYT-D)

Material

The Faba Bean International Yield Trial-Determinate comprised 12 test entries and two checks, one indeterminate check supplied and other local check to be supplied by the cooperator. All these test entries were tested for their superior performance at least once either in regional or in international screening nurseries.

Methods and Management

The trial design was a randomized complete block with 3 replications. The suggested plot size was 4 rows, each 4 m long, with inter row spacing at 0.50 cm accomodating 120 seeds per plot. Thirty-two sets of the trial were distributed to cooperators in 19 countries but the results were returned for 21 sets from 14 countries. The agronomic details received from the cooperators are presented in Table 4.3.1.

Results and Discussion

The location means for time to flowering, time to maturity and plant height are given in Tables 4.3.2., 4.3.3., and 4.3.4., respectively. Flowering was earliest at Pulway in Poland (52 days) and was followed by Holetta in Ethiopia (66 days), Sids in Egypt (69 days) and Dijon in France (71 days). The entry means for time to flowering across

Table 4.3.1. Agronomic data for different locations in the FBIYT-D during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Misserghin	18.11.87	06.05.88	-			2	-	Local
CYPRUS	Athalassa	26.11.87	31.05.88	21	48		1	Treflan, Pirimor	ARI 00139
EGYPT	Sids	NA	NA	NA			NA	NA	NA
EGYPT	Sakha	NA	NA	NA			NA	NA	Giza 3
ETHIOPIA	Holetta	19.06.88	30.11.88	25	100		-	-	CZ 20 DR
FRANCE	Dijon	07.03.88	28.07.88	-			-	Benfluraline	NA
IRAN	Gorgan	15.11.87	11.06.88	-			-	Methasystox	Barakat
IRAN	Hassan Abad	20.12.87	22.05.88		120		9	Methasystox	Zohreh
ITALY	Catania	24.11.87	30.05.88	45	90		-	Propyzamide, Simazina	45 NS VT
ITALY	Viterbo	19.11.87	19.06.88		31		-	-	LA 28 BA
LEBANON	Terbol	19.11.87	25.06.88		50		2	Kerb, Igran	Lebanese Local
MOROCCO	Domain	19.11.87	25.04.88	20	50		-	-	Aquadulce
MOROCCO	Douyet	16.11.87	07.06.88	30	60		-	Glyphosate	Aquadulce
POLAND	Pulawy	20.04.88	18.08.88	30	120		-	Fenitr., Dithane, Malathion	RAH 485
PORTUGAL	Elvas	19.11.87	03.06.88	-			-	-	F6M 395 Beja
SPAIN	Cordoba	02.12.87	NA		59		1	Dimetoato	Alameda
SYRIA	Deir-Ez-Zor	29.11.87	11.06.88		17		6	Sembush	Local
SYRIA	Hama	22.11.87	25.05.88	25	80		1	Decis, Baylton	From the market
SYRIA	Tel Hadya-1 (Rainfed)	31.10.87	19.05.88		50		-	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
SYRIA	Tel Hadya-2 (Irrigated)	31.10.87	19.05.88		50		4	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
TUNISIA	Beja	NA	NA	NA			NA	NA	NA

NA = Not available.

Table 4.3.2. Time to flowering (days) of entries at different locationms in the FBIYT-D during 1987/88.

Pedigree	ILB/ Cross No.	ALGERIA	CYPRUS	EGYPT	ETHIOPIA	FRANCE	IRAN	
		Misserghin	Athalassa	Sids	Holetta	Dijon	Gorgan	Hassan Abad
FLIP 84-230 FB	S82226	78	93	70	67	70	82	93
FLIP 84-237 FB	S82237	77	92	70	67	71	82	96
FLIP 84-240 FB	S82238	77	87	71	68	71	82	95
FLIP 84-243 FB	S82239	79	92	75	69	71	82	91
FLIP 84-244 FB	S82241	77	92	70	70	70	82	92
FLIP 84-246 FB	S82229	80	92	69	65	70	82	90
FLIP 86-107 FB	S82229	77	87	64	63	71	82	94
FLIP 86-118 FB	S82232	80	92	72	68	70	82	90
FLIP 86-143 FB	D83279	76	90	71	65	71	82	90
FLIP 86-144 FB	D83279	77	92	66	63	71	82	94
FLIP 86-145 FB	D83032	79	92	67	67	71	82	94
FLIP 86-146 FB	D83066	82	92	72	64	71	82	94
ILB 1814	1814	77	89	75	65	71	82	98
Local Check	-	77	97	57	62	79	85	95
Location Mean		**78**	**91**	**69**	**66**	**71**	**82**	**93**
S.E. of Mean		0.80	1.16	0.82	0.85	0.33	One Rep.	0.80
L.S.D. at 5%		2.34	3.37	2.38	2.12	0.95		2.33
C.V. %		1.78	2.20	2.05	1.82	0.79		1.49
Error d.f.		26	26	26	13	26		26
Significance		*	*	*	*	*		*

Cont'd. ...

Table 4.3.2. Cont'd. ...

Pedigree	ILB/ Cross No.	ITALY		LEBANON	MOROCCO		POLAND	PORTUGAL
		Catania	Viterbo	Terbol	Domain	Douyet	Pulawy	Elvas
FLIP 84-230 FB	S82226	121	125	120	89	96	51	107
FLIP 84-237 FB	S82237	117	125	120	91	95	50	106
FLIP 84-240 FB	S82238	120	125	119	91	96	51	107
FLIP 84-243 FB	S82239	121	125	120	91	95	51	109
FLIP 84-244 FB	S82241	121	125	120	89	95	50	107
FLIP 84-246 FB	S82229	120	125	120	91	95	50	108
FLIP 86-107 FB	S82229	119	125	120	91	95	51	107
FLIP 86-118 FB	S82232	120	125	120	88	96	51	107
FLIP 86-143 FB	D83279	118	125	120	91	95	52	107
FLIP 86-144 FB	D83279	121	125	120	89	96	50	107
FLIP 86-145 FB	D83032	121	125	120	90	96	54	109
FLIP 86-146 FB	D83066	121	125	120	91	95	52	109
ILB 1814	1814	115	125	119	91	95	53	107
Local Check	-	114	125	120	88	95	58	112
Location Mean		**119**	**125**	**120**	**90**	**95**	**52**	**108**
S.E. of Mean		0.85	One Rep.	0.25	One Rep.	0.00	0.66	0.73
L.S.D. at 5%		2.48		0.72		0.00	1.91	2.12
C.V. %		1.24		0.36		0.00	2.19	1.17
Error d.f.		26		26		26	26	26
Significance		*		*		*	*	*

Cont'd. ...

Table 4.3.2. Cont'd. ...

Pedigree	ILB/ Cross No.	SPAIN	SYRIA				Overall Mean
		Cordoba	Deir-Ez-Zor	Hama	Tel Hadya-1	Tel Hadya-2	
FLIP 84-230 FB	S82226	91	98	96	117	120	62
FLIP 84-237 FB	S82237	88	97	97	116	117	62
FLIP 84-240 FB	S82238	91	100	97	116	120	62
FLIP 84-243 FB	S82239	95	102	100	117	123	63
FLIP 84-244 FB	S82241	91	101	98	117	119	62
FLIP 84-246 FB	S82229	92	100	98	116	119	62
FLIP 86-107 FB	S82229	88	97	99	115	116	61
FLIP 86-118 FB	S82232	98	101	98	115	119	63
FLIP 86-143 FB	D83279	93	99	99	116	120	62
FLIP 86-144 FB	D83279	86	102	100	117	119	62
FLIP 86-145 FB	D83032	93	101	100	117	119	63
FLIP 86-146 FB	D83066	97	98	101	119	121	63
ILB 1814	1814	88	96	98	116	116	62
Local Check	-	94	100	92	119	114	
Location Mean		**92**	**99**	**98**	**117**	**119**	
S.E. of Mean		1.93	0.70	0.90	1.61	1.05	
L.S.D. at 5%		5.61	2.03	2.62	4.68	3.04	
C.V. %		3.64	1.22	1.59	2.39	1.53	
Error d.f.		26	26	26	26	26	
Significance		*	*	*	*	*	

* = Significant at $P \leq 0.05$.

Table 4.3.3. Time to maturity (days) of entries at different locations in the FBIYT-D during 1987/88.

Pedigree	ILB/ Cross No.	ALGERIA	ETHIOPIA	FRANCE	IRAN		ITALY		LEBANON	MOROCCO
		Misserghin	Holetta	Dijon	Gorgan	Hassan Abad	Catania	Viterbo	Terbol	Domain
FLIP 84-230 FB	S82226	158	150	143	161	193	184	210	187	162
FLIP 84-237 FB	S82237	154	153	143	161	194	184	210	186	157
FLIP 84-240 FB	S82238	156	152	143	161	194	183	210	186	164
FLIP 84-243 FB	S82239	160	150	143	161	190	184	210	188	158
FLIP 84-244 FB	S82241	154	152	143	161	191	184	210	186	160
FLIP 84-246 FB	S82229	156	151	143	161	191	184	210	186	150
FLIP 86-107 FB	S82229	155	148	143	161	193	183	210	187	152
FLIP 86-118 FB	S82232	176	150	143	161	192	184	210	186	157
FLIP 86-143 FB	D83279	158	149	143	161	189	184	210	186	152
FLIP 86-144 FB	D83279	158	149	143	161	197	184	210	189	162
FLIP 86-145 FB	D83032	158	150	143	161	192	183	210	187	152
FLIP 86-146 FB	D83066	162	152	143	161	190	184	210	188	157
ILB 1814	1814	166	154	143	161	195	184	210	190	162
Local Check	-	162	149	143	168	193	183	210	186	157
Location Mean		**159**	**150**	**143**	**161**	**192**	**184**	**210**	**187**	**157**
S.E. of Mean		1.17	1.75	One Rep.	One Rep.	0.99	0.27	One Rep.	0.73	One Rep.
L.S.D. at 5%		3.40	-			2.89	-		2.14	
C.V. %		1.27	1.65			0.89	0.26		0.68	
Error d.f.		26	13			26	26		26	
Significance		*	NS			*	NS		*	

Cont'd. ...

Table 4.3.3. Cont'd. ...

Pedigree	ILB/ Cross No.	MOROCCO	POLAND	PORTUGAL	SYRIA				Overall Mean
		Douyet	Pulawy	Elvas	Deir-Ez-Zor	Hama Tel	Hadya-1 Tel	Hadya-2	
FLIP 84-230 FB	S82226	182	114	182	145	170	194	199	171
FLIP 84-237 FB	S82237	181	110	185	145	167	192	198	170
FLIP 84-240 FB	S82238	182	114	184	145	167	193	198	171
FLIP 84-243 FB	S82239	181	113	184	145	169	190	198	170
FLIP 84-244 FB	S82241	181	110	184	144	168	189	198	170
FLIP 84-246 FB	S82229	181	110	184	145	169	192	199	169
FLIP 86-107 FB	S82229	181	113	182	143	169	194	198	169
FLIP 86-118 FB	S82232	182	113	182	146	170	192	198	171
FLIP 86-143 FB	D83279	181	112	183	145	169	192	198	169
FLIP 86-144 FB	D83279	182	113	183	145	169	196	200	171
FLIP 86-145 FB	D83032	182	112	185	145	170	195	199	170
FLIP 86-146 FB	D83066	181	111	184	146	170	190	200	171
ILB 1814	1814	182	113	184	149	171	197	197	172
Local Check	-	181	112	186	149	167	199	198	
Location Mean		**181**	**112**	**184**	**145**	**169**	**193**	**198**	
S.E. of Mean		0.00	1.00	1.54	0.67	0.57	0.86	0.55	
L.S.D. at 5%		0.00	-	-	1.95	1.65	2.50	1.59	
C.V. %		0.00	1.54	1.45	0.80	0.58	0.77	0.48	
Error d.f.		26	26	26	26	26	26	26	
Significance		*	NS	NS	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.3.4. Plant height (cm) of entries at different locations in the FBIYT-D during 1987/88.

Pedigree	ILB/ Cross No.	ALGERIA	CYPRUS	ETHIOPIA	FRANCE	IRAN	ITALY		LEBANON	MOROCCO
		Misserghin	Athalassa	Holetta	Dijon	Hassan Abad	Catania	Viterbo	Terbol	Domain
FLIP 84-230 FB	S82226	77	35	78	65	36	31	43	52	105
FLIP 84-237 FB	S82237	58	38	66	63	44	28	53	50	80
FLIP 84-240 FB	S82238	78	34	54	65	43	31	47	50	110
FLIP 84-243 FB	S82239	64	36	63	63	34	30	48	48	100
FLIP 84-244 FB	S82241	60	35	65	60	39	30	51	50	110
FLIP 84-246 FB	S82229	68	38	85	70	43	33	53	48	75
FLIP 86-107 FB	S82229	75	38	73	70	44	32	55	47	100
FLIP 86-118 FB	S82232	77	35	83	70	45	32	47	43	62
FLIP 86-143 FB	D83279	76	42	99	65	38	34	46	53	60
FLIP 86-144 FB	D83279	64	39	75	68	47	33	52	53	100
FLIP 86-145 FB	D83032	74	40	74	77	42	39	56	52	70
FLIP 86-146 FB	D83066	89	40	76	70	49	42	54	58	120
ILB 1814	1814	90	65	100	97	63	58	100	92	110
Local Check	-	92	66	91	97	61	55	108	72	170
Location Mean		**74**	**42**	**77**	**71**	**45**	**36**	**58**	**55**	**98**
S.E. of Mean		5.23	2.41	7.18	2.77	4.00	1.97	5.02	5.08	
L.S.D. at 5%		15.20	-	17.92	8.06	11.63	5.72	14.60	14.78	
C.V. %		12.16	10.04	13.17	6.73	15.45	9.39	15.00	16.04	
Error d.f.		26	26	13	26	26	26	26	26	
Significance		*	NS	*	*	*	*	*	*	

Cont'd. ...

Table 4.3.4. Cont'd. ...

Pedigree	ILB/ Cross No.	MOROCCO	POLAND	PORTUGAL	SPAIN	SYRIA				Overall Mean
		Douyet	Pulawy	Elvas	Cordoba	Deir-Ez-Zor	Hama	Tel Hadya-1	Tel Hadya-2	
FLIP 84-230 FB	S82226	71	71	51	37	30	73	71	52	58
FLIP 84-237 FB	S82237	80	69	50	46	30	67	72	63	56
FLIP 84-240 FB	S82238	85	67	53	39	30	68	69	67	58
FLIP 84-243 FB	S82239	80	70	49	40	32	70	69	58	56
FLIP 84-244 FB	S82241	72	65	51	46	27	73	70	63	57
FLIP 84-246 FB	S82229	95	73	48	48	28	73	75	68	60
FLIP 86-107 FB	S82229	90	74	54	46	35	70	70	62	61
FLIP 86-118 FB	S82232	79	70	56	43	37	75	77	75	59
FLIP 86-143 FB	D83279	80	76	50	40	32	75	79	65	59
FLIP 86-144 FB	D83279	81	69	45	44	33	77	80	65	60
FLIP 86-145 FB	D83032	95	72	55	48	40	78	86	73	63
FLIP 86-146 FB	D83066	82	78	60	53	42	87	84	78	68
ILB 1814	1814	125	103	66	64	63	120	115	100	90
Local Check	-	121	97	72	-	55	108	94	102	
Location Mean		**88**	**75**	**54**	**46**	**37**	**80**	**79**	**71**	
S.E. of Mean		0.00	3.99	2.53	1.67	4.64	2.93	6.44	4.02	
L.S.D. at 5%		0.00	11.60	7.35	4.89	13.49	8.53	18.74	11.68	
C.V. %		0.00	9.19	8.06	6.35	21.91	6.38	14.06	9.82	
Error d.f.		26	26	26	24	26	26	26	26	
Significance		*	*	*	*	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.3.5. Seed yield (y=kg/ha) of entries at different locations in the FBIYT-D during 1987/88.

Pedigree	ILB/ Cross No.	ALGERIA		CYPRUS		EGYPT				ETHIOPIA		FRANCE	
		Misserghin		Athalassa		Sids		Sakha		Holetta		Dijon	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-230 FB	S82226	1619	8	1458	6	656	7	620	13	56	10	4642	8
FLIP 84-237 FB	S82237	957	14	1428	7	705	5	926	8	50	11	4593	10
FLIP 84-240 FB	S82238	1385	11	1258	8	489	11	1056	6	144	4	4791	7
FLIP 84-243 FB	S82239	1314	12	971	14	1022	2	825	10	15	13	3896	14
FLIP 84-244 FB	S82241	1247	13	1479	4	311	13	1426	3	94	7	5016	4
FLIP 84-246 FB	S82229	1668	7	1468	5	444	12	926	7	171	3	4622	9
FLIP 86-107 FB	S82229	2013	4	1710	3	667	6	1287	4	59	9	5243	2
FLIP 86-118 FB	S82232	2030	3	1108	11	556	9	639	12	116	6	5527	1
FLIP 86-143 FB	D83279	1406	10	1217	9	522	10	898	9	45	12	3996	13
FLIP 86-144 FB	D83279	1746	6	1147	10	611	8	481	14	14	14	4953	5
FLIP 86-145 FB	D83032	1539	9	1066	13	755	4	741	11	91	8	4892	6
FLIP 86-146 FB	D83066	1936	5	1081	12	944	3	1074	5	140	5	4313	11
ILB 1814	1814	2120	2	2326	2	305	14	2444	2	173	2	5170	3
Local Check	–	2554	1	2333	1	2778	1	2685	1	843	1	4014	12
Location Mean		**1681**		**1432**		**769**		**1145**		**144**		**4691**	
S.E. of Mean		264.19		141.18		258.72		173.93		53.24		289.88	
L.S.D. at 5%		768.17		410.49		752.25		505.72		132.80		842.87	
C.V. %		27.22		17.08		58.28		26.31		52.45		10.70	
Error d.f.		26		26		26		26		13		26	
Significance		*		*		*		*		*		*	
Ent. > L. Check		0		0		0		0		0		6	

Cont'd. ...

Table 4.3.5. Cont'd. ...

Pedigree	ILB/ Cross No.	IRAN				ITALY				LEBANON		MOROCCO	
		Gorgan		Hassan Abad		Catania		Viterbo		Terbol		Domain	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-230 FB	S82226	3326	9	1656	5	1834	4	2516	12	2846	7	1558	7
FLIP 84-237 FB	S82237	2854	13	1556	10	1750	10	2742	8	2785	8	1404	10
FLIP 84-240 FB	S82238	3674	4	1711	3	1709	11	2945	5	2601	12	1717	6
FLIP 84-243 FB	S82239	3215	10	670	14	1500	14	2416	13	2784	9	2063	3
FLIP 84-244 FB	S82241	3389	7	1678	4	1751	9	2645	10	3032	3	2375	2
FLIP 84-246 FB	S82229	3160	11	1789	2	1833	7	2635	11	2441	14	1504	9
FLIP 86-107 FB	S82229	3354	8	1600	8	1751	8	3785	3	2864	6	1796	5
FLIP 86-118 FB	S82232	3417	6	1311	13	1834	5	2780	7	2556	13	1858	4
FLIP 86-143 FB	D83279	3042	12	1444	12	1583	13	2651	9	2941	4	1283	12
FLIP 86-144 FB	D83279	2743	14	1639	6	1834	6	2264	14	2765	10	1063	14
FLIP 86-145 FB	D83032	3569	5	1561	9	1626	12	3393	4	2926	5	1333	11
FLIP 86-146 FB	D83066	3736	3	1617	7	2126	3	2838	6	2685	11	1538	8
ILB 1814	1814	5139	2	1467	11	2418	2	5331	2	3562	1	2833	1
Local Check	–	6257	1	2106	1	2542	1	7124	1	3235	2	1104	13
Location Mean		**3634**		**1557**		**1864**		**3290**		**2859**		**1674**	
S.E. of Mean		327.09		211.98		169.80		428.77		218.45		415.80	
L.S.D. at 5%		951.05		616.36		493.70		1246.71		–		–	
C.V. %		15.59		23.58		15.78		22.57		13.24		43.03	
Error d.f.		26		26		26		26		26		26	
Significance		*		*		*		*		NS		NS	
Ent. > L. Check		0		0		0		0		–		–	

Cont'd. ...

Table 4.3.5. Cont'd. ...

Pedigree	ILB/ Cross No.	MOROCCO Douyet Y	MOROCCO Douyet R	POLAND Pulawy Y	POLAND Pulawy R	PORTUGAL Elvas Y	PORTUGAL Elvas R	SPAIN Cordoba Y	SPAIN Cordoba R	SYRIA Deir-Ez-Zor Y	SYRIA Deir-Ez-Zor R
FLIP 84-230 FB	S82226	2533	7	3806	2	3603	8	2762	11	2000	6
FLIP 84-237 FB	S82237	2011	14	3422	4	3813	7	3182	6	1678	12
FLIP 84-240 FB	S82238	2222	13	3159	8	3928	4	2622	13	2422	4
FLIP 84-243 FB	S82239	2533	8	2496	13	2918	14	2289	14	3744	1
FLIP 84-244 FB	S82241	2478	10	3133	9	4101	3	3241	4	1222	14
FLIP 84-246 FB	S82229	2678	6	3309	5	3393	12	3238	5	1778	11
FLIP 86-107 FB	S82229	3067	1	3269	6	3863	5	3134	7	1789	10
FLIP 86-118 FB	S82232	2744	5	3437	3	3829	6	3119	9	1844	8
FLIP 86-143 FB	D83279	2489	9	3167	7	3483	10	2881	10	1789	9
FLIP 86-144 FB	D83279	2344	12	2802	12	3448	11	2711	12	1633	13
FLIP 86-145 FB	D83032	2822	3	2902	10	3190	13	3122	8	2389	5
FLIP 86-146 FB	D83066	2944	2	2856	11	4983	2	3336	3	1922	7
ILB 1814	1814	2800	4	2409	14	5873	1	4065	2	3722	2
Local Check	-	2400	11	4902	1	3531	9	5506	1	3289	3
Location Mean		**2576**		**3219**		**3854**		**3229**		**2230**	
S.E. of Mean		259.87		162.69		416.97		179.35		756.64	
L.S.D. at 5%		-		473.03		1212.39		-		-	
C.V. %		17.47		8.75		18.74		9.62		58.76	
Error d.f.		26		26		26		26		26	
Significance		NS		*		*		NS		NS	
Ent. > L. Check		-		0		2		-		-	

Cont'd. ...

Table 4.3.5. Cont'd. ...

Pedigree	ILB/ Cross No.	SYRIA						TUNISIA		Overall Mean	
		Hama		Tel Hadya-1		Tel Hadya-2		Beja			
		Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-230 FB	S82226	3717	10	1511	7	2643	11	667	11	2192	7
FLIP 84-237 FB	S82237	3294	13	1645	5	2915	7	483	13	2104	10
FLIP 84-240 FB	S82238	2700	14	1399	10	2688	9	825	8	2164	9
FLIP 84-243 FB	S82239	3500	11	968	13	2499	14	425	14	1995	13
FLIP 84-244 FB	S82241	3928	8	1661	4	2630	12	700	10	2264	6
FLIP 84-246 FB	S82229	4328	3	1263	12	2661	10	583	12	2185	8
FLIP 86-107 FB	S82229	4256	4	1903	2	3592	3	1017	4	2477	2
FLIP 86-118 FB	S82232	3956	6	1794	3	3516	4	1333	3	2348	4
FLIP 86-143 FB	D83279	3461	12	1490	9	2524	13	892	6	2057	12
FLIP 86-144 FB	D83279	3817	9	1915	1	2903	8	825	9	2079	11
FLIP 86-145 FB	D83032	3956	7	1494	8	3377	5	925	5	2270	5
FLIP 86-146 FB	D83066	4122	5	1295	11	3096	6	850	7	2354	3
ILB 1814	1814	4733	2	1512	6	3604	2	1650	2	3031	1
Local Check	-	5322	1	937	14	4067	1	1917	1		
Location Mean		**3935**		**1485**		**3051**		**935**			
S.E. of Mean		245.90		239.03		306.40		155.34			
L.S.D. at 5%		714.98		-		890.91		451.67			
C.V. %		10.82		27.88		17.39		28.77			
Error d.f.		26		26		26		26			
Significance		*		NS		*		*			
Ent. > L. Check		0		-		0		0			

* = Significant at $P \leq 0.05$, NS = not significant.

Table 4.3.6. The five heaviest seed yielding entries at the individual locations in the FBIYT-D during 1987/88.

	ALGERIA	CYPRUS	EGYPT		ETHIOPIA	FRANCE	IRAN
Rank	Misserghin	Athalassa	Sids	Sakha	Holetta	Dijon	Gorgan
1	Local Check	Local Check	Local Check	Local Check	Local Check	FLIP86-118FB	Local Check
2	ILB 1814	ILB 1814	FLIP84-243FB	ILB 1814	ILB 1814	FLIP86-107FB	ILB 1814
3	FLIP86-118FB	FLIP86-107FB	FLIP86-146FB	FLIP84-244FB	FLIP84-246FB	ILB 1814	FLIP86-146FB
4	FLIP86-107FB	FLIP84-244FB	FLIP86-145FB	FLIP86-107FB	FLIP84-240FB	FLIP84-244FB	FLIP84-240FB
5	FLIP86-146FB	FLIP84-246FB	FLIP84-237FB	FLIP86-146FB	FLIP86-146FB	FLIP86-144FB	FLIP86-145FB

Cont'd. ...

Table 4.3.6. Cont'd. ...

	IRAN	ITALY		LEBANON	MOROCCO		POLAND
Rank	Hassan Abad	Catania	Viterbo	Terbol	Domaine	Douyet	Pulawy
1	Local Check	Local Check	Local Check	ILB 1814	ILB 1814	FLIP86-107FB	Local Check
2	FLIP84-246FB	ILB 1814	ILB 1814	Local Check	FLIP84-244FB	FLIP86-146FB	FLIP84-230FB
3	FLIP84-240FB	FLIP86-146FB	FLIP86-107FB	FLIP84-244FB	FLIP84-243FB	FLIP86-145FB	FLIP86-118FB
4	FLIP84-244FB	FLIP84-230FB	FLIP86-145FB	FLIP86-143FB	FLIP86-118FB	ILB 1814	FLIP84-237FB
5	FLIP84-230FB	FLIP86-118FB] FLIP86-144FB]	FLIP84-240FB	FLIP86- 45FB	FLIP86-107FB	FLIP86-118FB	FLIP84-246FB

Cont'd. ...

Table 4.3.6. Cont'd. ...

	PORTUGAL	SPAIN	SYRIA				TUNISIA
Rank	Elvas	Cordoba	Deir-Ez-Zor	Hama	Tel Hadya-1	Tel Hadya-2	Beja
1	ILB 1814	Local Check	FLIP84-243FB	Local Check	FLIP86-144FB	Local Check	Local Check
2	FLIP86-146FB	ILB 1814	ILB 1814	ILB 1814	FLIP86-107FB	ILB 1814	ILB 1814
3	FLIP84-244FB	FLIP86-146FB	Local Check	FLIP84-246FB	FLIP86-118FB	FLIP86-107FB	FLIP86-118FB
4	FLIP84-240FB	FLIP84-244FB	FLIP84-240FB	FLIP86-107FB	FLIP84-244FB	FLIP86-118FB	FLIP86-107FB
5	FLIP86-107FB	FLIP84-246FB	FLIP86-145FB	FLIP86-146FB	FLIP84-237FB	FLIP86-145FB	FLIP86-145FB

The bracket indicates entries having the same rank.

locations varied from 61 to 63 days, and FLIP 86-107FB was the earliest to flower. In general, the early flowering locations were also earlier in maturity. The plant height was tallest at Domain in Morocco (98 cm). At Catania in Italy and Deir-ez-Zor in Syria the plant height was shortest (36-37cm).

The location mean for seed yield ranged between 144 and 4691 kg/ha, Holetta in Ethiopia yielding the lowest and Dijon in France yielding the highest (Table 4.3.5.). The locations yielding more than 3000 kg/ha included Dijon (France), Gorgan (Iran), Viterbo (Italy), Pulway (Poland), Elvas (Portugal), Cordoba (Spain), Hama (Syria) and Tel Hadya-2 (Syria). The indeterminate check, ILB 1814 gave the highest yield (3031 kg/ha) across locations and was followed by determinate entries, FLIP 86-107FB, FLIP 86-146FB, FLIP 86-118FB, FLIP 86-145FB with seed yields of 2477, 2354, 2348 and 2270 kg/ha, respectively. The five heaviest seed yielding entries at each of the locations are given in Table 4.3.6.

4.4. FABA BEAN SOUTHERN LATITUDE REGIONAL TRIAL (FBSLRT)

Materials

The Faba Bean Southern Latitude Trial comprised 17 test entries and one local check to be supplied by the cooperator. The entries in this trial were selected on the basis of their earliness and superior performance in local trials conducted in the previous season.

Methods and Management

The material was suggested to be sown in a randomized block design with two replications. The suggested plot size was 4 rows 4 m long with inter row spacings of 50 cm. Nine sets of trials were distributed to cooperators in five countries but results were received for only one location, Giza in Egypt. The agronomic data was not reported. Giza 402 was used as check.

Results and Discussion

The entry means for time to flowering and seed yield (Table 4.4.1) varied from 57-67 days, and 1133 to 2067 kg/ha, respectively. The entry ILB 2789 gave the highest yield (2067 kg/ha) and was followed by the local check (1967 kg/ha). The ANOVA was, however, not significant for seed yield.

Table 4.4.1. Time to flowering (DFLR=days) and seed yield (Y=kg/ha) and rank (R) of entries at Giza in Egypt for FBSLRT during 1987/88.

Entry Name	DFLR	Seed Yield Y	Seed Yield R
BF 2/2	57	1217	15
Giza 3 Improved	64	1133	17
Giza 402	62	1483	8
Hudeiba 72	58	1417	11
Reina Blanca	67	1283	13
SM - L	57	1633	7
ILB 2785	62	1950	3
ILB 2786	63	1637	6
ILB 2788	61	1423	10
ILB 2789	62	2067	1
NEB 2727/75	61	1447	9
2095/76	61	1133	18
187/2324/79	64	1150	16
187/1104/80	63	1300	12
314/1188/81B	66	1730	4
343/1131/82	65	1267	14
345/1197/82	64	1683	5
Local Check	59	1967	2
Location Mean	62	1496	
S.E. of Mean	0.93	232.32	
L.S.D. at 5%	2.68	-	
C.V. %	2.60	26.91	
Error d.f.	34	34	
Significance	*	NS	

* = Significant at $P \leq 0.05$,
NS = Not significant.

4.5. FABA BEAN INTERNATIONAL SCREENING NURSERY-LARGE SEED (FBISN-L)

Material

The Faba Bean International Screening Nursery-Large Seed comprised 36 test entries and three checks. Two of the checks namely ILB 1814 and Reina Blanca (ILB 1270) were provided and the third was to be added by the cooperator. The entries in this nursery were selected on the basis of their superior performance either in local trials or from the last year's international screening nursery.

Methods and Management

The test entries and three checks were suggested to be sown in single row plots of 4 m length with inter- and intra-row spacings of 50- and 10 cm, respectively, in an augmented block design. The whole experimental unit was divided into three blocks. Fifty sets of the nursery were distributed to the cooperators in 27 countries. The results were, however, received for 28 sets from 16 countries. The agronomic data received from the cooperators are presented in Table 4.5.1.

Results and Discussion

The entry means over all the locations revealed that FLIP 83-37FB and FLIP 84-70FB flowered earliest in 87 days (Table 4.5.2.). The mean time to maturity and plant height for entries however, ranged from 174 to 177 days (Table 4.5.3), and 81 to 97 cm (Table 4.5.4), respectively.

The adjusted seed yield for the entries based on augmented design is presented in Table 4.5.5. Seed yields were very high at Izmir in Turkey (6037 kg/ha); Hama (4810 kg/ha), Deir-ez-Zor (4719 kg/ha) and Al-Ghab in Syria (4618 kg/ha); Terbol in Lebanon (4395 kg/ha); and Sakha in Egypt (4274 kg/ha). Among the entries, FLIP 84-127 FB with seed yield of 3701 kg/ha ranked number one and was closely followed by FLIP 84-107FB (3694 kg/ha), FLIP 86-36FB (3552 kg/ha), FLIP 84-91FB (3526 kg/ha), FLIP 84-76FB (3517 kg/ha) etc. The LSD estimates at different locations revealed that at 4 locations, namely Jubeiha and Taiba in Jordan, Izmir in Turkey and Terbol in Lebanon 9, 4, 6 and 1 test entries exceeded the respective local check by a significant margin. The entries FLIP 84-127FB, FLIP 84-109FB and FLIP 86-36FB occurred most frequently among the top five heaviest yielders at various locations and were thus more adaptable. The five heaviest yielders at each location are presented in Table 4.5.6.

4.6. FABA BEAN INTERNATIONAL SCREENING NURSERY-SMALL SEED (FBISN-S)

Material

The Faba Bean International Screening Nursery-Small Seed comprised 36

Table 4.5.1. Agronomic data for different locations in the FBISN-L during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
BOLIVIA	Cochabamba	21.04.88	27.10.88	50	50		6	Dimecron	Pairumani 1
COLOMBIA	Pasto	03.11.88	20.05.89	13	26	6	-	-	Blanca Pegionol
EGYPT	Sakha	NA	NA	NA			NA	NA	Giza 3
ETHIOPIA	Holetta	09.06.88	30.11.88	25	100		-	-	CZ 20 DK
ITALY	Gaudiano	21.12.87	16.05.88	25	78		-	Azinphos Methyl, Folipat Avossielotutoruro	CZ
ITALY	Viterbo	04.11.87	19.06.88	0	31		-	-	LA 28 BA
ITALY	Medolla	04.03.88	17.06.88	40	100		-	Pirimicarp, Chlorothalonil	BONNY LAD (Slugro)
JORDAN	Jubeiha	22.11.87	18.05.88	100	100				Local
JORDAN	Taiba	03.01.88	25.05.88	10	15				NA
JORDAN	Gor	27.10.87	15.05.88	40	40		-	-	Lebanese Local
LEBANON	Terbol	19.11.87	24.06.88		50		2	Kerb, Igran	-
NEPAL	Khumaltar (Upland)	27.10.87	28.04.88	20	20	20	-	-	-
NEPAL	Khumaltar (Lowland)	06.10.87	29.04.88	20	20	20	-	-	Giza 3
SAUDI ARABIA	Dierab	28.11.87	15.04.88	74	112		16	Malathion	Local from Market
SAUDI ARABIA	TADCO	21.11.87	06.88	150	200		S*	-	Alameda
SPAIN	Sevilla	01.02.88	08.06.88	-			-	Rogor	Local
SYRIA	Al Ghab	19.12.87	29.05.88	-			-	-	Local
SYRIA	Deir-Ez-Zor	02.88	26.05.88		17		6	Sembush	Local from market
SYRIA	Hama	01.12.87	26.05.88	25	80		1	Decis, Baylton	Local
SYRIA	Idleb	21.11.87	02.06.88		60		-	-	ILB 1814
SYRIA	Tel Hadya	02.11.87	08.05.88		50		4	Tribunil, Fusilade, Lancer, Gramaxone	
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	-
TURKEY	Diyarbakir	10.12.88	-	-			-	-	Fcesen - 87
TURKEY	Izmir (Menemen)	23.11.88	15.06.89	30	60		-	Endosulfan	

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 4.5.2. Adjusted time to flowering (days) of entries at different locations in the FBISN-L during 1987/88.

Pedigree	ILB/ Cross No.	BOLIVIA	COLOMBIA	EGYPT	ETHIOPIA	ITALY *			JORDAN	LEBANON	NEPAL	
		Cocha-bamba	Pasto	Sakha	Holetta	Gaudiano	Viterbo	Medolla	Gor	Terbol	Khumaltar (Upland)	Khumaltar (Lowland)
FLIP 82- 39 FB	X75TA209	66	58	58	59	98	140	67	71	118	103	98
FLIP 83- 4 FB	12	66	58	57	61	98	140	67	66	120	102	97
FLIP 83- 19 FB	S81056	78	63	70	67	98	140	67	65	120	103	96
FLIP 83- 24 FB	81S36522	69	58	52	69	98	140	67	66	120	104	96
FLIP 83- 37 FB	S81062	64	63	55	58	98	140	67	65	120	105	95
FLIP 83- 44 FB	78S 33201	66	58	58	69	98	140	67	64	120	102	98
FLIP 84- 69 FB	S82003	79	58	53	64	98	140	67	62	120	102	98
FLIP 84- 70 FB	S82007	66	63	55	57	98	140	67	70	118	105	95
FLIP 84- 76 FB	S82013	78	73	47	68	98	140	67	66	118	100	97
FLIP 84- 77 FB	S82014	67	73	63	71	98	140	67	75	120	105	95
FLIP 84- 91 FB	S82024	67	58	58	63	98	140	67	67	120	103	96
FLIP 84- 94 FB	S82026	68	78	50	58	98	140	67	68	118	104	94
FLIP 84-101 FB	S82057	68	63	55	62	98	140	67	65	120	102	95
FLIP 84-104 FB	S82061	71	78	55	63	98	140	67	74	120	104	96
FLIP 84-105 FB	S82064	67	58	58	58	98	140	67	75	120	105	95
FLIP 84-107 FB	S81064	78	63	60	64	98	140	67	68	120	102	96
FLIP 84-109 FB	S81077	67	58	62	65	98	140	67	72	120	71	97
FLIP 84-114 FB	S82092	72	58	63	65	98	140	67	67	118	103	96
FLIP 84-118 FB	S82103	78	63	55	64	98	140	67	65	120	103	94
FLIP 84-119 FB	S82103	69	58	47	70	98	140	67	68	120	102	98
FLIP 84-127 FB	S82116	79	58	47	70	98	140	67	68	120	103	98
FLIP 84-128 FB	S82118	67	58	47	60	98	140	67	70	118	109	98
FLIP 84-138 FB	S82415	67	58	58	71	98	140	67	75	120	101	97
FLIP 84-141 FB	S82428	67	58	53	65	98	140	67	75	120	103	94
FLIP 84-147 FB	S82442	76	78	55	63	98	140	67	76	120	105	96
FLIP 84-151 FB	S82471	73	58	47	67	98	140	67	66	118	99	96
FLIP 84-153 FB	S82486	74	88	55	63	98	140	67	68	118	103	96
FLIP 85- 14 FB	S82026	71	58	68	66	98	140	67	62	118	102	97
FLIP 85- 16 FB	S82031	69	73	62	66	98	140	67	66	118	69	96
FLIP 85- 81 FB	S82479	67	58	58	63	98	140	67	69	120	-	98
FLIP 86- 35 FB	S83172	75	58	63	68	98	140	67	67	120	102	97
FLIP 86- 36 FB	S83172	71	58	52	68	98	140	67	66	120	103	97
85/4 63	-	81	83	62	69	98	140	67	66	120	103	58
85/340	-	82	73	62	68	98	140	67	63	120	101	101
NSRT- 45	-	74	63	55	64	98	140	67	65	120	103	96
NSRT-116	-	70	78	65	64	98	140	67	65	120	103	96
ILB 1814	1814	71	60	60	65	98	140	67	67	120	101	97
Reina Blanca	1270	76	70	63	67	98	140	67	66	120	104	99
Local Check	-	69	100	42	64	98	140	67	66	119	102	96
Location Mean		**71**	**67**	**56**	**65**	**98**	**140**	**67**	**68**	**120**	**99**	**96**
S.E. of Mean		4.01	2.89	1.18	1.18				1.07	0.39	1.39	0.77
L.S.D. at 5% for:												
Checks		15.75	11.33	4.63	4.63				4.21	1.51	5.45	3.02
T.E. in the same block		27.27	19.63	8.01	8.01				7.28	2.62	9.44	5.23
T.E. in different blocks		31.49	22.66	9.25	9.25				8.41	3.02	10.89	6.04
Checks Vs test entries		25.72	18.51	7.56	7.56				6.87	2.47	8.90	4.94
C.V. %		9.73	7.45	3.62	3.15				2.75	0.56	2.43	1.39

Cont'd. ...

Table 4.5.2. Cont'd. ...

Pedigree	ILB/ Cross No.	SAUDI ARABIA	SPAIN	SYRIA					TURKEY	(1) Overall Mean
		TADCO	Sevilla	Al Ghab	Deir-Ez-Zor	Hama	Idleb	Tel Hadya	Izmir	
FLIP 82- 39 FB	X75TA209	83	56	102	95	104	121	116	116	89
FLIP 83- 4 FB	12	81	56	101	97	100	122	109	-	88
FLIP 83- 19 FB	S81056	85	66	101	101	108	121	116	116	92
FLIP 83- 24 FB	81S36522	82	56	103	100	106	122	119	116	90
FLIP 83- 37 FB	S81062	80	56	101	93	103	121	104	105	87
FLIP 83- 44 FB	78S 33201	83	66	102	152	102	121	116	116	93
FLIP 84- 69 FB	S82003	83	66	103	93	105	119	120	110	90
FLIP 84- 70 FB	S82007	79	56	102	93	99	117	105	-	87
FLIP 84- 76 FB	S82013	84	66	103	89	105	120	113	116	90
FLIP 84- 77 FB	S82014	82	66	102	96	107	121	114	-	92
FLIP 84- 91 FB	S82024	86	66	102	96	107	121	120	116	90
FLIP 84- 94 FB	S82026	81	56	102	94	103	119	115	-	89
FLIP 84-101 FB	S82057	81	66	100	94	101	117	111	110	89
FLIP 84-104 FB	S82061	84	66	101	96	106	119	116	116	91
FLIP 84-105 FB	S82064	81	56	101	93	102	121	110	116	88
FLIP 84-107 FB	S81064	83	66	101	97	104	121	111	-	91
FLIP 84-109 FB	S81077	82	56	103	97	105	122	120	-	90
FLIP 84-114 FB	S82092	84	66	102	97	102	119	116	105	90
FLIP 84-118 FB	S82103	81	66	99	96	101	119	109	105	89
FLIP 84-119 FB	S82103	80	66	103	98	105	122	119	-	90
FLIP 84-127 FB	S82116	86	56	101	100	100	120	118	105	90
FLIP 84-128 FB	S82118	82	56	101	93	101	120	113	105	88
FLIP 84-138 FB	S82415	83	66	100	99	105	123	116	110	91
FLIP 84-141 FB	S82428	82	66	101	94	102	123	121	105	90
FLIP 84-147 FB	S82442	81	56	100	94	104	117	112	-	90
FLIP 84-151 FB	S82471	82	56	101	99	105	125	120	-	89
FLIP 84-153 FB	S82486	81	56	99	97	104	121	109	-	90
FLIP 85- 14 FB	S82026	85	66	102	99	107	126	120	-	91
FLIP 85- 16 FB	S82031	84	56	102	99	105	122	115	-	90
FLIP 85- 81 FB	S82479	83	66	103	96	105	123	116	-	90
FLIP 86- 35 FB	S83172	86	66	103	96	107	119	121	-	91
FLIP 86- 36 FB	S83172	82	66	103	101	106	118	119	-	90
85/4 63	-	86	66	102	100	106	122	120	-	91
85/340	-	80	66	103	97	108	125	120	-	92
NSRT- 45	-	84	66	100	95	101	119	116	116	90
NSRT-116	-	84	66	102	94	106	121	116	-	91
ILB 1814	1814	82	56	102	95	105	123	117	-	90
Reina Blanca	1270	87	66	101	98	108	124	120	116	92
Local Check	-	-	66	100	101	102	118	117	105	-
Location Mean		**83**	**62**	**102**	**98**	**104**	**121**	**116**	**111**	
S.E. of Mean		0.62	0.00	0.33	0.81	1.05	0.71	1.37	0.00	
L.S.D. at 5% for:										
Checks		3.79	0.00	1.31	3.16	4.14	2.78	5.39	0.00	
T.E. in the same block		6.57	0.00	2.27	5.47	7.17	4.81	9.34	0.00	
T.E. in different blocks		8.05	0.00	2.62	6.32	8.28	5.55	10.79	0.00	
Checks Vs test entries		6.57	0.00	2.14	5.16	6.76	4.53	8.81	0.00	
C.V. %		1.30	0.00	0.57	1.43	1.75	1.01	2.05	0.00	

(1) Khumaltar (Upland) and Izmir were excluded from the overall mean. T.E. = Test entries.
* = Locations not analysed and thus mean values are unadjusted.

Table 4.5.3. Adjusted time to maturity (days) of entries at different locations in the FBISN-L during 1987/88.

Pedigree	ILB/ Cross No.	BOLIVIA	COLOMBIA	ETHIOPIA	ITALY		LEBANON	NEPAL *		SPAIN
		Cochabamba	Pasto	Holetta	Gaudiano	Viterbo *	Terbol	Khumaltar (Upland)	Khumaltar (Lowland)	Sevilla
FLIP 82- 39 FB	X75TA209	176	139	151	145	225	188	182	175	120
FLIP 83- 4 FB	12	182	156	158	145	225	190	182	175	120
FLIP 83- 19 FB	S81056	191	139	158	147	225	188	182	175	123
FLIP 83- 24 FB	81S36522	182	156	156	145	225	186	182	175	120
FLIP 83- 37 FB	S81062	186	139	153	147	225	190	182	175	120
FLIP 83- 44 FB	78S 33201	181	139	158	145	225	188	182	175	123
FLIP 84- 69 FB	S82003	183	139	151	145	225	186	182	175	120
FLIP 84- 70 FB	S82007	186	139	155	145	225	188	182	175	123
FLIP 84- 76 FB	S82013	184	156	156	147	225	188	182	175	120
FLIP 84- 77 FB	S82014	176	139	153	147	225	190	182	175	123
FLIP 84- 91 FB	S82024	189	139	158	145	225	188	182	175	123
FLIP 84- 94 FB	S82026	183	139	153	145	225	188	182	175	120
FLIP 84-101 FB	S82057	186	139	157	145	225	188	182	175	127
FLIP 84-104 FB	S82061	180	139	155	147	225	190	182	175	123
FLIP 84-105 FB	S82064	180	139	156	145	225	188	182	175	120
FLIP 84-107 FB	S81064	186	139	157	147	225	190	182	175	120
FLIP 84-109 FB	S81077	188	156	158	145	225	188	182	175	123
FLIP 84-114 FB	S82092	178	139	151	145	225	188	182	175	123
FLIP 84-118 FB	S82103	186	139	158	145	225	188	182	175	120
FLIP 84-119 FB	S82103	181	156	159	145	225	186	182	175	120
FLIP 84-127 FB	S82116	182	156	160	145	225	188	182	175	120
FLIP 84-128 FB	S82118	183	156	158	143	225	188	182	175	120
FLIP 84-138 FB	S82415	183	139	153	145	225	190	182	175	123
FLIP 84-141 FB	S82428	177	139	151	145	225	192	182	175	120
FLIP 84-147 FB	S82442	184	139	153	145	225	190	182	175	125
FLIP 84-151 FB	S82471	181	156	154	145	225	184	182	175	123
FLIP 84-153 FB	S82486	188	139	157	145	225	188	182	175	123
FLIP 85- 14 FB	S82026	180	139	153	145	225	188	182	175	120
FLIP 85- 16 FB	S82031	182	156	154	145	225	186	182	175	120
FLIP 85- 81 FB	S82479	180	139	151	145	225	188	182	175	123
FLIP 86- 35 FB	S83172	180	139	153	145	225	188	182	175	123
FLIP 86- 36 FB	S83172	183	156	156	145	225	190	182	175	120
85/4 63	-	185	-	160	145	225	190	182	175	123
85/340	-	183	156	158	145	225	190	182	175	123
NSRT- 45	-	184	139	157	145	225	190	182	175	123
NSRT-116	-	197	139	159	145	225	188	182	175	125
ILB 1814	1814	180	145	155	145	225	190	182	175	123
Reina Blanca	1270	183	145	158	145	225	186	182	175	121
Local Check	-	182	178	152	146	225	190	182	175	125
Location Mean		**183**	**145**	**155**	**145**	**225**	**189**	**182**	**175**	**122**
S.E. of Mean		2.78	9.62	0.87	0.38		0.00			1.60
L.S.D. at 5% for:										
Checks		10.89	37.77	3.42	1.51		0.00			6.27
T.E. in the same block		18.87	65.42	5.92	2.61		0.00			10.87
T.E. in different blocks		21.79	75.54	6.84	3.02		0.01			12.55
Checks Vs test entries		17.79	61.69	5.59	2.47		0.01			10.25
C.V. %		2.63	11.57	0.97	0.46		0.00			2.27

Cont'd. ...

Table 4.5.3. Cont'd. ...

Pedigree	ILB/ Cross No.	SYRIA					TURKEY	(1) Overall Mean
		Al Ghab	Deir-Ez-Zor	Hama	Idleb	Tel Hadya	Izmir	
FLIP 82- 39 FB	X75TA209	170	178	170	188	194	172	174
FLIP 83- 4 FB	12	170	176	169	181	196	-	174
FLIP 83- 19 FB	S81056	171	174	170	188	196	172	176
FLIP 83- 24 FB	81S36522	169	177	170	185	195	172	174
FLIP 83- 37 FB	S81062	171	176	171	193	195	172	176
FLIP 83- 44 FB	78S 33201	171	178	170	191	194	179	175
FLIP 84- 69 FB	S82003	169	175	170	187	195	179	174
FLIP 84- 70 FB	S82007	170	177	168	193	195	-	176
FLIP 84- 76 FB	S82013	170	177	171	188	196	172	175
FLIP 84- 77 FB	S82014	171	175	170	189	193	-	175
FLIP 84- 91 FB	S82024	170	177	169	189	194	172	176
FLIP 84- 94 FB	S82026	172	176	171	187	195	-	175
FLIP 84-101 FB	S82057	172	175	172	188	196	172	176
FLIP 84-104 FB	S82061	170	176	169	188	195	169	175
FLIP 84-105 FB	S82064	171	175	169	188	194	172	174
FLIP 84-107 FB	S81064	173	176	172	189	195	-	176
FLIP 84-109 FB	S81077	172	179	170	188	197	-	176
FLIP 84-114 FB	S82092	172	177	172	188	195	172	175
FLIP 84-118 FB	S82103	172	176	172	189	196	172	176
FLIP 84-119 FB	S82103	169	177	168	183	196	-	174
FLIP 84-127 FB	S82116	172	175	168	185	197	169	175
FLIP 84-128 FB	S82118	172	175	169	186	197	169	175
FLIP 84-138 FB	S82415	171	175	168	192	193	172	175
FLIP 84-141 FB	S82428	172	175	170	188	195	179	174
FLIP 84-147 FB	S82442	171	174	169	189	195	-	175
FLIP 84-151 FB	S82471	170	174	169	187	195	-	174
FLIP 84-153 FB	S82486	172	175	171	188	198	-	176
FLIP 85- 14 FB	S82026	168	177	171	188	194	-	174
FLIP 85- 16 FB	S82031	168	176	168	186	195	-	174
FLIP 85- 81 FB	S82479	171	177	171	189	195	-	175
FLIP 86- 35 FB	S83172	171	177	171	191	194	-	175
FLIP 86- 36 FB	S83172	171	178	169	179	196	-	174
85/4 63	-	172	179	172	190	197	-	176
85/340	-	172	178	172	180	196	-	175
NSRT- 45	-	171	176	171	193	195	169	176
NSRT-116	-	170	176	170	193	195	-	177
ILB 1814	1814	172	178	171	189	195	-	175
Reina Blanca	1270	171	176	169	187	196	169	175
Local Check	-	171	179	168	190	196	179	-
Location Mean		**171**	**177**	**170**	**188**	**195**	**169**	
S.E. of Mean		0.24	0.62	1.02	1.31	0.51	0.00	
L.S.D. at 5% for:								
Checks		0.93	2.45	4.00	5.12	2.00	0.01	
T.E. in the same block		1.60	4.24	6.92	8.87	3.46	0.01	
T.E. in different blocks		1.85	4.90	7.99	10.25	4.00	0.01	
Checks Vs test entries		1.51	4.00	6.53	8.37	3.26	0.00	
C.V. %		0.24	0.61	1.04	1.20	0.45	2.00	

(1) Pasto and Izmir were excluded from the overall mean., T.E. = Test entries.
* = Locations not analysed and thus mean values are unadjusted.

Table 4.5.4. Adjusted plant height (cm) of entries at different locations in the FBISN-L during 1987 88.

Pedigree	ILB/ Cross No.	BOLIVIA	ETHIOPIA	ITALY			LEBANON	NEPAL		SAUDI ARABIA	
		Cochabamba	Holetta	Gaudiano	Viterbo	Medolla	Terbol	Khumaltar (Upland)	Khumaltar (Lowland)	Dierab	TADCO
FLIP 82- 39 FB	X75TA209	98	115	64	130	-	104	57	44	78	139
FLIP 83- 4 FB	12	82	97	59	127	97	112	44	61	99	103
FLIP 83- 19 FB	S81056	80	106	68	123	106	89	27	52	95	119
FLIP 83- 24 FB	81S36522	77	94	60	113	97	107	51	47	79	112
FLIP 83- 37 FB	S81062	90	112	72	123	106	99	41	61	100	115
FLIP 83- 44 FB	78S 33201	83	120	72	118	97	104	59	44	73	99
FLIP 84- 69 FB	S82003	73	84	63	100	-	79	48	33	75	106
FLIP 84- 70 FB	S82007	75	109	59	116	106	99	52	49	85	118
FLIP 84- 76 FB	S82013	82	121	71	125	97	97	57	63	86	106
FLIP 84- 77 FB	S82014	78	100	65	112	92	109	44	66	103	134
FLIP 84- 91 FB	S82024	83	130	69	129	97	99	39	54	83	126
FLIP 84- 94 FB	S82026	85	107	64	118	106	99	28	75	97	105
FLIP 84-101 FB	S82057	85	101	72	125	96	94	41	61	98	108
FLIP 84-104 FB	S82061	75	122	61	113	96	104	32	58	85	106
FLIP 84-105 FB	S82064	68	74	72	111	-	94	35	53	88	124
FLIP 84-107 FB	S81064	80	116	68	114	106	89	47	64	95	128
FLIP 84-109 FB	S81077	77	121	68	116	-	107	50	66	95	113
FLIP 84-114 FB	S82092	78	110	70	119	97	94	46	57	108	117
FLIP 84-118 FB	S82103	80	116	64	124	101	99	31	51	89	122
FLIP 84-119 FB	S82103	82	109	64	131	97	112	48	57	97	111
FLIP 84-127 FB	S82116	72	111	67	138	-	107	42	32	86	106
FLIP 84-128 FB	S82118	62	121	59	120	-	102	43	33	95	113
FLIP 84-138 FB	S82415	73	112	66	112	-	89	46	53	104	124
FLIP 84-141 FB	S82428	78	134	64	123	-	89	56	73	103	129
FLIP 84-147 FB	S82442	80	126	66	109	-	104	39	52	83	105
FLIP 84-151 FB	S82471	77	97	62	114	97	97	60	55	84	106
FLIP 84-153 FB	S82486	80	101	60	106	106	99	46	62	95	108
FLIP 85- 14 FB	S82026	73	120	68	118	92	94	53	46	78	125
FLIP 85- 16 FB	S82031	82	109	55	107	97	102	51	56	74	110
FLIP 85- 81 FB	S82479	88	124	66	134	97	94	42	55	81	120
FLIP 86- 35 FB	S83172	78	114	63	120	-	89	54	41	82	136
FLIP 86- 36 FB	S83172	72	109	59	139	97	117	45	55	98	92
85/4 63	-	77	126	63	137	97	102	39	33	84	108
85/340	-	67	91	61	126	-	112	52	41	84	110
NSRT- 45	-	65	117	77	120	106	94	30	47	87	119
NSRT-116	-	70	132	66	117	106	89	34	59	85	123
ILB 1814	1814	85	97	66	113	90	102	42	53	98	110
Reina Blanca	1270	73	109	56	107	93	100	37	34	74	107
Local Check	-	97	108	62	109	58	100	55	47	94	-
Location Mean		**79**	**110**	**64**	**118**	**98**	**99**	**45**	**52**	**89**	**114**
S.E. of Mean		8.50	7.99	2.70	6.35	3.47	3.47	3.99	4.52	9.29	1.48
L.S.D. at 5% for:											
Checks		33.36	31.36	10.59	24.91	13.62	13.62	15.65	17.75	36.46	8.98
T.E. in the same block		57.78	54.31	18.34	43.14	23.59	23.59	27.11	30.74	63.15	15.56
T.E. in different blocks		66.72	62.71	21.18	49.81	27.24	27.24	31.31	35.50	72.92	19.06
Checks Vs test entries		54.48	51.21	17.29	40.68	22.24	22.24	25.57	28.99	59.55	15.56
C.V. %		18.55	12.58	7.25	9.31	8.48	6.06	15.43	15.17	18.07	2.24

Cont'd. ...

Table 4.5.4. Cont'd. ...

Pedigree	ILB/ Cross No.	SPAIN	SYRIA					TURKEY		(1) Overall Mean
		Sevilla	Al Ghab	Deir-Ez-Zor	Hama	Idleb	Tel Hadya	Diyarbakir	Izmir	
FLIP 82- 39 FB	X75TA209	69	131	62	132	61	147	45	75	95
FLIP 83- 4 FB	12	65	131	74	116	73	117	47	-	91
FLIP 83- 19 FB	S81056	64	98	74	132	67	128	38	66	88
FLIP 83- 24 FB	81S36522	65	126	79	136	73	131	36	73	90
FLIP 83- 37 FB	S81062	64	93	74	132	87	128	41	76	93
FLIP 83- 44 FB	78S 33201	67	136	62	122	85	137	24	80	92
FLIP 84- 69 FB	S82003	64	126	47	122	75	127	39	65	81
FLIP 84- 70 FB	S82007	61	98	64	117	77	128	39	-	87
FLIP 84- 76 FB	S82013	71	131	64	121	78	136	37	67	94
FLIP 84- 77 FB	S82014	64	126	77	117	80	147	35	2	95
FLIP 84- 91 FB	S82024	74	126	7	122	75	127	30	75	90
FLIP 84- 94 FB	S82026	69	103	69	132	87	124	38	-	91
FLIP 84-101 FB	S82057	60	108	69	132	77	118	33	66	90
FLIP 84-104 FB	S82061	57	113	64	122	82	128	38	76	88
FLIP 84-105 FB	S82064	63	131	72	122	70	122	24	79	87
FLIP 84-107 FB	S81064	53	118	74	127	67	108	35	-	90
FLIP 84-109 FB	S81077	65	126	59	121	73	130	32	-	92
FLIP 84-114 FB	S82092	60	136	62	122	65	129	36	79	92
FLIP 84-118 FB	S82103	62	108	64	132	57	128	2	77	88
FLIP 84-119 FB	S82103	76	121	64	111	88	122	45	-	93
FLIP 84-127 FB	S82116	60	121	54	111	58	116	36	72	85
FLIP 84-128 FB	S82118	64	116	49	101	68	125	-	72	85
FLIP 84-138 FB	S82415	66	131	72	112	65	133	25	75	91
FLIP 84-141 FB	S82428	71	131	72	112	85	142	32	90	97
FLIP 84-147 FB	S82442	65	143	59	117	84	123	29	-	90
FLIP 84-151 FB	S82471	73	126	59	126	73	142	36	-	90
FLIP 84-153 FB	S82486	54	103	69	132	73	128	-	-	88
FLIP 85- 14 FB	S82026	65	126	57	117	65	148	28	-	90
FLIP 85- 16 FB	S82031	67	116	59	126	78	140	45	-	89
FLIP 85- 81 FB	S82479	55	126	62	122	60	138	24	-	91
FLIP 86- 35 FB	S83172	60	126	62	122	71	114	35	-	89
FLIP 86- 36 FB	S83172	70	141	64	116	81	127	33	-	92
85/4 63	-	68	121	64	111	62	115	34	-	87
85/340	-	68	111	54	116	63	126	21	-	86
NSRT- 45	-	58	93	69	127	62	110	35	66	85
NSRT-116	-	68	98	64	122	75	124	35	-	88
ILB 1814	1814	64	125	78	123	77	132	39	-	91
Reina Blanca	1270	54	123	50	112	67	112	34	62	81
Local Check	-	63	125	73	117	67	122	30	96	-
Location Mean		**64**	**121**	**64**	**121**	**72**	**127**	**32**	**73**	
S.E. of Mean		3.91	4.51	3.66	4.66	5.78	4.09	2.20	2.87	
L.S.D. at 5% for:										
Checks		15.36	17.72	14.38	18.31	22.68	16.04	8.63	4.97	
T.E. in the same block		26.61	30.69	24.91	31.71	39.27	27.79	14.95	6.08	
T.E. in different blocks		30.72	35.43	28.77	36.62	45.35	32.09	17.26	4.97	
Checks Vs test entries		25.09	28.93	23.49	29.90	37.03	26.20	14.09	1.91	
C.V. %		10.63	6.47	9.93	6.69	13.85	5.58	11.90	2.00	

(1) Medolla, Diyarbakir and Izmir were excluded from the overall mean. T.E. = Test entries.

Table 4.5.5. Adjusted Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-L during 1987/88.

Pedigree	ILB/ Cross No.	BOLIVIA Cochabamba		COLOMBIA Pasto		EGYPT Sakha		EYHIOPIA Holetta		ITALY Viterbo		JORDAN Jubeiha		JORDAN Taiba	
		Y	R	Y	R	Y	R	R	Y	Y	R	Y	R	Y	R
FLIP 82- 39 FB	X75TA209	2428	15	9	11	4914	14	403	15	1523	16	2589	12	3515	20
FLIP 83- 4 FB	12	1936	21	7	19	3654	29	264	26	1814	9	2115	24	3571	18
FLIP 83- 19 FB	S81056	2861	11	0	29	4932	13	248	29	889	37	1585	33	4275	3
FLIP 83- 24 FB	81S36522	1436	27	8	18	3710	28	319	23	1133	32	1881	26	1238	39
FLIP 83- 37 FB	S81062	3111	7	2	27	3821	27	353	18	1409	21	1374	38	3941	7
FLIP 83- 44 FB	78S 33201	1903	22	21	3	3525	31	333	20	1171	31	1533	35	3904	9
FLIP 84- 69 FB	S82003	1903	23	8	16	4080	26	213	34	522	39	1700	31	3043	30
FLIP 84- 70 FB	S82007	3961	3	0	34	5043	10	213	33	1245	28	2530	14	3164	28
FLIP 84- 76 FB	S82013	2186	17	7	20	3432	32	354	17	1847	8	2826	8	3182	26
FLIP 84- 77 FB	S82014	1153	32	8	17	5191	5	333	22	1401	22	1533	34	4238	4
FLIP 84- 91 FB	S82024	2153	18	14	8	4414	20	333	21	1596	13	2367	20	3765	13
FLIP 84- 94 FB	S82026	3961	4	0	36	5099	8	23	38	1551	14	2363	21	3025	31
FLIP 84-101 FB	S82057	4061	2	22	2	4488	17	348	19	1480	18	1641	32	3775	12
FLIP 84-104 FB	S82061	3011	9	15	5	4988	12	518	11	1282	26	2530	15	3497	21
FLIP 84-105 FB	S82064	953	34	34	1	4358	21	233	31	1029	35	2422	17	4293	2
FLIP 84-107 FB	S81064	3811	6	0	30	6154	2	258	28	1290	25	2585	13	3719	14
FLIP 84-109 FB	S81077	1036	33	6	24	2321	39	604	6	2301	2	2037	25	1654	38
FLIP 84-114 FB	S82092	1678	25	10	10	4302	22	478	12	2090	3	2644	11	3349	23
FLIP 84-118 FB	S82103	2961	10	0	33	4654	15	78	36	1335	24	2363	22	3164	27
FLIP 84-119 FB	S82103	186	39	6	23	3043	34	554	9	1752	10	3159	6	4099	5
FLIP 84-127 FB	S82116	1311	30	9	15	5043	11	574	7	2630	1	2381	19	2377	35
FLIP 84-128 FB	S82118	236	38	6	22	2432	38	929	1	1928	5	2826	9	2960	32
FLIP 84-138 FB	S82415	1953	20	14	7	5802	3	463	13	1218	30	1422	37	3904	10
FLIP 84-141 FB	S82428	1403	29	14	6	5691	4	313	24	1495	17	2311	23	4404	1
FLIP 84-147 FB	S82442	2036	19	0	32	4543	16	3	39	643	38	1752	29	3830	11
FLIP 84-151 FB	S82471	1536	26	9	14	2988	37	244	30	1447	19	3159	5	3210	25
FLIP 84-153 FB	S82486	2736	13	-	-	5154	7	123	35	1226	29	1752	30	3914	8
FLIP 85- 14 FB	S82026	1153	31	9	13	5191	6	823	2	1650	11	1811	28	3571	17
FLIP 85- 16 FB	S82031	1411	28	5	25	3265	33	674	5	1361	23	2937	7	3265	24
FLIP 85- 81 FB	S82479	1828	24	11	9	4414	19	563	8	1614	12	3367	3	3627	15
FLIP 86- 35 FB	S83172	3053	8	9	12	4247	23	363	16	1535	15	3367	2	4015	6
FLIP 86- 36 FB	S83172	2861	12	5	26	3654	30	544	10	1434	20	3159	4	3599	16
85/4 63	-	611	37	-	-	4099	25	74	37	2083	4	3381	1	2015	37
85/340	-	861	35	7	21	2988	36	279	25	1918	7	1826	27	2154	36
NSRT- 45	-	2311	16	0	35	6710	1	263	27	970	36	1307	39	3552	19
NSRT-116	-	2636	14	0	31	5099	9	768	3	1111	33	2419	18	2608	34
ILB 1814	1814	858	36	1	28	3037	35	225	32	1087	34	2481	16	3481	22
Reina Blanca	1270	3833	5	16	4	4148	24	413	14	1254	27	2711	10	3074	29
Local Check	-	7092	1	-	-	4444	18	760	4	1923	6	1463	36	2685	33
Location Mean		**2444**		**9**	**-**	**4274**		**392**		**1460**		**2287**		**3314**	
S.E. of Mean		**493.73**		**8.97**		**705.73**		**96.02**		**259.84**		**187.65**		**222.29**	
L.S.D. at 5% for:															
Checks		**1938.04**		**54.60**		**2770.18**		**376.89**		**1019.93**		**736.58**		**872.53**	
T.E. in the same block		**3356.78**		**94.57**		**4798.10**		**652.79**		**1766.57**		**1275.79**		**1511.27**	
T.E. in different blocks		**3876.07**		**115.82**		**5540.36**		**753.77**		**2039.85**		**1473.15**		**1745.07**	
Checks Vs test entries		**3165.28**		**94.58**		**4524.37**		**615.55**		**1665.79**		**1203.01**		**1425.06**	
C.V. %		**34.99**		**263.21**		**28.60**		**42.39**		**30.82**		**14.21**		**11.62**	
Error d.f.		**4**		**2**		**4**		**4**		**4**		**4**		**4**	
Test > L. Check		**0**		**-**		**0**		**0**		**0**		**9**		**4**	

Cont'd. ...

Table 4.5.5. Cont'd. ...

Pedigree	ILB/ Cross No.	JORDAN Gor Y	JORDAN Gor R	LEBANON Terbol Y	LEBANON Terbol R	SAUDI ARABIA Dierab Y	SAUDI ARABIA Dierab R	SAUDI ARABIA TADCO Y	SAUDI ARABIA TADCO R	SPAIN Sevilla Y	SPAIN Sevilla R	SYRIA Al Ghab Y	SYRIA Al Ghab R	SYRIA Deir-Ez-Zor Y	SYRIA Deir-Ez-Zor R
FLIP 82- 39 FB	X75TA209	1519	30	4588	13	1265	14	4038	16	2964	28	5604	8	5141	14
FLIP 83- 4 FB	12	919	39	3786	34	1642	4	4050	15	4139	14	5526	10	2341	39
FLIP 83- 19 FB	S81056	2530	14	4440	18	-	-	2537	38	2297	34	3337	37	4452	24
FLIP 83- 24 FB	81S36522	2052	20	4008	29	922	20	3600	25	4664	7	5526	9	4674	23
FLIP 83- 37 FB	S81062	2030	22	4181	26	-	-	3612	24	2122	36	4570	22	5119	17
FLIP 83- 44 FB	78S 33201	1919	24	5255	5	-	-	3688	22	3414	22	3170	38	4874	20
FLIP 84- 69 FB	S82003	1619	29	3551	36	1031	18	3788	19	3589	19	4537	23	3007	37
FLIP 84- 70 FB	S82007	3696	4	4033	28	-	-	2662	37	2647	33	3704	35	4119	28
FLIP 84- 76 FB	S82013	2939	10	4416	19	1422	11	4100	14	4214	12	5759	7	5341	13
FLIP 84- 77 FB	S82014	1652	28	4218	23	-	-	4163	12	3714	18	4337	26	6474	1
FLIP 84- 91 FB	S82024	4119	2	4663	11	-	-	4487	6	4189	13	5037	16	5874	4
FLIP 84- 94 FB	S82026	3703	3	4885	9	-	-	2987	34	2197	35	4504	24	5052	18
FLIP 84-101 FB	S82057	3463	5	4292	22	-	-	3162	32	1822	38	4170	27	5719	6
FLIP 84-104 FB	S82061	4596	1	4218	24	-	-	3162	31	2772	32	4170	28	5119	15
FLIP 84-105 FB	S82064	1185	37	3922	31	-	-	3788	18	3314	24	5170	14	5474	9
FLIP 84-107 FB	S81064	3030	9	4440	17	-	-	3662	23	2847	30	4070	29	5719	5
FLIP 84-109 FB	S81077	2385	16	4305	21	1789	3	4850	3	5039	5	5926	5	4141	27
FLIP 84-114 FB	S82092	1319	35	4181	25	1458	9	4663	4	3514	21	4637	21	4674	22
FLIP 84-118 FB	S82103	1396	32	4663	12	-	-	3112	33	2022	37	3970	31	4052	30
FLIP 84-119 FB	S82103	2185	18	3860	33	1256	15	4550	5	4514	9	5426	11	2541	38
FLIP 84-127 FB	S82116	3319	6	3527	37	1576	6	3225	29	7014	1	6259	1	4341	26
FLIP 84-128 FB	S82118	3119	8	4749	10	949	19	3975	17	4639	8	5126	15	4007	32
FLIP 84-138 FB	S82415	1352	34	5033	8	-	-	4413	7	3264	25	4704	18	5474	8
FLIP 84-141 FB	S82428	3152	7	3996	30	-	-	5490	2	4389	10	4037	30	5407	12
FLIP 84-147 FB	S82442	1830	25	5551	2	-	-	2912	35	2797	31	5304	13	5452	11
FLIP 84-151 FB	S82471	1812	26	3490	38	1522	7	5600	1	5064	4	6126	3	4007	31
FLIP 84-153 FB	S82486	1696	27	3033	39	-	-	3537	27	972	39	3070	39	4385	25
FLIP 85- 14 FB	S82026	2119	19	5292	4	1431	10	4163	11	3939	16	6170	2	3374	36
FLIP 85- 16 FB	S82031	2385	15	4564	15	1576	5	3750	20	4014	15	5393	12	4007	33
FLIP 85- 81 FB	S82479	1385	33	4070	27	1791	2	4163	10	3564	20	5904	6	4074	29
FLIP 86- 35 FB	S83172	1052	38	4403	20	1271	13	3538	26	3839	17	4704	19	6141	2
FLIP 86- 36 FB	S83172	2852	12	5416	3	1496	8	4100	13	3139	26	5993	4	3607	35
85/4 63	-	2185	17	5045	7	1209	16	4350	8	5464	2	3859	33	5541	7
85/340	-	1419	31	4453	16	602	21	3725	21	5089	3	4659	20	5007	19
NSRT- 45	-	2030	23	4588	14	-	-	2912	36	3322	23	3870	32	5452	10
NSRT-116	-	2696	13	6351	1	-	-	3187	30	3022	27	4737	17	5119	16
ILB 1814	1814	1200	36	3728	35	1392	12	4183	9	2883	29	3711	34	4756	21
Reina Blanca	1270	2033	21	3901	32	1835	1	3517	28	4283	11	3511	36	3644	34
Local Check	-	2922	11	5136	6	1153	17	-	-	4750	6	4356	25	5956	3
Location Mean		**2247**		**4395**		**1361**		**3829**		**3673**		**4618**		**4719**	
S.E. of Mean		301.40		147.29		174.62		550.		496.12		543.12		160.76	
L.S.D. at 5% for:															
Checks		1183.09		578.15		685.44		3348.94		1947.40		2131.89		631.02	
T.E. in the same block		2049.16		1001.38		1187.22		5804.17		3372.99		3692.54		1092.97	
T.E. in different blocks		2366.17		1156.29		1370.88		7104.17		3894.80		4263.78		1262.05	
Checks Vs test entries		1932.26		944.25		1119.49		5801.41		3180.57		3481.89		1030.61	
C.V. %		23.23		5.81		38.30		24.90		23.40		20.37		5.90	
Error d.f.		4		4		4		2		4		4		4	
Test > L. Check		0		1		0		-		0		0		0	

Cont'd. ...

Table 4.5.5. Cont'd. ...

Pedigree	ILB/ Cross No.	SYRIA Hama Y	SYRIA Hama R	SYRIA Idleb Y	SYRIA Idleb R	SYRIA Tel Hadya Y	SYRIA Tel Hadya R	TUNISIA Beja Y	TUNISIA Beja R	TUNISIA Oued Meliz Y	TUNISIA Oued Meliz R	TURKEY Izmir Y	TURKEY Izmir R	Overall Mean (1) Y	Overall Mean (1) R
FLIP 82- 39 FB	X75TA209	6085	3	2846	23	4308	16	1811	28	3650	20	7074	5	3407	8
FLIP 83- 4 FB	12	6052	4	3870	9	4368	13	2511	12	2617	38	-	-	3149	26
FLIP 83- 19 FB	S81056	3563	35	1657	39	4243	18	2728	5	4783	5	4059	20	3021	33
FLIP 83- 24 FB	81S36522	4619	24	3724	11	4096	20	2561	11	4167	11	5222	16	3142	28
.IP 83- 37 FB	S81062	2996	38	1904	37	3868	24	2678	7	3033	31	4889	17	2948	35
.LIP 83- 44 FB	78S 33201	5585	10	3366	16	3865	25	1011	39	4350	9	5304	15	3110	29
FLIP 84- 69 FB	S82003	4519	26	3439	15	2696	37	1661	33	3100	30	5333	13	2763	38
FLIP 84- 70 FB	S82007	2930	39	2390	31	4626	8	1578	34	3033	32	-	-	3034	32
FLIP 84- 76 FB	S82013	4652	23	4537	2	4569	9	1811	27	3617	21	7511	4	3517	5
FLIP 84- 77 FB	S82014	4119	33	4173	6	4555	10	2261	19	3700	17	-	-	3366	13
FLIP 84- 91 FB	S82024	5219	16	3946	8	2416	38	2461	13	2900	33	9185	1	3526	4
FLIP 84- 94 FB	S82026	4330	29	3010	22	3951	22	2778	4	4133	13	-	-	3385	10
FLIP 84-101 FB	S82057	4963	19	2510	28	3927	23	3428	1	4083	14	6341	7	3372	11
FLIP 84-104 FB	S82061	3163	37	3537	14	3563	26	2178	21	2633	37	4459	19	3232	22
FLIP 84-105 FB	S82064	5519	11	2639	25	4444	11	1461	35	4150	12	7630	3	3197	23
FLIP 84-107 FB	S81064	4863	21	2557	27	6039	3	3328	2	4433	8	-	-	3694	2
FLIP 84-109 FB	S81077	6485	2	3364	17	4640	7	1661	31	4267	10	-	-	3354	14
FLIP 84-114 FB	S82092	4919	20	4359	3	4331	15	2161	22	3650	19	5889	10	3350	17
FLIP 84-118 FB	S82103	4463	27	1964	36	7321	1	2578	10	3333	29	7704	2	3143	27
FLIP 84-119 FB	S82103	5852	7	3090	21	2698	36	2211	20	2067	39	-	-	3046	31
FLIP 84-127 FB	S82116	5885	5	4650	1	5099	5	1811	29	3467	25	5444	12	3701	1
FLIP 84-128 FB	S82118	5852	8	3597	13	5196	4	1761	30	3617	22	5578	11	3350	16
FLIP 84-138 FB	S82415	5319	14	2493	29	3164	30	1861	26	5750	1	6222	9	3388	9
FLIP 84-141 FB	S82428	5785	9	3199	19	3082	32	1911	25	3350	28	5311	14	3495	6
FLIP 84-147 FB	S82442	4163	32	2290	33	6185	2	2378	15	3533	24	-	-	3247	21
FLIP 84-151 FB	S82471	5519	12	2610	26	3071	33	1411	36	2667	36	-	-	3174	25
FLIP 84-153 FB	S82486	3663	34	2410	30	3107	31	2578	9	4483	7	-	-	2814	36
FLIP 85- 14 FB	S82026	4752	22	2319	32	4993	6	2111	23	3450	26	-	-	3346	18
FLIP 85- 16 FB	S82031	5152	17	2697	24	2790	35	2461	14	4067	15	-	-	3188	24
FLIP 85- 81 FB	S82479	4519	25	3599	12	4391	12	2361	17	5150	2	-	-	3447	7
FLIP 86- 35 FB	S83172	4419	28	3853	10	1879	39	1661	32	3550	23	-	-	3272	20
FLIP 86- 36 FB	S83172	6785	1	4217	5	4301	17	1311	37	3417	27	-	-	3552	3
85/4 63	-	5252	15	4317	4	3508	28	2361	16	2867	34	-	-	3354	15
85/340	-	5885	6	3964	7	3522	27	1111	38	3867	16	-	-	3102	30
NSRT- 45	-	5030	18	2044	35	4072	21	3028	3	5033	3	4852	18	3323	19
NSRT-116	-	4296	30	1717	38	4200	19	2678	6	4633	6	-	-	3369	12
ILB 1814	1814	4211	31	3109	20	2807	34	2617	8	2850	35	-	-	2778	37
Reina Blanca	1270	3544	36	2196	34	3500	29	1933	24	3667	18	6481	6	3010	34
Local Check	-	5333	13	3267	18	4367	14	2283	18	4833	4	6259	8	-	-
Location Mean		**4810**		**3079**		**3980**		**2181**		**3748**		**6037**			
S.E. of Mean		574.44		344.83		584.55		338.84		326.17		0.06			
L.S.D. at 5% for:															
Checks		2254.82		1353.56		2294.50		1330.05		1280.32		0.35			
T.E. in the same block		3905.47		2344.44		3974.19		2303.71		2217.57		0.60			
T.E. in different blocks		4509.64		2707.13		4588.99		2660.10		2560.63		0.73			
Checks Vs test entries		3682.67		2210.69		3747.46		2172.29		2091.06		0.60			
C.V. %		20.69		19.40		25.44		26.91		15.07		0.00			
Error d.f.		4		4		4		4		4		2			
Test > L. Check		0		0		0		0		0		6			

(1) Pasto, Dierab and Izmir were excluded from the overall mean., T.E. = Test entries.

Table 4.5.6. The five heaviest seed yielding entries at the individual locations in the FBISN-L during 1987/88.

Rank	BOLIVIA	COLOMBIA	EGYPT	ETHIOPIA	ITALY	JORDAN	
	Cochabamba	Pasto	Sakha	Holetta	Gaudiano	Jubeiha	Taiba
1	Local Check	FLIP84-105FB	NSRT-45	FLIP84-128FB	FLIP84-127FB	85/4 63	FLIP84-141FB
2	FLIP84-101FB	FLIP84-101FB	FLIP84-107FB	FLIP85- 14FB	FLIP84-109FB	FLIP86- 35FB	FLIP84-105FB
3	FLIP84- 70FB	FLIP83- 44FB	FLIP84-138FB	NSRT-116	FLIP84-114FB	FLIP85- 81FB	FLIP83- 19FB
4	FLIP84- 94FB	ILB 1270	FLIP84-141FB	Local Check	85/4 63	FLIP86- 36FB	FLIP84- 77FB
5	ILB 1270	FLIP84-104FB	FLIP84- 77FB FLIP85- 14FB	FLIP85- 16FB	FLIP84-128FB	FLIP84-151FB FLIP84-119FB	FLIP84-119FB

Cont'd. ...

Table 4.5.6. Cont'd. ...

Rank	JORDAN	LEBANON	SAUDI ARABIA		SPAIN	SYRIA	
	Gor	Terbol	Dierab	TADCO	Sevilla	Al Ghab	Deir-Ez-Zor
1	FLIP84-104FB	NSRT-116	ILB 1270	FLIP84-151FB	FLIP84-127FB	FLIP84-127FB	FLIP84-77FB
2	FLIP84- 91FB	FLIP84-147FB	FLIP85- 81FB	FLIP84-141FB	85/4 63	FLIP85- 14FB	FLIP86- 35FB
3	FLIP84- 94FB	FLIP86- 36FB	FLIP84-109FB	FLIP84-109FB	85/340	FLIP84-151FB	Local Check
4	FLIP84- 70FB	FLIP85- 14FB	FLIP83- 4FB	FLIP84-114FB	FLIP84-151FB	FLIP86- 36FB	FLIP84- 91FB
5	FLIP84-101FB	FLIP83- 44FB	FLIP85- 16FB FLIP84-127FB	FLIP84-119FB	FLIP84-109FB	FLIP84-109FB	FLIP84-107FB FLIP84-101FB

Cont'd. ...

Table 4.5.6. Cont'd. ...

Rank	SYRIA			TUNISIA		TURKEY
	Hama	Idleb	Tel Hadya	Beja	Oued Meliz	Izmir
1	FLIP86- 36FB	FLIP84-127FB	FLIP84-118FB	FLIP84-101FB	FLIP84-138FB	FLIP84- 91FB
2	FLIP84-109FB	FLIP84- 76FB	FLIP84-147FB	FLIP84-107FB	FLIP85- 81FB	FLIP84-118FB
3	FLIP82- 39FB	FLIP84-114FB	FLIP84-107FB	NSRT- 45	NSRT- 45	FLIP84-105FB
4	FLIP83- 4FB	85/4 63	FLIP84-128FB	FLIP84- 94FB	Local Check	FLIP84- 76FB
5	FLIP84-127FB 85/340	FLIP86- 36FB	FLIP84-127FB	FLIP83- 19FB	FLIP83- 19FB	FLIP82- 39FB

The brackets indicate entries having the same rank.

test entries and three checks. Two of the checks namely ILB 1814 and Reina Blanca (ILB 1270) were supplied and the third was to be added by the cooperator. The entries in this nursery were chosen from the local, regional and international screening nurseries on the basis of their superior performance.

Methods and Management

The test entries and three checks were suggested to be sown following an augmented block design in single row plots of 4 m length with inter- and intra row spacings of 50 - and 10 cm, respectivley. The whole experimetnal unit was divided into three blocks. Thirty two sets of the nursery were distributed to the cooperators in 23 countries and the results were received from 18 locations representing 13 countries. The agronomic data received from the cooperators are presented in Table 4.6.1.

Results and Discussion

The entry means over all locations revealed that FLIP 84-165FB, FLIP 84-192FB and FLIP 86-88FB, flowered earliest in 86 days (Table 4.6.2.). Among the locations, the flowering was earliest at Pasto in Colombia and Holetta in Ethiopia (64 days), and latest at Terbol in Lebanon (120 days). The entry means for time to maturity ranged from 166 to 169 days (Table 4.6.3.) and for the plant height ranged from 84 to 96 cm (Table 4.6.4). The expression of plant height was maximum (127 cm) at Pasto in Colombia.

The adjusted seed yield for the entries based on augmented design is presented in Table 4.6.5. Seed yields were quite high at Tarquinia in Italy (6733 kg/ha) and Gemmeza in Egypt (4988 kg/ha). Among the entries FLIP 86-80FB ranked number one and was followed by FLIP 84-48FB, FLIP 85-28FB, FLIP 84-221FB and FLIP 86-85FB, with seed yields of 4127, 4103, 3872, 3804 and 3735 kg/ha, respectively. The LSD estimates revealed that only at Taiba in Jordan and Dierab in Saudi Arabia, 22 and 1 entries exceeded the respective local check by a significant margin. The five heaviest yielders at each location are presented in Table 4.6.6. The frequency of occurrance of entries among the top five across locations was highest for FLIP 86-80FB and was followed by FLIP 84-48FB. These two lines were comparatively more adaptable than others.

4.7. FABA BEAN INTERNATIONAL SCREENING NURSERY-DETERMINATE (FBISN-D)

Material

The Faba Bean International Screening Nursery Determinate comprised 24 test entries and two checks. One of the checks namely ILB 1814 was provided and the other was to be added by the cooperator. The entries in this nursery were selected on the basis of their superior performance in local trials.

Table 4.6.1. Agronomic data for different locations in the FBISN-S during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
COLOMBIA	Pasto	03.11.88	20.04.89	-			-	-	Blanca Regional
EGYPT	Gemmeza	NA	NA	NA			NA	NA	Giza 2
ETHIOPIA	Holetta	14.06.88	30.11.88	25	100		-	-	CS 20 DK
ITALY	Tarquinia	04.01.88	27.06.88	45	130		-	Gusathion	Tarquinia
JORDAN	Gor	27.10.87	15.05.88	40	40		-	-	NA
JORDAN	Jubeiha	22.11.87	11.05.88	100	100		-	-	NA
JORDAN	Taiba	03.01.88	25.05.88	10	15		-	-	Local
LEBANON	Terbol	19.11.87	25.06.88		50		2	Kerb, Igran	Lebanese Local
NEPAL	Khumaltar (Upland)	27.10.87	28.04.88	20	20	20	-	-	-
NEPAL	Khumaltar (Lowland)	06.11.87	29.04.88	20	20	20	-	-	-
PORTUGAL	Elvas	18.11.87	NA	-			-	-	FBn 395 BEJA
SAUDI ARABIA	Dierab	28.11.87	15.04.88	74	112		16	Malathion	805 44 056
SAUDI ARABIA	TADCO	21.11.87	06.88	150	200		S*	NA	Local from market
SPAIN	Sevilla	01.02.88	08.06.88	-			-	Rogor	palacio
SYRIA	Tel Hadya	02.11.87	19.05.88		50		4	Tribunil, Fusilado, Lancer,	ILB 1814
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 4.6.2. Adjusted time to flowering (days) of entries at different locations in the FBISN-S during 1987/88.

Pedigree	ILB/ Cross No.	COLOMBIA Pasto	EGYPT Gemmeza	ETHIOPIA Holetta	ITALY Tarquinia	JORDAN Gor	LEBANON Terbol	NEPAL Khumaltar-1 (Upland)
FLIP 83- 16 FB	S81056	65	76	65	100	65	120	100
FLIP 83- 30 FB	S81062	80	83	70	100	62	120	97
FLIP 83- 42 FB	78S 48395	-	78	65	84	68	120	101
FLIP 83- 48 FB	S81054	65	77	66	100	69	120	100
FLIP 84- 41 FB	S82018	-	76	65	84	74	120	101
FLIP 84- 59 FB	S82166	65	76	64	90	67	120	99
FLIP 84-154 FB	S82002	54	76	55	84	68	118	101
FLIP 84-162 FB	S82018	60	72	64	84	68	120	104
FLIP 84-165 FB	S82028	55	69	58	90	65	120	102
FLIP 84-168 FB	S81054	60	77	67	94	74	120	103
FLIP 84-179 FB	S82088	-	67	58	90	65	120	99
FLIP 84-180 FB	S82095	-	69	64	84	74	120	101
FLIP 84-186 FB	S82149	-	78	70	94	76	120	102
FLIP 84-192 FB	S82170	60	67	56	84	65	118	107
FLIP 84-196 FB	S82243	60	72	61	84	68	118	104
FLIP 84-211 FB	S82010	65	75	65	90	71	120	99
FLIP 84-213 FB	S82084	60	70	64	84	72	120	102
FLIP 84-216 FB	S82106	55	57	65	94	65	120	99
FLIP 84-221 FB	S82130	65	69	62	90	65	120	99
FLIP 84-224 FB	S82149	60	76	65	84	76	120	106
FLIP 84-226 FB	S82154	60	70	63	84	74	118	106
FLIP 85- 7 FB	S82018	65	71	62	100	65	120	101
FLIP 85- 13 FB	S82026	70	76	67	90	70	120	99
FLIP 85- 16 FB	S82031	65	75	64	90	69	120	100
FLIP 85- 28 FB	S82083	55	75	66	94	76	120	100
FLIP 84- 48 FB	S82138	55	71	64	94	74	118	102
FLIP 86- 75 FB	S83127	65	78	67	100	71	120	95
FLIP 86- 80 FB	S83202	70	71	65	90	76	120	101
FLIP 86- 82 FB	S83213	60	67	59	84	74	118	104
FLIP 86- 85 FB	S83232	65	65	59	90	62	120	100
FLIP 86- 86 FB	S83233	60	70	61	90	63	118	107
FLIP 86- 88 FB	L82086	60	64	58	84	68	120	107
80S 43651	X75TA33	65	65	57	90	65	120	100
80S 43977	X77TA60	60	77	65	94	74	120	102
Palacio	-	75	81	68	94	74	122	104
Brocal	-	70	78	68	94	76	120	102
ILB 1814	1814	65	76	64	93	68	119	99
Reina Blanca	1270	70	76	68	90	70	120	101
Local Check	-	100	60	62	95	65	119	99
Location Mean		64	72	64	91	69	120	101
S.E. of Mean		3.53	0.38	1.37	1.02	1.67	0.61	1.05
L.S.D. at 5% for:								
Checks		13.87	1.51	5.37	4.00	6.54	2.39	4.14
T.E. in the same block		24.03	2.62	9.30	6.92	11.33	4.14	7.17
T.E. in different blocks		27.75	3.02	10.74	7.99	13.08	4.78	8.28
Checks Vs test entries		22.66	2.47	8.77	6.53	10.68	3.90	6.76
C.V. %		10.44	0.93	3.72	1.94	4.17	0.88	1.81

Cont'd. ...

Table 4.6.2. Cont'd. ...

Pedigree	ILB/ Cross No.	NEPAL Khumaltar-2 (Lowland)	PORTUGAL Elvas	SAUDI ARABIA TADCO	SPAIN Sevilla	SYRIA Tel Hadya	(1) Overall Mean
FLIP 83- 16 FB	S81056	96	103	84	65	116	90
FLIP 83- 30 FB	S81062	87	111	94	65	120	92
FLIP 83- 42 FB	78S 48395	101	105	85	65	120	90
FLIP 83- 48 FB	S81054	74	104	90	65	119	89
FLIP 84- 41 FB	S82018	100	105	85	65	119	90
FLIP 84- 59 FB	S82166	96	103	88	66	120	90
FLIP 84-154 FB	S82002	94	104	83	65	115	88
FLIP 84-162 FB	S82018	86	102	83	64	112	87
FLIP 84-165 FB	S82028	81	105	83	65	110	86
FLIP 84-168 FB	S81054	96	107	87	68	117	92
FLIP 84-179 FB	S82088	96	103	81	66	120	88
FLIP 84-180 FB	S82095	101	103	81	65	120	89
FLIP 84-186 FB	S82149	104	106	89	65	120	93
FLIP 84-192 FB	S82170	93	101	79	69	103	86
FLIP 84-196 FB	S82243	93	104	81	64	110	87
FLIP 84-211 FB	S82010	96	105	84	65	114	89
FLIP 84-213 FB	S82084	92	104	81	64	112	88
FLIP 84-216 FB	S82106	-	106	83	65	110	87
FLIP 84-221 FB	S82130	94	103	82	66	120	88
FLIP 84-224 FB	S82149	93	104	83	64	112	89
FLIP 84-226 FB	S82154	95	103	85	64	117	89
FLIP 85- 7 FB	S82018	92	102	82	66	115	89
FLIP 85- 13 FB	S82026	-	106	83	65	115	89
FLIP 85- 16 FB	S82031	94	103	84	66	115	89
FLIP 85- 28 FB	S82083	101	104	85	65	115	91
FLIP 84- 48 FB	S82138	98	103	83	65	119	90
FLIP 86- 75 FB	S83127	96	109	89	65	120	92
FLIP 86- 80 FB	S83202	99	103	83	65	115	90
FLIP 86- 82 FB	S83213	93	101	81	64	110	87
FLIP 86- 85 FB	S83232	96	103	82	66	110	87
FLIP 86- 86 FB	S83233	94	102	79	69	103	87
FLIP 86- 88 FB	L82086	95	101	79	69	102	86
80S 43651	X75TA33	95	105	82	65	113	87
80S 43977	X77TA60	99	107	83	68	116	91
Palacio	-	95	107	90	68	117	93
Brocal	-	101	112	95	65	120	94
ILB 1814	1814	96	104	83	65	115	89
Reina Blanca	1270	94	102	87	66	116	90
Local Check	-	94	112	81	65	112	
Location Mean		**95**	**105**	**84**	**66**	**115**	
S.E. of Mean		3.06	0.53	0.38	0.84	1.52	
L.S.D. at 5% for:							
Checks		12.02	2.07	1.51	3.29	5.97	
Test entries in the same block		20.81	3.58	2.62	5.70	10.34	
Test entries in diff. blocks		24.03	4.14	3.02	6.59	11.94	
Checks Vs test entries		19.62	3.38	2.47	5.38	9.75	
C.V. %		5.84	0.87	0.79	2.22	2.30	

(1) Pasto and Khumaltar-2 (Lowland) were excluded from the overall mean.

Table 4.6.3. Adjusted time to maturity (days) of entries at different locations in the FBISN-S during 1987/88.

Pedigree	ILB/ Cross No.	COLOMBIA	EGYPT	ETHIOPIA	ITALY	LEBANON	NEPAL *		PORTUGAL	SPAIN	SYRIA	(1)
		Pasto	Gemmeza	Holetta	Tarquinia	Terbol	Khumaltar-1 (Upland)	Khumaltar-2 (Lowland)	Elvas	Sevilla	Tel Hadya	Overall Mean
FLIP 83- 16 FB	S81056	145	149	159	162	188	182	173	183	120	196	168
FLIP 83- 30 FB	S81062	-	149	157	162	186	182	173	183	120	196	167
FLIP 83- 42 FB	78S 48395	-	152	160	155	186	182	173	182	121	194	167
FLIP 83- 48 FB	S81054	145	147	155	155	186	182	173	185	120	195	166
FLIP 84- 41 FB	S82018	-	148	158	155	184	182	173	182	121	194	166
FLIP 84- 59 FB	S82166	145	149	153	159	188	182	173	183	120	197	167
FLIP 84-154 FB	S82002	145	151	154	155	186	182	173	182	121	196	167
FLIP 84-162 FB	S82018	145	147	160	152	185	182	173	186	120	194	167
FLIP 84-165 FB	S82028	145	147	156	155	186	182	173	182	121	195	166
FLIP 84-168 FB	S81054	145	150	160	159	185	182	173	186	120	196	168
FLIP 84-179 FB	S82088	-	149	153	159	186	182	173	183	120	197	167
FLIP 84-180 FB	S82095	-	149	157	155	188	182	173	184	121	196	167
FLIP 84-186 FB	S82149	-	153	162	162	190	182	173	184	121	197	169
FLIP 84-192 FB	S82170	145	150	154	152	189	182	173	184	123	196	167
FLIP 84-196 FB	S82243	145	146	158	152	187	182	173	184	123	195	167
FLIP 84-211 FB	S82010	145	150	153	155	188	182	173	183	123	196	167
FLIP 84-213 FB	S82084	145	147	158	152	185	182	173	186	120	194	166
FLIP 84-216 FB	S82106	-	152	160	159	190	182	-	182	124	194	167
FLIP 84-221 FB	S82130	145	148	153	159	186	182	173	185	120	197	167
FLIP 84-224 FB	S82149	195	148	160	152	189	182	173	186	120	196	167
FLIP 84-226 FB	S82154	-	154	160	152	187	182	173	186	125	195	168
FLIP 85- 7 FB	S82018	-	149	157	162	190	182	173	183	120	195	168
FLIP 85- 13 FB	S82026	145	151	160	155	188	182	-	182	121	194	166
FLIP 85- 16 FB	S82031	145	151	157	155	186	182	173	183	120	197	167
FLIP 85- 28 FB	S82083	145	151	158	155	184	182	173	182	121	195	167
FLIP 84- 48 FB	S82138	145	151	162	155	186	182	173	182	121	194	167
FLIP 86- 75 FB	S83127	-	150	155	162	186	182	173	183	120	196	167
FLIP 86- 80 FB	S83202	160	150	158	155	188	182	173	184	121	195	167
FLIP 86- 82 FB	S83213	145	147	158	152	185	182	173	184	120	196	166
FLIP 86- 85 FB	S83232	145	149	157	155	188	182	173	183	123	196	167
FLIP 86- 86 FB	S83233	145	148	156	152	187	182	173	184	127	196	167
FLIP 86- 88 FB	L82086	145	147	158	152	187	182	173	184	120	195	166
80S 43651	X75TA33	145	148	153	155	188	182	173	185	120	195	166
80S 43977	X77TA60	145	150	160	152	187	182	173	184	120	195	167
Palacio	-	145	148	164	152	187	182	173	186	123	195	168
Brocal	-	160	150	162	159	186	182	173	182	121	195	168
ILB 1814	1814	145	152	159	161	190	182	173	183	122	195	169
Reina Blanca	1270	145	150	158	156	186	182	173	184	121	195	167
Local Check	-	195	146	153	154	185	182	173	184	124	196	
Location Mean		150	149	157	156	187	182	173	184	121	196	
S.E. of Mean		0.00	2.64	0.38	1.35	0.47			0.47	1.98	0.19	
L.S.D. at 5% for:												
Checks		0.01	10.37	1.51	5.29	1.85			1.85	7.78	0.76	
T.E. in the same block		0.01	17.96	2.62	9.16	3.20			3.20	13.47	1.31	
T.E. in different blocks		0.02	20.74	3.02	10.58	3.70			3.70	15.55	1.51	
Checks Vs test entries		0.02	16.94	2.47	8.64	3.02			3.02	12.70	1.23	
C.V. %		0.00	3.07	0.42	1.50	0.44			0.44	2.83	0.17	

(1) Pasto and Khumaltar-2 (Lowland) were excluded from the overall mean., T.E. = Test entries.
* = Locations not analysed and thus mean values are unadjusted.

Table 4.6.4. Adjusted plant height (cm) of entries at different locations in the FBISN-S during 1987/88.

Pedigree	ILB/ Cross No.	COLOMBIA Pasto	ETHIOPIA Holetta	ITALY Tarquinia	LEBANON Terbol	NEPAL Khumal-tar-1 (Upland)	NEPAL Khumal-tar-2 (Lowland)	PORTUGAL Elvas	SAUDI ARABIA Dierab	SAUDI ARABIA TADCO	SPAIN Sevilla	SYRIA Tel Hadya	(1) Overall Mean
FLIP 83- 16 FB	S81056	114	132	108	93	52	57	75	104	120	55	125	92
FLIP 83- 30 FB	S81062	119	105	110	103	66	35	73	97	105	60	119	87
FLIP 83- 42 FB	78S 48395	-	135	94	95	45	48	68	104	106	59	142	90
FLIP 83- 48 FB	S81054	129	130	112	93	64	31	78	104	94	66	131	90
FLIP 84- 41 FB	S82018	-	137	92	85	61	64	68	106	98	65	128	90
FLIP 84- 59 FB	S82166	129	112	105	93	62	39	73	98	116	55	119	87
FLIP 84-154 FB	S82002	118	112	107	100	60	35	68	106	100	60	128	88
FLIP 84-162 FB	S82018	103	113	106	87	56	40	77	123	116	68	110	90
FLIP 84-165 FB	S82028	128	115	117	85	39	38	68	98	112	62	128	86
FLIP 84-168 FB	S81054	143	121	108	92	57	42	76	121	105	73	126	92
FLIP 84-179 FB	S82088	-	100	110	88	65	42	83	97	115	52	115	87
FLIP 84-180 FB	S82095	-	114	114	90	62	50	63	108	94	69	123	89
FLIP 84-186 FB	S82149	-	125	114	100	38	66	78	103	101	73	122	92
FLIP 84-192 FB	S82170	118	93	106	77	71	39	89	198	105	61	119	96
FLIP 84-196 FB	S82243	108	119	105	102	55	36	82	125	119	70	125	94
FLIP 84-211 FB	S82010	119	130	110	93	74	36	73	100	106	66	120	91
FLIP 84-213 FB	S82084	133	118	113	87	65	40	74	104	113	65	134	91
FLIP 84-216 FB	S82106	133	127	99	105	50	-	73	90	105	73	117	93
FLIP 84-221 FB	S82130	139	124	105	98	64	56	80	93	113	53	114	90
FLIP 84-224 FB	S82149	88	93	105	77	59	36	82	123	113	53	115	86
FLIP 84-226 FB	S82154	108	129	116	97	53	40	71	120	86	69	129	91
FLIP 85- 7 FB	S82018	109	124	110	103	63	56	83	96	101	50	123	91
FLIP 85- 13 FB	S82026	138	139	97	100	47	-	73	94	101	72	123	94
FLIP 85- 16 FB	S82031	119	140	110	93	56	44	80	93	131	61	119	93
FLIP 85- 28 FB	S82083	133	142	112	85	80	57	63	94	116	64	129	94
FLIP 84- 48 FB	S82138	138	145	107	85	46	65	83	91	103	64	117	91
FLIP 86- 75 FB	S83127	119	122	110	103	54	37	73	115	121	54	129	92
FLIP 86- 80 FB	S83202	143	119	112	100	49	57	68	104	105	75	137	93
FLIP 86- 82 FB	S83213	133	119	113	97	76	56	81	110	111	70	130	96
FLIP 86- 85 FB	S83232	124	132	115	98	55	43	83	100	94	64	119	90
FLIP 86- 86 FB	S83233	78	113	103	82	64	49	89	108	110	67	116	90
FLIP 86- 88 FB	L82086	103	123	108	72	69	37	85	76	105	59	114	85
80S 43651	X75TA33	139	102	120	88	54	45	80	80	128	67	133	90
80S 43977	X77TA60	143	127	106	92	72	22	79	112	100	61	100	87
Palacio	-	128	121	110	82	53	19	74	103	107	52	129	85
Brocal	-	148	117	114	90	48	33	63	78	116	52	127	84
ILB 1814	1814	143	112	112	95	63	38	75	108	106	67	127	90
Reina Blanca	1270	113	95	108	85	63	40	69	108	108	56	118	85
Local Check	-	122	115	96	90	54	38	85	95	95	53	132	
Location Mean		**127**	**119**	**108**	**92**	**59**	**43**	**76**	**104**	**107**	**62**	**124**	
S.E. of Mean		7.14	6.88	2.67	2.64	3.04	5.67	3.96	8.15	2.90	1.69	5.65	
L.S.D. at 5% for:													
Checks		28.01	27.01	10.47	10.34	11.94	22.24	15.55	32.00	11.39	6.65	22.17	
T.E. in the same block		48.52	46.77	18.13	17.92	20.69	38.53	26.94	55.42	19.72	11.52	38.39	
T.E. in different blocks		56.02	54.01	20.93	20.69	23.89	44.49	31.11	63.99	22.78	13.30	44.33	
Checks Vs test entries		45.75	44.11	17.10	16.89	19.51	36.33	25.41	52.26	18.60	10.86	36.20	
C.V. %		11.10	10.05	4.29	4.99	8.98	24.00	9.04	13.53	4.69	4.74	7.91	

(1) Pasto was excluded from the overall mean., T.E. = Test entres.

Table 4.6.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-S during 1987/88.

Pedigree	ILB/ Cross No.	COLOMBIA Pasto		EGYPT Gemmeza		ETHIOPIA Holetta		ITALY Tarquinia		JORDAN Gor		JORDAN Jubeiha	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 16 FB	S81056	586	13	3383	38	781	4	6700	22	-	-	1841	17
FLIP 83- 30 FB	S81062	-	-	3827	35	366	18	5067	39	1853	29	1507	25
FLIP 83- 42 FB	78S 48395	-	-	4975	18	361	19	7122	12	1930	27	2226	11
FLIP 83- 48 FB	S81054	686	4	3494	37	211	31	5333	36	953	38	2674	7
FLIP 84- 41 FB	S82018	-	-	4809	23	336	20	5722	33	2430	21	1670	20
FLIP 84- 59 FB	S82166	0	29	5216	13	296	25	5467	34	1786	31	1230	31
FLIP 84-154 FB	S82002	519	15	4086	33	261	27	7022	16	2664	16	3337	4
FLIP 84-162 FB	S82018	368	24	4920	22	13	39	5311	37	2884	8	1489	26
FLIP 84-165 FB	S82028	586	12	4975	20	411	15	7156	11	2664	17	4393	1
FLIP 84-168 FB	S81054	375	20	5531	10	668	5	5444	35	1317	35	1378	28
FLIP 84-179 FB	S82088	-	-	4494	26	151	34	6667	23	2519	19	1563	23
FLIP 84-180 FB	S82095	-	-	4198	31	206	32	7422	9	3264	3	2281	10
FLIP 84-186 FB	S82149	-	-	4420	28	306	23	5756	32	2897	7	781	33
FLIP 84-192 FB	S82170	368	23	5198	15	158	33	5978	30	1184	37	1100	32
FLIP 84-196 FB	S82243	375	19	5420	11	508	11	5878	31	2117	24	1378	29
FLIP 84-211 FB	S82010	0	30	4494	25	556	6	8700	2	2853	10	1841	18
FLIP 84-213 FB	S82084	365	25	4198	32	828	1	6344	28	1184	36	600	36
FLIP 84-216 FB	S82106	619	10	4753	24	476	12	6356	27	2864	9	2115	15
FLIP 84-221 FB	S82130	0	28	5160	16	801	3	6533	24	1853	28	1619	22
FLIP 84-224 FB	S82149	-	-	4975	21	23	38	6744	20	2717	15	1767	19
FLIP 84-226 FB	S82154	-	-	5809	6	553	8	6378	26	1950	25	711	34
FLIP 85- 7 FB	S82018	553	14	5549	9	521	9	8167	5	2786	12	2952	5
FLIP 85- 13 FB	S82026	653	5	4975	19	336	21	8022	8	2397	22	2115	13
FLIP 85- 16 FB	S82031	0	27	4438	27	301	24	7100	13	2553	18	2119	12
FLIP 85- 28 FB	S82083	619	11	5309	12	426	14	9222	1	3297	2	2837	6
FLIP 84- 48 FB	S82138	653	6	6198	4	516	10	8089	6	3364	1	3948	2
FLIP 86- 75 FB	S83127	-	-	4383	30	76	37	6933	17	2253	23	1452	27
FLIP 86- 80 FB	S83202	686	3	7031	1	391	17	8256	3	3030	5	3781	3
FLIP 86- 82 FB	S83213	388	17	4420	29	243	30	8211	4	3117	4	-	-
FLIP 86- 85 FB	S83232	653	7	6160	5	251	28	7300	10	2519	20	2341	9
FLIP 86- 86 FB	S83233	368	22	5198	14	278	26	8044	7	2850	11	1544	24
FLIP 86- 88 FB	L82086	368	21	6364	3	143	35	7078	14	3017	6	-	-
80S 43651	X75TA33	753	1	3160	39	321	22	6767	18	1719	32	2007	16
80S 43977	X77TA60	375	18	4086	34	248	29	6444	25	1717	34	1378	30
Palacio	-	363	26	5142	17	553	7	6244	29	1717	33	378	37
Brocal	-	719	2	5586	8	441	13	6722	21	2764	13	2115	14
ILB 1814	1814	624	9	3648	36	105	36	7056	15	1944	26	652	35
Reina Blanca	1270	467	16	6796	2	395	16	5289	38	1824	30	1667	21
Local Check	-	633	8	5593	7	803	2	6756	19	2756	14	2481	8
Location Mean		520		4988		383		6733		2259		1735	
S.E. of Mean		161.98		360.20		89.04		568.24		132.36		857.69	
L.S.D. at 5% for: Checks		631.90		1413.88		349.52		2230.51		519.56		3366.64	
T.E. in the same block		1094.49		2448.91		605.38		3863.35		899.91		5831.19	
T.E. in different blocks		1263.81		2827.76		699.04		4461.02		1039.13		6733.28	
Checks Vs test entries		1032.05		2309.20		570.85		3642.95		848.57		5498.53	
C.V. %		78.72		12.51		40.29		14.62		10.15		85.61	
Error d.f.		4		4		4		4		4		4	
Test > L. Check		0		0		0		0		0		0	

Cont'd. ...

Table 4.6.5. Cont'd. ...

Pedigree	ILB/ Cross No.	JORDAN Taiba Y	JORDAN Taiba R	LEBANON Terbol Y	LEBANON Terbol R	PORTUGAL Elvas Y	PORTUGAL Elvas R	SAUDI ARABIA Dierab Y	SAUDI ARABIA Dierab R	SAUDI ARABIA TADCO Y	SAUDI ARABIA TADCO R
FLIP 83- 16 FB	S81056	2194	33	4021	20	3485	19	2201	14	3333	21
FLIP 83- 30 FB	S81062	3111	17	4539	7	2991	31	668	39	3333	19
FLIP 83- 42 FB	78S 48395	3333	12	5058	2	3685	16	1581	30	2917	36
FLIP 83- 48 FB	S81054	2000	35	3650	32	2848	33	1541	31	3583	16
FLIP 84- 41 FB	S82018	4000	1	4391	11	2673	35	1608	29	3167	29
FLIP 84- 59 FB	S82166	2639	25	4095	16	3497	18	2201	15	2833	37
FLIP 84-154 FB	S82002	3000	21	4169	15	2542	37	2075	18	3667	12
FLIP 84-162 FB	S82018	3528	8	4255	12	3241	29	1984	21	3000	34
FLIP 84-165 FB	S82028	2389	29	4058	19	4078	8	2568	9	3667	13
FLIP 84-168 FB	S81054	2389	28	4403	10	3729	15	1884	22	3000	32
FLIP 84-179 FB	S82088	3861	3	3872	23	2604	36	1048	35	3333	23
FLIP 84-180 FB	S82095	3056	18	4613	5	3560	17	1381	32	3167	28
FLIP 84-186 FB	S82149	1833	37	3947	22	4679	2	908	37	2667	39
FLIP 84-192 FB	S82170	2528	26	3292	39	3247	28	2204	13	3000	31
FLIP 84-196 FB	S82243	3333	11	4700	4	4110	7	1704	28	3500	17
FLIP 84-211 FB	S82010	2861	23	4095	17	3271	27	1815	25	4083	8
FLIP 84-213 FB	S82084	2472	27	3663	31	2503	38	1857	24	3250	27
FLIP 84-216 FB	S82106	3583	6	3872	24	3298	23	2188	17	3667	11
FLIP 84-221 FB	S82130	1917	36	4243	13	2759	34	3648	1	4833	2
FLIP 84-224 FB	S82149	2333	30	3811	26	3271	26	2604	8	4000	9
FLIP 84-226 FB	S82154	3472	10	3737	30	4074	9	2937	5	3250	26
FLIP 85- 7 FB	S82018	3028	20	3984	21	3443	20	1761	27	5083	1
FLIP 85- 13 FB	S82026	3833	4	4613	6	4292	6	2561	10	3167	30
FLIP 85- 16 FB	S82031	2222	32	3798	27	2032	39	1788	26	3583	14
FLIP 85- 28 FB	S82083	3278	14	4465	9	3923	12	2941	4	3917	10
FLIP 84- 48 FB	S82138	3889	2	5354	1	4864	1	2901	6	4417	3
FLIP 86- 75 FB	S83127	3583	7	4465	8	3437	21	861	38	3583	15
FLIP 86- 80 FB	S83202	3333	13	4984	3	4346	5	2455	12	4417	4
FLIP 86- 82 FB	S83213	3111	16	3737	29	4407	4	2557	11	3000	35
FLIP 86- 85 FB	S83232	2306	31	4095	18	2991	32	2048	19	4333	6
FLIP 86- 86 FB	S83233	3528	9	4181	14	3973	11	1290	33	4250	7
FLIP 86- 88 FB	L82086	3028	19	3440	36	3276	24	2197	16	3250	25
80S 43651	X75TA33	2694	24	3761	28	4003	10	3088	3	4333	5
80S 43977	X77TA60	2972	22	3477	33	4640	3	2624	7	3000	33
Palacio	-	1306	39	3440	37	3050	30	2037	20	3250	24
Brocal	-	1556	38	3465	35	3834	14	1881	23	3417	18
ILB 1814	1814	3704	5	3840	25	3276	25	1002	36	3333	20
Reina Blanca	1270	3204	15	3469	34	3891	13	3338	2	3333	22
Local Check	-	2037	34	3383	38	3389	22	1138	34	2833	38
Location Mean		**2896**		**3996**		**3518**		**2001**		**3483**	
S.E. of Mean		98.86		323.67		355.68		319.62		600.93	
L.S.D. at 5% for: Checks		388.06		1270.48		1396.13		1254.61		2358.79	
T.E. in the same block		672.14		2200.53		2418.17		2173.05		4085.54	
T.E. in different blocks		776.12		2540.96		2792.26		2509.22		4717.58	
Checks Vs test entries		633.79		2075.00		2280.22		2049.08		3852.47	
C.V. %		5.91		14.03		17.51		27.67		29.88	
Error d.f.		4		4		4		4		4	
Test > L. Check		22		0		0		1		0	

Cont'd. ...

Table 4.6.5. Cont'd. ...

Pedigree	ILB/ Cross No.	SPAIN Sevilla Y	SPAIN Sevilla R	SYRIA Tel Hadya Y	SYRIA Tel Hadya R	TUNISIA Beja Y	TUNISIA Beja R	TUNISIA Oued Meliz Y	TUNISIA Oued Meliz R	Overall Mean (1) Y	Overall Mean (1) R
FLIP 83- 16 FB	S81056	4142	6	4038	4	4173	1	5256	1	3606	10
FLIP 83- 30 FB	S81062	1967	34	3690	7	3173	6	2306	37	2850	38
FLIP 83- 42 FB	78S 48395	3825	12	2021	32	1263	37	3572	16	3427	14
FLIP 83- 48 FB	S81054	4592	1	-	-	2823	9	2806	29	2989	33
FLIP 84- 41 FB	S82018	2700	27	1395	38	1413	36	4172	6	3181	28
FLIP 84- 59 FB	S82166	3077	21	1993	33	3023	7	3556	18	3264	24
FLIP 84-154 FB	S82002	2875	24	1483	36	2213	20	2372	36	3117	30
FLIP 84-162 FB	S82018	4383	2	2651	23	2563	13	4872	4	3461	13
FLIP 84-165 FB	S82028	2375	31	2629	24	2463	16	4872	3	3547	12
FLIP 84-168 FB	S81054	4333	3	3888	5	1613	33	4422	5	3402	17
FLIP 84-179 FB	S82088	2942	23	1866	35	3323	5	3306	23	3236	25
FLIP 84-180 FB	S82095	3700	15	1437	37	1763	29	3272	24	3303	22
FLIP 84-186 FB	S82149	3025	22	2480	27	1963	26	2772	30	2934	35
FLIP 84-192 FB	S82170	1808	36	2624	25	1613	32	3572	17	2963	34
FLIP 84-196 FB	S82243	3833	11	4804	1	2063	24	1972	38	3366	18
FLIP 84-211 FB	S82010	2817	25	3666	8	3373	4	3006	27	3552	11
FLIP 84-213 FB	S82084	1658	38	3175	16	2063	23	3222	25	2914	37
FLIP 84-216 FB	S82106	3325	20	1953	34	1013	39	2672	32	3200	26
FLIP 84-221 FB	S82130	3917	10	2968	20	4073	3	3956	9	3804	4
FLIP 84-224 FB	S82149	2383	29	3083	18	2163	22	3922	10	3294	23
FLIP 84-226 FB	S82154	3408	18	3534	11	2313	19	3872	11	3618	9
FLIP 85- 7 FB	S82018	4067	7	4171	3	2573	11	2656	33	3712	6
FLIP 85- 13 FB	S82026	3800	13	2346	30	1163	38	3422	19	3653	7
FLIP 85- 16 FB	S82031	4017	8	4248	2	3023	8	2706	31	3183	27
FLIP 85- 28 FB	S82083	3375	19	3756	6	2563	12	3172	26	3872	3
FLIP 84- 48 FB	S82138	2375	30	2426	28	2513	15	4022	8	4103	2
FLIP 86- 75 FB	S83127	1617	39	3381	13	2423	17	2606	35	3088	32
FLIP 86- 80 FB	S83202	4200	4	3230	15	2163	21	3822	12	4127	1
FLIP 86- 82 FB	S83213	3683	16	2683	22	1513	35	2622	34	3410	16
FLIP 86- 85 FB	S83232	4167	5	3394	12	4073	2	3356	22	3735	5
FLIP 86- 86 FB	S83233	1833	35	3148	17	1563	34	3372	21	3410	15
FLIP 86- 88 FB	L82086	2658	28	3559	10	1863	28	3572	15	3352	20
80S 43651	X75TA33	3492	17	3350	14	2373	18	2906	28	3354	19
80S 43977	X77TA60	2183	33	3076	19	1963	25	4922	2	3324	21
Palacio	-	1783	37	2131	31	1863	27	3422	20	2917	36
Brocal	-	2700	26	2600	26	1663	31	3622	14	3172	29
ILB 1814	1814	3708	14	3607	9	2583	10	1933	39	3108	31
Reina Blanca	1270	3992	9	2916	21	2533	14	3817	13	3642	8
Local Check	-	2275	32	2399	29	1673	30	4117	7		
Location Mean		3177		2956		2314		3412			
S.E. of Mean		719.62		403.68		485.83		288.84			
L.S.D. at 5% for:											
Checks		2824.68		1584.54		1907.02		1133.76			
T.E. in the same block		4892.49		2744.50		3303.06		1963.72			
T.E. in different blocks		5649.37		3169.08		3814.04		2267.51			
Checks Vs test entries		4613.38		2587.93		3114.62		1851.69			
C.V. %		39.23		24.24		36.37		14.66			
Error d.f.		4		4		4		4			
Test > L. Check		0		0		0		0			

(1) Pasto, Gor, Jubeiha and Tel Hadya were excluded from the overall mean., T.E. = Test entries.

Table 4.6.6. The five heaviest seed yielding entries at the individual locations in the FBISN-S during 1987/88.

	COLOMBIA	EGYPT	ETHIOPIA	ITALY	JORDAN			LEBANON
Rank	Pasto	Gemmeza	Holetta	Tarquinia	Gor	Jubeiha	Taiba	Terbol
1	80S 43651	FLIP86- 80FB	FLIP84-213FB	FLIP85- 28FB	FLIP84- 48FB	FLIP84-165FB	FLIP84- 41FB	FLIP84- 48FB
2	Bracol	ILB 1270	Local Check	FLIP84-211FB	FLIP85- 28FB	FLIP84- 48FB	FLIP84- 48FB	FLIP83- 42FB
3	FLIP86- 80FB	FLIP86- 88FB	FLIP84-221FB	FLIP86- 80FB	FLIP84-180FB	FLIP86- 80FB	FLIP84-179FB	FLIP86- 80FB
4	FLIP83- 48FB	FLIP84- 48FB	FLIP83- 16FB	FLIP86- 82FB	FLIP86- 82FB	FLIP84-154FB	FLIP85- 13FB	FLIP84-196FB
5	FLIP85- 13FB FLIP84- 48FB FLIP86- 85FB	FLIP86- 85FB	FLIP84-168FB	FLIP85- 7FB	FLIP86- 80FB	FLIP85- 7FB	ILB 1814	FLIP84-180FB FLIP85- 13FB

Cont'd. ...

Table 4.6.6. Cont'd. ...

	PORTUGAL	SAUDI ARABIA		SPAIN	SYRIA	TUNISIA	
Rank	Elvas	Dierab	TADCO	Sevilla	Tel Hadya	Beja	Oued Meliz
1	FLIP84- 48FB	FLIP84-221FB	FLIP85- 7FB	FLIP83- 48FB	FLIP84-196FB	FLIP83- 16FB	FLIP83- 16FB
2	FLIP84-186FB	ILB 1270	FLIP84-221FB	FLIP84-162FB	FLIP85- 16FB	FLIP86- 85FB	80S 43977
3	80S 43977	80S 43651	FLIP84- 48FB	FLIP84-168FB	FLIP85- 7FB	FLIP84-221FB	FLIP84-165FB
4	FLIP86- 82FB	FLIP85- 28FB	FLIP86- 80FB	FLIP86- 80FB	FLIP83- 16FB	FLIP84-211FB	FLIP84-162FB
5	FLIP86- 80FB	FLIP84-226fB	80S 43651 FLIP86- 85FB	FLIP86- 85FB	FLIP84-168FB	FLIP84-179FB	FLIP84-168FB

The brackets indicate entries having the same rank.

Methods and Management

The test entries and two checks were suggested to be sown in single row plots of 4 m length with inter- and intra-row spacings of 50- and 10 cm, respectively, in an augmented block design. The whole experimental unit was divided into two blocks. Thirty nine sets of the nursery were distributed to the cooperators in 21 countries. The results were, however, received for 26 sets from 17 countries. The agronomic data received from the cooperators are presented in Table 4.7.1.

Results and Discussion

The entry means over all locations revealed that FLIP 86-105FB and FLIP 86-116FB flowered earliest in 89 days (Table 4.7.2.). The mean time to maturity (Table 4.7.3) ranged from 172 to 175 days and plant height (Table 4.7.4) ranged from 55 to 86 cm.

The adjusted seed yield for the entries based on augmented design is presented in Table 4.7.5. Seed yields were very high at Mosul in Iraq (4384 kg/ha), and were followed by Elvas in Portugal (3774 kg/ha), Viterbo in Italy (3739 kg/ha), Terbol in Lebanon (3493 kg/ha), Tel Hadya in Syria (3242 kg/ha) and TADCO in Saudi Arabia (3231 kg/ha). Among the entries, indeterminate entry ILB 1814 with seed yield of 3492 kg/ha ranked number one and was closely followed by determinate entries FLIP 86-123FB (2949 kg/ha), FLIP 86-122FB (2874 kg/ha), FLIP 86-124FB (2684 kg/ha) FLIP 86-114FB (2644 kg/ha) etc. The LSD estimates at different locations revealed that at only 2 locations, namely Domaine (Morocco) and Dhamar (Yemen), 15 and 1 test entry exceeded the respective local check by a significant margin. The determinate entry FLIP 86-122FB occurred most frequently among the top five heaviest yielders at various locations and was thus more adaptable. The five heaviest yielders at each location are presented in Table 4.7.6.

4.8. FABA BEAN INTERNATIONAL F_4 NURSERY ($FBIF_4N$)

Material

The Faba Bean International F_4 Nursery comprised 36 F_4 populations and three checks, two of the checks, namely Syrian Local Large (ILB 1814) and Reina Blanca (ILB 1270) were supplied and the third to be added by the cooperator. The material should have provided a wide range of inter- and intra population variation. The cooperators were suggested to make single plant selections from the border rows for their use in breeding program.

Methods and Management

The test entries and three checks were suggested to be sown in four row plots of 4 m length with inter-row spacings of 50 cm accomodating 100 plants. The whole experimental unit was divided into three blocks and material was planted using augmented block design layout plan.

Table 4.7.1. Agronomic data for different locations in the FBISN-D during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
CHILE	Graneros	10.05.87	01.88	-			9		Hertnela
EGYPT	Sids	NA	NA	NA			NA	NA	Giza 402
ETHIOPIA	Holetta	21.06.88	30.11.88	25	100		-		CZ 20 DK
FRANCE	Dijon	07.03.88	28.07.88					Bonalon, Dinosebe, Kerb	Ticol
IRAQ	Mosul (Al Rasheedia)	17.11.87	29.05.88	50	50		3	-	Aquadulce
ITALY	Gaudiano	21.12.87	14.05.88	25	78		-	Azinphos Methyl, Folpet	
ITALY	Medolla	04.03.88	17.06.88	40	100		-	Pirimicarb, Chlorothalonil	CZ, A1, A2
ITALY	Viterbo	04.11.87	19.06.88	0	30		-	-	LA 28 BA
JORDAN	Gor	27.10.87	NA	40	40		-	-	NA
JORDAN	Jubeiha	22.11.87	05.06.88	100	100		-	-	NA
JORDAN	Taiba	03.01.88	25.05.88	10	15		-	-	Local
LEBANON	Terbol	19.11.87	25.06.88		50		2	kerb, Igran	Lebanese Local
MOROCCO	Domaine	19.11.87	25.04.88	20	50		-	-	Aquadulce
MOROCCO	Guich	15.11.87	20.06.88	30	60		-	-	Aquadulce
NEPAL	Khumaltar (Upland)	26.10.87	28.04.88	20	20	20	-	-	Kathmandu Local
NEPAL	Khumaltar (Lowland)	06.11.87	29.04.88	20	20	20	-	-	Kathmandu Local
PORTUGAL	Elvas	19.11.87	NA	NA			NA	NA	FGM 395 BEJA
SAUDI ARABIA	TADCO	21.11.87	06.88	150	200		S*	NA	Local from market
SPAIN	Sevilla	01.02.88						Rogor R-40	Alameda
SYRIA	Deir-Ez-Zor	29.11.87	11.06.88		17		6	Sembosh	Local
SYRIA	Homs	20.12.87	01.06.88	-			-	-	Local
SYRIA	Tel Hadya	31.10.87	10.05.88		50		4	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA
YEMEN A.R.	Dhamar	28.01.88	20.06.88	60	30		7	NA	NA

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 4.7.2. Adjusted time to flowering (days) of entries at different locatioins in the FBISN-D during 1987/88.

Pedigree	ILB/ Cross No.	CHILE	EGYPT	ETHIOPIA	FRANCE	IRAQ	ITALY			JORDAN	LEBANON	MOROCCO
		Graneros	Sids	Holetta	Dijon	Mosul	Gau - diano	* Medolla	Vit- erbo *	Gor	Terbol	Domaine
FLIP 84-233 FB	S82231	110	73	65	71	110	98	66	140	60	120	93
FLIP 85-154 FB	S82218	112	69	61	71	111	98	69	140	64	122	93
FLIP 85-171 FB	S82238	108	77	68	70	108	98	66	140	67	120	91
FLIP 85-172 FB	S82238	110	72	65	71	114	98	66	140	77	122	93
FLIP 86-103 FB	S82251	112	83	59	74	114	98	68	140	83	124	90
FLIP 86-104 FB	S82221	108	83	62	71	112	98	65	140	79	120	91
FLIP 86-105 FB	S82221	102	70	64	70	108	98	65	140	71	120	91
FLIP 86-109 FB	S82238	115	87	70	74	111	98	66	140	81	122	93
FLIP 86-110 FB	S82238	112	73	59	71	108	98	67	140	69	120	91
FLIP 86-112 FB	S82241	112	75	64	71	112	98	68	140	66	120	90
FLIP 86-114 FB	S82244	108	73	65	71	111	98	66	140	62	120	83
FLIP 86-115 FB	S82244	114	69	62	71	110	98	68	140	69	120	88
FLIP 86-116 FB	S82252	102	79	58	70	108	98	66	140	65	120	87
FLIP 86-117 FB	S82221	110	79	68	72	111	98	66	140	67	120	83
FLIP 86-119 FB	S82238	110	73	67	71	110	98	66	140	75	120	91
FLIP 86-122 FB	S82238	110	77	67	72	112	98	67	140	65	122	91
FLIP 86-123 FB	S82238	108	71	65	71	110	98	66	140	65	120	92
FLIP 86-124 FB	S82238	114	77	70	72	110	98	66	140	65	122	91
FLIP 86-125 FB	S82238	112	79	63	72	110	98	67	140	71	122	92
FLIP 86-128 FB	S82238	112	79	62	72	114	98	66	140	71	122	83
FLIP 86-135 FB	D83033	102	71	60	71	108	98	66	140	69	120	91
FLIP 86-136 FB	D83063	112	74	61	71	114	98	69	140	64	124	91
FLIP 86-139 FB	D83164	102	74	61	71	108	98	65	140	77	120	91
FLIP 86-147 FB	D83104	110	73	64	71	112	98	67	140	66	120	91
ILB 1814	1814	110	78	65	71	110	98	66	140	73	120	91
Local Check	-	102	59	60	79	108	98	65	140	71	120	93
Location Mean		**109**	**74**	**64**	**72**	**110**	**98**	**66**	**140**	**70**	**121**	**90**
S.E. of Mean		0.04	1.77	1.06	0.00	0.00		0.71		6.01	0.02	0.00
L.S.D. at 5% for:												
Checks		0.64	31.76	19.06	0.00	0.06		12.70		107.98	0.32	0.00
T.E. in the same blocks		0.90	44.92	26.95	0.00	0.09		17.97		152.71	0.45	0.00
T.E. in different blocks		1.10	55.01	33.01	0.00	0.11		22.00		187.03	0.55	0.00
Checks Vs test entries		0.95	47.65	28.59	0.00	0.10		19.06		162.00	0.48	0.00
C.V. %		0.05	3.36	2.36	0.00	0.00		1.52		12.17	0.02	0.00

Cont'd. ...

Table 4.7.2. Cont'd. ...

Pedigree	ILB/ Cross No.	MOROCCO	NEPAL		PORTUGAL	SAUDI-ARABIA	SPAIN	SYRIA			YEMEN	(1)
		Guich	Khumal-tar-1	Khumal-tar-2	Elvas	TADCO	Sevilla	Deir-Ez-Zor	Homs	Tel Hadya	Dhamar	Overall Mean
FLIP 84-233 FB	S82231	78	100	102	102	86	66	98	103	115	60	91
FLIP 85-154 FB	S82218	76	106	98	108	85	66	106	103	118	59	92
FLIP 85-171 FB	S82238	78	100	97	102	88	66	101	102	123	86	93
FLIP 85-172 FB	S82238	78	88	98	106	81	66	98	103	119	66	92
FLIP 86-103 FB	S82251	76	97	97	115	90	66	106	106	123	63	94
FLIP 86-104 FB	S82221	78	94	97	109	84	66	104	103	118	58	92
FLIP 86-105 FB	S82221	79	97	98	102	82	56	96	100	115	60	89
FLIP 86-109 FB	S82238	76	99	88	111	94	66	107	103	119	63	95
FLIP 86-110 FB	S82238	78	101	98	104	80	56	101	101	112	59	90
FLIP 86-112 FB	S82241	77	105	80	105	89	66	106	103	118	62	92
FLIP 86-114 FB	S82244	79	101	-	106	87	66	103	101	121	60	91
FLIP 86-115 FB	S82244	78	102	98	109	89	66	103	103	118	63	92
FLIP 86-116 FB	S82252	79	102	98	102	80	56	96	103	115	59	89
FLIP 86-117 FB	S82221	80	100	101	107	88	66	99	103	121	66	92
FLIP 86-119 FB	S82238	78	99	98	102	86	66	98	103	119	60	92
FLIP 86-122 FB	S82238	79	88	98	103	94	66	101	103	122	64	92
FLIP 86-123 FB	S82238	79	97	98	103	82	66	100	103	122	60	91
FLIP 86-124 FB	S82238	79	96	80	109	87	66	103	103	122	60	92
FLIP 86-125 FB	S82238	78	101	-	107	90	66	101	103	126	60	93
FLIP 86-128 FB	S82238	78	96	98	108	87	66	103	103	120	63	92
FLIP 86-135 FB	D83033	77	91	98	110	84	66	101	101	118	57	90
FLIP 86-136 FB	D83063	75	105	98	115	90	66	102	106	119	60	93
FLIP 86-139 FB	D83164	76	99	98	105	84	66	97	101	112	58	90
FLIP 86-147 FB	D83104	76	102	98	114	87	66	102	103	119	62	92
ILB 1814	1814	78	99	98	103	82	66	96	101	112	62	91
Local Check	-	78	90	97	112	82	66	101	101	115	90	
Location Mean		**78**	**98**	**95**	**107**	**86**	**65**	**101**	**103**	**118**	**64**	
S.E. of Mean		0.35	3.18	0.35	1.06	0.18	0.00	0.71	0.00	3.54	2.44	
L.S.D. at 5% for:												
Checks		6.35	57.17	6.35	19.06	3.18	0.00	12.70	0.00	63.52	43.83	
T.E. in the same block		8.98	80.85	8.98	26.95	4.49	0.00	17.97	0.00	89.83	61.98	
T.E. in different blocks		11.00	99.02	11.00	33.01	5.50	0.00	22.00	0.00	110.02	75.91	
Checks Vs test entries		9.53	85.77	9.53	28.59	4.76	0.00	19.06	0.00	95.29	65.75	
C.V. %		0.64	4.59	0.56	1.40	0.29	0.00	0.99	0.00	4.25	5.39	

(1) Khumaltar-2 (Lowland) was excluded from the overall mean., T.E. = Test entries.
* = Locations not analysed and thus mean values are unadjusted.

Table 4.7.3. Adjusted time to maturity (days) of entries at different locations in the FBISN-D during 1987/88.

Pedigree	ILB/ Cross No.	CHILE *	ETHIOPIA	IRAQ	ITALY *			LEBANON	MOROCCO	
		Graneros	Holetta	Mosul	Gaudiano	Medolla	Viterbo	Terbol	Domaine	Guich
FLIP 84-233 FB	S82231	195	145	193	145	-	225	187	153	185
FLIP 85-154 FB	S82218	195	148	195	145	-	225	185	148	186
FLIP 85-171 FB	S82238	195	145	186	145	-	225	187	158	184
FLIP 85-172 FB	S82238	195	144	190	145	-	225	191	148	183
FLIP 86-103 FB	S82251	195	148	189	145	-	225	187	148	184
FLIP 86-104 FB	S82221	195	150	192	145	105	225	189	150	185
FLIP 86-105 FB	S82221	195	144	188	145	-	225	189	153	184
FLIP 86-109 FB	S82238	195	148	187	145	-	225	185	153	185
FLIP 86-110 FB	S82238	195	147	189	145	-	225	187	148	186
FLIP 86-112 FB	S82241	195	150	192	145	-	225	187	163	187
FLIP 86-114 FB	S82244	195	144	190	145	-	225	187	153	186
FLIP 86-115 FB	S82244	195	-	190	145	-	225	187	166	186
FLIP 86-116 FB	S82252	195	139	186	145	-	225	185	163	186
FLIP 86-117 FB	S82221	195	147	188	145	-	225	189	163	186
FLIP 86-119 FB	S82238	195	149	186	145	-	225	185	148	184
FLIP 86-122 FB	S82238	195	157	186	145	-	225	187	150	184
FLIP 86-123 FB	S82238	195	144	186	145	-	225	189	153	185
FLIP 86-124 FB	S82238	195	151	186	145	-	225	185	158	183
FLIP 86-125 FB	S82238	195	-	191	145	-	225	189	157	185
FLIP 86-128 FB	S82238	195	150	187	145	105	225	185	159	183
FLIP 86-135 FB	D83033	195	148	185	145	-	225	187	160	186
FLIP 86-136 FB	D83063	195	147	185	145	-	225	185	160	185
FLIP 86-139 FB	D83164	195	148	185	145	-	225	189	158	184
FLIP 86-147 FB	D83104	195	147	185	145	-	225	187	153	185
ILB 1814	1814	195	154	191	145	-	225	191	159	186
Local Check	-	195	148	194	145	105	225	185	161	184
Location Mean		**195**	**148**	**188**	**145**	**105**	**225**	**187**	**156**	**184**
S.E. of Mean			2.47	0.71				0.02	0.04	1.41
L.S.D. at 5% for:										
Checks			44.46	12.70				0.32	0.64	25.41
T.E. in the same block			62.88	17.97				0.45	0.90	35.93
T.E. in different blocks			77.01	22.00				0.55	1.10	44.01
Checks Vs test entries			66.71	19.06				0.48	0.95	38.12
C.V. %			2.55	0.53				0.01	0.03	1.08

Cont'd. ...

Table 4.7.3. Cont'd. ...

Pedigree	ILB/ Cross No.	NEPAL *		PORTUGAL	SPAIN	SYRIA			YEMEN	(1) Overall Mean
		Khumal-tar-1	Khumal-tar-2	Elvas	Sevilla	Deir-Ez-Zor	Homs *	Tel * Hadya	Dhamar	
FLIP 84-233 FB	S82231	183	173	182	128	176	158	198	126	174
FLIP 85-154 FB	S82218	183	173	182	122	171	160	200	129	173
FLIP 85-171 FB	S82238	183	173	182	119	172	157	199	131	173
FLIP 85-172 FB	S82238	183	173	182	122	172	158	200	131	173
FLIP 86-103 FB	S82251	183	173	182	122	171	156	198	129	172
FLIP 86-104 FB	S82221	183	173	182	122	169	160	199	124	173
FLIP 86-105 FB	S82221	183	173	182	119	169	156	199	126	172
FLIP 86-109 FB	S82238	183	173	182	122	168	155	199	129	172
FLIP 86-110 FB	S82238	183	173	182	122	169	156	199	124	172
FLIP 86-112 FB	S82241	183	173	182	122	171	158	201	129	174
FLIP 86-114 FB	S82244	183	-	182	119	169	156	199	126	172
FLIP 86-115 FB	S82244	183	173	182	122	171	157	199	129	174
FLIP 86-116 FB	S82252	183	173	182	119	169	154	199	126	173
FLIP 86-117 FB	S82221	183	173	182	122	169	160	199	131	174
FLIP 86-119 FB	S82238	183	173	182	124	172	158	199	126	172
FLIP 86-122 FB	S82238	183	173	182	126	169	157	198	131	173
FLIP 86-123 FB	S82238	183	173	182	119	170	155	198	126	172
FLIP 86-124 FB	S82238	183	173	182	119	169	155	198	126	172
FLIP 86-125 FB	S82238	183	-	188	119	169	158	199	126	173
FLIP 86-128 FB	S82238	183	173	182	122	171	158	198	129	173
FLIP 86-135 FB	D83033	183	173	182	122	168	156	196	124	172
FLIP 86-136 FB	D83063	183	173	182	122	168	158	199	114	172
FLIP 86-139 FB	D83164	183	173	182	122	168	156	199	124	172
FLIP 86-147 FB	D83104	183	173	182	122	171	158	197	124	172
ILB 1814	1814	183	173	185	126	179	160	197	128	175
Local Check	-	183	173	185	125	178	160	197	155	
Location Mean		**183**	**173**	**183**	**122**	**171**	**158**	**198**	**129**	
S.E. of Mean				4.24	0.71	0.71			1.73	
L.S.D. at 5% for:										
Checks				76.22	12.70	12.70			31.12	
T.E. in the same block				107.80	17.97	17.97			44.02	
T.E. in different blocks				132.02	22.00	22.00			53.91	
Checks Vs test entries				114.35	19.06	19.06			46.69	
C.V. %				3.29	0.82	0.59			1.90	

(1) Holetta, Medolla and Khumaltar-2 (Lowland) were excluded from the overall mean., T.E. = Test entries.
* = Locations not analysed and thus mean values are unadjusted.

Table 4.7.4. Adjusted plant height (cm) of entries at different locations in the FBISN-D during 1987/88.

Pedigree	ILB/ Cross No.	CHILE	ETHIOPIA	FRANCE	IRAQ	ITALY			LEBANON	MOROCCO	NEPAL
		Graneros	Holetta	Dijon	Mosul	Gaudiano	Med-olla	* Viterbo	Terbol	Domaine	Khumal-tar-1
FLIP 84-233 FB	S82231	59	67	70	73	51	-	61	59	150	39
FLIP 85-154 FB	S82218	56	108	70	83	54	-	68	41	150	28
FLIP 85-171 FB	S82238	59	93	60	69	43	-	60	44	90	34
FLIP 85-172 FB	S82238	64	62	60	77	59	-	65	54	95	41
FLIP 86-103 FB	S82251	66	65	70	73	49	-	72	56	90	30
FLIP 86-104 FB	S82221	66	75	70	76	48	75	87	61	120	29
FLIP 86-105 FB	S82221	54	63	60	72	37	-	51	59	90	53
FLIP 86-109 FB	S82238	61	42	70	65	42	-	71	51	110	33
FLIP 86-110 FB	S82238	51	70	70	68	32	-	69	46	100	27
FLIP 86-112 FB	S82241	56	62	70	77	68	-	77	36	110	35
FLIP 86-114 FB	S82244	54	70	70	71	56	-	65	54	100	24
FLIP 86-115 FB	S82244	51	0	70	75	51	-	71	56	130	35
FLIP 86-116 FB	S82252	49	55	60	72	51	-	54	49	90	20
FLIP 86-117 FB	S82221	59	82	60	62	59	-	66	59	110	41
FLIP 86-119 FB	S82238	54	63	60	55	62	-	61	49	100	41
FLIP 86-122 FB	S82238	64	67	60	69	59	-	68	49	170	63
FLIP 86-123 FB	S82238	54	57	60	72	49	-	43	69	100	24
FLIP 86-124 FB	S82238	59	52	70	70	59	-	64	49	110	42
FLIP 86-125 FB	S82238	54	0	70	97	50	-	54	59	150	27
FLIP 86-128 FB	S82238	61	68	70	67	48	80	76	51	150	27
FLIP 86-135 FB	D83033	61	92	60	65	46	-	69	41	120	36
FLIP 86-136 FB	D83063	51	55	70	58	55	-	68	46	110	32
FLIP 86-139 FB	D83164	66	72	80	68	51	-	72	46	110	29
FLIP 86-147 FB	D83104	66	67	70	73	57	-	71	61	120	42
ILB 1814	1814	73	93	80	105	71	-	108	95	110	63
Local Check	-	70	98	80	110	71	55	96	83	150	47
Location Mean		**60**	**67**	**69**	**76**	**54**	**70**	**71**	**57**	**118**	**37**
S.E. of Mean		1.80	6.72	0.00	3.53	7.07		1.94	1.77	0.04	3.54
L.S.D. at 5% for:											
Checks		32.40	120.69	0.00	63.46	127.04		34.94	31.76	0.64	63.52
T.E. in the same block		45.81	170.68	0.00	89.74	179.66		49.41	44.92	0.90	89.83
T.E. in different blocks		56.11	209.04	0.00	109.91	220.04		60.51	55.01	1.10	110.02
Checks Vs test entries		48.60	181.06	0.00	95.20	190.59		52.41	47.65	0.95	95.30
C.V. %		4.25	14.09	0.00	6.54	18.42		3.87	4.38	0.04	13.46

Cont'd. ...

Table 4.7.4. Cont'd. ...

Pedigree	ILB/ Cross No.	NEPAL	PORTUGAL	SAUDI ARABIA	SPAIN	SYRIA			YEMEN	(1) Overall Mean
		Khumaltar-2	Elvas	TADCO	Sevilla	Deir-Ez-Zor	Homs	Tel Hadya	Dhamar	
FLIP 84-233 FB	S82231	15	63	99	47	39	74	76	53	67
FLIP 85-154 FB	S82218	27	64	94	46	31	56	74	47	64
FLIP 85-171 FB	S82238	15	65	73	48	19	54	77	53	56
FLIP 85-172 FB	S82238	29	78	86	53	29	49	86	58	64
FLIP 86-103 FB	S82251	33	74	89	38	36	46	65	42	60
FLIP 86-104 FB	S82221	31	72	70	49	31	41	75	47	63
FLIP 86-105 FB	S82221	16	68	72	46	24	49	84	63	59
FLIP 86-109 FB	S82238	34	74	83	50	26	41	69	47	60
FLIP 86-110 FB	S82238	29	57	84	46	26	41	74	47	56
FLIP 86-112 FB	S82241	25	67	90	51	41	56	69	52	64
FLIP 86-114 FB	S82244	-	78	84	51	24	54	81	53	61
FLIP 86-115 FB	S82244	32	74	73	46	36	41	75	37	61
FLIP 86-116 FB	S82252	33	65	80	41	34	44	62	53	55
FLIP 86-117 FB	S82221	13	68	75	47	24	59	82	43	61
FLIP 86-119 FB	S82238	25	65	71	43	29	54	71	63	58
FLIP 86-122 FB	S82238	37	75	93	57	39	59	89	48	71
FLIP 86-123 FB	S82238	39	65	75	44	24	49	82	63	58
FLIP 86-124 FB	S82238	40	75	59	50	24	44	68	53	60
FLIP 86-125 FB	S82238	-	75	86	49	29	64	66	48	65
FLIP 86-128 FB	S82238	25	70	71	41	36	61	74	42	63
FLIP 86-135 FB	D83033	55	74	74	39	26	41	69	57	59
FLIP 86-136 FB	D83063	29	62	58	45	31	41	64	42	56
FLIP 86-139 FB	D83164	27	77	89	47	26	46	70	37	61
FLIP 86-147 FB	D83104	47	67	83	50	36	46	70	52	64
ILB 1814	1814	54	99	110	70	73	60	123	55	86
Local Check	-	35	118	104	57	70	68	125	40	
Location Mean		**31**	**75**	**83**	**49**	**36**	**52**	**81**	**50**	
S.E. of Mean		7.07	0.71	6.72	4.60	1.77	8.84	5.30	3.50	
L.S.D. at 5% for:										
Checks		127.03	12.70	120.69	82.58	31.76	158.80	95.28	62.89	
T.E. in the same block		179.65	17.97	170.68	116.78	44.92	224.58	134.75	88.93	
T.E. in different blocks		220.03	22.00	209.04	143.03	55.01	275.05	165.03	108.92	
Checks Vs test entries		190.58	19.06	181.06	123.88	47.65	238.24	142.94	94.34	
C.V. %		33.98	1.33	11.40	13.22	6.97	23.89	9.26	9.97	

(1) Holetta, Medolla and Khumaltar-2 (Lowland) were excluded from the overall mean., T.E. = Test entries.
* = Locations not analysed and thus mean values are unadjusted.

Table 4.7.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-D during 1987/88.

Pedigree	ILB/ Cross No.	CHILE Graneros		ETHIOPIA Holetta		FRANCE Dijon		IRAQ Mosul		ITALY Viterbo		JORDAN Jubeiha		JORDAN Gor	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-233 FB	S82231	1406	26	51	15	959	20	2000	25	4716	7	-	-	1847	12
FLIP 85-154 FB	S82218	2344	18	74	10	1230	5	4333	10	3743	14	1628	15	1319	19
FLIP 85-171 FB	S82238	1906	24	66	11	914	22	2073	24	5462	5	1238	17	2069	8
FLIP 85-172 FB	S82238	2156	20	-	-	1014	17	4333	11	5668	4	2372	5	2069	7
FLIP 86-103 FB	S82251	4094	1	44	16	1257	3	5333	5	414	25	2762	2	1319	20
FLIP 86-104 FB	S82221	3469	8	64	12	1086	13	5667	3	2397	20	1762	13	2097	5
FLIP 86-105 FB	S82221	2156	19	36	19	1097	12	3667	18	2419	19	472	22	2125	4
FLIP 86-109 FB	S82238	2094	22	44	17	748	25	5333	4	1132	23	3495	1	931	24
FLIP 86-110 FB	S82238	2594	16	29	20	812	24	3333	20	14	26	1695	14	1264	21
FLIP 86-112 FB	S82241	2844	12	64	13	1070	14	3667	17	4262	11	428	24	708	25
FLIP 86-114 FB	S82244	2656	15	81	9	1188	7	4000	15	3376	15	2505	3	1903	11
FLIP 86-115 FB	S82244	2844	11	-	-	1341	1	4000	14	4208	12	2062	10	1097	22
FLIP 86-116 FB	S82252	1656	25	0	23	692	26	2667	22	4549	8	1205	18	3569	1
FLIP 86-117 FB	S82221	1906	23	316	2	1112	10	2667	21	3846	13	2338	8	2069	6
FLIP 86-119 FB	S82238	2406	17	111	6	932	21	333	26	2343	21	2472	4	1403	18
FLIP 86-122 FB	S82238	2656	13	171	3	1323	2	2333	23	5186	6	2338	7	2458	3
FLIP 86-123 FB	S82238	3156	9	101	8	870	23	4000	16	5841	3	838	20	1958	9
FLIP 86-124 FB	S82238	2906	10	-	-	1059	15	3667	19	4473	9	1138	19	1958	10
FLIP 86-125 FB	S82238	2656	14	-	-	963	19	4333	12	4295	10	1438	16	1625	13
FLIP 86-128 FB	S82238	3844	3	114	5	1112	11	5667	2	3192	17	628	21	1042	23
FLIP 86-135 FB	D83033	3594	6	139	4	1117	9	4667	9	2814	18	2162	9	1486	16
FLIP 86-136 FB	D83063	3969	2	39	18	1177	8	4000	13	3246	16	295	25	542	26
FLIP 86-139 FB	D83164	3844	4	109	7	1241	4	5000	8	1138	22	2362	6	1597	15
FLIP 86-147 FB	D83104	3469	7	64	14	1221	6	5000	7	927	24	1895	12	1431	17
ILB 1814	1814	2125	21	-	-	974	18	5000	6	6665	1	-	-	2917	2
Local Check	-	3813	5	655	1	1039	16	10333	1	5849	2	1987	11	1611	14
Location Mean		**2804**		**107**		**1056**		**4384**		**3739**		**1567**		**1748**	
S.E. of Mean		44.19		51.27		15.71		2357.02		2067.81		1449.57		176.78	
L.S.D. at 5% for:															
Checks		794.01		921.05		282.31		42346.90		37150.90		26043.40		3176.02	
T.E. in the same block		1122.89		1302.56		399.25		59887.60		52539.20		36830.90		4491.57	
T.E. in different blocks		1375.26		1595.30		488.98		73347.00		64347.20		45108.40		5501.03	
Checks Vs test entries		1191.19		1381.78		423.53		63530.00		55734.70		39070.90		4764.75	
C.V. %		2.23		67.78		2.10		76.04		78.22		130.79		14.30	
Test > L. Check		0		0		0		0		0		0		0	

Cont'd. ...

Table 4.7.5. Cont'd. ...

Pedigree	ILB/ Cross No.	JORDAN Taiba Y	JORDAN Taiba R	LEBANON Terbol Y	LEBANON Terbol R	MOROCCO Domaine Y	MOROCCO Domaine R	PORTUGAL Elvas Y	PORTUGAL Elvas R	SAUDI ARABIA TADCO Y	SAUDI ARABIA TADCO R	SPAIN Sevilla Y	SPAIN Sevilla R	SYRIA Deir-Ez-Zor Y	SYRIA Deir-Ez-Zor R
FLIP 84 233 FB	S82231	1875	21	1778	26	2750	5	1544	26	2163	24	1231	23	3555	12
FLIP 85 154 FB	S82218	1736	22	3333	15	1000	22	4132	9	2312	23	2019	9	112	19
FLIP 85 171 FB	S82238	2514	7	3556	11	750	24	3421	15	3413	10	1056	25	3288	13
FLIP 85 172 FB	S82238	2347	11	3481	13	750	23	2915	20	2838	18	1756	15	4022	6
FLIP 86 103 FB	S82251	1986	18	4074	4	500	26	3315	18	3613	7	1619	17	112	21
FLIP 86-104 FB	S82221	2069	17	3519	12	500	25	3121	19	2813	19	1969	11	0	25
FLIP 86-105 FB	S82221	2292	12	3815	7	1000	21	2132	23	2838	17	1281	22	4488	4
FLIP 86-109 FB	S82238	681	26	2815	21	1250	20	2074	24	2863	16	1969	10	0	26
FLIP 86-110 FB	S82238	1458	24	2889	19	1250	19	3321	16	1613	25	1119	24	0	23
FLIP 86-112 FB	S82241	1125	25	2889	18	2500	9	3791	10	2613	20	819	26	445	16
FLIP 86-114 FB	S82244	2125	14	4000	6	1500	18	5326	3	3788	6	2531	3	3888	8
FLIP 86-115 FB	S82244	1903	20	4074	5	4500	2	3709	11	3238	14	1894	12	45	22
FLIP 86-116 FB	S82252	2569	6	2741	22	2100	15	6326	2	3838	5	2356	5	4355	5
FLIP 86-117 FB	S82221	3097	4	2519	25	3250	4	4809	5	3338	11	2256	7	3888	10
FLIP 86-119 FB	S82238	2875	5	2667	24	2500	8	2279	22	2538	22	1856	13	3955	7
FLIP 86-122 FB	S82238	2431	9	4148	2	4750	1	3321	17	3588	8	2281	6	4555	3
FLIP 86-123 FB	S82238	3097	3	3630	9	2500	7	2885	21	3463	9	1606	18	5088	2
FLIP 86-124 FB	S82238	2125	15	3778	8	2500	6	4774	6	3913	3	1406	20	3888	9
FLIP 86-125 FB	S82238	3097	2	2704	23	3500	3	1950	25	3838	4	1781	14	3622	11
FLIP 86-128 FB	S82238	1681	23	2815	20	2250	13	3521	13	3113	15	2444	4	312	17
FLIP 86-135 FB	D83033	1958	19	2926	17	2250	12	7568	1	3313	12	2119	8	245	18
FLIP 86-136 FB	D83063	2125	16	3333	14	2500	10	3703	12	2563	21	1294	21	0	24
FLIP 86-139 FB	D83164	2153	13	3296	16	2000	16	4485	8	-	-	1744	16	112	20
FLIP 86-147 FB	D83104	2403	10	3630	10	2250	14	4974	4	3313	13	1494	19	1312	15
ILB 1814	1814	3306	1	5593	1	2250	11	4638	7	5000	1	3038	2	5333	1
Local Check	-	2444	8	4111	3	1750	17	3497	14	4900	2	5575	1	3223	14
Location Mean		**2258**		**3493**		**2093**		**3774**		**3231**		**2112**		**2399**	
S.E. of Mean		216.06		785.67		0.04		1322.71		300.52		203.29		879.17	
L.S.D. at 5% for:															
Checks		3881.80		14115.60		0.64		23764.10		5399.23		3652.42		15795.40	
T.E. in the same block		5489.70		19962.50		0.90		33607.50		7635.67		5165.31		22338.10	
T.E. in different blocks		6723.48		24449.00		1.10		41160.60		9351.75		6326.18		27358.40	
Checks Vs test entries		5823.58		21176.70		0.95		35651.50		8100.07		5479.46		23696.70	
C.V. %		13.53		31.81		0.00		49.57		13.15		13.62		51.82	
Test > L. Check		0		0		15		0		0		0		0	

Cont'd. ...

Table 4.7.5. Cont'd. ...

Pedigree	ILB/ Cross No.	SYRIA Homs Y	SYRIA Homs R	SYRIA Tel Hadya Y	SYRIA Tel Hadya R	TUNISIA Beja Y	TUNISIA Beja R	TUNISIA Oued Meliz Y	TUNISIA Oued Meliz R	YEMEN Dhamar Y	YEMEN Dhamar R	(1) Overall Mean Y	(1) Overall Mean R
FLIP 84-233 FB	S82231	817	22	3890	8	1038	21	2038	21	901	7	2021	20
FLIP 85-154 FB	S82218	1483	7	1558	21	813	25	2213	19	839	12	2013	21
FLIP 85-171 FB	S82238	917	20	3316	13	1038	20	2538	11	597	20	2213	14
FLIP 85-172 FB	S82238	1250	10	4175	6	1188	15	3038	3	571	21	2546	7
FLIP 86-103 FB	S82251	683	24	1370	23	1813	3	1513	26	896	8	1893	22
FLIP 86-104 FB	S82221	883	21	1732	19	1113	17	1763	25	999	6	2024	18
FLIP 86-105 FB	S82221	1217	11	3336	11	1688	7	2538	12	741	16	2249	13
FLIP 86-109 FB	S82238	1717	3	1702	20	1213	14	2763	6	756	15	1698	24
FLIP 86-110 FB	S82238	1150	14	744	26	1313	11	1913	23	536	24	1482	25
FLIP 86-112 FB	S82241	1017	18	1299	24	763	26	2413	18	559	23	1886	23
FLIP 86-114 FB	S82244	1183	12	4002	7	1238	13	2738	7	651	19	2644	5
FLIP 86-115 FB	S82244	1383	8	3320	12	1363	9	3013	4	462	25	2447	10
FLIP 86-116 FB	S82252	317	26	3662	10	1138	16	2488	15	561	22	2609	6
FLIP 86-117 FB	S82221	1083	17	3794	9	888	24	2438	17	1061	4	2543	8
FLIP 86-119 FB	S82238	1317	9	2874	15	1238	12	2588	10	784	14	2022	19
FLIP 86-122 FB	S82238	1117	16	4885	4	1038	22	2488	14	1021	5	2874	3
FLIP 86-123 FB	S82238	1650	5	4887	3	1338	10	3838	2	841	11	2949	2
FLIP 86-124 FB	S82238	1650	4	4401	5	1038	19	2638	9	684	18	2684	4
FLIP 86-125 FB	S82238	683	23	2915	14	988	23	2138	20	717	17	2373	11
FLIP 86-128 FB	S82238	683	25	1182	25	1713	5	2663	8	1139	3	2204	15
FLIP 86-135 FB	D83033	1517	6	2168	17	1713	6	2513	13	1842	1	2531	9
FLIP 86-136 FB	D83063	950	19	1964	18	1063	18	1913	24	1309	2	2068	17
FLIP 86-139 FB	D83164	2117	1	1494	22	1413	8	2013	22	796	13	2153	16
FLIP 86-147 FB	D83104	1183	13	2598	16	1763	4	2463	16	876	10	2312	12
ILB 1814	1814	1917	2	5633	2	2700	1	2900	5	880	9	3492	1
Local Check	-	1117	15	6119	1	2175	2	4375	1	175	26		
Location Mean		**1215**		**3242**		**1416**		**2614**		**795**			
S.E. of Mean		612.83		546.83		53.03		53.03		50.68			
L.S.D. at 5% for:													
Checks		11010.20		9824.49		952.81		952.81		910.46			
T.E. in the same block		15570.80		13893.90		1347.47		1347.47		1287.58			
T.E. in different blocks		19070.20		17016.50		1650.31		1650.31		1576.96			
Checks Vs test entries		16517.80		14739		1429.42		1429.42		1365.89			
C.V. %		71.30		23.85		5.30		2.87		9.02			
Test > L. Check		0		0		0		0		1			

(1) Holetta, Gor and TADCO were excluded from the overall mean., T.E. = Test entries.

Table 4.7.6. The five heaviest seed yielding entries at the individual locations in the FBISN-D during 1987/88.

	CHILE	ETHIOPIA	FRANCE	IRAQ	ITALY	JORDAN	
Rank	Graneros	Holetta	Dijon	Mosul	Viterbo	Jubeiha	Gor
1	FLIP86-103FB	Local Check	FLIP86-115FB	Local Check	ILB 1814	FLIP86-109FB	FLIP86-116FB
2	FLIP86-136FB	FLIP86-117FB	FLIP86-122FB	FLIP86-128FB	Local Check	FLIP86-103FB	ILB 1814
3	FLIP86-128FB	FLIP86-122FB	FLIP86-103FB	FLIP86-104FB	FLIP86-123FB	FLIP86-114FB	FLIP86-122FB
4	FLIP86-139FB	FLIP86-135FB	FLIP86-139FB	FLIP86-109FB	FLIP85-172FB	FLIP86-119FB	FLIP86-105FB
5	Local Check	FLIP86-128FB	FLIP85-154FB	FLIP86-103FB	FLIP85-171FB	FLIP85-172FB	FLIP86-104FB

Cont'd. ...

Table 4.7.6. Cont'd. ...

	JORDAN	LEBANON	MOROCCO	PORTUGAL	SAUDI ARABIA	SPAIN	SYRIA
Rank	Taiba	Terbol	Domaine	Elvas	TADCO	Sevilla	Deir-Ez-Zor
1	ILB 1814	ILB 1814	FLIP86-122FB	FLIP86-135FB	ILB 1814	Local Check	ILB 1814
2	FLIP86-125FB	FLIP86-122FB	FLIP86-115FB	FLIP86-116FB	Local Check	ILB 1814	FLIP86-123FB
3	FLIP86-123FB	Local Check	FLIP86-125FB	FLIP86-114FB	FLIP86-124FB	FLIP86-114FB	FLIP86-122FB
4	FLIP86-117FB	FLIP86-103FB	FLIP86-117FB	FLIP86-147FB	FLIP86-125FB	FLIP86-128FB	FLIP86-105FB
5	FLIP86-119FB	FLIP86-115FB	FLIP84-233FB	FLIP86-117FB	FLIP86-116FB	FLIP86-116FB	FLIP86-116FB

Cont'd. ...

Table 4.7.6. Cont'd. ...

	SYRIA		TUNISIA		YEMEN
Rank	Homs	Tel Hadya	Beja	Oued Meliz	Dhamar
1	FLIP86-139FB	Local Check	ILB 1814	Local Check	FLIP86-135FB
2	ILB 1814	ILB 1814	Local Check	FLIP86-123FB	FLIP86-136FB
3	FLIP86-109FB	FLIP86-123FB	FLIP86-103FB	FLIP85-172FB	FLIP86-128FB
4	FLIP86-124FB	FLIP86-122FB	FLIP86-147FB	FLIP86-115FB	FLIP86-117FB
5	FLIP86-123FB	FLIP86-124FB	FLIP86-128FB FLIP86-135FB	ILB 1814	FLIP86-122FB

The bracket indicates entries having the same rank.

Eighteen sets of nursery were supplied to cooperators in 13 countries and the results were received from 10 locations from 9 countries. The data on agronomic practices supplied by the cooperators are presented in Table 4.8.1.

Results and Discussion

The entry means for time to flowering, time to maturity and plant height ranged from 80 to 91 days (Table 4.8.2.), 170 to 178 days (Table 4.8.3.), and 77 to 100 cm (Table 4.8.4), respectively.

The adjusted seed yield of populations (Table 4.8.5.). exhibited that Tarquinia in Italy was the highest yielding location (5662 kg/ha) and was followed by Tel Hadya in Syria (2974 kg/ha) and Izmir in Turkey (2833 kg/ha). At almost all the locations some of the populations exceeded the respective local checks in seed yield. The top five heaviest yielding populations at each location are given in Table 4.8.6.

4.9. FABA BEAN INTERNATIONAL DISEASE SCREENING NURSERIES

Faba bean entries having a moderate to a high level of resistance to ascochyta blight, chocolate spot and rust were identified at ICARDA's research sub-station at Lattakia in Syria. Seeds from these resistant sources were multiplied and used to form the Faba Bean International Ascochyta Blight, Chocolate Spot and Rust and Multiple Disease Screening Nurseries.

Methods and Management

The suggested experimental design for these nurseries was randomized complete block with two replications. The suggested plot size was one row 1 m long accomodating 10 plants. The susceptible check was repeatedly sown after every two test entries/rows to serve as an indicator cum spreader row. In the absence of natural infestation the cooperators were advised to do the artificial inoculation as detailed in the instruction sheet provided. A 1-9 scale was recommended for scoring the disease severity.

4.9.1. FABA BEAN INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (FBIABN)

Material

The Faba bean International Ascochyta Blight Nursery included 25 test entries. These entries were selections from the materials which originated from Egypt, Ethiopia, Iraq, Lebanon, Syria, Turkey and ICARDA.

The susceptible check was the local land race from the location where the nursery was to be grown.

Table 4.8.1. Agronomic data for different locations in the FBIF4N during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
BOLIVIA	Cochabamba	21.04.88	27.10.88	50	50		6	Dimecron	Pairumani 1
EGYPT	Sakha	NA	NA	NA			NA	NA	Giza 3
EGYPT	Sids	NA	NA	NA			NA	NA	Giza 402
ETHIOPIA	Holetta	19.06.88	30.11.88	25	100		-	NA	CZ 20 DK
IRAQ	Mosul	22.11.87	05.06.88	50	50		-	-	Aquadulce
ITALY	Tarquinia	04.01.88	27.06.88	45	130		-	Gusathion-M	Tarquinia
JORDAN	Taiba	02.01.88	20.05.88	10	15		-	-	Local
SYRIA	Tel Hadya	02.11.87	12.05.88		50		4	Tribunil, Fusildae, Lancer, Gramaxone	ILB 1814
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TURKEY	Izmir	24.11.88	15.06.89	30	60		-	Endosulfan	Fcesen - 87

NA = Not available

Table 4.8.2. Adjusted time to flowering (days) of entries at different locations in the FBIF4N during 1987/88.

Entry Name/ Cross No.	Parents	BOLIVIA	EGYPT		ETHIOPIA	IRAQ	ITALY	SYRIA	TURKEY	Overall mean
		Cochabamba	Sakha	Sids	Holetta	Mosul	Tarquinia	Tel Hadya	Izmir	
S85017	80S 44150; 83Lat. 30164-2	66	54	68	60	92	86	118	111	82
S85020	80S 80128; 81Lat. 24694-1B	72	59	73	67	92	92	126	119	88
S85021	80S 81054; 80Lat. 15563-3A	70	54	71	71	90	96	118	117	86
S85023	FLIP 83-8FB, 79S 33120-L; 80Lat. 15563-3B	74	66	71	70	91	92	116	115	87
S85028	81Lat. 24957; 81Lat. 24857-1	80	66	77	72	91	96	128	115	91
S85065	FLIP 83-106 FB; Lat. 24948-1	68	66	59	63	95	86	117	115	84
S85070	FLIP 83-114 FB, S81064-3; 81Lat. 24948-1	76	69	70	71	92	96	126	117	90
S85103	80S 80028; 80Lat. 14434-2	66	59	68	56	92	92	121	117	84
S85107	FLIP 83-21FB, S81060-2; 80Lat. 14434-2	76	64	69	67	90	86	122	117	86
S85113	80S 50088; 80Lat. 14435-2	70	54	66	60	92	86	118	111	82
S85114	74TA56356; 80Lat. 14435-2	66	59	68	64	92	92	119	117	85
S85115	80S 44027; 80Lat. 14422-1	72	54	65	65	92	86	117	117	84
S85118	80S 50106; 80Lat. 14434-2	70	66	67	62	91	92	117	115	85
S85119	80S 50088; 80Lat. 14435-3	82	64	65	69	90	92	118	117	87
S85120	80S 44150; 80Lat. 14435-3	76	64	72	71	91	96	122	117	89
S85122	FLIP 83-48FB, S81054-11; 80Lat. 15035-2	78	66	74	66	92	92	125	115	88
S85126	FLIP 83-58FB, S81012-12; 82Lat. 10026	77	64	73	66	92	96	122	111	88
S85127	FLIP 83-68FB, S81065-17; 80Lat. 14435-3	68	61	69	64	90	86	115	115	83
S85128	FLIP 83-114FB, S81064-3; 80Lat. 14435-3	63	64	68	56	92	86	114	111	82
S85129	FLIP 83-123FB; 79Lat. 70015-1	68	66	74	64	91	96	120	115	87
S85163	S84021; 81Lat. 24694-1A	76	69	78	69	92	96	126	117	90
S85183	S84143; 80Lat. 14434-2	75	66	74	61	94	96	125	115	88
S85185	S84145; 80Lat. 14435-3	74	64	74	66	90	86	122	117	87
S85186	S84148; 80Lat. 14435-3	68	64	70	70	90	86	121	111	85
S85187	S84149; 80Lat. 15035-2	67	54	63	56	92	86	108	111	80
S85188	S84158; 80Lat. 15035-2	67	54	68	59	90	86	122	111	82
S85189	S84159; 79Lat. 70015-4	72	59	70	65	94	92	126	111	86
S85190	S84161; 79Lat. 70015-4	76	66	77	71	93	92	121	109	88
S85193	S84170; 79Lat. 70015-1	68	61	67	71	94	96	128	115	87
S85194	S84171; 79Lat. 70015-1	72	64	68	66	92	86	125	117	86
S85195	S84173; 80Lat. 14435-2	66	64	76	66	90	86	118	111	85
S85196	S84177; 80Lat. 14435-2	65	66	59	56	91	86	116	109	81
S85197	S84179; 80Lat. 14434-2	73	54	65	66	90	86	118	111	83
S85198	S84180; 80Lat. 14434-2	72	66	69	65	95	92	117	109	86
S85199	S84142; 80Lat. 14422-1	76	44	73	67	90	86	118	111	83
S85200	S84158; 80Lat. 14422-1	68	64	72	64	90	86	122	117	85
ILB 1814	(Syrian Local Large)	78	65	71	65	92	92	120	114	87
ILB 1270	(Reina Blanca)	78	63	75	71	90	92	119	114	88
Local Check		76	45	57	63	88	92	116	116	
Location Mean		**73**	**61**	**69**	**66**	**91**	**91**	**120**	**114**	
S.E. of Mean		1.43	0.96	1.18	0.90	1.05	0.00	1.49	1.83	
L.S.D. at 5% for checks		5.60	3.78	4.63	3.54	4.10	0.00	5.85	7.17	
L.S.D. at 5% for test entries in the same block		9.70	6.54	8.01	6.14	7.11	0.00	10.13	12.41	
L.S.D. at 5% for test entries in different blocks		11.20	7.55	9.25	7.09	8.21	0.00	11.70	14.33	
L.S.D. at 5% for checks Vs test entries		9.15	6.17	7.56	5.79	6.70	0.00	9.56	11.70	
C.V. %		3.40	2.73	2.95	2.39	1.99	0.00	2.15	2.78	

Table 4.8.3. Adjusted time to maturity (days) of entries at different locations in the FBIFWN during 1987/88.

Entry Name/ Cross No.	BOLIVIA Cochabamba	ETHIOPIA Holetta	IRAQ Mosul	ITALY Tarquinia	SYRIA Tel Hadya	TURKEY Izmir	Overall Mean
S85017	189	151	168	161	197	172	173
S85020	195	159	173	160	195	168	175
S85021	184	156	168	160	197	168	172
S85023	189	175	163	161	197	169	176
S85028	189	176	167	161	199	169	177
S85065	190	176	162	154	198	172	176
S85070	189	155	168	161	195	172	174
S85103	189	152	173	154	197	169	173
S85107	181	153	168	153	195	168	170
S85113	184	153	170	153	195	168	171
S85114	189	150	168	158	196	167	172
S85115	181	154	173	153	195	168	171
S85118	181	170	167	154	197	169	173
S85119	181	155	168	153	195	166	170
S85120	189	149	168	158	196	169	172
S85122	189	171	167	161	198	169	176
S85126	195	155	172	157	198	168	174
S85127	189	171	167	154	197	169	175
S85128	183	145	173	154	196	169	170
S85129	190	169	167	161	199	169	176
S85163	189	147	170	158	197	169	172
S85183	189	171	169	161	199	169	177
S85185	189	149	173	154	195	169	172
S85186	177	151	173	154	194	167	170
S85187	181	156	173	153	195	168	171
S85188	181	156	168	153	198	166	171
S85189	189	150	168	154	196	167	171
S85190	190	170	169	154	197	167	175
S85193	189	174	172	161	200	172	178
S85194	184	154	170	153	196	168	171
S85195	189	149	170	154	196	169	171
S85196	189	171	167	161	197	169	176
S85197	189	156	168	153	197	168	172
S85198	178	173	165	154	199	167	173
S85199	184	158	173	153	197	165	172
S85200	189	149	173	154	196	172	172
ILB 1814	192	159	172	161	196	170	175
ILB 1270	188	143	174	155	194	169	171
Local Check	188	157	171	154	198	169	
Location Mean	**188**	**158**	**170**	**157**	**197**	**169**	
S.E. of Mean	1.56	8.79	1.59	0.77	0.47	0.58	
L.S.D. at 5% for:							
Checks	6.11	34.50	6.25	3.02	1.85	2.27	
T.E. in the S.B.	10.59	59.76	10.83	5.23	3.20	3.93	
T.E. in D.B.	12.23	69.00	12.50	6.04	3.70	4.53	
Checks Vs T.E.	9.99	56.35	10.21	4.94	3.02	3.70	
C.V. %	1.44	9.64	1.62	0.85	0.42	0.59	

T.E. = Test entries., S.B. = Same block, D.B. = Different blocks.

Table 4.8.4. Adjusted plant height (cm) of entries at different locations in the FBIF4N during 1987/88.

Entry Name/ Cross No.	BOLIVIA Cochabamba	ETHIOPIA Holetta	IRAQ Mosul	ITALY Tarquinia	SYRIA Tel Hadya	TURKEY Izmir	Overall Mean
S85017	64	115	64	110	97	77	88
S85020	77	131	45	104	103	65	88
S85021	97	99	65	97	103	75	89
S85023	104	118	79	106	120	73	100
S85028	84	119	59	108	90	73	89
S85065	54	106	49	109	95	83	83
S85070	84	117	61	112	67	62	84
S85103	84	98	56	104	112	62	86
S85107	92	102	70	95	93	60	85
S85113	87	94	60	105	103	65	86
S85114	69	90	61	97	117	67	83
S85115	92	109	40	112	98	65	86
S85118	79	121	59	111	100	83	92
S85119	72	101	70	95	123	55	86
S85120	74	88	51	102	102	72	81
S85122	84	91	54	106	100	78	86
S85126	102	107	50	112	103	70	91
S85127	79	116	39	103	95	68	83
S85128	59	90	58	94	92	82	79
S85129	89	69	54	101	95	58	78
S85163	84	102	63	97	97	57	83
S85183	79	119	44	101	95	73	85
S85185	89	105	79	97	87	67	87
S85186	64	112	66	100	112	67	87
S85187	82	121	61	107	98	75	91
S85188	92	96	50	102	133	55	88
S85189	89	110	61	109	92	62	87
S85190	94	113	59	106	90	58	87
S85193	89	118	41	111	115	68	90
S85194	97	102	55	105	78	75	85
S85195	74	82	46	92	107	62	77
S85196	94	101	49	106	115	58	87
S85197	82	117	75	109	108	70	94
S85198	59	129	54	101	105	58	84
S85199	82	119	70	107	98	65	90
S85200	74	122	49	104	92	57	83
ILB 1814	78	110	56	104	98	65	85
ILB 1270	83	103	44	99	73	65	78
Local Check	95	123	61	99	93	60	
Location Mean	**83**	**108**	**57**	**103**	**98**	**66**	
S.E. of Mean	5.09	8.25	4.85	4.36	6.97	3.40	0.03
L.S.D. at 5% for:							
Checks	19.99	32.38	19.02	17.10	27.37	13.36	0.03
T.E. in the S.B.	34.62	56.09	32.95	29.62	47.40	23.14	0.00
T.E. in D.B.	39.97	64.76	38.04	34.20	54.74	26.71	0.03
Checks Vs T.E.	32.64	52.89	31.07	27.93	44.70	21.82	22.00
C.V. %	10.67	13.24	14.81	7.31	12.28	8.87	0.00

T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 4.8.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBIF4N during 1987/88.

Entry Name/ Cross No.	BOLIVIA		EGYPT				ETHIOPIA		IRAQ		ITALY	
	Cochabamba		Sakha		Sids		Holetta		Mosul		Tarquinia	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
S85017	2850	9	2154	31	941	20	455	8	561	20	5350	25
S85020	1577	25	2191	28	1019	16	105	31	561	19	7794	2
S85021	2921	5	2164	30	1185	12	5	37	736	9	4878	31
S85023	2454	14	2877	7	2207	3	573	5	728	11	5322	26
S85028	1048	35	1793	36	1207	9	298	18	378	33	5939	16
S85065	0	38	3821	2	207	38	990	1	278	37	8339	1
S85070	2269	17	2877	9	941	18	595	3	761	8	4117	35
S85103	3106	4	2404	23	941	21	368	13	411	32	5683	20
S85107	2796	10	3247	5	419	33	165	26	661	13	5628	21
S85113	2208	18	2497	21	685	26	5	38	611	16	5294	27
S85114	2888	7	2515	20	774	24	328	16	911	3	4967	30
S85115	2415	15	1969	35	519	28	133	28	561	24	6878	6
S85118	254	37	2182	29	1374	8	260	21	278	38	5889	17
S85119	2852	8	1302	39	1685	6	115	30	661	14	5594	22
S85120	2594	12	2099	33	507	29	273	20	461	29	5067	29
S85122	1710	22	3099	6	41	39	65	33	578	18	5139	28
S85126	2371	16	2275	26	352	36	70	32	411	30	7428	4
S85127	1610	24	2710	12	1207	10	240	22	178	39	6589	7
S85128	1344	29	3571	3	1107	14	433	9	761	7	3200	37
S85129	1154	34	2877	8	707	25	0	39	528	26	6139	14
S85163	2206	19	2654	14	1107	13	680	2	561	21	4250	34
S85183	1267	31	2543	18	374	34	340	15	328	35	6522	8
S85185	1419	28	3377	4	507	30	290	19	561	25	3067	38
S85186	1319	30	2377	24	774	23	388	11	411	31	4450	33
S85187	2140	20	2247	27	2019	4	210	23	561	22	6461	9
S85188	2908	6	1691	37	1185	11	43	34	736	10	6194	12
S85189	2694	11	2821	11	941	19	543	6	661	15	4867	32
S85190	767	36	2599	17	2541	1	18	36	778	5	5722	19
S85193	1973	21	2071	34	1707	5	38	35	328	36	7639	3
S85194	3158	2	1469	38	352	35	128	29	761	6	5461	24
S85195	1544	26	2293	25	441	31	383	12	661	12	1950	39
S85196	1160	33	2627	15	1541	7	510	7	478	27	6389	10
S85197	2540	13	2136	32	852	22	193	25	1036	2	5728	18
S85198	0	39	2488	22	1041	15	195	24	478	28	7372	5
S85199	1683	23	2691	13	519	27	353	14	1111	1	6078	15
S85200	1500	27	2543	19	441	32	325	17	561	23	3817	36
ILB 1814	1238	32	2611	16	256	37	158	27	833	4	6172	13
ILB 1270	3138	3	4167	1	967	17	410	10	367	34	6222	11
Local Check	4494	1	2852	10	2333	2	577	4	583	17	5472	23
Location Mean	**2103**		**2625**		**1001**		**300**		**586**		**5662**	
S.E. of Mean	241.92		170.69		329.67		121.78		90.27		723.95	
L.S.D. at 5% for:												
Checks	949.61		670.01		1294.05		478.01		354.32		2841.70	
T.E. in S.B.	1644.77		1160.48		2241.35		827.94		613.70		4921.97	
T.E. in D.B.	1899.22		1340.01		2588.09		956.02		708.64		5683.40	
Checks Vs T.E.	1550.94		1094.28		2113.49		780.71		578.69		4641.18	
C.V. %	19.93		11.26		57.06		70.23		26.68		22.15	
Test > L. Check	0		0		0		0		0		0	

Cont'd. ...

Table 4.8.5. Cont'd. ...

Entry Name/ Cross No.	JORDAN Taiba		SYRIA Tel Hadya		TUNISIA Beja		TURKEY Izmir		Overall Mean (1)	
	Y	R	Y	R	Y	R	Y	R	Y	R
S85017	610	34	2198	34	644	39	3457	5	2068	24
S85020	627	33	2567	30	2044	21	1593	39	2161	20
S85021	960	4	1529	39	1544	33	2519	27	1942	32
S85023	805	17	3835	4	2461	7	3099	10	2617	2
S85028	694	27	2682	28	1811	25	2432	29	1954	31
S85065	763	20	2483	31	2361	11	3969	2	2494	4
S85070	742	23	2256	33	1494	34	2309	30	1958	30
S85103	221	38	2710	27	1244	36	2901	19	2197	19
S85107	988	1	3448	8	2394	9	3444	6	2467	6
S85113	599	35	1535	38	1794	26	2148	34	1864	37
S85114	694	28	2126	35	1244	35	2753	22	2056	27
S85115	682	29	3341	10	1744	28	2963	16	2280	11
S85118	881	11	3198	17	2461	6	3136	9	2115	22
S85119	668	31	3204	16	2244	13	2185	33	2205	18
S85120	902	10	2103	36	1194	37	3012	13	1923	34
S85122	–	–	3016	21	1611	31	1821	38	1898	36
S85126	668	30	2650	29	1894	22	2519	26	2219	15
S85127	728	25	3687	5	1711	29	3154	8	2343	9
S85128	958	5	3322	12	1844	23	1883	36	1941	33
S85129	583	36	3563	7	2261	12	3210	7	2271	12
S85163	791	18	3327	11	1744	27	2253	31	2087	23
S85183	756	21	3564	6	2411	8	2543	25	2210	17
S85185	971	3	3247	14	1644	30	3568	4	1964	29
S85186	777	19	3212	15	2694	2	2975	15	2067	26
S85187	877	14	3009	22	2144	16	3630	3	2491	5
S85188	946	7	3045	19	2094	19	2056	35	2217	16
S85189	749	22	2862	26	1044	38	2957	17	2154	21
S85190	944	8	3037	20	2761	1	2895	20	2346	8
S85193	666	32	2454	32	2511	4	2432	28	2350	7
S85194	710	26	1880	37	1594	32	2889	21	1966	28
S85195	840	15	3979	3	2044	20	3086	11	1820	38
S85196	985	2	4568	1	2461	5	2728	23	2496	3
S85197	877	13	2984	23	2094	18	2981	14	2283	10
S85198	819	16	3353	9	2361	10	3025	12	2257	13
S85199	738	24	3266	13	2144	15	2222	32	2230	14
S85200	958	6	4100	2	2144	14	1864	37	1922	35
ILB 1814	905	9	2869	25	1833	24	2636	24	2067	25
ILB 1270	880	12	2911	24	2517	3	4068	1	2752	1
Local Check	581	37	3053	18	2133	17	2926	18		
Location Mean	**757**		**2974**		**1986**		**2833**			
S.E. of Mean	116.72		192.48		168.19		164.83			
L.S.D. at 5% for:										
Checks	458.14		755.55		660.18		646.99			
T.E. in S.B.	793.53		1308.66		1143.47		1120.62			
T.E. in D.B.	916.29		1511.11		1320.36		1293.98			
Checks Vs T.E.	748.26		1234.00		1078.23		1056.69			
C.V. %	26.71		11.21		14.67		10.08			
Test > L. Check	0		1		0		0			

(1) Taiba was excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different blocks

Table 4.8.6. The five heaviest seed yielding entries at the individual locations in the FBIF4N during 1987/88.

	BOLIVIA	EGYPT		ETHIOPIA	IRAQ
Rank	Cochabamba	Sakha	Sids	Holetta	Mosul
1	Local Check	ILB 1270	S85 190	S85 065	S85 199
2	S85 194	S85 065	Local Check	S85 163	S85 197
3	ILB 1270	S85 128	S85 023	S85 070	S85 114
4	S85 103	S85 185	S85 187	Local Check	ILB 1814
5	S85 021	S85 107	S85 193	S85 023	S85 190

Cont'd. ...

Table 4.8.6. Cont'd. ...

	ITALY	JORDAN	SYRIA	TUNISIA	TURKEY
Rank	Tarquinia	Taiba	Tel Hadya	Beja	Izmir
1	S85 065	S85 107	S85 196	S85 190	ILB 1270
2	S85 020	S85 196	S85 200	S85 186	S85 065
3	S85 193	S85 185	S85 195	ILB 1270	S85 187
4	S85 126	S85 021	S85 023	S85 193	S85 185
5	S85 198	S85 128]	S85 127	S85 196]	S85 017
		S85 200]		S85 118]	
				S85 023]	

The brackets indicate entries having the same rank.

Results and Discussion

Twenty-one sets of FBIABN were distributed to cooperators in 14 countries. The results were, however, received from 10 locations. The results from locations reporting disease scores are presented here (Table 4.9.1).

Bolivia: The nursery was conducted at Cochabamba. All the entries except BPL 2165 showed reaction between 1 and 5.
Italy: The nursery was conducted at Tarquinia. Only six entries showed reaction between 1 and 5 and were resistant or tolerant. All others were susceptible.
Poland: The nursery was conducted at Pulway and Radzikow. All the entries at both the locations showed susceptible reaction.
Syria: The nursery was conducted at Al-Ghab and Gelline. All the entries at Al-Ghab were tolerant or resistant. At Gelline, however, 12 entries showed tolerant reaction and all others susceptible.
U.K.: The nursery was conducted at Cambridgeshire. Nineteen of the entries showed resistant or tolerant reaction and others susceptible.
Morocco: The nursery was conducted at Dar Bouazza. The results were reported for Botrytis instead of Ascochyta blight. Except BPL 2139 which showed tolerant reaction all other entries were rated as susceptible.

Across locations, two entries namely BPL 74 and S83195 occured most frequently among the resistant sources at various locations and needed special attention.

4.9.2. FABA BEAN INTERNATIONAL CHOCOLATE SPOT NURSERY (FBICSN)

Material

The Faba Bean International Chocolate Spot Nursery included 26 test entries. These entries were selections from the materials which originated from Columbia, Egypt, Greece, Syria and ICARDA.

The susceptible check was the local land race from the location where the nursery was to be grown.

Results and Discussion

Twenty-five sets of FBICSN were distributed to cooperators in 16 countries, but the results were received back from 15 locations covering 12 countries.

The reaction of entries to chocolate spot (Botrytis fabae) for the countries reporting data is presented in Table 4.9.2. and discussed as under:

Bolivia: The nursery was conducted at Cochabamba. The reaction of entries revealed that one entry was resistant, ninteen tolerant and all others susceptible.

Table 4.9.1. Reaction of faba bean entries to ascochyta blight in FBIABN at different locations during 1987/88.

Pedigree	Accession	Origin	BOLIVIA	ITALY	MOROCCO	POLAND		SYRIA		U.K.
			Cocha-bamba	Tarqu-inia	Dar- * Bouazza	Pulawy	Radzi-kow	Al Ghab	Gelline	Cambrid-geshire
Sel. Lat. A87- 1	BPL 74	IRAQ	3	4	9	9	9	3	5	5
Sel. Lat. A87- 6	BPL 365	TURKEY	3	7	9	9	7	3	7	4
Sel. Lat. A87- 10	BPL 471	LEBANON	3	7	9	9	7	3	7	4
Sel. Lat. A87- 12	BPL 472	LEBANON	1	7	9	9	7	3	9	4
Sel. Lat. A87-175	S83195	ICARDA	3	5	7	9	9	3	5	2
Sel. Lat. A87- 15	BPL 818	ETHIOPIA	1	7	9	9	9	3	5	4
Sel. Lat. A87- 17	A2	-	-	5	7	9	9	5	5	4
Sel. Lat. A87- 19	L83118	ICARDA	3	7	9	9	9	5	7	3
Sel. Lat. A87- 21	L83120	ICARDA	5	7	7	9	9	3	7	1
Sel. Lat. A87- 29	L83127	ICARDA	3	6	9	9	7	3	7	5
Sel. Lat. A87- 35	L83129	ICARDA	5	7	7	9	9	5	5	3
Sel. Lat. A87- 36	L83135	ICARDA	5	7	7	9	9	3	5	3
Sel. Lat. A87- 59	L82001	ICARDA	3	6	9	9	9	3	5	6
Sel. Lat. A87-212	BPL 2138		5	3	9	9	9	3	5	6
Sel. Lat. A87-215	BPL 2139		1	7	5	9	9	3	9	7
Sel. Lat. A87-218	BPL 2144		3	5	9	9	9	3	7	3
Sel. Lat. A87-223	BPL 2145		1	7	9	9	7	3	7	5
Sel. Lat. A87-233	BPL 2148		3	6	9	9	9	3	7	5
Sel. Lat. A87-245	BPL 2148		1	6	9	9	9	3	5	6
Sel. Lat. A87-253	BPL 2152		3	5	9	9	9	3	7	7
Sel. Lat. A87-273	BPL 2165		7	6	9	9	7	3	5	4
Sel. Lat. A87-187	S83135		3	7	9	9	9	3	7	4
Sel. Lat. A87-304	31818-1		3	6	9	9	7	3	5	1
Syrian Local Large	ILB 1814	SYRIA	7	7	9	9	9	3	7	5
Giza 4	G-4	EGYPT	1	6	9	9	9	5	5	7
Local Susceptible Check			5	7	9	8	7	5	9	8

* The ratings are for Chocolate Spot.

Table 4.9.2. Reaction of faba bean entries to Chocolate Spot in FBICSN at different locations during 1987/88.

			BOLIVIA	CHILE	ECUADOR	EGYPT	ITALY	MOROCCO	POLAND			PORTUGAL	SYRIA		U.K.
Pedigree	Accession	Origin	Cocha-bamba	Gra-neros	Snta-Catalina	Giza	Tarq-uinia	Dar-Bouazza	Pul-awy	Rad-zikow	Str-zelce	Elvas	Al-Ghab	Gel-line	Cambri-geshire
Sel. Lat. B87 5	BPL 261	GREECE	5	3	5	5	6	7	9	5	7	2	5	7	4
Sel. Lat. B87 24	L83108	ICARDA	7	3	5	7	3	5	9	5	5	3	5	5	4
Sel. Lat. B87 10	BPL 710	COLOMBIA	5	3	4	4	6	5	9	5	5	3	3	5	5
Sel. Lat. B87 11	BPL 1179	COLOMBIA	5	3	7	4	6	7	9	3	5	3	3	5	6
Sel. Lat. B87 15	BPL 1179	COLOMBIA	5	3	5	5	6	9	9	5	5	3	5	5	6
Sel. Lat. B87 13	BPL 1179	COLOMBIA	7	3	9	6	6	9	9	7	9	3	5	5	6
Sel. Lat. B87 22	L83106	ICARDA	7	3	4	4	5	7	9	3	5	3	5	7	6
Sel. Lat. B87 27	L83114	ICARDA	5	3	7	4	5	9	9	3	7	3	5	5	5
Sel. Lat. B87 100	S83059	ICARDA	5	3	6	5	4	9	9	3	7	3	5	5	6
Sel. Lat. B87 103	S83061	ICARDA	5	3	9	6	6	9	9	5	7	3	7	7	6
Sel. Lat. B87 111	S83075	ICARDA	5	3	7	7	5	7	9	7	7	3	5	5	8
Sel. Lat. B87 118	S83081	ICARDA	5	3	7	5	2	9	9	5	5	3	5	5	7
Sel. Lat. B87 127	ILB 3025	COLOMBIA	5	3	5	5	2	5	9	5	5	3	3	7	6
Sel. Lat. B87 140	ILB 3025	COLOMBIA	7	3	4	3	2	9	9	5	5	4	5	5	5
Sel. Lat. B87 142	ILB 3026	COLOMBIA	7	3	8	6	6	9	9	5	5	4	3	5	5
Sel. Lat. B87 143	ILB 3026	COLOMBIA	3	3	5	5	6	9	9	5	7	4	3	5	5
Sel. Lat. B87 158	ILB 3026	COLOMBIA	5	3	5	7	6	9	9	5	7	4	7	5	6
Sel. Lat. B87 175	ILB 3027	COLOMBIA	5	3	7	6	2	9	9	5	7	4	7	9	7
Sel. Lat. B87 187	ILB 3033	COLOMBIA	5	3	5	3	7	9	9	3	5	3	5	7	4
Sel. Lat. B87 195	ILB 3034	COLOMBIA	5	3	6	4	7	9	9	5	5	3	5	5	7
Sel. Lat. B87 201	ILB 3036	COLOMBIA	5	3	3	4	7	7	9	3	5	3	7	5	7
Sel. Lat. B87 247	ILB 2282	COLOMBIA	5	3	8	5	6	9	9	7	7	3	5	5	8
Sel. Lat. B87 248	ILB 2282	COLOMBIA	5	3	7	7	7	9	9	5	7	3	5	5	7
Sel. Lat. B87 279	ILB 2302	COLOMBIA	7	3	7	5	6	9	9	5	5	4	3	3	5
Syrian Local Large	(ILB 1814)	SYRIA	5	3	7	5	7	9	9	7	5	3	5	9	7
Rebaya-40	R-40	EGYPT	5	3	7	7	7	5	9	7	9	3	5	7	9
Local Suceptible Check			7	3	7	9	7	9	9	5	5	5	7	9	8

Chile: The nursery was conducted at Graneros. All the entries including the susceptible check exhibited a rating of 3.
Ecuador: The nursery was conducted at Santa Catalina. Two entries showed resistant, and 15 entries tolerant reaction.
Egypt: The nursery was grown at Giza. Two, 15, and 9 entries showed resistant, tolerant, and susceptible reaction, respectively.
Italy: The nursery was conducted at Tarquinia. Five, four and 17 entries were rated as resistant, tolerant and susceptible, respectively.
Morocco: The nursery was conducted at Dar Bouazza. Only four entries showed resistant reaction and all others susceptible.
Poland: The nursery was conducted at Pulway, Radzikow and Strzelce. All the entries at Pulway exhibited highly susceptible reaction. At Radzikow, 21 entries showed resistant or tolerant reaction, and at Strzelce 15 entries showed tolerant reaction.
Portugal: The nursery was conducted at Elvas. All the entries including the check were rated between 3 and 5.
Syria: The nursery was conducted at Al-Ghab and Gelline. Twenty-two entries at Al-Ghab and 18 at Gelline were resistant or tolerant.
U.K.: The nursery was conducted at Cambridgeshire. Only nine entries were rated as tolerant and all others as susceptible.

On the basis of overall locations, Sel-Lat. B87-10 (BPL 710), B87-24 (L83108), B87-27 (L83114), B87-118 (S83081), B87-127 (ILB 3025), B87-140 (ILB 3025), occured most frequently among the resistant sources at various locations and possessed relatively broad base resistance.

4.9.3. FABA BEAN INTERNATIONAL RUST NURSERY (FBIRN)

Material

The Faba Bean International Rust Nursery included 21 test entries. These entries were selections from the materials which originated from Algeria, Canada, China, Egypt, Greece, Iran, Jordan, Spain, Syria, Tunisia, Urugway, and ICARDA.

The susceptible check was the local land race from the location where the nursery was to be grown.

Results and Discussion

Seventeen sets of FBIRN were distributed to cooperators in 14 countries. The results were received from 8 locations in 8 countries and are presented.

The disease reaction of the entries to rust (Uromyces fabae) at different locations is given in Table 4.9.3.

Bolivia: The nursery was conducted at Cochabamba. The ratings revealed that one entry Rebaya 40 was resistant, and all other entries (except BPL 406, BPL 427, BPL 484, BPL 604, BPL 702, BP 1179 and ILB 1814 which were susceptible) were tolerant in reaction. Local susceptible check

Table 4.9.3. Reaction of faba bean lines to rust at different locations in FBIRN during 1987/88.

Pedigree	Accession	Origin	BOLIVIA Cochabamba	COLOMBIA Obonuco	EGYPT Giza	ITALY Tarquinia	MOROCCO Dar-Bouazza	POLAND Pulawy
Sel. Lat. R87- 2	BPL 8	JORDAN	5	5	3	4	7	N
Sel. Lat. R87- 6	BPL 261	GREECE	5	5	1	5	7	O
Sel. Lat. R87- 8	BPL 263	GREECE	5	5	3	7	7	
Sel. Lat. R87-10	BPL 406	SPAIN	7	5	3	5	7	V
Sel. Lat. R87-13	BPL 417	SPAIN	5	5	4	7	7	I
Sel. Lat. R87-15	BPL 427	SPAIN	7	5	1	3	7	S
Sel. Lat. R87-17	BPL 484	URUGWAY	7	5	3	7	7	I
Sel. Lat. R87-22	BPL 539	CHINA	5	3	2	8	7	B
Sel. Lat. R87-24	15563-2	CANADA	5	7	1	5	7	L
Sel. Lat. R87-27	L82014	ICARDA	5	7	3	4	5	E
Sel. Lat. R87-35	BPL 552	IRAN	5	5	4	6	5	
Sel. Lat. R87-42	BPL 571	EGYPT	5	7	1	4	7	P
Sel. Lat. R87-46	BPL 588	EGYPT	5	7	3	7	7	U
Sel. Lat. R87-49	BPL 604	EGYPT	7	7	3	7	7	S
Sel. Lat. R87-54	BPL 627	ALGERIA	5	5	4	5	7	T
Sel. Lat. R87-59	BPL 663	TUNISIA	5	5	2	6	7	U
Sel. Lat. R87-61	BPL 665	TUNISIA	5	3	2	4	7	L
Sel. Lat. R87-64	BPL 702	SUDAN	7	7	3	4	7	E
Sel. Lat. R87-15	BPL 1179	COLOMBIA	7	3	3	3	5	S
Syrian Local Large	ILB 1814	SYRIA	7	5	4	7	7	
Rebaya-40	R-40	EGYPT	3	7	4	3	7	(1)
Local Susceptible Check			5	5	4	7	7	

also showed tolerant reaction.
Colombia: The nursery was conducted at Obonuco. Three entries were rated as resistant, 12 as tolerant and 6 as susceptible. The susceptible check also showed tolerant reaction.
Egypt: The nursery was conducted at Giza. All the entries including the susceptible check were rated between 1 and 4.
Italy: The nursery was conducted at Tarquinia. Twelve entries were rated as resistant or tolerant and all others as susceptible.
Morocco: The nursery was conducted at Dar Bouazza. Three entries (L82014, BPL 552, and BPL 1179) showed tolerant reaction and all others were susceptible.

On the basis of overall locations, seven entries namely, BPL 8, BPL 261, L82014, BPL 552, BPL 627, BPL 665, and BPL 1179 were relatively more frequent among tolerant lines than others.

4.9.4. FABA BEAN INTERNATIONAL MUTLIPLE DISEASE NURSERY (FBIMDN)

Material

The Faba Bean International Mutiple Disease Nursery comprised 6 test entries and one local susceptible check to be provided by the cooperator. The test entries were selections from the materials which originated from Syria, Egypt and ICARDA.

The susceptible check was the local land race from the location where the nursery was to be grown.

Results and Discussion

Seven sets of FBIMDN were distributed to cooperators in 6 countries. The results were, however, received from two locations and are presented here. The reaction of entries to various diseases is given in Table 4.9.4.

Egypt: The nursery was conducted at Giza and the scores were recorded for rust. Local susceptible check took rating of 5, and all other entries between 3 and 4.
U.K. The nursery was conducted at Cambridgeshire. None of the entries showed resistant reaction to all the three diseases. However, an entry B87-31 was resistant to two diseases, rust and ascochyta blight.

Table 4.9.4. Reaction of faba bean entries to Rust (*Uromyces fabae*), Chocolate spot (*Botrytis fabae*) and Ascochyta blight (*Ascochyta fabae*) in FBIMDN at two locations during 1987/88.

Pedigree	Accession	Origin	Rust		Chocolate Spot	Ascochyta Blight
			EGYPT	U.K.	U.K.	U.K.
			Giza	Cambridge-shire	Cambridge-shire	Cambridge-shire
B87-30	L82010 (UROM X BOT)	ICARDA	3	3	6	5
B87-31	L82011 (UROM X BOT)	ICARDA	3	3	5	2
B87-36	L82006 (ASCO X BOT X UROM)	ICARDA	3	2	6	5
B87-40	L82009 (ASCO X BOT X UROM)	ICARDA	4	4	7	5
Syrian Local	ILB 1814	SYRIA	3	5	7	5
Egyptian Local	R-40	EGYPT	4	3	7	7
Local Susceptible Check	–	–	5	6	5	7

5. LENTIL INTERNATIONAL TRIALS AND NURSERIES

Fourteen lentil international trials and nurseries were available to cooperators in 1987/88 season. These included yield trials, screening nurseries, stress nurseries, segregating populations and agronomy trials. Except the agronomy trials all other trials and nurseries are discussed in this section. Cooperators were free to use these materials directly or indirectly for the improvement of lentils in their own national programs.

5.1. LENTIL INTERNATIONAL YIELD TRIAL - LARGE SEED (LIYT-L)

Material

The Lentil Interntional Yield Trial - Large Seed comprised 23 test entries which were supplied and one local check to be supplied by the cooperator. The test entries were selections with seed size more than 4.5g/100-seed. The test entries were selected on the basis of their superior performance in international screening nursery.

Methods and Management

The suggested trial design was a randomized complete block design with 3 replications. The recommended plot size was four rows, each 4 m long with inter row spacing of 25 cm. Eight hundred seeds per plot were supplied.

Sixty seven sets of the trial were sent to cooperators in 32 countries. The results were, however, returned from 35 trials from 24 countries. The agronomic information received from cooperators is given in Table 5.1.1.

Results and Discussion

The data on time to flowering, time to maturity and plant height are given in Tables 5.1.2, 5.1.3 and 5.1.4, respectively. The location means for time to flowering, time to maturity and plant height ranged from 45 days (for Grob Fnzersdorf in Austria) to 150 days (for Madrid in Spain); 95 days (for Eskisehir in Turkey) to 212 days (for Madrid in Spain); 15 cm (for Setif in Algeria) to 84 cm (for Obregon in Mexico), respectively. Across locations, the entry FLIP 86-16L was earliest to flower and mature, and was also tallest.

The seed yield and rank of entries at different locations is given in Table 5.1.5. The ANOVA revealed that the differences among the entries were significant for 24 out of 29 locations reporting the data. The seed yields varied from 54 kg/ha at Dahmouni in Algeria to 2415 kg/ha at Tel Hadya in Syria. Among significant locations, at 17 locations some of the entries exceeded the local check by a significant margin. On the basis of average over locations the top five entries included FLIP 86-8L, 78S 26002, FLIP 85-38L, FLIP85-16L, and FLIP 86-5L with seed yields of 1201, 1184, 1114, 1113 and 1095 kg/ha,

Table 5.1.1. Agronomic data for different locations in the LIYT-L during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Dahmouni	10.12.87	16.06.88	17	90	75	-	Trifluraline (Treflan)	Metropole
ALGERIA	Setif	NA	NA	NA			NA	NA	NA
ALGERIA	Sidi Bel Abbes	25.11.87	06.06.88	-			-	-	NA
ARGENTINA	Perico	05.05.88	28.09.88	-			-	Metribuzin, Lambdacihalo-Trine	Precoz
AUSTRALIA	Horsham	29.06.88	22.12.88		150		-	Trifluraline, Cyanazine, Diquat, Endosulphan	Precoz
AUSTRALIA	Malloo	19.05.88	03.11.88		150		-	Trifluraline, Cyanazine, Fluazi-Pop, Butyl, Dichloro-fop Methyl, Dimethoate	Precoz
AUSTRALIA	Tamworth	24.06.88	06.11.88						Laird
AUSTRIA	Grob-Enzersdorf	05.05.88	16.08.88	25	60	30	-	Tribunil	Lenka
AUSTRIA	Grob-Enzersdorf-2	05.05.88	16.08.88	25	60	30	-	Tribunil	Lenka
CHILE	Graneros	15.07.88	15.12.88	-			7	-	Sel. Graneros
CYPRUS	Dromolaxia	03.02.88	13.06.88	21	48	0	-	-	
EGYPT	Sakha	03.12.87	01.05.88	38	75		-	Gesagard	Giza 370
ETHIOPIA	Debre Zeit	13.07.88		-			-	-	ILL 358
IRAN	Karaj	15.03.88	25.06.88	24	72		-	Treflan, Metasystox	Ghazvin
IRAQ	Mosul	25.11.87	26.05.88	50	50		-	-	Mahally
ITALY	Catania	24.11.87	30.05.88	45	90		-	-	Locale di Altamura
ITALY	Gaudiano	16.02.88	05.07.88	25	78		-	-	
ITALY	Modolla	10.03.88	13.07.88	40	100		-	Pirimicarb	Local Population
JORDAN	Marow	08.11.87		20	40		-	-	UJL 176
JORDAN	Taiba	02.01.88	20.05.88	10	15		-	-	UJL 176
LEBANON	Terbol	20.11.87	20.05.88		50		-	Kerb, Bladex	
MEXICO	Navojoa (Sonora)	18.11.87	27.04.88	92	40		5	Desis, Malathion, Tamaron	Guanajuato
MEXICO	Obregon (Sonora)	11.11.87	21.04.88	90	40		7	PCNB, Captan, Folimat	Guanajuato
MOROCCO	Marchouch	02.12.87	13.06.88	28	56	28	-	-	L 56
MOROCCO	Settat	18.11.87	10.05.88	20	50		-	-	L 56
PERU	Chiquian	28.11.87	15.05.88	-			-	Afalon	Chupaco
PORTUGAL	Elvas	24.11.87	07.06.88	-			-	-	ILL 5750P84-802
SPAIN	Madrid	13.11.87	20.06.88	32	96		-	Prometryne	LEC 142 ANGELA
SYRIA	Tel Hadya	24.11.87	19.05.88		50		-	Kerb, Bladex	ILL 4401
THAILAND	Chiang Mai	11.10.87	29.03.88	23	45	23	12	Azodrin, Benlate	-
TUNISIA	Beja	14.11.87	NA	NA			NA	NA	NA
TURKEY	Eskisehir	06.04.88	20.06.88	30	70				Sultan-1

NA = Not available

Table 5.1.2. Time to flowering (days) of entries at different locations in the LIYT-L during 1987/88.

Entry Name	Acc. No. (ILL)	Parentage	Origin	ALGERIA			ARGENTINA	AUSTRALIA
				Dahmouni	Setif	Sidi Bel Abbes	Perico	Horsham
Local Large	4400	-	SYRIA	130	147	140	122	111
Nablus	4606	-	PALESTINE	135	142	137	131	103
78S 26002	5582	-	JORDAN	135	140	136	130	104
78S 26018	5590	-	JORDAN	115	137	-	109	103
81S 30935	5668	-	SYRIA	128	139	139	111	104
81S 38326	5671	-	SYRIA	130	147	138	122	112
FLIP 84- 27L	5699	ILL 20 X ILWL1	ICARDA	122	137	-	119	103
FLIP 84- 78L	5748	ILL883 X ILL470	ICARDA	128	143	-	108	106
FLIP 84- 81L	5751	ILL889 X ILL588	ICARDA	135	143	138	130	107
FLIP 84- 84L	5754	ILL445 X ILL 35	ICARDA	128	149	-	118	112
FLIP 84- 92L	5762	ILL262 X ILL445	ICARDA	128	150	138	123	107
FLIP 84-147L	5816	ILL889 X ILL588	ICARDA	135	144	140	117	108
FLIP 84-148L	5817	ILL889 X ILL588	ICARDA	130	146	139	115	105
FLIP 84-149L	5818	ILL445 X ILL470	ICARDA	128	142	-	125	105
FLIP 85- 2L	5840	(ILL449 X ILL555)X (ILL445 X ILL701)	ICARDA	120	149	-	114	112
FLIP 85- 4L	5842	ILL889 X ILL588	ICARDA	132	146	140	133	107
FLIP 85- 35L	5873	ILL466 X ILL212	ICARDA	122	139	135	126	100
FLIP 85- 38L	5876	ILL466 X ILL212	ICARDA	130	145	-	135	107
FLIP 86- 2L	5988	ILL466 X ILL212	ICARDA	130	139	135	128	102
FLIP 86- 3L	5989	ILL466 X ILL212	ICARDA	128	139	-	118	102
FLIP 86- 5L	5991	ILL466 X ILL212	ICARDA	128	139	-	129	101
FLIP 86- 8L	5994	ILL466 X ILL212	ICARDA	122	139	-	121	103
FLIP 86- 16L	6002	ILL4349 X ILL4605	ICARDA	122	136	-	114	91
Local Check				123	147	135	84	91
Location Mean				**128**	**143**	**138**	**120**	**104**
S.E. of Mean				5.32	0.94	One Rep.	2.03	1.14
L.S.D. at 5%				-	2.69		5.77	3.24
C.V. %				7.22	1.15		2.92	1.89
Error df				46	46		46	46
Significance				NS	*		*	*

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	AUSTRALIA	AUSTRIA		CHILE	CYPRUS	EGYPT	ETHIOPIA	IRAN
	Mallee	(Grob-Enzersdorf) I	II	Graneros	Dromolaxia	Sakha	Debre Zeit	Karaj
Local Large	120	46	45	93	87	90	72	73
Nablus	114	46	45	90	84	100	55	71
78S 26002	113	44	45	89	83	90	54	70
78S 26018	110	41	44	87	80	82	50	69
81S 30935	114	46	46	91	84	80	54	73
81S 38326	120	46	45	94	79	95	64	71
FLIP 84- 27L	111	45	45	90	81	80	53	71
FLIP 84- 78L	109	42	44	86	84	75	49	72
FLIP 84- 81L	118	44	45	93	80	88	59	70
FLIP 84- 84L	120	44	45	92	86	90	71	70
FLIP 84- 92L	121	46	45	94	78	85	70	70
FLIP 84-147L	117	45	45	93	87	90	61	69
FLIP 84-148L	119	46	45	93	79	80	60	70
FLIP 84-149L	118	45	46	93	87	80	-	71
FLIP 85- 2L	117	46	45	93	84	90	53	71
FLIP 85- 4L	116	46	45	93	80	95	67	68
FLIP 85- 35L	112	44	45	90	83	80	54	71
FLIP 85- 38L	119	48	47	91	87	80	56	70
FLIP 86- 2L	112	45	45	90	80	95	52	70
FLIP 86- 3L	110	45	45	90	86	80	52	70
FLIP 86- 5L	110	44	45	90	81	80	52	70
FLIP 86- 8L	111	42	44	89	79	80	54	70
FLIP 86- 16L	104	44	44	84	79	65	48	70
Local Check	103	46	46	93	81	75	51	70
Location Mean	114	45	45	91	82	84	57	70
S.E. of Mean	1.09	0.41	0.38	0.53	1.04	0.75	1.32	0.79
L.S.D. at 5%	3.09	1.18	1.09	1.50	2.95	2.13	3.77	2.24
C.V. %	1.65	1.60	1.47	1.01	2.18	1.53	4.02	1.93
Error df	46	46	46	46	46	46	44	46
Significance	*	*	*	*	*	*	*	*

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	IRAQ	ITALY			JORDAN	LEBANON	MEXICO	
	Mosul	Catania	Gaudiano	Medolla	Marow	Terbol	Navojoa	Obregon
Local Large	131	139	135	72	146	136	101	112
Nablus	129	139	133	68	143	131	94	103
78S 26002	131	138	132	67	146	130	82	98
78S 26018	130	136	132	68	145	128	88	97
81S 30935	130	138	132	69	146	131	101	107
81S 38326	133	139	133	70	146	134	96	108
FLIP 84- 27L	132	139	132	71	146	129	89	101
FLIP 84- 78L	131	139	133	70	148	132	84	93
FLIP 84- 81L	130	138	132	69	147	132	108	112
FLIP 84- 84L	131	139	132	69	146	134	102	112
FLIP 84- 92L	134	143	132	68	145	134	108	112
FLIP 84-147L	132	138	132	69	147	132	103	112
FLIP 84-148L	131	138	132	68	148	133	94	109
FLIP 84-149L	131	138	132	70	147	131	99	103
FLIP 85- 2L	134	141	132	71	146	132	76	99
FLIP 85- 4L	130	139	132	68	148	133	105	111
FLIP 85- 35L	130	138	132	70	146	129	94	99
FLIP 85- 38L	132	139	132	69	148	133	85	97
FLIP 86- 2L	128	139	132	70	145	129	99	94
FLIP 86- 3L	130	138	132	70	147	129	93	97
FLIP 86- 5L	131	140	132	71	146	130	94	98
FLIP 86- 8L	130	138	132	67	147	131	82	102
FLIP 86- 16L	130	136	132	69	142	122	78	93
Local Check	152	139	138	72	146	148	81	92
Location Mean	132	139	133	69	146	132	93	103
S.E. of Mean	1.18	0.66	0.25	0.59	1.08	0.65	4.37	2.22
L.S.D. at 5%	3.36	1.88	0.70	1.69	3.06	1.84	12.43	6.32
C.V. %	1.55	0.83	0.32	1.48	1.28	0.85	8.12	4.75
Error df	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	MOROCCO		PERU	PORTUGAL	SPAIN	SYRIA	THAILAND	(1)
	Marchouch	Settat	Chiquian	Elvas	Madrid	Tel Hadya	Chiang Mai	Overall Mean
Local Large	115	128	95	123	155	141	108	112
Nablus	111	124	87	119	149	136	92	108
78S 26002	111	118	86	121	152	137	96	107
78S 26018	102	120	89	119	144	135	96	104
81S 30935	106	124	88	116	149	136	103	107
81S 38326	115	118	91	122	154	141	106	110
FLIP 84- 27L	105	122	84	120	147	135	96	106
FLIP 84- 78L	111	104	87	115	151	137	83	104
FLIP 84- 81L	112	124	91	124	148	139	105	110
FLIP 84- 84L	116	124	94	122	154	141	98	110
FLIP 84- 92L	109	107	96	125	156	140	111	110
FLIP 84-147L	108	124	92	121	149	140	104	110
FLIP 84-148L	111	120	89	123	151	140	99	108
FLIP 84-149L	112	124	92	119	149	139	103	109
FLIP 85- 2L	105	107	91	111	143	140	89	106
FLIP 85- 4L	111	122	94	122	151	140	101	110
FLIP 85- 35L	102	117	81	119	149	135	96	106
FLIP 85- 38L	111	118	86	122	155	139	94	108
FLIP 86- 2L	110	120	87	122	147	135	103	108
FLIP 86- 3L	102	120	84	119	146	135	96	106
FLIP 86- 5L	105	120	98	121	146	135	96	107
FLIP 86- 8L	111	124	86	121	150	136	92	106
FLIP 86- 16L	116	120	82	102	133	126	59	100
Local Check	118	107	105	118	166	137	–	
Location Mean	**110**	**119**	**90**	**119**	**150**	**137**	**97**	
S.E. of Mean	0.00	One Rep.	3.60	1.63	1.01	0.61	3.38	
L.S.D. at 5%	0.00		10.24	4.63	2.87	1.72	9.63	
C.V. %	0.00		6.94	2.36	1.17	0.76	6.05	
Error df	46		46	46	46	46	44	
Significance	*		*	*	*	*	*	

* = Significant at $P < 0.05$, NS = Not significant.
(1) Sidi Bel Abbes and Debre Zeit were excluded from the overall mean.

Table 5.1.3. Time to maturity (days) of entries at different locations in the LIYT-L during 1987/88.

Entry Name	ALGERIA			ARGENTINA	AUSTRALIA		EGYPT	IRAN
	Dahmouni	Setif	Sidi Bel Abbes	Perico	Horsham	Mallee	Sakha	Karaj
Local Large	173	193	190	161	160	178	150	103
Nablus	173	187	186	164	158	172	150	104
78S 26002	173	186	181	155	155	168	150	104
78S 26018	173	179	184	150	156	168	135	103
81S 30935	173	186	176	153	156	173	145	105
81S 38326	173	189	188	152	160	177	150	105
FLIP 84- 27L	173	188	-	163	154	172	150	104
FLIP 84- 78L	173	190	191	166	175	172	140	104
FLIP 84- 81L	173	188	189	165	158	175	150	105
FLIP 84- 84L	173	188	190	160	185	180	150	105
FLIP 84- 92L	173	197	-	171	159	177	150	105
FLIP 84-147L	173	188	185	155	157	175	150	104
FLIP 84-148L	173	188	179	155	158	173	150	106
FLIP 84-149L	173	185	-	159	157	182	140	105
FLIP 85- 2L	173	195	-	157	159	178	150	106
FLIP 85- 4L	173	198	190	153	159	177	150	104
FLIP 85- 35L	173	181	182	160	151	168	140	105
FLIP 85- 38L	173	187	176	165	159	177	145	105
FLIP 86- 2L	173	179	183	151	151	172	150	103
FLIP 86- 3L	173	181	181	146	153	170	150	105
FLIP 86- 5L	173	188	178	163	153	167	140	105
FLIP 86- 8L	173	187	189	152	156	168	150	104
FLIP 86- 16L	173	194	-	159	150	167	125	104
Local Check	173	193	174	125	149	165	140	107
Location Mean	**173**	**188**	**184**	**157**	**158**	**173**	**146**	**105**
S.E. of Mean	0.00	3.89	One Rep.	1.23	1.26	1.78	0.00	0.82
L.S.D. at 5%	0.00	-		3.49	3.60	5.06	0.00	-
C.V. %	0.00	3.58		1.36	1.39	1.78	0.00	1.36
Error df	46	46		46	46	46	46	46
Significance	*	NS		*	*	*	*	NS

Cont'd. ...

Table 5.1.3. Cont'd. ...

Entry Name	IRAQ	ITALY			JORDAN	LEBANON	MEXICO	
	Mosul	Catania	Gaudiano	Medolla	Marow	Terbol	Navojoa	Obregon
Local Large	179	183	145	116	187	176	158	162
Nablus	178	182	143	118	185	172	149	162
78S 26002	177	182	143	118	184	171	140	160
78S 26018	176	181	141	117	184	172	143	162
81S 30935	173	181	141	118	183	172	138	162
81S 38326	175	182	146	118	189	175	157	163
FLIP 84- 27L	178	181	142	118	186	172	145	163
FLIP 84- 78L	178	183	146	114	185	181	148	162
FLIP 84- 81L	175	181	140	113	186	172	156	162
FLIP 84- 84L	177	183	141	122	185	172	152	162
FLIP 84- 92L	178	183	143	118	186	174	154	163
FLIP 84-147L	174	181	143	118	186	173	154	162
FLIP 84-148L	175	182	143	113	185	171	154	162
FLIP 84-149L	178	182	143	120	187	172	150	162
FLIP 85- 2L	180	183	142	118	187	175	142	162
FLIP 85- 4L	176	182	143	122	184	172	156	162
FLIP 85- 35L	177	182	141	114	184	169	154	162
FLIP 85- 38L	175	182	142	115	185	173	145	162
FLIP 86- 2L	176	182	141	113	185	171	152	162
FLIP 86- 3L	178	181	143	116	187	170	147	162
FLIP 86- 5L	178	181	141	118	186	170	150	160
FLIP 86- 8L	179	182	140	118	186	172	141	162
FLIP 86- 16L	177	181	141	118	182	169	138	155
Local Check	181	182	147	115	186	179	137	155
Location Mean	**177**	**182**	**143**	**117**	**185**	**173**	**148**	**161**
S.E. of Mean	1.08	0.47	0.37	0.47	1.04	0.81	2.88	0.69
L.S.D. at 5%	3.07	1.35	1.06	1.34	2.95	2.30	8.19	1.95
C.V. %	1.06	0.45	0.45	0.69	0.97	0.81	3.36	0.74
Error df	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*

Cont'd. ...

Table 5.1.3. Cont'd. ...

Entry Name	MOROCCO		PERU	PORTUGAL	SPAIN	SYRIA	THAILAND	TURKEY	(1) Overall Mean
	Marchouch	Settat	Chiquian	Elvas	Madrid	Tel Hadya	Chiang Mai	Eskisehir	
Local Large	168	167	145	188	215	182	169	97	163
Nablus	164	165	131	185	210	179	164	94	160
78S 26002	164	163	140	182	208	176	152	95	158
78S 26018	155	163	130	185	210	176	152	92	157
81S 30935	159	165	126	189	210	176	156	94	158
81S 38326	168	163	150	188	212	180	169	97	163
FLIP 84- 27L	158	163	140	182	209	177	150	94	159
FLIP 84- 78L	164	159	127	191	212	183	154	95	161
FLIP 84- 81L	165	165	150	187	211	176	169	97	162
FLIP 84- 84L	169	165	140	187	215	179	164	95	163
FLIP 84- 92L	162	159	151	189	217	179	168	97	163
FLIP 84-147L	161	165	142	183	213	177	169	96	161
FLIP 84-148L	164	165	148	189	212	177	169	96	161
FLIP 84-149L	165	165	141	187	217	180	168	95	162
FLIP 85- 2L	158	159	134	184	211	179	164	93	160
FLIP 85- 4L	164	165	142	187	211	176	169	97	162
FLIP 85- 35L	155	165	131	180	212	177	157	94	158
FLIP 85- 38L	164	165	148	185	210	179	156	95	160
FLIP 86- 2L	162	165	138	182	215	178	160	94	159
FLIP 86- 3L	155	149	140	187	208	177	157	93	158
FLIP 86- 5L	158	165	148	179	209	178	160	93	159
FLIP 86- 8L	164	165	135	180	211	179	152	93	159
FLIP 86- 16L	169	132	126	187	207	174	128	93	154
Local Check	171	159	144	180	221	178	-	95	
Location Mean	**163**	**162**	**139**	**185**	**212**	**178**	**160**	**95**	
S.E. of Mean	0.14	One Rep.	5.02	2.31	1.31	0.85	3.35	0.52	
L.S.D. at 5%	0.39		14.29	6.57	3.74	2.41	9.54	1.47	
C.V. %	0.15		6.23	2.16	1.07	0.82	3.63	0.95	
Error df	46		46	46	46	46	44	46	
Significance	*		*	*	*	*	*	*	

(1) Sidi Bel Abbes was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.1.4. Plant height (cm) of entries at different locations in the LIYT-L during 1987/88.

Entry Name	ALGERIA			ARGENTINA	AUSTRALIA		AUSTRIA		CHILE
	Dahmouni	Setif	Sidi Bel Abbes	Perico	Horsham	Mallee	(Grob-Enzersdorf) I	II	Graneros
Local Large	25	13	27	26	30	31	32	28	35
Nablus	24	16	29	32	25	29	25	24	35
78S 26002	25	13	25	31	29	29	25	25	38
78S 26018	23	15	–	34	28	25	23	26	37
81S 30935	24	17	25	43	25	26	23	27	33
81S 38326	25	12	–	22	30	30	23	29	37
FLIP 84- 27L	21	12	28	33	30	28	23	23	37
FLIP 84- 78L	25	20	35	38	32	35	29	29	37
FLIP 84- 81L	23	13	25	34	25	29	28	28	33
FLIP 84- 84L	22	11	–	28	26	28	25	28	37
FLIP 84- 92L	23	14	–	28	24	29	30	29	33
FLIP 84-147L	23	13	30	30	23	27	29	28	33
FLIP 84-148L	23	13	30	31	22	27	29	27	32
FLIP 84-149L	25	17	35	38	31	33	24	26	38
FLIP 85- 2L	23	14	–	34	24	25	26	27	35
FLIP 85- 4L	23	16	25	33	22	27	25	30	33
FLIP 85- 35L	21	15	25	33	25	25	20	23	33
FLIP 85- 38L	22	15	–	28	30	27	20	23	35
FLIP 86- 2L	21	12	25	35	24	27	18	24	33
FLIP 86- 3L	24	15	25	36	29	28	22	23	37
FLIP 86- 5L	22	13	29	38	27	28	20	23	35
FLIP 86- 8L	21	13	26	33	24	30	28	30	33
FLIP 86- 16L	22	23	30	45	34	28	38	40	42
Local Check	32	14	–	41	24	25	35	40	40
Location Mean	23	15	28	34	27	28	26	28	35
S.E. of Mean	0.61	1.04	One Rep.	2.45	1.78	1.28	1.33	0.97	2.48
L.S.D. at 5%	1.74	2.96		6.99	5.06	3.63	3.79	2.77	–
C.V. %	4.52	12.36		12.67	11.49	7.85	8.94	6.10	12.08
Error df	46	46		46	46	46	46	46	46
Significance	*	*		*	*	*	*	*	NS

Cont'd. ...

Table 5.1.4. Cont'd. ...

Entry Name	IRAN	IRAQ	ITALY			JORDAN	LEBANON	MEXICO	
	Karaj	Mosul	Catania	Gaudiano	Medolla	Marow	Terbol	Navojoa	Obregon
Local Large	23	34	32	25	42	28	30	52	72
Nablus	20	31	31	34	45	30	29	42	85
78S 26002	22	35	31	29	40	34	29	46	83
78S 26018	22	30	32	23	40	38	31	49	97
81S 30935	22	29	31	32	58	37	28	51	97
81S 38326	22	32	33	30	42	35	30	49	70
FLIP 84- 27L	20	32	33	27	40	35	28	44	90
FLIP 84- 78L	24	35	35	43	52	37	34	55	87
FLIP 84- 81L	24	32	29	29	32	30	30	37	80
FLIP 84- 84L	21	33	30	35	40	30	29	50	83
FLIP 84- 92L	22	30	30	31	78	27	29	54	80
FLIP 84-147L	22	32	29	30	33	30	28	50	65
FLIP 84-148L	21	32	31	27	53	30	29	43	75
FLIP 84-149L	24	32	34	38	67	31	32	55	67
FLIP 85- 2L	22	31	28	33	70	32	28	58	95
FLIP 85- 4L	22	32	30	28	52	31	29	36	82
FLIP 85- 35L	18	31	33	25	42	31	27	36	90
FLIP 85- 38L	22	32	31	30	40	35	29	48	85
FLIP 86- 2L	21	30	31	28	30	34	27	34	95
FLIP 86- 3L	22	25	34	20	43	34	29	39	100
FLIP 86- 5L	23	28	32	29	42	31	31	40	69
FLIP 86- 8L	21	29	31	25	40	36	26	52	105
FLIP 86- 16L	28	30	35	35	58	37	33	43	83
Local Check	25	37	33	35	58	31	31	44	80
Location Mean	22	31	32	30	47	33	29	46	84
S.E. of Mean	1.33	1.56	1.07	0.80	1.44	2.41	1.45	5.13	0.07
L.S.D. at 5%	3.77	4.43	3.04	2.29	4.10	–	–	14.59	0.19
C.V. %	10.35	8.58	5.84	4.65	5.27	12.72	8.54	19.26	0.14
Error df	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	NS	NS	*	*

Cont'd. ...

Table 5.1.4. Cont'd. ...

Entry Name	MOROCCO		PERU	PORTUGAL	SPAIN	SYRIA	THAILAND	(1) Overall Mean
	Marchouch	Settat	Chiquian	Elvas	Madrid	Tel Hadya	Chiang Mai	
Local Large	53	42	30	34	52	33	22	34
Nablus	55	44	31	30	44	36	22	34
78S 26002	52	53	33	35	44	38	19	35
78S 26018	57	41	31	29	46	37	23	35
81S 30935	48	34	25	32	49	40	22	36
81S 38326	50	45	34	33	51	34	21	34
FLIP 84- 27L	48	54	33	35	50	44	20	35
FLIP 84- 78L	49	47	32	40	56	44	26	39
FLIP 84- 81L	54	45	33	30	46	31	21	33
FLIP 84- 84L	51	32	35	29	50	33	19	34
FLIP 84- 92L	52	34	40	32	51	36	22	36
FLIP 84-147L	47	39	35	31	43	33	23	32
FLIP 84-148L	55	34	35	30	48	33	22	33
FLIP 84-149L	46	41	32	34	52	40	21	37
FLIP 85- 2L	51	40	29	31	52	34	20	36
FLIP 85- 4L	47	40	31	30	42	31	20	33
FLIP 85- 35L	53	36	32	29	50	36	23	33
FLIP 85- 38L	54	47	34	32	51	35	20	34
FLIP 86- 2L	52	44	31	30	47	44	24	33
FLIP 86- 3L	57	40	37	31	46	43	22	35
FLIP 86- 5L	48	33	33	30	50	41	24	33
FLIP 86- 8L	52	46	37	28	51	37	27	36
FLIP 86- 16L	52	47	36	38	53	47	28	40
Local Check	49	42	38	30	50	38	-	
Location Mean	51	42	33	32	49	38	22	
S.E. of Mean	3.76	0.57	2.64	1.74	1.56	2.29	1.08	
L.S.D. at 5%	-	1.61	-	4.95	4.43	6.51	3.07	
C.V. %	12.69	2.35	13.80	9.46	5.52	10.57	8.41	
Error df	46	46	46	46	46	46	44	
Significance	NS	*	NS	*	*	*	*	

(1) Sidi Bel Abbes was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.1.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIYT-L during 1987/88.

Entry Name	ALGERIA						ARGENTINA		AUSTRALIA			
	Dahmouni		Setif		Sidi Bel Abbes		Perico		Tamworth		Horsham	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Large	109	1	373	17	383	22	0	23	1668	21	1911	12
Nablus	52	14	898	6	495	20	267	8	2062	14	1341	20
78S 26002	68	6	858	9	1129	11	222	10	2277	6	1933	10
78S 26018	34	20	1076	1	891	14	278	7	2145	11	2022	8
81S 30935	40	17	898	7	1454	3	494	2	2150	10	2474	1
81S 38326	66	7	411	16	949	13	0	24	2022	15	2452	3
FLIP 84- 27L	18	23	916	5	1433	4	156	15	2394	5	1793	13
FLIP 84- 78L	46	15	262	24	329	24	106	19	2017	16	1585	17
FLIP 84- 81L	76	3	573	13	833	17	167	13	2064	12	1548	18
FLIP 84- 84L	73	4	331	19	862	16	72	20	1991	17	2467	2
FLIP 84- 92L	73	5	349	18	970	12	50	21	1716	20	2170	7
FLIP 84-147L	64	8	747	12	1170	10	161	14	2062	13	1696	15
FLIP 84-148L	42	16	1040	3	1208	8	178	12	1922	19	1681	16
FLIP 84-149L	59	9	276	23	387	21	44	22	1452	23	985	24
FLIP 85- 2L	104	2	296	21	350	23	144	16	1642	22	2207	6
FLIP 85- 4L	33	21	296	22	741	18	139	17	1966	18	1230	22
FLIP 85- 35L	57	12	818	10	624	19	217	11	2512	1	1970	9
FLIP 85- 38L	57	11	462	14	874	15	117	18	2242	7	2289	4
FLIP 86- 2L	59	10	860	8	1208	8	283	6	2461	4	2244	5
FLIP 86- 3L	39	18	462	15	1279	6	244	9	2506	2	1289	21
FLIP 86- 5L	38	19	1069	2	1441	5	400	4	2497	3	1741	14
FLIP 86- 8L	18	22	924	4	1241	7	483	3	2187	9	1926	11
FLIP 86- 16L	7	24	764	11	1520	2	572	1	2235	8	1067	23
Local Check	55	13	331	20	1620	1	344	5	597	24	1459	19
Location Mean	**54**		**637**		**975**		**214**		**2033**		**1812**	
S.E. of Mean	14.20		123.65		One Rep.		77.05		62.58		256.44	
L.S.D. at 5%	40.41		351.96				219.32		178.30		729.95	
C.V. %	45.85		33.62				62.33		5.06		24.52	
Error df	46		46				46		46		46	
Significance	*		*				*		*		*	
Ent. > L. Check	2		12				1		23		6	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	AUSTRALIA		AUSTRIA				CHILE		CYPRUS		EGYPT	
	Mallee		Grob-Enzersdorf I & II				Graneros		Dromolaxia		Sakha	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Large	741	18	1176	10	1225	8	1007	22	2562	4	1352	12
Nablus	1252	8	699	23	619	22	1042	20	2247	9	481	24
78S 26002	1259	7	1492	5	1058	13	1389	13	2567	3	1185	19
78S 26018	1074	13	652	24	538	24	1458	11	1731	22	1778	4
81S 30935	1141	11	1169	11	1267	6	1007	21	2062	13	852	21
81S 38326	667	21	1522	4	1221	9	1146	19	2038	17	1370	10
FLIP 84- 27L	1474	4	751	19	816	18	1528	7	2040	16	1296	17
FLIP 84- 78L	1585	1	1266	9	826	15	1493	8	1887	21	1333	13
FLIP 84- 81L	867	16	1275	8	1124	12	1458	10	2280	8	1370	11
FLIP 84- 84L	733	19	1992	3	1801	2	1319	16	2058	14	1722	5
FLIP 84- 92L	600	23	1160	12	1170	11	1667	4	2209	10	1574	9
FLIP 84-147L	733	20	1345	7	1326	5	1250	17	2047	15	1796	3
FLIP 84-148L	822	17	965	14	1331	4	1597	6	1902	19	1833	2
FLIP 84-149L	667	22	906	16	931	14	486	23	1896	20	907	20
FLIP 85- 2L	474	24	1359	6	1235	7	1354	14	1269	24	500	23
FLIP 85- 4L	896	15	920	15	1210	10	1667	3	2447	6	1704	6
FLIP 85- 35L	1563	2	703	22	821	17	1181	18	2967	1	1222	18
FLIP 85- 38L	933	14	723	21	821	16	1319	15	2780	2	1333	15
FLIP 86- 2L	1356	6	814	18	644	21	1639	5	1982	18	1611	8
FLIP 86- 3L	1459	5	726	20	738	20	1493	9	2187	11	1296	16
FLIP 86- 5L	1541	3	828	17	747	19	1424	12	2433	7	1611	7
FLIP 86- 8L	1200	9	1027	13	603	23	2014	1	2171	12	1333	14
FLIP 86- 16L	1185	10	2223	2	1653	3	1910	2	1596	23	537	22
Local Check	1133	12	2345	1	1828	1	417	24	2538	5	1852	1
Location Mean	**1056**		**1168**		**1065**		**1344**		**2162**		**1327**	
S.E. of Mean	119.29		123.66		121.84		143.17		340.82		297.28	
L.S.D. at 5%	339.56		352.00		346.81		407.54		-		846.23	
C.V. %	19.56		18.33		19.82		18.45		27.30		38.80	
Error df	46		46		46		46		46		46	
Significance	*		*		*		*		NS		*	
Ent. > L. Check	4		0		0		22		-		0	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	IRAN		IRAQ		ITALY		JORDAN				LEBANON	
	Karaj		Mosul		Catania		Marow		Taiba		Terbol	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Large	61	24	1861	4	770	21	2069	10	1263	24	1491	16
Nablus	166	14	1685	11	833	13	2416	5	1826	13	1383	20
78S 26002	305	8	1574	16	958	3	2824	2	1608	16	1712	1
78S 26018	120	18	1619	13	854	11	2547	4	1525	18	1441	17
81S 30935	162	15	685	24	938	5	2556	3	2010	3	1417	19
81S 38326	116	20	1811	6	770	20	1344	21	1917	9	1558	12
FLIP 84- 27L	119	19	1620	12	938	4	1871	12	1569	17	1648	6
FLIP 84- 78L	76	23	1320	20	853	12	958	23	1435	20	1230	23
FLIP 84- 81L	388	2	1519	19	791	19	1816	15	1628	15	1546	14
FLIP 84- 84L	145	16	1528	18	636	24	1856	13	1458	19	1613	10
FLIP 84- 92L	358	4	1593	15	833	14	2069	9	1769	14	1435	18
FLIP 84-147L	380	3	1944	2	791	18	1849	14	1860	10	1616	9
FLIP 84-148L	210	12	1783	7	874	10	1587	19	1957	6	1619	8
FLIP 84-149L	278	9	1944	1	791	17	1628	18	1923	8	1518	15
FLIP 85- 2L	176	13	1296	21	646	23	1218	22	1853	11	1292	22
FLIP 85- 4L	471	1	1769	8	958	2	1398	20	1847	12	1682	4
FLIP 85- 35L	103	21	1889	3	894	8	2120	7	2022	2	1644	7
FLIP 85- 38L	252	10	1565	17	811	16	2956	1	1959	5	1685	2
FLIP 86- 2L	138	17	1685	10	749	22	1709	16	1282	23	1605	11
FLIP 86- 3L	97	22	1843	5	1061	1	2109	8	1952	7	1684	3
FLIP 86- 5L	322	7	1759	9	874	9	1971	11	2130	1	1676	5
FLIP 86- 8L	338	6	1602	14	937	6	2120	6	1426	21	1557	13
FLIP 86- 16L	220	11	907	23	812	15	716	24	1974	4	1134	24
Local Check	340	5	1211	22	896	7	1708	17	1313	22	1356	21
Location Mean	**223**		**1584**		**845**		**1892**		**1729**		**1523**	
S.E. of Mean	76.77		184.13		63.36		396.46		316.19		56.99	
L.S.D. at 5%	218.52		524.13		180.34		1128.53		-		162.21	
C.V. %	59.74		20.14		12.99		36.29		31.67		6.48	
Error df	46		46		46		46		46		46	
Significance	*		*		*		*		NS		*	
Ent. > L. Check	0		9		0		1		-		14	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	MEXICO				MOROCCO				PERU		PORTUGAL	
	Navojoa		Obregon		Marchouch		Settat		Chiquian		Elvas	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Large	861	24	3019	5	296	11	129	21	101	13	270	4
Nablus	1445	17	2938	6	765	4	364	6	35	18	232	12
78S 26002	2139	6	3506	1	257	12	229	16	43	16	238	11
78S 26018	2343	5	2758	8	165	15	85	23	39	17	177	22
81S 30935	1753	12	2785	7	104	18	157	20	21	23	261	6
81S 38326	1778	10	1903	17	172	14	247	13	87	14	305	2
FLIP 84- 27L	1759	11	2193	10	757	5	305	9	243	3	207	14
FLIP 84- 78L	1963	8	2642	9	644	7	304	10	32	20	199	17
FLIP 84- 81L	981	22	1654	19	339	10	167	18	339	1	255	7
FLIP 84- 84L	1750	13	1989	14	146	16	318	8	29	22	269	5
FLIP 84- 92L	1574	15	1940	16	35	23	240	15	34	19	219	13
FLIP 84-147L	1491	16	2011	13	80	20	161	19	269	2	253	9
FLIP 84-148L	2056	7	2014	12	76	21	36	24	234	4	281	3
FLIP 84-149L	898	23	1074	24	115	17	191	17	50	15	207	15
FLIP 85- 2L	1926	9	1328	23	93	19	98	22	16	24	319	1
FLIP 85- 4L	1648	14	1950	15	452	9	283	11	230	5	254	8
FLIP 85- 35L	1250	20	1335	22	483	8	397	4	128	11	193	20
FLIP 85- 38L	2592	3	1600	20	669	6	589	2	106	12	201	16
FLIP 86- 2L	1083	21	1525	21	230	13	391	5	183	7	193	19
FLIP 86- 3L	1280	18	2096	11	933	2	401	3	173	8	197	18
FLIP 86- 5L	1268	19	1882	18	72	22	279	12	143	10	240	10
FLIP 86- 8L	2870	2	3386	2	804	3	338	7	219	6	166	23
FLIP 86- 16L	2472	4	3161	4	1511	1	915	1	31	21	102	24
Local Check	3472	1	3178	3	28	24	240	14	149	9	186	21
Location Mean	**1777**		**2244**		**384**		**286**		**122**		**226**	
S.E. of Mean	432.34		350.52		242.41		103.74		56.59		30.62	
L.S.D. at 5%	1230.67		997.77		690.03		295.29		161.07		87.17	
C.V. %	42.14		27.05		109.22		62.84		80.14		23.47	
Error df	46		46		46		46		46		46	
Significance	*		*		*		*		*		*	
Ent. > L. Check	0		0		5		2		1		3	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry NAme	SPAIN Madrid		SYRIA Tel Hadya		THAILAND Chiang Mai		TUNISIA Beja		TURKEY Eskisehir		Overall Mean (1)	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Large	451	9	2118	21	79	22	1005	4	469	24	954	21
Nablus	831	1	–	–	79	21	755	20	828	13	1001	17
78S 26002	739	3	2562	8	108	16	672	24	797	15	1184	2
78S 26018	383	16	2723	4	158	6	771	19	1026	2	1060	9
81S 30935	384	15	2466	10	104	17	949	8	885	9	1078	6
81S 38326	543	5	2030	22	92	20	880	13	771	17	1006	16
FLIP 84- 27L	444	11	2776	2	154	7	704	23	1024	3	1078	7
FLIP 84- 78L	541	6	2586	6	150	9	877	14	854	11	958	20
FLIP 84- 81L	337	20	2190	19	133	11	960	7	792	16	974	19
FLIP 84- 84L	634	4	2238	18	121	12	840	17	901	8	1059	11
FLIP 84- 92L	432	12	2254	16	108	15	923	9	729	21	1000	18
FLIP 84-147L	267	23	2274	14	167	2	1035	2	745	20	1047	13
FLIP 84-148L	299	21	2147	20	150	8	965	6	677	22	1048	12
FLIP 84-149L	159	24	2243	17	158	5	856	16	906	7	775	23
FLIP 85- 2L	364	18	2323	13	171	1	920	11	1026	1	846	22
FLIP 85- 4L	340	19	2027	23	100	19	968	5	635	23	1008	15
FLIP 85- 35L	477	8	2577	7	113	14	1091	1	974	4	1063	8
FLIP 85- 38L	410	13	2358	12	100	18	917	12	818	14	1114	3
FLIP 86- 2L	392	14	2557	9	133	10	1027	3	953	5	1016	14
FLIP 86- 3L	497	7	2986	1	163	3	725	22	755	19	1060	10
FLIP 86- 5L	373	17	2770	3	117	13	920	10	865	10	1095	5
FLIP 86- 8L	799	2	2434	11	163	4	856	15	922	6	1201	1
FLIP 86- 16L	270	22	2630	5	67	23	752	21	844	12	1113	4
Local Check	444	10	2271	15	–	–	771	18	766	18		
Location Mean	**450**		**2415**		**126**		**881**		**832**			
S.E. of Mean	89.80		175.51		29.19		129.62		53.57			
L.S.D. at 5%	255.63		500.25		–		–		152.50			
C.V. %	34.53		12.59		40.27		25.49		11.16			
Error df	46		44		40		46		46			
Significance	*		*		NS		NS		*			
Ent. > L. Check	3		2		–		–		6			

(1) Tel Hadya wasexcluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.1.6. The five heaviest seed yielding entries at the individual locations in the LIYT-L during 1987/88.

Rank	ALGERIA			ARGENTINA	AUSTRALIA			AUSTRIA
	Dahmouni	Setif	Sidi Bel Abbes	Perico	Horsham	Mallee	Tamworth	Grob-Enzersdorf I
1	Local Large	78S 26018	Local Check	FLIP86- 16L	81S 30935	FLIP84- 78L	FLIP85- 35L	Local Check
2	FLIP85- 2L	FLIP86- 5L	FLIP86- 16L	81S 30935	FLIP84- 84L	FLIP85- 35L	FLIP86- 3L	FLIP86- 16L
3	FLIP84- 81L	FLIP84-148L	81S 30935	FLIP86- 8L	81S 38326	FLIP86- 5L	FLIP86- 5L	FLIP84- 84L
4	FLIP84- 84L	FLIP86- 8L	FLIP84- 27L	FLIP86- 5L	FLIP85- 38L	FLIP84- 27L	FLIP86- 2L	81S 38326
5	FLIP84- 92L	FLIP84- 27L	FLIP86- 5L	Local Check	FLIP86- 2L	FLIP86- 3L	FLIP84- 27L	78S 26002

Cont'd. ...

Table 5.1.6. Cont'd. ...

Rank	AUSTRIA	CHILE	CYPRUS	EGYPT	IRAN	IRAQ	ITALY
	Grob-Enzersdorf II	Graneros	Dromolaxia	Sakha	Karaj	Mosul	Catania
1	Local Check	FLIP86- 8L	FLIP85- 35L	Local Check	FLIP85- 4L	FLIP84-149L	FLIP86- 3L
2	FLIP84- 84L	FLIP86- 16L	FLIP85- 38L	FLIP84-148L	FLIP84- 81L	FLIP84-147L	FLIP85- 4L
3	FLIP86- 16L	FLIP85- 4L	78S 26002	FLIP84-147L	FLIP84-147L	FLIP85- 35L	78S 26002
4	FLIP84-148L	FLIP84- 92L	Local Large	78S 26018	FLIP84- 92L	Local Large	FLIP84- 27L
5	FLIP84-147L	FLIP86- 2L	Local Check	FLIP84- 84L	Local Check	FLIP86- 3L	81S 30935

Cont'd. ...

Table 5.1.6. Cont'd. ...

Rank	JORDAN		LEBANON	MEXICO		MOROCCO	
	Marow	Taiba	Terbol	Navojoa	Obregon	Marchouch	Settat
1	FLIP85- 38L	FLIP86- 5L	78S 26002	Local Check	78S 26002	FLIP86- 16L	FLIP86- 16L
2	78S 26002	FLIP85- 35L	FLIP85- 38L	FLIP86- 8L	FLIP86- 8L	FLIP86- 3L	FLIP85- 38L
3	81S 30935	81S 30935	FLIP86- 3L	FLIP85- 38L	Local Check	FLIP86- 8L	FLIP86- 3L
4	78S 26018	FLIP86- 16L	FLIP85- 4L	FLIP86- 16L	FLIP86- 16L	ILL 4606	FLIP85- 35L
5	ILL 4606	FLIP85- 38L	FLIP86- 5L	78S 26018	Local Large	FLIP84- 27L	FLIP86- 2L

Cont'd. ...

Table 5.1.6. Cont'd. ...

Rank	PERU	PORTUGAL	SPAIN	SYRIA	THAILAND	TUNISIA	TURKEY
	Chiquian	Elvas	Madrid	Tel Hadya	Chiang Mai	Beja	Eskisehir
1	FLIP84- 81L	FLIP85- 2L	ILL 4606	FLIP86- 3L	FLIP85- 2L	FLIP85- 35L	FLIP85- 2L
2	FLIP84-147L	81S 38326	FLIP86- 8L	FLIP84- 27L	FLIP84-147L	FLIP84-147L	78S 26018
3	FLIP84- 27L	FLIP84-148L	78S 26002	FLIP86- 5L	FLIP86- 3L	FLIP86- 2L	FLIP84- 27L
4	FLIP84-148L	Local Large	FLIP84- 84L	78S 26018	FLIP86- 8L	Local Large	FLIP85- 35L
5	FLIP85- 4L	FLIP84- 84L	81S 38326	FLIP86- 16L	FLIP84-149L] 78S 26018	FLIP85- 4L	FLIP86- 2L

The bracket indicates entries having the same rank.

respectively.

The five best entries at different locations are given in Table 5.1.6. Some of the lines, namely, FLIP 86-16L, FLIP 86-3L, FLIP 84-27L occured most frequently among the top five heaviest yielders and were thus comparatively widley adapted.

On the basis of average over two years for the common entries (Table 5.1.7.), 78S 26002 ranked number 1 and was followed by FLIP 84-27L, FLIP 85-35L, 81S 38326, and FLIP 84-148L with seed yields of 1432, 1328, 1309, 1278, and 1277 kg/ha, respectively.

Table 5.1.7. The mean seed yield (Y=kg/ha) and rank (R) of the common entries in LIYT-L during 1986/87 and 1987/88.

Entry Name	1986/87		1987/88		Mean	
	Y	R	Y	R	Y	R
Syrian local large	1369	11	954	12	1162	12
78S 26002	1680	1	1184	1	1432	1
81S 38326	1549	4	1006	8	1278	4
FLIP 84- 27L	1577	2	1078	2	1328	2
FLIP 84- 76L	1450	6	958	11	1204	9
FLIP 84- 81L	1405	10	974	10	1190	10
FLIP 84- 84L	1421	8	1059	4	1240	6
FLIP 84- 92L	1426	7	1000	9	1213	8
FLIP 84-147L	1412	9	1047	6	1230	7
FLIP 84-148L	1505	5	1048	5	1277	5
FLIP 85- 2L	1355	13	846	13	1101	13
FLIP 85- 4L	1362	12	1008	7	1185	11
FLIP 85- 35L	1555	3	1063	3	1309	3

5.2. LENTIL INTERNATIONAL YIELD TRIAL-SMALL SEED (LIYT-S)

Material

The material for the Lentil International Yield Trial-Small Seed comprised of 23 test entries and one local check to be supplied by the cooperator. The test entries were selections with seed size less than 4.5 g/100-seeds and were selected from the international screening nurseries based on their superior yield performance. Out of 23 test entries, 21 were developed at ICARDA through hybridization.

Methods and Management

The trial design was a randomized complete block with four replications. The suggested plot size was four rows each 4 m long with an inter row spacing of 25 cm. Thirty nine sets of trial were distributed to cooperators in 22 countries. The results were received

Table 5.2.1. Agronomic data for different locations in the LIYT-S during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Hassi Bounif	29.12.87	15.05.88	12	15	18	-	-	Local
ARGENTINA	Mendoza	NA	NA	NA			NA	NA	NA
AUSTRALIA	Horsham	29.06.88	22.12.88		150		-	Trifluralin, Cyanazine, Diquat, Endosulphan	Precoz
AUSTRALIA	Mallee	19.05.88	03.12.88		150		-	Trifluralin, Cyanazine, Fluazi-Fop-Butyl, Diclofop Methyl, Dimethoate	Precoz
AUSTRALIA	Tamworth	24.06.88	06.11.88						Callisto
AUSTRIA	Grob-Enzersdorf	05.05.88	16.08.88	25	60	30	-	Tribunil	Lenka
CYPRUS	Dromolaxia	03.02.88	10.06.88	21	48	0			
ETHIOPIA	Debre Zeit	13.07.88	Not Harv.	-			-	-	ILL 358
JORDAN	Marow	08.11.87		20	40		-	-	UJL 176
JORDAN	Taiba	02.01.88	20.05.88	10	15		-	-	UJL 176
LEBANON	Terbol	20.11.87	25.05.88		50		-	Kerb, Igran	Lebanese Local
MOROCCO	Marchouch	20.11.87	27.05.88	28	56	28	-	-	L 24
MOROCCO	Settat	18.11.87	30.04.88	20	50		-	-	L 24
PORTUGAL	Elvas	23.11.87	21.06.88	-			-	-	188L,FLIP84-58L, ILL 5728
SPAIN	Madrid	13.11.87	17.06.88	32	96		-	Prometryne	LEC 142 (ANGELA)
SRI LANKA	Dodangolla	22.11.87	03.03.88	50	63		8	Metasystox, Oxydemekon - Methyl	-
SYRIA	Tel Hadya	24.11.87	26.05.88		50		-	Kerb, Bladex	ILL 4400
TUNISIA	Beja	NA	NA	NA			NA	NA	NA
TURKEY	Eskisehir	06.04.88	20.06.88	30	70		-	-	Sultan-1

NA = Not available

Table 5.2.2. Time to flowering (days) of entries at different locations in the LIYT-S during 1987/88.

Entry Name	Acc. No. (ILL)	Parentage	Origin	ALGERIA	AUSTRALIA		AUSTRIA	CYPRUS
				Hassi Bounif	Horsham	Mallee	Grob-Enzersdorf	Dromolaxia
Local Small	4401	–	SYRIA	98	109	118	45	86
78S 26013	5588	–	JORDAN	92	108	116	45	82
FLIP 84- 29L	5700	ILL 20 X ILWL1	ICARDA	91	99	111	45	86
FLIP 84- 44L	5715	ILL500 X ILL1719	ICARDA	96	112	120	55	86
FLIP 84- 51L	5722	ILL883 X ILL470	ICARDA	85	106	111	44	87
FLIP 84- 58L	5728	ILL 39 X ILL479	ICARDA	89	104	111	46	84
FLIP 84- 59L	5729	ILL 39 X ILL784	ICARDA	95	113	122	54	87
FLIP 84- 82L	5752	ILL 20 X ILWL1	ICARDA	90	101	110	46	82
FLIP 84- 88L	5758	ILL253 X ILL470	ICARDA	97	108	119	44	82
FLIP 84-105L	5775	ILL253 X ILL470	ICARDA	96	108	119	43	87
FLIP 84-159L	5828	ILL253 X ILL226	ICARDA	103	114	121	46	80
FLIP 84-161L	5830	ILL500 X ILL 35	ICARDA	91	109	115	50	87
FLIP 84-167L	5836	ILL262 X ILL445	ICARDA	97	108	119	46	85
FLIP 85- 15L	5854	ILL101 X ILL262	ICARDA	97	108	120	44	86
FLIP 85- 22L	5860	ILL262 X ILL479	ICARDA	103	105	115	45	84
FLIP 85- 25L	5863	ILL280 X ILL212	ICARDA	96	106	117	44	82
FLIP 85- 31L	5869	ILL883 X ILL516	ICARDA	98	109	117	43	84
FLIP 85- 33L	5871	ILL176 X ILL 35	ICARDA	96	112	121	44	87
FLIP 86- 29L	6015	ILL501 X ILL 2	ICARDA	94	112	118	45	79
FLIP 86- 31L	6017	(ILL323 X ILL199)X	ICARDA	96	113	120	46	85
FLIP 86- 32L	6018	(ILL176 X ILL226)X	ICARDA	99	108	118	45	79
FLIP 86- 63L	6049	(ILL294 X ILL 35)X	ICARDA	96	108	118	43	80
FLIP 86- 64L	6050	(ILL445 X ILL470)X	ICARDA	98	106	119	46	83
Local Check				112	91	105	46	80
Location Mean				**96**	**107**	**117**	**46**	**84**
S.E. of Mean				0.82	1.29	0.92	0.31	1.03
L.S.D. at 5%				2.23	3.65	2.59	0.88	2.91
C.V. %				1.48	2.42	1.58	1.37	2.47
Error df				46	69	69	69	69
Significance				*	*	*	*	*

Cont'd. ...

Table 5.2.2. Cont'd. ...

Entry Name	ETHIOPIA	JORDAN	LEBANON	MOROCCO		PORTUGAL	SPAIN	SYRIA	Overall mean
	Debre Zeit	Marow	Terbol	Marchouch	Settat	Elvas	Madrid	Tel Hadya	
Local Small	61	147	133	123	130	127	156	137	113
78S 26013	64	145	135	129	130	124	155	140	113
FLIP 84- 29L	54	145	130	116	106	123	149	135	107
FLIP 84- 44L	60	146	142	127	128	125	158	141	115
FLIP 84- 51L	50	147	147	123	106	126	155	140	110
FLIP 84- 58L	61	145	130	121	128	123	144	135	109
FLIP 84- 59L	71	146	143	127	128	125	159	142	116
FLIP 84- 82L	53	145	130	121	120	123	148	135	108
FLIP 84- 88L	68	146	134	123	122	127	150	137	112
FLIP 84-105L	62	146	135	123	122	126	149	138	112
FLIP 84-159L	70	147	145	130	122	127	155	142	115
FLIP 84-161L	63	145	141	126	122	125	154	141	113
FLIP 84-167L	67	146	135	123	122	126	149	137	112
FLIP 85- 15L	66	145	135	123	122	127	152	138	113
FLIP 85- 22L	68	145	135	127	130	127	151	137	113
FLIP 85- 25L	65	146	137	132	130	126	153	140	113
FLIP 85- 31L	58	146	138	123	128	127	159	141	113
FLIP 85- 33L	64	145	143	127	128	126	157	142	115
FLIP 86- 29L	61	145	133	123	128	125	154	139	112
FLIP 86- 31L	61	145	146	127	128	128	159	144	115
FLIP 86- 32L	63	144	147	125	128	126	154	141	114
FLIP 86- 63L	70	145	139	132	132	127	151	138	114
FLIP 86- 64L	58	147	132	126	120	126	156	137	112
Local Check	51	145	150	124	128	120	165	138	
Location Mean	**62**	**145**	**138**	**125**	**125**	**125**	**154**	**139**	
S.E. of Mean	1.36	0.65	0.90	0.94	One Rep.	1.24	0.73	0.46	
L.S.D. at 5%	3.87	-	2.53	2.66		3.49	2.07	1.30	
C.V. %	3.79	0.89	1.30	1.51		1.97	0.95	0.66	
Error df	46	69	69	69		69	69	69	
Significance	*	NS	*	*		*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.2.3. Time to maturity (days) of entries at different locations in the LIYT-S during 1987/88.

Entry Name	ALGERIA		AUSTRALIA		JORDAN	LEBANON	MOROCCO		PORTUGAL	SPAIN	SYRIA	TURKEY	Overall
	Hassi	Bounif	Horsham	Mallee	Marow	Terbol	Marchouch	Settat	Elvas	Madrid	Tel Hadya	Eskisehir	Mean
Local Small	134	157	176	184	172	170	163		193	210	177	93	166
78S 26013	132	152	174	183	173	175	163		189	209	176	93	165
FLIP 84- 29L	128	151	174	184	174	170	157		187	206	179	93	164
FLIP 84- 44L	135	155	178	180	175	175	163		184	210	177	94	166
FLIP 84- 51L	120	161	170	183	179	172	157		192	209	181	94	165
FLIP 84- 58L	128	150	170	183	171	172	163		183	205	175	95	163
FLIP 84- 59L	135	158	179	181	177	175	163		188	210	178	94	167
FLIP 84- 82L	129	152	173	184	176	172	163		185	211	177	94	165
FLIP 84- 88L	139	159	180	185	175	172	163		189	207	177	95	167
FLIP 84-105L	134	156	179	185	173	170	163		186	210	177	95	166
FLIP 84-159L	140	158	179	184	177	179	163		190	210	184	96	169
FLIP 84-161L	128	157	168	183	175	172	163		194	214	177	92	166
FLIP 84-167L	131	158	178	184	175	172	163		189	207	177	95	166
FLIP 85- 15L	134	159	180	184	176	172	163		190	210	177	95	167
FLIP 85- 22L	138	151	168	183	171	175	163		186	206	175	92	164
FLIP 85- 25L	136	155	173	184	173	175	163		193	209	177	94	166
FLIP 85- 31L	135	154	171	185	175	172	163		187	206	177	91	165
FLIP 85- 33L	131	159	180	183	178	180	169		190	213	179	93	169
FLIP 86- 29L	132	159	174	185	171	172	163		187	211	176	93	166
FLIP 86- 31L	137	155	179	184	179	180	163		194	215	179	94	169
FLIP 86- 32L	137	153	175	185	176	172	163		187	211	177	92	166
FLIP 86- 63L	138	154	170	184	172	172	163		189	210	176	92	165
FLIP 86- 64L	139	154	171	185	175	175	157		187	209	177	93	165
Local Check	145	149	170	182	181	175	163		180	221	180	96	
Location Mean	**134**	**155**	**174**	**183**	**175**	**174**	**163**		**188**	**210**	**177**	**94**	
S.E. of Mean	0.62	1.24	1.64	0.93	0.74	0.59	One Rep.		2.06	1.18	0.57	0.51	
L.S.D. at 5%	1.76	3.51	4.62	2.62	2.10	1.66			5.81	3.31	1.61	1.46	
C.V. %	0.80	1.60	1.88	1.01	0.85	0.68			2.19	1.12	0.64	0.95	
Error df	46	69	69	69	69	69			69	69	69	46	
Significance	*	*	*	*	*	*			*	*	*	*	

* = Significant at $P \leq 0.05$.

Table 5.2.4. Plant height (cm) of entries at different locations in the LIYT-S during 1987/88.

Entry Name	ALGERIA	ARGENTINA	AUSTRALIA		AUSTRIA	JORDAN	LEBANON
	Hassi Bounif	Mendoza	Horsham	Walpeup	Grob-Enzersdorf	Marow	Terbol
Local Small	27	22	24	26	19	27	29
78S 26013	28	26	24	27	25	30	28
FLIP 84- 29L	28	29	30	28	22	28	28
FLIP 84- 44L	36	25	29	26	20	21	31
FLIP 84- 51L	30	22	30	28	23	31	33
FLIP 84- 58L	29	28	31	24	25	30	28
FLIP 84- 59L	31	24	28	31	22	25	30
FLIP 84- 82L	31	24	29	28	23	28	28
FLIP 84- 88L	27	24	29	27	22	28	33
FLIP 84-105L	32	21	26	27	23	26	29
FLIP 84-159L	31	25	30	31	25	31	32
FLIP 84-161L	29	23	28	27	22	26	28
FLIP 84-167L	26	19	27	25	24	27	28
FLIP 85- 15L	30	22	28	28	22	28	32
FLIP 85- 22L	22	24	28	23	20	25	25
FLIP 85- 25L	27	21	29	29	22	25	30
FLIP 85- 31L	28	25	26	28	25	25	29
FLIP 85- 33L	38	24	31	30	29	25	31
FLIP 86- 29L	35	24	29	29	28	28	31
FLIP 86- 31L	35	26	33	31	24	29	31
FLIP 86- 32L	30	22	29	27	27	32	29
FLIP 86- 63L	24	22	31	26	22	30	29
FLIP 86- 64L	28	25	22	29	20	27	26
Local Check	26	24	32	25	35	28	32
Location Mean	**30**	**24**	**28**	**27**	**24**	**27**	**30**
S.E. of Mean	2.74	1.42	1.84	1.35	1.09	2.25	1.44
L.S.D. at 5%	7.78	4.00	5.20	3.80	3.07	-	4.07
C.V. %	16.04	11.98	13.05	9.86	9.25	16.35	9.77
Error df	46	69	69	69	69	69	69
Significance	*	*	*	*	*	NS	*

Cont'd. ...

Table 5.2.4. Cont'd. ...

Entry Name	MOROCCO		PORTUGAL	SPAIN	SRI LANKA	SYRIA	Overall Mean
	Marchouch	Settat	Elvas	Madrid	Dodangolla	Tel Hadya	
Local Small	48	35	30	46	9	34	29
78S 26013	48	34	33	51	15	37	31
FLIP 84- 29L	47	42	29	48	15	42	32
FLIP 84- 44L	54	44	28	45	16	34	31
FLIP 84- 51L	52	41	30	55	17	40	33
FLIP 84- 58L	51	43	32	51	13	36	32
FLIP 84- 59L	55	43	31	46	15	39	32
FLIP 84- 82L	46	41	31	47	16	43	32
FLIP 84- 88L	50	44	30	50	13	41	32
FLIP 84-105L	54	42	34	46	12	32	31
FLIP 84-159L	57	45	33	50	14	42	34
FLIP 84-161L	46	54	29	53	12	38	32
FLIP 84-167L	50	41	31	51	15	35	31
FLIP 85- 15L	45	41	30	48	13	35	31
FLIP 85- 22L	46	32	29	49	10	36	28
FLIP 85- 25L	52	43	32	48	10	36	31
FLIP 85- 31L	52	48	35	52	14	38	33
FLIP 85- 33L	54	35	34	54	14	41	34
FLIP 86- 29L	50	40	32	49	14	34	32
FLIP 86- 31L	54	45	34	53	13	41	34
FLIP 86- 32L	48	42	33	42	14	41	32
FLIP 86- 63L	50	41	29	48	11	37	31
FLIP 86- 64L	46	35	24	51	12	36	29
Local Check	50	45	33	56	0	40	
Location Mean	50	41	31	49	13	38	
S.E. of Mean	2.31	0.50	2.20	1.43	0.61	1.82	
L.S.D. at 5%	6.51	1.42	-	4.02	1.73	5.12	
C.V. %	9.23	2.42	14.14	5.77	9.71	9.64	
Error df	69	69	69	69	69	69	
Significance	*	*	NS	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.2.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIYT-S during 1987/88.

Entry Name	ALGERIA		ARGENTINA		AUSTRALIA						AUSTRIA	
	Hassi Bounif		Mendoza		Horsham		Walpeup		Tamworth		Grob-Enzersdorf	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Small	52	14	633	21	1678	23	911	14	1245	17	390	22
78S 26013	326	2	600	22	2500	5	1000	11	1789	6	1301	5
FLIP 84- 29L	134	5	2150	1	2700	2	1361	3	2068	3	983	8
FLIP 84- 44L	132	6	1160	7	2533	3	911	15	1566	11	309	24
FLIP 84- 51L	360	1	650	20	2300	12	1517	1	1781	8	971	9
FLIP 84- 58L	124	7	1000	10	3040	1	1389	2	2214	1	1323	3
FLIP 84- 59L	48	15	500	24	2311	11	967	13	1160	20	385	23
FLIP 84- 82L	24	19	933	12	2139	14	1283	4	2210	2	813	12
FLIP 84- 88L	96	9	850	14	2056	16	739	23	1109	21	569	17
FLIP 84-105L	52	13	850	13	1656	24	878	18	1252	18	680	15
FLIP 84-159L	24	18	983	11	2356	10	989	12	1162	19	947	10
FLIP 84-161L	55	11	700	17	1939	21	839	20	1930	5	426	21
FLIP 84-167L	64	10	1083	8	1972	20	767	22	1517	13	1087	6
FLIP 85- 15L	8	21	783	16	2472	8	578	24	935	23	777	14
FLIP 85- 22L	2	24	1317	6	2033	18	900	16	1482	14	490	19
FLIP 85- 25L	105	8	683	19	2528	4	1039	9	1344	15	566	18
FLIP 85- 31L	6	22	1400	5	2461	9	1033	10	1331	16	792	13
FLIP 85- 33L	285	3	1433	4	2489	7	833	21	1561	12	2074	1
FLIP 86- 29L	25	17	1050	9	2161	13	1089	7	2012	4	928	11
FLIP 86- 31L	153	4	817	15	2500	6	850	19	1093	22	1002	7
FLIP 86- 32L	4	23	683	18	2111	15	883	17	1682	9	1322	4
FLIP 86- 63L	54	12	533	23	2033	17	1050	8	1782	7	488	20
FLIP 86- 64L	29	16	1817	2	1933	22	1239	5	1676	10	646	16
Local Check	11	20	1583	3	2006	19	1194	6	565	24	1990	2
Location Mean	91		1008		2246		1010		1519		886	
S.E. of Mean	64.86		264.20		313.32		96.88		150.40		118.28	
L.S.D. at 5%	184.63		745.25		-		273.27		300.10		333.63	
C.V. %	123.92		52.42		27.90		19.18		12.92		26.71	
Error df	46		69		69		69		69		69	
Significance	*		*		NS		*		*		*	
Ent. > L. Check	3		0		-		1		23		0	

Cont'd. ...

Table 5.2.5. Cont'd. ...

Entry Name	CYPRUS		JORDAN				LEBANON		MOROCCO			
	Dromolaxia		Marow		Taiba		Terbol		Marchouch		Settat	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Small	1307	22	1482	10	1669	19	1214	18	1881	11	14	12
78S 26013	1362	21	2265	1	2366	6	1239	14	2056	7	51	5
FLIP 84- 29L	2095	3	1165	18	2400	5	1413	4	1183	24	311	1
FLIP 84- 44L	2087	4	200	24	1844	13	1553	1	2217	4	0	20
FLIP 84- 51L	1743	14	1468	11	1819	14	1231	15	1988	8	168	3
FLIP 84- 58L	2183	2	1620	6	1811	15	1195	20	2490	1	34	8
FLIP 84- 59L	2015	6	1030	21	2421	3	1415	3	1935	10	0	19
FLIP 84- 82L	1928	8	1232	16	1750	17	1394	5	1692	14	247	2
FLIP 84- 88L	1907	9	1428	13	2604	2	1388	6	1292	21	3	17
FLIP 84-105L	1047	24	1360	15	1501	22	1214	17	1582	17	12	13
FLIP 84-159L	2377	1	1608	7	1765	16	1465	2	1539	18	1	18
FLIP 84-161L	1877	10	1043	20	1691	18	1272	12	1796	12	31	10
FLIP 84-167L	1492	19	1662	5	2401	4	1306	10	1640	16	6	16
FLIP 85- 15L	1818	12	1448	12	1652	21	1278	11	1771	13	0	24
FLIP 85- 22L	1683	16	1398	14	2649	1	1054	24	1222	23	16	11
FLIP 85- 25L	1717	15	2010	2	1660	20	1342	9	1382	20	0	23
FLIP 85- 31L	1435	20	1972	3	2087	8	1230	16	1500	19	9	14
FLIP 85- 33L	1598	18	677	23	1024	24	1362	8	1660	15	63	4
FLIP 86- 29L	1818	11	1572	8	1938	11	1385	7	2411	2	9	15
FLIP 86- 31L	1625	17	698	22	1957	10	1243	13	2068	6	0	21
FLIP 86- 32L	1753	13	1070	19	2172	7	1188	21	1958	9	50	7
FLIP 86- 63L	2052	5	1505	9	2033	9	1202	19	1271	22	0	22
FLIP 86- 64L	1298	23	1952	4	1884	12	1063	23	2264	3	51	6
Local Check	1980	7	1227	17	1247	23	1153	22	2206	5	32	9
Location Mean	1758		1379		1931		1283		1792		46	
S.E. of Mean	276.08		246.54		322.63		80.66		244.32		15.16	
L.S.D. at 5%	–		695.44		–		227.53		689.18		42.77	
C.V. %	31.41		35.76		28.94		12.57		27.27		65.71	
Error df	69		69		46		69		69		69	
Significance	NS		*		NS		*		*		*	
Ent. > L. Check	–		4		–		7		0		3	

Cont'd. ...

Table 5.2.5. Cont'd. ...

Entry Name	PORTUGAL Elvas		SPAIN Madrid		SYRIA Tel Hadya		TUNISIA Beja		TURKEY Eskisehir		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local Small	1279	13	877	1	1891	24	652	24	760	24	1120	23
78S 26013	1419	6	829	3	2430	14	972	8	990	11	1465	3
FLIP 84- 29L	1204	16	555	21	2967	1	1052	2	1063	3	1531	2
FLIP 84- 44L	1111	19	400	24	2345	17	1038	4	1057	6	1279	15
FLIP 84- 51L	1175	17	585	18	2493	11	752	19	1016	9	1366	6
FLIP 84- 58L	1649	3	698	10	2606	5	1214	1	891	16	1590	1
FLIP 84- 59L	1391	10	586	17	2858	2	1048	3	1042	7	1319	11
FLIP 84- 82L	1083	20	721	9	2791	3	1002	6	870	17	1366	6
FLIP 84- 88L	1416	8	674	13	2734	4	980	7	849	21	1293	14
FLIP 84-105L	1738	1	771	6	2072	23	908	10	865	18	1151	22
FLIP 84-159L	1080	21	573	20	2591	6	916	9	839	22	1326	9
FLIP 84-161L	933	24	512	22	2286	20	674	23	833	23	1175	21
FLIP 84-167L	1419	7	504	16	2286	21	810	16	865	19	1311	13
FLIP 85- 15L	1378	11	787	5	2381	16	874	13	927	15	1242	20
FLIP 85- 22L	1204	15	582	19	2333	18	730	21	1146	1	1264	18
FLIP 85- 25L	1269	14	609	15	2325	19	840	14	938	14	1272	16
FLIP 85- 31L	1483	5	761	7	2557	8	752	18	1057	5	1366	6
FLIP 85- 33L	1141	18	610	14	2489	12	732	20	1078	2	1315	12
FLIP 86- 29L	1516	4	697	11	2584	7	1004	5	1063	4	1453	4
FLIP 86- 31L	1324	12	683	12	2517	10	824	15	990	10	1271	17
FLIP 86- 32L	1078	22	819	4	2544	9	886	11	969	13	1320	10
FLIP 86- 63L	1410	9	732	8	2126	22	686	22	984	12	1246	19
FLIP 86- 64L	1029	23	872	2	2453	13	796	17	1031	8	1374	5
Local Check	1709	2	432	23	2387	15	878	12	859	20		
Location Mean	1310		655		2460		876		957			
S.E. of Mean	221.28		101.50		168.74		87.70		64.64			
L.S.D. at 5%	–		–		475.97		247.38		183.99			
C.V. %	33.79		30.51		13.72		20.03		11.69			
Error df	69		69		69		69		46			
Significance	NS		NS		*		*		*			
Ent. > L. Check	–		–		1		1		6			

(1) Settat was excluded from the ovrall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.2.6. The five heaviest seed yielding entries at the individual locations in the LIYT-S during 1987/88.

	ALGERIA	ARGENTINA	AUSTRALIA			AUSTRIA
Rank	Hassi Bounif	Mendoza	Horsham	Tamworth	Walpeup	Grob-Enzersdorf
1	FLIP84- 51L	FLIP84- 29L	FLIP84- 58L	FLIP84- 58L	FLIP84- 51L	FLIP85- 33L
2	78S 26013	FLIP86- 64L	FLIP84- 29L	FLIP84- 82L	FLIP84- 58L	Local Check
3	FLIP85- 33L	Local Check	FLIP84- 44L	FLIP84- 29L	FLIP84- 29L	FLIP84- 58L
4	FLIP86- 31L	FLIP85- 33L	FLIP85- 25L	FLIP86- 29L	FLIP84- 82L	FLIP86- 32L
5	FLIP84- 29L	FLIP85- 31L	78S 26013] FLIP86- 31L]	FLIP84-161L	FLIP86- 64L	78S 26013

Cont'd. ...

Table 5.2.6. Cont'd. ...

	CYPRUS	JORDAN		LEBANON	MOROCCO	
Rank	Dromolaxia	Marow	Taiba	Terbol	Marchouch	Settat
1	FLIP84-159L	78S 26013	FLIP85- 22L	FLIP84- 44L	FLIP84- 58L	FLIP84- 29L
2	FLIP84- 58L	FLIP85- 25L	FLIP84- 88L	FLIP84-159L	FLIP86- 29L	FLIP84- 82L
3	FLIP84- 29L	FLIP85- 31L	FLIP84- 59L	FLIP84- 59L	FLIP86- 64L	FLIP84- 51L
4	FLIP84- 44L	FLIP86- 64L	FLIP84-167L	FLIP84- 29L	FLIP84- 44L	FLIP85- 33L
5	FLIP86- 63L	FLIP84-167L	FLIP84- 29L	FLIP84- 82L	Local Check	78S 26013] FLIP86- 64L]

Cont'd. ...

Table 5.2.6. Cont'd. ...

	PORTUGAL	SPAIN	SYRIA	TUNISIA	TURKEY
Rank	Elvas	Madrid	Tel Hadya	Beja	Eskisehir
1	FLIP84-105L	Local Small	FLIP84- 29L	FLIP84- 58L	FLIP85- 22L
2	Local Check	FLIP86- 64L	FLIP84- 59L	FLIP84- 29L	FLIP85- 33L
3	FLIP84- 58L	78S 26013	FLIP84- 82L	FLIP84- 59L	FLIP84- 29L
4	FLIP86- 29L	FLIP86- 32L	FLIP84- 88L	FLIP84- 44L	FLIP86- 29L
5	FLIP85- 31L	FLIP85- 15L	FLIP84- 58L	FLIP86- 29L	FLIP85- 31L] FLIP84- 44L]

The brackets indicate entries having the same rank.

for 23 trials from 19 countries and are reported. The agronomic practices employed at different locations are given in Table 5.2.1.

Results and Discussion

The data on time to flowering, time to maturity and plant height are given in Tables 5.2.2., 5.2.3. and 5.2.4., respectively. The location means for time to flowering, time to maturity and plant height ranged from 46 days (for Grob-Enzersdorf in Austria) to 154 days (for Madrid in Spain); 94 days (for Eskisehir in Turkey) to 210 days (for Madrid in Spain); and 13 cm (for Dodangolla in Sri Lanka) to 50 cm (for Marchouch in Morocco), respectively. The entries FLIP 84-29L and FLIP 84-58L flowered and matured earliest, and the entries FLIP 84-159L, FLIP 85-33L and FLIP86-31L with plant height of 34 cm were the tallest.

The seed yield and rank of entries at different locations is given in Table 5.2.5. The ANOVA revealed that the differences among the entries were significant for 12 out of 17 locations reporting data. The seed yields varied from 46 kg/ha at Settat in Morocco to 2460 kg/ha at Tel Hadya in Syria. Among significant locations, at 9 locations some of the entries exceeded the local check by a significant margin. On the basis of average over locations the top five entries included FLIP 84-58L, FLIP84- 29L, 78S 26013, FLIP 86- 29L and FLIP 86- 64L with seed yields of 1590, 1531, 1465, 1453 and 1374 kg/ha, respectively.

The five best entries at different locations are given in Table 5.2.6. Some of the lines namely FLIP 84- 29L and FLIP 84- 58L occured most frequently among the top five than others and were thus comparatively widley adapted.

On the basis of average over two years for the common entries (Table 5.2.7), FLIP 84- 58L ranked number 1 and was closely followed by FLIP 84-29L, FLIP84- 59L, FLIP 84- 44L and FLIP 84-82L with seed yields of 1459, 1433, 1330, 1325 and 1306 kg/ha, respectively.

Table 5.2.7. The mean seed yield (Y=kg/ha) and rank (R) of the common entries in LIYT-S during 1986/87 and 1987/88.

	1986/87		1987/88		Mean	
Entry Name	Y	R	Y	R	Y	R
Local Small	1112	13	1120	13	1116	13
FLIP 84- 29L	1334	3	1531	2	1433	2
FLIP 84- 44L	1370	1	1279	10	1325	4
FLIP 84- 58L	1327	4	1590	1	1459	1
FLIP 84- 59L	1341	2	1319	6	1330	3
FLIP 84- 82L	1245	6	1366	6	1306	5
FLIP 84- 88L	1219	8	1293	9	1256	9
FLIP 84-159L	1234	7	1326	5	1280	8
FLIP 84-161L	1154	12	1175	11	1165	12
FLIP 84-167L	1164	11	1311	8	1238	10
FLIP 85- 25L	1204	10	1272	12	1238	11
FLIP 85- 31L	1218	9	1366	3	1292	6
FLIP 85- 33L	1259	5	1315	7	1287	7

5.3. LENTIL INTERNATIONAL YIELD TRIAL - EARLY (LIYT-E)

Material

The material for the Lentil International Yield Trial - Early comprised of 23 test entries and one local check to be supplied by the cooperator. The test entries were selections with earliness. These were selected from the international screening nurseries based on their superior yield performance. Out of 23 test entries, 9 were developed at ICARDA through hybridization.

Methods and Management

The trial design was a randomised complete block with four replications. The suggested plot size was four rows each 4 m long with an inter row spacing of 25 cm. Twenty four sets of trials were distributed to cooperators in 11 countries. The results were received for 13 trials from 8 countries and are reported. The agronomic practices employed at different locations are given in Table 5.3.1.

Results and Discussion

The location mean for time to flowering (Table 5.3.2.), time to maturity (Table 5.3.3), and plant height (Table 5.3.4) ranged from 45 days (for Debre Zeit in Ethiopia) to 133 days (for Tel Hadya in Syria); 107 days (for Dodangolla in Sri Lanka) to 191 days (for Mansehra in Pakistan); and 20 cm (for Tarnab in Pakistan) to 53 cm (for Faisalabad in Pakistan), respectively. On an average over locations, the entry means ranged from 84 to 109 days for time to flowering, 149 to 167 days for time to maturity, and 32 to 42 cm for plant height. The highest seed yield (Table 5.3.5.) was obtained at Gemmeza in Egypt (2298 kg/ha) and was followed by Mansehra in Pakistan (2068 kg/ha), Tel Hadya in Syria (1850 kg/ha) and Faisalabad in Pakistan (1753 kg/ha). The seed yield at New Delhi in India (258 kg/ha) was, however, extremely poor. One of the entries, Precoz gave as high yield as 4319 kg/ha at Gemmeza in Egypt.

On an average over locations, the five best entries included FLIP 86-39L, Precoz, FLIP 86- 38L, ILL 2022 and ILL 2573 with respective seed yields of 1622, 1604, 1498, 1426 and 1409 kg/ha.

The ANOVA for seed yield revealed that the local check was excelled by some entries by a significant margin ($P \leq 0.05$) at 7 locations.

The five best entries in each of the locations are given in Table 5.3.6. The entries, L1278 and FLIP 86-39L occured most frequently among the five heaviest yielders and were thus comparatively better in adaptation.

Table 5.3.1. Agronomic data for different locations in the LIYT-E during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
BRAZIL	Brasilia-DF	05.05.88	02.10.88	56	120		20T	Tivran, Iprodine, Seed Tr.	Precoz
EGYPT	Gemmeza	08.12.87	10.05.88	36	72		1	Topogard	Giza 370
ETHIOPIA	Debre Zeit	13.07.88	Not Harv.	-			-	-	EL 142
INDIA	Delhi	30.11.87	20.04.88	20	40		2	Metasystox, Basolin	L - 4076
PAKISTAN	Islamabad (NARC)	NA	NA	NA			NA	NA	NA
PAKISTAN	Faisalabad (NIAB)	09.11.87	04.88	20	60		1	-	Masoor 85 (Var9-6)
PAKISTAN	Mansehra	27.10.87		20	50				Precoz
PAKISTAN	Tarnab	12.11.88	02.05.88	-			1	-	Local Check
PAKISTAN	Serai Nawrang	17.10.87	25.04.88	20	50		-	-	VM 25
SRI LANKA	Bandarawela	01.12.87	28.03.88	40	60	40	-	-	
SYRIA	Tel Hadya	23.11.87	22.05.88		50		-	Kerb, Bladex	ILL 4401

NA = Not available

Table 5.3.2. Time to flowering (days) of entries at different locations in the LIYT-E during 1987/88.

Entry Name	Acc. No. (ILL)	Pedigree	Origin	BRAZIL Brasilia	EGYPT Gemmeza	ETHIOPIA Debre Zeit	INDIA New Delhi	PAKISTAN Faisalabad (NARC)
El 42	1712	-	ETHIOPIA	91	87	48	82	96
ILL 1866	1866	-	SYRIA	99	100	50	100	-
L 1057	2022	-	ETHIOPIA	93	87	39	80	101
L 1327	2069	-	ETHIOPIA	99	102	47	97	118
Pant L 406	2501	-	INDIA	97	92	44	89	109
Pant L 639	2573	-	INDIA	94	92	42	87	105
L 1278	2580	-	INDIA	92	96	40	85	104
L 1282	2581	-	INDIA	89	100	37	86	106
LL 1	2582	-	INDIA	92	92	40	86	106
LL 37	3601	-	INDIA	93	91	43	86	104
LL 57	3614	-	INDIA	-	102	47	100	125
162	4403	-	PAKISTAN	95	91	40	85	105
Precoz	4605	-	ARGENTINA	92	82	50	74	92
Fam 370	5486	-	EGYPT	93	87	41	85	76
FLIP 84- 60L	5730	ILL 500 X ILL 254	ICARDA	97	92	48	91	118
FLIP 84- 78L	5748	ILL 883 X ILL 470	ICARDA	90	92	51	98	89
FLIP 84-112L	5782	ILL 883 X ILL 470	ICARDA	94	86	48	91	86
FLIP 86- 14L	6000	ILL4349 X ILL4605	ICARDA	84	76	47	69	83
FLIP 86- 17L	6003	ILL4349 X ILL4605	ICARDA	83	78	46	71	83
FLIP 86- 38L	6024	ILL 262 X ILL3458	ICARDA	87	86	49	82	109
FLIP 86- 39L	6025	ILL 1 X ILL 936	ICARDA	95	89	39	86	103
FLIP 86- 49L	6035	ILL4349 X ILL4605	ICARDA	88	76	48	70	83
FLIP 86- 51L	6037	ILL4349 X ILL4605	ICARDA	83	81	48	70	85
Local Check				83	92	50	83	78
Location Mean				91	90	45	85	98
S.E. of Mean				2.00	0.00	0.62	1.74	1.27
L.S.D. at 5%				5.65	0.00	1.74	4.95	3.58
C.V. %				4.38	0.00	2.74	3.56	2.58
Error df				66	69	69	46	66
Significance				*	*	*	*	*

Cont'd. ...

Table 5.3.2. Cont'd. ...

Entry Name	PAKISTAN				SRI LANKA		SYRIA	(1) Overall Mean
	Faisalabad (NIAB)	Mansehra	Tarnab	Serai Nawrang		Bandarawela	Tel Hadya	
El 42	88	118	107	102	96	68	130	92
ILL 1866	106	144	112	150	121	61	133	108
L 1057	92	119	111	113	101	43	132	92
L 1327	142	141	115	118	118	66	135	108
Pant L 406	103	121	110	124	109	49	133	97
Pant L 639	100	121	111	121	107	45	132	96
L 1278	99	123	108	124	105	47	133	96
L 1282	99	121	110	122	106	41	132	95
LL 1	98	121	110	124	106	45	132	95
LL 37	99	122	111	124	104	45	132	95
LL 57	135	127	117	133	125	66	138	109
162	97	122	110	124	105	41	131	95
Precoz (ILL 4605)	81	117	105	100	91	45	128	87
Fam 370	80	118	103	75	78	47	132	84
FLIP 84- 60L	104	136	113	133	118	67	136	104
FLIP 84- 78L	93	121	108	100	89	58	137	95
FLIP 84-112L	92	118	109	94	86	62	140	92
FLIP 86- 14L	82	118	98	103	83	41	129	85
FLIP 86- 17L	77	117	98	102	83	43	130	84
FLIP 86- 38L	101	119	107	124	109	67	132	97
FLIP 86- 39L	98	120	111	119	103	45	131	94
FLIP 86- 49L	78	125	100	105	83	54	129	87
FLIP 86- 51L	77	120	104	100	85	43	131	86
Local Check	93	117	110	121	78	49	138	
Location Mean	96	123	108	115	99	51	133	
S.E. of Mean	0.63	1.78	2.00	3.66	1.25	2.70	0.51	
L.S.D. at 5%	1.77	5.03	5.63	10.32	3.52	7.62	1.44	
C.V. %	1.30	2.91	3.69	6.38	2.51	10.50	0.77	
Error df	69	69	69	69	69	69	69	
Significance	*	*	*	*	*	*	*	

(1) Horsham and NARC were excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not sign..

Table 5.3.3. Time to maturity (days) of entries at different locations in the LIYT-E during 1987/88.

Entry Name	EGYPT	PAKISTAN					SRI LANKA	SYRIA	Overall Mean
	Gemmeza	Faisalabad (NARC)	Faisalabad (NIAB)	Mansehra	Tarnab	Serai-Nawrang	Bandarawela	Tel Hadya	
El 42	150	149	158	188	159	157	103	170	154
ILL 1866	152	165	166	193	165	184	105	173	163
L 1057	143	154	156	190	160	174	97	171	153
L 1327	153	163	168	192	166	179	107	176	163
Pant L 406	148	159	157	190	167	181	101	175	160
Pant L 639	147	151	159	185	158	175	111	171	157
L 1278	146	151	157	188	157	170	101	171	155
L 1282	150	154	151	188	156	174	99	171	155
LL 1	152	150	156	189	155	169	103	171	155
LL 37	151	155	156	189	164	177	111	171	159
LL 57	153	164	160	190	162	184	113	175	163
162	148	152	156	186	162	175	105	170	157
Precoz (ILL 4605)	145	146	144	187	152	151	98	170	149
Fam 370	152	157	158	189	162	179	116	178	161
FLIP 84- 60L	150	164	158	203	163	186	90	176	161
FLIP 84- 78L	151	160	165	202	164	183	124	185	167
FLIP 84-112L	146	157	159	199	166	187	123	183	165
FLIP 86- 14L	140	148	155	197	157	154	98	174	153
FLIP 86- 17L	141	147	145	189	155	151	98	175	150
FLIP 86- 38L	145	156	158	189	163	171	128	172	160
FLIP 86- 39L	146	155	159	191	164	174	132	174	162
FLIP 86- 49L	142	146	154	190	157	159	106	175	153
FLIP 86- 51L	152	148	158	189	155	155	98	181	154
Local Check	148	145	152	181	160	172	98	179	
Location Mean	**148**	**154**	**157**	**191**	**160**	**172**	**107**	**174**	
S.E. of Mean	0.08	1.70	0.42	1.80	2.36	3.00	2.48	0.91	
L.S.D. at 5%	0.22	3.51	1.19	5.08	6.66	8.47	6.98	2.58	
C.V. %	0.11	1.56	0.54	1.89	2.95	3.50	4.64	1.05	
Error df	69	23	69	69	69	69	69	69	
Significance	*	*	*	*	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.3.4. Plant height (cm) of entries at different locations in the LIYT-E during 1987/88.

Entry Name	EGYPT	INDIA	PAKISTAN				SRI LANKA	SYRIA	Overall Mean
	Gemmeza	New Delhi	Faisalabad (NIAB)	Mansehra	Tarnab	Serai - Nawrang	Bandarawela	Tel Hadya	
El 42	39	28	49	44	19	29	42	38	36
ILL 1866	43	25	38	38	19	23	42	33	32
L 1057	39	31	55	42	19	22	37	34	35
L 1327	43	31	56	50	20	22	43	44	38
Pant L 406	37	32	52	40	20	23	42	38	35
Pant L 639	40	32	58	39	20	26	35	29	35
L 1278	37	34	61	45	21	26	35	33	36
L 1282	42	34	46	43	20	34	36	33	36
LL 1	38	33	51	48	20	32	37	34	37
LL 37	35	29	65	47	20	26	46	33	37
LL 57	45	30	47	43	21	31	38	36	36
162	37	32	51	45	21	28	39	33	36
Precoz (ILL 4605)	41	30	47	46	23	22	28	41	35
Fam 370	48	39	58	45	22	32	37	43	41
FLIP 84- 60L	44	30	50	44	19	21	42	34	35
FLIP 84- 78L	52	33	65	44	18	29	52	43	42
FLIP 84-112L	45	30	59	45	21	26	47	41	39
FLIP 86- 14L	40	27	43	51	22	25	34	36	35
FLIP 86- 17L	46	30	49	47	21	30	32	36	36
FLIP 86- 38L	37	26	56	52	20	20	37	35	37
FLIP 86- 39L	40	32	46	50	19	21	36	36	35
FLIP 86- 49L	44	26	46	51	21	32	31	37	36
FLIP 86- 51L	48	31	66	52	23	28	38	46	41
Local Check	47	41	51	49	20	21	38	34	
Location Mean	42	31	53	46	20	26	38	37	
S.E. of Mean	2.80	2.35	0.62	2.37	1.21	0.84	2.52	2.29	
L.S.D. at 5%	7.91	6.69	1.75	6.68	-	2.37	7.10	6.45	
C.V. %	13.42	13.08	2.34	10.34	11.86	6.46	13.10	12.52	
Error df	69	46	69	69	69	69	69	69	
Significance	*	*	*	*	NS	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.3.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIYT-E during 1987/88.

Entry Name	BRAZIL		EGYPT		INDIA		PAKISTAN			
	Brasilia		Gemmeza		New Delhi		Faisalabad (NARC)		Faisalabad (NIAB)	
	Y	R	Y	R	Y	R	Y	R	Y	R
El 42	856	19	2146	15	73	21	1438	2	1141	19
ILL 1866	525	23	1688	21	208	13	-	-	828	24
L 1057	2222	2	2111	16	392	6	505	21	2359	6
L 1327	806	20	917	24	88	20	1075	8	1094	20
Pant L 406	1175	14	2389	10	350	7	1072	9	2193	9
Pant L 639	1872	9	2313	13	546	3	1171	6	2271	7
L 1278	2188	3	1201	23	538	4	1349	3	2828	1
L 1282	1919	7	1958	18	279	11	560	20	2500	2
LL 1	2009	6	1979	17	171	14	1324	4	2141	10
LL 37	2022	5	1786	20	429	5	1444	1	2438	4
LL 57	1138	15	2417	9	313	8	749	16	1453	15
162	1894	8	1882	19	554	2	1034	10	2359	5
Precoz (ILL 4605)	2169	4	4319	1	288	10	455	22	1708	12
Fam 370	672	22	2438	8	217	12	1123	7	896	23
FLIP 84- 60L	1231	11	2333	12	63	22	949	13	1698	13
FLIP 84- 78L	291	24	3174	2	50	24	809	15	1250	17
FLIP 84-112L	1006	17	2236	14	63	23	978	12	1846	11
FLIP 86- 14L	1178	13	2924	4	96	18	704	17	1055	22
FLIP 86- 17L	1109	16	3090	3	146	15	336	23	1370	16
FLIP 86- 38L	1800	10	2715	6	104	17	987	11	1638	14
FLIP 86- 39L	881	18	2785	5	300	9	1292	5	2238	8
FLIP 86- 49L	1184	12	2479	7	138	16	855	14	1063	21
FLIP 86- 51L	700	21	2382	11	88	19	681	18	1250	18
Local Check	2603	1	1493	22	696	1	606	19	2448	3
Location Mean	1394		2298		258		935		1753	
S.E. of Mean	226.32		469.15		81.68		198.71		84.30	
L.S.D. at 5%	638.40		1323.36		233.52		561.03		237.79	
C.V. %	32.48		40.83		54.89		42.53		9.62	
Error df	69		69		46		66		69	
Significance	*		*		*		*		*	
Ent. > L. Check	0		4		0		6		1	

Cont'd. ...

Table 5.3.5. Cont'd. ...

Entry Name	PAKISTAN						SRI LANKA		SYRIA		(1) Overall Mean	
	Mansehra		Tarnab		Serai Nawrang		Bandarawela		Tel Hadya			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
El 42	2500	5	531	16	675	18	359	17	1836	10	1124	19
ILL 1866	1348	22	594	10	388	24	399	15	1636	17	846	23
L 1057	2096	9	688	2	1050	6	309	19	1604	18	1426	4
L 1327	1954	14	619	7	775	14	456	11	2123	7	981	22
Pant L 406	1876	16	688	3	1153	2	222	21	1773	12	1313	12
Pant L 639	2285	7	594	9	1025	7	418	12	1361	23	1409	5
L 1278	1828	18	600	8	1063	5	490	9	1694	14	1381	6
L 1282	2003	13	506	20	1000	9	409	13	1327	24	1322	11
LL 1	1834	17	538	15	1605	1	404	14	1581	19	1362	8
LL 37	2005	12	531	17	1013	8	594	8	1528	20	1372	7
LL 57	1634	20	531	19	1113	3	661	6	1900	9	1240	15
162	1817	19	625	6	1113	4	473	10	1473	21	1354	9
Precoz (ILL 4605)	2279	8	500	21	588	19	214	22	2371	2	1604	2
Fam 370	2038	11	544	14	525	22	754	5	2300	3	1154	17
FLIP 84- 60L	1336	24	438	24	825	12	837	4	1441	22	1134	18
FLIP 84- 78L	1336	23	469	23	463	23	360	16	2200	6	1066	21
FLIP 84-112L	1915	15	500	22	800	13	1007	3	2205	5	1286	13
FLIP 86- 14L	2463	6	581	11	925	10	326	18	1664	15	1246	14
FLIP 86- 17L	3030	1	625	4	750	15	206	23	1742	13	1341	10
FLIP 86- 38L	2667	4	625	5	538	21	1148	2	2252	4	1498	3
FLIP 86- 39L	2888	3	550	12	738	16	1275	1	2948	1	1622	1
FLIP 86- 49L	2908	2	550	13	738	17	258	20	1642	16	1218	16
FLIP 86- 51L	2078	10	531	18	575	20	205	24	1829	11	1071	20
Local Check	1515	21	719	1	888	11	627	7	1963	8		
Location Mean	2068		570		847		517		1850			
S.E. of Mean	131.32		66.99		142.99		35.86		197.91			
L.S.D. at 5%	370.44		–		403.34		101.15		558.25			
C.V. %	12.70		23.52		33.78		13.87		21.40			
Error df	69		69		69		69		69			
Significance	*		NS		*		*		*			
Ent. > L. Check	15		–		1		5		1			

(1) NARC was excluded from the overall mean, * = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.3.6. The five heaviest seed yielding entries at the individual locations in the LIYT-E during 1987/88.

Rank	BRAZIL	EGYPT	INDIA	PAKISTAN	
	Brasilia	Gemmeza	New Delhi	Faisalabad (NARC)	Faisalabad (NIAB)
1	Local Check	ILL 4605	Local Check	LL 37	L 1278
2	L 1057	FLIP84- 78L	ILL 4403	EL 42	L 1282
3	L 1278	FLIP86- 17L	Pant L 639	L 1278	Local Check
4	ILL 4605	FLIP86- 14L	L 1278	LL 1	LL 37
5	LL 37	FLIP86- 39L	LL 37	FLIP86- 39L	ILL 4403] L 1057]

Cont'd. ...

Table 5.3.6. Cont'd. ...

Rank	PAKISTAN			SRI LANKA	SYRIA
	Mansehra	Tarnab	Serai Nawrang	Bandarawela	Tel Hadya
1	FLIP86- 17L	Local Check	LL 1	FLIP86- 39L	FLIP86- 39L
2	FLIP86- 49L	L 1057	Pant L 406	FLIP86- 38L	ILL 4605
3	FLIP86- 39L	Pant L 406	LL 57	FLIP84-112L	Fam 370
4	FLIP86- 38L	FLIP86- 17L	ILL 4403	FLIP84- 60L	FLIP86- 38L
5	EL 42	FLIP86- 38L] ILL 4403]	L 1278	Fam 370	FLIP84-112L

The brackets indicate entries having the same rank.

5.4. LENTIL INTERNATIONAL SCREENING NURSERY-LARGE SEED (LISN-L)

Material

The material for the Lentil International Screening Nursery-Large Seed comprised of 42 test entries. In addition, there were three checks, two namely Syrian Local Large (ILL 4400) and 78S 26002 (ILL 5588) were supplied and one local check was to be used by the cooperator. Most of these entries were selected from the materials developed and tested at ICARDA sites in Syria and Lebanon.

Methods and Management

The material was sown in an augmented block design. The entries were suggested to be accomodated in three blocks, each block containing 14 test entries and 3 checks. The suggested plot size was single row 4 m long with inter row spacing of 25 cm. Sixty nine sets of screening nursery were sent to cooperators in 31 countries and the results were received from 34 locations from 20 countries. The agronomic data received from cooperators are given in Table 5.4.1.

Results and Discussion

The data on time to flowering (Table 5.4.2) showed that flowering was earliest at Shanxi in China (48 days) and latest at Madrid in Spain (153 days). The entry means over all locations revealed that FLIP 87-18L was the earliest to flower in 93 days and FLIP84-144L was the latest to flower in 107 days. The entry mean for time to maturity ranged from 142 to 152 days (Table 5.4.3.). The plant height data (5.4.4.) revealed that the entries were tallest at Navojoa in Mexico (53 cm). The entry means overall locations revealed that the entries FLIP 85-7L, FLIP88-10L, FLIP 88-11L and FLIP 88-13L were the tallest with plant height of 34 cm.

Adjusted seed yields of different entries over locations are given in Table 5.4.5. The location mean was highest at Gelline in Syria (2200 kg/ha). The ANOVA of the experimental design revealed that at Mendoza and Perico in Argentina; Graneros in Chile; Shanxi in China; Nubaria in Egypt; Ghazvin and Karaj in Iran; Terbol in Lebanon; Elvas in Portugal; Madrid in Spain; Idleb, Izra'a and Tel Hadya in Syria, 2, 3, 23, 16, 6, 1, 10, 11, 2, 3, 1, 1 and 3 test entries, respectively, exceeded the local check by a significant margin. The five heaviest yielders across locations included FLIP 88-1L, FLIP 88-13L, FLIP 88-6L, FLIP 88-8L and FLIP87- 17L and yielded 1881, 1613, 1610, 1467 and 1400 kg/ha, respectively.

The five heaviest yielders at each location are given in Table 5.4.6. It was noticed that FLIP88- 6L, FLIP88- 1L and FLIP88- 8L occured most frequently among the top five heaviest yielders and were relatively more adaptable.

Table 5.4.1. Agronomic data for different locations in the LISN-L during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Setif	NA	NA	NA			NA	NA	NA
ARGENTINA	Mendoza	NA	NA	NA			NA	NA	NA
ARGENTINA	Perico	05.05.88	01.10.88	-			-	Metribuzin, Landacyholotrin	Precoz
AUSTRALIA	Horsham	06.07.88	13.12.88		150		-	Trifluralin, Cyanazine, Diquat, Paraquat, Endosulphan	Precoz
CHILE	Graneros	15.07.88	12.88	-			7	-	Sel. Graneros
CHILE	Valdivia	26.08.88	27.01.89	32	100	50	-	Linuron	Linea 3074
CHINA	Shanxia	18.04.88	21.07.88	-		-	-	-	NA
EGYPT	Nubaria	10.11.87		48	72		3	Gesagard	NA
EGYPT	Sakha	15.12.87	01.05.88	38	75		-	Gesagard	Giza 370
ETHIOPIA	Debre Zeit	07.88	-	-			-	-	ILL 358
IRAN	Ghazvin	13.04.88	06.07.88	-			-	-	Ghazvin
IRAN	Karaj	15.03.88	25.06.88	24	72		-	Treflan, Metasystox	Ghazvin
ITALY	Gaudiano	16.02.88	05.07.88	25	78		-	-	Local Population (CZ, VN, MEC)
ITALY	Medolla	10.03.88	13.07.88	40	100		-	Pirimicarb	Local Population (CZ, VN, MEC)
JORDAN	Jubeiha	11.11.87	18.05.88	20	40		-	-	UJL 176
JORDAN	Ramtha	02.11.87	15.05.88	20	40		-	-	UJL 176
LEBANON	Terbol	02.11.87	20.05.88		50		-	Kerb, Bladex	Local
MEXICO	Navojoa	18.11.87	16.04.88	92	40		6	Desis, Malathion, Tamaron	Guanajuato
PAKISTAN	Faisalabad (UAF)	NA	NA	NA			NA	NA	NA
PERU	Chiquian	02.12.87	05.05.88	0			-	Afalon	Chupaca
PORTUGAL	Elvas	24.11.37	08.06.88	-			-	-	L188, FLIP84-58L, ILL 5728
SPAIN	Madrid	12.11.87	20.06.88	32	90		-	Prometryne	LEC 142 (ANGELA)
SYRIA	Aleppo	25.11.87	21.05.88		110		-	-	Local
SYRIA	Gelline	10.12.87	21.05.88	20	50		-	-	Idleb-1
SYRIA	Idleb	05.12.87	05.06.88		60		-	-	Idleb-1
SYRIA	Izra'a	21.01.88	17.06.88	13	17		-	-	Hurani
SYRIA	Tel Hadya	23.11.87	18.05.88		50		-	Kerb, Bladex	ILL 4401
THAILAND	Chiang Rai	11.10.87	29.03.88	102	25		S*	-	-
THAILAND	Chiang Mai	11.10.87	18.03.88	23	45		12	Azodrine, Benlate	-
TUNISIA	Beja	14.11.87	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA
TURKEY	Ankara	25.03.88	19.07.88	30	70		-	-	-
TURKEY	Diyarbakir	09.12.88	01.06.89	30	60		-	-	Yerli Kirmizi
TURKEY	Eskisehir	06.04.88	20.06.88	30	70		-	-	Sultan 1

NA = Not available, S* = Frequent irrigation depending upon weather condithions..pg;

Table 5.4.2. Adjusted time to flowering (days) of entries at different locations in the LISN-L during 1987/88.

Selection	ILL	ARGENTINA	AUSTRALIA	CHILE	CHINA	EGYPT		ETHIOPIA	IRAN		ITALY
		Perico	Horsham	Graneros	Shanxi	Nubaria	Sakha	Debre Zeit	Ghazvin	Karaj	Gaudiano
FLIP 84-144L	5814	103	108	95	54	123	115	75	55	73	85
FLIP 84-156L	5825	97	100	93	44	117	85	55	54	70	86
FLIP 85- 7L	5845	101	108	95	49	126	90	69	53	72	85
FLIP 86- 10L	5996	101	103	90	44	125	90	49	48	70	87
FLIP 86- 13L	5999	97	93	86	47	67	90	49	55	70	86
FLIP 87- 1L	6191	98	97	93	47	117	90	56	55	71	85
FLIP 87- 2L	6192	100	103	93	49	118	105	60	54	72	87
FLIP 87- 3L	6193	98	100	93	48	120	85	66	55	70	84
FLIP 87- 4L	6194	95	101	93	48	115	85	57	55	67	86
FLIP 87- 5L	6195	97	103	92	49	128	120	57	55	71	84
FLIP 87- 6L	6196	100	93	94	47	117	90	59	55	73	90
FLIP 87- 7L	6197	64	107	89	43	100	110	52	49	73	86
FLIP 87- 8L	6198	90	98	91	52	127	100	63	55	70	86
FLIP 87- 9L	6199	95	103	94	53	122	80	74	56	74	85
FLIP 87- 10L	6200	95	95	97	52	115	85	–	56	73	84
FLIP 87- 11L	6201	93	100	93	47	117	90	56	55	72	84
FLIP 87- 12L	6202	88	98	91	44	112	85	56	52	71	86
FLIP 87- 13L	6203	86	98	91	45	117	95	53	56	72	85
FLIP 87- 14L	6204	89	100	91	45	119	95	54	55	73	85
FLIP 87- 15L	6205	90	95	88	43	108	95	60	49	70	84
FLIP 87- 16L	6206	97	107	90	44	105	95	58	48	68	84
FLIP 87- 17L	6207	91	95	88	43	107	100	57	49	73	84
FLIP 87- 18L	6208	82	91	85	47	73	95	48	52	73	91
FLIP 87- 19L	6209	76	91	84	47	70	90	49	50	71	87
FLIP 87- 20L	6210	88	93	96	46	65	90	47	52	72	86
FLIP 87- 21L	6211	83	91	86	52	73	90	50	54	71	85
FLIP 87- 22L	6212	85	91	85	48	78	120	49	49	72	90
FLIP 87- 23L	6213	92	91	85	47	77	105	48	–	72	87

Table 5.4.2. Cont'd. ...

Selection	ILL	ARGENTINA Perico	AUSTRALIA Horsham	CHILE Graneros	CHINA Shanxi	EGYPT Nubaria	EGYPT Sakha	ETHIOPIA Debre Zeit	IRAN Ghazvin	IRAN Karaj	ITALY Gaudiano
FLIP 88- 1L	6425	83	93	88	43	107	90	52	49	71	84
FLIP 88- 2L	6426	98	103	89	46	112	100	59	53	72	84
FLIP 88- 3L	6427	86	102	91	47	117	90	60	53	72	87
FLIP 88- 4L	6428	88	93	88	45	114	95	56	53	69	84
FLIP 88- 5L	6429	98	98	91	54	121	100	60	54	72	85
FLIP 88- 6L	6430	101	93	90	44	95	90	53	50	67	84
FLIP 88- 7L	6431	92	93	91	42	100	80	50	50	73	84
FLIP 88- 8L	6432	94	100	92	45	105	85	53	50	69	84
FLIP 88- 9L	6433	98	101	93	46	120	85	57	55	70	87
FLIP 88- 10L	6434	100	100	93	53	115	80	68	55	72	85
FLIP 88- 11L	6435	104	107	89	45	118	90	58	49	73	85
FLIP 88- 12L	6436	64	108	89	44	108	90	56	49	73	84
FLIP 88- 13L	6437	89	98	88	45	122	90	52	49	72	89
FLIP 88- 14L	6438	88	103	92	51	122	85	70	56	74	86
Local Large	4400	95	98	93	53	126	85	66	56	73	85
78S 26002	5582	85	100	91	44	114	80	55	51	70	84
Local Check		89	88	94	57	75	75	51	52	69	93
Location Mean		**91**	**98**	**91**	**48**	**107**	**91**	**56**	**52**	**71**	**86**
S.E. of Mean		9.08	1.47	1.43	0.47	3.01	0.00	1.83	0.51	0.82	0.19
L.S.D. at 5% for :											
Checks		35.64	5.75	5.60	1.85	11.81	0.00	7.17	2.00	3.21	0.76
T.E. in S.B.		61.73	9.97	9.70	3.21	20.46	0.00	12.41	3.46	5.55	1.31
T.E. in D.B.		71.27	11.51	11.21	3.70	23.62	0.00	14.33	4.00	6.41	1.51
Checks Vs T.E.		58.20	9.40	9.15	3.02	19.29	0.00	11.71	3.26	5.23	1.23
C.V. %		17.21	2.59	2.72	1.71	4.85	0.00	5.67	1.71	1.99	0.39

Cont'd. ...

Table 5.4.2. Cont'd. ...

Selection	ILL	ITALY	JORDAN		LEBANON	MEXICO	PAKISTAN	PERU	PORTUGAL	SPAIN	SYRIA
		Medolla	Jubeiha	Ramtha	Terbol	Navojoa	Faisalabad	Chiquian	Elvas	Madrid	Aleppo
FLIP 84-144L	5814	72	156	154	138	104	123	99	126	156	127
FLIP 84-156L	5825	70	156	149	132	82	121	99	125	151	126
FLIP 85- 7L	5845	72	156	154	136	104	110	95	129	156	128
FLIP 86- 10L	5996	70	156	153	130	87	122	80	126	148	125
FLIP 86- 13L	5999	69	144	145	128	76	122	83	105	138	127
FLIP 87- 1L	6191	70	156	152	134	98	121	86	125	154	127
FLIP 87- 2L	6192	69	156	152	132	105	124	93	129	153	128
FLIP 87- 3L	6193	66	156	152	132	97	125	94	122	159	127
FLIP 87- 4L	6194	71	156	150	134	98	112	94	125	159	126
FLIP 87- 5L	6195	70	156	154	132	104	119	87	126	156	125
FLIP 87- 6L	6196	69	156	150	136	90	124	88	125	162	118
FLIP 87- 7L	6197	70	156	152	130	81	124	85	129	148	126
FLIP 87- 8L	6198	71	156	150	132	99	112	104	125	158	125
FLIP 87- 9L	6199	72	158	151	138	87	118	85	125	161	128
FLIP 87- 10L	6200	70	156	151	134	98	127	92	118	161	127
FLIP 87- 11L	6201	69	156	152	134	96	128	88	110	158	127
FLIP 87- 12L	6202	69	156	150	132	74	112	101	120	151	125
FLIP 87- 13L	6203	69	158	149	132	97	116	101	122	156	127
FLIP 87- 14L	6204	69	156	148	132	98	111	95	122	158	127
FLIP 87- 15L	6205	66	156	150	130	75	121	93	120	152	125
FLIP 87- 16L	6206	66	156	153	130	96	128	79	124	149	125
FLIP 87- 17L	6207	66	149	148	130	75	116	92	120	150	126
FLIP 87- 18L	6208	69	146	148	126	71	94	76	108	133	117
FLIP 87- 19L	6209	66	–	144	128	97	96	92	105	138	117
FLIP 87- 20L	6210	71	146	145	128	62	117	84	105	138	118
FLIP 87- 21L	6211	70	146	148	126	73	127	79	110	136	118
FLIP 87- 22L	6212	66	146	148	128	73	104	69	110	133	117
FLIP 87- 23L	6213	69	146	148	126	69	119	83	108	134	118

Table 5.4.2. Cont'd. ...

Selection	ILL	ITALY	JORDAN		LEBANON	MEXICO	PAKISTAN	PERU	PORTUGAL	SPAIN	SYRIA
		Medolla	Jubeiha	Ramtha	Terbol	Navojoa	Faisalabad	Chiquian	Elvas	Madrid	Aleppo
FLIP 88- 1L	6425	66	-	151	130	75	108	93	122	151	125
FLIP 88- 2L	6426	66	156	149	134	86	123	86	124	160	125
FLIP 88- 3L	6427	69	156	150	136	100	117	99	122	160	127
FLIP 88- 4L	6428	66	152	148	130	87	113	92	120	152	127
FLIP 88- 5L	6429	67	156	148	130	101	117	100	120	160	126
FLIP 88- 6L	6430	70	152	149	130	74	127	82	123	152	126
FLIP 88- 7L	6431	66	152	149	130	74	120	80	120	154	125
FLIP 88- 8L	6432	72	156	150	130	76	122	83	122	149	125
FLIP 88- 9L	6433	66	156	150	132	96	123	94	122	158	125
FLIP 88- 10L	6434	70	156	149	134	99	112	96	122	155	125
FLIP 88- 11L	6435	66	156	149	130	95	104	80	124	148	125
FLIP 88- 12L	6436	66	156	154	130	85	97	88	126	146	125
FLIP 88- 13L	6437	70	156	149	130	98	113	97	120	150	123
FLIP 88- 14L	6438	71	152	152	130	95	111	80	118	149	127
Local Large	4400	71	157	152	136	93	114	90	123	156	127
78S 26002	5582	66	157	149	130	82	109	88	121	155	126
Local Check		70	156	150	148	75	98	88	120	167	126
Location Mean		69	148	150	133	88	115	89	120	153	125
S.E. of Mean		0.30	0.61	0.78	0.02	4.00	7.58	6.55	2.06	1.31	0.45
L.S.D. at 5% for :											
Checks		1.19	2.39	3.07	0.08	15.69	29.75	25.72	8.10	5.15	1.77
T.E. in S.B.		2.07	4.14	5.32	0.13	27.18	51.52	44.54	14.03	8.92	3.07
T.E. in D.B.		2.39	4.78	6.14	0.15	31.38	59.49	51.44	16.20	10.30	3.54
Checks Vs T.E.		1.95	3.90	5.01	0.12	25.63	48.58	42.00	13.23	8.41	2.89
C.V. %		0.77	0.71	0.90	0.03	7.90	11.42	12.70	2.98	1.49	0.63

Cont'd. ...

Table 5.4.2. Cont'd. ...

Selection	ILL	SYRIA				THAILAND		TURKEY			(1) Overall Mean
		Gelline	Idleb	Izra'a	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	Diyar-bakir	Eski-sehir*	
FLIP 84-144L	5814	113	135	90	144	97	96	73	–	72	107
FLIP 84-156L	5825	113	131	84	136	86	107	71	128	–	102
FLIP 85- 7L	5845	113	138	90	144	95	90	71	–	–	105
FLIP 86- 10L	5996	110	129	86	137	87	101	72	126	–	102
FLIP 86- 13L	5999	108	131	80	131	90	94	71	–	–	96
FLIP 87- 1L	6191	113	135	86	140	90	113	71	128	–	103
FLIP 87- 2L	6192	113	132	92	143	91	96	71	–	–	105
FLIP 87- 3L	6193	112	127	86	140	90	113	73	128	–	104
FLIP 87- 4L	6194	113	135	86	141	92	94	71	127	–	102
FLIP 87- 5L	6195	108	132	88	144	93	107	71	128	–	106
FLIP 87- 6L	6196	114	131	85	143	86	94	70	–	–	103
FLIP 87- 7L	6197	108	130	88	139	77	91	70	–	–	100
FLIP 87- 8L	6198	112	137	88	142	98	53	71	127	–	102
FLIP 87- 9L	6199	113	135	92	141	97	85	71	–	72	103
FLIP 87- 10L	6200	113	–	85	142	96	119	71	–	–	104
FLIP 87- 11L	6201	114	137	88	140	101	102	73	–	–	103
FLIP 87- 12L	6202	107	138	88	137	85	95	72	–	–	100
FLIP 87- 13L	6203	110	135	86	141	98	101	71	126	–	103
FLIP 87- 14L	6204	110	135	86	140	98	103	73	125	–	103
FLIP 87- 15L	6205	107	129	82	137	92	90	71	127	–	99
FLIP 87- 16L	6206	109	132	84	139	87	59	72	124	–	100
FLIP 87- 17L	6207	105	129	84	136	85	107	70	124	–	100
FLIP 87- 18L	6208	105	129	80	129	88	91	71	126	–	93
FLIP 87- 19L	6209	104	127	81	127	83	85	73	–	–	94
FLIP 87- 20L	6210	107	126	80	128	86	113	71	128	–	95
FLIP 87- 21L	6211	106	130	83	130	91	91	73	127	–	95
FLIP 87- 22L	6212	105	127	82	130	88	91	72	127	–	95
FLIP 87- 23L	6213	107	130	82	129	87	96	73	–	–	96

Table 5.4.2. Cont'd. ...

Selection	ILL	SYRIA				THAILAND		TURKEY			(1) Overall Mean
		Gelline	Idleb	Izra'a	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	Diyar-bakir	Eski-sehir*	
FLIP 88- 1L	6425	107	129	83	137	83	82	71	125	65	98
FLIP 88- 2L	6426	109	131	85	140	82	113	72	-	-	103
FLIP 88- 3L	6427	113	135	86	141	93	107	70	-	-	104
FLIP 88- 4L	6428	107	131	84	137	86	98	73	127	-	100
FLIP 88- 5L	6429	108	135	86	137	98	53	73	-	-	102
FLIP 88- 6L	6430	110	129	85	137	84	97	73	126	-	99
FLIP 88- 7L	6431	110	127	83	138	78	113	72	125	63	99
FLIP 88- 8L	6432	109	132	83	140	78	94	72	127	-	99
FLIP 88- 9L	6433	112	132	84	140	80	102	70	127	-	102
FLIP 88- 10L	6434	112	135	86	140	91	107	73	127	72	103
FLIP 88- 11L	6435	108	130	84	142	92	83	73	-	-	101
FLIP 88- 12L	6436	108	132	83	144	93	107	72	-	-	99
FLIP 88- 13L	6437	108	128	82	137	92	90	72	1125	-	101
FLIP 88- 14L	6438	111	132	83	137	98	90	73	-	-	101
Local Large	4400	114	135	86	142	95	113	70	126	71	104
78S 26002	5582	112	130	84	140	86	102	72	126	-	100
Local Check		109	130	86	140	-	-	-	-	-	
Location Mean		**110**	**129**	**85**	**139**	**90**	**97**	**72**	**100**	**69**	
S.E. of Mean		0.84	0.30	1.15	1.22	1.89	0.20	0.24	0.71		
L.S.D. at 5% for :											
Checks		3.29	1.19	4.50	4.78	11.47	1.24	1.43	4.30		
T.E. in S.B.		5.70	2.07	7.80	8.28	19.87	2.15	2.48	7.45		
T.E. in D.B.		6.59	2.39	9.00	9.56	24.34	2.64	3.04	9.13		
Checks Vs T.E.		5.38	1.95	7.35	7.80	19.88	2.15	2.48	7.45		
C.V. %		1.32	0.41	2.34	1.52	3.63	0.36	0.57	1.23		

(1) Debre Zeit, Ghazvin, Jubeiha, Idleb, Diyarbakir and Eskisehir were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B.= Different blocks. * = Location not analysed and thus mean values are unadjusted.

Table 5.4.3. Adjusted time to maturity (days) of entries at different locations in the LISN-L during 1987/88.

Selection	ILL	ARGENTINA	AUSTRALIA	CHILE	CHINA	EGYPT		IRAN		ITALY
		Perico	Horsham	Valdivia	Shanxi	Nubaria	Sakha*	Ghazvin	Karaj	Gaudiano
FLIP 84-144L	5814	132	-	142	84	176	150	78	105	135
FLIP 84-156L	5825	131	-	139	81	164	150	79	104	134
FLIP 85- 7L	5845	136	-	139	84	176	150	75	106	135
FLIP 86- 10L	5996	135	-	142	84	173	150	73	104	135
FLIP 86- 13L	5999	137	-	139	82	136	150	75	102	139
FLIP 87- 1L	6191	133	150	142	83	164	150	76	100	135
FLIP 87- 2L	6192	129	152	139	86	169	150	74	105	142
FLIP 87- 3L	6193	133	150	139	81	169	150	82	101	139
FLIP 87- 4L	6194	137	150	142	84	159	150	82	102	135
FLIP 87- 5L	6195	133	152	139	84	174	150	84	103	135
FLIP 87- 6L	6196	131	150	139	84	162	150	76	102	134
FLIP 87- 7L	6197	119	-	139	84	154	150	73	103	135
FLIP 87- 8L	6198	129	149	141	87	172	150	82	102	136
FLIP 87- 9L	6199	127	-	141	91	172	150	82	104	136
FLIP 87- 10L	6200	188	-	142	85	164	150	79	102	139
FLIP 87- 11L	6201	137	150	139	87	164	150	75	103	135
FLIP 87- 12L	6202	131	-	138	84	162	150	74	102	136
FLIP 87- 13L	6203	130	154	141	82	162	150	73	102	136
FLIP 87- 14L	6204	132	-	141	82	164	150	75	103	142
FLIP 87- 15L	6205	135	149	141	82	152	150	71	103	136
FLIP 87- 16L	6206	131	152	139	84	154	150	70	105	135
FLIP 87- 17L	6207	130	152	141	84	157	150	72	100	136
FLIP 87- 18L	6208	123	144	139	83	134	150	72	102	141
FLIP 87- 19L	6209	122	146	141	84	137	150	75	68	140
FLIP 87- 20L	6210	123	142	139	78	134	150	73	100	139
FLIP 87- 21L	6211	123	144	139	86	134	150	72	104	135
FLIP 87- 22L	6212	127	152	139	88	136	150	73	101	141
FLIP 87- 23L	6213	124	144	139	83	139	150	-	102	136

Table 5.4.3. Cont'd. ...

Selection	ILL	ARGENTINA Perico	AUSTRALIA Horsham	CHILE Valdivia	CHINA Shanxi	EGYPT Nubaria	EGYPT Sakha*	IRAN Ghazvin	IRAN Karaj	ITALY Gaudiano
FLIP 88- 1L	6425	133	152	141	82	157	150	73	100	136
FLIP 88- 2L	6426	129	150	139	88	164	150	78	103	136
FLIP 88- 3L	6427	125	–	141	87	167	150	83	100	136
FLIP 88- 4L	6428	129	152	141	84	162	150	73	100	136
FLIP 88- 5L	6429	134	154	138	90	172	150	78	101	136
FLIP 88- 6L	6430	136	150	139	85	144	150	72	101	135
FLIP 88- 7L	6431	131	148	139	81	150	150	71	101	134
FLIP 88- 8L	6432	129	148	139	83	154	150	72	101	134
FLIP 88- 9L	6433	134	148	142	82	164	150	77	102	134
FLIP 88- 10L	6434	136	150	139	84	154	150	79	103	134
FLIP 88- 11L	6435	133	150	139	86	169	150	75	104	136
FLIP 88- 12L	6436	121	152	142	82	160	150	73	104	135
FLIP 88- 13L	6437	130	154	141	82	167	150	74	101	136
FLIP 88- 14L	6438	129	–	141	82	172	150	79	102	136
Local Large	4400	134	153	141	87	170	150	83	103	135
78S 26002	5582	127	150	139	83	160	150	72	102	138
Local Check		128	144	141	92	138	135	75	101	143
Location Mean		**131**	**150**	**140**	**85**	**158**	**150**	**75**	**102**	**137**
S.E. of Mean		3.94	0.84	0.91	0.39	3.66		0.58	0.61	1.97
L.S.D. at 5% for :										
Checks		15.45	3.29	3.58	1.51	14.36		2.27	2.39	7.74
T.E. in S.B.		26.75	5.70	6.21	2.62	24.88		3.93	4.14	13.41
T.E. in D.B.		30.89	6.59	7.17	3.02	28.73		4.53	4.78	15.48
Checks Vs T.E.		25.23	5.38	5.85	2.47	23.46		3.70	3.90	12.64
C.V. %		5.20	1.27	1.13	0.79	4.00		1.34	1.04	2.50

Cont'd. ...

Table 5.4.3. Cont'd. ...

Selection	ILL	ITALY	JORDAN		LEBANON	MEXICO	PAKISTAN	PERU	PORTUGAL	SPAIN	SYRIA
		Medolla	Jubeiha	Ramtha	Terbol	Navojoa	Faisalabad	Chiquian	Elvas	Madrid	Aleppo
FLIP 84-144L	5814	116	187	191	182	148	145	132	190	216	169
FLIP 84-156L	5825	121	181	191	177	148	144	137	184	209	168
FLIP 85- 7L	5845	118	187	194	177	137	135	133	190	218	169
FLIP 86- 10L	5996	115	185	193	173	136	150	143	178	209	168
FLIP 86- 13L	5999	116	183	190	182	133	139	127	178	206	168
FLIP 87- 1L	6191	121	187	193	171	149	141	147	190	210	167
FLIP 87- 2L	6192	120	187	191	177	145	147	142	184	218	168
FLIP 87- 3L	6193	119	187	192	173	148	153	148	184	217	167
FLIP 87- 4L	6194	117	181	191	173	143	144	137	192	216	168
FLIP 87- 5L	6195	118	185	193	173	140	144	143	184	213	166
FLIP 87- 6L	6196	121	185	191	182	138	145	132	178	217	170
FLIP 87- 7L	6197	113	187	191	182	137	126	142	178	221	170
FLIP 87- 8L	6198	115	186	193	173	143	129	136	175	214	168
FLIP 87- 9L	6199	124	184	192	175	145	146	151	175	212	168
FLIP 87- 10L	6200	121	181	191	177	155	152	142	178	216	170
FLIP 87- 11L	6201	116	183	191	182	137	147	134	178	213	168
FLIP 87- 12L	6202	115	184	193	171	133	133	145	175	216	168
FLIP 87- 13L	6203	117	188	193	177	132	132	139	187	217	159
FLIP 87- 14L	6204	117	186	193	177	130	146	143	187	213	168
FLIP 87- 15L	6205	112	186	190	173	130	146	131	175	208	168
FLIP 87- 16L	6206	118	187	191	171	133	140	143	178	209	159
FLIP 87- 17L	6207	112	184	190	171	131	142	141	175	208	160
FLIP 87- 18L	6208	113	183	193	171	119	148	127	178	207	160
FLIP 87- 19L	6209	117	-	190	171	125	115	131	175	210	161
FLIP 87- 20L	6210	119	183	190	173	119	146	142	178	208	160
FLIP 87- 21L	6211	118	185	189	173	130	152	132	190	209	159
FLIP 87- 22L	6212	112	183	193	177	134	134	127	178	211	160
FLIP 87- 23L	6213	120	183	189	173	123	118	142	184	214	159

Table 5.4.3. Cont'd. ...

Selection	ILL	ITALY Medolla	JORDAN Jubeiha	JORDAN Ramtha	LEBANON Terbol	MEXICO Navojoa	PAKISTAN Faisalabad	PERU Chiquian	PORTUGAL Elvas	SPAIN Madrid	SYRIA Aleppo
FLIP 88- 1L	6425	112	-	190	171	130	131	151	175	213	161
FLIP 88- 2L	6426	113	185	193	173	138	125	132	178	216	167
FLIP 88- 3L	6427	113	188	193	177	141	140	135	175	214	169
FLIP 88- 4L	6428	114	184	192	173	131	134	151	175	211	169
FLIP 88- 5L	6429	117	184	193	175	139	140	146	181	216	168
FLIP 88- 6L	6430	115	185	193	171	132	147	134	178	214	168
FLIP 88- 7L	6431	114	181	190	171	135	133	132	178	215	160
FLIP 88- 8L	6432	119	187	190	173	131	146	134	178	212	165
FLIP 88- 9L	6433	119	181	191	171	150	148	142	178	214	168
FLIP 88- 10L	6434	123	185	191	175	150	148	150	178	213	167
FLIP 88- 11L	6435	113	187	191	177	141	120	127	178	207	169
FLIP 88- 12L	6436	114	185	191	173	136	137	132	184	217	168
FLIP 88- 13L	6437	112	184	190	171	133	137	141	175	207	161
FLIP 88- 14L	6438	117	184	191	173	143	132	136	175	206	169
Local Large	4400	121	184	192	176	147	142	150	186	209	169
78S 26002	5582	115	183	189	174	131	142	133	177	212	168
Local Check		117	185	192	185	134	133	133	177	219	168
Location Mean		**117**	**177**	**191**	**175**	**137**	**139**	**138**	**180**	**212**	**166**
S.E. of Mean		1.67	1.49	0.77	0.62	1.71	8.49	1.93	1.54	1.05	0.75
L.S.D.at 5% for :											
Checks		6.54	5.85	3.02	2.41	6.71	33.34	7.55	6.04	4.14	2.93
T.E. in S.B.		11.33	10.14	5.23	4.18	11.63	57.75	13.08	10.47	7.17	5.07
T.E. in D.B.		13.08	11.70	6.04	4.83	13.43	66.68	15.11	12.09	8.28	5.85
Checks Vs T.E.		10.69	9.56	4.94	3.94	10.97	54.45	12.34	9.87	6.76	4.78
C.V. %		2.47	1.46	0.70	0.61	2.16	10.56	2.41	1.48	0.86	0.78

Cont'd. ...

Table 5.4.3. Cont'd. ...

Selection	ILL	SYRIA				THAILAND		TURKEY			(1) Overall Mean
		Gelline	Idleb	Izra'a	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	Diyar-bakir	Eski-sehir*	
FLIP 84-144L	5814	151	172	131	183	134	155	117	-	-	150
FLIP 84-156L	5825	151	175	126	185	132	155	115	170	-	149
FLIP 85- 7L	5845	151	176	129	181	133	155	114	168	-	149
FLIP 86- 10L	5996	146	173	125	177	132	128	114	169	95	147
FLIP 86- 13L	5999	146	175	124	178	133	141	115	-	-	145
FLIP 87- 1L	6191	151	174	122	178	133	141	115	170	-	148
FLIP 87- 2L	6192	152	175	126	179	133	169	116	170	-	150
FLIP 87- 3L	6193	151	172	122	178	133	155	117	169	-	150
FLIP 87- 4L	6194	150	174	122	178	133	141	115	170	-	148
FLIP 87- 5L	6195	147	175	125	178	133	169	115	169	-	149
FLIP 87- 6L	6196	152	174	123	185	132	141	114	171	-	148
FLIP 87- 7L	6197	149	175	125	186	128	128	114	171	97	146
FLIP 87- 8L	6198	149	175	123	180	134	183	115	171	-	149
FLIP 87- 9L	6199	148	174	127	179	134	183	115	170	-	151
FLIP 87- 10L	6200	151	174	122	179	134	155	115	172	-	152
FLIP 87- 11L	6201	150	175	123	183	135	114	116	172	97	147
FLIP 87- 12L	6202	148	172	122	179	131	142	116	170	96	146
FLIP 87- 13L	6203	149	170	122	179	134	183	115	170	-	148
FLIP 87- 14L	6204	149	171	122	177	134	169	117	169	-	149
FLIP 87- 15L	6205	145	170	120	177	133	142	116	169	96	145
FLIP 87- 16L	6206	147	175	124	178	132	169	116	170	96	147
FLIP 87- 17L	6207	146	174	122	176	131	169	114	169	97	146
FLIP 87- 18L	6208	142	172	121	172	132	128	115	169	-	142
FLIP 87- 19L	6209	142	176	119	171	133	169	117	-	96	142
FLIP 87- 20L	6210	143	171	118	172	132	114	115	170	95	142
FLIP 87- 21L	6211	144	175	122	175	133	128	117	169	-	144
FLIP 87- 22L	6212	142	172	126	177	132	128	116	169	95	143
FLIP 87- 23L	6213	142	173	125	175	132	128	117	-	96	143

Table 5.4.3. Cont'd. ...

Selection	ILL	SYRIA				THAILAND		TURKEY			(1) Overall Mean
		Gelline	Idleb	Izra'a	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	Diyar-bakir	Eski-sehir*	
FLIP 88- 1L	6425	147	174	122	178	130	169	114	169	95	146
FLIP 88- 2L	6426	146	166	124	176	130	128	117	170	-	145
FLIP 88- 3L	6427	139	173	123	179	133	142	116	170	96	146
FLIP 88- 4L	6428	149	173	123	178	131	142	117	169	-	146
FLIP 88- 5L	6429	149	172	122	178	134	183	116	169	-	150
FLIP 88- 6L	6430	147	174	121	177	131	155	117	170	95	146
FLIP 88- 7L	6431	146	175	119	177	130	155	116	170	95	145
FLIP 88- 8L	6432	148	172	121	178	130	141	116	169	95	145
FLIP 88- 9L	6433	139	175	123	178	130	114	114	170	-	146
FLIP 88- 10L	6434	139	172	124	179	133	141	117	170	-	148
FLIP 88- 11L	6435	148	172	126	178	133	128	117	170	-	145
FLIP 88- 12L	6436	148	175	122	179	133	128	116	-	96	145
FLIP 88- 13L	6437	146	170	120	178	133	142	115	169	96	145
FLIP 88- 14L	6438	147	173	123	177	134	183	117	170	-	148
Local Large	4400	152	173	127	181	133	154	114	170	-	150
78S 26002	5582	147	172	122	177	131	142	115	169	44	146
Local Check		147	172	123	177	-	-	-	171	-	
Location Mean		**147**	**173**	**123**	**178**	**132**	**148**	**116**	**153**	**96**	
S.E. of Mean		0.69	1.05	0.51	0.90	0.71	0.51	0.41	0.33		
L.S.D. at 5% for :											
Checks		2.72	4.10	2.00	3.54	4.30	3.11	2.48	1.31		
T.E. in S.B.		4.72	7.11	3.46	6.14	7.45	5.38	4.30	2.27		
T.E. in D.B.		5.45	8.21	4.00	7.09	9.13	6.59	5.27	2.62		
Checks Vs T.E.		4.45	6.70	3.26	5.79	7.45	5.38	4.30	2.14		
C.V. %		0.82	1.05	0.72	0.88	0.93	0.60	0.61	0.38		

(1) Horsham, Sakha, Ghazvin, Jubeiha, Diyarbakir and Eskisehir were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different blocks., * = Locations not analysed and thus mean values are unadjusted.

Table 5.4.4. Adjusted plant height (cm) of entries at different locations in the LISN-L during 1987/88.

Selection	ILL	ALGERIA	ARGENTINA		AUSTRALIA	CHILE		CHINA	EGYPT	IRAN
		Setif	Mendoza	Perico	Horsham	Graneros	Valdivia	Shanxi	Nubaria	Ghazvin
FLIP 84-144L	5814	14	21	35	32	37	31	21	38	21
FLIP 84-156L	5825	17	37	22	32	35	33	20	46	20
FLIP 85- 7L	5845	22	25	37	33	32	27	22	33	21
FLIP 86- 10L	5996	15	22	36	32	37	35	20	43	20
FLIP 86- 13L	5999	21	39	22	36	35	27	19	46	19
FLIP 87- 1L	6191	9	30	14	31	30	28	20	51	20
FLIP 87- 2L	6192	15	25	32	32	37	29	22	33	21
FLIP 87- 3L	6193	11	29	20	31	35	26	17	46	19
FLIP 87- 4L	6194	14	36	22	26	35	27	19	41	21
FLIP 87- 5L	6195	13	20	30	29	42	24	21	33	19
FLIP 87- 6L	6196	13	34	11	26	30	22	18	46	19
FLIP 87- 7L	6197	16	29	39	31	37	25	20	28	21
FLIP 87- 8L	6198	17	29	34	26	38	18	19	26	20
FLIP 87- 9L	6199	17	28	36	32	38	29	19	51	21
FLIP 87- 10L	6200	19	29	19	33	40	30	21	36	20
FLIP 87- 11L	6201	15	40	23	32	35	22	19	46	18
FLIP 87- 12L	6202	20	30	34	28	28	22	18	36	20
FLIP 87- 13L	6203	14	28	31	31	38	32	20	31	20
FLIP 87- 14L	6204	17	21	24	29	38	29	20	26	20
FLIP 87- 15L	6205	16	27	23	32	38	25	19	41	19
FLIP 87- 16L	6206	14	23	30	29	32	26	20	43	20
FLIP 87- 17L	6207	16	24	28	30	33	24	19	41	19
FLIP 87- 18L	6208	22	22	39	26	32	22	19	23	20
FLIP 87- 19L	6209	18	28	35	27	38	24	18	36	20
FLIP 87- 20L	6210	19	34	30	26	35	32	19	46	19
FLIP 87- 21L	6211	18	20	48	30	37	30	21	28	20
FLIP 87- 22L	6212	18	25	33	26	32	31	19	-	21
FLIP 87- 23L	6213	15	30	40	23	42	24	21	23	-

Table 5.4.4 Cont'd. ...

Selection	ILL	ALGERIA	ARGENTINA		AUSTRALIA	CHILE		CHINA	EGYPT	IRAN
		Setif	Mendoza	Perico	Horsham	Graneros	Valdivia	Shanxi	Nubaria	Ghazvin
FLIP 88- 1L	6425	18	27	39	23	33	21	18	46	20
FLIP 88- 2L	6426	19	23	45	32	32	23	17	38	18
FLIP 88- 3L	6427	18	23	40	20	33	16	17	31	19
FLIP 88- 4L	6428	16	26	26	26	33	25	19	41	19
FLIP 88- 5L	6429	18	24	30	23	38	19	19	41	20
FLIP 88- 6L	6430	16	26	21	29	30	24	19	46	20
FLIP 88- 7L	6431	18	38	29	26	35	27	18	51	20
FLIP 88- 8L	6432	15	36	20	33	35	20	17	46	20
FLIP 88- 9L	6433	17	33	20	23	40	32	19	36	21
FLIP 88- 10L	6434	16	33	25	31	40	29	19	51	21
FLIP 88- 11L	6435	17	21	32	34	42	28	21	43	19
FLIP 88- 12L	6436	16	21	38	28	37	28	21	28	20
FLIP 88- 13L	6437	18	24	34	28	33	25	20	31	19
FLIP 88- 14L	6438	14	26	36	34	33	31	19	41	20
Local Large	4400	17	32	24	31	35	30	19	42	21
78S 26002	5582	14	25	30	30	32	23	18	40	19
Local Check		25	27	27	27	33	34	21	42	21
Location Mean		**17**	**28**	**29**	**29**	**35**	**27**	**19**	**38**	**20**
S.E. of Mean		1.64	3.66	4.79	1.61	2.36	1.17	1.15	4.19	0.19
L.S.D. at 5% for :										
Checks		6.45	14.38	18.82	6.32	9.25	4.60	4.50	16.46	0.76
T.E. in S.B.		11.18	24.91	32.59	10.95	16.03	7.96	7.80	28.52	1.31
T.E. in D.B.		12.91	28.77	37.64	12.64	18.50	9.19	9.00	32.93	1.51
Checks Vs T.E.		10.54	23.49	30.73	10.32	15.11	7.51	7.35	26.89	1.23
C.V. %		16.93	22.81	28.36	9.57	11.63	7.59	10.37	18.95	1.71

Cont'd. ...

Table 5.4.4. Cont'd. ...

Selection	ILL	IRAN	ITALY		JORDAN	LEBANON	MEXICO	PAKISTAN	PERU	PORTUGAL	SPAIN
		Karaj	Gaudiano	Medolla	Jubeiha	Terbol	Navojoa	Faisalabad	Chiquian	Elvas	Madrid
FLIP 84-144L	5814	20	35	48	43	30	60	50	33	38	48
FLIP 84-156L	5825	23	30	31	33	24	72	39	35	41	46
FLIP 85- 7L	5845	21	39	53	45	30	61	45	35	39	58
FLIP 86- 10L	5996	15	28	58	45	30	57	50	33	31	42
FLIP 86- 13L	5999	28	27	11	31	29	49	38	40	37	52
FLIP 87- 1L	6191	23	27	16	32	27	57	38	33	38	48
FLIP 87- 2L	6192	17	28	63	31	30	61	43	37	35	56
FLIP 87- 3L	6193	24	27	16	29	26	62	42	33	37	44
FLIP 87- 4L	6194	21	33	11	36	29	57	40	43	35	48
FLIP 87- 5L	6195	20	30	53	41	27	56	43	37	33	42
FLIP 87- 6L	6196	25	25	16	30	31	50	51	26	38	46
FLIP 87- 7L	6197	16	25	53	44	30	56	40	42	35	48
FLIP 87- 8L	6198	22	28	50	34	36	62	51	35	37	44
FLIP 87- 9L	6199	23	28	50	38	33	60	30	40	37	52
FLIP 87- 10L	6200	21	25	26	33	31	59	51	34	37	44
FLIP 87- 11L	6201	22	27	16	32	24	65	48	53	38	48
FLIP 87- 12L	6202	21	24	60	34	31	52	52	44	42	46
FLIP 87- 13L	6203	24	28	40	32	26	57	31	35	40	46
FLIP 87- 14L	6204	20	27	40	32	31	57	35	37	39	44
FLIP 87- 15L	6205	22	25	45	28	24	43	31	39	43	48
FLIP 87- 16L	6206	18	25	43	32	20	52	43	35	31	50
FLIP 87- 17L	6207	26	30	45	32	23	50	32	39	37	46
FLIP 87- 18L	6208	18	33	43	28	25	41	38	29	31	48
FLIP 87- 19L	6209	27	30	50	–	26	40	47	37	42	48
FLIP 87- 20L	6210	27	30	11	36	29	47	45	40	38	44
FLIP 87- 21L	6211	19	37	53	41	28	44	38	40	38	54
FLIP 87- 22L	6212	24	30	13	26	30	43	38	34	25	50
FLIP 87- 23L	6213	20	32	58	29	30	48	38	36	39	54

Table 5.4.4. Cont'd. ...

Selection	ILL	IRAN	ITALY		JORDAN	LEBANON	MEXICO	PAKISTAN	PERU	PORTUGAL	SPAIN
		Karaj	Gaudiano	Medolla	Jubeiha	Terbol	Navojoa	Faisalabad	Chiquian	Elvas	Madrid
FLIP 88- 1L	6425	24	27	50	-	23	41	36	38	37	48
FLIP 88- 2L	6426	21	32	43	32	23	41	51	33	41	46
FLIP 88- 3L	6427	22	29	40	35	29	57	42	39	45	54
FLIP 88- 4L	6428	24	30	45	33	31	42	38	42	40	50
FLIP 88- 5L	6429	25	25	40	41	31	62	36	37	39	46
FLIP 88- 6L	6430	21	29	26	29	27	53	32	35	41	51
FLIP 88- 7L	6431	22	27	16	29	24	49	37	27	38	44
FLIP 88- 8L	6432	23	25	26	34	24	49	44	47	42	43
FLIP 88- 9L	6433	26	32	21	26	21	60	47	51	37	50
FLIP 88- 10L	6434	29	35	36	46	29	64	43	42	35	44
FLIP 88- 11L	6435	22	33	58	32	22	66	45	38	41	48
FLIP 88- 12L	6436	19	33	48	38	25	56	42	31	39	46
FLIP 88- 13L	6437	23	33	60	33	31	71	33	42	39	46
FLIP 88- 14L	6438	24	27	60	34	31	62	35	37	40	44
Local Large	4400	21	38	38	39	32	51	41	36	40	47
78S 26002	5582	21	23	41	31	25	42	43	35	37	45
Local Check		24	35	87	33	32	42	41	34	40	51
Location Mean		**22**	**30**	**42**	**33**	**28**	**53**	**41**	**37**	**38**	**48**
S.E. of Mean		1.39	0.00	18.18	2.63	1.85	0.77	4.48	1.46	1.31	0.77
L.S.D. at 5% for :											
Checks		5.47	0.00	71.35	10.30	7.27	3.02	17.58	5.73	5.12	3.02
T.E. in S.B.		9.48	0.00	123.58	17.84	12.58	5.23	30.45	9.93	8.87	5.23
T.E. in D.B.		10.95	0.00	142.69	20.61	14.53	6.04	35.16	11.46	10.25	6.04
Checks Vs T.E.		8.94	0.00	116.53	16.83	11.87	4.94	28.71	9.36	8.37	4.94
C.V. %		11.04	0.00	74.54	13.75	11.47	2.52	18.81	6.82	5.95	2.79

Cont'd. ...

Table 5.4.4. Cont'd. ...

Selection	ILL	SYRIA					THAILAND		TURKEY	(1) Overall Mean
		Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Chiang Rai	Chiang Mai	Diyar-bakir	
FLIP 84-144L	5814	32	37	27	24	36	14	21	-	32
FLIP 84-156L	5825	33	36	36	24	34	25	28	15	33
FLIP 85- 7L	5845	29	36	29	30	35	14	24	25	34
FLIP 86- 10L	5996	28	41	34	24	33	19	25	28	32
FLIP 86- 13L	5999	31	36	28	22	36	31	25	-	31
FLIP 87- 1L	6191	26	30	27	25	30	27	28	21	29
FLIP 87- 2L	6192	31	35	34	24	43	15	26	24	33
FLIP 87- 3L	6193	31	36	27	24	34	27	27	16	30
FLIP 87- 4L	6194	33	37	33	26	29	22	27	27	31
FLIP 87- 5L	6195	33	36	32	25	39	14	25	28	31
FLIP 87- 6L	6196	29	38	36	19	40	29	24	17	29
FLIP 87- 7L	6197	31	41	34	28	43	16	25	30	33
FLIP 87- 8L	6198	34	31	27	22	29	15	16	26	31
FLIP 87- 9L	6199	31	33	32	21	29	19	20	30	32
FLIP 87- 10L	6200	31	38	37	21	34	19	25	20	31
FLIP 87- 11L	6201	31	33	32	23	34	19	21	22	31
FLIP 87- 12L	6202	33	32	27	22	39	16	20	25	32
FLIP 87- 13L	6203	35	34	32	26	41	20	19	30	32
FLIP 87- 14L	6204	31	32	30	24	43	21	20	32	31
FLIP 87- 15L	6205	33	34	29	23	34	18	22	28	30
FLIP 87- 16L	6206	31	40	39	23	35	20	26	31	31
FLIP 87- 17L	6207	31	35	30	25	39	21	22	28	31
FLIP 87- 18L	6208	24	30	27	20	43	32	23	26	30
FLIP 87- 19L	6209	33	32	24	21	36	22	23	27	32
FLIP 87- 20L	6210	34	38	32	17	36	30	30	24	31
FLIP 87- 21L	6211	25	29	28	19	38	24	26	27	32
FLIP 87- 22L	6212	28	42	31	24	38	26	20	25	30
FLIP 87- 23L	6213	29	36	36	23	38	28	22	25	33

Table 5.4.4. Cont'd. ...

Selection	ILL	SYRIA					THAILAND		TURKEY	(1) Overall Mean
		Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Chiang Rai	Chiang Mai	Diyar-bakir	
FLIP 88- 1L	6425	34	34	32	23	49	20	23	30	31
FLIP 88- 2L	6426	29	44	31	27	47	22	25	22	32
FLIP 88- 3L	6427	34	35	25	21	49	15	18	-	31
FLIP 88- 4L	6428	32	34	27	24	45	16	21	33	31
FLIP 88- 5L	6429	29	31	23	23	36	19	17	33	30
FLIP 88- 6L	6430	32	37	30	24	37	28	31	23	30
FLIP 88- 7L	6431	33	33	33	25	35	25	31	16	30
FLIP 88- 8L	6432	32	34	32	25	34	32	22	18	31
FLIP 88- 9L	6433	33	38	37	24	33	26	29	19	33
FLIP 88- 10L	6434	33	38	36	31	40	23	26	17	34
FLIP 88- 11L	6435	38	39	31	25	43	17	23	24	34
FLIP 88- 12L	6436	28	35	32	25	30	12	24	-	31
FLIP 88- 13L	6437	36	40	22	26	51	16	20	29	34
FLIP 88- 14L	6438	37	35	27	25	45	15	17	29	33
Local Large	4400	33	37	33	25	35	19	25	27	32
78S 26002	5582	31	30	29	23	36	25	21	21	30
Local Check		31	37	28	22	36	-	-	23	
Location Mean		**32**	**35**	**31**	**24**	**38**	**21**	**23**	**23**	
S.E. of Mean		1.43	2.46	1.79	1.05	1.74	3.03	0.16	2.63	
L.S.D. at 5% for :										
Checks		5.60	9.66	7.03	4.10	6.84	18.45	0.99	10.33	
T.E. in S.B.		9.70	16.73	12.17	7.11	11.85	31.95	1.72	17.89	
T.E. in D.B.		11.21	19.32	14.05	8.21	13.68	39.14	2.11	20.66	
Checks Vs T.E.		9.15	15.78	11.48	6.70	11.17	31.96	1.72	16.87	
C.V. %		7.84	12.03	10.14	7.56	7.99	24.71	1.21	20.01	

(1) Nubaria, Ghazvin, Jubeiha and Diyarbakir were excluded from the overall mean. T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 5.4.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-L during 1987/88.

Selection	ILL	ARGENTINA				CHILE				CHINA		EGYPT			
		Mendoza		Perico		Graneros		Valdivia		Shanxi		Nubaria		Sakha	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-144L	5814	1185	20	7	34	1551	19	1665	3	326	40	143	37	-	-
FLIP 84-156L	5825	1407	12	-	-	1273	27	665	22	991	11	352	19	1049	41
FLIP 85- 7L	5845	919	36	7	35	1134	28	252	39	531	33	109	39	864	42
FLIP 86- 10L	5996	652	43	241	12	1343	23	359	37	630	29	359	17	1975	25
FLIP 86- 13L	5999	1007	32	-	-	1273	25	572	28	1335	1	246	29	1494	33
FLIP 87- 1L	6191	1207	18	-	-	1690	15	1305	8	1147	4	707	1	2494	16
FLIP 87- 2L	6192	1185	21	107	28	1551	20	1372	5	-	-	404	10	1309	37
FLIP 87- 3L	6193	2541	3	-	-	2106	4	1425	4	1032	10	496	7	1938	26
FLIP 87- 4L	6194	1407	13	-	-	1690	14	652	23	761	22	557	2	1272	38
FLIP 87- 5L	6195	1052	27	41	31	1759	9	625	25	827	17	354	18	198	44
FLIP 87- 6L	6196	1074	26	-	-	856	39	559	30	679	24	302	25	1383	36
FLIP 87- 7L	6197	919	35	174	16	1551	16	705	20	408	36	104	40	1086	40
FLIP 87- 8L	6198	2207	4	207	13	926	36	-	-	940	12	378	13	2642	10
FLIP 87- 9L	6199	741	39	107	27	718	42	376	36	751	23	378	14	2198	23
FLIP 87- 10L	6200	741	41	-	-	1065	32	572	29	1204	3	91	42	1272	39
FLIP 87- 11L	6201	1007	31	-	-	1690	12	732	18	1048	8	119	38	1494	34
FLIP 87- 12L	6202	1007	30	107	21	718	40	-	-	1046	9	383	12	3531	1
FLIP 87- 13L	6203	1007	29	107	22	926	35	1870	1	365	38	328	23	2642	9
FLIP 87- 14L	6204	1141	23	107	25	718	41	1750	2	-	-	228	32	2420	17
FLIP 87- 15L	6205	1407	11	141	19	1968	6	590	27	636	28	333	21	2753	6
FLIP 87- 16L	6206	1185	19	107	29	1134	29	519	32	777	20	387	11	2642	8
FLIP 87- 17L	6207	741	40	207	14	1968	5	483	33	554	31	156	36	2753	7
FLIP 87- 18L	6208	1452	10	674	3	1343	24	465	35	638	27	98	41	2864	4
FLIP 87- 19L	6209	474	45	107	24	1759	10	176	41	849	16	167	34	2864	5
FLIP 87- 20L	6210	1141	25	752	2	648	43	1305	9	818	18	446	8	2605	13
FLIP 87- 21L	6211	785	38	774	1	1134	30	972	12	-	-	81	43	1642	31
FLIP 87- 22L	6212	1319	14	207	15	926	34	252	40	433	35	-	-	531	43
FLIP 87- 23L	6213	919	33	174	17	1551	18	332	38	548	32	237	31	1753	29

Table 5.4.5. Cont'd. ...

Selection	ILL	ARGENTINA				CHILE				CHINA		EGYPT			
		Mendoza		Perico		Graneros		Valdivia		Shanxi		Nubaria		Sakha	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 88- 1L	6425	9007	1	607	5	1759	11	–	–	776	21	378	15	3086	3
FLIP 88- 2L	6426	1052	28	141	20	1759	8	692	21	1294	2	426	9	2198	22
FLIP 88- 3L	6427	607	44	607	4	1551	22	–	–	1087	6	300	26	2642	11
FLIP 88- 4L	6428	1141	24	274	9	2176	1	723	19	658	26	172	33	2309	19
FLIP 88- 5L	6429	1141	22	107	23	1551	21	470	34	341	39	283	27	1753	30
FLIP 88- 6L	6430	1741	8	85	30	2106	3	839	15	–	–	552	3	3494	2
FLIP 88- 7L	6431	1741	7	285	8	1065	33	652	24	794	19	341	20	2605	14
FLIP 88- 8L	6432	2074	5	152	18	2106	2	892	13	367	37	541	6	2605	15
FLIP 88- 9L	6433	1274	16	–	–	1690	13	892	14	933	13	546	4	2272	20
FLIP 88- 10L	6434	1807	6	–	–	1273	26	799	16	1114	5	546	5	1494	35
FLIP 88- 11L	6435	919	34	41	32	1134	31	599	26	1056	7	159	35	2198	21
FLIP 88- 12L	6436	1319	15	341	6	1551	17	745	17	482	34	331	22	1753	28
FLIP 88- 13L	6437	7807	2	241	11	926	37	976	11	–	–	306	24	2086	24
FLIP 88- 14L	6438	874	37	107	26	509	45	1336	7	595	30	256	28	2420	18
Local Large	4400	667	42	11	33	903	38	1022	10	856	15	370	16	1593	32
78S 26002	5582	1244	17	322	7	1875	7	538	31	930	14	243	30	2630	12
Local Check		1644	9	256	10	625	44	1356	6	661	25	59	44	1815	27
Location Mean		**1471**		**186**		**1340**		**756**		**704**		**296**		**2011**	
S.E. of Mean		307.39		63.18		106.08		305.50		22.68		68.63		438.75	
L.S.D. at 5% for :															
Checks		1206.57		248.00		416.39		1199.17		89.04		269.40		1722.21	
T.E. in S.B.		2089.84		429.55		721.20		2077.02		154.21		466.61		2982.95	
T.E. in D.B.		2413.14		496.00		832.77		2398.33		178.07		538.79		3444.42	
Checks Vs T.E.		1970.61		405.04		680.06		1958.53		145.42		439.99		2812.78	
C.V. %		36.20		67.24		13.71		69.96		5.58		40.13		37.79	
Test > L. Check		2		3		23		0		16		6		0	

Cont'd. ...

Table 5.4.5. Cont'd. ...

Selection	ILL	IRAN				JORDAN				LEBANON		MEXICO		PAKISTAN	
		Ghazvin		Karaj		Jubeiha		Ramtha		Terbol		Navojoa		Faisalabad	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-144L	5814	444	21	236	24	2176	12	1163	37	1260	37	988	41	653	19
FLIP 84-156L	5825	200	43	95	39	2229	7	1630	29	1505	29	1710	27	588	23
FLIP 85- 7L	5845	1311	1	247	22	3206	2	2896	11	1260	36	2488	6	1066	4
FLIP 86- 10L	5996	511	9	125	37	1766	21	3163	8	1594	26	2154	13	959	9
FLIP 86- 13L	5999	300	36	590	4	1149	41	1163	39	927	42	1765	24	615	21
FLIP 87- 1L	6191	389	26	152	33	1749	23	1496	33	1649	20	1821	22	515	31
FLIP 87- 2L	6192	822	2	364	12	2036	16	3496	5	1649	21	1377	35	973	7
FLIP 87- 3L	6193	433	23	290	18	2049	15	830	43	1788	12	1710	25	481	33
FLIP 87- 4L	6194	522	7	84	41	2179	10	1563	31	1927	5	2099	15	815	13
FLIP 87- 5L	6195	511	8	608	5	1536	32	4363	2	1149	41	1599	28	839	11
FLIP 87- 6L	6196	333	33	378	11	1309	39	1163	40	1638	25	1210	38	548	27
FLIP 87- 7L	6197	667	3	30	45	1746	24	1896	24	1460	32	1099	39	839	10
FLIP 87- 8L	6198	378	29	236	23	1936	18	1674	26	1646	23	1858	20	379	36
FLIP 87- 9L	6199	333	32	164	32	656	43	941	42	1923	6	1469	32	559	26
FLIP 87- 10L	6200	222	41	95	40	1369	38	1430	34	1760	16	377	45	341	40
FLIP 87- 11L	6201	322	35	212	28	2309	5	–	–	1372	34	1821	21	828	12
FLIP 87- 12L	6202	367	31	230	25	1656	27	2541	16	1812	10	1358	36	353	38
FLIP 87- 13L	6203	478	16	214	27	1436	37	1674	27	1785	14	580	43	446	34
FLIP 87- 14L	6204	511	10	147	35	2066	14	2407	17	2035	3	469	44	253	42
FLIP 87- 15L	6205	444	22	264	19	1576	28	2207	20	1201	39	2358	9	533	28
FLIP 87- 16L	6206	533	6	330	15	1526	33	1163	38	794	44	1432	33	999	6
FLIP 87- 17L	6207	433	24	191	30	1436	36	4474	1	1590	27	2414	8	646	20
FLIP 87- 18L	6208	278	38	908	1	1506	34	3163	9	1427	33	2043	16	586	24
FLIP 87- 19L	6209	278	39	325	16	–	–	1007	41	1785	13	2914	3	519	30
FLIP 87- 20L	6210	133	44	456	6	1489	35	1296	36	1149	40	2654	4	1095	3
FLIP 87- 21L	6211	611	4	36	44	1556	29	3296	6	1483	31	2432	7	686	17
FLIP 87- 22L	6212	367	30	841	2	1756	22	3096	10	677	45	932	42	346	39
FLIP 87- 23L	6213	111	45	797	3	746	42	3230	7	2149	1	1821	23	666	18

Table 5.4.5. Cont'd. ...

Selection	ILL	IRAN				JORDAN				LEBANON		MEXICO		PAKISTAN	
		Ghazvin		Karaj		Jubeiha		Ramtha		Terbol		Navojoa		Faisalabad	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 88- 1L	6425	333	34	419	9	–	44	2341	18	1312	35	2136	14	1159	1
FLIP 88- 2L	6426	467	18	364	13	1746	25	3963	4	1649	22	1043	40	1039	5
FLIP 88- 3L	6427	211	42	158	34	1236	40	1741	25	1812	11	2191	11	693	16
FLIP 88- 4L	6428	244	40	408	10	1876	19	1607	30	1812	9	1414	34	719	15
FLIP 88- 5L	6429	389	27	175	31	1536	31	554	44	1901	7	3080	2	426	35
FLIP 88- 6L	6430	478	15	356	14	2179	11	2030	22	1705	18	1710	26	201	44
FLIP 88- 7L	6431	500	12	428	7	2209	8	2896	13	1638	24	1877	19	241	43
FLIP 88- 8L	6432	411	25	323	17	3909	1	2763	15	1772	15	2488	5	521	29
FLIP 88- 9L	6433	589	5	45	42	2239	6	1563	32	1705	17	1877	18	75	45
FLIP 88- 10L	6434	500	11	206	29	2209	9	1296	35	1816	8	2154	12	355	37
FLIP 88- 11L	6435	467	17	247	21	2956	3	2896	12	816	43	1599	29	1153	2
FLIP 88- 12L	6436	478	14	41	43	2736	4	4030	3	1483	30	2210	10	786	14
FLIP 88- 13L	6437	389	28	425	8	2096	13	1674	28	2146	2	1969	17	573	25
FLIP 88- 14L	6438	489	13	136	36	1556	30	2807	14	1979	4	1469	31	279	41
Local Large	4400	452	20	122	38	2007	17	2156	21	1652	19	1537	30	596	22
78S 26002	5582	296	37	252	20	1813	20	1956	23	1556	28	1259	37	513	32
Local Check		452	19	228	26	1697	26	2244	19	1241	38	3778	1	962	8
Location Mean		**427**		**280**		**1786**		**2138**		**1555**		**1841**		**638**	
S.E. of Mean		72.15		26.89		416.38		612.96		88.06		312.81		187.37	
L.S.D.at 5% for :															
Checks		283.21		105.55		1634.39		2406.03		345.67		1227.87		735.48	
T.E. in S.B.		490.54		182.81		2830.85		4167.37		598.71		2126.73		1273.89	
T.E. in D.B.		566.42		211.09		3268.79		4812.61		691.33		2455.73		1470.96	
Checks Vs T.E.		462.55		172.38		2669.36		3929.63		564.56		2005.40		1201.22	
C.V. %		29.25		16.62		40.37		49.67		9.81		29.43		50.83	
Test > L. Check		1		10		0		0		11		0		0	

Cont'd. ...

Table 5.4.5. Cont'd. ...

Selection	ILL	PERU		PORTUGAL		SPAIN		SYRIA							
		Chiquian		Elvas		Madrid		Aleppo		Gelline		Idleb		Izra'a	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-144L	5814	307	38	756	25	979	22	2388	17	1939	28	1067	29	202	44
FLIP 84-156L	5825	563	24	112	44	569	36	1887	26	1470	39	1410	22	690	26
FLIP 85- 7L	5845	391	30	1056	14	1641	6	1267	38	2153	22	–	–	560	33
FLIP 85- 10L	5996	1166	3	465	34	711	33	2068	24	2803	7	–	–	1024	5
FLIP 85- 13L	5999	205	44	262	40	1947	3	551	44	1348	44	1303	23	583	30
FLIP 87- 1L	6191	355	34	687	29	1139	18	932	42	1706	35	1853	8	869	13
FLIP 87- 2L	6192	707	16	831	24	165	44	3249	1	2439	15	1503	13	738	21
FLIP 87- 3L	6193	1230	2	695	27	430	37	1843	28	1727	34	1182	26	1012	6
FLIP 87- 4L	6194	521	26	329	38	644	34	1824	29	1984	27	2067	4	762	20
FLIP 87- 5L	6195	732	15	873	22	199	43	3009	3	2553	13	1653	10	917	11
FLIP 87- 6L	6196	255	41	562	32	309	41	1900	25	1534	38	1446	20	298	40
FLIP 87- 7L	6197	1399	1	573	31	–	–	2478	12	1375	41	1010	31	524	34
FLIP 87- 8L	6198	371	32	948	19	1268	13	2525	10	2120	24	1501	14	929	10
FLIP 87- 9L	6199	246	42	1756	2	927	23	2436	15	1884	29	1958	6	571	31
FLIP 87- 10L	6200	355	33	1687	3	621	35	1720	32	1391	40	1482	16	405	37
FLIP 87- 11L	6201	205	43	1287	8	1796	4	2806	6	2306	18	2225	2	405	36
FLIP 87- 12L	6202	830	11	1048	15	725	32	2285	20	2634	11	1465	18	714	23
FLIP 87- 13L	6203	380	31	1606	5	750	30	2303	18	1698	36	122	37	643	28
FLIP 87- 14L	6204	705	18	1181	10	1418	9	1717	33	2056	26	122	36	714	22
FLIP 87- 15L	6205	563	25	1123	11	2573	1	2673	7	2834	6	122	35	964	8
FLIP 87- 16L	6206	274	39	573	30	1225	14	3020	2	2725	8	1860	7	881	12
FLIP 87- 17L	6207	796	14	1215	9	1138	19	2286	19	3334	1	2015	5	857	14
FLIP 87- 18L	6208	407	29	240	41	342	39	1009	41	2167	21	–	–	202	45
FLIP 87- 19L	6209	696	19	531	33	328	25	804	43	1856	30	1187	25	214	43
FLIP 87- 20L	6210	1105	5	0	45	795	27	369	45	1363	43	1025	30	333	38
FLIP 87- 21L	6211	1116	4	415	36	321	40	1780	31	1846	31	653	32	274	41
FLIP 87- 22L	6212	307	36	140	42	242	42	1069	39	1367	42	–	–	310	39
FLIP 87- 23L	6213	807	13	290	39	375	38	1027	40	1596	37	489	34	274	42

Selection	ILL	PERU		PORTUGAL		SPAIN		SYRIA							
		Chiquian		Elvas		Madrid		Aleppo		Gelline		Idleb		Izra'a	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 88- 1L	6425	971	7	1081	12	1680	5	2813	5	3170	3	1479	17	786	18
FLIP 88- 2L	6426	916	9	873	23	777	28	1496	36	2060	25	-	-	988	7
FLIP 88- 3L	6427	596	23	1640	4	1303	12	2437	14	2627	12	1465	19	607	29
FLIP 88- 4L	6428	855	10	1906	1	1999	2	2110	22	2327	17	1608	11	714	25
FLIP 88- 5L	6429	946	8	1473	6	1190	16	2271	21	2198	20	122	39	714	24
FLIP 88- 6L	6430	255	40	745	26	1536	7	2535	9	3048	4	1125	28	1405	1
FLIP 88- 7L	6431	705	17	129	43	1312	11	1711	34	2291	19	2360	1	1119	4
FLIP 88- 8L	6432	638	21	879	21	1223	15	1865	27	2427	16	1567	12	1119	3
FLIP 88- 9L	6433	446	27	404	37	893	24	1372	37	1227	45	-	-	798	16
FLIP 88- 10L	6434	313	35	445	35	1009	21	1557	35	1777	33	1146	27	1155	2
FLIP 88- 11L	6435	666	20	973	18	1461	8	2831	4	2660	10	1682	9	845	15
FLIP 88- 12L	6436	307	37	1065	13	773	29	2448	13	2725	9	617	33	452	35
FLIP 88- 13L	6437	421	28	940	20	1025	20	2406	16	2927	5	1187	24	964	9
FLIP 88- 14L	6438	-	-	1365	7	1352	10	2094	23	2120	23	122	38	679	27
Local Large	4400	983	6	1025	16	748	31	2510	11	1795	32	1445	21	571	32
78S 26002	5582	808	12	983	17	1190	17	1808	30	2502	14	1486	15	774	19
Local Check		622	22	694	28	804	26	2568	8	3176	2	2214	3	798	17
Location Mean		**632**		**847**		**977**		**2036**		**2200**		**1180**		**699**	
S.E. of Mean		419.06		155.34		174.27		309.73		173.44		15.58		67.34	
L.S.D. at 5% for :															
Checks		1644.91		609.75		684.04		1215.77		680.80		61.17		264.34	
T.E. in S.B.		2849.06		1056.12		1184.80		2105.77		1179.17		105.94		457.85	
T.E. in D.B.		3289.81		1219.51		1368.09		2431.53		1361.59		122.33		528.68	
Checks Vs T.E.		2686.53		995.87		1117.21		1985.64		1111.90		99.90		431.73	
C.V. %		114.84		31.76		30.89		26.35		13.65		2.29		16.69	
Test > L. Check		0		2		3		0		0		1		1	

Cont'd. ...

Table 5.4.5. Cont'd. ...

Selection	ILL	SYRIA		THAILAND				TURKEY						(1) Overall Mean	
		Tel Hadya		Chiang Rai		Chiang Mai		Ankara		Diyarbakir		Eskisehir			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-144L	5814	2034	21	158	40	300	26	247	1	15	27	1118	20	942	38
FLIP 84-156L	5825	1334	39	1333	17	325	23	97	18	10	39	1431	5	989	39
FLIP 85- 7L	5845	1838	24	8	44	200	41	197	3	24	17	1306	13	1032	31
FLIP 86- 10L	5996	1962	23	898	29	300	28	107	11	40	3	868	40	1122	24
FLIP 86- 13L	5999	641	43	3533	1	425	10	–	–	6	42	1056	25	1013	34
FLIP 87- 1L	6191	1654	28	1333	16	425	12	57	27	12	35	1056	26	1109	25
FLIP 87- 2L	6192	1749	26	648	36	550	4	47	28	27	13	1368	8	1183	16
FLIP 87- 3L	6193	1699	27	1133	22	325	24	97	17	12	34	1306	10	1206	14
FLIP 87- 4L	6194	943	42	1233	20	275	33	–	–	50	1	1118	17	1045	30
FLIP 87- 5L	6195	1642	31	58	41	450	8	147	7	38	6	1118	22	1012	35
FLIP 87- 6L	6196	1494	35	1483	12	575	3	107	13	39	5	1056	27	925	41
FLIP 87- 7L	6197	1518	34	208	39	650	1	127	10	27	12	1306	12	923	42
FLIP 87- 8L	6198	1414	37	658	35	425	14	–	–	21	21	1201	16	1166	18
FLIP 87- 9L	6199	2170	18	1108	23	325	25	–	–	15	29	826	41	1080	28
FLIP 87- 10L	6200	1485	36	833	30	225	38	107	12	10	38	681	45	817	43
FLIP 87- 11L	6201	1983	22	973	27	375	15	57	25	38	8	1118	18	1188	15
FLIP 87- 12L	6202	3077	2	1658	10	175	42	–	–	3	43	951	32	1210	13
FLIP 87- 13L	6203	259	44	958	28	325	22	157	5	21	20	889	38	1022	33
FLIP 87- 14L	6204	3050	3	808	31	275	32	67	24	19	23	1076	24	1165	19
FLIP 87- 15L	6205	259	45	1308	18	225	39	157	6	38	7	951	34	1307	7
FLIP 87- 16L	6206	2451	11	1008	25	350	21	147	8	30	10	993	31	1224	11
FLIP 87- 17L	6207	2925	5	2308	4	275	34	27	30	10	37	889	37	1400	5
FLIP 87- 18L	6208	2745	8	1358	15	500	6	127	9	24	15	1118	21	1154	21
FLIP 87- 19L	6209	2214	16	708	34	475	7	7	31	–	–	764	43	1031	32
FLIP 87- 20L	6210	1530	33	2633	3	375	18	57	26	8	40	1306	11	1092	27
FLIP 87- 21L	6211	1234	40	558	38	350	20	97	16	29	11	1056	29	983	37
FLIP 87- 22L	6212	1207	41	1608	11	600	2	97	14	31	9	868	39	736	44
FLIP 87- 23L	6213	1651	29	778	33	50	44	77	20	15	26	1056	28	927	40

Table 5.4.5. Cont'd. ...

Selection	ILL	SYRIA		THAILAND				TURKEY						Overall (1) Mean	
		Tel Hadya		Chiang Rai		Chiang Mai		Ankara		Diyarbakir		Eskisehir			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 88- 1L	6425	2677	9	1758	8	375	17	67	23	12	33	1326	9	1881	1
FLIP 88- 2L	6426	2905	6	1808	7	250	36	227	2	24	16	806	42	1179	17
FLIP 88- 3L	6427	2303	15	1158	21	175	43	-	-	7	41	951	33	1242	9
FLIP 88- 4L	6428	2419	14	1358	14	375	16	37	29	-	44	1201	15	1345	6
FLIP 88- 5L	6429	2774	7	1008	24	225	40	-	-	13	31	701	44	1236	10
FLIP 88- 6L	6430	3539	1	3183	2	425	13	-	-	13	32	1431	3	1610	3
FLIP 88- 7L	6431	2437	12	1933	6	275	30	-	-	17	24	1431	2	1256	8
FLIP 88- 8L	6432	3023	4	2033	5	425	11	-	-	12	36	1493	1	1467	4
FLIP 88- 9L	6433	1761	25	1383	13	425	9	97	19	16	25	1431	6	1075	29
FLIP 88- 10L	6434	2188	17	983	26	275	31	-	-	42	2	1431	4	1135	22
FLIP 88- 11L	6435	2567	10	58	42	350	19	197	4	22	19	1118	19	1162	20
FLIP 88- 12L	6436	1340	38	28	43	550	5	97	15	15	28	1243	14	1125	23
FLIP 88- 13L	6437	2108	19	1258	19	225	37	-	-	25	14	1076	23	1613	2
FLIP 88- 14L	6438	2037	20	558	37	275	29	-	-	14	30	951	35	1099	26
Local Large	4400	1650	30	800	32	250	35	70	22	23	18	917	36	991	36
78S 26002	5582	2436	13	1667	9	300	27	73	21	20	22	1000	30	1222	12
Local Check		1579	32	-	-	-	-	-	-	40	4	1375	7		
Location Mean		1946		1192		342		68		21		1104			
S.E. of Mean		226.20		194.01		20.41		26.25		9.81		165.80			
L.S.D. at 5% for :															
Checks		887.91		1180.43		124.20		159.70		38.50		650.79			
T.E. in S.B.		1537.90		2044.56		215.12		276.60		66.69		1127.21			
T.E. in D.B.		1775.81		2504.06		263.46		338.77		77.00		1301.59			
Checks Vs T.E.		1450.16		2044.87		215.15		276.64		62.88		1062.90			
C.V. %		20.14		28.19		10.35		67.35		80.00		26.01			
Test > L. Check		3		0		0		0		0		0			

(1) Nubaria, Jubeiha, Ramtha, Chiquian, Idleb, Ankara and Diyarbakir were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different block.

Table 5.4.6. The five heaviest seed yielding entries at the individual locations in the LISN-L during 1987/88.

Rank	ARGENTINA		CHILE		CHINA	EGYPT		IRAN	
	Mendoza	Perico	Granoros	Valdivia	Shanxi	Nubaria	Sakha	Ghazvin	Karaj
1	FLIP88- 1L	FLIP87- 21L	FLIP88- 4L	FLIP87- 13L	FLIP86- 13L	FLIP87- 1L	FLIP87- 12L	FLIP85- 7L	FLIP87- 18L
2	FLIP88- 13L	FLIP87- 20L	FLIP88- 8L	FLIP87- 14L	FLIP88- 2L	FLIP89- 4L	FLIP88- 6L	FLIP87- 2L	FLIP87- 22L
3	FLIP87- 3L	FLIP87- 18L	FLIP88- 6L	FLIP84-144L	FLIP87- 10L	FLIP88- 6L	FLIP88- 1L	FLIP87- 7L	FLIP87- 23L
4	FLIP87- 8L	FLIP88- 3L	FLIP87- 3L	FLIP87- 3L	FLIP87- 1L	FLIP88- 9L	FLIP87- 13L	FLIP87- 21L	FLIP86- 13L
5	FLIP88- 8L	FLIP88- 1L	FLIP87- 17L FLIP87- 15L	FLIP87- 2L	FLIP88- 10L	FLIP88- 10L	FLIP87- 19L	FLIP88- 9L	FLIP87- 5L

Cont'd. ...

Table 5.4.6. Cont'd. ...

Rank	JORDAN		LEBANON	MEXICO	PAKISTAN	PERU	PORTUGAL	SPAIN	SYRIA
	Jubeiha	Ramtha	Terbol	Navojoa	Faisalabad	Chiquian	Elvas	Madrid	Aleppo
1	FLIP88- 8L	FLIP87- 17L	FLIP87- 23L	Local Check	FLIP88- 1L	FLIP87- 7L	FLIP88- 4L	FLIP87- 15L	FLIP87- 2L
2	FLIP85- 7L	FLIP87- 5L	FLIP88- 13L	FLIP88- 5L	FLIP88- 11L	FLIP87- 3L	FLIP87- 9L	FLIP88- 4L	FLIP87- 16L
3	FLIP88- 11L	FLIP88- 12L	FLIP87- 14L	FLIP87- 19L	FLIP87- 20L	FLIP86- 10L	FLIP87- 10L	FLIP86- 13L	FLIP87- 5L
4	FLIP88- 12L	FLIP88- 2L	FLIP88- 14L	FLIP87- 20L	FLIP85- 7L	FLIP87- 21L	FLIP88- 3L	FLIP87- 11L	FLIP88- 11L
5	FLIP87- 11L	FLIP87- 2L	FLIP87- 4L	FLIP88- 8L FLIP85- 7L	FLIP88- 2L	FLIP87- 20L	FLIP87- 13L	FLIP88- 1L	FLIP88- 1L

Cont'd. ...

Table 5.4.6. Cont'd. ...

Rank	SYRIA				THAILAND		TURKEY		
	Gelline	Idleb	Izra'a	Tel Hadya	Chiang Rai	Chiang Mai	Ankara	Diyarbakir	Eskisehir
1	FLIP87- 17L	FLIP88- 7L	FLIP88- 6L	FLIP88- 6L	FLIP86- 13L	FLIP87- 7L	FLIP84-144L	FLIP87- 4L	FLIP88- 8L
2	Local Check	FLIP87- 11L	FLIP88- 10L	FLIP87- 12L	FLIP88- 6L	FLIP87- 22L	FLIP88- 2L	FLIP88- 10L	FLIP88- 7L
3	FLIP88- 1L	Local Check	FLIP88- 6L	FLIP87- 14L	FLIP87- 20L	FLIP87- 6L	FLIP85- 3L	FLIP86- 10L	FLIP88- 6L
4	FLIP86- 6L	FLIP87- 4L	FLIP88- 7L	FLIP88- 8L	FLIP87- 17L	FLIP87- 2L	FLIP88- 11L	Local Check	FLIP88- 10L
5	FLIP88- 13L	FLIP87- 17L	FLIP86- 10L	FLIP87- 17L	FLIP88- 8L	FLIP88- 12L	FLIP87- 13L FLIP87- 15L	FLIP87- 6L	FLIP84-156L FLIP88- 9L

The brackets indicate entries having the same rank.

5.5. *LENTIL* INTERNATIONAL SCREENING NURSERY-SMALL SEED (LISN-S)

Material

The Lentil International Screening Nursery-Small Seed comprised 56 test entries and 3 checks, two of the checks namely Syrian Local Small (ILL 4401) and 78S 26013 (ILL 5588) were supplied, and one local check was to be added by the cooperator. All the test entries in this nursery were developed at ICARDA through hybridization and were selected based on their superior performance at ICARDA sites and Lebanon.

Methods and Management

The material comprising 56 test entries and three checks was sown in an augmented block design in four blocks comprising 14 test entries and 3 checks repeated in every block. The suggested plot size was single row 4 m long accomodating 200 plants with between-row spacing of 25 cm.

Forty two sets of the nursery were supplied to different cooperators in 24 countries but the results were received from 22 locations in 15 countries. The agronomic data received from the cooperators are presented in Table 5.5.1.

Results and Discussion

The data on time to flowering (Table 5.5.2.) revealed that flowering was earliest at Shanxi in China (in 49 days), and latest at Jubeiha in Jordan (in 159 days). The entries namely, FLIP87- 47L, FLIP88- 25L, and FLIP88-32L were earliest to flower in 104 or 105 days. The data on time to maturity (Table 5.5.3.) revealed that the lines flowering earlier were, in general, also earlier in maturity.

The plant height data (Table 5.5.4) revealed that the entry means ranged between 26 (for FLIP 87- 42L, FLIP 88- 15L, FLIP 88- 23L, FLIP 88- 26L) and 31 cm (for FLIP 87-52L, FLIP 88- 27L and FLIP 88 -33L).

The performance of entries (Table 5.5.5) at Gelline in Syria was the best with average seed yield of 2291 kg/ha and was followed by Tel Hadya in Syria (2026 kg/ha); Ramtha in Jordan (1797 kg/ha) and Aleppo in Syria (1593 kg/ha). The ANOVA for the experiment revealed that at Mendoza in Argentina; Shanxi in China; Madrid in Spain; Aleppo, Izra'a and Tel Hadya in Syria; 2, 5, 9, 2, 20 and 1 test entries, respectively, outyielded the respective local checks by significant margins. The entry means over all locations revealed that FLIP 88-29L was the top yielder with an average yield of 1273 kg/ha and was followed by FLIP 87-48L, FLIP 87-49L, FLIP 87-42L and FLIP 87-34L with seed yield of 1263, 1207, 1168, and 1137 kg/ha, respectively.

The five heaviest seed yielding entries at different locations are given in Table 5.5.6. The entries FLIP88-27L and FLIP87-53L occured most frequently among the top five heavy yielders.

Table 5.5.1. Agronomic data for different locations in the LISN-S during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ARGENTINA	Mendoza	NA	NA	NA			NA	NA	NA
AUSTRALIA	Horsham	06.07.88	13.12.88		150		-	Trifluralin, Cyanazine,	Precoz
							-	Diquat, Paraquat, Endosulphan	
CHINA	Shanxi	18.04.88	21.07.88	-			-	-	-
ETHIOPIA	Debre Zeit	13.07.88	-	-			-	-	ILL 358
IRAN	Ghazvin	13.04.88	06.07.88	-			-	-	Ziba
IRAN	Karaj	15.03.88	25.06.88	24	72		-	Treflan, Metasystox	Ziba
SPAIN	Maragah	06.12.88	07.88		60		-	-	-
JORDAN	Jubeiha	11.11.87	18.05.88	20	40		-	-	UJL 176
JORDAN	Ramtha	02.11.87	15.05.88	20	40		-	-	UJL 176
LEBANON	Terbol	20.11.87	20.05.88		50		-	Kerb, Bladex	Lebanese Local
NEPAL	Khumaltar	27.10.87	04.88	20	40	20	-	-	Simrise
PAKISTAN	Faisalabad (AARI)	09.11.87	30.03.88	26	60		3	-	Masoor 85
PORTUGAL	Elvas	23.11.87	20.06.88	-			-	-	L188, FLIP84-58L, ILL 5728
SPAIN	Madrid	13.11.87	22.06.88	32	96		-	Prometryne	LEC 142 (ANGELA)
SRI LANKA	Dodangolla	22.11.87	-	50	63		8	Metasystox	-
SYRIA	Aleppo	25.11.87	14.05.88		50		-	-	Hurani
SYRIA	Gelline	19.12.87	21.05.88	20	50		-	-	
SYRIA	Idleb	05.12.87	05.06.88		60		-	-	Hurani
SYRIA	Izra'a	12.01.88	10.06.88	12	37		-	-	Idleb 1
SYRIA	Tel Hadya	23.11.87	17.05.88		50		-	Kerb, Bladex	ILL 4400
TUNISIA	Beja	14.11.87	NA	NA			NA	NA	NA

NA = Not available.

Table 5.5.2. Adjusted time to flowering (days) of entries at different locations in LISN-S during 1987/88.

			AUSTRALIA	CHINA	ETHIOPIA	IRAN		JORDAN		LEBANON	NEPAL
Selection	ILL	Origin	Horhsam	Shanxi	Debre Zeit	Ghazvin	Karaj	Jubeiha	Ramtha	Terbol	Khumaltar
FLIP 84-51L	5722	ICARDA	103	45	51	50	70	156	149	132	112
FLIP 86-62L	6048	ICARDA	106	49	70	53	72	156	151	130	133
FLIP 87-24L	6214	ICARDA	101	49	65	55	73	156	153	133	132
FLIP 87-25L	6215	ICARDA	94	49	67	54	70	156	153	130	133
FLIP 87-26L	6216	ICARDA	101	50	-	55	74	158	150	133	132
FLIP 87-27L	6217	ICARDA	104	49	65	54	74	156	150	131	132
FLIP 87-28L	6218	ICARDA	101	49	68	56	68	156	149	130	134
FLIP 87-29L	6219	ICARDA	103	49	70	54	71	156	150	131	136
FLIP 87-30L	6220	ICARDA	101	49	59	55	76	156	153	130	134
FLIP 87-31L	6221	ICARDA	98	49	-	55	74	156	152	131	132
FLIP 87-32L	6222	ICARDA	97	49	-	54	72	156	153	130	133
FLIP 87-33L	6223	ICARDA	98	49	58	55	72	156	150	132	134
FLIP 87-34L	6224	ICARDA	106	49	-	56	71	156	148	130	136
FLIP 87-35L	6225	ICARDA	101	49	77	54	72	156	150	131	132
FLIP 87-36L	6226	ICARDA	101	48	55	56	72	156	152	130	136
FLIP 87-37L	6227	ICARDA	101	48	57	56	73	156	151	130	134
FLIP 87-38L	6228	ICARDA	92	49	-	54	71	156	152	132	136
FLIP 87-39L	6229	ICARDA	95	51	65	54	72	156	153	130	133
FLIP 87-40L	6230	ICARDA	103	49	55	54	72	156	153	130	136
FLIP 87-41L	6231	ICARDA	98	48	66	56	70	156	149	130	136
FLIP 87-42L	6232	ICARDA	100	49	-	54	71	156	153	130	136
FLIP 87-43L	6233	ICARDA	98	49	66	56	69	156	148	130	134
FLIP 87-44L	6234	ICARDA	106	50	68	55	69	156	148	130	136
FLIP 87-45L	6235	ICARDA	102	49	54	54	72	156	153	130	134
FLIP 87-46L	6236	ICARDA	94	47	52	53	70	156	153	130	118
FLIP 87-47L	6237	ICARDA	90	49	56	51	71	156	153	128	112
FLIP 87-48L	6238	ICARDA	98	48	68	55	71	156	152	134	133
FLIP 87-49L	6239	ICARDA	97	51	55	58	81	156	153	132	136
FLIP 87-50L	6240	ICARDA	97	51	67	54	81	156	158	136	118
FLIP 87-51L	6241	ICARDA	101	46	59	54	71	156	153	132	133
FLIP 87-52L	6242	ICARDA	93	46	52	53	72	151	151	130	125
FLIP 87-53L	6243	ICARDA	101	50	68	56	68	-	149	132	133
FLIP 87-54L	6244	ICARDA	94	58	-	59	73	163	155	142	136
FLIP 87-55L	6245	ICARDA	101	50	68	57	72	156	154	132	133

Table 5.5.2. Cont'd. ...

Selection	ILL	Origin	AUSTRALIA	CHINA	ETHIOPIA	IRAN		JORDAN		LEBANON	NEPAL
			Horhsam	Shanxi	Debre Zeit	Ghazvin	Karaj	Jubeiha	Ramtha	Terbol	Khumaltar
FLIP 87-56L	6246	ICARDA	98	46	62	54	73	156	151	131	121
FLIP 87-57L	6247	ICARDA	99	48	63	54	71	156	150	133	125
FLIP 87-58L	6248	ICARDA	101	51	-	55	71	156	154	136	133
FLIP 88-15L	6439	ICARDA	101	49	68	56	71	152	149	132	133
FLIP 88-16L	6440	ICARDA	96	46	57	51	72	153	150	133	112
FLIP 88-17L	6441	ICARDA	101	47	59	54	71	158	153	143	118
FLIP 88-18L	6442	ICARDA	98	46	54	51	69	156	149	130	133
FLIP 88-19L	6443	ICARDA	98	48	63	55	72	156	150	131	118
FLIP 88-20L	6444	ICARDA	103	46	61	51	73	156	153	131	132
FLIP 88-21L	6445	ICARDA	102	47	50	49	69	152	155	132	118
FLIP 88-22L	6446	ICARDA	94	45	46	49	71	151	155	132	111
FLIP 88-23L	6447	ICARDA	96	46	46	50	69	-	156	128	112
FLIP 88-24L	6448	ICARDA	98	50	74	55	73	156	152	135	132
FLIP 88-25L	6449	ICARDA	94	43	42	49	72	151	150	130	112
FLIP 88-26L	6450	ICARDA	89	44	49	49	72	151	153	130	112
FLIP 88-27L	6451	ICARDA	96	48	56	52	73	156	151	130	125
FLIP 88-28L	6452	ICARDA	106	48	68	55	68	156	148	130	136
FLIP 88-29L	6453	ICARDA	101	43	56	49	71	151	150	128	125
FLIP 88-30L	6454	ICARDA	93	48	56	52	70	151	152	132	118
FLIP 88-31L	6455	ICARDA	106	48	74	54	72	156	150	135	122
FLIP 88-32L	6456	ICARDA	94	43	47	50	67	151	149	130	111
FLIP 88-33L	6457	ICARDA	96	46	45	50	69	156	151	130	125
Local small	4401	SYRIA	101	50	59	55	77	157	154	135	133
78S 26013	5588	JORDAN	100	48	64	56	72	156	154	135	133
Local Check			88	61	53	55	79	156	152	148	84
Location Mean			**98**	**49**	**61**	**54**	**72**	**159**	**152**	**133**	**126**
S.E. of Mean			1.00	0.38	3.15	0.49	2.72	0.29	0.93	0.50	0.30
L.S.D. at 5% for :											
Checks			3.47	1.32	10.90	1.71	9.42	1.00	3.22	1.73	1.04
Test entries in the same block			6.94	2.65	21.80	3.41	18.85	2.00	6.45	3.46	2.08
Test entries in different block			8.02	3.05	25.17	3.94	21.76	2.31	7.45	4.00	2.41
Checks Vs test entries			6.34	2.41	19.90	3.12	17.21	1.82	5.89	3.16	1.90
C.V. %			2.04	1.56	12.03	1.83	7.55	0.39	1.23	0.75	0.48

Cont'd. ...

Table 5.5.2. Cont'd. ...

Selection	PAKISTAN	PORTUGAL	SPAIN	SYRIA					(1) Overall Mean
	Faisalabad*	Elvas	Madrid	Aleppo	Gelline	Idleb	Izraa'	Tel Hadya	
FLIP 84-51L	98	125	153	108	112	132	84	145	108
FLIP 86-62L	132	132	155	104	114	133	84	139	111
FLIP 87-24L	-	128	149	104	108	130	83	140	110
FLIP 87-25L	-	123	153	104	109	129	84	137	109
FLIP 87-26L	-	125	154	100	108	133	83	136	110
FLIP 87-27L	140	125	152	101	109	130	83	135	109
FLIP 87-28L	-	130	151	103	108	133	83	139	109
FLIP 87-29L	137	128	153	104	107	130	83	136	110
FLIP 87-30L	-	123	151	101	108	136	84	137	110
FLIP 87-31L	-	135	150	103	110	130	84	140	110
FLIP 87-32L	-	128	154	102	108	133	84	138	110
FLIP 87-33L	-	123	152	103	110	139	86	137	110
FLIP 87-34L	-	134	153	104	108	131	84	140	110
FLIP 87-35L	-	128	155	103	110	129	82	135	109
FLIP 87-36L	123	123	154	104	107	138	83	138	110
FLIP 87-37L	-	123	154	104	107	136	84	137	110
FLIP 87-38L	-	128	148	104	108	132	82	138	109
FLIP 87-39L	124	122	151	100	109	137	85	139	109
FLIP 87-40L	-	123	148	104	109	136	84	137	110
FLIP 87-41L	126	128	153	101	110	132	84	140	109
FLIP 87-42L	-	126	149	104	109	132	84	138	110
FLIP 87-43L	131	135	152	103	108	133	83	139	110
FLIP 87-44L	-	128	154	104	109	130	84	140	110
FLIP 87-45L	-	133	149	100	108	132	83	137	110
FLIP 87-46L	-	128	148	102	108	130	82	137	107
FLIP 87-47L	99	119	137	99	105	129	85	133	104
FLIP 87-48L	121	128	157	104	109	132	85	138	110
FLIP 87-49L	122	133	154	103	112	133	84	141	112
FLIP 87-50L	128	126	154	105	113	136	89	143	111
FLIP 87-51L	124	126	148	104	107	139	84	137	110
FLIP 87-52L	118	114	142	100	104	132	83	137	106
FLIP 87-53L	-	132	155	106	117	132	88	145	111
FLIP 87-54L	-	133	159	102	116	138	87	145	114
FLIP 87-55L	124	132	153	104	114	130	87	141	111

Table 5.5.2. Cont'd. ...

Selection	PAKISTAN	PORTUGAL	SPAIN	SYRIA					(1)
	Faisalabad*	Elvas	Madrid	Aleppo	Gelline	Idleb	Izraa'	Tel Hadya	Overall Mean
FLIP 87-56L	129	125	152	102	108	135	82	137	108
FLIP 87-57L	-	128	150	102	110	129	82	136	108
FLIP 87-58L	-	134	154	105	113	132	88	145	112
FLIP 88-15L	-	130	154	102	115	133	87	143	111
FLIP 88-16L	113	128	153	102	107	130	82	135	107
FLIP 88-17L	116	130	158	104	110	135	83	141	111
FLIP 88-18L	-	125	149	103	108	132	81	139	108
FLIP 88-19L	124	125	156	100	106	130	83	136	108
FLIP 88-20L	130	135	155	104	112	130	85	142	111
FLIP 88-21L	114	126	151	103	109	132	83	138	108
FLIP 88-22L	110	128	154	102	107	131	81	137	107
FLIP 88-23L	111	130	154	99	107	129	79	138	106
FLIP 88-24L	-	135	154	102	109	129	85	139	111
FLIP 88-25L	100	123	148	100	104	132	81	134	105
FLIP 88-26L	107	126	148	101	109	130	84	134	106
FLIP 88-27L	123	123	154	100	107	136	83	135	108
FLIP 88-28L	128	130	147	103	113	138	87	141	110
FLIP 88-29L	111	121	146	100	106	131	83	136	106
FLIP 88-30L	119	119	149	100	104	131	83	136	106
FLIP 88-31L	125	128	157	105	114	130	87	143	111
FLIP 88-32L	110	125	148	100	104	133	80	138	105
FLIP 88-33L	109	121	154	100	107	132	84	135	107
Local small	129	132	154	104	111	135	86	140	112
78S 26013	132	129	156	105	112	132	84	142	111
Local Check	102	120	164	104	110	134	85	141	
Location Mean	120	127	153	103	109	132	84	139	
S.E. of Mean		1.57	0.55	0.17	0.49	2.44	0.57	0.86	
L.S.D. at 5% for :									
Checks		5.42	1.91	0.58	1.71	8.43	1.98	2.98	
T.E. in the same block		10.34	3.83	1.15	3.41	16.86	3.95	5.97	
T.E. in the different block		12.51	4.42	1.33	3.94	19.47	4.57	6.89	
Checks Vs test entries		9.89	3.49	1.05	3.12	15.40	3.61	5.45	
C.V. %		2.46	0.72	0.32	0.90	3.68	1.36	1.24	

(1) Debro Zeit, Jubeiha and Faisalabad were excluded from the overall mean.
T.E. = Test entries, * = Location not analysed and thus mean values are unadjusted.

Table 5.5.3. Adjusted time to maturity (days) of entries at different locations in the LISN-S during 1987/88.

	AUSTALIA	CHINA	IRAN		JORDAN		LEBANON	PORTUGAL
Selection	Horsham	Shanxi	Ghazvin	Karaj	Jubeiha	Ramtha	Terbol	Elvas
FLIP 84-51L	-	81	69	101	184	193	177	193
FLIP 86-62L	177	82	74	101	185	192	169	194
FLIP 87-24L	126	84	76	101	184	188	169	185
FLIP 87-25L	177	82	75	102	185	189	171	180
FLIP 87-26L	126	84	77	102	186	188	169	185
FLIP 87-27L	126	84	78	102	186	189	169	185
FLIP 87-28L	127	84	73	100	182	189	171	189
FLIP 87-29L	126	84	74	100	186	188	169	198
FLIP 87-30L	177	83	78	103	187	191	173	184
FLIP 87-31L	126	84	77	101	186	188	169	191
FLIP 87-32L	177	82	71	104	185	193	171	190
FLIP 87-33L	177	82	73	103	183	191	171	190
FLIP 87-34L	127	84	71	101	186	194	173	193
FLIP 87-35L	126	81	77	101	186	189	169	191
FLIP 87-36L	177	82	76	101	187	194	171	184
FLIP 87-37L	-	82	77	102	185	192	171	190
FLIP 87-38L	175	82	75	100	185	194	171	197
FLIP 87-39L	177	82	76	104	185	190	169	184
FLIP 87-40L	177	82	77	103	187	191	171	190
FLIP 87-41L	-	84	73	102	186	190	173	193
FLIP 87-42L	177	82	73	98	183	191	169	184
FLIP 87-43L	127	84	73	100	186	189	171	189
FLIP 87-44L	-	84	71	102	184	193	173	183
FLIP 87-45L	175	82	72	103	185	191	173	190
FLIP 87-46L	177	82	71	102	185	192	173	190
FLIP 87-47L	177	82	76	103	185	192	171	180
FLIP 87-48L	177	82	77	99	185	194	173	178
FLIP 87-49L	175	85	77	103	185	193	171	194
FLIP 87-50L	-	82	77	107	183	193	173	184
FLIP 87-51L	-	79	74	101	185	195	173	194
FLIP 87-52L	-	79	76	101	183	194	173	190
FLIP 87-53L	-	84	73	100	-	193	177	195
FLIP 87-54L	175	86	76	103	191	193	173	197
FLIP 87-55L	177	83	81	102	185	192	171	194

Table 5.5.3. Cont'd. ...

Selection	AUSTALIA	CHINA	IRAN		JORDAN		LEBANON	PORTUGAL
	Horsham	Shanxi	Ghazvin	Karaj	Jubeiha	Ramtha	Terbol	Elvas
FLIP 87-56L	124	80	74	101	184	190	171	181
FLIP 87-57L	124	81	76	101	186	189	169	185
FLIP 87-58L	-	84	73	105	184	193	173	193
FLIP 88-15L	125	81	70	101	186	191	171	195
FLIP 88-16L	118	82	73	99	182	187	169	185
FLIP 88-17L	126	84	75	100	188	189	171	185
FLIP 88-18L	127	81	70	104	186	193	169	193
FLIP 88-19L	126	82	74	100	186	188	171	191
FLIP 88-20L	126	82	73	101	184	190	169	191
FLIP 88-21L	175	79	71	101	181	193	173	184
FLIP 88-22L	175	79	72	104	181	192	175	190
FLIP 88-23L	127	84	72	99	-	194	177	195
FLIP 88-24L	126	81	76	102	184	189	173	191
FLIP 88-25L	-	76	74	103	183	190	171	197
FLIP 88-26L	175	79	72	100	181	191	173	180
FLIP 88-27L	177	82	77	100	187	192	171	184
FLIP 88-28L	127	81	71	104	186	192	177	195
FLIP 88-29L	-	78	76	102	185	191	171	190
FLIP 88-30L	-	82	76	102	183	192	175	197
FLIP 88-31L	124	84	76	102	186	192	185	195
FLIP 88-32L	124	80	70	99	184	190	173	189
FLIP 88-33L	-	84	73	102	186	191	177	193
Local small	113	82	73	102	186	192	174	194
78S 26013	114	83	77	102	186	193	171	195
Local Check	144	90	77	105	185	192	185	182
Location Mean	**150**	**83**	**74**	**102**	**186**	**191**	**173**	**190**
S.E. of Mean	33.47	0.67	1.912	1.04	0.94	0.75	0.29	1.27
L.S.D. at 5% for :								
Checks	115.80	2.30	6.61	3.59	3.26	2.58	1.00	4.40
T.E. in S.B.	231.61	4.60	13.21	7.18	6.52	5.16	2.00	8.80
T.E. in D.B.	267.43	5.32	15.26	8.29	7.53	5.96	2.31	10.16
Checks Vs T.E.	211.46	4.20	12.06	6.56	5.96	4.71	1.82	8.04
C.V. %	56.98	1.61	5.14	2.04	1.07	0.78	0.33	1.34

Cont'd. ...

Table 5.5.3. Cont'd. ...

Selection	SPAIN	SYRIA					Overall Mean (1)
	Madrid	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	
FLIP 84-51L	219	147	148	169	125	181	150
FLIP 86-62L	211	136	145	168	121	177	148
FLIP 87-24L	209	136	152	172	120	177	147
FLIP 87-25L	214	138	145	169	123	177	147
FLIP 87-26L	211	136	150	172	120	177	148
FLIP 87-27L	211	135	150	172	122	177	148
FLIP 87-28L	270	138	143	169	119	176	152
FLIP 87-29L	212	134	152	171	123	174	148
FLIP 87-30L	218	136	145	171	123	178	149
FLIP 87-31L	215	134	152	171	121	177	148
FLIP 87-32L	210	138	146	169	128	177	148
FLIP 87-33L	208	137	143	171	122	177	147
FLIP 87-34L	212	147	145	169	122	177	149
FLIP 87-35L	214	134	141	172	121	177	147
FLIP 87-36L	209	145	144	169	122	178	148
FLIP 87-37L	207	145	145	171	120	178	148
FLIP 87-38L	211	138	144	171	120	177	148
FLIP 87-39L	210	138	146	168	122	177	147
FLIP 87-40L	210	145	143	171	122	178	149
FLIP 87-41L	212	138	146	172	122	175	148
FLIP 87-42L	213	137	146	169	121	177	147
FLIP 87-43L	215	138	143	170	119	176	147
FLIP 87-44L	218	147	146	170	123	176	149
FLIP 87-45L	207	138	146	168	123	178	148
FLIP 87-46L	208	138	135	168	124	177	147
FLIP 87-47L	207	138	145	168	123	174	147
FLIP 87-48L	219	145	146	174	123	177	149
FLIP 87-49L	218	138	145	169	122	177	149
FLIP 87-50L	211	139	148	169	123	178	149
FLIP 87-51L	218	135	146	167	120	178	148
FLIP 87-52L	212	144	146	168	123	179	149
FLIP 87-53L	214	139	149	170	121	176	149
FLIP 87-54L	220	138	148	168	124	179	150
FLIP 87-55L	216	145	147	170	123	179	150

Table 5.5.3. Cont'd. ...

Selection	SPAIN	SYRIA					(1)
	Madrid	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Overall Mean
FLIP 87-56L	201	144	143	172	123	175	146
FLIP 87-57L	218	135	153	174	119	178	148
FLIP 87-58L	215	139	147	169	121	177	149
FLIP 88-15L	217	140	146	175	121	177	149
FLIP 88-16L	212	135	148	171	122	172	146
FLIP 88-17L	217	136	153	172	123	176	148
FLIP 88-18L	210	139	144	169	125	177	148
FLIP 88-19L	216	135	153	172	123	175	148
FLIP 88-20L	216	134	151	178	121	178	149
FLIP 88-21L	214	137	145	168	122	177	147
FLIP 88-22L	210	140	148	169	126	177	148
FLIP 88-23L	217	139	149	170	121	177	149
FLIP 88-24L	216	135	152	171	118	176	148
FLIP 88-25L	203	136	141	171	122	175	147
FLIP 88-26L	209	138	146	168	121	178	146
FLIP 88-27L	214	136	144	171	123	177	148
FLIP 88-28L	219	140	146	175	123	177	150
FLIP 88-29L	211	136	144	171	121	178	147
FLIP 88-30L	207	145	147	171	123	179	150
FLIP 88-31L	218	144	153	172	123	178	152
FLIP 88-32L	209	138	143	170	121	177	147
FLIP 88-33L	218	147	148	172	121	179	150
Local small	213	137	146	169	121	177	148
78S 26013	215	140	146	169	121	177	149
Local Check	222	140	144	169	123	180	
Location Mean	214	139	146	170	122	177	
S.E. of Mean	0.91	2.20	1.80	0.68	1.08	0.85	
L.S.D. at 5% for :							
Checks	3.15	7.62	6.22	2.36	3.74	2.94	
T.E. in S.B.	6.29	15.25	12.44	4.72	7.48	5.88	
T.E. in D.B.	7.27	17.61	14.36	5.45	8.63	6.79	
Checks Vs T.E.	5.74	13.92	11.35	4.31	6.82	5.37	
C.V. %	0.85	3.17	2.45	0.80	1.77	0.96	

(1) Horsham and Jubeiha were excluded from the overall mean. T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 5.5.4. Adjusted plant height (cm) of entries at different locations in the LISN-S during 1987/88.

Selection	ARGENTINA	AUSTRALIA	CHINA	IRAN			JORDAN		LEBANON
	Mendoza	Horsham	Shanxi	Ghazvin	Karaj	Maragah	Jubeiha	Ramtha	Terbol
FLIP 84-51L	30	35	18	19	21	19	34	34	28
FLIP 86-62L	22	27	18	20	22	19	37	36	24
FLIP 87-24L	16	38	20	19	23	18	42	43	24
FLIP 87-25L	26	29	22	19	21	23	33	39	24
FLIP 87-26L	21	36	21	19	24	20	47	46	24
FLIP 87-27L	21	33	20	19	21	20	38	32	26
FLIP 87-28L	24	35	23	20	22	16	36	35	25
FLIP 87-29L	21	38	20	19	22	20	32	33	29
FLIP 87-30L	22	30	19	20	23	18	35	41	24
FLIP 87-31L	18	35	22	20	20	22	41	42	29
FLIP 87-32L	27	31	18	19	24	21	29	35	27
FLIP 87-33L	30	32	21	17	25	22	38	30	32
FLIP 87-34L	23	25	21	20	23	16	29	36	27
FLIP 87-35L	21	35	20	19	23	16	38	42	24
FLIP 87-36L	22	30	20	19	26	20	37	37	32
FLIP 87-37L	19	30	20	20	24	20	43	37	29
FLIP 87-38L	23	34	20	20	25	21	39	29	24
FLIP 87-39L	24	24	19	20	22	21	33	39	21
FLIP 87-40L	21	32	20	20	28	16	36	41	32
FLIP 87-41L	23	32	21	20	26	15	25	36	30
FLIP 87-42L	21	29	19	18	20	19	31	34	24
FLIP 87-43L	28	33	22	20	25	19	31	39	28
FLIP 87-44L	23	28	21	20	22	17	36	35	32
FLIP 87-45L	21	29	19	19	25	17	29	34	22
FLIP 87-46L	23	28	17	18	23	17	29	39	24
FLIP 87-47L	26	30	22	19	25	23	34	29	29
FLIP 87-48L	21	29	22	19	24	22	34	37	27
FLIP 87-49L	22	28	18	20	23	20	34	39	29
FLIP 87-50L	22	31	18	20	22	21	35	34	24
FLIP 87-51L	20	27	19	20	20	18	43	37	32
FLIP 87-52L	27	34	22	18	27	20	37	38	32
FLIP 87-53L	27	32	20	20	20	17	-	36	25
FLIP 87-54L	23	34	19	20	23	19	24	32	27
FLIP 87-55L	22	31	17	20	20	18	29	37	32

Table 5.5.4. Cont'd. ...

	ARGENTINA	AUSTRALIA	CHINA	IRAN			JORDAN		LEBANON
Selection	Mendoza	Horsham	Shanxi	Ghazvin	Karaj	Maragah	Jubeiha	Ramtha	Terbol
FLIP 87-56L	25	34	21	19	23	18	37	42	31
FLIP 87-57L	19	33	17	18	20	18	39	33	27
FLIP 87-58L	25	29	17	19	21	19	32	40	30
FLIP 88-15L	19	30	14	18	21	21	35	35	28
FLIP 88-16L	22	33	17	18	23	20	32	39	24
FLIP 88-17L	-	33	16	18	22	16	41	32	24
FLIP 88-18L	26	35	20	20	23	19	31	39	30
FLIP 88-19L	24	38	19	18	23	17	39	40	27
FLIP 88-20L	25	34	19	18	22	18	36	37	24
FLIP 88-21L	22	33	19	20	22	21	29	40	29
FLIP 88-22L	23	32	18	19	26	19	32	34	27
FLIP 88-23L	18	30	18	18	21	19	-	37	28
FLIP 88-24L	18	31	16	19	19	22	39	45	24
FLIP 88-25L	23	30	16	18	19	18	39	41	29
FLIP 88-26L	23	28	18	19	24	23	36	29	24
FLIP 88-27L	25	34	21	20	24	20	37	36	34
FLIP 88-28L	24	25	18	19	22	19	26	40	25
FLIP 88-29L	25	28	21	18	23	22	42	35	24
FLIP 88-30L	20	31	15	19	25	18	35	40	27
FLIP 88-31L	24	33	20	20	23	22	38	43	29
FLIP 88-32L	25	30	21	19	23	19	28	40	23
FLIP 88-33L	26	30	21	20	25	15	36	46	32
Local small	19	28	17	19	20	19	39	32	27
78S 26013	21	31	18	19	22	18	36	36	29
Local Check	23	25	19	20	24	23	37	39	31
Location Mean	**22**	**31**	**19**	**19**	**23**	**19**	**36**	**37**	**27**
S.E. of Mean	1.55	2.61	0.66	0.38	1.13	1.05	2.81	1.70	1.11
L.S.D. at 5% for :									
Checks	5.36	9.01	2.27	1.32	3.90	3.64	9.72	5.88	3.83
T.E. in S.B.	10.71	18.03	4.54	2.64	7.80	7.27	19.44	11.76	7.65
T.E. in D.B.	12.37	20.81	5.24	3.05	9.01	8.40	22.44	13.58	8.83
Checks Vs T.E.	9.78	16.46	4.15	2.41	7.12	6.64	17.75	10.74	6.99
C.V. %	14.07	16.92	6.88	3.98	10.02	10.89	17.88	9.20	8.05

Cont'd. ...

Table 5.5.4. Cont'd. ...

Selection	NEPAL	PORTUGAL	SPAIN	SRI LANKA	SYRIA					(1) Overall Mean
	Khumaltar	Elvas	Madrid	Dodangolla	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	
FLIP 84-51L	31	39	50	16	31	31	29	23	37	29
FLIP 86-62L	33	29	41	11	31	36	28	25	38	27
FLIP 87-24L	27	35	51	12	30	29	28	25	39	29
FLIP 87-25L	34	33	47	12	32	24	18	23	34	27
FLIP 87-26L	29	30	51	12	28	29	26	25	33	28
FLIP 87-27L	34	32	51	14	31	28	33	23	45	29
FLIP 87-28L	31	41	46	11	32	30	26	21	42	29
FLIP 87-29L	35	37	51	12	27	25	21	22	34	28
FLIP 87-30L	32	38	41	13	34	39	28	29	37	29
FLIP 87-31L	31	30	57	11	29	24	30	25	25	28
FLIP 87-32L	27	40	39	10	31	35	20	23	42	28
FLIP 87-33L	31	41	43	12	30	41	26	24	35	29
FLIP 87-34L	25	36	50	13	29	34	28	24	40	28
FLIP 87-35L	37	35	49	14	30	27	25	24	43	29
FLIP 87-36L	32	34	39	13	31	36	20	28	35	28
FLIP 87-37L	32	44	41	12	31	37	23	24	42	29
FLIP 87-38L	31	37	47	12	29	38	16	25	45	28
FLIP 87-39L	32	37	49	11	34	33	20	24	32	27
FLIP 87-40L	32	36	35	14	31	38	23	27	52	30
FLIP 87-41L	28	37	48	13	31	29	26	24	32	28
FLIP 87-42L	32	37	45	12	29	33	24	22	25	26
FLIP 87-43L	30	44	48	12	32	30	28	19	39	29
FLIP 87-44L	27	37	52	12	25	31	29	23	40	28
FLIP 87-45L	31	35	41	9	33	34	23	23	40	27
FLIP 87-46L	36	33	47	10	30	35	24	22	40	28
FLIP 87-47L	34	34	51	14	29	34	25	24	32	28
FLIP 87-48L	32	33	43	14	34	29	22	29	45	29
FLIP 87-49L	33	35	49	14	35	41	26	26	37	30
FLIP 87-50L	27	37	44	8	32	34	23	22	39	27
FLIP 87-51L	33	43	45	13	40	36	21	23	41	29
FLIP 87-52L	33	41	43	14	33	43	26	27	44	31
FLIP 87-53L	27	46	39	13	37	33	23	20	34	28
FLIP 87-54L	42	38	41	12	37	37	23	25	36	29
FLIP 87-55L	28	36	48	13	31	30	27	30	36	28

Table 5.5.4. Cont'd. ...

Selection	NEPAL	PORTUGAL	SPAIN	SRI LANKA	SYRIA					Overall Mean (1)
	Khumaltar	Elvas	Madrid	Dodangolla	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	
FLIP 87-56L	35	27	53	13	29	28	34	24	31	29
FLIP 87-57L	32	37	57	12	28	34	26	23	32	28
FLIP 87-58L	25	34	50	11	31	36	31	21	28	28
FLIP 88-15L	28	31	44	10	30	32	22	20	29	26
FLIP 88-16L	28	35	57	15	28	27	23	20	33	27
FLIP 88-17L	31	37	49	12	31	28	25	18	39	27
FLIP 88-18L	30	34	46	13	32	43	38	25	36	30
FLIP 88-19L	30	39	56	13	35	28	20	21	35	29
FLIP 88-20L	30	32	51	14	32	29	31	23	22	27
FLIP 88-21L	25	33	51	10	32	32	20	26	40	28
FLIP 88-22L	39	33	44	15	29	34	26	22	36	28
FLIP 88-23L	28	42	42	16	29	24	24	18	29	26
FLIP 88-24L	28	35	49	8	28	31	31	22	37	28
FLIP 88-25L	26	34	43	11	33	36	21	21	32	27
FLIP 88-26L	28	35	43	10	33	26	22	23	34	26
FLIP 88-27L	33	41	49	11	32	39	28	29	39	31
FLIP 88-28L	26	32	46	10	36	34	23	22	31	27
FLIP 88-29L	34	44	37	14	39	33	28	31	42	30
FLIP 88-30L	30	36	47	12	35	33	24	22	37	28
FLIP 88-31L	31	37	51	12	32	33	35	22	31	30
FLIP 88-32L	26	37	46	15	32	33	32	24	33	28
FLIP 88-33L	32	49	54	17	33	34	33	22	34	31
Local small	28	39	48	10	31	36	26	24	34	27
78S 26013	29	36	45	13	30	37	26	24	34	28
Local Check	28	32	51	-	32	35	29	23	36	
Location Mean	30	36	47	12	31	33	26	24	36	
S.E. of Mean	0.85	1.50	1.34	0.67	1.13	1.67	1.95	0.55	2.87	
L.S.D. at 5% for :										
Checks	2.94	5.18	4.65	3.01	3.91	5.76	6.73	1.89	9.94	
T.E. in S.B.	5.88	10.36	9.30	6.02	7.82	11.52	13.46	3.78	19.89	
T.E. in D.B.	6.79	12.00	10.74	7.38	9.03	13.31	15.55	4.37	22.96	
Checks Vs T.E.	5.37	9.46	8.49	5.83	7.14	10.52	12.29	3.45	18.16	
C.V. %	5.64	8.25	5.73	10.97	7.20	9.94	15.18	4.59	15.91	

(1) Mendoza and Jubeiha were excluded from the overall mean. T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 5.5.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries for different locations in the LISN-S during 1987/88.

Selection	ILL	ARGENTINA		CHINA		IRAN						JORDAN	
		Mendoza		Shanxi		Ghazvin		Karaj		Maragah		Jubeiha	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-51L	5722	414	43	992	10	159	59	375	26	-	-	1440	33
FLIP 86-62L	6048	486	35	428	44	485	13	300	32	775	7	2467	2
FLIP 87-24L	6214	548	31	1236	3	352	41	118	51	475	28	1977	15
FLIP 87-25L	6215	1086	7	1044	7	415	28	446	18	575	22	2187	10
FLIP 87-26L	6216	201	50	-	-	452	19	151	47	475	29	1967	16
FLIP 87-27L	6217	548	28	530	36	407	29	207	42	525	24	1177	46
FLIP 87-28L	6218	681	20	894	14	215	56	437	20	125	51	1470	32
FLIP 87-29L	6219	414	41	620	31	419	25	151	48	525	23	2187	11
FLIP 87-30L	6220	752	16	264	51	530	8	-	-	675	15	1767	24
FLIP 87-31L	6221	214	49	1014	9	563	5	140	50	625	18	1867	20
FLIP 87-32L	6222	152	53	667	27	381	36	307	31	325	38	1667	27
FLIP 87-33L	6223	619	21	83	54	374	37	-	-	625	19	2557	1
FLIP 87-34L	6224	548	33	697	25	370	38	470	13	-	-	1420	36
FLIP 87-35L	6225	548	29	489	39	352	42	251	38	675	13	2117	13
FLIP 87-36L	6226	752	15	-	-	407	31	-	-	825	4	1367	40
FLIP 87-37L	6227	352	44	330	49	263	54	-	-	775	9	1237	44
FLIP 87-38L	6228	-	-	486	40	370	39	268	35	325	39	2327	5
FLIP 87-39L	6229	19	56	782	21	437	21	324	30	575	20	327	56
FLIP 87-40L	6230	352	45	124	53	463	16	-	-	675	14	1637	28
FLIP 87-41L	6231	148	55	-	-	404	33	703	4	25	54	1950	17
FLIP 87-42L	6232	419	38	724	23	504	11	401	24	825	6	1777	23
FLIP 87-43L	6233	414	42	1165	4	326	45	609	7	-	-	1330	42
FLIP 87-44L	6234	1081	8	-	-	248	55	403	23	275	42	1180	45
FLIP 87-45L	6235	-	-	-	-	315	47	240	39	425	31	1417	37
FLIP 87-46L	6236	552	27	634	29	470	14	279	33	375	35	757	51
FLIP 87-47L	6237	819	11	962	11	326	46	579	9	375	37	1937	19
FLIP 87-48L	6238	619	24	781	22	496	12	700	5	775	8	1937	18
FLIP 87-49L	6239	686	17	659	28	593	3	201	43	225	45	2017	14
FLIP 87-50L	6240	819	12	486	41	504	10	279	34	325	40	1037	47
FLIP 87-51L	6241	219	47	633	30	419	27	-	-	475	27	2217	9
FLIP 87-52L	6242	619	23	-	-	552	6	361	27	925	2	2217	8
FLIP 87-53L	6243	1214	5	1050	6	426	23	559	10	-	-	-	58
FLIP 87-54L	6244	-	-	314	50	459	18	196	44	425	32	637	52
FLIP 87-55L	6245	886	10	888	15	463	17	-	-	825	5	2287	6

Table 5.5.5. Cont'd. ...

Selection	ILL	ARGENTINA		CHINA		IRAN						JORDAN	
		Mendoza		Shanxi		Ghazvin		Karaj		Maragah		Jubeiha	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-56L	6246	2148	2	1269	1	385	35	451	15	675	16	2127	12
FLIP 87-57L	6247	214	48	899	12	441	20	251	37	475	26	1787	22
FLIP 87-58L	6248	548	30	590	34	404	32	403	22	-	-	1440	34
FLIP 88-15L	6439	281	46	795	19	204	57	764	3	175	49	790	50
FLIP 88-16L	6440	414	40	866	16	430	22	190	45	175	48	1817	21
FLIP 88-17L	6441	-	-	415	45	352	40	218	40	225	47	1627	29
FLIP 88-18L	6442	814	13	861	17	281	51	448	16	175	50	1370	39
FLIP 88-19L	6443	548	32	686	26	263	53	207	41	325	41	2387	3
FLIP 88-20L	6444	3214	1	464	42	419	26	446	17	425	33	1437	35
FLIP 88-21L	6445	419	37	363	46	515	9	329	29	275	44	1347	41
FLIP 88-22L	6446	552	25	429	43	648	2	329	28	275	43	867	49
FLIP 88-23L	6447	948	9	894	13	281	50	442	19	25	52	-	-
FLIP 88-24L	6448	174	52	719	24	385	34	385	25	725	12	567	53
FLIP 88-25L	6449	486	34	518	37	296	49	144	49	575	21	1377	38
FLIP 88-26L	6450	552	26	618	32	570	4	457	14	375	34	527	54
FLIP 88-27L	6451	1552	3	502	38	674	1	-	-	725	10	2367	4
FLIP 88-28L	6452	681	19	1247	2	337	44	603	8	25	53	440	55
FLIP 88-29L	6453	619	22	215	52	196	58	261	36	925	3	1527	30
FLIP 88-30L	6454	1152	6	-	-	407	30	644	6	725	11	1757	25
FLIP 88-31L	6455	414	39	801	18	463	15	546	12	475	25	1267	43
FLIP 88-32L	6456	1481	4	1140	5	426	24	942	2	375	36	890	48
FLIP 88-33L	6457	681	18	1017	8	270	52	548	11	225	46	-	-
Local small	4401	190	51	589	35	350	43	404	21	438	30	1493	31
78S 26013	5588	433	36	786	20	308	48	182	46	638	17	1685	26
Local Check		767	14	593	33	531	7	1957	1	1200	1	2233	7
Location Mean		642		715		402		490		536		1541	
S.E. of Mean		151.78		81.78		79.00		158.80		195.92		162.03	
L.S.D. at 5% for :													
Checks		559.76		282.95		273.34		549.46		677.90		560.62	
T.E. in S.B.		1119.51		565.90		546.67		1098.92		1355.80		1121.23	
T.E. in D.B.		1292.70		653.44		631.24		1268.93		1565.55		1294.69	
Checks Vs T.E.		1022.12		516.67		499.12		1003.33		1237.86		1023.69	
C.V. %		55.55		26.23		39.32		78.73		80.74		21.02	
Tset > L. Check		2		5		0		0		0		0	

Cont'd. ...

Tabel 5.5.5. Cont'd. ...

Selection	ILL	JORDAN Ramtha		LEBANON Terbol		NEPAL Khumaltar		PORTUGAL Elvas		SPAIN Madrid		SYRIA Aleppo	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-51L	5722	1525	37	1450	27	-	55	1191	40	1954	1	762	58
FLIP 86-62L	6048	828	51	546	58	336	34	294	59	820	32	1631	24
FLIP 87-24L	6214	1437	40	1339	33	533	22	891	54	423	55	1647	22
FLIP 87-25L	6215	2344	13	1554	19	269	38	1241	36	880	28	1359	46
FLIP 87-26L	6216	2264	14	1450	25	603	17	1699	9	904	25	1818	15
FLIP 87-27L	6217	1370	43	1450	24	463	29	1774	5	694	44	1759	17
FLIP 87-28L	6218	3151	2	1339	34	743	10	1258	34	737	40	1570	29
FLIP 87-29L	6219	2224	16	1561	17	183	45	1508	18	798	33	1515	37
FLIP 87-30L	6220	-	-	1102	47	636	14	1335	31	833	31	2162	5
FLIP 87-31L	6221	2077	18	1117	46	513	24	1616	11	952	23	1860	13
FLIP 87-32L	6222	2184	17	1198	43	189	44	1149	45	1050	18	1525	35
FLIP 87-33L	6223	521	57	1546	22	736	11	1494	20	1453	5	1518	36
FLIP 87-34L	6224	1925	24	1561	18	-	-	1183	42	1352	8	1724	18
FLIP 87-35L	6225	2904	3	1006	50	243	40	1208	39	364	57	1826	14
FLIP 87-36L	6226	761	52	1880	2	356	33	1469	23	256	59	1473	39
FLIP 87-37L	6227	708	54	1657	9	356	32	1052	49	479	51	1364	45
FLIP 87-38L	6228	730	53	1554	20	269	37	1308	33	1075	16	1527	33
FLIP 87-39L	6229	1530	35	1331	35	229	41	1224	37	1012	19	1654	21
FLIP 87-40L	6230	1761	28	1380	32	556	19	1594	12	436	53	1251	53
FLIP 87-41L	6231	2631	10	1394	31	-	-	1049	50	888	26	1586	27
FLIP 87-42L	6232	2050	21	1831	3	229	42	1099	48	1365	7	1866	11
FLIP 87-43L	6233	2058	19	1450	28	-	-	1133	46	779	36	1474	38
FLIP 87-44L	6234	2645	7	1172	44	53	54	1508	19	1153	15	1285	51
FLIP 87-45L	6235	1530	36	1065	48	199	43	1166	43	717	42	1910	10
FLIP 87-46L	6236	1570	33	998	52	559	18	883	57	879	29	1353	47
FLIP 87-47L	6237	1277	45	1598	13	769	9	1033	51	1302	10	975	57
FLIP 87-48L	6238	1441	39	1435	30	726	12	2335	1	1189	14	1285	50
FLIP 87-49L	6239	1717	30	1720	6	379	31	1374	29	1695	4	1956	8
FLIP 87-50L	6240	1997	22	165	59	249	39	1183	41	748	39	1576	28
FLIP 87-51L	6241	481	58	1324	37	626	16	1244	35	1011	20	1118	56
FLIP 87-52L	6242	615	56	1546	21	466	28	1394	27	431	54	758	59
FLIP 87-53L	6243	2245	15	1050	49	1013	5	1383	28	1756	2	2262	4
FLIP 87-54L	6244	1690	31	2165	1	119	49	1633	10	985	21	1455	41
FLIP 87-55L	6245	1041	49	1769	5	546	21	1435	26	982	22	1865	12

Table 5.5.5. Cont'd. ...

Selection	ILL	JORDAN Ramtha Y	JORDAN Ramtha R	LEBANON Terbol Y	LEBANON Terbol R	NEPAL Khumaltar Y	NEPAL Khumaltar R	PORTUGAL Elvas Y	PORTUGAL Elvas R	SPAIN Madrid Y	SPAIN Madrid R	SYRIA Aleppo Y	SYRIA Aleppo R
FLIP 87-56L	6246	1597	32	1783	4	173	47	2041	2	1404	6	1292	48
FLIP 87-57L	6247	1377	25	1551	16	383	30	1533	13	908	24	1656	20
FLIP 87-58L	6248	1751	29	1672	7	113	50	1891	3	1204	13	1291	49
FLIP 88-15L	6439	2711	5	1583	14	-	-	1124	47	671	45	1607	26
FLIP 88-16L	6440	1464	38	1561	15	783	8	1158	44	1754	3	1453	42
FLIP 88-17L	6441	1437	41	1161	45	1053	4	699	58	481	50	1217	54
FLIP 88-18L	6442	3525	1	1228	41	533	23	1724	8	1224	11	2115	6
FLIP 88-19L	6443	2530	11	1228	39	513	25	891	55	882	27	2810	1
FLIP 88-20L	6444	1890	25	733	57	553	20	891	56	370	56	1795	16
FLIP 88-21L	6445	1130	48	1665	8	129	48	899	53	769	37	1557	30
FLIP 88-22L	6446	1024	50	1609	10	979	6	1441	25	530	48	1144	55
FLIP 88-23L	6447	1391	42	933	54	853	7	1474	22	835	30	1440	43
FLIP 88-24L	6448	2757	4	1450	26	1153	2	1583	14	749	38	1368	44
FLIP 88-25L	6449	1148	47	1324	36	636	15	1010	52	1067	17	1624	25
FLIP 88-26L	6450	1317	44	1609	11	439	26	1566	15	616	47	1552	31
FLIP 88-27L	6451	1201	46	1602	12	316	36	1352	30	517	49	1641	23
FLIP 88-28L	6452	2645	8	894	55	63	53	1224	38	1223	12	2373	3
FLIP 88-29L	6453	2655	6	830	56	1056	3	1769	6	1351	9	2665	2
FLIP 88-30L	6454	641	55	991	53	656	13	1744	7	295	58	2003	7
FLIP 88-31L	6455	1797	27	1228	40	133	46	1458	24	631	46	1258	52
FLIP 88-32L	6456	2631	9	1006	51	113	51	1333	32	785	34	1682	19
FLIP 88-33L	6457	2058	20	1450	29	93	52	1533	16	724	41	1917	9
Local small	4401	1570	34	1214	42	483	27	1485	21	716	43	1470	40
78S 26013	5588	1981	23	1483	23	323	35	1529	17	782	35	1526	34
Local Check		2347	12	1319	38	1293	1	1875	4	458	52	1548	32
Location Mean		1797		1353		521		1337		870		1593	
S.E. of Mean		455.99		133.81		82.75		165.86		134.20		172.35	
L.S.D. at 5% for :													
Checks		1577.76		453.00		236.31		573.89		464.35		596.35	
T.E. in S.B.		3155.52		925.99		572.63		1147.78		928.71		1192.69	
T.E. in D.B.		3643.68		1069.24		661.21		1325.35		1072.38		1377.20	
Checks Vs T.E.		2881.02		845.44		522.82		1047.94		847.92		1088.94	
C.V. %		52.09		19.78		35.23		23.93		30.85		21.64	
Test > L. Check		0		0		0		0		9		2	

Cont'd. ...

Table 5.5.5. Cont'd. ...

Selection	ILL	SYRIA								TUNISIA		(1) Overall Mean	
		Gelline		Idleb		Izra'a		Tel Hadya		Beja			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-51L	5722	1626	54	1571	2	545	49	1865	42	575	26	928	45
FLIP 86-62L	6048	1580	55	1142	27	473	53	1603	47	483	39	775	55
FLIP 87-24L	6214	1866	45	1135	29	985	5	2901	7	698	8	903	50
FLIP 87-25L	6215	2757	10	1273	17	676	36	2165	25	725	4	1082	14
FLIP 87-26L	6216	2952	6	764	52	914	10	2367	16	438	45	1092	8
FLIP 87-27L	6217	1795	47	1092	31	914	12	3167	3	558	27	1016	26
FLIP 87-28L	6218	2640	15	1057	35	830	19	3225	2	695	9	991	30
FLIP 87-29L	6219	2238	32	1271	18	842	18	2394	15	528	31	1032	21
FLIP 87-30L	6220	2988	5	1028	38	795	23	1665	45	463	41	1083	12
FLIP 87-31L	6221	2295	30	821	49	1057	2	1070	55	678	11	1066	18
FLIP 87-32L	6222	2414	26	909	45	533	52	2325	17	365	54	923	47
FLIP 87-33L	6223	2773	9	764	51	902	14	2883	9	483	38	1085	11
FLIP 87-34L	6224	3133	1	1407	10	688	31	1820	43	625	21	1137	5
FLIP 87-35L	6225	1816	46	1464	5	1021	4	1958	35	398	53	944	44
FLIP 87-36L	6226	2780	8	607	56	973	6	1798	44	463	42	1012	27
FLIP 87-37L	6227	2580	18	685	53	723	26	3150	5	583	25	924	46
FLIP 87-38L	6228	2642	14	1216	21	926	8	1881	40	635	18	1077	15
FLIP 87-39L	6229	2492	23	987	39	676	34	603	57	495	35	1019	25
FLIP 87-40L	6230	2509	22	1514	4	902	13	3070	6	633	20	1032	22
FLIP 87-41L	6231	1911	43	1185	23	688	32	1207	54	655	12	953	38
FLIP 87-42L	6232	2649	13	1052	36	747	25	-	-	505	34	1168	4
FLIP 87-43L	6233	2376	27	1128	30	902	15	2630	10	725	5	991	31
FLIP 87-44L	6234	1947	42	1064	34	688	29	2496	13	705	6	950	42
FLIP 87-45L	6235	2578	19	945	43	818	21	1374	51	645	13	984	33
FLIP 87-46L	6236	3107	2	1430	8	676	35	2121	27	605	24	1005	28
FLIP 87-47L	6237	1878	44	1230	20	604	43	-	-	555	28	950	41
FLIP 87-48L	6238	2580	17	1278	15	866	17	3150	4	953	1	1263	2
FLIP 87-49L	6239	2571	21	1330	13	926	9	1312	52	685	10	1207	3
FLIP 87-50L	6240	1757	50	980	40	676	33	1270	53	335	56	775	56
FLIP 87-51L	6241	2473	24	949	42	330	57	3478	1	703	7	913	48
FLIP 87-52L	6242	2345	28	871	48	652	38	1994	33	643	14	952	39
FLIP 87-53L	6243	1783	48	957	41	616	41	1527	48	755	3	1050	20
FLIP 87-54L	6244	2271	31	1145	26	390	55	2298	18	435	46	1051	19
FLIP 87-55L	6245	2652	12	914	44	723	27	1887	39	273	58	1082	13

Table 5.5.5. Cont'd. ...

Selection	ILL	SYRIA								TUNISIA		(1) Overall Mean	
		Gelline		Idleb		Izra'a		Tel Hadya		Beja			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-56L	6246	2616	16	-	59	914	11	2545	12	428	47	1090	9
FLIP 87-57L	6247	2045	37	1085	33	592	45	2234	21	638	17	1021	24
FLIP 87-58L	6248	1483	57	1442	6	545	50	1447	50	415	50	977	34
FLIP 88-15L	6439	1697	52	564	58	616	40	2255	20	405	52	856	54
FLIP 88-16L	6440	2345	29	607	57	557	47	2901	8	638	16	988	32
FLIP 88-17L	6441	1773	49	1307	14	557	46	2065	30	458	43	768	57
FLIP 88-18L	6442	2433	25	1278	16	723	28	1909	37	495	37	1102	7
FLIP 88-19L	6443	1580	56	678	55	557	48	2110	28	608	23	912	49
FLIP 88-20L	6444	1730	51	1535	3	664	37	977	56	358	55	856	53
FLIP 88-21L	6445	1985	41	1252	19	390	16	2058	31	455	44	963	36
FLIP 88-22L	6446	1342	58	1137	28	533	51	1490	49	495	36	862	52
FLIP 88-23L	6447	1261	59	678	54	330	58	2230	22	505	33	751	58
FLIP 88-24L	6448	2095	35	1621	1	1021	3	2483	14	408	51	1072	17
FLIP 88-25L	6449	2102	34	1428	9	795	22	2127	26	253	59	965	35
FLIP 88-26L	6450	2035	39	730	50	604	44	1881	41	425	48	963	37
FLIP 88-27L	6451	2995	4	1149	25	1116	1	2225	23	633	19	1128	6
FLIP 88-28L	6452	2018	40	1049	37	652	39	1630	46	535	30	994	29
FLIP 88-29L	6453	3066	3	1435	7	973	7	2261	19	483	40	1273	1
FLIP 88-30L	6454	2066	36	1392	11	366	56	1905	38	643	15	1025	23
FLIP 88-31L	6455	2045	38	885	47	271	59	1976	34	238	57	868	51
FLIP 88-32L	6456	2804	7	1085	32	759	24	2535	11	765	2	1087	10
FLIP 88-33L	6457	1697	53	892	46	688	30	2087	29	515	32	951	40
Local small	4401	2136	33	1198	22	616	42	2000	32	418	49	949	43
78S 26013	5588	2748	11	1182	24	821	20	2176	24	619	22	1074	16
Local Check		2571	20	1346	12	411	54	1922	36	548	29		
Location Mean		2291		1107		703		2025		542			
S.E. of Mean		106.04		141.00		61.36		239.71		65.16			
L.S.D. at 5% for :													
Checks		366.92		487.88		212.29		829.40		225.46			
T.E. in S.B.		733.84		975.76		424.59		1658.79		450.91			
T.E. in D.B.		847.36		1126.71		490.27		1915.41		520.67			
Checks Vs T.E.		670.00		890.88		387.65		1514.49		411.69			
C.V. %		9.26		25.47		17.46		23.67		24.04			
Test > L. Check		0		0		20		1		0			

(1) Mendoza, Shanxi, Jubeiha, Ramtha, Khumaltar and Tel Hadya were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 5.5.6. The five heaviest seed yielding entries at the individual locations in the LISN-S during 1987/88.

	ARGENTINA	CHINA	IRAN			JORDAN		LEBANON	NEPAL
Rank	Mendoza	Shanxi	Ghazvin	Karaj	Maragah	Jubeiha	Ramtha	Torbol	Khumaltar
1	FLIP88- 20L	FLIP87- 56L	FLIP88- 27L	Local Check	Local Check	FLIP87- 33L	FLIP88- 18L	FLIP87- 54L	Local Check
2	FLIP87- 56L	FLIP88- 28L	FLIP88- 22L	FLIP88- 32L	FLIP87- 52L	FLIP86- 62L	FLIP87- 28L	FLIP87- 36L	FLIP88- 24L
3	FLIP88- 27L	FLIP87- 24L	FLIP87- 49L	FLIP88- 15L	FLIP88- 29L	FLIP88- 19L	FLIP87- 35L	FLIP87- 42L	FLIP88- 29L
4	FLIP88- 32L	FLIP87- 43L	FLIP88- 26L	FLIP87- 41L	FLIP87- 36L	FLIP88- 27L	FLIP88- 24L	FLIP87- 56L	FLIP88- 17L
5	FLIP87- 53L	FLIP88- 32L	FLIP87- 31L	FLIP87- 48L	FLIP87- 55L] FLIP87- 42L	FLIP87- 38L	FLIP88- 15L	FLIP87- 55L	FLIP87- 53L

Cont'd. ...

Table 5.5.6. Cont'd. ...

	PORTUGAL	SPAIN	SYRIA					TUNISIA
Rank	Elvas	Madrid	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Beja
1	FLIP87- 48L	FLIP84- 51L	FLIP88- 19L	FLIP87- 34L	FLIP88- 24L	FLIP88- 27L	FLIP87- 51L	FLIP87- 48L
2	FLIP87- 56L	FLIP87- 53L	FLIP88- 29L	FLIP87- 46L	FLIP84- 51L	FLIP87- 31L	FLIP87- 28L	FLIP88- 32L
3	FLIP87- 58L	FLIP88- 16L	FLIP88- 28L	FLIP88- 29L	FLIP88- 20L	FLIP88- 24L	FLIP87- 27L	FLIP87- 53L
4	Local Check	FLIP87- 49L	FLIP87- 53L	FLIP88- 27L	FLIP87- 40L	FLIP87- 35L	FLIP87- 48L	FLIP87- 25L
5	FLIP87- 27L	FLIP87- 33L	FLIP87- 30L	FLIP87- 30L	FLIP87- 35L	FLIP87- 24L	FLIP87- 37L	FLIP87- 43L

The bracket indicates entries having the same rank.

5.6. LENTIL INTERNATIONAL SCREENING NURSERY - EARLY (LISN-E)

Material

The material for the Lentil International Screening Nursery - Early comprised of 36 test entries and 3 checks, two checks (ILL 4354 and Precoz) were supplied and one local check was to be added by the cooperator. The entries were selected on the basis of their performance from the germplasm collections and progenies from crosses grown at ICARDA.

Methods and Management

The material comprising 36 test entries and 3 checks was suggested to be sown in an augmented block design. In each block 12 test entries alongwith 3 checks were sown in single row plots of 4 m length. The spacings between the rows were suggested to be 25 cm.

Fifty nine sets of screening nursery were supplied to cooperators in 28 countries and the data were received for 28 sets from 19 countries. The data on agronomic characters received from the cooperators are presented in Table 5.6.1.

Results and Discussion

The location mean for time to flowering (Table 5.6.2) ranged from 44 days for Shanxi in China to 148 days for Jubeiha and Ramtha in Jordan. At most of the locations the location mean for time to flowering was almost same or earlier to that of the respective local check. This revealed that most of the test entries supplied in this trial were earlier in flowering. Among the entries FLIP 88-42L was the earliest in flowering (82 days) and was closely followed by FLIP 88-40L, FLIP 88-41L, FLIP 88-43L etc.

The location means for time to maturity (Table 5.6.3) ranged from 81 days at Shanxi in China to 190 days at Ramtha in Jordan. The overall entry means revealed that the entry FLIP 88-42L was earliest in maturity (134 days) and was followed by FLIP 88-45L and FLIP 88-40L.

The plant height was tallest for FLIP 88-43L and was followed by Pant L406, ILL 5486, FLIP 84-112L, FLIP 86-50L, FLIP 87-65L, and FLIP 87-67L (Table 5.6.4).

The location mean for seed yield was recorded as highest at Mansehra in Pakistan and (Table 5.6.5) was followed by Chiang Rai in Thailand (1613 kg/ha), and Ramtha in Jordan (1577 kg/ha). Among the entries, FLIP88-34L gave the highest seed yield of 1311 kg/ha which was closely followed by Precoz, FLIP 88-39L, FLIP 88-45L, and FLIP 84-112L with seed yields of 1311, 1180, 1150, 1131 and 1102 kg/ha, respectively. The ANOVA for augmented design revealed that at Perico in Argentina, Shanxi in China, Settat in Morocco, Faisalabad and Islamabad in Pakistan, 4, 10, 32, 1, and 1 entries, respectively, outyielded the respective local check by a significant margin. The

Table 5.6.1. Agronomic data for different locations in the LISN-E during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ARGENTINA	Perico	05.05.88	25.09.88	-			3	Metribuzin	Perico
AUSTRALIA	Horsham	05.07.88	13.12.88		150		-	Trifluralin, Cyanazine Endosulphan	Perico
CHINA	Shanxi	18.04.88	15.07.88	NA			2	NA	NA
EGYPT	Sids	25.11.87	NA	48	72		2	-	NA
ETHIOPIA	Debre Zeit	13.07.88	NH	-			-	-	EL - 142
GREECE	Larissa	30.11.87	10.06.88		60		-	Decamethain	Azkadia
INDIA	Delhi	30.11.87	20.04.88	20	40		2	Basolin, Metasystox	L - 830
IRAN	Karaj	15.03.88	05.07.88	24	72		-	Treflan, Metasystox	Ghazvin
JORDAN	Jubeiha	11.11.87	30.05.88	20	40		-	-	UJL 176
JORDAN	Ramtha	02.11.87	25.05.88	20	40		-	-	UJL 176
MOROCCO	Settat	18.11.87	30.04.88	20	50		-	-	L - 24
PAKISTAN	Faisalabad (AARI)	09.11.87	30.03.88	25	60		3	-	Masoor 85
PAKISTAN	Faisalabad (NIAB)	09.11.87	10.04.88	20	60		1	-	Masoor 85
PAKISTAN	Faisalabad (UAF)	NA	NA	NA			NA	NA	NA
PAKISTAN	Mansehra	26.10.87		50	125		-	-	-
PAKISTAN	Serai Nawrang	15.10.87	24.04.88	20	50		-	-	1/M - 25
PAKISTAN	Tarnab	03.11.87	30.04.88	-			-	-	NA
PERU	Chiquian	02.12.87	05.05.88	-			-	Afalon	Chupaea
POLAND	Pulawy	08.04.88	08.07.88	-			-	Penoxaline, benlate,	Jreleisovska (CSK)
SRI LANKA	Bandarawola	01.12.87	10.03.88	40	60	40	-	-	NA
SRI LANKA	Dodangolla	21.11.87	02.03.88	50	63		8	Metasystox	-
SYRIA	Tel hadya	23.11.87	05.06.88		50		-	Kerb, Igran	ILL 4401
THAILAND	Chiang Rai	11.10.87	29.03.88	101	25		1	Lanate, Daconil	-
TUNISIA	Beja	14.11.87	NA	NA			NA	NA	NA
TURKEY	Ankara	25.03.88	30.07.88	30	70		-	-	-
TURKEY	Eskisehir	06.04.88	20.06.88	30	70		-	-	Sultan - 1

NA = Not available., NH = Not harvested.

Table 5.6.2. Adjusted time to flowering (days) of entries at different locations in the LISN-E during 1987/88.

Select	ILL	Origin	ARGENTINA Perico	AUSTRALIA Horsham	CHINA Shanxi	EGYPT Sids	ETHIOPIA Debre Zeit	GREECE Larissa	INDIA Delhi	IRAN Karaj
ILL 1983	1983	ETHIOPIA	79	95	40	79	40	134	78	70
Pant L 406	2501	INDIA	87	102	40	0	42	133	89	70
Pant L 639	2573	INDIA	91	99	42	88	40	134	92	69
Fam 370	5486	EGYPT	84	93	41	76	41	133	79	70
FLIP 84-112L	5782	ICARDA	87	96	43	79	48	133	107	69
FLIP 86- 38L	6024	ICARDA	95	92	41	77	47	128	84	70
FLIP 86- 39L	6025	ICARDA	87	93	41	85	39	130	84	68
FLIP 86- 50L	6036	ICARDA	81	93	48	80	48	129	70	68
FLIP 87- 64L	6254	ICARDA	78	93	42	93	55	130	119	68
FLIP 87- 65L	6255	ICARDA	85	93	45	96	47	135	88	68
FLIP 87- 66L	6256	ICARDA	84	93	43	92	43	133	86	69
FLIP 87- 67L	6257	ICARDA	90	92	43	91	59	128	91	70
FLIP 87- 68L	6258	ICARDA	88	91	42	81	41	126	122	68
FLIP 87- 69L	6259	ICARDA	91	94	43	88	42	131	122	69
FLIP 87- 70L	6260	ICARDA	88	94	43	93	42	132	87	69
FLIP 87- 71L	6261	ICARDA	93	91	42	86	42	129	89	70
FLIP 87- 72L	6262	ICARDA	85	92	43	84	45	131	89	68
FLIP 87- 73L	6263	ICARDA	78	93	42	80	47	129	79	70
FLIP 87- 74L	6264	ICARDA	89	91	42	88	50	126	92	69
FLIP 87- 75L	6265	ICARDA	92	92	40	89	39	131	70	69
FLIP 87- 76L	6266	ICARDA	84	92	40	74	48	125	78	70
FLIP 88- 34L	6458	ICARDA	87	89	43	86	41	131	87	69
FLIP 88- 35L	6459	ICARDA	85	89	41	81	40	128	83	68
FLIP 88- 36L	6460	ICARDA	86	92	42	91	50	129	87	70
FLIP 88- 37L	6461	ICARDA	82	93	41	90	47	130	84	70
FLIP 88- 38L	6462	ICARDA	97	94	43	86	42	131	91	70
FLIP 88- 39L	6463	ICARDA	84	93	40	85	38	129	78	68
FLIP 88- 40L	6464	ICARDA	81	94	47	78	46	127	70	67
FLIP 88- 41L	6465	ICARDA	87	92	45	75	47	125	68	69
FLIP 88- 42L	6466	ICARDA	80	89	49	81	42	129	70	71
FLIP 88- 43L	6467	ICARDA	83	93	45	68	41	127	64	69
FLIP 88- 44L	6468	ICARDA	78	92	39	84	40	131	94	71
FLIP 88- 45L	6469	ICARDA	78	93	48	84	50	129	71	67
FLIP 88- 46L	6470	ICARDA	91	91	47	76	48	127	69	68
FLIP 88- 47L	6471	ICARDA	91	90	46	74	50	128	69	68
FLIP 88- 48L	6472	ICARDA	80	92	44	84	48	128	71	69
Local	4354	JORDAN	92	96	45	92	53	133	97	69
Precoz	4605	ARGENTINA	90	90	48	77	50	129	70	69
Local Check			85	116	57	73	49	140	74	68
Location Mean			86	94	44	81	46	131	84	69
S.E. of Mean			4.11	1.68	0.47	1.84	0.58	0.24	1.22	0.30
L.S.D. at 5% for :										
Checks			16.12	6.59	1.85	7.21	2.27	0.93	4.78	1.19
T.E. in S.B.			27.93	11.41	3.21	12.48	3.93	1.60	8.28	2.07
T.E. in D.B.			32.25	13.17	3.70	14.41	4.53	1.85	9.56	2.39
Checks Vs T.E.			26.33	10.76	3.02	11.77	3.70	1.51	7.80	1.95
C.V. %			8.24	3.08	1.84	3.93	2.19	0.31	2.51	0.76

Cont'd. ...

Table 5.6.2. Cont'd. ...

Selection	ILL	JORDAN		MOROOCO	PAKISTAN					
		Jubeiha	Ramtha	Settat	- Faisalabad - (NIAB)	(AARI)	(UAF)	Mansehra	Islamabad (NARC)	Serai * Nawrang
ILL 1983	1983	153	150	118	91	108	132	133	108	-
Pant L 406	2501	158	150	118	99	115	126	135	107	-
Pant L 639	2573	-	151	121	97	103	105	121	107	-
Fam 370	5486	155	150	121	90	90	94	87	83	104
FLIP 84-112L	5782	155	153	121	90	103	90	120	93	-
FLIP 86- 38L	6024	153	152	120	98	104	106	117	104	106
FLIP 86- 39L	6025	145	146	125	99	110	109	127	105	120
FLIP 86- 50L	6036	143	146	125	78	85	94	102	84	126
FLIP 87- 64L	6254	148	153	118	105	109	126	129	113	109
FLIP 87- 65L	6255	150	151	119	104	109	119	127	102	-
FLIP 87- 66L	6256	150	150	123	105	107	108	111	107	124
FLIP 87- 67L	6257	153	146	122	107	111	109	128	113	-
FLIP 87- 68L	6258	143	146	121	79	98	90	118	90	-
FLIP 87- 69L	6259	150	150	121	105	110	109	122	107	126
FLIP 87- 70L	6260	-	151	123	94	97	100	106	107	-
FLIP 87- 71L	6261	150	146	121	89	93	102	119	102	-
FLIP 87- 72L	6262	148	150	120	98	105	104	120	105	115
FLIP 87- 73L	6263	150	146	118	92	102	122	118	100	118
FLIP 87- 74L	6264	145	146	118	95	97	96	122	83	-
FLIP 87- 75L	6265	153	146	120	97	100	128	120	103	106
FLIP 87- 76L	6266	149	153	120	89	90	115	118	91	126
FLIP 88- 34L	6458	145	146	123	95	105	104	119	104	-
FLIP 88- 35L	6459	145	146	123	91	95	111	121	93	-
FLIP 88- 36L	6460	146	151	119	92	94	99	122	99	-
FLIP 88- 37L	6461	150	150	123	90	106	119	127	95	121
FLIP 88- 38L	6462	150	150	127	104	105	111	122	113	125
FLIP 88- 39L	6463	145	146	125	91	108	119	124	94	129
FLIP 88- 40L	6464	143	146	123	79	92	94	87	84	131
FLIP 88- 41L	6465	146	146	122	78	89	109	82	88	119
FLIP 88- 42L	6466	145	146	121	78	83	94	82	89	-
FLIP 88- 43L	6467	143	146	123	78	90	107	87	83	125
FLIP 88- 44L	6468	148	146	120	104	110	112	120	110	124
FLIP 88- 45L	6469	143	146	125	78	82	92	100	88	108
FLIP 88- 46L	6470	143	146	121	78	83	121	88	84	125
FLIP 88- 47L	6471	144	146	120	76	83	126	94	87	127
FLIP 88- 48L	6472	145	146	118	78	85	132	94	90	110
Local	4354	156	151	119	115	114	107	133	112	-
Precoz	4605	144	146	125	78	86	104	97	89	129
Local Check		153	150	128	94	100	113	-	85	120
Location Mean		**148**	**148**	**122**	**92**	**99**	**109**	**113**	**97**	**120**
S.E. of Mean		1.93	0.39	0.74	0.51	1.52	4.68	3.01	1.43	
L.S.D. at 5% for :										
Checks		7.55	1.51	2.92	2.00	5.97	18.37	18.31	5.63	
T.E. in S.B.		13.08	2.62	5.06	3.46	10.34	31.81	31.71	9.75	
T.E. in D.B.		15.11	3.02	5.84	4.00	11.94	36.73	38.84	11.26	
Checks Vs T.E.		12.34	2.47	4.77	3.26	9.75	29.99	31.72	9.19	
C.V. %		2.35	0.45	1.06	0.96	2.66	7.43	5.00	2.56	

Cont'd. ...

Table 5.6.2. Cont'd. ...

Selection	ILL	PAKISTAN	PERU	POLAND	SRI LANKA	SYRIA	THAILAND	TURKEY		(1)
		Tarnab (NWPP)	Chiquian	Pulawy	Bandarawela	Tel Hadya	Chiang Rai	Ankara	Eskisehir*	Overall Mean
ILL 1983	1983	107	82	59	45	135	74	72	63	91
Pant L 406	2501	112	87	59	62	135	84	73	63	95
Pant L 639	2573	112	77	57	51	138	65	70	63	90
Fam 370	5486	98	82	57	51	132	62	72	62	84
FLIP 84-112L	5782	113	85	57	51	143	61	70	62	89
FLIP 86- 38L	6024	100	81	55	45	134	74	73	62	89
FLIP 86- 39L	6025	112	84	55	51	132	64	70	63	90
FLIP 86- 50L	6036	103	80	60	43	132	67	69	-	84
FLIP 87- 64L	6254	109	83	55	65	135	84	71	65	95
FLIP 87- 65L	6255	111	80	60	51	135	76	70	66	92
FLIP 87- 66L	6256	114	84	57	68	135	75	71	63	91
FLIP 87- 67L	6257	109	87	57	45	133	91	72	65	94
FLIP 87- 68L	6258	114	83	54	51	128	59	72	62	88
FLIP 87- 69L	6259	115	77	56	71	132	75	69	63	94
FLIP 87- 70L	6260	106	77	56	51	133	71	72	63	88
FLIP 87- 71L	6261	111	81	55	68	134	70	71	62	89
FLIP 87- 72L	6262	110	83	59	65	133	74	74	65	91
FLIP 87- 73L	6263	107	87	54	68	130	77	73	62	90
FLIP 87- 74L	6264	103	79	55	68	134	74	72	62	88
FLIP 87- 75L	6265	100	79	57	45	134	73	73	62	89
FLIP 87- 76L	6266	101	81	57	45	133	67	74	62	87
FLIP 88- 34L	6458	112	79	56	51	132	69	70	62	89
FLIP 88- 35L	6459	107	75	55	68	133	58	70	62	87
FLIP 88- 36L	6460	109	77	54	68	133	58	70	62	88
FLIP 88- 37L	6461	103	84	55	68	133	75	69	63	90
FLIP 88- 38L	6462	108	85	55	68	133	78	71	-	93
FLIP 88- 39L	6463	108	80	54	51	131	63	71	62	88
FLIP 88- 40L	6464	105	84	57	43	127	63	72	-	83
FLIP 88- 41L	6465	101	83	60	37	128	61	72	-	83
FLIP 88- 42L	6466	103	81	60	43	128	59	71	-	82
FLIP 88- 43L	6467	100	86	57	43	126	62	73	64	83
FLIP 88- 44L	6468	110	79	56	45	132	74	71	63	90
FLIP 88- 45L	6469	107	84	60	51	132	64	72	-	84
FLIP 88- 46L	6470	99	82	59	51	131	65	70	-	84
FLIP 88- 47L	6471	110	83	60	37	129	63	72	-	85
FLIP 88- 48L	6472	105	85	60	37	129	63	74	-	85
Local	4354	110	91	59	62	136	83	71	65	96
Precoz	4605	103	81	60	61	129	63	71	-	85
Local Check		109	86	64	49	142	-	-	-	
Location Mean		**107**	**83**	**58**	**54**	**133**	**70**	**71**	**63**	
S.E. of Mean		2.27	3.15	0.00	6.02	0.99	1.93	0.24		
L.S.D. at 5% for :										
Checks		8.91	12.37	0.00	23.64	3.89	11.74	1.43		
T.E. in S.B.		15.43	21.42	0.00	40.94	6.74	20.33	2.48		
T.E. in D.B.		17.81	24.73	0.00	47.27	7.78	24.90	3.04		
Checks Vs T.E.		14.55	20.20	0.00	38.60	6.35	20.34	2.48		
C.V. %		3.67	6.60	0.00	19.24	1.29	4.79	0.57		

(1) Sids, Jubeiha, Serai Nawrang, Dodangolla and Eskisehir were excluded from the overall mean. T.E. = Test entries, S.B. = Same block, D.B. = Different block., * = Locations not analysed and thus mean values are unadjusted.

Table 5.6.3. Adjusted time to maturity (days) of entries at different locations in the LISN-E during 1987/88.

Selection	ILL	ARGENTINA	AUSTRALIA	CHINA	GREECE	INDIA	IRAN	JORDAN	
		Perico	Horsham *	Shanxi	Larissa	Delhi	Karaj	Juboiha	Ramtha
ILL 1983	1983	157	144	80	173	129	101	182	196
Pant L 406	2501	167	152	80	174	137	102	186	194
Pant L 639	2573	161	144	80	170	136	103	-	192
Fam 370	5486	159	152	75	186	121	105	187	191
FLIP 84-112L	5782	171	-	84	173	146	104	186	190
FLIP 86- 38L	6024	165	144	82	169	119	101	182	192
FLIP 86- 39L	6025	168	144	73	179	125	106	190	187
FLIP 86- 50L	6036	159	149	83	188	115	103	185	188
FLIP 87- 64L	6254	143	144	80	169	144	98	182	192
FLIP 87- 65L	6255	169	152	80	178	130	102	179	189
FLIP 87- 66L	6256	168	144	80	173	125	103	179	187
FLIP 87- 67L	6257	170	144	80	174	135	100	182	192
FLIP 87- 68L	6258	176	-	81	170	151	100	186	193
FLIP 87- 69L	6259	173	-	81	168	-	102	186	192
FLIP 87- 70L	6260	154	144	81	169	131	102	-	192
FLIP 87- 71L	6261	176	144	81	184	127	102	186	189
FLIP 87- 72L	6262	172	152	82	174	139	101	184	194
FLIP 87- 73L	6263	151	152	80	186	121	106	187	188
FLIP 87- 74L	6264	176	144	76	168	131	102	186	189
FLIP 87- 75L	6265	163	144	80	179	114	100	186	192
FLIP 87- 76L	6266	158	150	80	174	114	99	190	196
FLIP 88- 34L	6458	174	144	81	173	126	103	188	189
FLIP 88- 35L	6459	169	152	76	184	121	100	192	190
FLIP 88- 36L	6460	159	144	76	166	131	103	-	190
FLIP 88- 37L	6461	164	141	72	171	125	101	181	187
FLIP 88- 38L	6462	171	152	81	184	136	103	190	190
FLIP 88- 39L	6463	166	144	79	186	118	104	185	192
FLIP 88- 40L	6464	166	149	83	171	114	101	181	187
FLIP 88- 41L	6465	173	144	83	169	114	100	192	192
FLIP 88- 42L	6466	140	150	83	168	111	102	198	188
FLIP 88- 43L	6467	166	144	81	173	110	104	187	187
FLIP 88- 44L	6468	141	144	85	174	135	102	186	196
FLIP 88- 45L	6469	153	144	83	171	116	101	187	187
FLIP 88- 46L	6470	164	144	83	172	115	102	185	184
FLIP 88- 47L	6471	155	144	83	169	114	98	190	192
FLIP 88- 48L	6472	155	152	83	173	119	101	186	192
Local	4354	164	-	82	179	139	103	182	192
Precoz	4605	166	144	83	173	115	100	185	189
Local Check		168	-	92	178	123	99	190	188
Location Mean		**164**	**146**	**81**	**175**	**123**	**101**	**174**	**190**
S.E. of Mean		5.31		0.51	0.87	0.71	1.12	1.56	2.24
L.S.D.at 5% for :									
Checks		20.83		2.00	3.42	3.00	4.41	6.14	8.81
T.E. in S.B.		36.07		3.46	5.92	4.81	7.63	10.63	15.26
T.E. in D.B.		41.65		4.00	6.84	5.55	8.81	12.27	17.62
Checks Vs T.E.		34.01		3.26	5.59	4.53	7.19	10.02	14.39
C.V. %		5.61		1.09	0.86	1.00	1.92	1.56	2.04

Cont'd. ...

Table 5.6.3. Cont'd. ...

Selection	ILL	MOROCCO	PAKISTAN						
		Settat	- Faisalabad -			Mansehra	Islamabad	Serai *	Tarnab
			(NIAB)	(AARI)	(UAF)		(NARC)	Nawrang	(NWFP)
ILL 1983	1983	157	153	152	151	165	154	-	172
Pant L 406	2501	157	149	157	145	166	162	-	173
Pant L 639	2573	163	144	153	120	170	154	-	174
Fam 370	5486	157	148	150	124	159	164	150	175
FLIP 84-112L	5782	157	152	151	122	168	151	-	174
FLIP 86- 38L	6024	157	153	155	131	167	150	159	173
FLIP 86- 39L	6025	157	147	152	133	167	153	-	177
FLIP 86- 50L	6036	145	142	144	124	162	146	173	177
FLIP 87- 64L	6254	157	153	154	145	164	157	165	172
FLIP 87- 65L	6255	157	145	153	140	167	157	-	177
FLIP 87- 66L	6256	157	149	151	129	163	159	-	178
FLIP 87- 67L	6257	157	153	153	139	164	162	-	171
FLIP 87- 68L	6258	157	152	149	121	167	155	-	175
FLIP 87- 69L	6259	157	151	156	117	171	154	-	175
FLIP 87- 70L	6260	157	146	153	126	165	154	-	171
FLIP 87- 71L	6261	157	150	149	122	168	149	-	177
FLIP 87- 72L	6262	157	152	148	127	169	152	-	174
FLIP 87- 73L	6263	157	147	152	140	163	159	171	173
FLIP 87- 74L	6264	157	149	152	118	171	154	-	175
FLIP 87- 75L	6265	157	149	152	149	169	150	170	169
FLIP 87- 76L	6266	157	151	154	137	168	150	180	171
FLIP 88- 34L	6458	154	145	153	133	169	153	-	176
FLIP 88- 35L	6459	157	149	148	134	169	152	-	178
FLIP 88- 36L	6460	157	151	152	120	171	147	11	172
FLIP 88- 37L	6461	157	145	148	141	167	149	-	174
FLIP 88- 38L	6462	157	154	151	132	171	169	173	176
FLIP 88- 39L	6463	157	151	149	138	165	159	-	177
FLIP 88- 40L	6464	145	138	144	125	158	146	-	177
FLIP 88- 41L	6465	145	153	147	136	165	142	170	173
FLIP 88- 42L	6466	145	147	142	119	161	143	-	174
FLIP 88- 43L	6467	145	136	145	128	159	147	172	175
FLIP 88- 44L	6468	157	153	151	135	169	154	182	174
FLIP 88- 45L	6469	145	136	142	119	160	146	171	177
FLIP 88- 46L	6470	145	141	143	142	159	143	156	177
FLIP 88- 47L	6471	145	143	144	145	162	139	182	173
FLIP 88- 48L	6472	157	142	141	151	163	142	-	168
Local	4354	157	158	155	134	167	159	170	172
Precoz	4605	145	140	144	130	163	142	165	173
Local Check		157	149	150	138	-	143	170	171
Location Mean		**154**	**148**	**150**	**133**	**166**	**151**	**169**	**174**
S.E. of Mean		0.37	1.02	0.45	4.71	1.25	1.33		1.22
L.S.D. at 5% for :									
Checks		1.46	4.00	1.77	18.47	7.59	5.21		4.78
T.E. in S.B.		2.52	6.92	3.07	32.00	13.14	9.02		8.28
T.E. in D.B.		2.91	8.00	3.54	36.95	16.10	10.41		9.56
Checks Vs T.E.		2.38	6.53	2.89	30.17	13.15	8.50		7.80
C.V. %		0.42	1.19	0.52	6.15	1.30	1.52		1.21

Cont'd. ...

Table 5.6.3. Cont'd. ...

Selection	ILL	PERU	POLAND	SRI LANKA		THAILAND	TURKEY		(1) Overall Mean
		Chiquian	Pulawy	Band-arawela *	Dodan-golla *	Chiang Rai	Ankara	Eskisehir	
ILL 1983	1983	128	101	-	-	134	113	93	141
Pant L 406	2501	122	101	-	-	135	114	95	142
Pant L 639	2573	118	100	66	-	128	114	94	139
Fam 370	5486	131	117	-	91	125	115	93	140
FLIP 84-112L	5782	146	100	-	91	129	114	95	140
FLIP 86- 38L	6024	128	101	-	97	134	115	93	140
FLIP 86- 39L	6025	147	102	128	95	127	114	95	140
FLIP 86- 50L	6036	131	117	-	95	129	113	96	138
FLIP 87- 64L	6254	133	101	-	-	135	113	92	139
FLIP 87- 65L	6255	151	102	-	91	130	113	93	141
FLIP 87- 66L	6256	141	102	-	-	130	115	93	140
FLIP 87- 67L	6257	153	111	-	-	137	114	93	142
FLIP 87- 68L	6258	136	100	-	95	129	115	95	140
FLIP 87- 69L	6259	126	100	-	91	130	113	94	140
FLIP 87- 70L	6260	115	100	66	-	130	115	94	138
FLIP 87- 71L	6261	134	107	79	95	130	115	94	141
FLIP 87- 72L	6262	133	101	-	-	134	116	95	140
FLIP 87- 73L	6263	129	102	-	91	130	116	93	140
FLIP 87- 74L	6264	131	100	-	-	131	115	95	139
FLIP 87- 75L	6265	122	101	82	91	134	115	94	141
FLIP 87- 76L	6266	133	111	-	95	133	116	95	141
FLIP 88- 34L	6458	142	100	79	-	130	113	94	140
FLIP 88- 35L	6459	136	100	-	-	125	113	94	140
FLIP 88- 36L	6460	121	100	65	95	125	115	93	137
FLIP 88- 37L	6461	136	92	-	97	130	113	91	138
FLIP 88- 38L	6462	126	115	-	-	130	115	96	143
FLIP 88- 39L	6463	147	102	-	91	125	114	94	141
FLIP 88- 40L	6464	141	102	-	91	125	116	93	136
FLIP 88- 41L	6465	128	111	82	95	129	115	96	139
FLIP 88- 42L	6466	142	100	66	98	126	115	95	134
FLIP 88- 43L	6467	144	125	-	91	125	116	93	138
FLIP 88- 44L	6468	153	111	-	91	134	113	93	140
FLIP 88- 45L	6469	126	102	-	91	127	116	94	135
FLIP 88- 46L	6470	126	109	128	95	123	114	93	137
FLIP 88- 47L	6471	133	101	75	95	131	114	94	137
FLIP 88- 48L	6472	133	108	75	91	130	116	93	138
Local	4354	134	110	-	-	132	115	96	142
Precoz	4605	129	106	61	91	127	114	94	137
Local Check		142	116	96	-	-	-	95	
Location Mean		**134**	**106**	**82**	**86**	**129**	**115**	**94**	
S.E. of Mean		2.14	1.59			2.12	0.62	1.00	
L.S.D. at 5% for :									
Checks		8.41	6.25			12.91	3.79	2.62	
T.E. in S.B.		14.57	10.83			22.36	6.57	4.53	
T.E. in D.B.		16.82	12.50			27.38	8.05	5.23	
Checks Vs T.E.		13.74	10.21			22.36	6.57	4.27	
C.V. %		2.77	2.61			2.84	0.94	1.23	

(1) Horsham, Delhi, Jubeiha, Serai Nawrang, Bandarawela and Dodangolla were excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different block., * = Locations not analysed and thus mean values are unadjusted.

Table 5.6.4. Adjusted plant height (cm) of entries at different locations in the LISN-E during 1987/88.

Selection	ILL	ARGENTINA Perico	AUSTRALIA Horsham	CHINA Shanxi	GRECCE Larissa	INDIA Delhi	IRAN Karaj	JORDAN Jubeiha	JORDAN Ramtha	MOROCCO Settat	PAKISTAN --(NIAB)-- Fisalabad
ILL 1983	1983	26	29	18	32	26	21	23	39	39	47
Pant L 406	2501	45	20	19	32	34	20	25	38	41	57
Pant L 639	2573	32	25	19	24	29	20	-	30	27	56
Fam 370	5486	36	31	20	39	26	18	45	34	44	53
FLIP 84-112L	5782	35	33	19	34	31	24	31	39	37	64
FLIP 86- 38L	6024	40	26	18	27	27	19	29	37	43	47
FLIP 86- 39L	6025	34	30	18	34	36	22	33	33	31	45
FLIP 86- 50L	6036	28	29	21	39	30	31	37	37	49	47
FLIP 87- 64L	6254	39	29	16	32	21	20	22	37	44	43
FLIP 87- 65L	6255	35	32	19	34	33	22	35	38	41	44
FLIP 87- 66L	6256	32	27	19	34	34	20	35	42	41	49
FLIP 87- 67L	6257	41	29	20	32	26	22	28	35	51	54
FLIP 87- 68L	6258	28	30	17	29	24	20	26	29	41	56
FLIP 87- 69L	6259	33	30	19	34	24	18	23	35	34	53
FLIP 37- 70L	6260	31	25	19	24	26	23	-	36	32	41
FLIP 87- 71L	6261	34	28	18	29	23	22	31	33	37	49
FLIP 87- 72L	6262	36	29	18	32	26	21	30	32	34	50
FLIP 87- 73L	6263	32	31	18	29	30	19	34	38	33	50
FLIP 87- 74L	6264	37	29	17	34	30	20	30	32	42	52
FLIP 87- 75L	6265	34	26	18	27	28	21	34	32	44	44
FLIP 87- 76L	6266	37	28	19	32	30	22	26	38	39	52
FLIP 88- 34L	6458	35	25	18	29	36	23	31	30	37	48
FLIP 88- 35L	6459	32	30	19	29	32	18	40	34	49	45
FLIP 88- 36L	6460	33	30	18	34	20	24	29	30	42	46
FLIP 88- 37L	6461	35	30	19	34	25	19	40	38	46	47
FLIP 88- 38L	6462	25	28	19	34	27	17	31	39	35	46
FLIP 88- 39L	6463	43	30	16	34	36	20	39	32	48	45
FLIP 88- 40L	6464	31	26	20	39	28	18	39	33	41	42
FLIP 88- 41L	6465	36	21	19	27	26	18	16	37	46	40
FLIP 88- 42L	6466	32	27	19	34	21	20	25	29	46	43
FLIP 88- 43L	6467	36	31	19	39	28	26	28	38	44	51
FLIP 88- 44L	6468	25	27	15	32	31	21	25	45	26	41
FLIP 88- 45L	6469	36	26	23	34	31	21	27	32	39	36
FLIP 88- 46L	6470	48	25	21	39	28	20	35	42	31	44
FLIP 88- 47L	6471	36	28	19	27	26	20	24	42	36	44
FLIP 88- 48L	6472	38	26	21	27	26	19	34	34	39	43
Local	4354	35	31	20	38	21	20	31	37	43	58
Procoz	4605	37	23	20	35	20	20	25	35	41	42
Local Check		35	44	19	38	28	22	34	35	45	50
Location Mean		35	29	19	33	23	21	31	36	41	48
S.E. of Mean		1.39	1.25	0.77	2.26	2.00	0.93	1.97	2.48	1.15	0.41
L.S.D. at 5% for :											
Checks		5.45	4.90	3.02	8.86	7.05	3.66	7.72	9.73	4.50	1.60
T.E. in S.B.		9.44	8.48	5.23	15.34	12.20	6.34	13.38	16.86	7.80	2.78
T.E. in D.B.		10.90	9.79	6.04	17.72	14.09	7.32	15.45	19.47	9.00	3.21
Checks Vs T.E.		8.90	8.00	4.94	14.47	11.51	5.98	12.61	15.90	7.35	2.62
C.V. %		6.91	7.48	7.04	11.81	11.23	7.77	11.57	12.09	4.89	1.46

Cont'd. ...

Table 5.6.4. Cont'd. ...

Selection	ILL	PAKISTAN				PERU	POLAND	SRI LANKA		THAILAND	(1) Overall Mean
		Faisal-abad(UAF)	Mansehra	Serai Nawrang	Tarnab *	Chiquian	Pulawy	Bandara-wella	Dodan-golla	Chiang-Rai	
ILL 1983	1983	39	51	-	19	36	38	35	17	17	31
Pant L 406	2501	57	50	-	19	34	27	36	12	13	33
Pant L 639	2573	43	52	-	24	32	28	28	11	19	29
Pam 370	5486	40	53	34	16	39	41	40	14	27	33
FLIP 84-112L	5782	30	45	-	20	35	29	37	16	27	33
FLIP 86- 38L	6024	33	54	28	19	34	24	34	21	24	31
FLIP 86- 39L	6025	48	53	-	24	46	29	27	14	13	31
FLIP 86- 50L	6036	50	51	-	18	38	31	36	16	23	33
FLIP 87- 64L	6254	49	53	36	25	38	26	32	14	12	31
FLIP 87- 65L	6255	52	53	-	19	36	36	35	16	16	33
FLIP 87- 66L	6256	46	46	-	21	37	27	39	12	12	31
FLIP 87- 67L	6257	43	53	32	23	38	28	37	20	14	33
FLIP 87- 68L	6258	35	48	-	16	42	32	38	18	20	30
FLIP 87- 69L	6259	31	45	-	18	37	33	28	14	20	29
FLIP 87- 70L	6260	42	48	-	22	39	27	34	11	12	28
FLIP 87- 71L	6261	33	48	-	21	32	25	32	15	31	30
FLIP 87- 72L	6262	35	50	29	23	29	23	37	15	15	30
FLIP 87- 73L	6263	35	46	23	17	42	35	41	13	23	31
FLIP 87- 74L	6264	50	43	-	23	36	27	35	15	27	32
FLIP 87- 75L	6265	35	48	31	19	26	21	29	17	24	29
FLIP 87- 76L	6266	35	49	27	19	39	31	12	19	20	30
FLIP 88- 34L	6458	48	47	-	17	35	31	32	17	20	31
FLIP 88- 35L	6459	34	44	-	19	54	26	25	11	19	29
FLIP 88- 36L	6460	36	46	-	18	37	30	36	17	15	30
FLIP 88- 37L	6461	42	53	-	16	39	29	29	12	21	31
FLIP 88- 38L	6462	45	44	27	19	39	32	31	12	14	29
FLIP 88- 39L	6463	50	49	-	17	37	34	28	15	15	32
FLIP 88- 40L	6464	34	48	-	18	39	37	30	16	24	30
FLIP 88- 41L	6465	41	52	26	25	39	19	29	26	18	30
FLIP 88- 42L	6466	31	46	-	18	31	28	32	22	25	30
FLIP 88- 43L	6467	46	52	-	19	36	37	32	21	23	34
FLIP 88- 44L	6468	41	51	29	18	29	34	34	15	17	30
FLIP 88- 45L	6469	45	49	31	16	36	33	31	16	23	31
FLIP 88- 46L	6470	42	47	30	20	32	37	31	16	25	32
FLIP 88- 47L	6471	38	49	33	21	35	27	28	19	28	31
FLIP 88- 48L	6472	46	51	29	24	35	34	28	19	16	31
Local	4354	36	51	-	22	35	35	38	15	15	32
Precoz	4605	46	49	-	21	34	34	27	18	22	31
Local Check		33	-	28	21	38	57	30	-	-	
Location Mean		**41**	**49**	**30**	**20**	**37**	**33**	**32**	**16**	**20**	
S.E. of Mean		2.74	1.03		1.96	2.54	3.19	2.03	1.43	1.97	
L.S.D. at 5% for :											
Checks		10.74	6.25		7.71	9.96	12.50	7.95	8.72	11.98	
T.E. in S.B.		18.60	10.83		13.35	17.25	21.66	13.77	15.11	20.74	
T.E. in D.B.		21.47	13.26		15.42	19.92	25.01	15.90	18.51	25.40	
Checks Vs T.E.		17.54	10.83		12.59	16.27	20.42	12.99	15.11	20.75	
C.V. %		11.69	3.61		17.01	12.04	16.95	10.91	15.47	17.44	

(1) Jubeiha and Serai Nawrang were excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different block., * = Locations not analysed and thus mean values are unadjusted.

Table 5.6.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-E during 1987/88.

Selection	ILL	ARGENTINA Perico		CHINA Shanxi		EGYPT Sids		GREECE Larissa		INDIA Delhi		IRAN Karaj	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 1983	1983	500	32	660	23	1043	18	747	21	-	-	21	36
Pant L 406	2501	933	17	832	15	-	-	797	13	-	-	315	13
Pant L 639	2573	1422	12	614	24	388	37	747	19	-	-	152	24
Fam 370	5486	644	26	564	27	1347	7	856	13	219	10	227	19
FLIP 84-112L	5782	422	33	1016	6	1054	16	1297	3	-	-	258	17
FLIP 86- 38L	6024	1800	4	947	10	599	31	747	20	106	22	15	37
FLIP 86- 39L	6025	1011	16	261	39	1347	8	1006	7	169	14	371	9
FLIP 86- 50L	6036	378	34	474	34	1591	6	456	34	119	21	927	1
FLIP 87- 64L	6254	933	18	964	9	377	38	572	30	-	-	4	38
FLIP 87- 65L	6255	611	29	367	36	1347	9	236	39	369	2	327	11
FLIP 87- 66L	6256	611	28	581	25	1014	20	631	27	269	7	282	14
FLIP 87- 67L	6257	667	24	545	29	1154	14	747	22	-	-	132	25
FLIP 87- 68L	6258	1589	8	1065	5	499	35	647	25	-	-	258	16
FLIP 87- 69L	6259	622	27	835	14	499	33	1197	5	-	-	36	34
FLIP 87- 70L	6260	289	35	876	12	721	30	697	24	46	32	197	23
FLIP 87- 71L	6261	1722	6	1475	2	832	29	997	8	246	8	119	26
FLIP 87- 72L	6262	533	31	570	26	932	24	872	12	-	-	82	32
FLIP 87- 73L	6263	844	21	326	38	1014	19	356	37	169	13	221	20
FLIP 87- 74L	6264	1489	10	1163	4	499	34	897	11	-	-	108	28
FLIP 87- 75L	6265	-	-	808	17	932	27	847	14	286	6	27	35
FLIP 87- 76L	6266	867	20	701	20	932	22	897	10	136	18	115	27
FLIP 88- 34L	6458	1289	13	679	22	1054	17	847	16	346	3	358	10
FLIP 88- 35L	6459	822	22	925	11	499	36	547	31	196	11	86	31
FLIP 88- 36L	6460	1956	2	1409	3	1332	10	597	29	-	-	102	29
FLIP 88- 37L	6461	1778	5	482	33	902	28	531	32	169	16	254	18
FLIP 88- 38L	6462	589	30	696	21	499	32	1197	4	96	24	-	-
FLIP 88- 39L	6463	1978	1	491	32	1125	15	456	33	369	1	271	15
FLIP 88- 40L	6464	644	25	852	13	1769	2	631	28	169	15	577	4
FLIP 88- 41L	6465	-	-	709	18	1610	5	722	23	136	17	54	33
FLIP 88- 42L	6466	1622	7	975	8	1310	11	847	15	-	-	447	7
FLIP 88- 43L	6467	1911	3	507	31	1680	3	256	38	319	4	543	5
FLIP 88- 44L	6468	233	36	430	35	932	23	647	26	-	-	199	22
FLIP 88- 45L	6469	1444	11	532	30	1614	4	406	35	219	9	860	2
FLIP 88- 46L	6470	1244	14	335	37	1769	1	406	36	119	20	643	3
FLIP 88- 47L	6471	1200	15	1005	7	932	25	797	17	106	23	88	30
FLIP 88- 48L	6472	933	19	1494	1	932	26	1122	6	186	12	210	21
Local	4354	222	37	709	19	1296	12	1383	2	57	31	326	12
Precoz	4605	1544	9	812	16	1278	13	950	9	120	19	506	6
Local Check		700	23	558	28	1000	21	1608	1	310	5	409	8
Location Mean		1006		742		1036		845		194		280	
S.E. of Mean		168.51		59.75		170.22		205.03		88.75		144.48	
S.E. of Mean Checks		661.44		234.52		668.17		804.79		348.35		567.14	
T.E. in S.B.		1145.65		406.20		1157.30		1393.95		603.37		982.31	
T.E. in D.B.		1322.88		469.04		1336.34		1609.59		696.71		1134.28	
Checks Vs T.E.		1080.29		383.03		1091.28		1314.42		568.94		926.27	
C.V. %		30.64		13.94		28.46		41.97		114.90		89.30	
Test > L. Check		4		10		0		0		0		0	

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	ILL	JORDAN				MOROCCO		PAKISTAN					
		Jubeiha		Ramtha		Settat		Faisalabad (NIAB)		Faisalabad (AARI)		Faisalabad (UAF)	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 1983	1983	1783	8	1489	22	732	18	1898	6	864	15	1055	7
Pant L 406	2501	1293	13	1356	24	1032	7	1398	12	1309	6	1461	1
Pant L 639	2573	-	-	-	-	593	21	1370	19	1549	5	864	11
Fam 370	5486	733	24	800	30	275	36	1398	17	475	20	981	9
FLIP 84-112L	5782	1653	10	2404	4	926	9	1954	2	327	32	117	37
FLIP 86- 38L	6024	1193	17	1622	20	465	32	648	35	198	37	388	27
FLIP 86- 39L	6025	333	34	587	32	275	37	1398	15	1253	7	175	36
FLIP 86- 50L	6036	983	22	1813	15	775	14	731	33	364	31	255	33
FLIP 87- 64L	6254	1243	14	2222	7	724	19	481	38	309	34	388	28
FLIP 87- 65L	6255	713	25	213	34	475	29	648	36	920	12	341	30
FLIP 87- 66L	6256	653	26	173	35	484	28	1398	14	1698	3	1021	8
FLIP 87- 67L	6257	1813	7	2156	8	565	23	65	39	198	35	401	25
FLIP 87- 68L	6258	243	35	2711	3	1918	1	1370	18	383	29	317	32
FLIP 87- 69L	6259	373	33	-	-	451	33	1620	8	605	17	430	21
FLIP 87- 70L	6260	-	-	-	-	534	24	787	29	883	13	937	10
FLIP 87- 71L	6261	2003	5	2044	9	426	34	1204	20	494	19	630	13
FLIP 87- 72L	6262	1233	15	1902	13	249	38	731	31	198	38	541	17
FLIP 87- 73L	6263	0	-	547	33	217	39	731	32	475	22	181	35
FLIP 87- 74L	6264	1313	12	1778	17	584	22	1120	24	438	23	1377	2
FLIP 87- 75L	6265	2193	3	1796	16	890	10	1815	7	1086	9	495	19
FLIP 87- 76L	6266	2873	1	1036	28	749	15	648	34	198	36	421	23
FLIP 88- 34L	6458	613	28	644	31	1626	2	1454	11	3105	1	1377	3
FLIP 88- 35L	6459	1163	18	2311	6	784	12	1204	21	1105	8	490	20
FLIP 88- 36L	6460	763	23	1218	25	776	13	1120	23	383	28	237	34
FLIP 88- 37L	6461	183	36	40	39	992	8	815	27	920	11	555	16
FLIP 88- 38L	6462	653	27	1511	21	518	26	537	37	994	10	1177	6
FLIP 88- 39L	6463	463	30	920	29	1100	3	1565	9	1920	2	81	38
FLIP 88- 40L	6464	1053	21	1413	23	617	20	1398	16	420	27	328	31
FLIP 88- 41L	6465	1163	19	2396	5	740	17	1148	22	309	33	508	18
FLIP 88- 42L	6466	583	29	1978	11	484	27	1120	25	438	24	57	39
FLIP 88- 43L	6467	433	32	2000	10	875	11	815	28	809	16	415	24
FLIP 88- 44L	6468	1053	20	1729	18	474	30	1898	5	864	14	1321	4
FLIP 88- 45L	6469	1223	16	1173	27	1059	6	1398	13	475	21	388	29
FLIP 88- 46L	6470	453	31	1213	26	534	25	981	26	364	30	808	12
FLIP 88- 47L	6471	1743	9	2729	2	740	16	1898	4	420	26	575	15
FLIP 88- 48L	6472	2083	4	3396	1	1082	4	1898	3	420	25	1268	5
Local	4354	1967	6	1822	14	473	31	778	30	167	39	389	26
Precoz	4605	1313	11	1716	19	1059	5	1472	10	556	18	627	14
Local Check		2700	2	1916	12	335	35	2528	1	1648	4	422	22
Location Mean		**1170**		**1577**		**697**		**1267**		**762**		**593**	
S.E. of Mean		308.02		356.01		1.36		125.26		194.52		165.38	
L.S.D. at 5% for :													
Checks		1209.07		1397.45		5.34		491.67		763.53		649.15	
T.E. in S.B.		2094.17		2420.45		9.24		851.59		1322.48		1124.36	
T.E. in D.B.		2418.14		2794.90		10.67		983.33		1527.07		1298.30	
Chocks Vs T.E.		1974.70		2282.37		8.72		803.01		1247.03		1060.22	
C.V. %		45.59		40.87		0.34		17.13		44.23		48.31	
Test > L. Check		0		0		32		0		1		0	

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	ILL	PAKISTAN								PERU		POLAND	
		Mansehra		Islamabad (NARS)		Serai Nawrang *		Tarnab (NWFP)		Chiquian		Pulawy	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 1983	1983	968	33	0	-	-	-	2344	1	453	20	775	25
Pant L 406	2501	798	35	13	35	-	-	1144	18	469	19	950	14
Pant L 639	2573	2338	4	364	24	-	-	1844	4	0	-	1261	5
Fam 370	5486	1523	23	122	31	1100	2	11	38	447	21	831	21
FLIP 84-112L	5782	3008	1	471	20	-	-	1244	12	858	4	1144	7
FLIP 86- 38L	6024	1898	10	73	32	500	7	1644	6	444	22	-	-
FLIP 86- 39L	6025	2613	3	236	26	-	-	411	36	789	5	1631	2
FLIP 86- 50L	6036	1803	13	642	13	-	-	711	33	631	10	431	33
FLIP 87- 64L	6254	1068	31	2033	1	500	7	844	27	719	7	833	20
FLIP 87- 65L	6255	1583	19	549	18	-	-	411	35	756	6	739	28
FLIP 87- 66L	6256	1703	16	136	30	-	-	1211	16	364	25	1406	4
FLIP 87- 67L	6257	618	38	47	33	-	-	1344	9	1111	1	292	37
FLIP 87- 68L	6258	648	37	924	7	-	-	744	30	483	18	903	17
FLIP 87- 69L	6259	1278	27	453	21	-	-	1044	23	0	-	869	19
FLIP 87- 70L	6260	1458	24	916	8	-	-	1244	11	0	-	1153	6
FLIP 87- 71L	6261	1258	28	911	9	-	-	1044	22	83	33	369	35
FLIP 87- 72L	6262	1208	30	0	-	800	4	644	34	611	11	1142	8
FLIP 87- 73L	6263	2663	2	16	34	1000	3	1411	8	314	28	789	23
FLIP 87- 74L	6264	1538	21	1284	4	-	-	1244	13	83	32	794	22
FLIP 87- 75L	6265	1548	20	-	-	1000	3	1144	17	653	8	292	38
FLIP 87- 76L	6266	808	34	367	23	500	7	844	26	511	17	600	31
FLIP 88- 34L	6458	1688	17	978	6	-	-	2044	3	0	-	1094	10
FLIP 88- 35L	6459	2318	5	1338	3	-	-	744	31	442	23	761	27
FLIP 88- 36L	6460	2108	6	516	19	-	-	1144	19	0	-	769	26
FLIP 88- 37L	6461	1793	15	842	11	-	-	311	37	256	30	781	24
FLIP 88- 38L	6462	1798	14	1284	5	500	7	744	32	75	34	394	34
FLIP 88- 39L	6463	1453	25	629	14	-	-	911	25	547	15	897	18
FLIP 88- 40L	6464	1213	29	-	-	-	-	0	-	572	14	981	12
FLIP 88- 41L	6465	1898	11	167	28	600	6	1644	5	903	3	683	30
FLIP 88- 42L	6466	1328	26	884	10	-	-	1044	21	192	31	578	32
FLIP 88- 43L	6467	1613	18	669	12	-	-	1311	10	272	29	939	15
FLIP 88- 44L	6468	1048	32	167	29	1500	1	944	24	594	12	350	36
FLIP 88- 45L	6469	2083	7	629	15	450	8	1211	15	531	16	956	13
FLIP 88- 46L	6470	1873	12	616	16	300	9	1211	14	322	26	1447	3
FLIP 88- 47L	6471	1528	22	233	27	1000	3	844	28	578	13	1133	9
FLIP 88- 48L	6472	728	36	1713	2	800	4	844	29	653	9	908	16
Local	4354	2080	8	-	-	-	-	1067	20	314	27	697	29
Precoz	4605	2017	9	607	17	-	-	1567	7	394	24	1006	11
Local Check		-	-	367	22	650	5	2400	2	1033	2	2506	1
Location Mean		**1645**		**565**		**747**		**1178**		**460**		**943**	
S.E. of Mean		137.26		259.57				436		188		128	
L.S.D. at 5% for:													
Checks		835.12		1018.87				1710		737		501	
T.E. in S.B.		1446.47		1764.74				2962		1277		867	
T.E. in D.B.		1771.56		2037.74				3420		1474		1002	
Checks Vs T.E.		1446.69		1664.06				2793		1204		818	
C.V. %		14.45		86.89				64		71		23	
Test > L. Check		0		1				0		0		0	

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	ILL	SRI LANKA				THAILAND		TUNISIA		TURKEY				(1) Overall Mean	
		Bandarawela		Dodangolla		Chiang Rai		Beja		Ankara		Eskisehir			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 1983	1983	-	-	-	-	2337	5	897	30	-	-	1250	8	1048	8
Pant L 406	2501	-	-	-	-	2167	9	1272	15	27	33	1125	10	1066	6
Pant L 639	2573	1192	1	-	-	1092	32	189	39	0	-	771	35	998	14
Pan 370	5486	-	-	79	19	1892	14	1414	9	-	-	854	28	814	27
FLIP 84-112L	5782	-	-	85	12	2342	4	1314	14	200	4	1021	15	1102	5
FLIP 86- 38L	6024	-	-	41	16	1537	21	1672	4	53	28	1063	14	1018	11
FLIP 86- 39L	6025	384	16	-	-	2592	1	1089	23	120	14	1354	4	1041	9
FLIP 86- 50L	6036	704	8	16	20	2292	8	1114	20	213	2	979	19	818	25
FLIP 87- 64L	6254	-	-	-	-	1317	28	772	32	27	34	875	27	727	33
FLIP 87- 65L	6255	-	-	-	-	892	35	964	27	227	1	917	25	671	38
FLIP 87- 66L	6256	-	-	-	-	2442	2	1239	17	107	18	854	30	1009	12
FLIP 87- 67L	6257	-	-	-	-	1267	29	922	29	40	30	938	24	679	37
FLIP 87- 68L	6258	-	-	109	9	942	33	764	33	53	29	958	20	912	21
FLIP 87- 69L	6259	-	-	113	8	1942	13	714	34	120	15	896	26	820	24
FLIP 87- 70L	6260	854	2	-	-	1542	20	264	38	27	35	771	36	718	34
FLIP 87- 71L	6261	354	17	54	15	1392	25	939	28	120	16	521	38	935	19
FLIP 87- 72L	6262	-	-	-	-	1167	30	1522	7	133	12	1000	16	698	36
FLIP 87- 73L	6263	-	-	-	-	842	37	439	37	200	3	854	29	715	35
FLIP 87- 74L	6264	-	-	-	-	1342	26	489	36	67	25	833	31	946	18
FLIP 87- 75L	6265	264	19	40	17	2317	6	1222	18	27	32	813	33	911	22
FLIP 87- 76L	6266	-	-	62	14	1417	24	1747	3	27	31	1063	13	790	30
FLIP 88- 34L	6458	400	14	-	-	1992	12	839	31	120	17	1083	12	1311	1
FLIP 88- 35L	6459	-	-	34	18	2292	7	1239	16	80	22	958	21	985	16
FLIP 88- 36L	6460	396	15	84	13	1142	31	1339	13	80	23	833	32	1007	13
FLIP 88- 37L	6461	346	18	-	-	1342	27	964	26	107	19	1104	11	925	20
FLIP 88- 38L	6462	0	-	0	-	1442	22	1039	24	187	6	396	39	786	31
FLIP 88- 39L	6463	667	10	0	-	2042	11	1664	5	147	9	792	34	1150	3
FLIP 88- 40L	6464	826	3	0	-	892	36	1364	12	120	13	1417	3	771	32
FLIP 88- 41L	6465	724	6	141	5	1417	23	1122	19	133	11	938	23	808	29
FLIP 88- 42L	6466	251	20	176	3	842	38	989	25	93	21	958	22	864	23
FLIP 88- 43L	6467	568	13	159	4	1642	18	1089	22	-	-	979	17	997	15
FLIP 88- 44L	6468	0	-	87	11	2067	10	522	35	93	20	750	37	815	26
FLIP 88- 45L	6469	780	4	106	10	1742	16	1914	1	187	5	1479	2	1131	4
FLIP 88- 46L	6470	686	9	120	7	2392	3	1114	21	160	8	979	18	963	17
FLIP 88- 47L	6471	655	11	305	1	1687	17	1522	8	147	10	1188	9	1018	10
FLIP 88- 48L	6472	717	7	138	6	1567	19	1372	11	-	-	1250	5	1052	7
Local	4354	-	-	-	-	917	34	1892	2	71	24	1250	7	812	28
Precoz	4605	744	5	-	-	1817	15	1592	6	182	7	1250	6	1180	2
Local Check		635	12	-	-	-	-	1383	10	-	-	1688	1		
Location Mean		**607**		**106**		**1613**		**1192**		**109**		**1053**			
S.E. of Mean		73.83		46.18		113.65		128.79		16.63		55.12			
L.S.D. at 5% for :															
Checks		449.22		280.97		691.51		505.52		101.18		216.36			
T.E. in S.B.		778.07		486.65		1197.72		875.58		175.25		374.75			
T.E. in D.B.		952.94		596.03		1466.91		1011.03		214.64		432.72			
Checks Vs T.E.		778.19		486.73		1197.91		825.63		175.28		353.37			
C.V. %		37.71		129.44		12.20		18.71		28.71		9.07			
Test > L. Check		0		0		0		0		0		0			

(1) Delhi, Jubeiha, Ramtha, Pulawy, Bandarawela, Dodargolla, Sids, Islamabad (NARC), Ankara and Serai Nawrang were excluded from the overall mean. T.E. = Test entries, S.B. = Same block, D.B. = Different block. * = Location not analysed and thus mean values are unadjusted.

Table 5.6.6. The five heaviest seed yielding entries at the individual locations in the LISN-E during 1987/88.

Rank	ARGENTINA	CHINA	EGYPT	GREECE	INDIA	IRAN	JORDAN	
	Perico	Shanxi	Sids	Larissa	New Delhi	Karaj	Juboiha	Ramtha
1	FLIP83- 39L	FLIP83- 43L	FLIP83- 46L	Local Check	FLIP83- 39L	FLIP86- 50L	FLIP87- 76L	FLIP83- 48L
2	FLIP83- 36L	FLIP87- 71L	FLIP88- 40L	Local Check	FLIP87- 65L	FLIP83- 45L	Local Check	FLIP83- 47L
3	FLIP83- 43L	FLIP83- 36L	FLIP88- 43L	FLIP84-112L	FLIP83- 34L	FLIP83- 46L	FLIP87- 75L	FLIP87- 68L
4	FLIP86- 38L	FLIP87- 74L	FLIP83- 45L	FLIP88- 38L	FLIP83- 43L	FLIP88- 40L	FLIP83- 43L	FLIP84-112L
5	FLIP83- 37L	FLIP87- 68L	FLIP88- 41L	FLIP87- 69L	Local Check	FLIP88- 43L	FLIP87- 71L	FLIP88- 41L

Cont'd. ...

Table 5.6.6. Cont'd. ...

Rank	MOROCCO	PAKISTAN						
	Settat	Faisalabad (NIAB)	Faisalabad (AARI)	Faisalabad (UAF)	Mansehra	Islamabad (NARC)	Serai - Nawrang	Tarnab
1	FLIP87- 68L	Local Check	FLIP88- 34L	Pant L 406	FLIP84-112L	FLIP87- 64L	FLIP88- 44L	ILL 1983
2	FLIP88- 34L	FLIP84-112L	FLIP88- 39L	FLIP87- 74L	FLIP87- 73L	FLIP83- 48L	Fam 370	Local Check
3	FLIP83- 39L	FLIP88- 48L	FLIP87- 66L	FLIP83- 34L	FLIP86- 39L	FLIP83- 35L	FLIP87- 73L	FLIP88- 34L
4	FLIP83- 48L	FLIP88- 47L	Local Check	FLIP83- 44L	Pant L 639	FLIP87- 74L	FLIP87- 75L	Pant L 639
5	Precoz FLIP83- 45L	FLIP88- 44L ILL 1983	Pant L 639	FLIP83- 43L	FLIP83- 35L	FLIP83- 38L	FLIP83- 47L	FLIP83- 41L FLIP86- 38L

Cont'd. ...

Table 5.6.6. Cont'd. ...

Rank	PERU	POLAND	SRI LANKA		THAILAND	TUNISIA	TURKEY	
	Chiquian	Pulawy	Bandarawela	Dodangolla	Chiang Rai	Beja	Ankara	Eskisehir
1	FLIP87- 67L	Local Check	Pant L 639	FLIP83- 47L	FLIP86- 39L	FLIP83- 45L	FLIP87- 65L	Local Check
2	Local Check	FLIP86- 39L	FLIP87- 70L	Precoz	FLIP87- 66L	Local Check	FLIP86- 50L	FLIP83- 45L
3	FLIP83- 41L	FLIP83- 46L	FLIP83- 40L	FLIP83- 42L	FLIP83- 46L	FLIP87- 76L	FLIP87- 73L	FLIP88- 40L
4	FLIP84-112L	FLIP87- 66L	FLIP83- 45L	FLIP83- 43L	FLIP84-112L	FLIP83- 38L	FLIP84-112L	FLIP86- 39L
5	FLIP86- 39L	Pant L 639	Precoz	FLIP83- 41L	ILL 1983	FLIP83- 39L	FLIP83- 45L FLIP83- 38L	FLIP83- 43L Precoz ILL 4354 ILL 1983

The brackets indicate entries having the same rank.

list of top five high yielding lines at each location is given in Table 5.6.6. The entry FLIP 88-48L occured most frequently among the top five heaviest yielders and was closely followed by FLIP 84-112L and FLIP 88-45L.

5.7. LENTIL INTERNATIONAL SCREENING NURSERY - TALL (LISN-T)

Material

The Lentil International Screening Nursery - Tall (LISN-T) specifically meant for mechanical harvesting comprised of 45 test entries. These included elite germplasm accessions received from other centers and selections made from the progenies developed through hybridization at ICARDA. In addition, there were three checks, two namely Syrian Local Small (ILL 4401) and Hurani-1 (ILL 2130) were supplied by ICARDA, and the third check, the best local cultivar, was to be added by the cooperator.

Methods and Management

The nursery was grown in an augmented block design. The suggested plot size was a single row plot, 4 m long. The cooperators were urged to use the locally recommended agronomic practices for the management of the nursery.

Fifty six sets of nursery were distributed to cooperators in 26 countries and data were returned from 34 locations in 22 countries. The details of the agronomic practices supplied by the cooperators are given in Table 5.7.1.

Results and Discussion

The location mean for entries ranged from 95 to 111 days for time to flowering (Table 5.7.2), 142 to 153 days for time to maturity (Table 5.7.3), and 28 to 37 cm for plant height (Table 5.7.4). The entries FLIP 86-18L, FLIP 86-16L, FLIP 86-38L FLIP 86-51L, FLIP 84-133L, ILL 5486, and FLIP 87-52L, took less time to flower and mature. The entries ILL 6408, ILL 4349 and ILL 6410 were among the tallest (36-37 cm). At most locations some of the test entries were taller than the respective local checks.

The adjusted seed yields based on the augmented design are given in Table 5.7.5. The highest mean yield was recorded at Gelline in Syria (1770 kg/ha) and was followed by Jubeiha in Jordan (1766 kg/ha) and Tel Hadya in Syria (1684 kg/ha). The LSD estimates revealed that at eleven locations, some of the test entries, outyielded the respective local check by a significant margin. The five heaviest yielding entries at individual locations are given in Table 5.7.6. The frequency of occurrence of lines among the top five was highest for FLIP 88-51L, ILL 1939, FLIP 84-58L, 82S 15 (ILL 5883), FLIP 88-18L, and FLIP 88-49L.

Table 5.7.1. Agronomic data for different locations in the LISN-T during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Setif	NA	NA	NA			NA	NA	NA
AUSTRALIA	Horsham	06.07.88	13.12.88		150		-	Trifluralin, Cyanazine, Diquat, Paraquat, Endosulphan	Procoz
AUSTRALIA	Tamworth	20.07.88	06.10.88	-			-	-	Callisto
BULGARIA	Toshevo	11.04.88	12.07.88	30	60		-	Gusagard	Tadjikskaja 95
CHINA	Shanxi	18.04.88	21.07.88	-			-	-	NA
CYPRUS	Dromolaxia	03.02.88	06.06.88	21	48		-	NA	NA
EGYPT	Sids	25.11.87		48	72		2	NA	NA
ETHIOPIA	Debre Zeit	13.07.88	-	-			-	-	ILL 358
GREECE	Larissa	30.11.87	13.06.88		60		-	Decamethrin	Samos
INDIA	Delhi	30.11.87	25.04.88	20	40		2	Basalin, Metasystox	L-4162
IRAN	Ghazvin	13.04.88	12.07.88	-			-	-	Ghazvin
IRAN	Karaj	15.03.88	25.06.88	24	72		-	Treflan, Metasystox	Ghazvin
IRAN	Maragah	06.12.87	09.07.88		60		-	-	NA
ITALY	Gaudiano	12.02.88	05.06.88	25	78		-	-	Local Population
ITALY	Medolla	10.03.88	13.07.88	40	100		-	Pirimicarb	Local Population
JORDAN	Jubeiha	11.11.87	13.05.88	20	40		-	-	UJL 176
LEBANON	Terbol	20.11.87	20.06.88		50		-	Korb, Bladex	Local
MOROCCO	Settat	-	-	-			-	-	-
PAKISTAN	Faisalabad (NIAB)	09.11.87	25.04.88	20	60		1	-	Masoor 85 (Var. 9-6)
PAKISTAN	Faisalabad (NARC)	NA	NA	NA			NA	NA	NA
POLAND	Pulawy	08.04.88	02.08.88		80	120	-	Ponoxalino	Trebisovska (CSK)
PORTUGAL	Elvas	24.11.87	08.06.88	-			-	-	L188, FLIP84-58L, ILL 5728
SPAIN	Madrid	12.11.87	23.06.88	32	96		-	Prometryne	LEC 142 (ANGELA)
SRI LANKA	Dodangolla	21.11.87	02.03.88	50	63		8	Metasystox	-
SYRIA	Aloppo	16.11.87							Idleb 1
SYRIA	Gelline	11.01.88	21.05.88	20	50		-	-	-
SYRIA	Idleb	03.12.87	05.06.88		60		-	-	Idleb 1
SYRIA	Izra'a	21.01.88		12	37		-	-	-
SYRIA	Tel Hadya	23.11.87	24.05.88		50		-	Korb, Bladex	ILL 4400
TUNISIA	Beja	14.11.87	NA	NA			NA	NA	NA
TUNISIA	Oued Meliz	NA	NA	NA			NA	NA	NA
TURKEY	Ankara	25.03.88	19.07.88	30	70		-	-	-
TURKEY	Diyarbakir	09.12.88	01.06.89	30	60		-	-	Yerli Kirmizi
TURKEY	Eskisehir	06.04.88	20.06.88	30	70		-	-	SULTAN-1

NA = Not available.

Table 5.7.2. Adjusted to time flowering (days) of entries at different locations in the LISN-T during 1987/88.

Selection	ILL	Origin	AUSTRALIA Horsham	BULGARIA Toshevo	CHINA Shanxi	CYPRUS Dromolxia	EGYPT Sids	ETHIOPIA Debre Zeit	GREECE Larissa	INDIA Delhi	IRAN Ghazvin
ILL 468	468	Chile	107	60	60	88	91	75	140	121	62
ILL 1939	1939	Morocco	97	55	50	89	91	69	135	106	56
Laird	4349	Canada	104	62	54	87	93	60	133	116	52
Chilean	4711	USA	105	58	48	78	90	56	141	119	57
Fam 370	5486	Egypt	94	56	40	88	69	40	131	79	49
74TA 550	5544	Syria	99	54	45	88	93	-	136	121	52
78S 26002	5582	Jordan	102	55	42	81	91	54	131	106	49
78S 26052	5604	Turkey	102	56	47	83	90	58	138	99	57
FLIP 84- 43L	5714	ICARDA	107	57	48	83	91	67	136	90	56
FLIP 84- 51L	5722	ICARDA	102	56	42	78	78	51	135	93	50
FLIP 84- 58L	5728	ICARDA	102	57	54	83	90	68	134	114	55
FLIP 84- 59L	5729	ICARDA	107	57	53	82	89	-	136	111	51
FLIP 84- 78L	5748	ICARDA	97	55	45	82	81	51	134	116	50
FLIP 84- 83L	5753	ICARDA	104	55	52	88	95	76	137	106	55
FLIP 84-133L	5803	ICARDA	91	50	42	88	76	41	128	79	48
FLIP 85- 38L	5876	ICARDA	102	57	45	80	91	54	133	106	55
81S 15	5883	Jordan	105	57	44	80	92	57	137	117	55
FLIP 86- 16L	6002	ICARDA	-	56	44	84	75	47	130	75	52
FLIP 86- 18L	6004	ICARDA	91	55	43	81	66	46	127	66	50
FLIP 86- 24L	6010	ICARDA	110	56	45	83	94	70	143	119	56
FLIP 86- 25L	6011	ICARDA	97	57	43	83	90	51	134	93	50
FLIP 86- 30L	6016	ICARDA	102	55	46	83	91	67	136	116	55
FLIP 86- 33L	6019	ICARDA	102	53	45	83	95	58	134	95	48
FLIP 86- 35L	6021	ICARDA	102	56	45	81	91	57	134	101	55
FLIP 86- 38L	6024	ICARDA	97	53	44	84	86	50	132	83	49
FLIP 86- 41L	6027	ICARDA	94	56	41	83	80	41	135	89	50
FLIP 86- 51L	6037	ICARDA	94	56	45	83	75	79	130	65	54
FLIP 86- 56L	6042	ICARDA	102	57	48	80	96	59	143	114	57
FLIP 87- 9L	6199	ICARDA	107	57	53	84	96	70	141	113	50

Table 5.7.2. Cont'd. ...

Selection	ILL	Origin	AUSTRALIA Horsham	BULGARIA Toshevo	CHINA Shanxi	CYPRUS Dromolxia	EGYPT Sids	ETHIOPIA Debre Zeit	GREECE Larissa	INDIA Delhi	IRAN Ghazvin
FLIP 87- 45L	6235	ICARDA	99	54	48	82	96	71	134	116	54
FLIP 87- 48L	6238	ICARDA	99	56	45	87	89	56	136	111	55
FLIP 87- 52L	6242	ICARDA	94	56	44	81	89	51	131	86	51
FLIP 87- 59L	6249	ICARDA	102	57	49	83	95	69	133	96	55
FLIP 87- 60L	6250	ICARDA	102	56	48	82	-	71	142	116	53
FLIP 87- 63L	6253	ICARDA	104	55	50	82	91	76	136	111	53
HC 125	6408	Bulgaria	118	59	44	83	91	79	148	111	62
HC 972	6409	Bulgaria	105	59	54	78	92	-	148	114	64
HC 1414	6410	Bulgaria	115	60	61	87	89	73	149	111	63
FLIP 88- 6L	6430	ICARDA	94	54	45	88	91	59	134	113	49
FLIP 88- 8L	6432	ICARDA	101	55	43	81	93	56	133	106	49
FLIP 88- 18L	6442	ICARDA	97	55	45	80	92	52	133	114	50
FLIP 88- 31L	6445	ICARDA	102	55	45	81	95	67	134	101	52
FLIP 88- 49L	6473	ICARDA	99	55	45	85	91	57	134	101	48
FLIP 88- 50L	6474	ICARDA	99	54	45	84	95	56	134	111	48
FLIP 88- 51L	6475	ICARDA	97	53	45	79	90	70	132	119	50
Local small	4401	Syria	100	55	47	81	95	60	135	109	55
Hurani 1	2130	Syria	102	57	50	83	92	67	135	113	54
Local Check			116	56	60	83	68	53	146	89	53
Location Mean			**102**	**56**	**48**	**83**	**88**	**61**	**136**	**103**	**53**
S.E. of Mean			1.64	0.93	1.17	0.78	1.17	0.45	0.24	5.18	1.33
L.S.D. at 5% for :											
Checks			6.45	3.66	4.60	3.07	4.60	1.77	0.93	20.35	5.21
T.E. in S.B.			11.18	6.34	7.96	5.32	7.96	3.07	1.60	35.24	9.02
T.E. in D.B.			12.91	7.32	9.19	6.14	9.19	3.54	1.85	40.69	10.41
Checks Vs T.E.			10.54	5.98	7.51	5.01	7.51	2.89	1.51	33.23	8.50
C.V. %			2.84	2.87	4.00	1.63	2.35	1.37	0.30	8.69	4.31

Cont'd. ...

Table 5.7.2. Cont'd. ...

Selection	ILL	IRAN	ITALY		JORDAN	LEBANON	MOROCCO	PAKISTAN		POLAND	PORTUGAL
		Karaj	Gaudiano	Medolla	Jubeiha	Terbol	Settat	Faisal-abad(NIAB)	Islam-abad(NARC)	Pulawy	Elvas
ILL 468	468	72	95	76	162	146	129	124	131	63	126
ILL 1939	1939	71	95	74	155	134	123	121	119	60	121
Laird	4349	73	97	76	164	133	131	114	114	62	122
Chilean	4711	78	98	78	162	133	131	119	113	61	122
Fam 370	5486	71	97	73	157	129	123	90	78	54	112
74TA 550	5544	69	94	74	158	134	129	122	118	60	123
78S 26002	5582	71	88	72	157	129	108	110	114	58	123
78S 26052	5604	72	96	74	155	135	131	122	128	60	122
FLIP 84- 43L	5714	70	97	76	157	135	126	122	123	59	123
FLIP 84- 51L	5722	70	97	74	155	131	129	94	104	57	122
FLIP 84- 58L	5728	69	90	74	155	131	126	117	122	61	118
FLIP 84- 59L	5729	72	96	72	161	137	129	112	135	59	123
FLIP 84- 78L	5748	72	95	74	155	130	107	91	103	60	123
FLIP 84- 83L	5753	70	94	74	163	138	129	117	136	61	123
FLIP 84-133L	5803	68	87	74	155	126	104	112	86	55	119
FLIP 85- 38L	5876	70	88	72	157	133	119	109	114	59	123
81S 15	5883	69	94	74	155	133	129	121	134	60	120
FLIP 86- 16L	6002	69	95	74	145	127	121	80	89	61	104
FLIP 86- 18L	6004	70	97	73	147	125	121	80	87	59	103
FLIP 86- 24L	6010	69	92	74	155	143	126	106	122	59	125
FLIP 86- 25L	6011	71	92	74	155	131	129	119	117	60	115
FLIP 86- 30L	6016	70	93	72	157	131	128	114	115	57	123
FLIP 86- 33L	6019	68	89	74	155	130	123	115	119	58	123
FLIP 86- 35L	6021	71	91	72	157	135	125	116	116	59	123
FLIP 86- 38L	6024	68	86	74	147	130	104	82	106	56	116
FLIP 86- 41L	6027	68	97	74	155	129	125	100	107	56	120
FLIP 86- 51L	6037	70	97	74	145	131	121	79	83	60	105
FLIP 86- 56L	6042	70	95	74	162	135	129	123	126	60	122
FLIP 87- 9L	6199	70	92	78	155	135	129	120	136	60	122

Table 5.7.2. Cont'd. ...

Selection	ILL	IRAN	ITALY		JORDAN	LEBANON	MOROCCO	PAKISTAN		POLAND	PORTUGAL
		Karaj	Gaudiano	Medolla	Jubeiha	Terbol	Settat	Faisal-abad(NIAB)	Islam-abad(NARC)	Pulawy	Elvas
FLIP 87- 45L	6235	72	95	74	155	130	129	123	128	60	121
FLIP 87- 48L	6238	71	93	72	157	133	133	116	114	58	121
FLIP 87- 52L	6242	70	91	73	157	129	106	103	106	58	119
FLIP 87- 59L	6249	70	89	72	157	131	107	118	114	59	119
FLIP 87- 60L	6250	71	86	74	155	138	129	125	140	61	126
FLIP 87- 63L	6253	69	93	74	155	134	129	118	138	60	121
HC 125	6408	79	95	74	164	150	129	124	130	62	128
HC 972	6409	69	99	78	158	153	129	121	126	61	125
HC 1414	6410	72	97	76	161	151	134	120	-	60	126
FLIP 88- 6L	6430	69	86	74	155	130	123	103	118	60	121
FLIP 88- 8L	6432	72	89	72	157	129	119	110	113	58	121
FLIP 88- 18L	6442	69	92	74	155	129	125	116	116	59	120
FLIP 88- 31L	6445	69	93	72	157	133	129	112	121	59	123
FLIP 88- 49L	6473	70	87	74	155	130	121	116	127	60	121
FLIP 88- 50L	6474	70	87	74	155	130	123	106	119	59	121
FLIP 88- 51L	6475	70	91	74	155	131	123	115	123	59	118
Local small	4401	70	94	75	156	134	126	118	126	59	124
Hurani 1	2130	69	96	74	155	133	126	122	122	60	123
Local Check		71	97	75	155	148	131	93	83	65	119
Location Mean		**70**	**94**	**74**	**156**	**134**	**124**	**111**	**116**	**60**	**121**
S.E. of Mean		1.15	1.16	0.39	0.51	0.61	0.04	0.33	2.00	0.47	1.58
L.S.D. at 5% for :											
Checks		4.50	4.53	1.51	2.00	2.39	0.17	1.31	6.28	1.85	2.27
T.E. in S.B.		7.80	7.85	2.62	3.46	4.14	0.30	2.27	11.00	3.21	3.93
T.E. in D.B.		9.00	9.07	3.02	4.00	4.78	0.34	2.62	12.55	3.70	4.53
Checks Vs T.E.		7.35	7.40	2.47	3.26	3.90	0.28	2.14	10.25	3.02	3.70
C.V. %		2.83	2.14	0.90	0.56	0.78	0.06	0.52	2.44	1.37	0.83

Cont'd. ...

Table 5.7.2. Cont'd. ...

Selection	ILL	SPAIN	SYRIA					TURKEY			(1) Overall Mean
		Madrid	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Ankara	Diyar-bakir	Eski-sehir*	
ILL 468	468	157	151	127	139	101	148	71	126	-	110
ILL 1939	1939	154	145	121	133	83	142	70	127	-	104
Laird	4349	154	147	126	136	85	144	70	126	74	106
Chilean	4711	167	145	124	132	89	143	71	-	-	107
Fam 370	5486	142	141	118	136	84	132	72	-	62	99
74TA 550	5544	154	144	121	135	87	142	72	-	-	105
78S 26002	5582	149	143	122	132	81	140	72	125	68	101
78S 26052	5604	158	147	122	131	84	142	72	-	-	105
FLIP 84- 43L	5714	157	147	123	138	87	141	71	-	65	105
FLIP 84- 51L	5722	152	147	124	132	83	146	70	-	-	102
FLIP 84- 58L	5728	144	142	121	135	83	133	71	126	-	103
FLIP 84- 59L	5729	155	147	124	129	87	143	71	-	70	105
FLIP 84- 78L	5748	147	142	123	134	83	143	72	124	-	102
FLIP 84- 83L	5753	154	146	127	132	87	142	72	-	-	106
FLIP 84-133L	5803	141	135	115	139	81	141	71	-	62	98
FLIP 85- 38L	5876	155	144	124	131	87	140	72	127	69	103
81S 15	5883	154	145	121	134	82	141	71	127	-	104
FLIP 86- 16L	6002	137	135	113	134	81	128	72	-	-	96
FLIP 86- 18L	6004	134	135	112	136	83	130	70	-	66	95
FLIP 86- 24L	6010	165	147	128	134	90	144	72	-	-	106
FLIP 86- 25L	6011	152	142	120	140	81	136	71	-	-	102
FLIP 86- 30L	6016	154	146	124	133	87	141	71	125	66	104
FLIP 86- 33L	6019	152	144	120	137	83	141	72	124	-	102
FLIP 86- 35L	6021	156	145	123	132	84	141	70	126	65	103
FLIP 86- 38L	6024	140	138	114	139	87	132	72	-	62	97
FLIP 86- 41L	6027	151	141	115	131	81	133	73	-	-	100
FLIP 86- 51L	6037	136	135	116	133	81	129	70	126	-	96
FLIP 86- 56L	6042	160	147	125	132	91	139	71	-	-	106
FLIP 87- 9L	6199	156	144	125	129	92	143	71	-	-	105

Cont'd. ...

Table 5.7.2. Cont'd. ...

Selection	ILL	SPAIN	SYRIA					TURKEY			(1) Overall Mean
		Madrid	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Ankara	Diyar-bakir	Eski-sehir*	
FLIP 87- 45L	6235	151	144	120	139	84	137	73	127	-	104
FLIP 87- 48L	6238	156	145	123	132	84	137	73	129	68	104
FLIP 87- 52L	6242	141	140	119	132	83	136	72	129	72	99
FLIP 87- 59L	6249	154	142	123	132	85	141	71	125	66	102
FLIP 87- 60L	6250	155	147	125	133	83	142	70	-	-	105
FLIP 87- 63L	6253	153	145	121	130	87	143	73	124	-	104
HC 125	6408	153	147	125	129	102	142	72	-	-	108
HC 972	6409	169	166	127	130	100	142	70	128	-	110
HC 1414	6410	157	166	126	133	101	146	73	-	68	111
FLIP 88- 6L	6430	151	143	120	132	84	137	71	126	-	102
FLIP 88- 8L	6432	150	143	123	138	83	140	71	126	68	102
FLIP 88- 18L	6442	150	145	121	140	84	137	72	-	-	103
FLIP 88- 31L	6445	155	145	121	129	87	141	71	127	68	103
FLIP 88- 49L	6473	150	143	120	128	83	138	67	-	-	101
FLIP 88- 50L	6474	148	144	120	129	81	139	71	-	-	102
FLIP 88- 51L	6475	146	142	119	135	83	135	73	-	-	102
Local small	4401	155	145	125	136	87	141	70	128	68	104
Hurani 1	2130	157	145	123	130	86	141	71	126	68	105
Local Check		166	144	120	135	82	142	-	128	68	
Location Mean		153	145	122	134	86	140	71	122	67	
S.E. of Mean		0.53	0.39	0.77	2.58	0.61	1.13	0.00	0.75		
L.S.D. at 5% for :											
Checks		2.07	1.51	3.02	10.12	2.39	4.44	0.00	2.93		
T.E. in S.B.		3.58	2.62	5.23	17.53	4.14	7.69	0.00	5.07		
T.E. in D.B.		4.15	3.02	6.04	20.24	4.78	8.88	0.00	5.85		
Checks Vs T.E.		3.38	2.47	4.94	16.53	3.90	7.25	0.00	4.78		
C.V. %		1.00	0.46	1.10	3.34	1.23	1.40	0.00	1.84		

(1) Horsham, Sids, Debre Zeit, Islamabad(NARC), Diyarbakir and Eskisehir were excluded from the overall mean.
T.E. = Test entries, S.B. = Same block, D.B. = Different blocks., * = Location not analysed and thus mean values are unadjusted.

Table 5.7.3. Adjusted time to maturity (days) of entries at different locations in the LISN-T during 1987/88.

Selection	ILL	AUSTRALIA	BULGARIA	CHINA	CYPRUS	INDIA	IRAN		ITALY
		Horsham*	Toshevo	Shanxi	Larissa	Delhi	Ghazvin	Karaj	Gaudiano
ILL 468	468	-	94	85	184	150	89	103	145
ILL 1939	1939	152	88	85	184	140	78	101	139
Laird	4349	-	95	87	182	148	80	101	146
Chilean	4711	-	91	91	183	-	89	101	139
Fam 370	5486	144	90	79	175	124	73	99	138
74TA 550	5544	150	88	82	176	-	77	101	139
78S 26002	5582	152	88	81	174	139	75	100	137
78S 26052	5604	-	89	82	183	141	76	103	138
FLIP 84- 43L	5714	152	90	82	175	135	77	98	137
FLIP 84- 51L	5722	-	90	79	180	135	73	101	138
FLIP 84- 58L	5728	-	90	91	175	-	75	101	138
FLIP 84- 59L	5729	152	89	87	174	144	78	102	146
FLIP 84- 78L	5748	-	92	82	184	142	76	103	143
FLIP 84- 83L	5753	-	92	85	184	139	78	102	139
FLIP 84-133L	5803	152	88	85	181	125	72	99	139
FLIP 85- 38L	5876	152	94	82	182	138	76	100	137
81S 15	5883	-	90	82	176	143	74	103	138
FLIP 86- 16L	6002	-	90	82	175	126	72	103	138
FLIP 86- 18L	6004	144	89	82	182	114	73	99	138
FLIP 86- 24L	6010	-	91	82	179	-	76	101	138
FLIP 86- 25L	6011	152	90	82	183	136	74	103	138
FLIP 86- 30L	6016	-	88	82	178	149	76	100	137
FLIP 86- 33L	6019	-	88	85	181	138	75	99	139
FLIP 86- 35L	6021	152	92	82	170	138	76	102	141
FLIP 86- 38L	6024	152	88	82	171	135	73	99	139
FLIP 86- 41L	6027	152	90	82	180	136	74	100	137
FLIP 86- 51L	6037	-	91	85	183	119	75	104	139
FLIP 86- 56L	6042	-	91	82	183	143	77	104	137
FLIP 87- 9L	6199	-	91	91	183	143	88	104	138

Table 5.7.3. COnt'd. ...

Selection	ILL	AUSTRALIA	BULGARIA	CHINA	CYPRUS	INDIA	IRAN		ITALY
		Horsham*	Toshevo	Shanxi	Larissa	Delhi	Ghazvin	Karaj	Gaudiano
FLIP 87- 45L	6235	-	87	85	176	142	76	103	139
FLIP 87- 48L	6238	-	91	79	170	139	75	102	145
FLIP 87- 52L	6242	-	91	82	179	134	76	100	138
FLIP 87- 59L	6249	-	89	87	182	134	77	101	138
FLIP 87- 60L	6250	152	89	85	180	140	76	101	139
FLIP 87- 63L	6253	-	88	85	176	142	77	100	139
HC 125	6408	-	94	85	184	142	86	103	139
HC 972	6409	-	92	91	183	146	87	101	139
HC 1414	6410	-	94	91	182	144	92	106	141
FLIP 88- 6L	6430	152	88	85	177	140	75	102	139
FLIP 88- 8L	6432	-	89	81	174	139	75	102	137
FLIP 88- 18L	6442	152	88	82	174	146	75	103	138
FLIP 88- 31L	6445	-	90	82	182	137	76	102	138
FLIP 88- 49L	6473	-	89	85	176	138	72	104	139
FLIP 88- 50L	6474	152	94	86	176	142	73	104	139
FLIP 88- 51L	6475	152	88	82	179	-	73	100	138
Local small	4401	152	90	83	178	138	76	101	137
Hurani 1	2130	152	89	83	177	144	77	99	137
Local Check		-	89	89	182	136	75	104	139
Location Mean		**151**	**90**	**84**	**179**	**158**	**77**	**102**	**139**
S.E. of Mean			1.20	1.73	1.49	1.17	0.37	0.61	1.20
L.S.D. at 5% for :									
Checks			4.72	6.80	5.85	4.60	1.44	2.39	4.72
T.E. in S.B.			8.17	11.77	10.14	7.96	2.50	4.14	8.17
T.E. in D.B.			9.44	13.59	11.70	9.19	2.88	4.78	9.44
Checks Vs T.E.			7.71	11.10	10.56	7.51	2.35	3.90	7.71
C.V. %			2.31	4.00	1.44	1.61	0.83	1.04	1.50

Cont'd. ...

Table 5.7.3. Cont'd. ...

Selection	ILL	ITALY Medolla	JORDAN Jubeiha	LEBANON Terbol	MOROCCO Settat	PAKISTAN Faisalabad	POLAND Pulawy	PORTUGAL Elvas	SPAIN Madrid	SYRIA Aleppo
ILL 468	468	129	190	187	163	164	124	200	223	187
ILL 1939	1939	127	186	175	157	162	111	195	216	177
Laird	4349	134	-	184	163	165	116	194	212	192
Chilean	4711	124	190	184	163	149	124	194	221	192
Fam 370	5486	122	-	174	157	137	111	175	212	187
74TA 550	5544	123	188	173	163	163	101	187	218	177
78S 26002	5582	124	-	170	145	153	111	175	211	186
78S 26052	5604	128	189	172	163	162	111	194	219	188
FLIP 84- 43L	5714	122	-	172	163	161	101	175	219	187
FLIP 84- 51L	5722	126	187	174	163	163	124	181	216	189
FLIP 84- 58L	5728	126	185	170	157	155	116	175	208	188
FLIP 84- 59L	5729	128	-	172	163	166	111	181	213	187
FLIP 84- 78L	5748	127	191	184	145	152	124	200	224	187
FLIP 84- 83L	5753	125	190	179	163	158	111	200	223	187
FLIP 84-133L	5803	123	190	173	156	151	101	181	211	187
FLIP 85- 38L	5876	128	-	172	157	154	116	185	220	187
81S 15	5883	124	-	172	163	161	101	194	218	184
FLIP 86- 16L	6002	128	187	174	163	146	124	175	207	187
FLIP 86- 18L	6004	126	-	170	145	140	116	181	210	191
FLIP 86- 24L	6010	126	188	170	157	145	111	181	218	188
FLIP 86- 25L	6011	128	187	172	163	159	111	181	219	186
FLIP 86- 30L	6016	128	-	172	157	157	111	185	216	187
FLIP 86- 33L	6019	125	186	175	157	154	111	181	221	187
FLIP 86- 35L	6021	-	-	170	157	157	101	175	214	186
FLIP 86- 38L	6024	125	184	171	145	145	116	181	209	177
FLIP 86- 41L	6027	128	187	174	163	166	116	187	218	186
FLIP 86- 51L	6037	126	189	176	145	147	116	194	208	188
FLIP 86- 56L	6042	128	190	184	163	163	124	187	219	189
FLIP 87- 9L	6199	126	191	174	163	161	116	187	219	188

Table 5.7.3. Cont'd. ...

Selection	ILL	ITALY Medolla	JORDAN Jubeiha	LEBANON Terbol	MOROCCO Settat	PAKISTAN Faisalabad	POLAND Pulawy	PORTUGAL Elvas	SPAIN Madrid	SYRIA Aleppo
FLIP 87- 45L	6235	125	188	173	163	156	111	181	217	178
FLIP 87- 48L	6238	128	-	170	163	158	108	181	218	187
FLIP 87- 52L	6242	128	-	170	145	155	101	175	210	187
FLIP 87- 59L	6249	124	-	170	145	157	124	175	220	187
FLIP 87- 60L	6250	127	188	173	163	166	116	187	216	187
FLIP 87- 63L	6253	127	188	173	163	159	111	181	223	178
HC 125	6408	125	195	187	163	163	116	200	214	190
HC 972	6409	128	185	184	163	156	124	189	222	190
HC 1414	6410	128	-	184	163	159	124	194	222	194
FLIP 88- 6L	6430	125	188	173	163	160	111	181	222	187
FLIP 88- 8L	6432	124	-	170	163	152	101	175	213	187
FLIP 88- 18L	6442	128	189	170	163	160	108	175	209	188
FLIP 88- 31L	6445	124	-	170	163	156	116	185	221	187
FLIP 88- 49L	6473	123	192	173	163	154	111	181	220	187
FLIP 88- 50L	6474	123	193	173	163	162	111	181	222	187
FLIP 88- 51L	6475	122	185	170	163	153	111	181	207	187
Local small	4401	126	187	172	163	159	101	187	214	186
Hurani 1	2130	124	186	174	163	163	108	179	213	187
Local Check		127	188	182	163	150	116	177	221	187
Location Mean		**126**	**189**	**175**	**160**	**157**	**112**	**184**	**216**	**186**
S.E. of Mean		2.03	0.51	1.47	0.03	0.69	0.00	3.32	1.39	0.45
L.S.D. at 5% for :										
Checks		7.96	2.00	5.75	0.13	2.72	0.00	13.04	5.45	1.77
T.E. in S.B.		13.79	3.46	9.97	0.23	4.72	0.00	22.59	9.44	3.07
T.E. in D.B.		15.92	4.00	11.51	0.26	5.45	0.00	26.08	10.90	3.54
Checks Vs T.E.		13.00	3.26	9.40	0.21	4.45	0.00	21.30	8.90	2.89
C.V. %		2.84	0.67	1.45	0.04	0.77	0.00	3.13	1.11	0.42

Cont'd. ...

Table 5.7.3. Cont'd. ...

Selection	ILL	SYRIA				TURKEY			(1) Overall Mean
		Gelline	Idleb	Izra'a	Tel Hadya	Ankara	Diyarbakir	Eskisehir*	
ILL 468	468	159	177	127	186	114	172	-	153
ILL 1939	1939	153	168	122	178	113	170	95	146
Laird	4349	159	170	125	192	114	170	95	151
Chilean	4711	156	172	128	183	113	-	-	151
Fam 370	5486	155	169	124	177	116	169	94	143
74TA 550	5544	153	168	118	177	115	173	94	145
78S 26002	5582	156	168	122	178	116	170	95	143
78S 26052	5604	156	169	122	177	115	-	-	147
FLIP 84- 43L	5714	159	186	123	177	115	-	94	146
FLIP 84- 51L	5722	157	169	123	182	113	-	-	147
FLIP 84- 58L	5728	155	171	123	175	114	170	-	145
FLIP 84- 59L	5729	158	169	120	179	116	171	95	147
FLIP 84- 78L	5748	157	171	125	182	115	172	97	149
FLIP 84- 83L	5753	160	168	127	183	115	169	-	149
FLIP 84-133L	5803	154	170	123	177	113	-	95	144
FLIP 85- 38L	5876	158	168	123	178	115	170	94	146
81S 15	5883	155	167	121	177	114	171	-	146
FLIP 86- 16L	6002	152	169	121	174	115	-	-	144
FLIP 86- 18L	6004	152	186	120	171	114	-	94	144
FLIP 86- 24L	6010	159	167	127	178	114	170	-	145
FLIP 86- 25L	6011	157	169	118	177	113	-	-	146
FLIP 86- 30L	6016	156	168	125	178	116	169	93	145
FLIP 86- 33L	6019	154	188	124	178	114	172	94	147
FLIP 86- 35L	6021	155	169	121	177	114	169	95	144
FLIP 86- 38L	6024	149	170	123	171	115	170	93	142
FLIP 86- 41L	6027	156	165	125	178	116	-	-	147
FLIP 86- 51L	6037	156	185	119	178	113	170	-	146
FLIP 86- 56L	6042	158	169	123	179	114	-	-	149
FLIP 87- 9L	6199	158	168	126	179	114	170	-	149

Table 5.7.3. Cont'd. ...

Selection	ILL	SYRIA				TURKEY			(1) Overall Mean
		Gelline	Idleb	Izra'a	Tel Hadya	Ankara	Diyarbakir	Eskisehir*	
FLIP 87- 45L	6235	153	169	121	177	116	172	95	145
FLIP 87- 48L	6238	154	169	122	175	117	169	93	145
FLIP 87- 52L	6242	155	169	121	177	116	169	94	143
FLIP 87- 59L	6249	156	169	121	180	115	170	95	146
FLIP 87- 60L	6250	156	170	122	176	113	170	97	147
FLIP 87- 63L	6253	154	167	120	177	116	172	94	145
HC 125	6408	158	165	121	187	115	-	-	150
HC 972	6409	158	167	136	182	113	170	-	151
HC 1414	6410	159	168	126	191	117	168	-	152
FLIP 88- 6L	6430	155	171	122	177	114	170	95	146
FLIP 88- 8L	6432	156	167	122	177	116	168	-	144
FLIP 88- 18L	6442	154	170	123	177	116	170	-	145
FLIP 88- 31L	6445	156	171	122	176	115	169	94	147
FLIP 88- 49L	6473	154	171	120	177	97	172	94	146
FLIP 88- 50L	6474	157	171	128	177	114	172	95	147
FLIP 88- 51L	6475	155	169	124	174	116	168	-	144
Local small	4401	157	168	122	177	113	170	95	145
Hurani 1	2130	155	169	121	177	114	170	95	145
Local Check		155	168	121	179	-	170	94	
Location Mean		**156**	**170**	**123**	**178**	**114**	**176**	**95**	
S.E. of Mean		0.39	1.25	0.90	0.33	0.41	1.03		
L.S.D.at 5% for :									
Checks		1.51	4.90	3.54	1.31	2.48	4.03		
T.E. in S.B.		2.62	8.48	6.14	2.27	4.30	6.96		
T.E. in D.B.		3.02	9.79	7.09	3.62	5.27	8.07		
Checks Vs T.E.		2.47	8.00	5.79	2.14	4.30	6.59		
C.V. %		0.43	1.27	1.27	0.32	0.26	1.31		

(1) Horhsam, Delhi, Medolla,Jubeiha, Ankara, Diyarbakir and Eskisehir were excluded from the overall mean.
T.E. = Test entries, S.B. = Same Block, D.B. = Different blocks., * = Locations not analysed and thus mean values are unadjusted.

Table 5.7.4. Adjusted plant height (cm) of entries at different locations in the LISN-T during 1987/88.

		ALGERIA	AUSTRALIA	BULGARIA	CHINA	GREECE	INDIA	IRAN	
Selection	ILL	Setif	Horsham	Toshevo	Shanxi	Larissa	Delhi	Ghazvin	Karaj
ILL 468	468	19	37	58	20	35	33	22	37
ILL 1939	1939	19	31	48	22	40	37	20	32
Laird	4349	23	41	71	19	38	28	23	29
Chilean	4711	35	39	53	21	42	25	21	32
Fam 370	5486	12	26	41	20	38	41	19	27
74TA 550	5544	11	26	43	19	40	22	18	27
78S 26002	5582	16	26	40	20	38	21	19	21
78S 26052	5604	19	34	52	22	37	39	21	23
FLIP 84- 43L	5714	19	31	51	21	38	28	20	25
FLIP 84- 51L	5722	17	38	37	18	37	23	19	21
FLIP 84- 58L	5728	14	32	44	19	37	28	20	22
FLIP 84- 59L	5729	15	26	46	18	43	30	21	24
FLIP 84- 78L	5748	16	30	60	20	40	37	18	26
FLIP 84- 83L	5753	15	30	50	21	35	28	20	29
FLIP 84-133L	5803	18	26	43	19	35	39	19	28
FLIP 85- 38L	5876	15	24	37	19	33	19	18	23
81S 15	5883	14	39	42	21	42	41	21	25
FLIP 86- 16L	6002	15	–	56	23	37	41	21	24
FLIP 86- 18L	6004	19	24	61	20	33	31	23	26
FLIP 86- 24L	6010	14	26	55	21	37	29	19	31
FLIP 86- 25L	6011	16	36	37	19	37	31	20	24
FLIP 86- 30L	6016	17	23	51	19	38	28	19	27
FLIP 86- 33L	6019	16	30	45	19	35	36	16	29
FLIP 86- 35L	6021	17	32	41	21	38	37	20	23
FLIP 86- 38L	6024	17	24	43	18	30	32	18	22
FLIP 86- 41L	6027	16	39	44	18	37	29	19	25
FLIP 86- 51L	6037	18	37	52	23	42	33	21	26
FLIP 86- 56L	6042	13	39	55	21	42	23	21	21
FLIP 87- 9L	6199	18	37	37	19	37	24	20	23

Table 5.7.4. Cont'd. ...

Selection	ILL	ALGERIA Setif	AUSTRALIA Horsham	BULGARIA Toshevo	CHINA Shanxi	GREECE Larissa	INDIA Delhi	IRAN Ghazvin	IRAN Karaj
FLIP 87- 45L	6235	18	29	47	21	40	33	19	27
FLIP 87- 48L	6238	16	26	51	21	43	38	19	24
FLIP 87- 52L	6242	15	32	51	20	33	32	20	27
FLIP 87- 59L	6249	15	25	45	20	38	28	21	23
FLIP 87- 60L	6250	18	27	48	21	35	32	19	25
FLIP 87- 63L	6253	14	28	47	20	35	34	19	31
HC 125	6408	21	36	63	20	40	35	21	24
HC 972	6409	19	34	57	18	32	29	19	26
HC 1414	6410	22	29	71	18	38	34	23	33
FLIP 88- 6L	6430	19	31	43	20	35	30	18	25
FLIP 88- 8L	6432	17	27	36	20	43	30	19	22
FLIP 88- 18L	6442	20	39	41	20	37	31	20	24
FLIP 88- 31L	6445	15	29	50	19	43	28	20	25
FLIP 88- 49L	6473	18	31	43	19	35	37	20	26
FLIP 88- 50L	6474	16	29	48	20	40	38	19	25
FLIP 88- 51L	6475	16	35	37	19	42	31	19	27
Local small	4401	13	30	51	19	35	24	18	23
Hurani 1	2130	15	34	42	19	38	28	20	28
Local Check		20	44	53	19	42	36	21	27
Location Mean		**17**	**32**	**48**	**19**	**38**	**31**	**20**	**26**
S.E. of Mean		1.61	2.48	2.97	0.51	1.18	0.87	0.75	2.03
L.S.D. at 5% for :									
Checks		6.32	9.75	11.65	2.02	4.63	3.42	2.95	7.96
T.E. in S.B.		10.95	16.88	20.19	3.49	8.01	5.92	5.11	13.79
T.E. in D.B.		12.64	19.50	23.31	4.03	9.25	6.84	5.90	15.92
Checks Vs T.E.		10.32	15.92	19.03	3.29	7.56	5.59	4.82	13.00
C.V. %		16.16	13.56	10.70	4.57	5.39	4.91	6.48	13.55

Cont'd. ...

Table 5.7.4. Cont'd. ...

		IRAN	ITALY		JORDAN	LEBANON	MOROCCO	PAKISTAN	POLAND	PORTUGAL
Selection	ILL	Maragah	Gaudiano	Medolla	Jubeiha	Terbol	Settat	Faisalabad	Pulawy	Elvas
ILL 468	468	17	37	68	37	31	46	57	41	41
ILL 1939	1939	16	32	38	35	32	41	55	35	44
Laird	4349	22	51	66	45	40	38	55	40	45
Chilean	4711	19	29	31	43	39	49	60	40	43
Fam 370	5486	18	32	51	47	32	38	51	42	37
74TA 550	5544	22	34	33	32	24	39	46	38	36
78S 26002	5582	25	33	46	37	32	36	48	36	36
78S 26052	5604	21	33	31	49	29	53	67	34	38
FLIP 84- 43L	5714	20	34	36	41	29	38	53	27	36
FLIP 84- 51L	5722	21	31	26	45	21	50	59	33	40
FLIP 84- 58L	5728	19	32	56	41	22	40	43	39	33
FLIP 84- 59L	5729	20	41	46	40	34	48	53	40	34
FLIP 84- 78L	5748	16	34	43	39	34	41	57	37	37
FLIP 84- 83L	5753	21	33	38	31	29	41	57	45	39
FLIP 84-133L	5803	21	30	28	39	24	51	48	36	41
FLIP 85- 38L	5876	25	37	51	35	27	35	46	28	36
81S 15	5883	23	27	36	-	29	50	61	34	35
FLIP 86- 16L	6002	21	34	46	36	31	45	52	43	41
FLIP 86- 18L	6004	27	38	51	29	27	43	48	26	31
FLIP 86- 24L	6010	21	29	36	40	27	40	46	28	36
FLIP 86- 25L	6011	19	28	36	43	24	43	51	30	38
FLIP 86- 30L	6016	20	33	56	38	32	38	52	32	38
FLIP 86- 33L	6019	19	27	33	26	31	46	53	36	39
FLIP 86- 35L	6021	22	37	-	44	37	38	52	34	36
FLIP 86- 38L	6024	19	29	33	28	24	41	48	29	46
FLIP 86- 41L	6027	22	31	26	35	31	44	47	27	38
FLIP 86- 51L	6037	19	34	36	34	31	55	53	40	43
FLIP 86- 56L	6042	19	33	46	31	19	50	48	34	35
FLIP 87- 9L	6199	21	33	26	42	29	42	58	34	41

Table 5.7.4. Cont'd. ...

Selection	ILL	IRAN	ITALY		JORDAN	LEBANON	MOROCCO	PAKISTAN	POLAND	PORTUGAL
		Maragah	Gaudiano	Medolla	Jubeiha	Terbol	Settat	Faisalabad	Pulawy	Elvas
FLIP 87- 45L	6235	19	29	38	31	22	54	54	45	41
FLIP 87- 48L	6238	20	33	46	40	29	36	52	35	36
FLIP 87- 52L	6242	23	38	41	-	32	43	50	34	31
FLIP 87- 59L	6249	22	40	36	46	37	43	58	35	39
FLIP 87- 60L	6250	21	32	33	35	29	45	60	34	37
FLIP 87- 63L	6253	17	37	38	31	29	44	59	39	39
HC 125	6408	19	32	68	37	41	44	72	49	47
HC 972	6409	23	29	46	36	34	35	43	47	35
HC 1414	6410	18	51	76	44	34	40	58	52	39
FLIP 88- 6L	6430	17	27	28	34	27	41	54	29	39
FLIP 88- 8L	6432	20	40	36	38	25	38	45	26	32
FLIP 88- 18L	6442	21	31	36	39	29	43	57	33	35
FLIP 88- 31L	6445	25	37	41	38	30	48	50	31	33
FLIP 88- 49L	6473	17	33	38	33	22	43	53	31	39
FLIP 88- 50L	6474	16	29	33	30	24	51	57	42	36
FLIP 88- 51L	6475	17	36	26	31	29	46	47	35	38
Local small	4401	21	33	35	35	24	51	52	30	34
Hurani 1	2130	19	30	43	31	29	40	58	34	34
Local Check		21	31	50	35	33	45	52	49	37
Location Mean		**20**	**33**	**41**	**37**	**29**	**44**	**54**	**36**	**37**
S.E. of Mean		1.22	3.22	2.81	2.91	3.45	1.54	3.02	4.52	2.12
L.S.D. at 5% for :										
Checks		4.78	12.62	11.01	11.41	13.53	6.04	11.84	17.75	8.31
T.E. in S.B.		8.28	21.86	19.07	19.76	23.44	10.47	20.50	30.74	14.39
T.E. in D.B.		9.56	25.24	22.02	22.81	27.07	12.09	23.67	35.50	16.62
Checks Vs T.E.		7.80	20.61	17.99	18.63	22.11	9.87	19.33	28.99	13.57
C.V. %		10.43	16.80	11.93	14.20	20.39	6.06	9.74	21.64	9.85

Cont'd. ...

Table 5.7.4. Cont'd. ...

Selection	ILL	SPAIN	SRI LANKA	SYRIA					TURKEY	(1) Overall Mean
		Madrid	Dodangolla	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Diyarbakir	
ILL 468	468	49	16	41	37	28	26	33	30	35
ILL 1939	1939	45	16	33	38	23	25	32	20	33
Laird	4349	48	18	40	37	44	33	40	20	37
Chilean	4711	47	19	30	36	22	28	44	–	35
Fam.370	5486	46	19	35	29	29	25	40	23	32
74TA 550	5544	50	9	27	30	26	17	19	21	28
78S 26002	5582	50	13	35	34	34	24	33	20	31
78S 26052	5604	47	14	38	38	31	25	39	–	34
FLIP 84- 43L	5714	48	13	33	30	47	24	37	–	32
FLIP 84- 51L	5722	45	14	30	32	30	25	39	–	31
FLIP 84- 58L	5728	43	14	28	35	36	25	36	25	30
FLIP 84- 59L	5729	50	13	32	34	35	20	25	17	32
FLIP 84- 78L	5748	45	17	38	32	39	25	34	28	34
FLIP 84- 83L	5753	45	16	35	35	32	29	31	23	33
FLIP 84-133L	5803	41	24	29	28	40	20	33	–	32
FLIP 85- 38L	5876	53	15	34	31	34	25	34	22	30
81S 15	5883	51	16	32	35	32	26	39	28	33
FLIP 86- 16L	6002	47	20	38	34	33	26	48	–	35
FLIP 86- 18L	6004	48	18	12	27	26	23	35	–	31
FLIP 86- 24L	6010	47	12	28	31	27	26	44	27	31
FLIP 86- 25L	6011	51	15	28	33	34	27	37	–	31
FLIP 86- 30L	6016	52	17	28	33	24	20	39	25	31
FLIP 86- 33L	6019	45	15	31	27	38	20	24	26	31
FLIP 86- 35L	6021	50	14	32	30	31	25	33	23	32
FLIP 86- 38L	6024	45	20	33	28	36	19	31	26	30
FLIP 86- 41L	6027	45	17	30	34	25	29	41	–	31
FLIP 86- 51L	6037	49	23	38	32	34	28	49	33	35
FLIP 86- 56L	6042	53	12	29	36	30	25	38	–	31
FLIP 87- 9L	6199	47	15	30	33	25	29	40	28	31

Table 5.7.4. Cont'd. ...

Selection	ILL	SPAIN	SRI LANKA	SYRIA					TURKEY	(1) Overall Mean
		Madrid	Dodangolla	Aleppo	Gelline	Idleb	Izra'a	Tel Hadya	Diyarbakir	
FLIP 87- 45L	6235	43	13	32	32	34	19	39	31	32
FLIP 87- 48L	6238	47	17	37	31	28	21	35	22	32
FLIP 87- 52L	6242	50	15	36	31	35	26	36	18	32
FLIP 87- 59L	6249	48	14	35	31	37	23	34	21	33
FLIP 87- 60L	6250	41	18	35	33	31	22	31	29	32
FLIP 87- 63L	6253	43	13	30	33	20	22	28	21	31
HC 125	6408	41	19	33	35	26	24	41	-	36
HC 972	6409	49	18	33	31	28	25	39	26	32
HC 1414	6410	46	18	32	37	35	25	34	-	36
FLIP 88- 6L	6430	47	13	31	35	33	21	36	21	31
FLIP 88- 8L	6432	50	14	31	29	30	24	35	15	30
FLIP 88- 18L	6442	44	14	28	34	33	28	42	27	32
FLIP 88- 31L	6445	53	16	30	32	31	24	35	20	32
FLIP 88- 49L	6473	43	15	33	33	31	22	33	24	31
FLIP 88- 50L	6474	49	16	34	31	34	25	31	25	32
FLIP 88- 51L	6475	45	13	26	31	25	27	44	29	31
Local small	4401	42	10	27	31	25	22	31	25	29
Hurani 1	2130	46	8	25	33	32	22	32	23	30
Local Check		45	-	30	33	32	23	36	27	
Location Mean		**47**	**15**	**32**	**33**	**31**	**24**	**36**	**25**	
S.E. of Mean		0.87	0.47	0.84	0.39	1.31	0.33	1.11	1.54	
L.S.D. at 5% for :										
Checks		3.42	2.87	3.29	1.51	5.15	1.31	4.34	6.04	
T.E. in S.B.		5.92	4.97	5.70	2.62	8.92	2.27	7.52	10.47	
T.E. in D.B.		6.84	6.08	6.59	3.02	10.30	2.62	8.68	12.09	
Checks Vs T.E.		5.59	4.97	5.38	2.47	8.41	2.14	7.09	9.87	
C.V. %		3.23	5.45	4.60	2.03	7.29	2.37	5.39	13.89	

(1) Horsham, Medolla, Jubeiha and Diyarbakir were excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 5.7.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-T during 1987/88.

		AUSTRALIA		BULGARIA		CHINA		CYPRUS		EGYPT		GREECE		IRAN	
		Tomworth		Toshevo		Shanxi		Dromolaxia		Sids		Larissa		Ghazvin	
Selection	ILL	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 468	468	591	15	1815	9	451	27	724	7	778	33	1428	16	47	45
ILL 1939	1939	568	16	2015	6	574	21	791	6	1111	15	1728	7	369	21
Laird	4349	279	39	1015	34	–	–	231	37	370	46	1078	35	99	42
Chilean	4711	70	48	1904	7	126	43	591	12	963	26	969	41	343	26
Fam 370	5486	617	11	815	40	662	18	351	29	815	31	1278	22	277	34
74TA 550	5544	253	41	881	38	353	33	591	13	889	28	1428	14	358	24
78S 26002	5582	847	3	948	36	875	12	1151	3	1815	1	1628	10	243	36
78S 26052	5604	603	12	1237	30	438	28	364	28	630	40	944	42	610	6
FLIP 84- 43L	5714	447	27	881	37	–	–	164	39	1037	21	1278	23	421	15
FLIP 84- 51L	5722	793	4	1570	15	1107	8	364	27	1630	3	1194	26	332	29
FLIP 84- 58L	5728	598	13	1570	14	208	40	404	25	1630	4	1994	1	510	11
FLIP 84- 59L	5729	399	32	881	39	572	22	298	32	1037	24	1028	37	354	25
FLIP 84- 78L	5748	461	26	1815	8	976	10	524	17	1444	6	1378	17	58	44
FLIP 84- 83L	5753	248	42	1615	12	304	36	284	33	778	32	1128	29	302	32
FLIP 84-133L	5803	243	43	2215	3	1337	3	4	46	1222	12	1278	21	380	20
FLIP 85- 38L	5876	659	10	615	43	202	41	1284	2	1037	19	1128	32	154	39
81S 15	5883	418	30	1104	32	93	44	404	24	1074	16	1744	6	721	2
FLIP 86- 16L	6002	933	1	1237	29	290	37	418	23	852	30	1244	24	454	13
FLIP 86- 18L	6004	417	31	81	48	–	–	–	–	926	27	578	48	588	8
FLIP 86- 24L	6010	345	36	1437	20	873	13	444	21	1296	9	994	38	321	30
FLIP 86- 25L	6011	720	6	1304	27	479	26	458	19	–	–	1344	19	854	1
FLIP 86- 30L	6016	309	38	615	44	760	17	–	–	1037	23	978	40	388	19
FLIP 86- 33L	6019	391	33	1481	18	1321	4	84	44	667	37	978	39	391	18
FLIP 86- 35L	6021	699	7	1615	13	186	42	444	22	–	–	1828	3	343	27
FLIP 86- 38L	6024	463	25	1348	23	1190	5	124	42	667	38	828	45	125	41
FLIP 86- 41L	6027	528	20	1437	19	544	23	324	30	1074	18	1144	28	554	9
FLIP 86- 51L	6037	373	34	1770	10	413	30	471	18	630	39	644	47	610	7
FLIP 86- 56L	6042	353	35	1304	26	52	45	244	36	519	43	844	44	643	3
FLIP 87- 9L	6199	470	24	1304	25	257	39	244	35	963	25	1644	9	299	33

Table 5.7.5. Cont'd. ...

Selection	ILL	AUSTRALIA Tomworth Y	AUSTRALIA Tomworth R	BULGARIA Toshevo Y	BULGARIA Toshevo R	CHINA Shanxi Y	CHINA Shanxi R	CYPRUS Dromolaxia Y	CYPRUS Dromolaxia R	EGYPT Sids Y	EGYPT Sids R	GREECE Larissa Y	GREECE Larissa R	IRAN Ghazvin Y	IRAN Ghazvin R
FLIP 87- 45L	6235	266	40	2148	4	1181	6	631	8	778	34	1578	11	547	10
FLIP 87- 48L	6238	914	2	1281	28	867	14	84	45	593	42	1378	18	77	43
FLIP 87- 52L	6242	512	21	1148	31	809	15	124	43	481	44	878	43	365	23
FLIP 87- 59L	6249	732	5	1548	17	1006	9	1364	1	1037	20	1128	30	399	17
FLIP 87- 60L	6250	501	22	2681	2	1411	2	258	34	-	-	1328	20	336	28
FLIP 87- 63L	6253	543	18	2081	5	1583	1	124	41	889	29	1428	15	-	-
HC 125	6408	96	47	1681	11	-	-	538	15	1222	11	1203	25	-	-
HC 972	6409	108	46	2904	1	495	24	444	20	1074	17	1094	33	221	37
HC 1414	6410	162	44	1348	24	309	35	604	11	370	45	828	46	32	46
FLIP 88- 6L	6430	436	29	1548	16	894	11	124	40	1333	7	1828	2	169	38
FLIP 88- 8L	6432	697	8	148	47	432	29	804	5	1259	10	1728	8	154	40
FLIP 88- 18L	6442	568	17	1370	21	807	16	831	4	1630	2	1444	13	465	12
FLIP 88- 31L	6445	592	14	415	46	383	32	324	31	1037	22	1128	31	432	14
FLIP 88- 49L	6473	486	23	748	41	386	31	604	10	1222	13	1028	36	636	4
FLIP 88- 50L	6474	663	9	1015	35	1132	7	204	38	1222	14	1528	12	369	22
FLIP 88- 51L	6475	535	19	1370	22	659	19	578	14	1296	8	1794	5	410	16
Local small	4401	438	28	644	42	490	25	391	26	667	36	1083	34	270	35
Hurani 1	2130	332	37	556	45	324	34	622	9	667	35	1150	27	315	31
Local Check		140	45	1044	33	621	20	533	16	1444	5	1800	4	622	5
Location Mean		456		1259		632		445		990		1280		375	
S.E. of Mean		56.82		129.26		111.92		72.15		117.12		80.51		58.37	
L.S.D.at 5% for :															
Checks		223.03		507.38		439.33		283.19		459.73		316.01		229.10	
T.E. in S.B.		386.30		878.80		760.95		490.50		796.28		547.35		396.81	
T.E. in D.B.		446.06		1014.75		878.67		566.38		919.47		632.03		458.20	
Checks Vs T.E.		364.27		828.66		717.54		462.52		750.85		516.13		374.17	
C.V. %		21.58		17.78		33.36		28.05		21.34		10.90		28.33	
Test > L. Check		21		7		2		3		0		0		0	

Cont'd. ...

Table 5.7.5. Cont'd. ...

		IRAN				JORDAN		LEBANON		MOROCCO		PAKISTAN		POLAND	
		Karaj		Maragah		Jubeiha		Terbol		Settat		Faisalabad(NIAB)		Pulawy	
Selection	ILL	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 468	468	661	14	817	14	383	41	1506	22	–	–	139	43	1134	14
ILL 1939	1939	467	24	967	6	3033	6	2562	1	432	8	389	24	1201	11
Laird	4349	98	44	600	24	550	39	1173	36	519	7	292	28	1098	18
Chilean	4711	619	16	833	12	697	38	1432	26	732	3	278	29	1334	9
Fam 370	5486	731	10	200	44	2100	15	617	45	169	20	708	14	556	35
74TA 550	5544	–	–	817	13	933	34	1006	41	–	–	56	45	793	29
78S 26002	5582	676	12	450	32	3350	2	1062	40	194	18	1375	4	756	32
78S 26052	5604	280	36	983	4	2817	8	1599	17	549	6	486	23	1126	15
FLIP 84- 43L	5714	287	35	400	36	3000	7	2173	2	94	31	208	38	898	25
FLIP 84- 51L	5722	485	22	1033	3	1517	26	1265	32	249	14	903	9	1576	4
FLIP 84- 58L	5728	669	13	883	9	3117	5	1377	30	166	21	278	31	959	21
FLIP 84- 59L	5729	76	45	500	30	1930	19	1617	15	–	–	375	25	1090	19
FLIP 84- 78L	5748	106	43	817	15	63	47	1451	24	24	41	56	46	701	34
FLIP 84- 83L	5753	406	29	967	7	143	46	1340	31	32	39	222	37	1459	6
FLIP 84-133L	5803	628	15	817	16	1033	32	962	43	274	12	889	10	434	41
FLIP 85- 38L	5876	437	27	350	38	1850	23	1728	8	111	26	1292	6	773	31
81S 15	5883	513	18	433	34	–	–	1488	23	–	–	486	22	859	26
FLIP 86- 16L	6002	1385	1	633	22	1767	24	1621	13	82	33	653	17	1259	10
FLIP 86- 18L	6004	120	42	150	46	1450	28	1395	27	219	16	625	19	106	48
FLIP 86- 24L	6010	813	6	733	18	1567	25	1265	33	149	22	278	30	468	40
FLIP 86- 25L	6011	341	33	533	26	1917	20	1554	19	57	37	486	21	551	36
FLIP 86- 30L	6016	809	7	150	47	1000	33	1395	29	194	19	708	16	1423	7
FLIP 86- 33L	6019	439	26	417	35	433	40	1951	6	149	23	1139	7	109	47
FLIP 86- 35L	6021	193	38	400	37	3150	4	1617	14	294	10	1542	2	915	23
FLIP 86- 38L	6024	567	17	317	40	1883	21	1562	18	715	4	806	13	543	38
FLIP 86- 41L	6027	507	19	833	11	–	–	1654	12	1799	1	236	32	501	39
FLIP 86- 51L	6037	385	30	533	27	1097	31	1238	34	591	5	569	20	551	37
FLIP 86- 56L	6042	780	8	533	28	797	36	284	48	82	32	236	33	851	27
FLIP 87- 9L	6199	413	28	1233	2	2117	14	1654	11	24	40	153	40	776	30

Table 5.7.5. Cont'd. ...

Selection	ILL	IRAN Karaj Y	IRAN Karaj R	IRAN Maragah Y	IRAN Maragah R	JORDAN Jubeiha Y	JORDAN Jubeiha R	LEBANON Terbol Y	LEBANON Terbol R	MOROCCO Settat Y	MOROCCO Settat R	PAKISTAN Faisalabad(NIAB) Y	PAKISTAN Faisalabad(NIAB) R	POLAND Pulawy Y	POLAND Pulawy R
FLIP 87- 45L	6235	133	41	867	10	2083	17	1095	39	132	24	-	-	818	28
FLIP 87- 48L	6238	348	32	200	45	360	44	1617	16	102	29	708	15	998	20
FLIP 87- 52L	6242	181	39	300	41	700	37	1506	21	102	28	1292	5	1115	16
FLIP 87- 59L	6249	70	46	350	39	2750	9	1951	5	111	27	875	11	1106	17
FLIP 87- 60L	6250	322	34	667	19	1233	29	1840	7	249	15	-	-	1468	5
FLIP 87- 63L	6253	194	37	567	25	1883	22	1673	9	40	38	56	44	1151	13
HC 125	6408	1006	4	967	5	-	-	951	44	124	25	306	26	1393	8
HC 972	6409	1207	2	783	17	797	35	1154	37	-	-	236	35	2051	2
HC 1414	6410	1154	3	100	48	330	45	351	47	-	-	292	27	1156	12
FLIP 88- 6L	6430	6	47	517	29	2133	13	1673	10	257	13	806	12	359	42
FLIP 88- 8L	6432	704	11	250	43	2700	10	1506	20	336	9	1458	3	906	24
FLIP 88- 18L	6442	502	20	633	23	3317	3	2043	4	74	36	236	36	951	22
FLIP 88- 31L	6445	354	31	300	42	2100	16	1395	28	77	35	208	39	206	44
FLIP 88- 49L	6473	450	25	667	20	1183	30	562	46	865	2	639	18	193	45
FLIP 88- 50L	6474	472	23	667	21	2383	12	1228	35	290	11	1056	8	134	46
FLIP 88- 51L	6475	735	9	433	33	3467	1	2154	3	-	-	236	34	1643	3
Local small	4401	489	21	450	31	1467	27	981	42	208	17	139	42	711	33
Hurani 1	2130	174	40	900	8	2083	18	1148	38	80	34	139	41	303	43
Local Check		976	5	1400	1	2550	11	1444	25	100	30	1806	1	2339	1
Location Mean		493		645		1766		1388		245		590		935	
S.E. of Mean		243.55		103.41		957.72		138.99		1.93		73.49		161.69	
L.S.D. at 5% for :															
Checks		956.01		405.93		3759.29		545.58		7.59		288.48		634.69	
T.E. in S.B.		1655.85		703.09		6511.29		944.97		13.15		499.66		1099.31	
T.E. in D.B.		1912.01		811.85		7518.59		1091.16		15.19		576.96		1269.37	
Checks Vs T.E.		1561.39		662.98		6139.83		891.06		12.40		471.16		1036.60	
C.V. %		85.58		27.75		99.88		17.34		1.53		22.57		29.94	
Test > L. Check		0		0		0		1		24		0		0	

Cont'd. ...

Table 5.7.5. Cont'd. ...

		PORTUGAL		SPAIN		SRI LANKA		SYRIA							
		Elvas		Madrid		Dodangolla*		Aleppo		Gelline		Idleb		Izra'a	
Selection	ILL	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 468	468	1503	28	452	42	–	–	1217	21	525	45	2214	3	310	45
ILL 1939	1939	2683	3	1976	1	–	–	2024	4	2747	4	964	44	1024	7
Laird	4349	1747	20	898	27	–	–	863	42	725	44	1600	16	369	43
Chilean	4711	2130	8	1105	22	–	–	569	46	985	43	1221	34	714	25
Fam 370	5486	657	47	1862	2	23	6	588	45	1318	38	1086	39	619	32
74TA 550	5544	1413	29	599	37	–	–	1210	22	1818	24	1279	30	667	29
78S 26002	5582	1717	21	1212	16	–	–	881	39	2190	13	964	43	690	27
78S 26052	5604	1250	34	1230	15	–	–	1731	12	2271	11	1507	21	964	9
FLIP 84- 43L	5714	1647	24	1197	18	–	–	1917	5	1847	23	807	45	1155	3
FLIP 84- 51L	5722	1520	27	1351	13	8	7	1131	25	1656	28	1557	18	750	21
FLIP 84- 58L	5728	2790	1	1708	5	–	–	645	44	2778	2	1529	19	393	41
FLIP 84- 59L	5729	1127	38	400	44	–	–	1124	26	2168	14	1293	29	226	46
FLIP 84- 78L	5748	2283	6	366	46	4	9	1774	10	1283	39	1886	6	595	34
FLIP 84- 83L	5753	2083	9	564	38	–	–	1217	20	2361	7	1514	20	702	26
FLIP 84-133L	5803	2033	11	1571	9	53	2	1288	19	1518	32	1329	28	631	30
FLIP 85- 38L	5876	1997	13	850	30	–	–	1738	11	1454	35	1150	38	619	31
81S 15	5883	1580	25	563	39	–	–	1574	14	3106	1	2243	2	1250	1
FLIP 86- 16L	6002	1010	41	1633	7	118	1	952	36	2099	16	1600	15	786	17
FLIP 86- 18L	6004	497	48	1130	20	43	3	324	47	1483	33	521	48	440	39
FLIP 86- 24L	6010	1980	14	996	24	–	–	1052	33	1721	26	1700	8	786	16
FLIP 86- 25L	6011	1240	35	686	36	–	–	1595	13	2285	9	614	47	1250	2
FLIP 86- 30L	6016	1927	15	1391	11	–	–	1095	30	1990	20	1357	26	726	23
FLIP 86- 33L	6019	1683	23	208	48	–	–	745	43	1254	41	1164	37	381	42
FLIP 86- 35L	6021	1127	37	1132	19	–	–	1095	29	1683	27	1250	31	833	15
FLIP 86- 38L	6024	1373	30	1641	6	29	5	1345	15	2068	18	2171	4	488	38
FLIP 86- 41L	6027	1850	18	1505	10	–	–	1781	9	2763	3	1700	9	964	10
FLIP 86- 51L	6037	900	43	1251	14	42	4	1202	23	1428	36	1650	13	786	18
FLIP 86- 56L	6042	1020	40	399	45	–	–	1052	32	1813	25	1386	25	1107	6
FLIP 87- 9L	6199	1780	19	930	26	–	–	1345	16	1549	31	679	46	714	24

Table 5.7.5. COnt'd. ...

Selection	ILL	PORTUGAL Elvas Y	PORTUGAL Elvas R	SPAIN Madrid Y	SPAIN Madrid R	SRI LANKA Dodangolla* Y	SRI LANKA Dodangolla* R	SYRIA Aleppo Y	SYRIA Aleppo R	SYRIA Gelline Y	SYRIA Gelline R	SYRIA Idleb Y	SYRIA Idleb R	SYRIA Izra'a Y	SYRIA Izra'a R
FLIP 87- 45L	6235	1873	17	514	41	–	–	1338	17	2118	15	1621	14	881	14
FLIP 87- 48L	6238	2037	10	1050	23	–	–	1895	6	2075	17	1664	11	548	37
FLIP 87- 52L	6242	837	45	1753	3	–	–	881	40	1597	30	1671	10	619	33
FLIP 87- 59L	6249	1187	36	1211	17	–	–	1845	7	1275	40	1079	40	548	36
FLIP 87- 60L	6250	2013	12	1588	8	–	–	1074	31	1247	42	1429	23	560	35
FLIP 87- 63L	6253	1523	26	432	43	–	–	945	37	1640	29	2429	1	738	22
HC 125	6408	1373	31	347	47	5	8	874	41	404	46	1664	12	202	48
HC 972	6409	1700	22	948	25	–	–	888	38	356	47	1707	7	357	44
HC 1414	6410	787	46	865	29	–	–	38	48	133	48	1043	41	226	47
FLIP 88- 6L	6430	1913	16	849	31	–	–	2067	1	2233	12	1579	17	952	12
FLIP 88- 8L	6432	1287	33	1112	21	–	–	1102	27	2054	19	993	42	762	19
FLIP 88- 18L	6442	2230	7	1390	12	–	–	1295	18	2599	5	1343	27	1143	4
FLIP 88- 31L	6445	897	44	750	34	–	–	1102	28	1461	34	1214	35	440	40
FLIP 88- 49L	6473	2473	4	526	40	–	–	2060	2	2583	6	1250	32	1131	5
FLIP 88- 50L	6474	2703	2	807	32	–	–	2052	3	1904	22	2171	5	917	13
FLIP 88- 51L	6475	2400	5	1730	4	–	–	1188	24	2321	8	1457	22	964	11
Local small	4401	997	42	873	28	–	–	955	35	1326	37	1236	33	679	28
Hurani 1	2130	1073	39	718	35	–	–	990	34	1960	21	1188	36	750	20
Local Check		1370	32	784	33	–	–	1812	8	2276	10	1412	24	964	8
Location Mean		1557		996		30		1241		1770		1403		724	
S.E. of Mean		200.72		123.23				120.62		69.70		159.95		42.92	
L.S.D. at 5% for :															
Checks		787.88		483.72				473.47		273.57		627.85		168.49	
T.E. in S.B.		1364.65		837.82				820.07		473.84		1087.46		291.83	
T.E. in D.B.		1575.77		967.43				946.94		547.14		1255.69		336.97	
Checks Vs T.E.		1286.80		790.02				773.29		446.81		1025.42		275.18	
C.V. %		22.32		21.42				16.84		6.82		19.75		10.27	
Test > L. Check		3		8				0		4		0		2	

Table 5.7.5. Cont'd. ...

		SYRIA		TUNISIA				TURKEY						(1) Overall Mean	
		Tel Hadya		Beja		Oued Meliz		Ankara		Diyarbakir		Eskisehir			
Selection	ILL	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 468	468	1557	29	1031	40	–	–	1781	4	417	1	240	16	979	35
ILL 1939	1939	3068	1	1681	18	450	45	844	31	157	15	173	24	1517	1
Laird	4349	1325	35	1189	38	1517	16	469	33	66	37	240	15	894	41
Chilean	4711	1687	22	1006	42	533	42	–	–	–	–	267	8	999	33
Fam 370	5486	2365	10	964	43	1117	27	969	30	259	5	133	32	914	38
74TA 550	5544	854	45	1381	32	600	39	1906	3	237	8	240	17	868	43
78S 26002	5582	1130	39	1714	16	2417	3	781	32	119	23	267	11	1212	14
78S 26052	5604	1331	34	1631	23	2183	6	–	–	–	–	53	39	1207	16
FLIP 84- 43L	5714	2197	11	1814	11	2217	5	1469	9	–	–	–	–	1196	18
FLIP 84- 51L	5722	727	46	1881	9	2033	9	–	–	–	–	–	–	1211	15
FLIP 84- 58L	5728	2069	15	1556	26	2033	8	–	–	97	29	–	–	1346	4
FLIP 84- 59L	5729	712	47	2264	3	1117	26	1219	20	73	36	–	–	927	37
FLIP 84- 78L	5748	632	48	1281	36	1400	18	1531	6	77	35	293	7	1045	30
FLIP 84- 83L	5753	2072	14	1781	12	1100	31	1094	27	84	33	520	1	1170	19
FLIP 84-133L	5803	1663	23	1706	17	400	47	1469	8	–	–	133	33	1089	27
FLIP 85- 38L	5876	2605	5	1239	37	2417	1	1031	29	126	22	147	30	1241	10
81S 15	5883	2665	4	2106	5	1883	10	–	–	–	–	227	18	1357	2
FLIP 86- 16L	6002	1598	27	1456	30	1383	20	–	–	144	16	200	21	1217	12
FLIP 86- 18L	6004	1023	41	914	45	517	43	1406	12	–	–	67	38	573	47
FLIP 86- 24L	6010	1731	21	1556	27	683	37	–	–	97	28	160	26	1055	29
FLIP 86- 25L	6011	2576	7	1881	8	2283	4	–	–	–	–	240	13	1206	17
FLIP 86- 30L	6016	2765	2	1764	14	667	38	1469	10	113	25	–	–	1115	24
FLIP 86- 33L	6019	1432	32	1331	34	550	41	1406	14	170	10	160	27	874	42
FLIP 86- 35L	6021	1841	18	1664	19	817	36	1531	5	86	32	120	34	1150	22
FLIP 86- 38L	6024	1485	31	1531	28	400	46	1281	17	137	21	53	40	1059	28
FLIP 86- 41L	6027	1598	28	1431	31	1183	23	–	–	–	–	413	3	1219	11
FLIP 86- 51L	6037	2149	12	881	46	883	33	–	–	144	17	–	–	981	34
FLIP 86- 56L	6042	1660	24	1081	39	1183	22	–	–	117	24	213	19	896	40
FLIP 87- 9L	6199	1491	30	1781	13	1683	14	–	–	97	27	27	41	1102	25

Table 5.7.5. Cont'd. ...

Selection	ILL	SYRIA Tel Hadya Y	SYRIA Tel Hadya R	TUNISIA Beja Y	TUNISIA Beja R	TUNISIA Oued Meliz Y	TUNISIA Oued Meliz R	TURKEY Ankara Y	TURKEY Ankara R	TURKEY Diyarbakir Y	TURKEY Diyarbakir R	TURKEY Eskisehir Y	TURKEY Eskisehir R	(1) Overall Mean Y	(1) Overall Mean R
FLIP 87- 45L	6235	2081	13	1606	25	1050	32	1906	2	97	30	253	12	1145	23
FLIP 87- 48L	6238	2499	9	1964	6	1117	25	1469	7	239	7	400	4	1243	9
FLIP 87- 52L	6242	1139	38	1614	24	1117	24	1219	21	59	38	213	20	1016	32
FLIP 87- 59L	6249	899	44	1664	20	1867	11	1344	15	266	4	240	14	1150	21
FLIP 87- 60L	6250	1281	37	1356	33	1250	21	1156	24	144	18	80	37	1159	20
FLIP 87- 63L	6253	1343	33	1656	21	1100	28	1156	22	137	20	160	29	1090	26
HC 125	6408	917	43	656	47	1750	13	1469	11	-	-	173	25	907	39
HC 972	6409	1065	40	431	48	883	34	-	-	164	12	267	9	1018	31
HC 1414	6410	1325	36	939	44	517	44	1094	26	106	26	133	31	659	46
FLIP 88- 6L	6430	2579	6	1956	7	1100	30	1406	13	250	6	160	28	1251	8
FLIP 88- 8L	6432	2517	8	2439	1	2417	2	1156	23	139	19	267	10	1271	7
FLIP 88- 18L	6442	1802	20	1731	15	1783	12	-	-	177	9	107	35	1328	5
FLIP 88- 31L	6445	2054	16	1639	22	817	35	1094	25	93	31	333	5	850	44
FLIP 88- 49L	6473	2677	3	2281	2	1500	17	1281	16	170	11	320	6	1214	13
FLIP 88- 50L	6474	2028	17	2256	4	1100	29	1281	19	84	34	93	36	1273	6
FLIP 88- 51L	6475	1660	25	1506	29	1583	15	-	-	157	14	507	2	1349	3
Local small	4401	945	42	1300	35	550	40	1063	28	158	13	178	23	788	45
Hurani 1	2130	1813	19	1817	10	1400	19	1281	18	364	2	182	22	946	36
Local Check		1600	26	1025	41	2100	7	1938	1	362	3	-			
Location Mean		1634		1511		1300		1313		181		211			
S.E. of Mean		227.79		273.65		145.30		162.38		119.45		54.80			
L.S.D. at 5% for :															
Checks		894.13		1074.15		570.33		987.99		468.87		333.40			
T.E. in S.B.		1548.68		1860.48		987.84		1397.23		812.11		577.46			
T.E. in D.B.		1788.26		2148.30		1140.66		1613.38		937.75		707.24			
Checks Vs T.E.		1460.33		1754.34		931.48		1397.44		765.78		577.55			
C.V. %		23.43		31.37		19.77		17.50		139.77		52.08			
Test > L. Check		1		0		0		0		0		0			

(1) Shanxi, Sids, Ghazvin, Jubeiha, Settat, Dodangolla, Ankara, Diyarbakir and Eskisehir were excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different blocks., * = Locations not analysed and thus mean values are unadjusted.

Table 5.7.6. The five heaviest seed yielding entries at the individual locations in the LISN-T during 1987/88.

	AUSTRALIA	BULGARIA	CHINA	CYPRUS	EGYPT	GREECE	IRAN		
Rank	Tamworth	Toshevo	Shanxi	Dromolaxia	Sids	Larissa	Ghazvin	Karaj	Maragah
1	FLIP86- 16L	HC 972	FLIP87- 63L	FLIP87- 59L	78S 26002	FLIP84- 58L	FLIP86- 25L	FLIP86- 16L	Local Check
2	FLIP87- 48L	FLIP87- 60L	FLIP87- 60L	FLIP85- 38L	FLIP88- 18L	FLIP88- 6L	81S 15	HC 972	FLIP87- 9L
3	78S 26002	FLIP84-133L	FLIP84-133L	78S 26002	FLIP84- 51L	FLIP86- 35L	FLIP86- 56L	HC 1414	FLIP84- 51L
4	FLIP84- 51L	FLIP87- 45L	FLIP86- 33L	FLIP83- 13L	FLIP84- 58L	Local Check	FLIP88- 49L	HC 125	78S 26052
5	FLIP87- 59L	FLIP87- 63L	FLIP86- 38L	FLIP88- 8L	Local Check FLIP84- 78L	FLIP88- 51L	Local Check	Local Check	HC 125 ILL 1939 FLIP84- 83L

Cont'd. ...

Table 5.7.6. Cont'd. ...

	JORDAN	LEBANON	MOROCCO	PAKISTAN	POLAND	PORTUGAL	SPAIN	SRI LANKA	SYRIA
Rank	Jubeiha	Terbol	Settat	NIAB	Pulawy	Elvas	Madrid	Dodangolla	Aleppo T.H.
1	FLIP88- 51L	ILL 1939	FLIP86- 41L	Local Check	Local Check	FLIP84- 58L	ILL 1939	FLIP86- 16L	FLIP86- 6L
2	78S 26002	FLIP84- 43L	FLIP88- 49L	FLIP86- 35L	HC 972	FLIP88- 50L	Fam 370	FLIP84-133L	FLIP88- 49L
3	FLIP88- 18L	FLIP88- 51L	Chilean	FLIP88- 8L	FLIP88- 51L	ILL 1939	FLIP87- 52L	FLIP86- 18L	FLIP88- 50L
4	FLIP86- 35L	FLIP88- 18L	FLIP86- 38L	78S 26002	FLIP84- 51L	FLIP88- 49L	FLIP88- 51L	FLIP86- 51L	ILL 1939
5	FLIP84- 58L	FLIP87- 59L FLIP86- 33L	FLIP86- 51L	FLIP87- 52L FLIP85- 38L	FLIP87- 60L	FLIP88- 51L	FLIP84- 58L	FLIP86- 38L	FLIP84- 43L

Cont'd. ...

Table 5.7.6. Cont'd. ...

	SYRIA				TUNISIA		TURKEY		
Rank	Gelline	Idleb	Izra'a	Tel Hadya	Beja	Oued Meliz	Eskisehir	Diyarbakir	Ankara
1	81S 15	FLIP87- 63L	81S 15	ILL 1939	FLIP88- 8L	FLIP85- 38L	Local Check	ILL 468	FLIP84- 83L
2	FLIP84- 58L	81S 15	FLIP86- 25L	FLIP86- 30L	FLIP88- 49L	FLIP88- 8L	FLIP87- 45L	Hurani 1	FLIP88- 51L
3	FLIP86- 41L	ILL 468	FLIP84- 43L	FLIP88- 49L	FLIP84- 59L	78S 26002	74TA 550	Local Check	FLIP86- 41L
4	ILL 1939	FLIP86- 38L	FLIP88- 18L	81S 15	FLIP88- 50L	FLIP86- 25L	ILL 468	FLIP87- 59L	FLIP87- 48L
5	FLIP88- 18L	FLIP88- 50L	FLIP88- 49L	FLIP85- 38L	81S 15	FLIP84- 43L	FLIP86- 35L	Fam 370	FLIP88- 31L FLIP84- 78L

The brackets indicate entries having the same rank.

5.8. LENTIL INTERNATIONAL F_3 TRIAL (LIF_3T)

Material

The material for the Lentil International F_3 Trial comprised of 23 F_3 populations (test entries) and one local check. The test entries were supplied and a local check was to be added by the cooperator. These F_3 populations originated from single crosses and were expected to release a wide genetic base upon which the selection can be practiced by the cooperators under their local environmental conditions.

Methods and Management

The randomized complete block design with two replications was suggested. The suggested plot size was four rows 4 m long, spaced 25cm apart, accomodating 640 seeds/plot.

Nineteen sets of LIF_3T were sent to cooperators in 12 countries and the results were received for 14 sets from 10 countries. The agronomic data pertaining to different locations are presented in Table 5.8.1.

Results and Discussion

The mean time to flowering (Table 5.8.2) ranged from 45 days (at Grob-Enzersdorf in Austria) to 151 days (at Ramtha in Jordan). The population X86S 182 was the earliest (flowering in 87 days) and was followed by X86S 131, X86S 6, and X86S 52 (flowering in 88 to 90 days). The location means and entry means for time to maturity ranged from 80 to 192 days and 135 to 139 days, respectively (Table 5.8.3).

The location mean for plant height (Table 5.8.4) ranged from 19cm at Ghazvin in Iran to 52 cm at Marchouch in Morocco, and the population X86S 131 was the tallest.

The seed yield and rank of entries at different locations are given in Table 5.8.5. The highest mean yield was recorded at Gemmeza in Egypt (2690 kg/ha) and was followed by Ramtha in Jordan (1763 kg/ha), Homs in Syria (1690 kg/ha), and Marchouch in Morocco (1684 kg/ha). Six, 6 and 4 entries at Homs and Tel Hadya in Syria, and Eskisehir in Turkey exceeded the respective local check by a significant margin. On the basis of average seed yield over locations the population X86S52 ranked number 1 and was followed by X86S215, X86S57, X86S185, and X86S169 with seed yields of 1356, 1292, 1272, 1258 and 1255 kg/ha, respectively. The five heaviest seed yielding entries are given in Table 5.8.6. The populations X86S 215, X86S 57, and X86S 52 occured most frequently among the top five heavy yielders and were more adaptable.

Table 5.8.1. Agronomic data for different locations in the LIF3T during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
ALGERIA	Sidi Bel Abbes	25.11.87	15.06.88	-			-	-	-
AUSTRIA	Grob-Enzersdorf	05.05.88	16.08.88	25	60		-	Tribunil	Lenka
EGYPT	Gemmeza	07.12.87	15.05.88	36	72		1	Topogard	Giza - 370
IRAN	Ghazvin	13.04.88	30.06.88	-			-	-	Ziba
ITALY	Gaudiano	16.02.88	05.07.88	25	78		-	-	VN (Prov. Nenosa)
ITALY	Medolla	10.03.88	05.07.88	40	100		-	Pirimicarb	CZ (Prov. Lavello)
JORDAN	Ramtha	02.11.87	14.05.88	20	40		-	-	UJL 176
MOROCCO	Marchouch	21.11.87	03.06.88	28	54	28	-	-	L 24
SYRIA	Homs	20.01.88	15.06.88		50		-	-	Hurani
SYRIA	Izra'a	19.01.88	15.06.88	12	36		-	-	Hurani
SYRIA	Tel Hadya	24.11.87	20.05.88		50		-	Kerb, Igran	ILL 4401
TUNISIA	Beja	11.11.87	NA	NA			NA	NA	ILL 4606
TURKEY	Ankara	25.03.88	20.07.88	30	70		-	-	-
TURKEY	Eskisehir	06.04.88	20.06.88	30	70		-	-	Sultan - 1

NA = Not available.

Table 5.8.2. Time to flowering (days) of entries at different locations in the LIF3T during 1987/88.

Cross No. X86S	Female Parent Entry Name	ILL	Origin	Male Parent Entry Name	ILL	Origin	AUSTRIA Grob-Enzersdorf	EGYPT Gemmeza	IRAN Ghazvin
6	74TA 441	5538	Mexico	78S 26052	5604	Turkey	44	79	56
14	74TA 550	5544	Syria	-	975	Chile	44	103	54
17	78S 26013	5588	Jordan	FLIP84- 63L	5733	ICARDA	45	103	54
31	74TA 138	5513	Morocco	Local	4354	Jordan	45	98	56
44	78S 26011	5587	Jordan	81S 15	5883	Jordan	45	100	54
52	FLIP85- 37L	5875	ICARDA	UJL 176	5426	Jordan	45	93	52
57	83S 99	-	Jordan	Local Sel.	4354	Jordan	46	93	53
59	FLIP84- 29L	5700	ICARDA	Local Sel.	4354	Jordan	45	98	55
63	FLIP84-109L	5799	ICARDA	UJL 176	5426	Jordan	44	93	52
128	-	468	Chile	FLIP84-147L	5816	ICARDA	45	106	58
131	-	468	Chile	FLIP86- 12L	5998	ICARDA	45	73	53
140	Kurdi 1	2126	Syria	FLIP85- 2L	5840	ICARDA	46	107	58
145	Loc. Large	4400	Syria	FLIP84- 28L	5752	ICARDA	46	96	55
149	Loc. Large	4400	Syria	FLIP84-148L	5817	ICARDA	46	103	58
169	74TA 276	5527	Hungary	FLIP84-148L	5817	ICARDA	46	102	58
180	78S 26002	5582	Jordan	FLIP85- 2L	5840	ICARDA	45	98	53
182	78S 26002	5582	Jordan	FLIP86- 15L	6001	ICARDA	45	79	52
185	FLIP84- 26L	5698	ICARDA	FLIP84- 82L	5752	ICARDA	45	95	52
196	FLIP84- 75L	5745	ICARDA	FLIP84- 82L	5752	ICARDA	45	98	55
215	-	1939	Morocco	FLIP84- 44L	5715	ICARDA	48	102	59
258	78S 26013	5588	Jordan	FLIP86- 26L	6012	ICARDA	45	100	56
263	78S 26052	5604	Turkey	FLIP84-109L	5779	ICARDA	48	98	55
266	78S 26052	5604	Turkey	FLIP84-135L	5805	ICARDA	47	100	58
Local Check							46	94	58
Location Mean							45	96	55
S.E. of Mean							0.33	3.58	0.81
L.S.D. at 5%							0.96	10.49	2.37
C.V. %							1.02	5.28	2.08
Error df							23	23	23
Significance							*	*	*

Cont'd. ...

Table 5.8.2. Cont'd. ...

Cross No. X86S	ITALY	JORDAN	MOROCCO	SYRIA			TURKEY	Overall Mean
	Medolla	Ramtha	Marchouch	Homs	Izra'a	Tel Hadya	Ankara	
6	69	151	115	89	88	137	72	90
14	69	152	122	89	88	136	74	93
17	69	155	135	92	89	142	71	95
31	68	151	122	96	89	138	71	93
44	67	153	122	90	88	137	71	93
52	69	151	115	87	86	135	71	90
57	69	151	118	89	86	137	71	91
59	69	153	125	91	88	136	73	93
63	69	150	122	87	87	133	71	91
128	69	151	130	93	91	142	72	96
131	69	146	122	86	86	127	72	88
140	69	153	127	93	90	139	71	95
145	69	153	115	90	87	137	71	92
149	69	152	120	91	90	138	71	94
169	69	151	127	92	90	138	73	94
180	69	152	122	89	88	137	72	92
182	67	146	113	87	86	127	72	87
185	69	152	115	86	85	135	73	91
196	69	152	115	91	88	136	72	92
215	69	154	128	92	88	140	71	95
258	69	152	122	94	88	138	72	93
263	69	151	125	89	88	136	71	93
266	70	153	122	89	88	137	72	93
Local Check	72	151	115	91	89	137	-	
Location Mean	69	151	121	90	88	136	72	
S.E. of Mean	0.20	0.83	0.05	1.26	0.65	0.66	0.72	
L.S.D. at 5%	0.60	2.44	0.15	3.68	1.91	1.93	-	
C.V. %	0.42	0.78	0.06	1.98	1.05	0.68	1.43	
Error df	23	23	23	23	23	23	22	
Significance	*	*	*	*	*	*	NS	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.8.3. Time to maturity (days) of entries at different locations in the LIF3T during 1987/88.

Cross No. X86S	EGYPT	IRAN	ITALY	JORDAN	MOROCCO	SYRIA			TURKEY		Overall Mean
	Gemmeza	Ghazvin	Medolla	Ramtha	Marchouch	Homs	Izra'a	Tel Hadya	Ankara	Eskisehir	
6	151	77	114	190	182	127	128	178	114	93	135
14	149	77	116	193	182	126	130	177	116	93	136
17	151	77	118	192	182	128	131	178	115	93	136
31	151	76	119	191	182	131	131	179	114	94	137
44	149	80	119	192	182	131	130	177	115	95	137
52	152	78	114	192	182	130	130	176	114	92	136
57	150	78	116	192	182	133	131	183	115	94	137
59	152	78	115	193	182	133	131	180	116	95	137
63	148	78	118	190	187	127	129	177	114	92	136
128	155	90	116	191	182	133	133	177	115	97	139
131	151	83	114	192	182	133	132	176	115	95	137
140	156	87	119	194	182	133	133	178	115	95	139
145	150	77	116	193	182	132	133	177	114	95	137
149	152	85	115	193	182	129	132	179	115	96	138
169	149	82	114	192	182	128	130	180	116	97	137
180	148	76	118	193	182	131	132	176	115	94	136
182	150	77	116	190	182	132	132	178	115	96	137
185	153	76	118	192	187	126	127	177	116	94	136
196	156	78	118	193	182	133	133	178	114	95	138
215	155	80	119	192	187	126	129	178	114	93	137
258	156	87	116	191	187	128	131	177	115	93	138
263	150	77	114	189	187	127	130	178	114	93	136
266	151	86	118	192	187	128	132	178	114	94	138
Local Check	153	81	117	190	182	128	126	176	–	97	
Location Mean	151	80	116	192	183	130	130	178	115	94	
S.E. of Mean	3.18	1.92	0.63	1.03	0.05	0.97	1.26	0.32	0.81	0.63	
L.S.D. at 5%	–	5.62	1.83	–	0.15	2.85	3.68	0.93	–	1.83	
C.V. %	2.97	3.40	0.76	0.76	0.04	1.06	1.37	0.25	1.00	0.94	
Error df	23	23	23	23	23	23	23	23	22	23	
Significance	NS	*	*	NS	*	*	*	*	NS	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.8.4. Plant height (cm) of entries at different locations in the LIF3T during 1987/88.

Cross No. X86S	AUSTRIA	EGYPT	IRAN	ITALY		MOROCCO	SYRIA			Overall Mean
	Grob-Enzersdorf	Gemmeza	Ghazvin	Gaudiano	Medolla	Marchouch	Homs	Izra'a	Tel Hadya	
6	19	40	19	29	40	55	35	25	39	33
14	24	44	17	30	28	48	33	21	40	31
17	25	49	17	31	45	57	37	25	42	36
31	24	48	18	31	50	49	35	25	40	35
44	25	48	19	31	53	60	34	28	41	37
52	22	50	19	30	30	50	34	24	41	33
57	28	55	19	35	30	55	34	28	50	37
59	27	52	19	30	40	53	33	27	40	35
63	20	40	18	25	33	47	33	23	36	30
128	28	49	19	35	40	48	35	27	42	36
131	34	51	20	38	38	57	36	30	47	39
140	22	49	19	28	40	50	34	27	35	34
145	20	52	19	27	43	50	32	25	40	34
149	29	51	19	30	40	54	33	27	37	35
169	27	46	18	30	50	50	33	26	35	35
180	28	44	18	29	45	48	34	26	42	35
182	30	37	19	34	50	54	33	26	42	36
185	22	45	19	25	38	50	30	24	41	33
196	23	58	20	29	30	50	32	25	37	34
215	22	51	19	31	35	55	38	28	47	36
258	22	39	19	25	45	49	33	23	39	32
263	20	37	18	29	30	58	36	24	35	32
266	23	50	23	31	40	51	33	24	36	34
Local Check	33	42	18	29	70	61	31	27	36	
Location Mean	25	47	19	30	41	52	34	25	40	
S.E. of Mean	1.66	4.92	1.15	0.71	1.11	3.11	0.65	1.22	2.79	
L.S.D. at 5%	4.86	–	–	2.07	3.24	–	1.89	3.56	8.17	
C.V. %	9.53	14.92	8.76	3.34	3.83	8.41	2.72	6.79	9.93	
Error df	23	23	23	23	23	23	23	23	23	
Significance	*	NS	NS	*	*	NS	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.8.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIF3T during 1987/88.

Cross No. X86S	ALGERIA Sidi Bel Abbes		AUSTRIA Grob-Enzersdorf		EGYPT Gemmeza		IRAN Ghazvin		JORDAN Ramtha		MOROCCO Marchouch	
6	55	21	661	20	2444	17	322	8	1253	22	1589	17
14	70	9	993	14	1500	24	236	19	1220	24	1528	18
17	59	17	1492	3	2417	18	258	15	1233	23	1622	16
31	47	24	1228	6	3583	2	272	12	1807	11	1083	22
44	70	11	1147	8	2750	12	228	20	2043	7	1989	4
52	85	4	1001	13	3986	1	203	23	2070	6	1950	6
57	57	19	1418	5	3333	4	244	18	2417	2	1689	14
59	78	7	1010	12	2681	14	228	21	2150	4	2164	1
63	94	2	482	24	1806	21	217	22	2033	8	1906	8
128	71	8	1630	1	3000	10	344	5	1267	21	847	24
131	70	12	719	17	3278	5	269	13	1433	18	1461	19
140	57	18	729	16	1625	23	394	3	1423	19	1047	23
145	67	13	888	15	2986	11	258	14	1783	12	1886	10
149	67	14	1089	10	3083	7	347	4	1917	10	1336	21
169	81	6	1141	9	3069	8	336	7	1920	9	1403	20
180	63	15	674	18	2111	19	278	11	1733	13	1778	12
182	62	16	1160	7	1639	22	131	24	1450	17	1942	7
185	70	10	1017	11	3361	3	339	6	1700	14	1769	13
196	52	23	1438	4	3194	6	247	17	1350	20	1981	5
215	84	5	573	22	3042	9	297	9	2193	3	2019	2
258	53	22	604	21	2486	16	256	16	1657	15	1867	11
263	86	3	513	23	2611	15	297	10	2112	5	1900	9
266	56	20	674	19	2736	13	497	2	1463	16	1989	3
Local Check	113	1	1615	2	1833	20	542	1	2693	1	1675	15
Location Mean	69		996		2690		293		1763		1684	
S.E. of Mean	One Rep.		156.04		629.47		61.25		330.91		247.49	
L.S.D. at 5%			457.56		–		179.23		–		–	
C.V. %			22.16		33.10		29.52		26.54		20.78	
Error df			23		23		23		23		23	
Significance			*		NS		*		NS		NS	
Ent. > L. Check			0		–		0		–		–	

Cont'd. ...

Table 5.8.5. Cont'd. ...

Cross No. X86S	SYRIA						TURKEY				Overall Mean	
	Homs		Izra'a		Tel Hadya		Ankara		Eskisehir			
6	1491	15	856	17	1225	15	81	19	836	8	983	20
14	1410	17	631	24	525	24	131	11	1008	2	841	23
17	1831	9	881	16	1050	19	69	22	703	20	1056	17
31	2029	6	956	11	1213	17	75	20	922	6	1201	6
44	2225	2	838	19	950	23	100	13	781	11	1193	7
52	1671	12	900	14	1900	1	184	5	969	3	1356	1
57	1184	22	1013	4	1363	10	200	1	1070	1	1272	3
59	1380	20	981	8	1575	6	69	21	727	18	1186	8
63	2188	3	806	20	1638	4	99	15	750	14	1092	15
128	2050	5	988	5	1288	14	63	23	625	24	1107	13
131	1350	21	950	12	1650	3	150	8	680	21	1092	16
140	1468	16	988	6	988	21	138	10	781	12	876	22
145	1496	14	844	18	1300	12	94	16	742	15	1122	12
149	1884	8	975	10	1475	7	86	18	633	23	1172	10
169	2675	1	1056	3	1213	16	181	6	734	16	1255	5
180	1543	13	981	7	1350	11	169	7	719	19	1036	18
182	1169	23	763	22	975	22	106	12	656	22	914	21
185	2121	4	975	9	1438	9	138	9	914	7	1258	4
196	1394	18	881	15	1638	5	100	14	758	13	1185	9
215	1925	7	1244	2	1725	2	188	4	922	5	1292	2
258	1143	24	694	23	1450	8	194	2	820	9	1020	19
263	1819	10	775	21	1288	13	194	3	945	4	1140	11
266	1724	11	925	13	1100	18	88	17	789	10	1095	14
Local Check	1394	19	1331	1	1025	20	–	–	727	17		
Location Mean	1690		926		1306		126		800			
S.E. of Mean	210.04		89.18		180.16		37.27		70.08			
L.S.D. at 5%	614.59		260.94		527.14		–		205.05			
C.V. %	17.58		13.62		19.51		41.89		12.38			
Error df	23		23		23		22		23			
Significance	*		*		*		NS		*			
Ent. > L. Check	6		0		6		–		4			

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.8.6. The five heaviest seed yielding entries at the individual locations in the LIF3T during 1987/88.

Rank	ALGERIA Sidi Bel - Abbes	AUSTRIA Grob - Enzersdorf	EGYPT Gemmeza	IRAN Ghazvin	JORDAN Ramtha	MOROCCO Marchouch
	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.
1	Local Check	X86S 128	X86S 52	Local Check	Local Check	X86S 59
2	X86S 63	Local Check	X86S 31	X86S 266	X86S 57	X86S 215
3	X86S 263	X86S 17	X86S 59	X86S 140	X86S 215	X86S 266
4	X86S 52	X86S 196	X86S 57	X86S 149	X86S 59	X86S 44
5	X86S 215	X86S 57	X86S 131	X86S 128	X86S 263	X86S 196

Cont'd. ...

Table 5.8.6. Cont'd. ...

Rank	SYRIA Homs	SYRIA Izra'a	TUNISIA Beja	TURKEY Ankara	TURKEY Eskisehir
	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.
1	X86S 169	Local Check	X86S 52	X86S 57	X86S 57
2	X86S 44	X86S 215	X86S 215	X86S 258	X86S 14
3	X86S 63	X86S 169	X86S 131	X86S 263	X86S 52
4	X86S 185	X86S 57	X86S 63	X86S 215	X86S 263
5	X86S 128	X86S 128] X86S 140]	X86S 196	X86S 52	X86S 215] X86S 31]

The brackets indicate entries having the same rank.

5.9. LENTIL INTERNATIONAL F_3 TRIAL- EARLY (LIF_3T-E)

Material

The material for the Lentil International F_3 Trial-Early comprised of 23 F_3 populations and one check. The F_3 populations were supplied and the local check was to be added by the cooperator. These populations were derived from the divergent crosses and were expected to release a wide genetic base upon which the selection can be practiced by the cooperators under their local environmental conditions.

Methods and Management

The randomized complete block design with 2 replications was suggested. The suggested plot size was 4 rows, each 4 m long accomodating 640 seeds per plot. The between row spacing was suggested to be 25 cm.

Twenty sets of trial were distributed to cooperators in 13 countries. However, the results were received back for 7 sets. The agronomic data received from the cooperators are presented in Table 5.9.1.

Results and Discussion

The data on time to flowering (Table 5.9.2) revealed that the populations flowered earliest at Dhamar in Yemen in 61 days and latest at Tel Hadya in Syria in 129 days. The range in time to flowering for entries varied from 83 days for X86S 108, X86S 118 and X86S 122 to 99 days for X86S30. The earlier flowering crosses were not necessarily earlier in maturity (Table 5.9.3). At almost all the locations some of the populations were earlier in flowering than the respective local check. The plant height (Table 5.9.4) was maximum at Settat in Morocco (47cm). Across locations, the populations, X86S 122, X86S 211 and X86S 117 were among the tallest with height of 42-43cm.

The seed yields and ranks of different entries are given in Table 5.9.5. The seed yield at Dhamar in Yemen was highest (1469 kg/ha) and was followed by Sids in Egypt (1394 kg/ha). The LSD estimates revealed that at Settat in Morocco, 21 entries, exceeded the respective local check by a significant margin.

5.10. LENTIL INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (LIABN)

Material

The LIABN included 31 test entries, one local check to be supplied by the cooperator and one repeated susceptible check. The test entries have been selected on the basis of their reaction to Ascochyta blight

Table 5.9.1. Agronomic data for different locations in the LIF3T-E during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
EGYPT	Sids	25.11.87	NA	48	72		2	-	Giza - 370
INDIA	New Delhi	30.11.87	30.04.88	20	40		2	Metasystox	L - 4163
MOROCCO	Settat	18.11.87	30.04.88	20	50		-	-	L - 24
PAKISTAN	Faisalabad (AARI)	09.11.87	NA	25	60		3	-	Masoor - 85
PAKISTAN	Faisalabad (NARC)	NA	NA	NA			NA	NA	NA
SYRIA	Tel Hadya	24.11.87	30.06.88		50		-	Kerb, Bladex	ILL 4401
YEMEN	Dhamar	03.02.88	11.06.88	30	60		7	-	NA

NA = Not available.

Table 5.9.2. Time to flowering (days) of entries at diferent locations in the LIF3T-E during 1987/88.

Cross No. X86S	Female Parent Entry Name	ILL	Origin	Male Parent Entry Name	ILL	Origin	EGYPT Sids
30	UJL 176	5426	Jordan	74TA 264	5523	Greece	91
45	Precoz	4605	Argentina	FLIP84-148L	5817	ICARDA	71
49	Precoz	4605	Argentina	UJL 176	5426	Jordan	70
58	FLIP84- 29L	5700	ICARDA	Precoz	4605	Argentina	73
82	LP 286	4377	India	Precoz	4605	Argentina	71
88	162	4403	Pakistan	Precoz	4605	Argentina	69
96	Pant-L406	2501	India	FLIP86- 17L	6003	ICARDA	72
97	Pant-L406	2501	India	FLIP86- 19L	6005	ICARDA	69
99	Pant-L639	2573	India	FLIP86- 15L	6001	ICARDA	67
108	LG 41	3516	India	FLIP86- 17L	6003	ICARDA	67
109	LG 41	3516	India	FLIP86- 19L	6005	ICARDA	68
117	Fam 370	5486	Egypt	FLIP86- 15L	6001	ICARDA	68
118	Fam 370	5486	Egypt	FLIP86- 17L	6003	ICARDA	68
119	Fam 370	5486	Egypt	FLIP86- 19L	6005	ICARDA	69
121	FLIP84-112L	5782	ICARDA	FLIP86- 15L	6001	ICARDA	68
122	FLIP84-112L	5782	ICARDA	FLIP86- 17L	6003	ICARDA	67
123	FLIP84-112L	5782	ICARDA	FLIP86- 19L	6005	ICARDA	68
124	FLIP84-112L	5782	ICARDA	FLIP86- 21L	6007	ICARDA	68
211	FLIP84- 78L	5748	ICARDA	FLIP86- 12L	5998	ICARDA	70
219	-	1939	Morocco	FLIP84-112L	5782	ICARDA	76
228	74TA 441	5538	Mexico	FLIP84-112L	5782	ICARDA	77
255	78S 26013	5588	Jordan	FLIP84-112L	5782	ICARDA	75
300	81S 15	5883	Jordan	FLIP84-112L	5782	ICARDA	75
Local Check							75
Location Mean							71
S.E. of Mean							1.10
L.S.D. at 5%							3.23
C.V. %							2.19
Error df							23
Significance							*

Cont'd. ...

Table 5.9.2. Cont'd. ...

Cross No. X86S	INDIA Delhi	MOROCCO Settat	PAKISTAN Faisalabad	SYRIA Tel Hadya	YEMEN Dhamar	Overall Mean
30	94	92	117	137	62	99
45	74	107	99	125	59	89
49	76	96	89	129	62	87
58	74	96	112	127	56	89
82	66	92	98	126	60	85
88	72	92	97	126	59	86
96	75	92	87	126	60	85
97	75	96	93	125	61	86
99	71	105	91	125	62	87
108	65	92	96	124	58	83
109	73	92	91	125	60	85
117	74	94	95	127	62	86
118	66	96	83	127	60	83
119	69	94	92	126	60	85
121	71	92	93	126	60	85
122	70	94	81	126	58	83
123	67	94	94	125	60	85
124	71	94	83	126	62	84
211	72	94	92	126	62	86
219	92	96	114	140	68	98
228	96	92	115	140	62	97
255	90	107	106	137	62	96
300	92	105	108	137	62	96
Local Check	79	98	103	137	58	
Location Mean	76	96	97	129	61	
S.E. of Mean	3.73	One Rep.	1.02	1.05	0.50	
L.S.D. at 5%	10.92		2.98	3.08	1.47	
C.V. %	6.96		1.49	1.15	1.18	
Error df	23		23	23	23	
Significance	*		*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.9.3. Time to maturity (days) of entries at different locations in the LIF3T-E during 1987/88.

Cross No. X86S	INDIA Delhi	MOROCCO Settat	SYRIA Tel Hadya	YEMEN Dhamar	Overall Mean
30	138	153	180	110	145
45	123	155	180	103	140
49	128	153	180	110	143
58	122	153	179	100	138
82	121	153	178	105	139
88	120	153	180	100	138
96	106	153	180	105	136
97	120	153	179	108	140
99	115	155	180	110	140
108	110	153	178	100	135
109	115	153	180	105	138
117	123	153	180	110	141
118	118	153	180	105	139
119	114	153	180	105	138
121	110	153	180	105	137
122	108	153	184	100	136
123	108	153	179	105	136
124	113	153	179	110	139
211	108	153	181	110	138
219	135	159	180	115	147
228	138	153	179	110	145
255	128	155	178	110	143
300	135	155	180	110	145
Local Check	127	163	178	100	
Location Mean	120	154	179	106	
S.E. of Mean	4.54	One Rep.	0.38	0.82	
L.S.D. at 5%	13.27		1.10	2.40	
C.V. %	5.35		0.30	1.09	
Error df	23		23	23	
Significance	*		*	*	

* = Significant at $P \leq 0.05$.

Table 5.9.4. Plant height (cm) of entries at different locations in the LIF3T-E during 1987/88.

Cross No. X86S	INDIA Delhi	MOROCCO Settat	SYRIA Tel Hadya	YEMEN Dhamar	Overall Mean
30	30	48	48	44	40
45	27	47	41	37	37
49	28	48	38	34	36
58	30	47	42	31	36
82	31	43	40	33	35
88	32	47	36	30	36
96	36	39	40	43	39
97	32	49	39	34	38
99	28	47	38	36	37
108	26	47	37	37	37
109	28	52	39	37	39
117	34	50	43	42	42
118	33	48	45	39	40
119	31	42	44	35	36
121	31	46	45	32	36
122	34	48	36	47	43
123	38	50	42	37	41
124	36	48	38	41	41
211	40	48	49	39	42
219	25	49	38	39	38
228	25	51	37	31	36
255	27	45	40	41	38
300	32	48	44	36	38
Local Check	32	45	35	24	
Location Mean	31	47	40	36	
S.E. of Mean	2.75	2.79	2.22	1.32	
L.S.D. at 5%	8.04	-	6.49	3.85	
C.V. %	12.61	8.41	7.78	5.12	
Error df	23	23	23	23	
Significance	*	NS	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 5.9.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIF3T-E during 1987/88.

Cross No. X86S	EGYPT Sids		INDIA Delhi		MOROCCO Settat		YEMEN Dhamar		Overall Mean	
30	1500	7	44	23	496	14	1150	19	798	17
45	1389	16	125	13	453	17	1390	16	839	15
49	1833	1	125	11	499	13	1665	8	1031	3
58	1111	22	81	18	573	11	1083	20	712	21
82	833	23	131	10	465	16	935	23	591	23
88	1667	3	169	6	373	20	1403	15	903	12
96	1389	17	206	2	600	8	748	24	736	19
97	1389	18	119	15	703	4	1584	9	948	7
99	1194	20	156	8	478	15	1528	13	839	16
108	1444	14	94	17	579	10	1708	7	956	6
109	1667	4	169	7	581	9	1820	5	1059	2
117	1500	8	125	12	564	12	1535	12	931	9
118	1778	2	119	14	424	18	1436	14	939	8
119	1500	9	200	4	716	2	955	22	843	14
121	1222	19	200	3	626	7	1830	4	970	5
122	56	24	119	16	631	6	1563	11	592	22
123	1500	10	181	5	638	5	1058	21	844	13
124	1500	11	75	20	705	3	1363	17	911	10
211	1667	5	145	9	730	1	1913	2	1114	1
219	1444	15	44	22	403	19	1728	6	905	11
228	1194	21	44	24	185	22	1565	10	747	18
255	1667	6	75	19	363	21	1913	3	1004	4
300	1500	12	63	21	109	23	1218	18	722	20
Local Check	1500	13	294	1	55	24	2163	1		
Location Mean	1394		129		498		1469			
S.E. of Mean	One Rep.		22.03		88.77		280.66			
L.S.D. at 5%			64.47		259.74		–			
C.V. %			24.11		25.22		27.03			
Error df			23		23		23			
Significance			*		*		NS			
Ent. > L. Check			0		21		–			

* = Significant at $P \leq 0.05$, NS = Not significant.

tested in Lattakia in Syria and Islamabad in Pakistan.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 4 m long accomodating 200 seeds. The susceptible check was repeatedly sown after every two test entries/rows to serve as an indicator cum spreader row. The cooperators in the Mediterranean region were advised to sow the nursery in the winter season to get high disease pressure. Otherwise the nurseries were managed as per the local agronomic practices. In the absence of natural infestation, the cooperators were advised to do the artificial inoculation of the nursery with the blight disease either by scattering the diseased debris collected from the previous season or by supplementing the natural infection by spraying the spore suspension prepared from the freshly infected plants in the fields. A 1-9 scale was recommended for scoring the disease severity at least at two times, first in the vegetative stage and the second at the podding stage. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Seventeen sets of LIABN were distributed to cooperators in 12 countries, and the data were, however, received for 5 sets. Out of these the ascochyta score was recorded only at one location, Debre Zeit in Ethiopia, and presented here.

Results and Discussion

Only one entry FLIP 84-85L with rating of 3 was found as resistant and all other entries were susceptible (Table 5.10.1).

5.11. LENTIL INTERNATIONAL COLD TOLERANCE NURSERY (LICIN)

Material

The LICIN included 16 test entries, one local check and one susceptible repeated check. The test entries have been selected on the basis of their reaction to cold in Italy and high elevation site in Turkey.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was two rows each 4 m long accomodating 400 plants. The susceptible check was repeatedly sown after every two test entries/rows to serve as an indicator row. The cooperators in the Mediterranean region were advised to sow the nursery early into the winter to get better expression of cold. Otherwise the nurseries were managed as per the local agronomic practices. It was suggested to record the number of plants germinated before the onset of severe winter.

Table 5.10.1. Reaction of entries to ascochyta blight in LIABN during 1987/88.

Entry Name	Acc. No.	Pedigree	Origin	ETHIOPIA Debre Zeit
ILL 358	ILL 358	-	Mexico	-
ILL 2439	ILL 2439	-	Egypt	8
Pant L 406	ILL 2501	-	India	-
S 30116	ILL 2532	-	India	9
LWS 3	ILL 2590	-	India	9
LG 41	ILL 3516	-	India	9
Silaim	ILL 1861	-	Sudan	9
UJL-81129	ILL 5244	-	Jordan	8
Lenka	ILL 5480	-	Czechoslovakia	8
76TA 66005	ILL 5562	-	Jordan	9
78S 26002	ILL 5582	-	Jordan	9
78S 26013	ILL 5588	-	Jordan	-
78S 26018	ILL 5590	-	Jordan	9
78S 26033	ILL 5597	-	Syria	8
78S 26038	ILL 5599	-	Syria	-
78S 26052	ILL 5604	-	Turkey	9
FLIP 84- 43L	ILL 5714	ILL 500XILL 1719	ICARDA	9
FLIP 84- 44L	ILL 5715	ILL 500XILL 1719	ICARDA	9
FLIP 84- 51L	ILL 5722	ILL 883XILL 470	ICARDA	8
FLIP 84- 55L	ILL 5725	ILL 610XILL 784	ICARDA	-
FLIP 84- 58L	ILL 5728	ILL 39XILL 479	ICARDA	8
FLIP 84- 80L	ILL 5750	ILL 502XILL 1719	ICARDA	9
FLIP 84- 85L	ILL 5755	ILL 445XILL 470	ICARDA	3
FLIP 84- 95L	ILL 5765	ILL 39XILL 321	ICARDA	9
FLIP 84- 96L	ILL 5766	ILL 101XILL 321	ICARDA	9
FLIP 84-139L	ILL 5809	ILL 500XILL 1719	ICARDA	9
FLIP 85- 33L	ILL 5871	ILL 176XILL 35	ICARDA	9
FLIP 86- 12L	ILL 5998	ILL 4349XILL 4605	ICARDA	9
FLIP 86- 21L	ILL 6007	ILL 4349XILL 4605	ICARDA	9
FLIP 86- 39L	ILL 6025	ILL 1XILL 936	ICARDA	9
FLIP 86- 51L	ILL 6037	ILL 4349XILL 4605	ICARDA	9
Local Check				8
Pant L 538	ILL 2500	(Repeated Susceptible Check)	India	9

Table 5.11.1. Reaction of entries to cold tolerance LICTN during 1987/88.

Entry Name	Origin	BULGARIA Toshevo	IRAN Oroumieh	SPAIN Madrid
ILL 52	Iraq	7	7	1
ILL 298	Greece	9	7	2
ILL 312	Greece	5	7	2
ILL 323	Yugoslavia	7	3	1
ILL 465	Chile	8	7	2
ILL 468	Chile	8	7	1
ILL 590	Turkey	9	7	2
ILL 632	Turkey	5	5	2
ILL 662	Turkey	5	5	2
ILL 759	Iran	5	7	1
ILL 780	Syria	6	7	3
ILL 857	Algeria	9	7	1
ILL 983	Chile	9	7	1
ILL1878	Turkey	5	7	4
ILL1918	Austria	7	7	1
ILL4400	Syria	8	7	2
Local Check	-	8	7	1
ILL 4605		9	7	5

(Susceptible check repeated after every 2 test entries).

A 1-9 scale was recommended for scoring the cold severity at different stages of cold occurence. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Fifteen sets of LICIN were distributed to cooperators in nine countries, however, results were received for 8 sets.

Results and Discussion

Out of eight locations returning the data, the cold tolerance was recorded only at three locations (Table 5.11.1) and the results are discussed below:

Bulgaria: The nursery was conducted at Toshevo. Five entries, ILL 312, ILL 632, ILL 662, ILL 759 and ILL 1878 showed tolerant reaction and all others were susceptible.
Iran: The nursery was conducted at Orumieh. One entry ILL 323 was rated as resistant and two others, ILL 632 and ILL 662, as tolerant. All other entries were susceptible.
Spain: The nursery was conducted at Madrid. The susceptible check was rated at 5. Thus no conclusive inferences were made at this site.

On the basis of reaction across locations two entries namely ILL 632 and ILL 662 showed tolerant reaction.

6. PEA INTERNATIONAL ADAPTATION TRIAL (PIAT)

Introduction

An adaptation trial on peas was initiated this season. The improved genotypes were collected from different countries and distributed to the national programs for testing under their own environments for their suitability and potential. The cooperators were free to use these materials in their breeding programs or for release as cultivars.

Material

The material for the Pea International Adaptation Trial comprised 23 test entries, and one local check to be supplied by the cooperator. The test entries were selected from the local and regional yield trials based on their superior yield performance.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was four rows each 4m long with an inter- and intra row spacing of 30- and 10cm, respectivley.

Sixteen sets of trial were distributed to cooperators in 13 countries and the results were returned from 9 sets covering 8

Table 6.1. Agronomic data for different locations in the PIAT during 1987/88.

Country	Location	Planting Date	Harvesting Date	Fertilizer (Kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
CHILE	Graneros	28.05.88	13.12.88	39	100		–	–	Perfected Freezer
ETHIOPIA	Holetta	21.06.88	10.11.88	28	100		–	–	G 22763-2C
LEBANON	Terbol	01.12.87	07.06.88		50		–	Kerb, Igran	NA
PERU	La Molina	26.08.88	05.12.88	0			2	–	Pasco 002
SPAIN	Valladolid	16.11.87	15.07.88	0	60		–	–	Frisson
SUDAN	Shambat	14.11.87	10.02.88	98	31		S*	–	Entry No. 3
SYRIA	Jindiress	21.11.87	20.05.88		50		–	Primor, Bravo, Novacron	ACC 223
SYRIA	Tel Hadya	11.12.87	10.05.88		50		–	Primor, Bravo	ACC 223

NA = Not available, S* = Frequent irrigation depending upon weather conditions.

Table 6. 2. Time to flowering (days) of entries at different locations in the PIAT during 1987/88.

Entry Name	Origin	CHILE	ETHIOPIA	LEBANON	PERU	SPAIN	SUDAN	SYRIA	Overall Mean
		Graneros	Holetta	Terbol	La Molina	Valla - dolid	Shambat	Tel Hadya	
Facima	U.K.	130	67	130	34	152	76	134	103
Petit Provincale	U.K.	129	43	122	25	157	44	119	91
Sudan Local	Sudan	151	62	130	33	160	54	134	103
Baf	France	127	57	128	37	158	65	132	101
Consort	U.K.	129	62	130	39	157	52	132	100
BS3	U.K.	128	47	119	23	170	44	119	93
Midinette	U.K.	133	58	122	20	177	44	119	97
Meteor	U.K.	145	58	122	18	182	44	119	98
Douce Province	U.K.	126	43	122	20	157	44	117	99
Span	U.K.	128	70	122	26	177	44	122	98
Scout	U.K.	128	58	126	34	174	51	126	100
Progress No. 9	U.K.	131	54	122	23	157	44	128	94
Ballet	U.K.	134	65	130	43	166	54	134	103
Brandon	U.K.	131	61	130	40	175	51	133	103
Progreta	U.K.	127	64	129	40	177	54	138	104
MG 100452	Unknown	135	58	128	40	167	54	128	102
MG 102699	India	132	72	132	48	177	73	137	110
Derrimut	Australia	128	62	126	38	152	62	131	100
Pennant	Australia	130	57	124	35	170	51	125	99
Dundale	Australia	131	67	130	45	170	63	134	106
Echo	U.K.	141	62	130	35	159	58	132	102
Lincoln	U.K.	133	67	132	41	157	76	134	106
Syrian Local (Aleppo)	Syria	130	73	143	48	175	74	140	112
Local Check		135	73	132	45	160	-	135	
Location Mean		132	61	123	35	166	55	129	
S.E. of Mean		0.88	3.96	0.53	3.67	One Rep.	2.87	0.83	
L.S.D. at 5%		2.51	9.46	1.52	10.45		8.18	2.35	
C.V. %		1.16	9.25	0.72	18.42		8.96	1.11	
Error d.f.		46	23	46	46		44	46	
Significance		*	*	*	*		*	*	

* = Significance at $P \leq 0.05$.

Table 6.3. Time to maturity (days) of entries at different locations in the PIAT during 1987/88.

Entry Name	CHILE	ETHIOPIA	LEBANON	PERU	SUDAN	SYRIA	Overall Mean
	Graneros	Holetta	Terbol	La Molina	Shambat	Tel Hadya	
Facima	182	117	173	74	110	178	139
Petit Provincale	164	104	167	53	91	169	125
Sudan Local	172	111	173	71	108	176	136
Baf	182	112	171	70	107	176	137
Consort	183	107	170	68	99	174	133
BS3	175	119	168	51	84	171	128
Midinette	175	102	169	51	88	169	126
Meteor	175	118	168	48	88	168	127
Douce Province	171	103	168	52	98	170	127
Span	187	105	175	54	92	170	130
Scout	182	107	171	63	99	177	133
Progress No. 9	182	106	179	56	99	175	133
Ballet	182	108	175	76	111	178	138
Brandon	175	105	175	62	110	172	133
Progreta	183	117	177	79	113	178	141
MG 100452	185	127	171	66	103	177	138
MG 102699	175	125	174	81	113	179	141
Derrimut	182	126	172	77	114	176	141
Pennant	175	108	170	64	109	173	133
Dundale	172	118	171	84	113	179	140
Echo	180	113	172	65	106	177	135
Lincoln	170	109	177	78	115	178	138
Syrian Local (Aleppo)	170	139	177	84	113	179	143
Local Check	182	142	178	87	–	179	
Location Mean	177	114	172	67	104	175	
S.E. of Mean	1.14	6.69	0.95	3.68	1.49	0.92	
L.S.D. at 5%	3.24	15.97	2.71	10.46	4.23	2.62	
C.V. %	1.11	8.27	0.96	9.46	2.48	0.91	
Error d.f.	46	23	46	46	44	46	
Significance	*	*	*	*	*	*	

* = Significant at $P \leq 0.05$.

Table 6.4. Plant height (cm) of entries at different locations in the PIAT during 1987/88.

Entry Name	CHILE	ETHIOPIA	LEBANON	SPAIN	SUDAN	SYRIA	Overall Mean
	Graneros	Holetta	Terbol	Valladolid	Shambat	Tel Hadya	
Facima	54	51	52	70	29	25	47
Petit Provincale	40	25	32	55	28	25	34
Sudan Local	38	41	42	60	44	21	41
Baf	57	55	56	65	36	23	49
Consort	51	55	48	50	50	34	48
BS3	76	45	51	60	34	34	50
Midinette	45	30	52	30	33	24	36
Meteor	64	30	39	40	30	23	38
Douce Province	39	33	42	40	35	25	36
Span	48	43	40	50	28	24	39
Scout	47	45	59	50	42	24	45
Progress No. 9	52	38	40	40	23	17	35
Ballet	37	58	48	70	48	30	48
Brandon	48	53	59	60	53	27	50
Progreta	67	66	54	70	48	23	55
MG 100452	61	104	87	130	58	47	81
MG 102699	50	139	77	120	56	36	79
Derrimut	62	133	75	90	74	34	78
Pennant	39	58	69	110	70	41	64
Dundale	43	165	85	100	73	48	86
Echo	51	42	46	80	47	31	50
Lincoln	61	53	49	60	34	21	46
Syrian Local (Aleppo)	49	164	84	130	62	38	88
Local Check	69	143	57	70	-	32	
Location Mean	52	69	56	71	45	29	
S.E. of Mean	1.68	11.23	4.26	One Rep.	4.29	2.51	
L.S.D. at 5%	4.79	26.82	12.11		12.23	7.13	
C.V. %	5.61	22.90	13.15		16.51	14.73	
Error d.f.	46	23	46		44	46	
Significance	*	*	*		*	*	

* = Significant at $P \leq 0.05$.

Table 6. 5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the PIAT during 1987/88.

Entry Name	ARGENTINA Mendoza		CHILE Graneros		ETHIOPIA Holetta		LEBANON Terbol		PERU La Molina	
	Y	R	Y	R	Y	R	Y	R	Y	R
Facima	396	4	3333	12	187	10	2195	10	417	2
Petit Provincale	51	19	3507	10	16	21	1766	21	109	21
Sudan Local	451	1	1659	23	241	9	2688	5	302	8
Baf	431	3	4493	3	114	14	1812	18	198	16
Consort	153	13	3715	9	119	13	2206	9	380	6
BS3	38	20	4271	4	298	8	1451	24	146	18
Midinette	198	9	2795	18	15	22	1755	22	125	20
Meteor	152	14	3229	15	15	23	1810	19	78	23
Douce Province	167	12	3298	13	22	19	1944	16	78	24
Span	125	15	2396	21	86	17	1558	23	78	22
Scout	188	10	3820	7	18	20	2022	12	214	13
Progress No. 9	208	8	2743	20	7	24	5247	1	141	19
Ballet	382	5	2743	19	131	11	1963	15	323	7
Brandon	24	22	3230	14	30	18	2016	13	208	14
Progreta	174	11	4549	2	330	7	2015	14	385	5
MG 100452	59	18	2951	16	568	5	2667	6	234	12
MG 102699	31	21	3993	6	1159	2	2172	11	167	17
Derrimut	10	24	4637	1	623	4	2618	7	474	1
Pennant	64	17	2257	22	131	12	2722	4	297	9
Dundale	17	23	1528	24	945	3	2534	8	401	3
Echo	333	6	4042	5	90	16	1854	17	286	10
Lincoln	243	7	3785	8	108	15	4062	2	203	15
Syrian Local (Aleppo)	125	16	2916	17	542	6	2778	3	396	4
Local Check	438	2	3437	11	1229	1	1770	20	271	11
Location Mean	186		3305		293		2318		246	
S.E. of Mean	51.44		658.77		142.23		533.86		66.45	
L.S.D. at 5%	146.43		-		339.81		1519.64		189.15	
C.V. %	47.97		34.52		68.74		39.90		46.73	
Error d.f.	46		46		23		46		46	
Significance	*		NS		*		*		*	
Entry > L. Check	0		-		0		2		1	

Cont'd. ...

Table 6.5. Cont'd. ...

Entry Name	SPAIN		SUDAN		SYRIA				Overall Mean	
	Valladolid		Shambat		Jindiress		Tel Hadya			
	Y	R	Y	R	Y	R	Y	R	Y	R
Facima	2491	7	77	22	1106	9	1717	13	1179	18
Petit Provincale	–	–	2217	7	626	16	1986	9	1285	13
Sudan Local	6030	1	2357	5	1378	2	2446	2	1440	3
Baf	1953	11	870	16	681	15	1766	12	1296	12
Consort	2535	6	3177	1	1033	11	2160	6	1618	1
BS3	–	–	1510	12	502	23	1240	20	1182	17
Midinette	–	–	1933	8	622	17	1321	18	1095	22
Meteor	–	–	1917	9	570	19	1145	21	1114	20
Douce Province	–	–	1463	13	569	20	1345	17	1111	21
Span	2795	5	707	17	539	22	661	23	768	23
Scout	–1	–	1853	10	615	18	1497	16	1278	14
Progress No. 9	–1	–	930	15	228	24	457	24	1245	16
Ballet	3243	3	2383	4	1367	3	1994	8	1410	8
Brandon	–1	–	2480	2	1065	10	1556	15	1326	11
Progreta	3196	4	1407	14	931	13	1259	19	1381	9
MG 100452	1367	15	1760	11	1293	5	2679	1	1526	2
MG 102699	740	16	33	23	1111	8	2024	7	1667	10
Derrimut	1758	13	370	20	933	12	1800	11	1433	5
Pennant	1499	14	2453	3	1154	7	2398	4	1434	4
Dundale	1993	10	203	21	1354	4	2206	5	1149	19
Echo	3965	2	2250	6	881	14	1675	14	1426	6
Lincoln	2110	9	483	19	543	21	756	22	1273	15
Syrian Local (Aleppo)	2152	8	637	18	1589	1	2424	3	1426	7
Local Check	1866	12	–	–	1200	6	1826	10		
Location Mean	2431		1455		912		1681			
S.E. of Mean	326.99		225.81		134.18		283.70			
L.S.D. at 5%	944.30		643.60		381.94		807.55			
C.V. %	22.83		26.88		25.48		29.24			
Error d.f.	30		44		46		46			
Significance	*		*		*		*			
Entry > L. Check	4		14		1		1			

(1) Valladolid was excluded from the overall mean.
* = Significance at $P \leq 0.05$, NS = Not significant.

Table 6. 6. The five heaviest seed yielding entries at the individual locations in the PIAT during 1987/88.

Rank	ARGENTINA Mendoza	CHILE Graneros	ETHIOPIA Holetta
1	Sudan Local	Derrimut	Local Check
2	local Check	Progreta	MG 102699
3	Baf	Baf	Dundale
4	Facima	BS3	Derrimut
5	Ballet	Echo	MG 100452

Cont'd. ...

Table 6. 6. Cont'd. ...

Rank	LEBANON Terbol	PERU La Molina	SPAIN Valladolid
1	Progress No.9	Derrimut	Sudan Local
2	Lincoln	Facima	Echo
3	Syrian Local (Aleppo)	Dundale	Ballet
4	Pennant	Syrian Local (Aleppo)	Progreta
5	Sudan Local	Progreta	Span

Cont'd. ...

Table 6. 6. Cont'd. ...

Rank	SUDAN Shambat	SYRIA Jindiress	SYRIA Tel Hadya
1	Consort	Syrian Local (Aleppo)	MG 100452
2	Brandon	Sudan Local	Sudan Local
3	Pennant	Ballet	Syrian Local (Aleppo)
4	Ballet	Dundale	Pennant
5	Sudan Local	MG 100452	Dundale

countries. The agronomic practices employed at different locations are shown in Table 6.1.

Results and Discussion

Mean for time to flowering, time to maturity, plant height, and 100-seed weight are compiled in Tables 6.2 , 6.3 and 6.4 , respectively. Time to flowering ranged from 91 days for Petit Provincale to 112 days for Syrian Local Aleppo. The location means for time to flowering varied from 35 days at La Molina in Peru to 166 days at Valladolid in Spain. In general, the locations which flowered earlier were also earlier in maturity. The time to maturity ranged from 125 days to 143 days. The entry Petit Provincale matured earliest in 125 days and was closely followed by Midinette, Douce Province, Meteor and BS3 maturing between 125 and 128 days.

The plant height data revealed that the entry Syrian Local Aleppo was the tallest (88 cm) and Petit Provincale was the shortest (34cm).

The mean seed yield at different locations (Table 6.5) revealed that highest seed yield per hectare was obtained at Granada in Chile (3305 kg/ha) and was followed by Valladolid in Spain (2481 kg/ha). The seed yields at Holetta in Ethiopia (293 kg/ha) and La Molina in Peru (246 kg/ha) were very low. The ANOVA of the seed yield revealed that 2, 1, 4, 14, 1 and 1 entries, respectively, at Terbol in Lebanon, La Molina in Peru, Valladolid in Spain, Shambat in Sudan, and Jindiress and Tel Hadya in Syria out-yielded the respective local check by a significant margin. The five heaviest yielders at different locations are given in Table 6.6. Three entries, Sudan local, Ballet and Dundale occured most frequently among the top five heaviest yielders and were comparatively more stable.

7. INTERNATIONAL AGRONOMY TRIALS

7.1. INTERNATIONAL FERTILITY-RHIZOBIUM EVALUATION TRIAL (IFRT)

Introduction

The IFRT was planned to study the response of faba bean, lentil and chickpea to the application of fertilizer nutrients under different agro-ecological conditions in the region. The objectives of this trial have been to investigate:

(i) whether there is a need for application of phosphate and potash,
(ii) whether the naturalized Rhizobia present in the soil were effective or there was a need for artificial inoculation,
(iii) whether the symbiotic nitrogen fixation was adequate in meeting the nitrogen need of crop,
(iv) whether the symbiotic nitrogen fixation as reflected in terms of crop performance can be improved with starter nitrogen dressing,
(v) whether the symbiotic nitrogen fixation is affected by the application of phosphorous and/or potassium.

Material and Methods

The basic set of fertility treatments was the same for all the three crops. These consisted of: (i) farm fertility, (ii) farm fertility + nitrogen at 100 kg/ha, (iii) farm fertility + phosphate at 80 kg/ha + potash at 60 kg/ha, (iv) farm fertility + potash at 60 kg/ha + phosphate at 80 kg/ha + nitrogen at 100 kg/ha.

The trial was designed as a randomized complete block with four replications. The cooperators could reduce the replications to three if land was limiting. The suggested plot size was 13.5 m2 (2.7m x 5.0m). The net plot for harvesting was suggested to be comprised of the central rows leaving one row at either side of the plot and 0.5m at either end of row as border.

7.1.1. CHICKPEA INTERNATIONAL FERTILITY-RHIZOBIUM EVALUATION TRIAL (CIFRT)

Results and Discussion

Twenty two trials were sent to cooperators in 13 countries and seven of the cooperators reported the results.

The trial conducted in Phillipines failed. Out of the remaining six locations reporting the results, ANOVA for seed yield was significant only for Adana location in Turkey (Table 7.1.1). The treatments with nitrogen gave significantly higher yields as compared to farm fertility and farm fertility with phosphate and potash.

Table 7.1.1. Seed yield (Y=kg/ha) and rank (R) and nodule weight (N/W=g/plot) for different fertilizer-cum inoculation treatments in CIFRT at different locations during 1987/88.

Treatment	Symbol	AFGHANISTAN				ETHIOPIA					
		Kabul		Bulkh		Denbi		Ginchi			
		Y	R	Y	R	Y	R	Y	R	N/W	R
Farm Fertility	T1	635	1	597	3	1078	1	2234	4	20	1
Farm Fertility + Nitrogen at 100 kg/ha	T2	608	3	602	2	1061	2	2243	3	3	4
Farm Fertility + Phosphate at 80 kg/ha + Potash at 60 kg/ha	T3	635	2	565	4	966	4	2311	2	18	2
Farm Fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha + Nitrogen at 100 kg/ha	T4	387	4	629	1	1031	3	2450	1	13	3
Location Mean		556		598		1034		2309		13	
S.E. of Mean		104.00		75.59		100.41		81.73		6.58	
L.S.D. at 5%		-		-		-		-		-	
C.V. %		36.76		25.27		19.42		7.08		100.19	
Error d.f.		9		9		9		9		9	
Significance		NS		NS		NS		NS		NS	

Cont'd. ...

Table 7.1.1. Cont'd. ...

Treatment	JORDAN		TURKEY				Overall Mean	
	Taiba		Adana					
	Y	R	Y	R	N/W	R	Y	R
T1	1149	3	1929	4	0.20	2	1270	2
T2	806	4	2788	2	0.09	4	1351	4
T3	1478	1	2195	3	0.20	1	1358	3
T4	1180	2	2871	1	0.10	3	1424	1
Location Mean	1153		2446		0.15			
S.E. of Mean	393.65		188.07		0.02			
L.S.D. at 5%	-		601.64		0.05			
C.V. %	59.12		15.38		21.99			
Error d.f.	6		9		9			
Significance	NS		*		*			

* = Significant at $P \leq 0.05$, NS = Not significant.

7.1.2. FABA BEAN INTERNATIONAL FERTILITY-RHIZOBIUM EVALUATION TRIAL (FBIFRT)

Results and Discussion

Eight trials were sent to different cooperators in six countries but the results were received from only two locations. Out of these two trials the trial at Phillipines failed and at Taiba in Jordan the ANOVA for seed yield revealed non significant differences among treatment means (Table 7.1.2.).

7.1.3. LENTIL INTERNATIONAL FERTILITY- RHIZOBIUM EVALUATION TRIAL (LIFRT)

Results and Discussion

Eighteen trials were sent to cooperators in 13 countries and the results were received from only one location, Dobroudja in Bulgaria. The ANOVA for seed yield revealed that differences between treatments were not significant.

7.2. INTERNATIONAL INOCULATION RESPONSE TRIAL (IRT)

Introduction

The Inoculation Response Trial was planned to be conducted where a need to inoculate exhists. The purpose of the trial has been to evaluate crop yield response to inoculation with chosen superior strains of rhizobia.

Material and Methods

The basic set of treatments was the same for all the three crops except for different Rhizobium strains for three different crops. The treatments included, i) T_1 - 120 kg N/ha + 80 kg P_2O_5/ha + 60 kg K_2O/ha. ii) T_2 = 80 kg P_2O_5/ha + 60 kg K_2O/ha. iii) T_3 = Same as at No. 2 + Inoculation of seed with strain 1. iv) T_4 = Same as at No. 2 + Inoculation of seed with strain 2. v) T_5 = Same as at No. 2 + Inoculation of seed with Strain 3.

The details of strains for chickpea, lentil and faba bean are given as under:

Table 7.1.2. Seed yield (Y=kg/ha) and rank (R) for various treatments in FBIFRT at Taiba in Jordan during 1987/88.

Treatment	Symbol	Y	R
Farm fertility	T1	673	3
Farm fertility + Nitrogen at 100 kg/ha	T2	783	1
Farm fertility + Phosphate at 80 kg/ha + Potash at 60 kg/ha	T3	612	4
Farm fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha + Nitrogen at 100 kg/ha	T4	704	2
Location Mean		693	
S.E. of Mean		198.37	
L.S.D. at 5%		-	
C.V. %		49.59	
Error d.f.		6.00	
Significance		NS	

NS = Not significant.

Table 7.1.3. Seed yield (Y=kg/ha) and rank (R) and nodule weight (N/W=g/plot) for different fertilizer-cum inoculation treatments in LIFRT at Dobroudja in Bulgaria during 1987/88.

Treatment	Symbol	Y	R	N/W	R
Farm fertility	T1	1074	4	0.07	4
Farm fertility + Nitrogen at 100 kg/ha	T2	1208	1	0.09	3
Farm fertility + Phosphate at 80 kg/ha + Potash at 60 kg/ha	T3	1076	3	0.14	1
Farm fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha + Nitrogen at 100 kg/ha	T4	1156	2	0.13	2
Location Mean		1128		0.11	
S.E. of Mean		77.31		0.04	
L.S.D. at 5%		-		-	
C.V. %		13.70		68.90	
Error df		9		9	
Significance		NS		NS	

NS = Not significant.

Crop	Strain 1 (No.)	Strain 2 (No.)	Strain 3 (No.)
Chickpea	31	36	39
Lentil	420	452	481
Faba bean	735	719	726

The trial was designed as a randomized complete block with four replications. The cooperators could reduce the replications to three if land was limiting. The suggested plot size was 13.5 m^2 (2.7m x 5.0m). The net plot for harvesting was suggested to be comprised of the central rows leaving one row at either side of the plot and 0.5 m at either end of row as borders.

7.2.1. CHICKPEA INTERNATIONAL RHIZOBIUM INOCULATION RESPONSE TRIAL (CIRT)

Results and Discussion

Ninteen trials were sent to cooperators in 12 countries. At three of locations, in Jordan, Phillipines and Portugal, either the trial failed or was not planted. The results from four locations reporting yield data (Table 7.2.1) revealed that treatment differences were not significant.

7.2.2. FABA BEAN INTERNATIONAL RHIZOBIUM INOCULATION RESPONSE TRIAL (FBIRT)

Results and discussion

The trial was sent to cooperators in eight countries but the results were received from only two locations, Taiba in Jordan, and Dhamar in Yemen. The ANOVA for seed yield revealed significant differences among treatment means only at Dhamar in Yemen (Table 7.2.2). The treatment T5 (Inoculation with strain no. 481) gave significantly higher seed yield than treatment T2 and T1. This showed that strain no. 481 was the best for this area.

7.2.3. LENTIL INTERNATIONAL RHIZOBIUM INOCULATION RESPONSE TRIAL (LIRT)

Results and Discussion

Fifteen trials were sent to cooperetors in 12 countries. Out of 4 locations reporting the results, only at two locations, Dobroudja (Bulgaria) and Alte Brown (Argentina), the differences between

Table 7.2.1. Seed Yield (Y=kg/ha) and rank (R) and nodule weight (N/W=g/plot) for different fertilizer-cum inoculation treatments in CIRT at different locations during 1987/88.

Treatment	Symbol	ETHIOPIA				JORDAN		TURKEY				Overall Mean	
		Denbi		Ginchi		Taiba		Adana					
		Y	R	Y	R	Y	R	Y	R	N/W	R	Y	R
120 kg N/ha + 80 kg P2O5/ha + 60 kg K2O/ha	T1	1638	3	2702	1	1030	1	1687	5	0.13	5	1764	2
80 kg P2O5/ha + 60 kg K2O/ha	T2	1608	4	2594	2	840	2	1897	1	0.32	1	1735	3
Same as T2 + Inoculation of seed with Chickpea Rhizobium Strain No. 31	T3	1722	2	2503	3	664	4	1860	4	0.21	3	1688	4
Same as T2 + Inoculation of seed with Chickpea Rhizobium Strain No. 36	T4	1505	5	2413	5	655	5	1869	2	0.30	2	1610	5
Same as T2 + Inoculation of seed with Chickpea Rhizobium Strain No. 39	T5	2064	1	2431	4	734	3	1868	3	0.21	4	1774	1
Location Mean		1724		2528		785		1836		0.24			
S.E. of Mean		168.71		130.99		82.81		94.34		0.04			
L.S.D. at 5%		-		-		-		-		0.13			
C.V. %		19.58		10.36		18.28		8.90		29.02			
Error d.f.		12		12		8		8		8			
Significance		NS		NS		NS		NS		*			

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 7.2.2. Seed Yield (Y=kg/ha) and rank (R) for different fertilizer-cum inoculation treatments in FBIRT at different locations during 1987/88.

Treatment	Symbol	JORDAN Taiba		YEMEN Dhamar		Overall Mean	
		Y	R	Y	R	Y	R
120 kg N/ha + 80 kg P2O5/ha + 60 kg K2O/ha	T1	684	2	4167	2	2426	2
80 Kg P2O5/ha + 60 kg K2O/ha	T2	721	1	2986	5	1854	5
Same as T2 + Inoculation of seed with Faba Bean Rhizobium Strain No. 420	T3	547	4	3797	3	2172	3
Same as T2 + Inoculation of seed with Faba Bean Rhizobium Strain No. 452	T4	506	5	3264	4	1885	4
Same as T2 + Inoculation of seed with Faba Bean Rhizobium Strain No. 481	T5	585	3	4965	1	2775	1
Location Mean		609		3836			
S.E. of Mean		178.46		131.03			
L.S.D. at 5%		–		403.76			
C.V. %		50.79		6.83			
Error d.f.		8		12			
Significance		NS		*			

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 7.2.3. Seed Yield (Y=kg/ha) and rank (R) and nodule weight (N/W=g/plot) for different fertilizer-cum inoculation treatments in LIRT at different locations during 1987/88.

Treatment	Symbol	BULGARIA Dobroudja		JORDAN Marow	
		Y	R	Y	R
120 kg N/ha + 80 kg P2O5/ha + 60 kg K2O/ha	T1	1163	5	671	4
80 kg P2O5/ha + 60 kg K2O/ha	T2	1348	2	620	5
Same as T2 + Inoculation of seed with Lentil Rhizobium Strain No. 735	T3	1366	1	704	2
Same as T2 + Inoculation of seed with Lentil Rhizobium Strain No. 719	T4	1213	4	778	1
Same as T2 + Inoculation of seed with Lentil Rhizobium Strain No. 726	T5	1257	3	676	3
Location Mean		1269		690	
S.E. of Mean		46.45		88.80	
L.S.D. at 5%		143.14		-	
C.V. %		7.32		22.30	
Error df		12		8	
Significance		*		NS	

Cont'd. ...

Table 7.2.3. Cont'd. ...

Treatment	INDIA		ARGENTINA				Overall Mean	
	Pantnagar		Alte Brown					
	Y	R	Y	R	N/W	R	Y	R
T1	2465	1	117	5	4.37	4	1104	5
T2	2396	2	335	3	9.80	1	1175	4
T3	2396	3	309	4	8.00	2	1194	1
T4	2222	5	563	1	3.43	5	1194	2
T5	2292	4	541	2	6.60	3	1192	3
Location Mean	2354		373		6.44			
S.E. of Mean	116.81		63.78		1.39			
L.S.D. at 5%	-		196.54		4.28			
C.V. %	9.92		34.18		43.14			
Error d.f.	12		12		12			
Significance	NS		*		*			

* = Significanct at $P \leq 0.05$, NS = Not significnat.

treatments were significant (Table 7.2.3). The natural rhizobium at Dobroudja (Bulgaria) seemed to be as efficient as strain No. 735. However, at Alte Brown Strain No. 719 gave significantly higher yield than Treatment T_2 with natural Rhizobium.

7.3. INTERNATIONAL WEED CONTROL TRIALS (WCT)

Introduction

The trial aimed at finding out the magnitude of yield loss that occurs in faba bean, lentil and chickpea crops due to the presence of herbicides. It also aimed at assessing the relative merit of some selected herbicides under different agro-ecological conditions in these crops.

Material and Methods

The basic treatments involved weedy check, weed free by repeated hand weeding, hand weeding twice (30-40, 70-80 days after emergence) and herbicide application treatments. The details of these treatments are given in the appropriate tables.

The trials were designed as randomized complete blocks with four replications. The plot size for each trial was 18.0 m2 (3.6 m x 5.0 m). At harvest time the two outside rows and 0.5 m at either end of the central rows were discarded. Thus the seed yields described in this report are based on the central rows of 4 m length.

7.3.1. CHICKPEA INTERNATIONAL WEED CONROL TRIAL (CWCT)

Results and Discussion

Thirty one trials were distributed to cooperators in 13 countries and the results were received from 9 locations in 6 countries. The trial at Adana in Turkey failed. At Bulkh in Afghanistan, Dahmouni in Algeria, and Eskisehir in Turkey the ANOVA for seed yield revealed the non-significant differences among treatment means (Table 7.3.1).

Afghanistan: At kabul, two treatments, T6 (Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha) and T12 (Pre-emergence application of methabenzthiazuron (Tribunil) at 3.0 kg a.i./ha plus pronamide at 0.3 kg a.i./ha) gave significantly higher yield over the weedy check.
Italy: At Tarquinia, five of the weedicide treatments, T4, T11, T9, T5 and T10 gave significantly higher yield than the weedy check. The weed weight was also the least in treatment T11.
Portugal: At Elvas five treatments, T11, T9, T5, T4 and T8 gave significantly higher yield than the weedy check. The weed weight was

Table 7.3.1. Seed yield (Y=kg/ha) and rank (R), weed weight (W/W=g/plot) and phytotoxicity score (S) for different weed control treatments in CWCT at different locations during 1987/88.

Treatment	Symbol	AFGHANISTAN								
		Bulkh					Kabul			
		Y	R	W/W	R	S	Y	R	W/W	R
Weedy check	T1	399	8	1646	4	4	965	11	1813	5
Weed free by repeated hand weeding	T2	508	2	1938	2	3	1901	4	1479	8
Hand weeding twice (30-40 & 70-80 days after emergence)	T3	680	1	500	12	2	2556	2	1229	10
Pre-emergence application of terbuthylazine + terbutryne (Topogard) at 0.75 kg a.i./ha	T4	458	5	1479	5	3	1689	7	1729	6
Pre-emergence application of terbutryne (Igran) at 3.0 kg a.i./ha	T5	349	10	688	10	5	1385	9	1583	7
Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha	T6	436	6	1417	6	4	2924	1	1188	11
Post-emergence application of pyridate (Lentagran) at 1.0 kg a.i./ha	T7	420	7	2625	1	8	943	12	2479	2
Post-emergence application of dinoseb acetate (Aretit) at 1.0 kg a.i./ha plus 0.5 kg a.i./ha fluazifop butyl (Fusilade)	T8	488	4	1375	7	4	1337	10	2938	1
Same as No. 5 above plus 0.5 kg a.i./ha of pronamide (Kerb)	T9	335	11	938	9	8	1782	5	1458	9
Same as No. 6 above plus pronamide as in No. 9	T10	350	9	1708	3	4	1776	6	2021	3
Pre-emergence application of chlorobromuron (Maloran) plus pronamide as in No. 9	T11	318	12	1083	8	8	1525	8	1833	4
Pre-emergence application of methabenzthiazuron (Tribunil) at 3.0 kg a.i./ha plus pronamide as No. 9	T12	489	3	583	11	3	2466	3	1167	12
Location Mean		438		1332			1771		1743	
S.E. of Mean		81.83		515.07			391.05		354.90	
L.S.D. at 5%		-		-			1125.29		1021.28	
C.V. %		37.56		77.36			44.17		40.72	
Error d.f.		33		33			33		33	
Significance		NS		NS			*		*	

Cont'd. ...

Table 7.3.1. Cont'd. ...

Treatment	ALGERIA				ITALY					PORTUGAL				
	Dahmouni				Tarquinia					Elvas				
	Y	R	W/W	R	Y	R	W/W	R	S	Y	R	W/W	R	S
T1	906	9	397	8	506	11	2361	2	1	678	11	3865	2	2
T2	1281	7	1159	1	2052	1	0	12	1	1558	2	42	12	2
T3	1073	8	574	6	1917	2	0	11	1	1465	4	177	10	3
T4	1615	1	845	2	1438	3	1023	9	1	1212	6	1821	6	3
T5	1281	6	511	7	1305	6	1370	6	1	1421	5	487	8	3
T6	-	-	-	-	1001	8	1868	3	1	671	12	4274	1	3
T7	1375	4	590	5	485	12	3146	1	6	851	10	3627	3	3
T8	458	10	597	4	882	10	1206	8	8	1118	7	2557	5	9
T9	1510	2	339	10	1332	5	1280	7	1	1472	3	292	9	2
T10	-	-	-	-	1111	7	1736	4	1	952	9	2837	4	3
T11	1417	3	716	3	1390	4	625	10	1	1560	1	148	11	2
T12	1354	5	391	9	993	9	1729	5	1	1082	8	814	7	3
Location Mean	1227		612		1201		1362			1170		1745		
S.E. of Mean	243.37		88.31		191.81		469.30			149.24		658.61		
L.S.D. at 5%	-		256.28		551.97		1350.20			429.46		1895.25		
C.V. %	39.67		28.86		31.94		68.90			25.51		75.49		
Error d.f.	27		27		33		33			33		33		
Significance	NS		*		*		*			*		*		

Cont'd. ...

Table 7.3.1. Cont'd. ...

Treatment	SPAIN					TURKEY				Overall Mean	
	Badajoz			Cordoba		Eskisehir					
	Y	R	S	Y	R	Y	R	W/W	R	Y	R
T1	1275	11	0	2488	11	514	12	232	4	1047	12
T2	2469	1	0	3056	1	667	8	0	12	1855	1
T3	2076	3	0	2754	6	768	3	0	11	1801	2
T4	1678	10	2	2517	10	752	4	186	8	1557	6
T5	1709	9	3	2981	2	576	11	314	2	1523	7
T6	707	12	2	2342	12	626	9	206	5	1379	9
T7	1774	7	2	2689	8	694	6	282	3	1259	11
T8	1711	8	2	2656	9	682	7	204	6	1263	10
T9	2210	2	3	2792	5	740	5	187	7	1691	3
T10	1781	6	3	2853	4	617	10	343	1	1515	8
T11	2037	4	2	2888	3	819	1	129	10	1662	4
T12	1961	5	5	2704	7	778	2	181	9	1620	5
Location Mean	1782			2726		686		189			
S.E. of Mean	251.96			95.76		92.04		69.34			
L.S.D. at 5%	725.04			275.56		–		199.54			
C.V. %	28.27			7.02		26.83		73.53			
Error d.f.	33			33		33		33			
Significance	*			*		NS		*			

* = Significnat at $P \leq 0.05$, NS = Not significnat.

lowest in the treatment T11.
Spain: at Badajoz, two of the herbicide treatments T9 and T11 gave significantly higher yield than the weedy check. The phytotoxicity was comparatively less using T11 when compared to T9.

At cordoba, four treatments, T5, T11, T10 and T9 in order of their merit gave significantly higher yield than the weedy check, T1.

The seed yield across locations for the weedy check and weed free check revealed that weeds caused a heavy loss (43.6%) in seed yield in chickpea. Further, pre-emergence application of Igran or Maloran with Kerb was most effective.

7.3.2. FABA BEAN INTERNATIONAL WEED CONTROL TRIAL (FBWCT)

Results and Discussion

Ten trials were supplied to cooperators in 8 countries and the results were received for 4 trials from 4 countries and are presented in Table 7.3.2. and discussed below:

Ethiopia: At Holetta, treatment T^{12} (pre-emergence application of Tribunil + Kerb) gave significantly higher yield.
Italy: At Tarquinia, five treatments, T9, T8, T7, T4 and T12 in order of their superiority exceeded the weedy check in seed yield by a significant margin. Out of these, two treatments, T4 and T12 were less phytotoxic.
Spain: At Cordoba, none of the weedicide treatments was significantly superior to weedy check.
Yemen: At Dhamar, the treatment T5 (Igran at 2.5 kg a.i./ha) gave significantly higher yield as compared to weedy check.

7.3.3. LENTIL INTERNATIONAL WEED CONTROL TRIAL (LWCT)

Results and Discussion

Thirty one sets of trial were distributed to cooperators in 14 countries and the results were received for 11 sets.

The comparison of weedy check (Treatment T_1) and weed free check (Treatment T_2) across locations showed that weeds caused heavy losses (41.9 percent) in seed yield (Table 7.3.3). The ANOVA revealed that the differences between treatment means were significant at Faisalabad in Pakistan, Dhamar in Yemen and Karaj in Iran.

The results of locations showing significant treatment differences are discussed below:

Table 7.3.2. Seed yield (Y=kg/ha) and rank (R), weed weight (W/W=g/plot) and phytotoxicity score (S) for different weed control treatments in FBWCT at different locations during 1987/88.

Treatment	Symbol	ETHIOPIA					ITALY				
		Holetta					Tarquinia				
		Y	R	W/W	R	S	Y	R	W/W	R	S
Weedy Check	T1	1260	10	3449	1	9	1931	12	3692	1	1
Weed free by repeated hand weeding	T2	1787	1	-	-	2	3674	1	0	12	1
Hand weeding twice (30-40 & 70-80 dyas after emergence)	T3	1223	11	1134	10	8	3618	2	0	11	1
Pre-emergence application of terbuthylazine Terbutryne (Topogard) at 0.75 kg a.i./ha	T4	1428	4	2292	5	9	2875	6	481	7	1
Pre-emergence application of terbutryne (Igran) at 2.5 kg a.i./ha	T5	1390	6	2014	7	5	2708	9	704	5	2
Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha	T6	1419	5	2824	4	9	2354	11	1588	2	1
Post-emergence application of Oxadiazon (Ronstar) at 1.07 kg a.i./ha	T7	219	12	-	-	9	3257	5	433	9	6
Post emergence application of dinoseb acetate (Aretit) at 1.0 kg a.i./ha plus 0.5 kg a.i./ha fluazifop butyl (Fusilade)	T8	1346	8	2292	6	4	3472	4	451	8	3
Same as No. 5 above plus 0.5 kg a.i./ha of pronamide (Kerb)	T9	1290	9	1736	9	4	3542	3	299	10	3
Same as No. 6 above plus pronamide as in No. 9	T10	1550	3	3125	3	9	2576	10	819	4	1
Pre-emergence application of chlorbromuron (Maloran) plus pronamide as in No. 9	T11	1378	7	1921	8	5	2778	8	1155	3	1
Pre-emergence application of methabenz-thiazuron (Tribunil) at 3.0 kg a.i./ha plus pronamide as in No. 9	T12	1735	2	3171	2	6	2806	7	688	6	1
Location Mean		1335		2356			2866		859		
S.E. of Mean		124.58		428.06			295.27		413.04		
L.S.D. at 5%		358.50		1242.23			849.68		1188.57		
C.V. %		18.66		35.73			19.91		96.15		
Error d.f.		33		27			33		33		
Significance		*		*			*		*		

Cont'd. ...

Table 7.3.2. Cont'd. ...

Treatment	SPAIN			YEMEN					Overall Mean	
	Cordoba			Dhamar						
	Y	R	S	Y	R	W/W	R	S	Y	R
T1	7599	8	1	2762	2	801	1	4	4097	8
T2	7474	9	1	2639	3	29	12	1	4596	1
T3	7924	4	1	2049	8	70	11	2	4530	2
T4	8014	1	1	2500	5	425	4	2	4463	5
T5	7333	10	1	3449	1	110	10	5	4497	4
T6	7650	7	1	2581	4	354	5	4	4195	7
T7	6181	12	7	1815	9	253	7	9	3751	12
T8	7972	2	1	2083	7	468	3	4	4509	3
T9	7108	11	1	2310	6	558	2	5	4320	6
T10	7907	5	1	1690	10	285	6	3	4058	9
T11	7715	6	1	1655	11	140	9	4	4049	10
T12	7936	3	1	938	12	145	8	6	3893	11
Location Mean	7568			2238		303				
S.E. of Mean	249.55			235.15		0.00				
L.S.D. at 5%	718.12			676.67		0.00				
C.V. %	6.60			21.32		0.00				
Error d.f.	33			33		33				
Significance	*			*		*				

* = Significant at $P \leq 0.05$, NS = Not significant.

Table 7.3.3. Seed yield (Y=kg/ha) and rank (R), weed weight (W/W=g/plot) and phytotoxicity score (S) for different weed control treatments in LWCT at different locations during 1987/88.

Treatment	Symbol	ALGERIA			ETHIOPIA				
		Y	R	S	Y	R	W/W	R	S
Weedy Check	T1	732	6	1	67	9	6389	7	3
Weed free by repeated hand weeding	T2	678	9	1	88	7	3074	12	3
Hand weeding twice (30-40 & 70-80 days after emergence)	T3	1098	2	1	113	4	3944	11	4
Pre-emergence application of methabenzthiazuron (Tribunil) at 2.0 kg a.i./ha	T4	662	10	1	87	8	8125	1	4
Pre-emergence application of chlorbromuron (Maloran) at 1.5 kg a.i./ha	T5	850	4	1	42	12	6458	6	3
Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha	T6	–	–	–	59	10	4757	10	3
Pre-emergence application of prometryne (Gesagard) at 1.5 kg a.i./ha	T7	810	5	5	91	6	5069	9	4
Post-emergence application of dinoseb acetate (Aretit) at 1.0 kg a.i./ha plus 0.5 kg a.i./ha fluazifop butyl (Fusilade)	T8	718	7	1	54	11	7222	3	4
Same as No. 4 above plus 0.5 kg a.i./ha of pronamide (Kerb)	T9	687	8	1	214	1	5729	8	4
Same as No. 6 above plus pronamide as in No. 9	T10	–	–	–	133	3	6875	4	4
Same as No. 5 above plus pronamide as in No. 9	T11	923	3	1	155	2	6528	5	4
Same as No. 7 above plus pronamide as in No. 9	T12	1213	1	1	95	5	7743	2	4
Location Mean		837			100		5993		
S.E. of Mean		166.14			42.66		977.75		
L.S.D. at 5%		–			–		2813.61		
C.V. %		39.69			74.08		32.63		
Error df		27			22		33		
Significance		NS			NS		*		

Cont'd. ...

Table 7.3.3. Cont'd. ...

	IRAN					PAKISTAN										
	Karaj					Mansehra		Serai Nawrang				Faisalabad (AARI)				
Treatment	Y	R	W/W	R	S	Y	R	Y	R	W/W	R	Y	R	W/W	R	S
T1	862	12	4290	1	–	1148	8	775	3	828	2	333	12	9833	1	1
T2	1853	1	0	12	–	1926	1	873	2	0	12	1484	1	0	12	1
T3	1558	2	618	11	–	1481	5	772	5	670	8	979	3	0	11	1
T4	1192	6	2913	10	1	1000	11	774	4	655	9	563	9	5521	5	4
T5	994	9	3238	5	3	1041	9	662	8	510	11	682	5	4375	9	4
T6	874	11	3785	2	2	1556	4	933	1	792	3	375	11	7031	2	4
T7	955	10	3307	4	4	1593	3	648	11	842	1	766	4	5229	7	4
T8	1091	7	2945	9	2	1889	2	655	9	780	4	594	8	5844	4	3
T9	1219	5	3133	7	2	926	12	717	7	683	7	635	6	5417	6	3
T10	1084	8	3395	3	1	1370	6	649	10	773	5	484	10	4807	8	3
T11	1275	3	2996	8	3	1296	7	718	6	583	10	625	7	6094	3	5
T12	1270	4	3163	6	3	1037	10	615	12	723	6	1052	2	2578	10	3
Location Mean	1106		2815			1355		733		653		714		4727		
S.E. of Mean	128.45		448.92			248.82		134.41		104.05		149.42		1007.70		
L.S.D. at 5%	369.64		1291.84			–		–		299.42		429.97		2899.80		
C.V. %	21.67		31.90			36.72		36.70		31.85		41.83		42.63		
Error d.f.	33		33			33		33		33		33		33		
Significance	*		*			NS		NS		*		*		*		

Cont'd. ...

Table 7.3.3. Cont'd. ...

Treatment	PAKISTAN				TURKEY				YEMEN					(1) Overall Mean	
	Tarnab				Eskisehir				Dhamar						
	Y	R	W/W	R	Y	R	W/W	R	Y	R	W/W	R	S	Y	R
T1	283	12	1309	1	667	3	253	8	1048	7	569	1	6	648	12
T2	665	1	326	12	646	5	0	12	1383	2	278	4	2	1115	1
T3	587	3	471	11	646	6	0	11	1295	5	173	9	4	929	2
T4	641	2	677	6	667	4	257	7	871	11	198	7	5	725	10
T5	490	6	641	7	701	2	308	4	1354	3	268	5	4	746	8
T6	429	10	717	5	722	1	215	10	1622	1	153	11	3	822	3
T7	433	9	834	2	618	7	465	1	1028	9	256	6	4	767	5
T8	410	11	830	3	528	12	435	2	613	12	173	8	6	728	9
T9	486	7	597	9	542	11	267	6	1029	8	163	10	5	721	11
T10	475	8	793	4	563	9	236	9	1351	4	403	2	3	764	7
T11	559	4	579	10	569	8	322	3	1111	6	113	12	6	789	4
T12	491	5	631	8	556	10	299	5	989	10	308	3	6	765	6
Location Mean	496		700		619		255		1141		254				
S.E. of Mean	89.85		155.80		46.79		81.35		145.33		117.36				
L.S.D. at 5%	-		-		-		234.09		418.20		337.71				
C.V. %	36.24		44.49		15.13		63.87		25.47		92.24				
Error d.f.	33		33		33		33		33		33				
Significance	NS		NS		NS		*		*		*				

(1) Dahmouni was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

Pakistan: At Ayub Agricultural Research Institute (AARI) Faisalabad, two treatments, T12 and T7 gave significantly higher yield than the weedy check. The treatment T_{12} (Tribunil + Kerb) showed least phytotoxicity and was the best.
Yemen: At Dhamar, treatment T_6 (Bladex) gave significantly higher yield than the weedy check.

On the basis of average over locations the treatment T_6 (Bladex) gave the highest seed yield and was followed by T11 (Maloran + Kerb).

7.4. FABA BEAN INTERNATIONAL OROBANCHE CHEMICAL CONTROL TRIAL (FBOCCT)

Introduction

The main objective of the Faba Bean International Orobanche Chemical Control Trial was to know the extent of loss caused by and the possibility of controlling Orobanche spp in faba bean using glyphosate herbicide. The trial is expected to give the information on the appropriate rate of chemical and the stage of crop grown at which it should be applied to get the best control.

Material and Methods

The treatments included:

T_1 Control - No application of glyphosate.
T_2 At the beginning of flowering, apply glyphosate at 0.08 kg ai/ha once.
T_3 Starting at the beginning of flowering apply glyphosate at 0.08 kg ai/ha twice at 15 days interval.
T_4 Starting at the beginning of flowering apply glyphosate at 0.08 kg ai/ha thrice at 15 days interval.
T_5 At 15 days after flowering began, apply glyphosate at 0.08 kg ai/ha once.
T_6 Starting 15 days after flowering began, apply glyphosate at 0.08 kg ai/ha twice at 15 days interval.
T_7 Starting at 15 days after flowering began, apply glyphosate at 0.08 kg ai/ha thrice at 15 days interval.
T_8 At the beginning of flowering, apply glyphosate at 0.12 kg ai/ha once.
T_9 Starting at the beginning of flowering, apply glyphosate at 0.12 kg ai/ha twice at 15 days interval.
T_{10} Starting at the beginning of flowering, apply glyhosate at 0.12 kg ai/ha thrice at 15 days interval.

The trial was designed as randomised complete block with four replications. The suggested plot size was 8 rows, 5 m long spaced 45 cm apart (=18.0 m^2). At harvesting, net area harvested was suggested to be 6 rows 4 m long spaced 45 cm apart (=10.8 m^2).

Table 7.4.1. Seed yield (NPSY=kg/ha), total yield (NPTY=kg/ha) and rank (R), phytotoxicity score (S), no. of orobanche shoots per plot (NOS), weight of orobanche shoots per plot (WOS) and Plant height (HT=cm) for different treatments in FBOCCT at different locations during 1987/88.

Treatment	Symbol	ITALY - Tarquinia						
		HT	R	NPTY	R	NPSY	R	S
Control-No application of glyphosate	T1	125	5	14611	2	5410	1	0
At the beginning of flowering, apply glyphosate at 0.08 kg a.i./ha once	T2	125	4	13979	4	5111	4	2
Starting at the beginning of flowering apply glyphosate at 0.08 kg a.i./ha twice at 15 days interval	T3	124	6	13465	8	4729	7	2
Starting at the beginning of flowering apply glyphosate at 0.08 kg a.i./ha thrice at 15 days interval	T4	126	3	13847	6	4792	6	2
At 15 days after flowering began, apply glyphosate at 0.08 kg a.i./ha once	T5	129	1	14278	3	4951	5	2
Starting 15 days after flowering began, apply glyphosate at 0.08 kg a.i./ha twice at 15 days interval	T6	124	7	15722	1	5208	2	2
Starting 15 days after flowering began, apply glyphosate at 0.08 kg a.i./ha thrice at 15 days interval	T7	120	10	11354	10	3708	10	2
At the beginning of flowering, apply glyphosate at 0.12 kg a.i./ha once	T8	128	2	13875	5	5146	3	2
Starting at the beginning of flowering, apply glyphosate at 0.12 kg a.i./ha twice at 15 days interval	T9	120	9	13667	7	4056	8	2
Starting at the beginning of flowering, apply glyphosate at 0.12 kg a.i./ha thrice at 15 days interval	T10	121	8	13049	9	3715	9	2
Location Mean		124		13785		4683		
S.E. of Mean		3.67		1201.51		355.16		
L.S.D. at 5%		-		-		1030.67		
C.V. %		5.91		17.43		15.17		
Error d.f.		27		27		27		
Significance		NS		NS		*		

Cont'd. ...

Table 7.4.1. Cont'd. ...

Treatment	PORTUGAL Elvas NOS	R	WOS	R	NPTY	R	NPSY	R	S	SPAIN Cordoba NOS	R	NPSY	R	Overall Mean NPSY	R
T1	30	2	53.80	2	8127	5	4794	3	0	3	4	841	9	3682	3
T2	32.80	1	74	1	8402	3	4640	4	1	3.75	2	850	8	4788	1
T3	0	7	1	5	7564	7	4027	7	1	1	6	871	4	3209	8
T4	1.30	5	1	6	8200	4	4258	5	2	0.30	9	872	3	3307	5
T5	5.80	3	5.80	3	7803	6	4213	6	0	0.50	8	858	7	3341	4
T6	0	9	1	7	9073	1	5027	2	0	2.30	5	866	6	3700	2
T7	0	8	0	9	9041	2	5130	1	0	0.50	7	870	5	3236	7
T8	2.80	4	3	4	6925	8	3823	8	3	4.30	1	886	1	3285	6
T9	1	6	1	8	6470	10	2945	10	3	3	3	813	10	2605	10
T10	0	10	0	10	6501	9	3410	9	3	0	10	885	2	2670	9
Location Mean	1.40		14		7811		4227			1.90		861			
S.E. of Mean	10.37		23.57		345.02		272.26			1.03		17.17			
L.S.D. at 5%	-		-		1001.24		700.59			-		-			
C.V. %	282.10		335.46		8.84		11.16			111.02		3.99			
Error d.f.	27		27		27		18			27		27			
Significance	NS		NS		*		*			NS		NS			

* = Significant at $P \leq 0.05$, NS= Not significant.

Results and Discussion

Fourteen sets of trial were sent to cooperators in eight countries but the results were received back from three locations (Table 7.4.1) and presented below:

Italy: At Tarquinia, the data on Orobanche was not reported. Moreover, the seed yield of the control plot was highest.
Portugal: At Elvas, none of the glyphosate treatments significantly exceeded the control. However, treatment T7 was the best resulting in complete control of Orobanche. The ANOVA for number of shoots and weight of shoots revealed that the differences among treatments were not significant.
Spain: At Cordoba, the ANOVA revealed that differences among treatments were non-significant for seed yield and number of Orobanche shoots.

8. ACKNOWLEDGEMENT

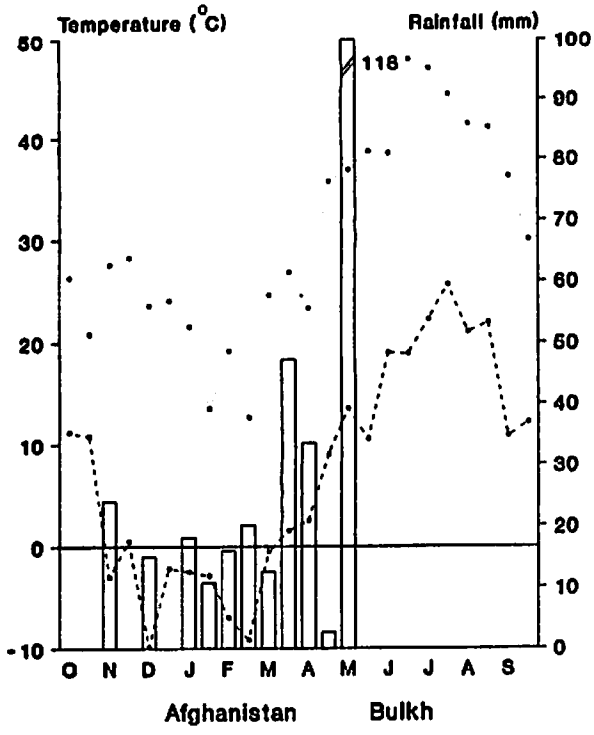
Our thanks are due to all donors of ICARDA, for making this cooperative research effort possible. We are greatful to the cooperators from different national programs for conducting the experiments and returning the data books.

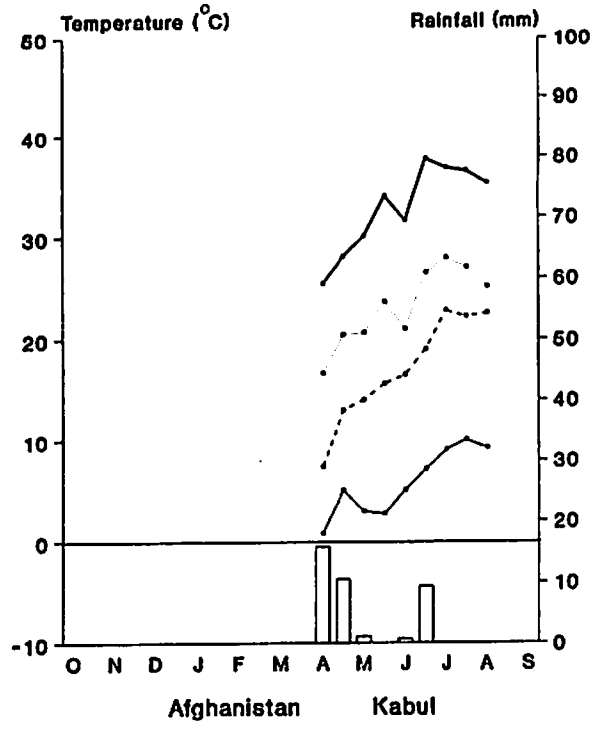
Figure Legends

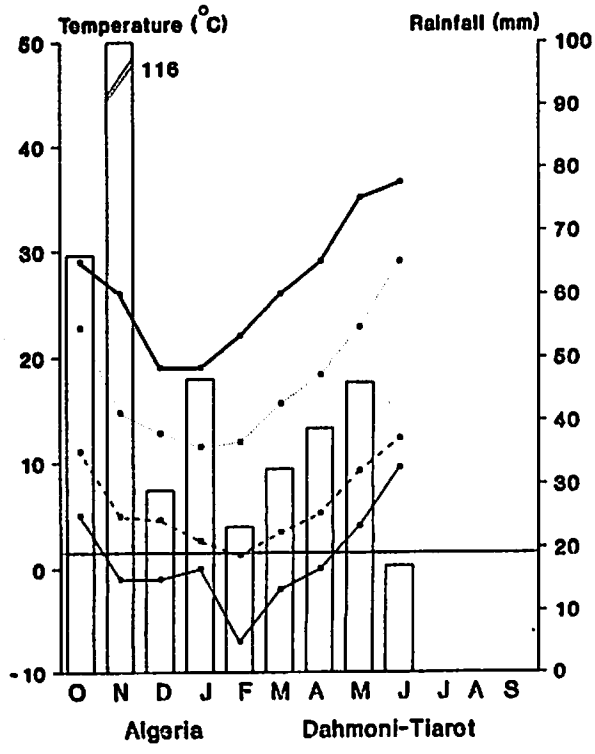
- Fortnightly Rainfall
- Monthly Rainfall
- Max. Temperatures
- Min. Temperatures
- Absolute Max. Temp.
- Absolute Min. Temp.

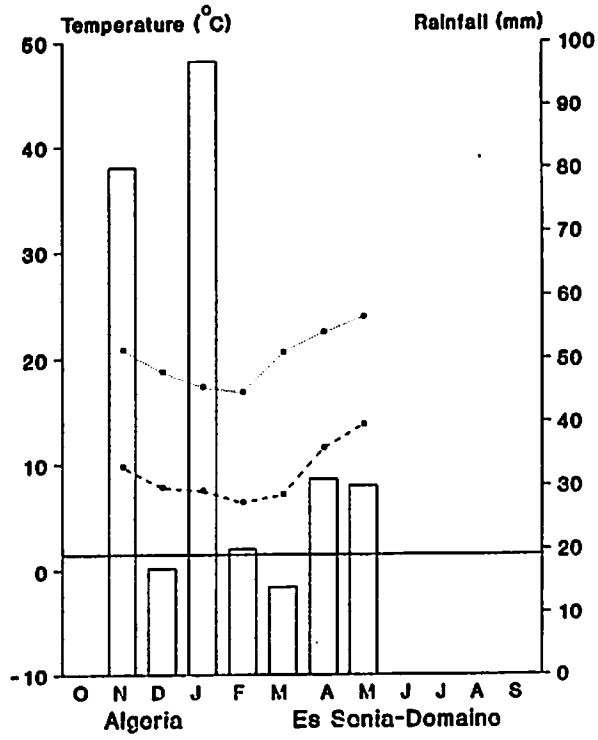
APPENDIX

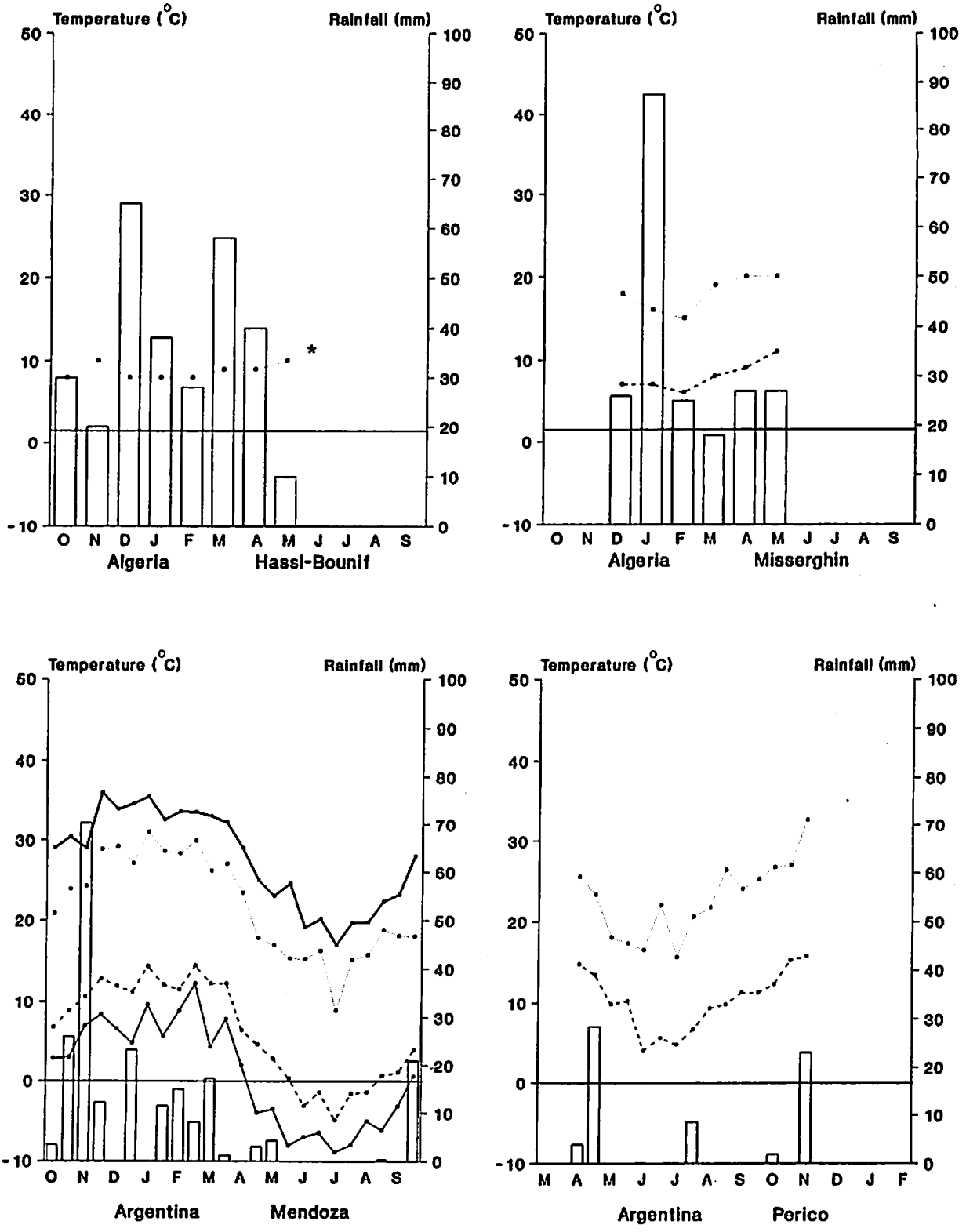
Maximum absolute, Maximum mean, Minimum mean, Minimum absolute, and Average fortnightly/monthly temperatures at various sites during 1987/88.



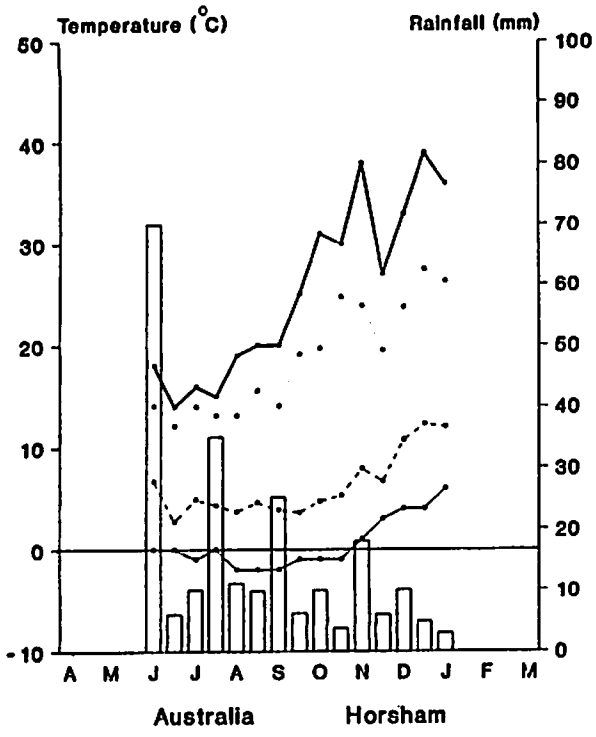


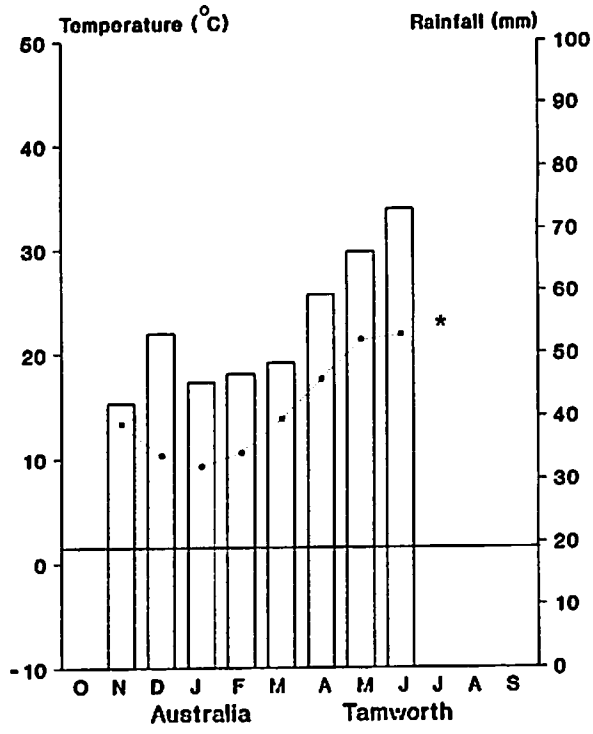


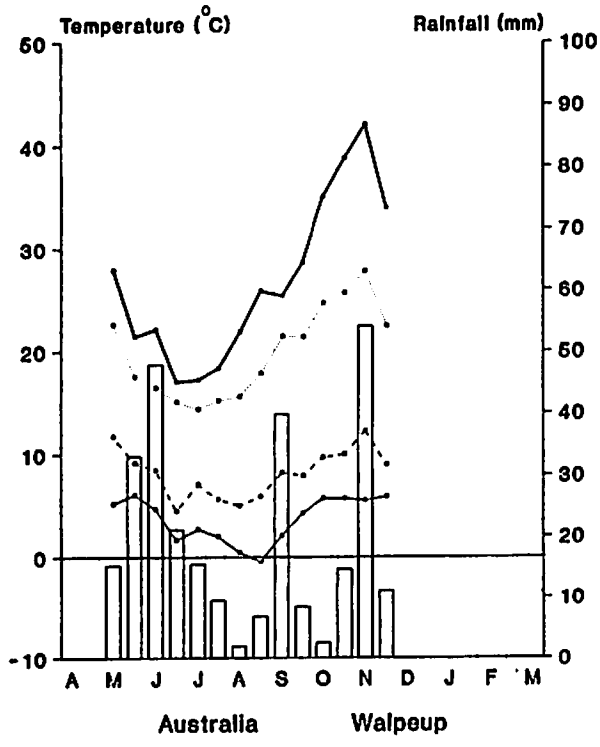


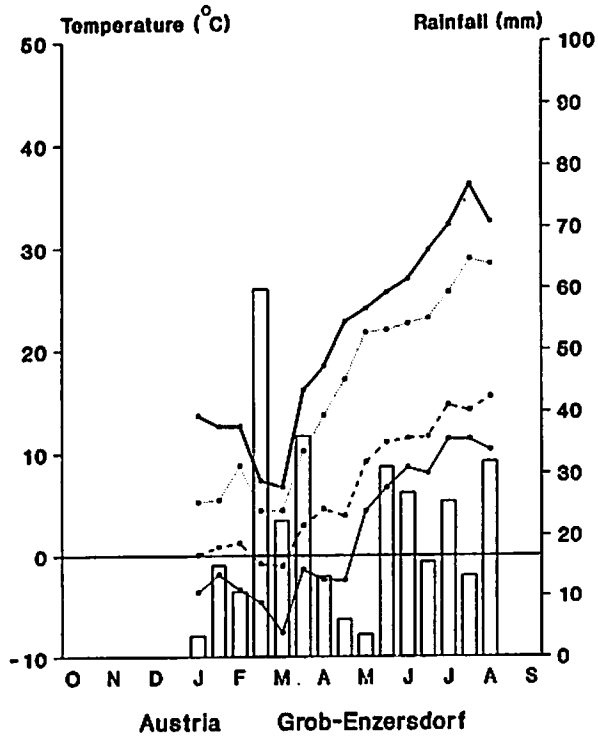


* Average mean temperature.

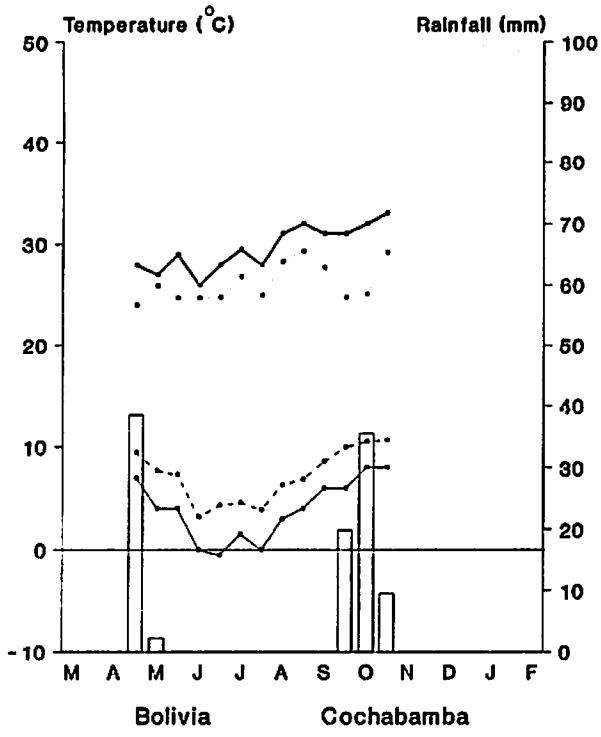


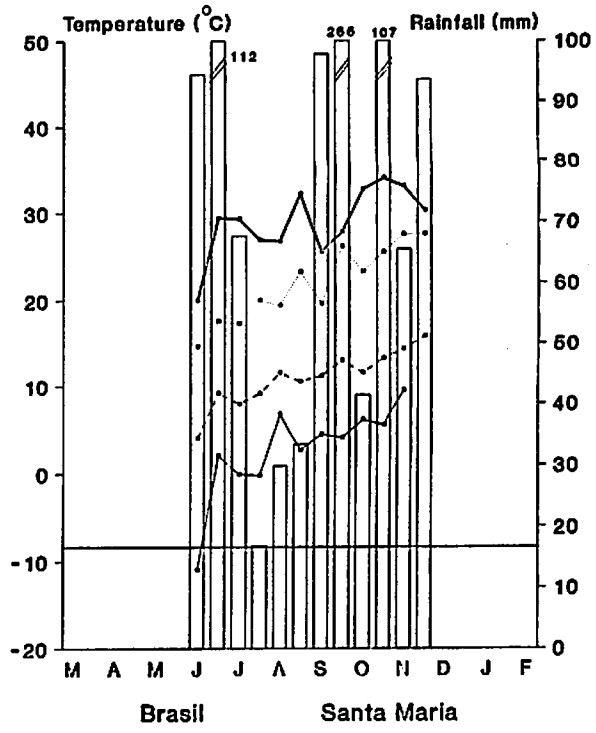


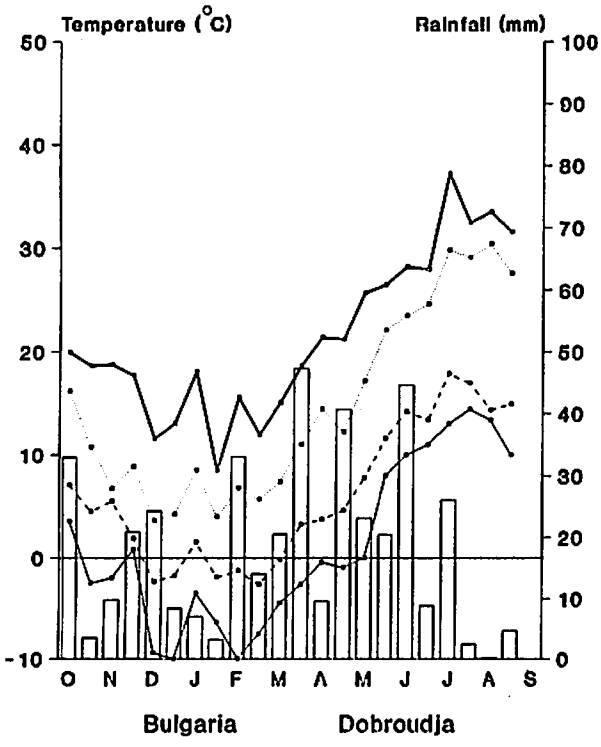


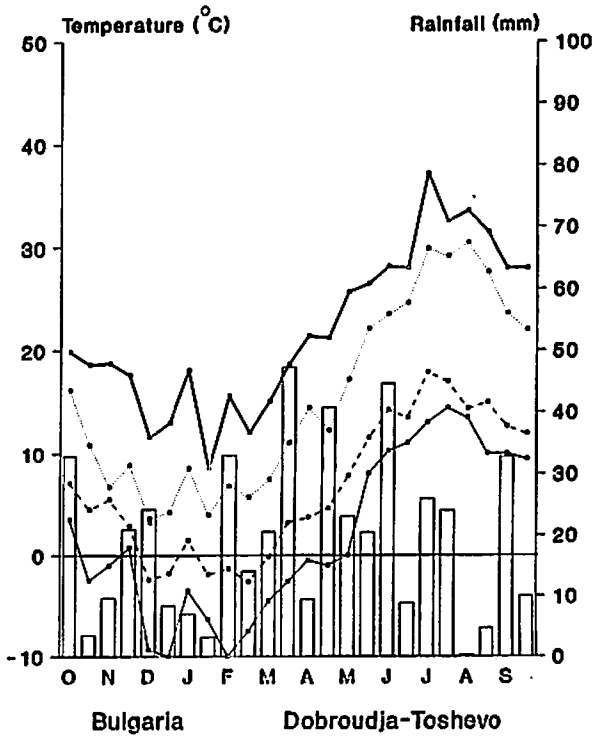


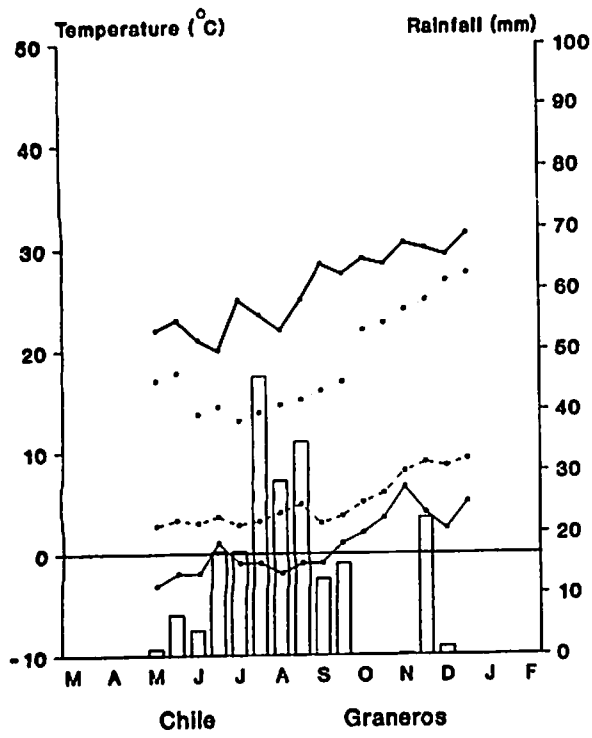
* Average mean temperature.

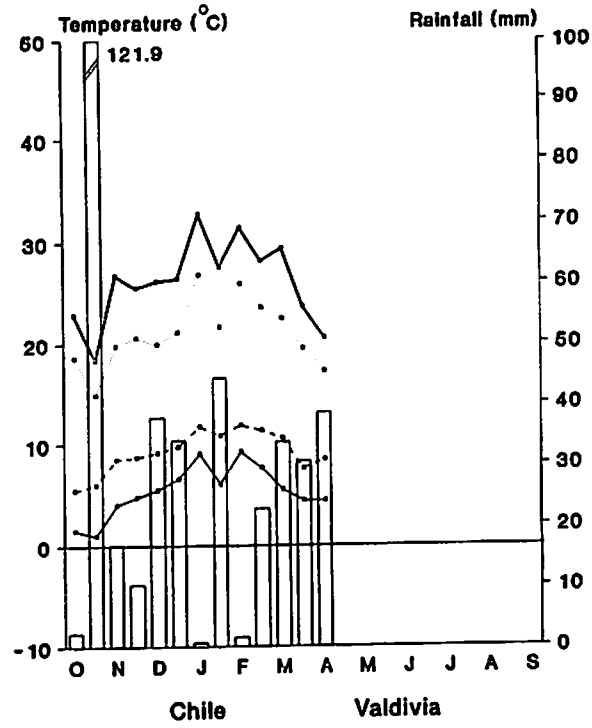

Temperature (°C)
Rainfall (mm)
M A M J J A S O N D J F
Bolivia
Cochabamba

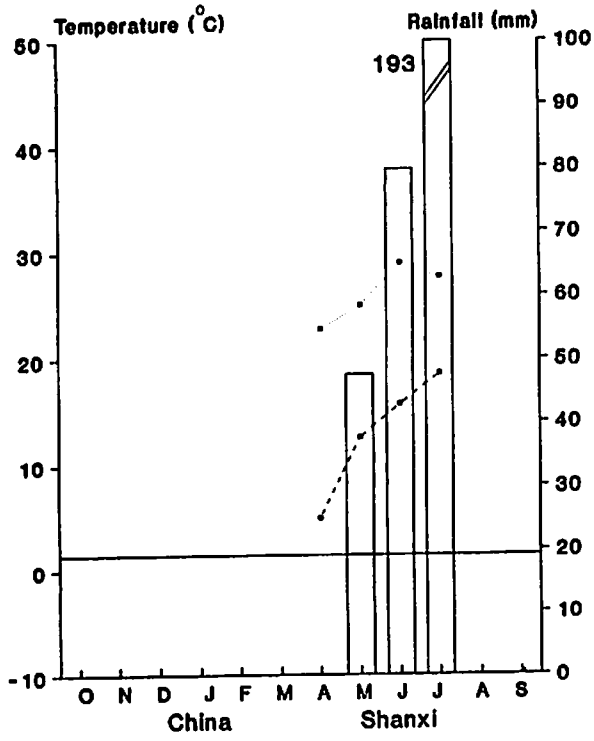

Temperature (°C)
Rainfall (mm)
112
266
107
M A M J J A S O N D J F
Brasil
Santa Maria

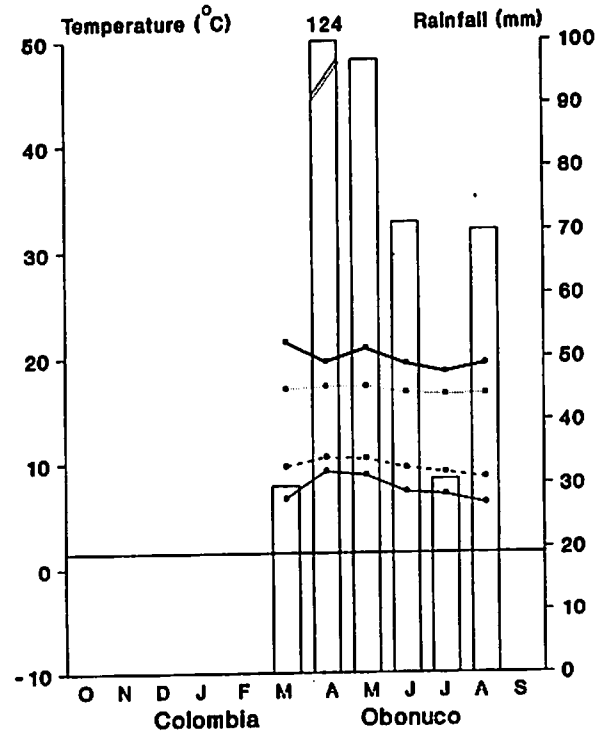

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Bulgaria
Dobroudja

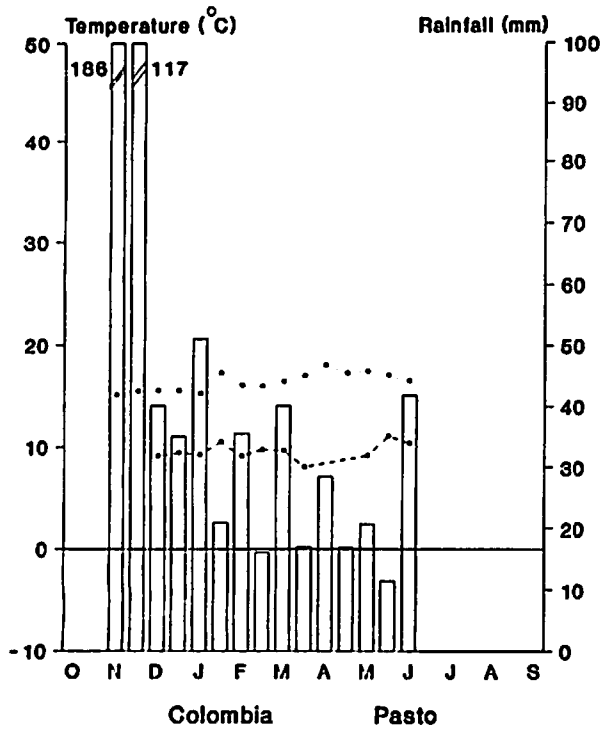

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Bulgaria
Dobroudja-Toshevo

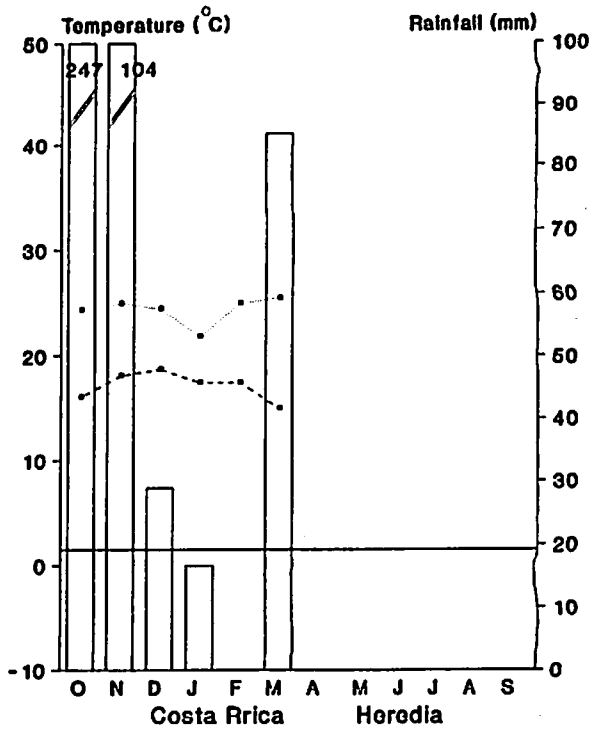

Temperature (°C)
Rainfall (mm)
M A M J J A S O N D J F
Chile
Graneros

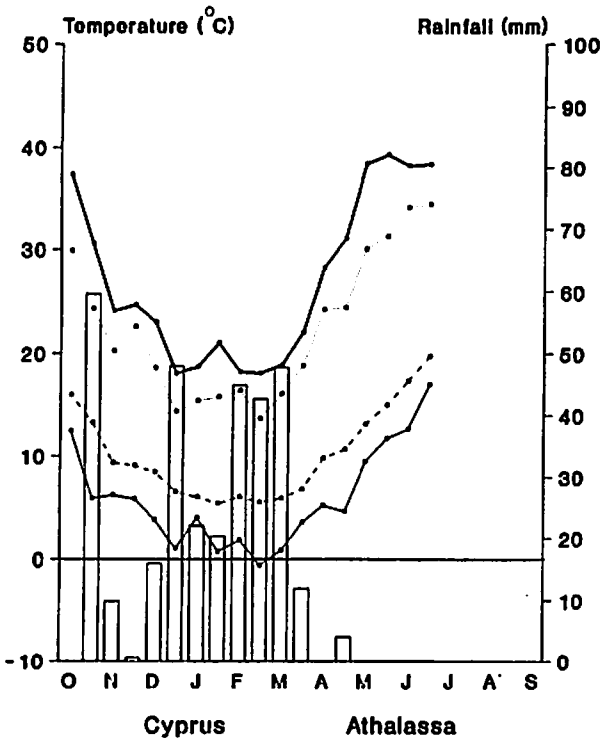

Temperature (°C)
Rainfall (mm)
121.9
O N D J F M A M J J A S
Chile
Valdivia

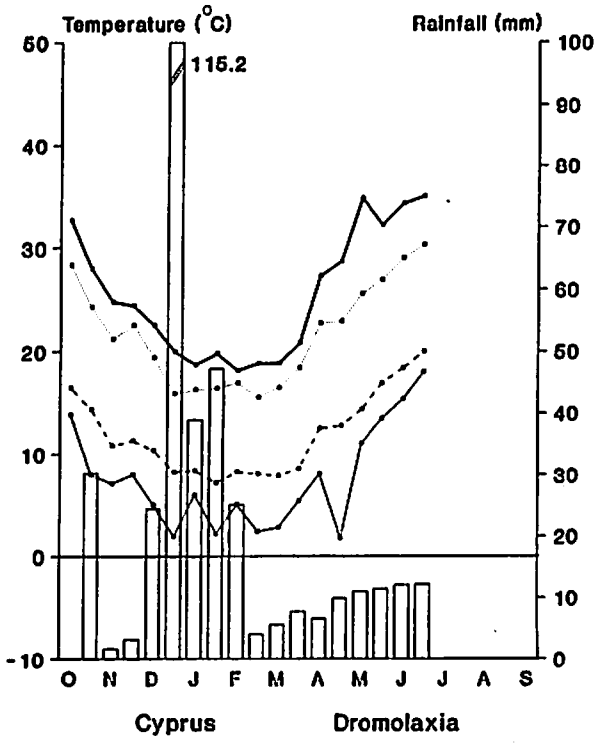

Temperature (°C)
Rainfall (mm)
193
O N D J F M A M J J A S
China
Shanxi

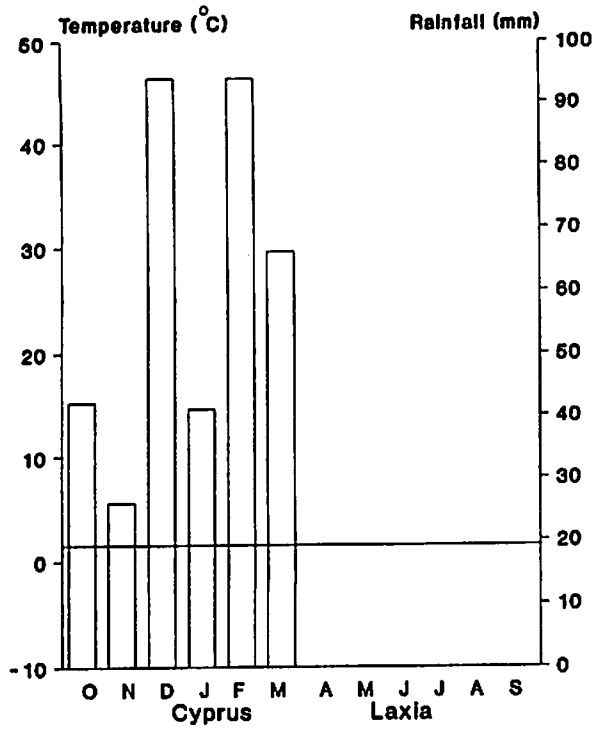

Temperature (°C)
124
Rainfall (mm)
O N D J F M A M J J A S
Colombia
Obonuco

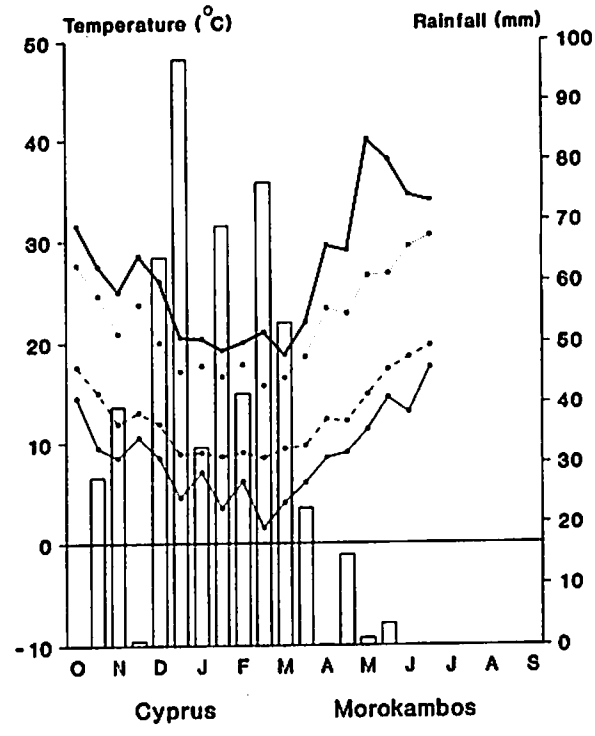

Temperature (°C)
Rainfall (mm)
186
117
O N D J F M A M J J A S
Colombia Pasto

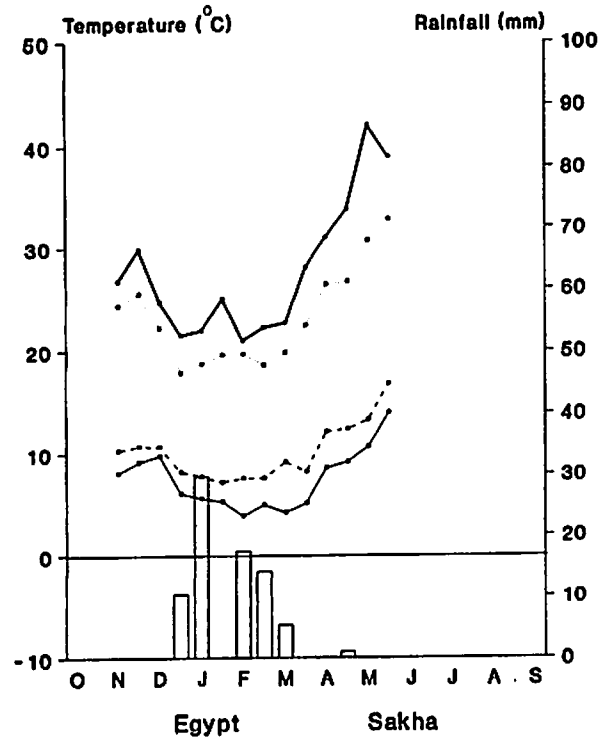

Temperature (°C)
Rainfall (mm)
247
104
O N D J F M A M J J A S
Costa Rrica Heredia


Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Cyprus Athalassa


Temperature (°C)
Rainfall (mm)
115.2
O N D J F M A M J J A S
Cyprus Dromolaxia


Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Cyprus
Laxia


Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Cyprus
Morokambos


Temperature (°C)
Rainfall (mm)
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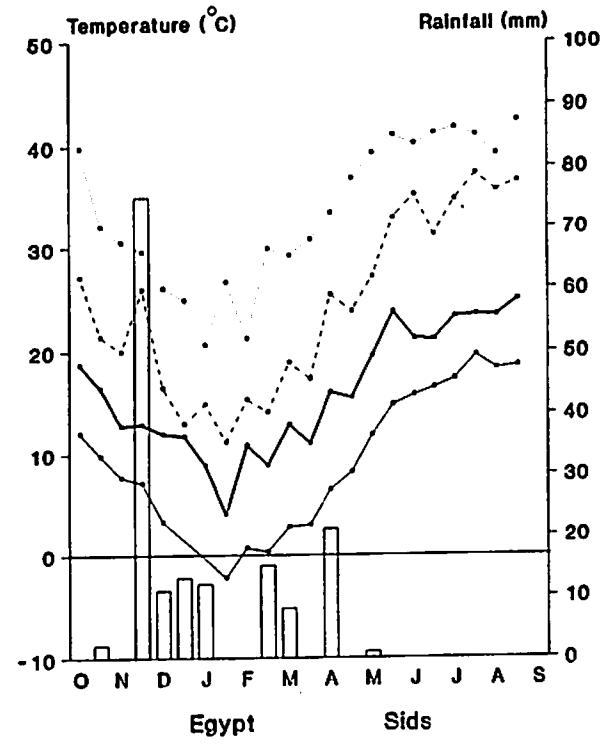
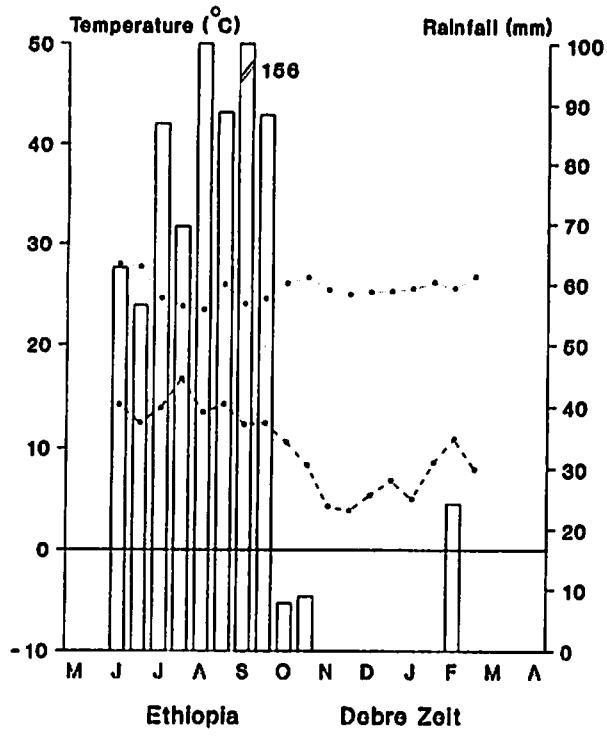
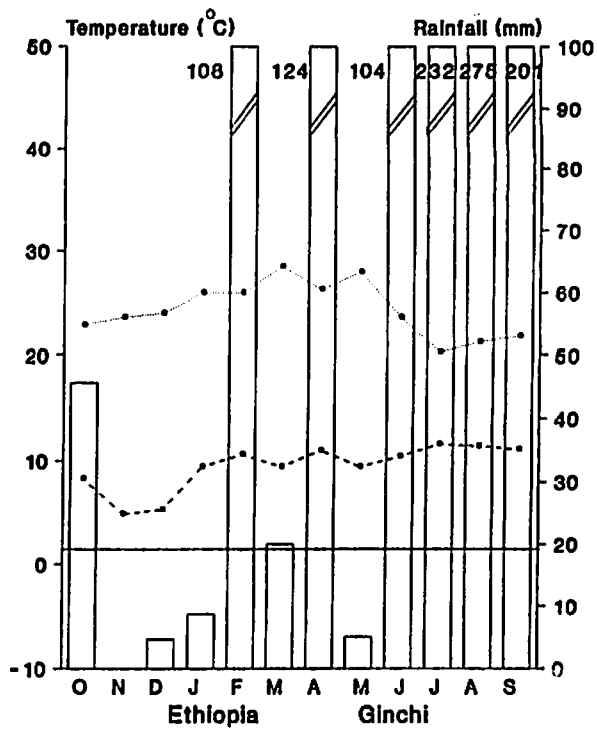
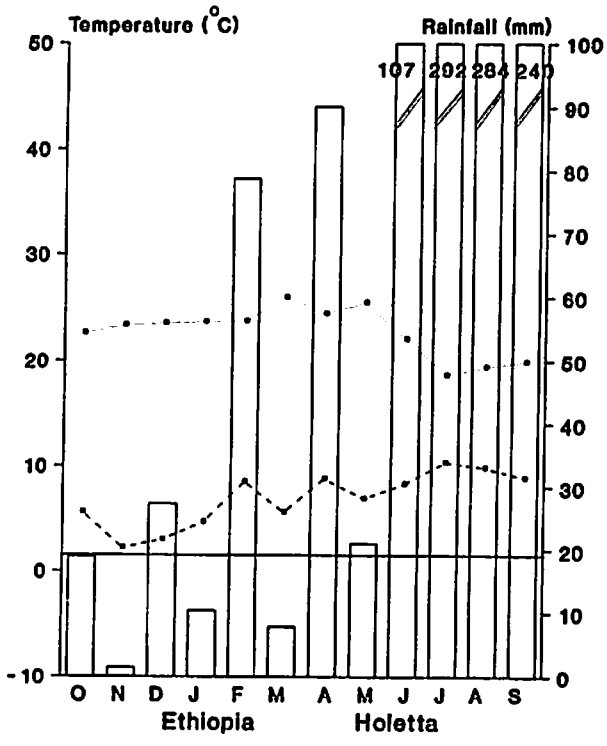
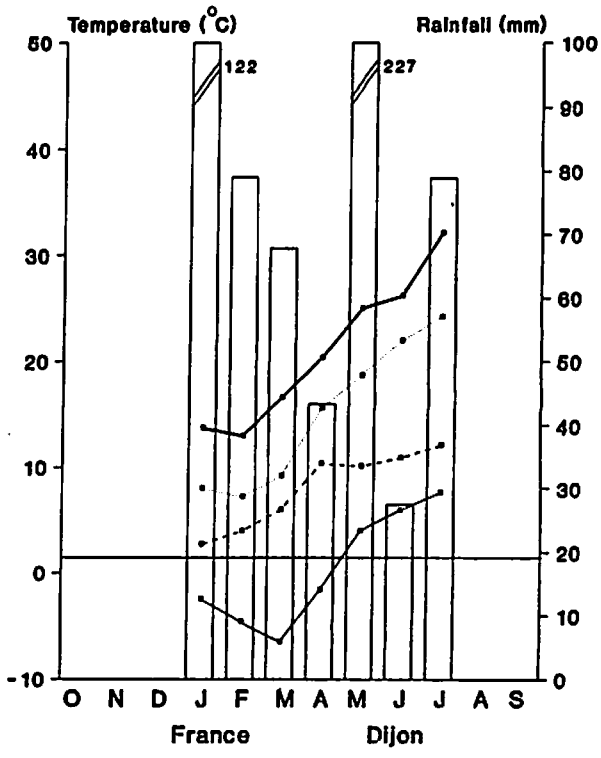
Egypt
Sakha

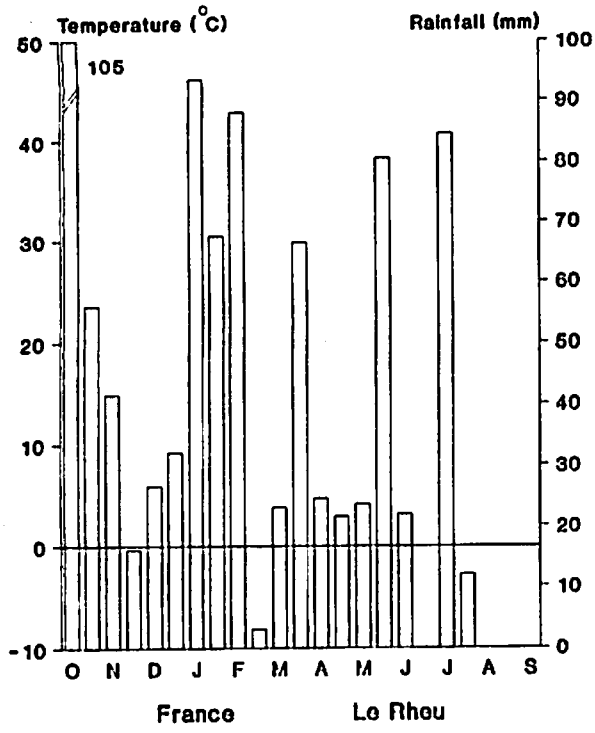

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Egypt
Sids

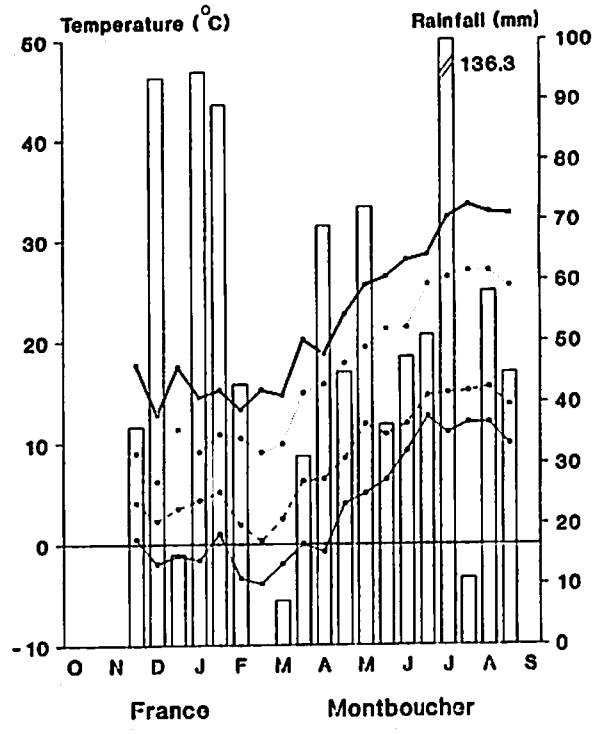

Temperature (°C)
Rainfall (mm)
156
M J J A S O N D J F M A
Ethiopia
Debre Zeit

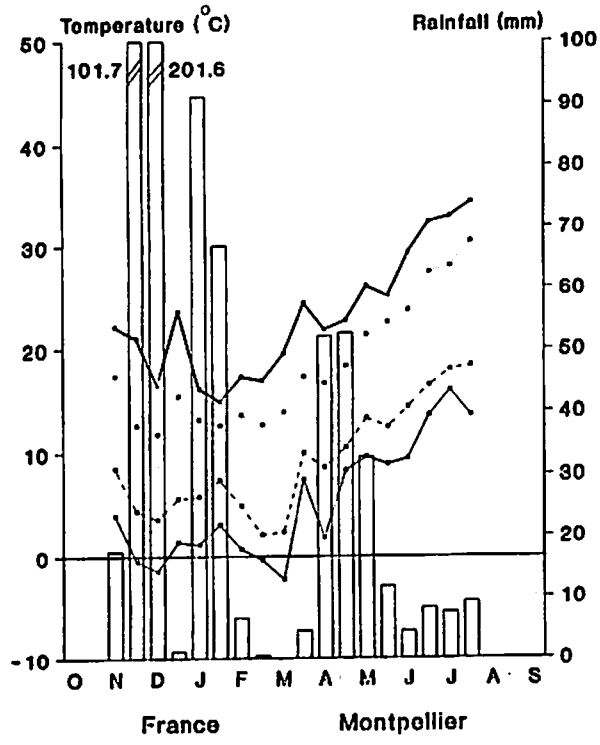

Temperature (°C)
Rainfall (mm)
108 124 104 232 275 201
O N D J F M A M J J A S
Ethiopia
Ginchi

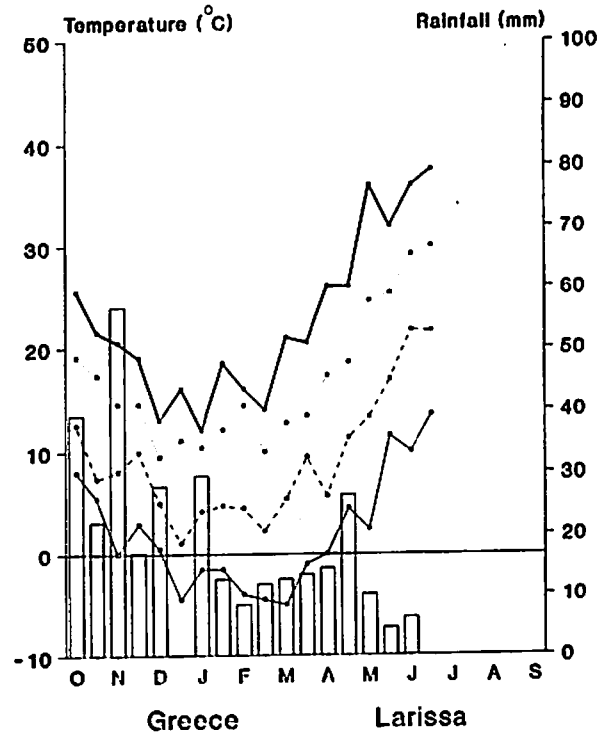

Temperature (°C)
Rainfall (mm)
107 202 284 240
O N D J F M A M J J A S
Ethiopia
Holetta

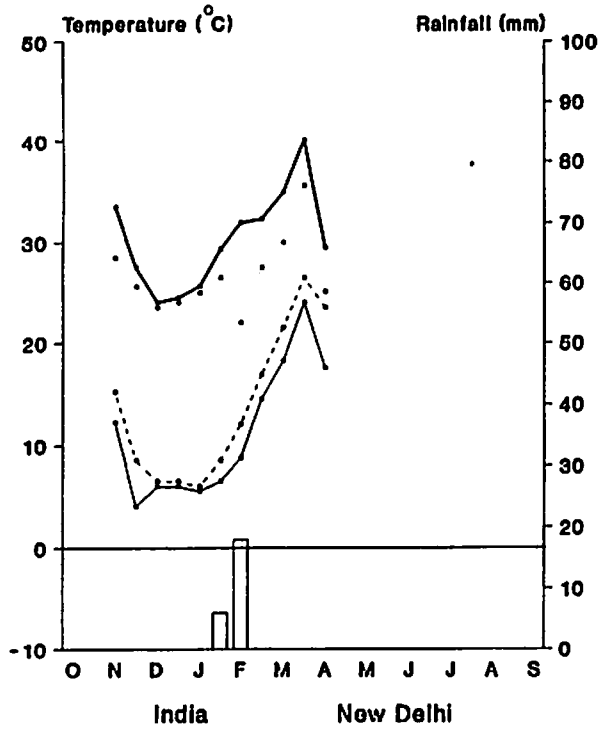

Temperature (°C)
Rainfall (mm)
122
227
O N D J F M A M J J A S
France
Dijon

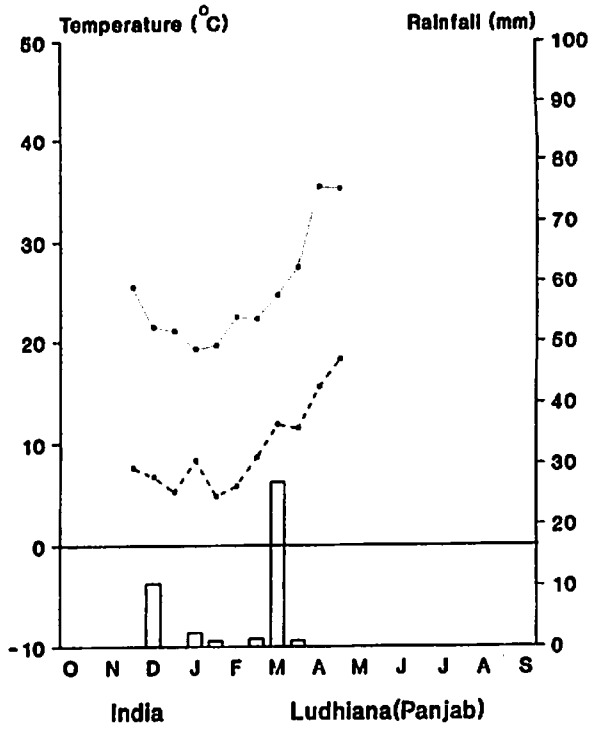

Temperature (°C)
Rainfall (mm)
105
O N D J F M A M J J A S
France
Le Rheu

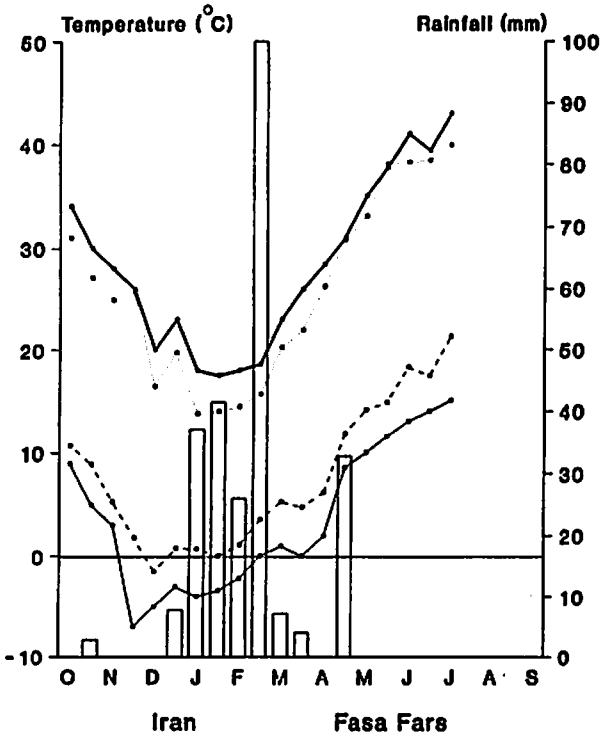

Temperature (°C)
Rainfall (mm)
136.3
O N D J F M A M J J A S
France
Montboucher

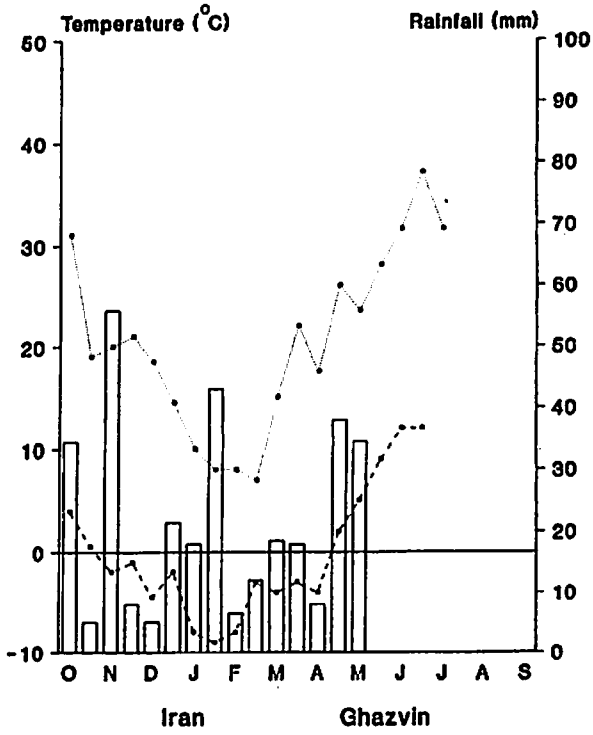

Temperature (°C)
Rainfall (mm)
101.7
201.6
O N D J F M A M J J A S
France
Montpellier

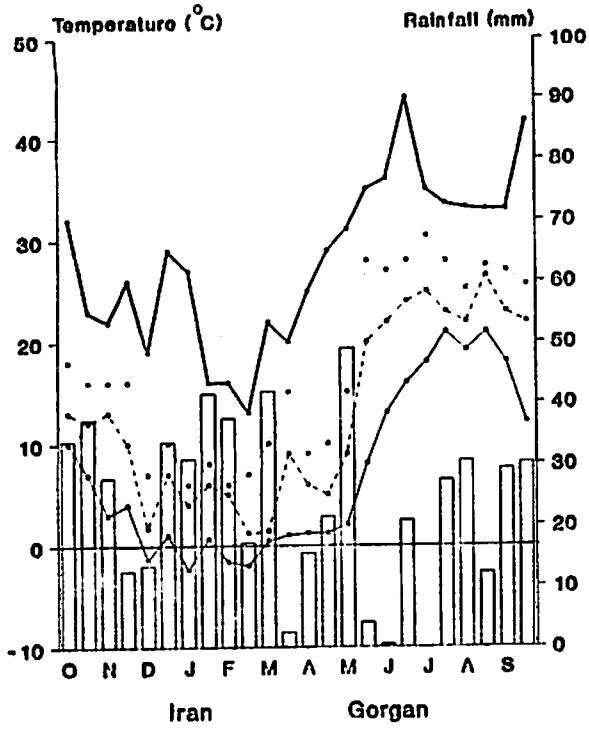

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Greece
Larissa

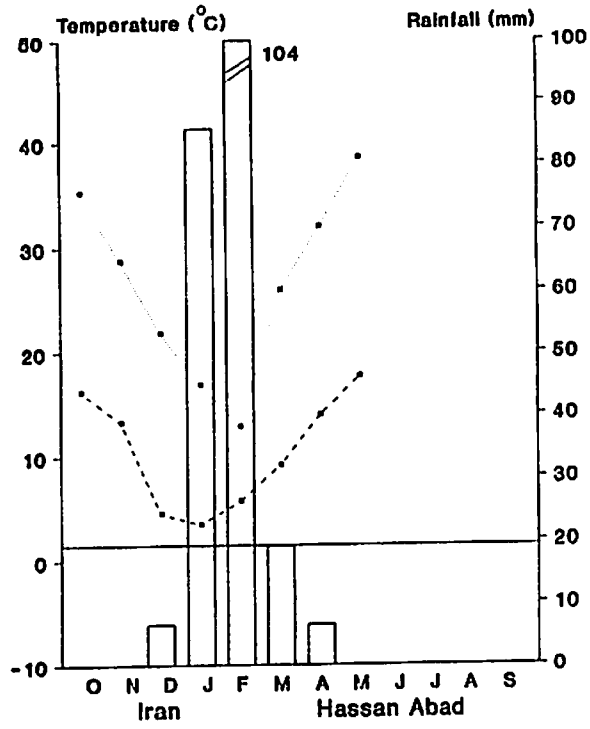

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
India
New Delhi

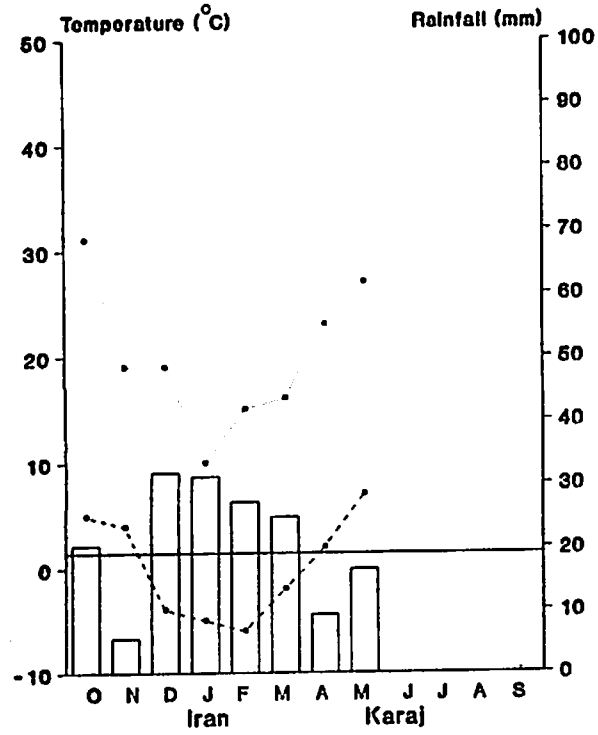

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
India
Ludhiana(Panjab)

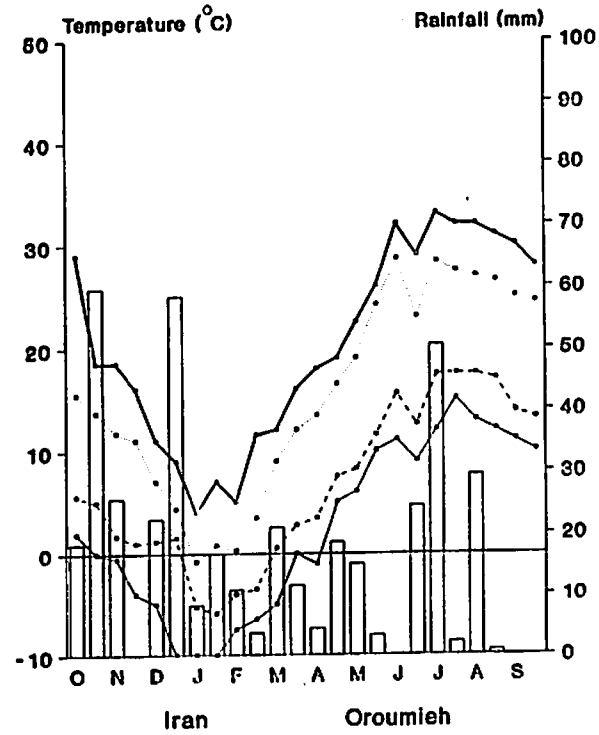

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Iran
Fasa Fars

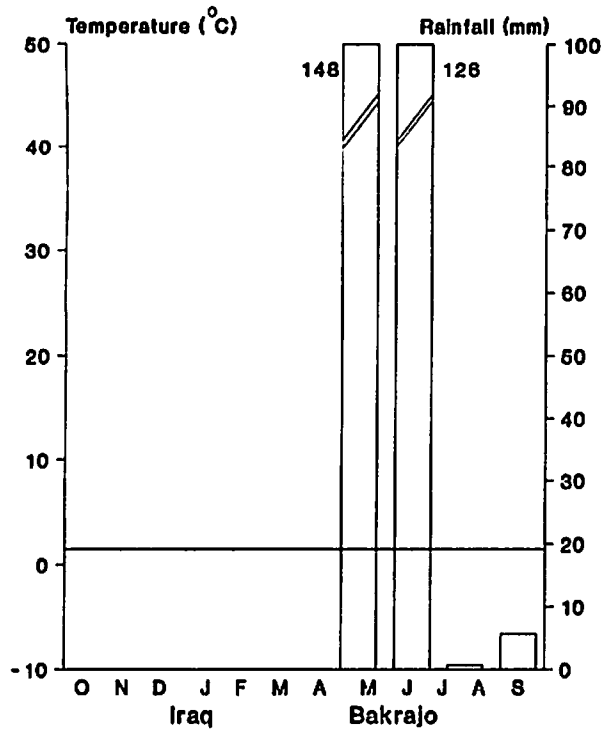

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Iran
Ghazvin

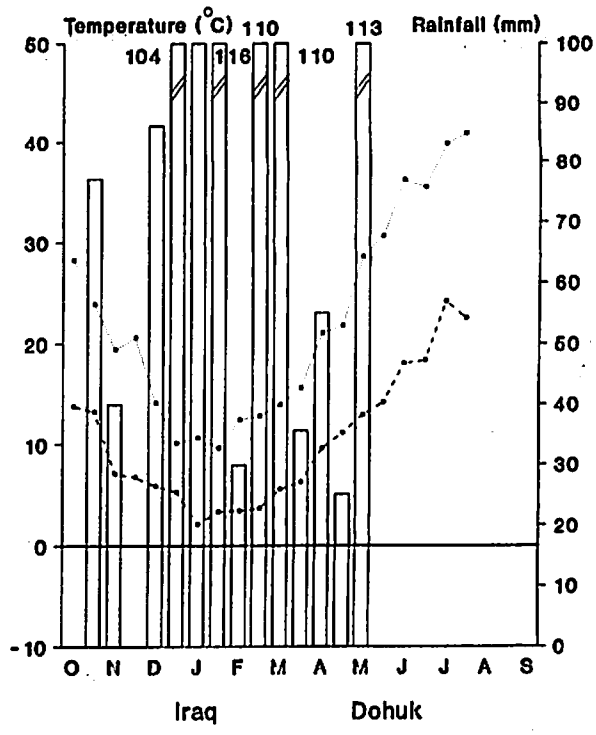

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Iran
Gorgan

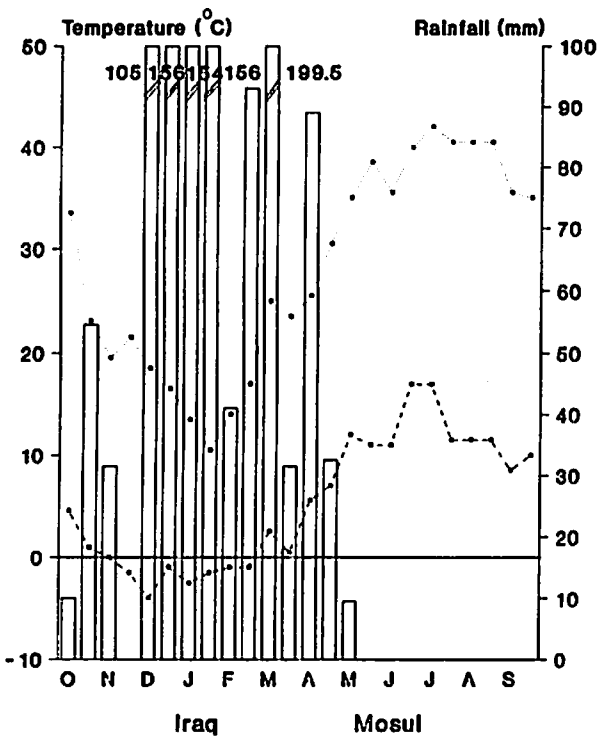

Temperature (°C)
Rainfall (mm)
104
O N D J F M A M J J A S
Iran
Hassan Abad

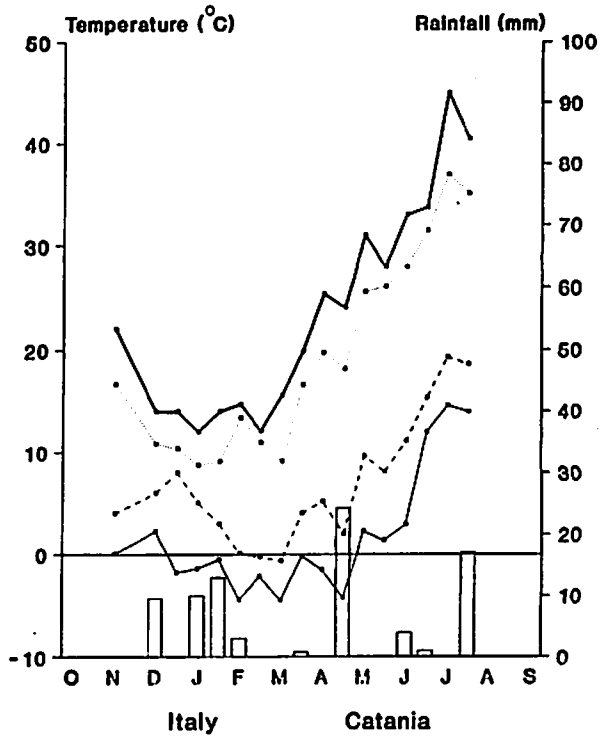

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Iran
Karaj

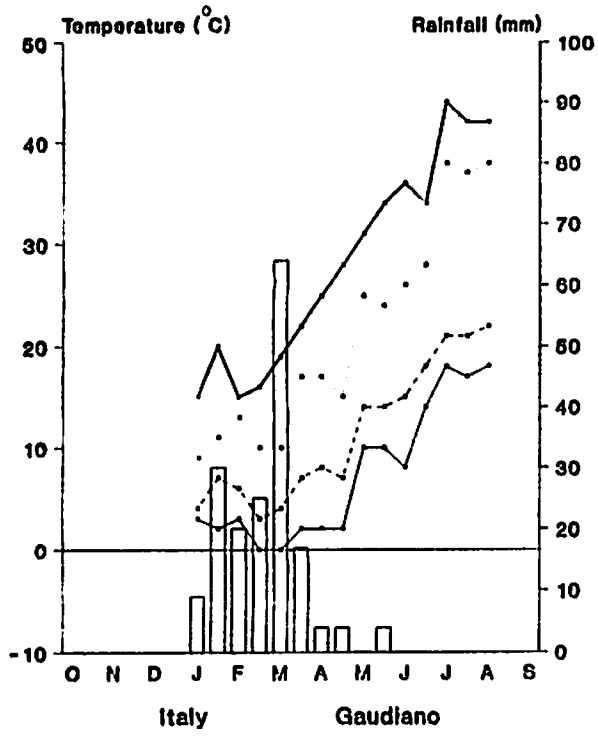

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Iran
Oroumieh

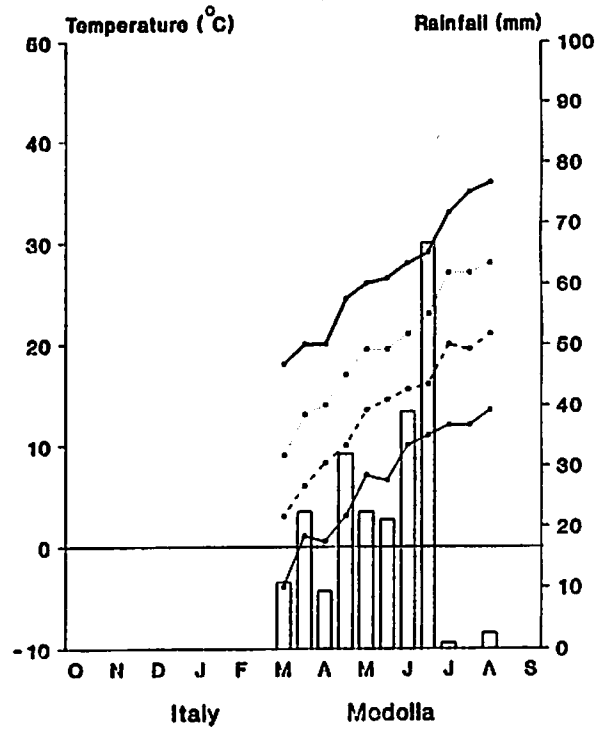

Temperature (°C)
Rainfall (mm)
148
126
O N D J F M A M J J A S
Iraq
Bakrajo

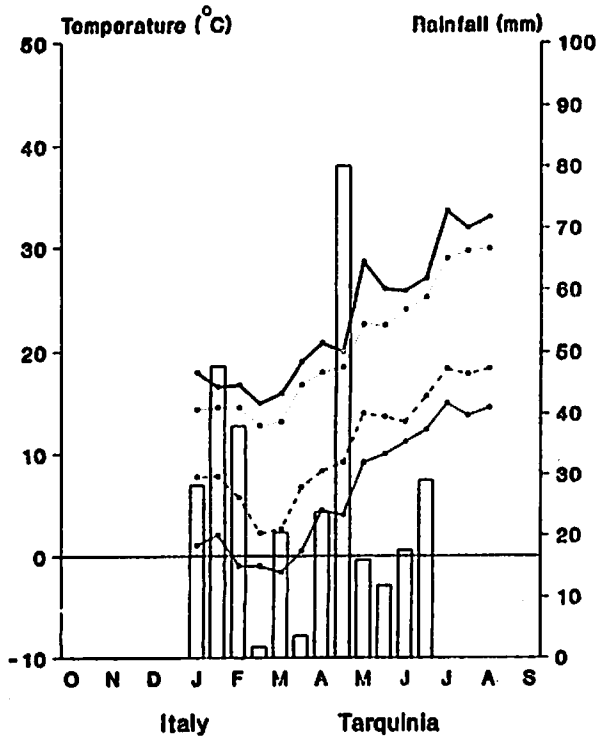

Temperature (°C)
Rainfall (mm)
104
116
110
110
113
O N D J F M A M J J A S
Iraq
Dohuk

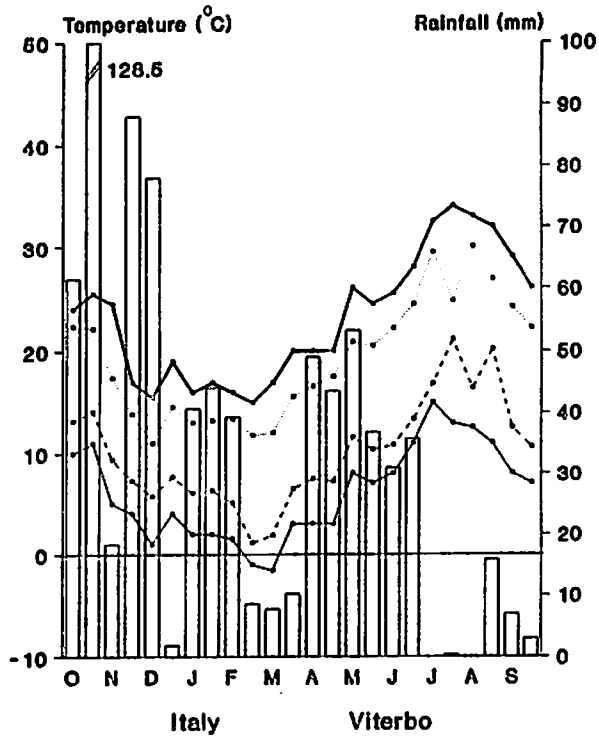

Temperature (°C)
Rainfall (mm)
105
156
154
156
199.5
O N D J F M A M J J A S
Iraq
Mosul

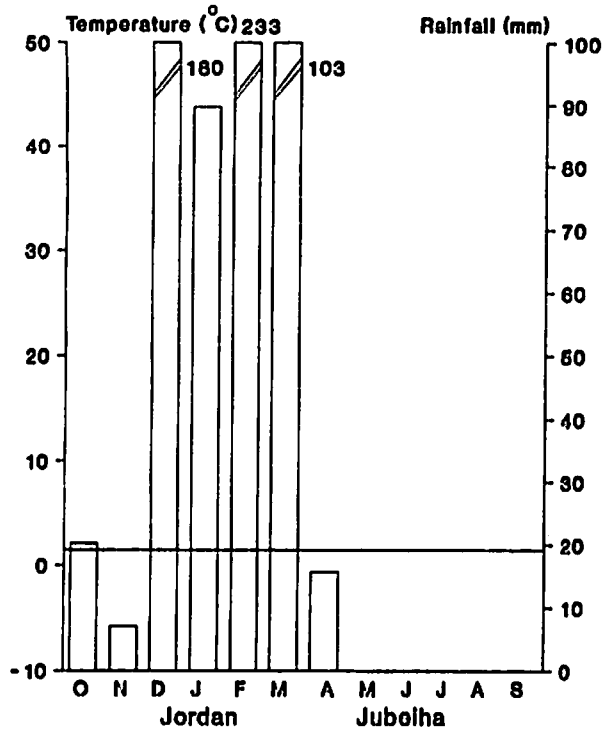

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Italy
Catania

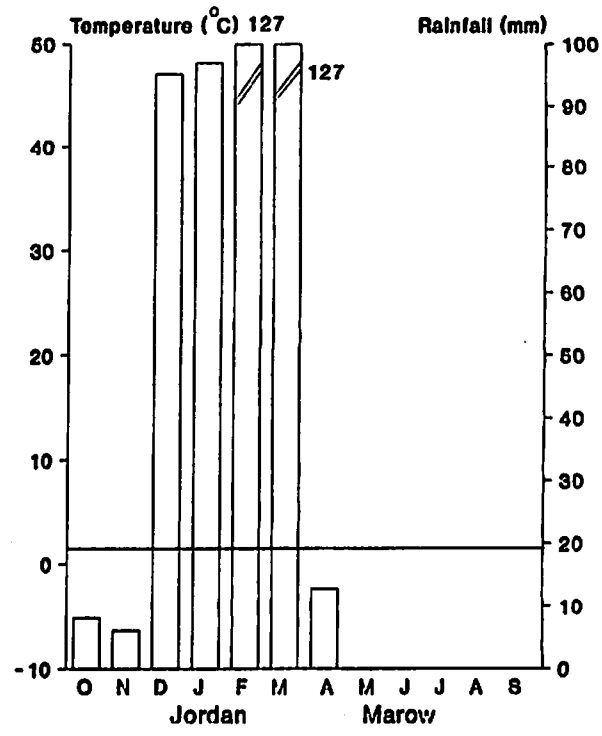

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Italy
Gaudiano

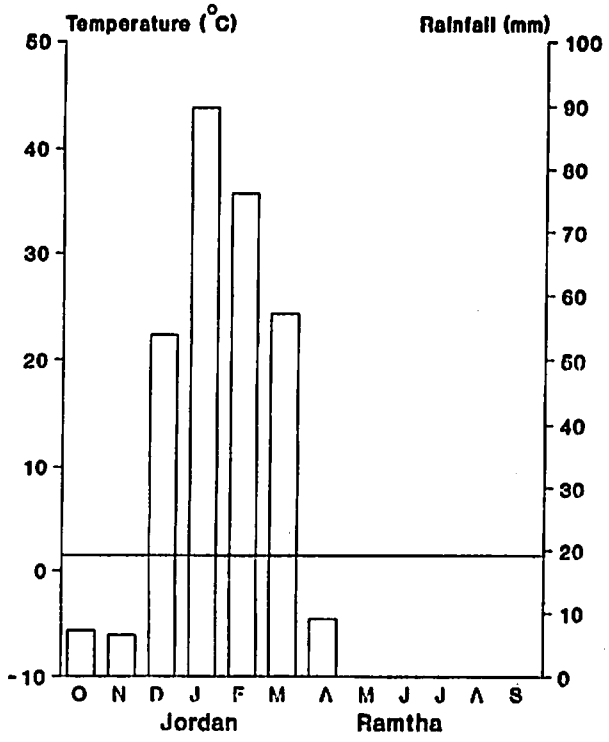

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Italy
Modolla

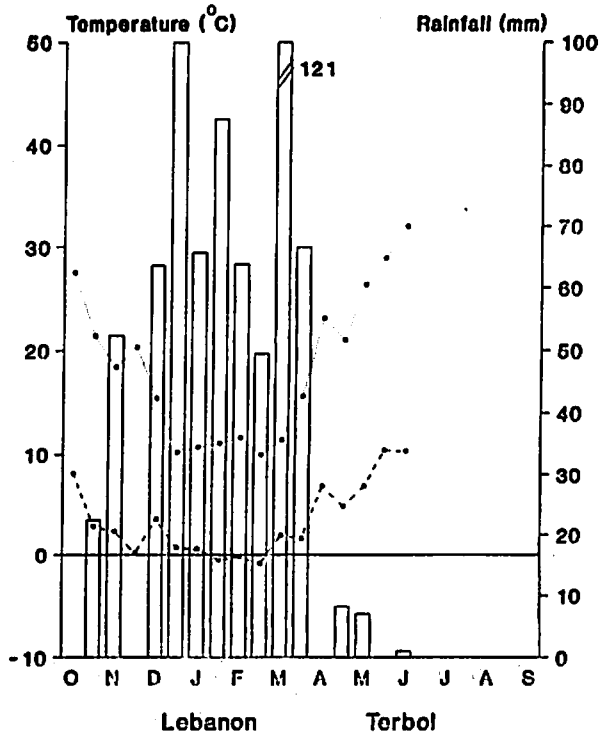

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Italy
Tarquinia

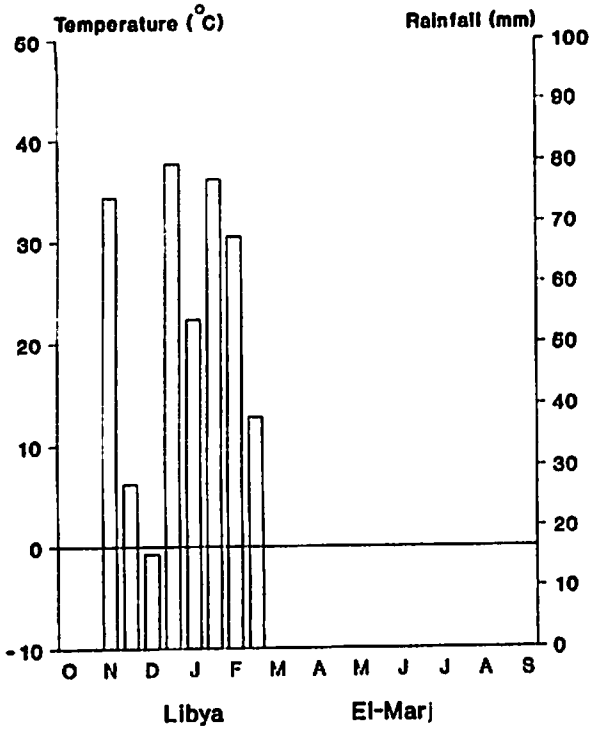

Temperature (°C)
Rainfall (mm)
128.5
O N D J F M A M J J A S
Italy
Viterbo

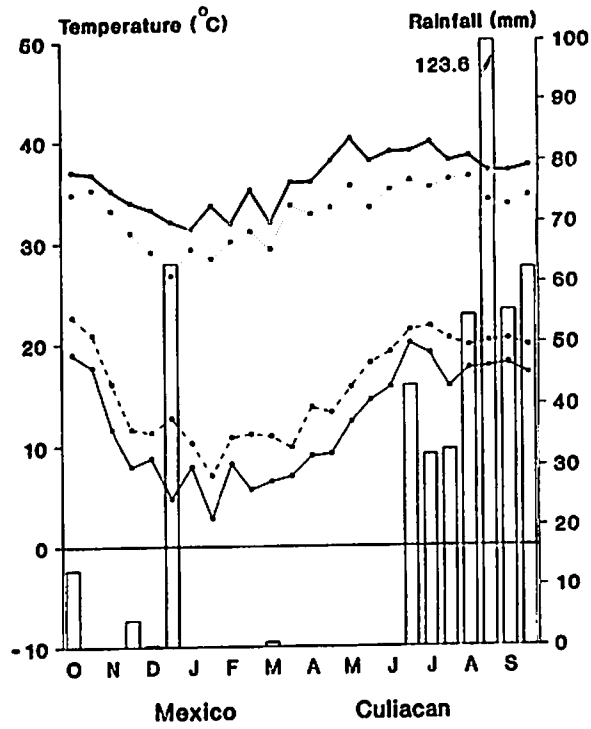

Temperature (°C) 233
Rainfall (mm)
180
103
O N D J F M A M J J A S
Jordan
Jubeiha

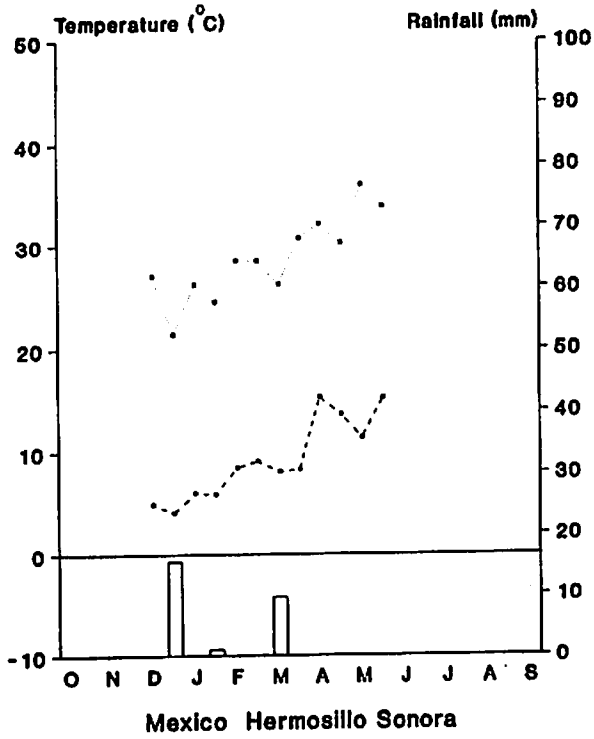

Temperature (°C) 127
Rainfall (mm)
127
O N D J F M A M J J A S
Jordan
Marow

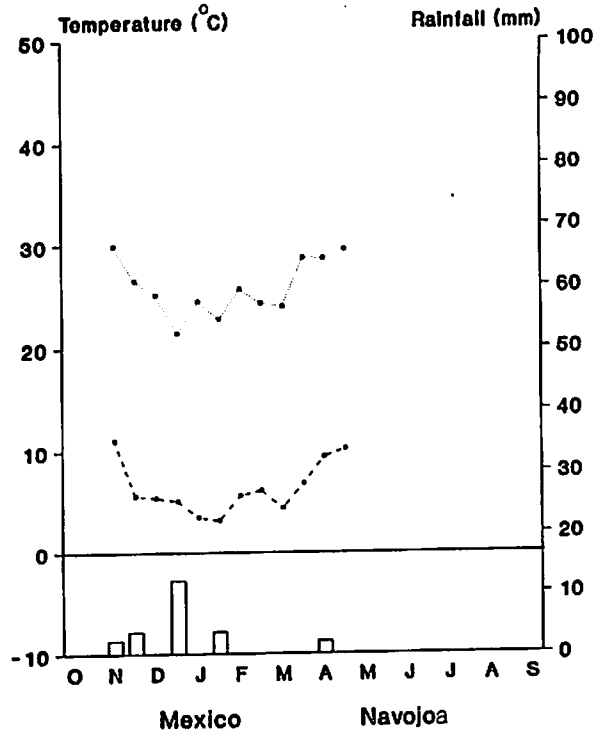

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Jordan
Ramtha

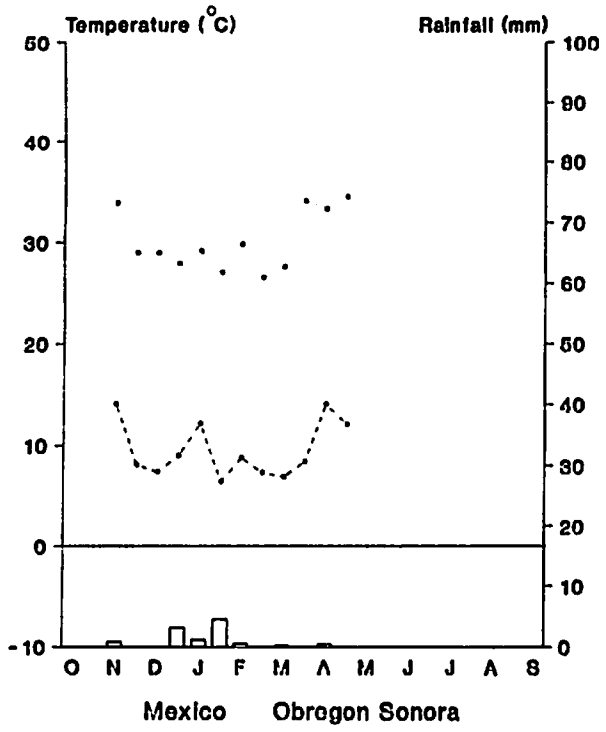

Temperature (°C)
Rainfall (mm)
121
O N D J F M A M J J A S
Lebanon
Terbol

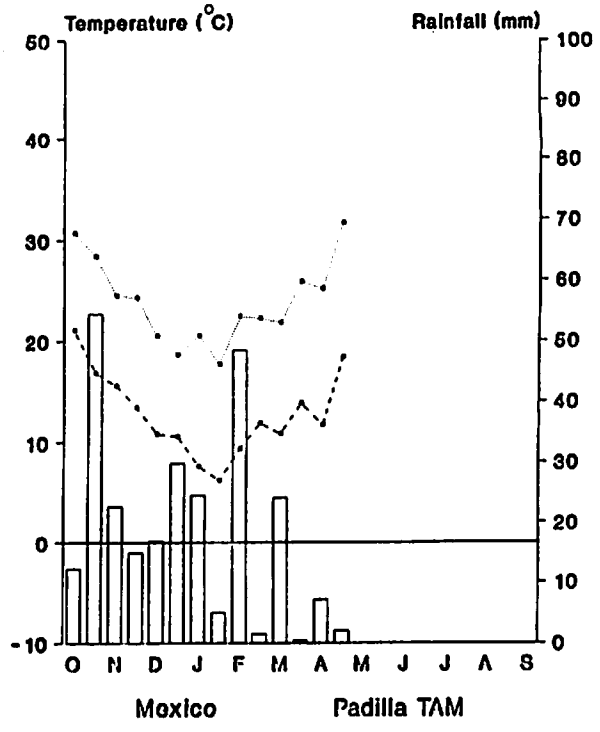

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Libya
El-Marj

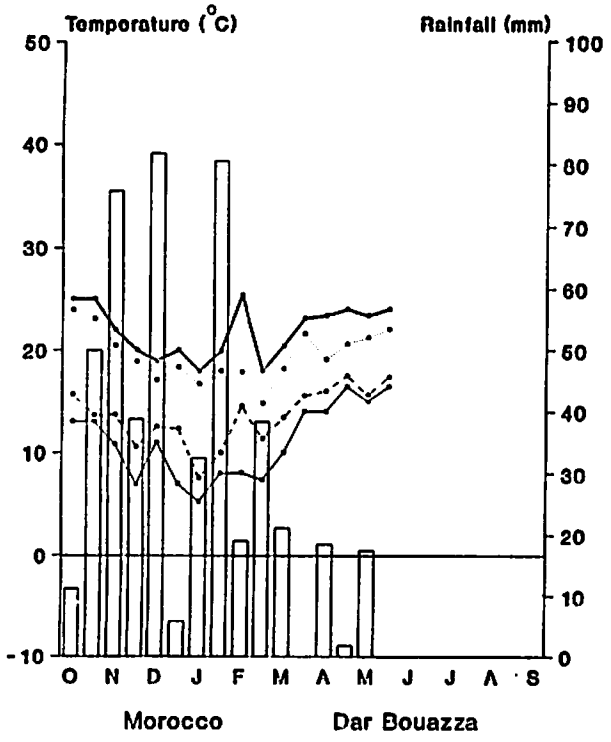

Temperature (°C)
Rainfall (mm)
123.6
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Mexico
Culiacan

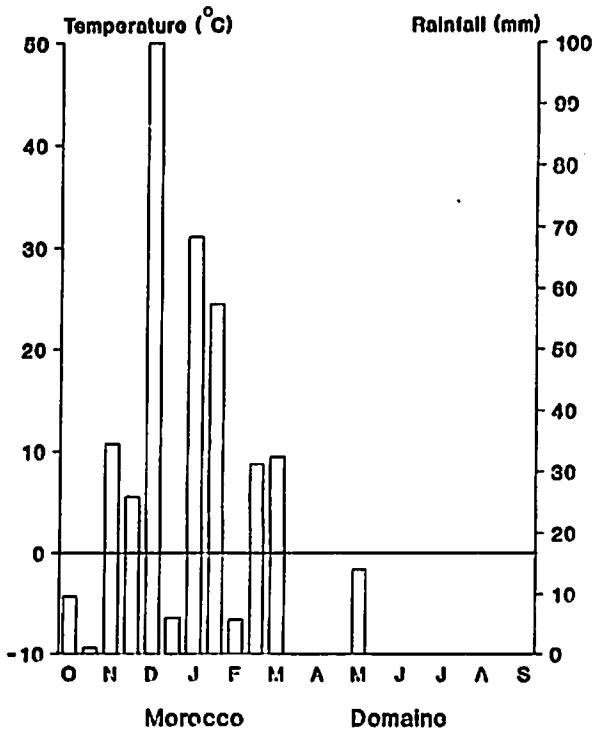

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Mexico Hermosillo Sonora

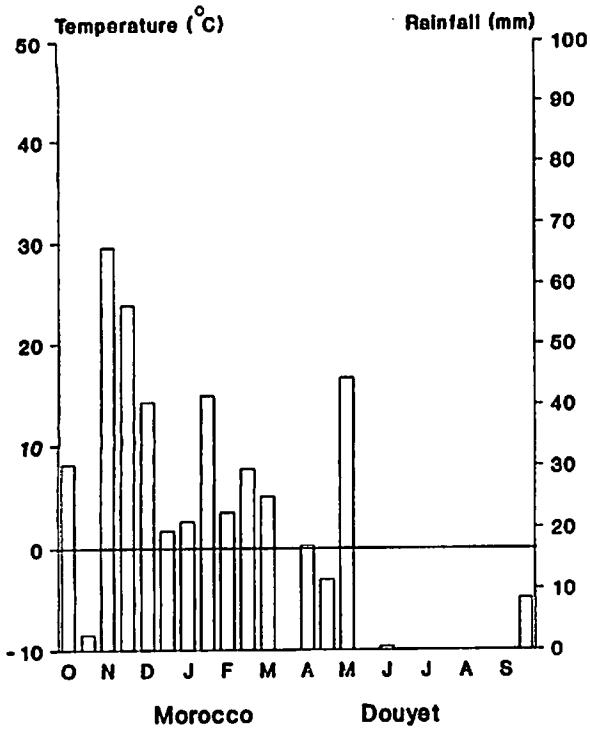

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Mexico
Navojoa

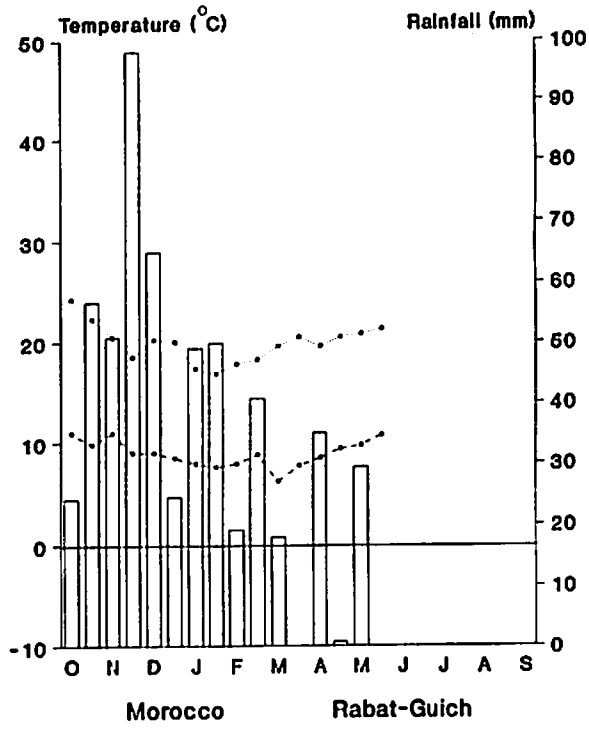

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Mexico Obregon Sonora

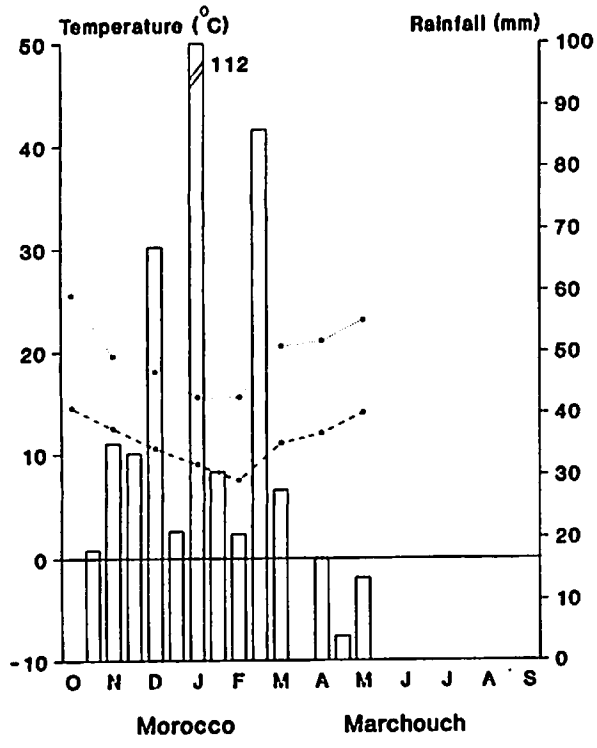

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Mexico Padilla TAM

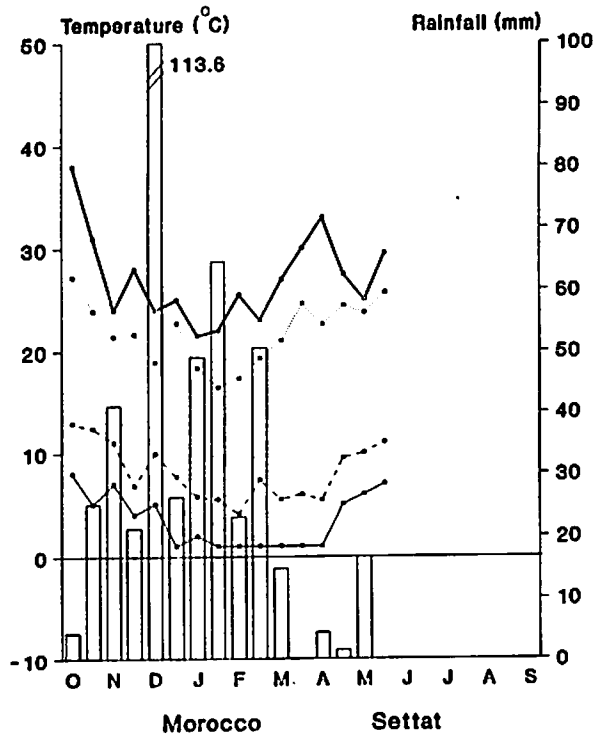

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Morocco Dar Bouazza

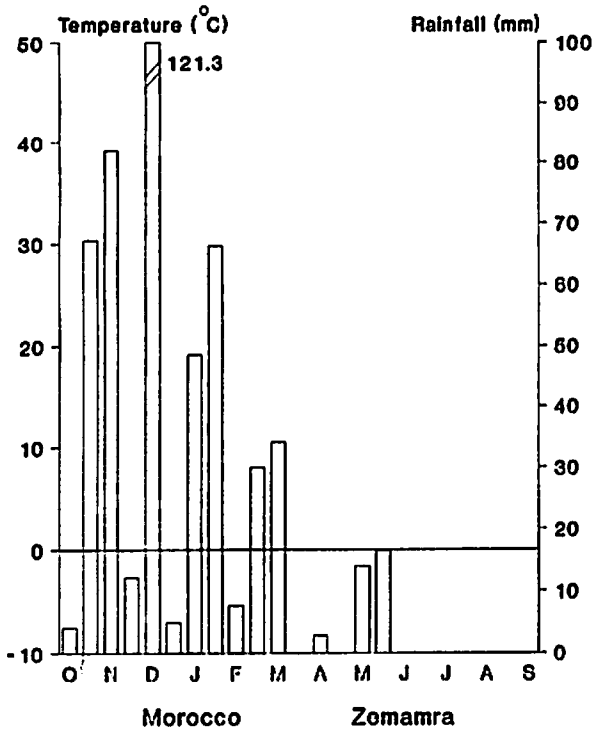

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Morocco Domaine

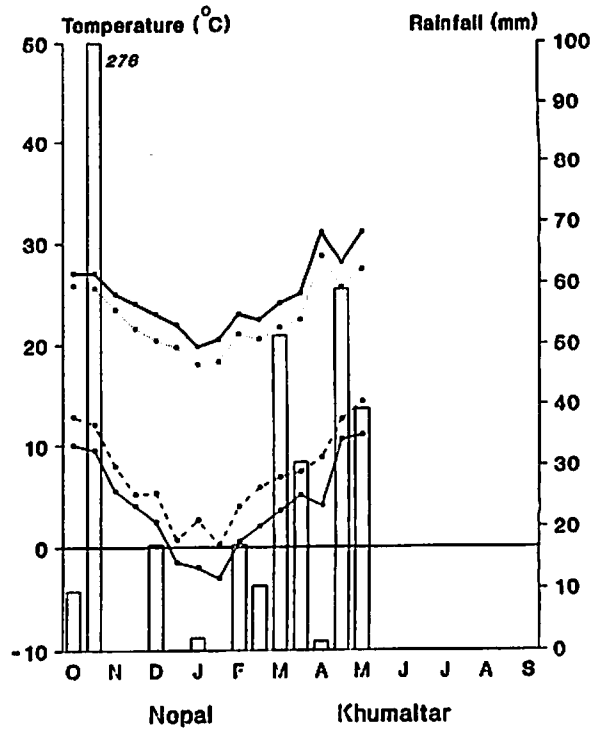

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Morocco
Douyet

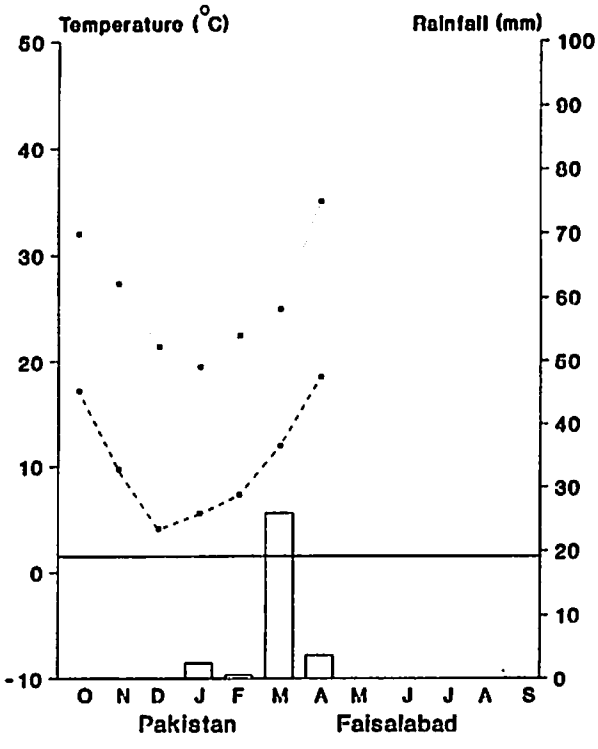

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Morocco
Rabat-Guich

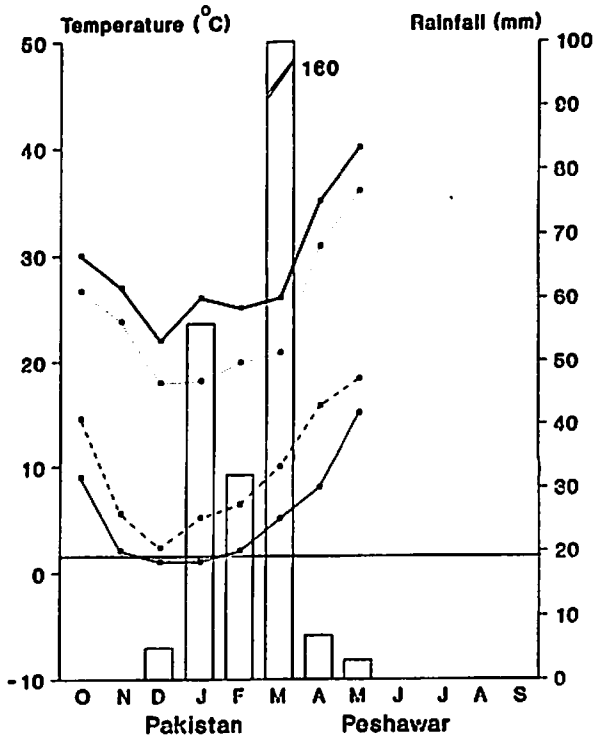

Temperature (°C)
Rainfall (mm)
112
O N D J F M A M J J A S
Morocco
Marchouch

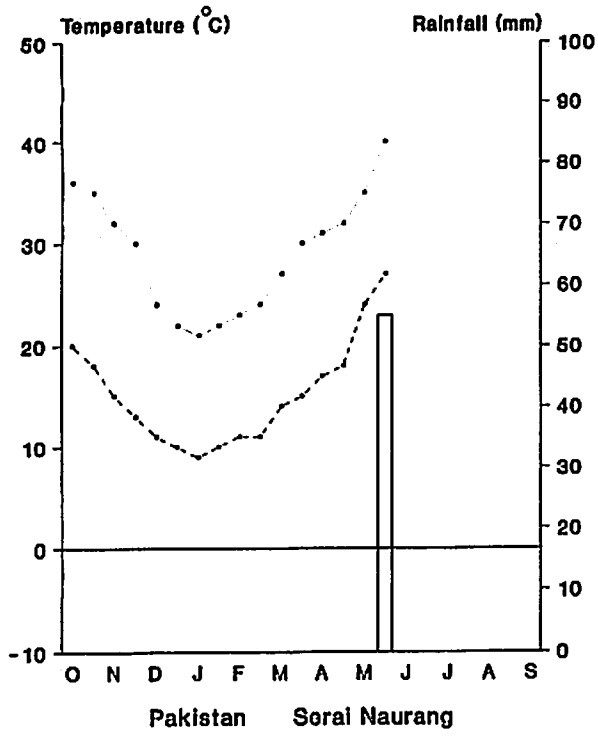

Temperature (°C)
Rainfall (mm)
113.6
O N D J F M A M J J A S
Morocco
Settat

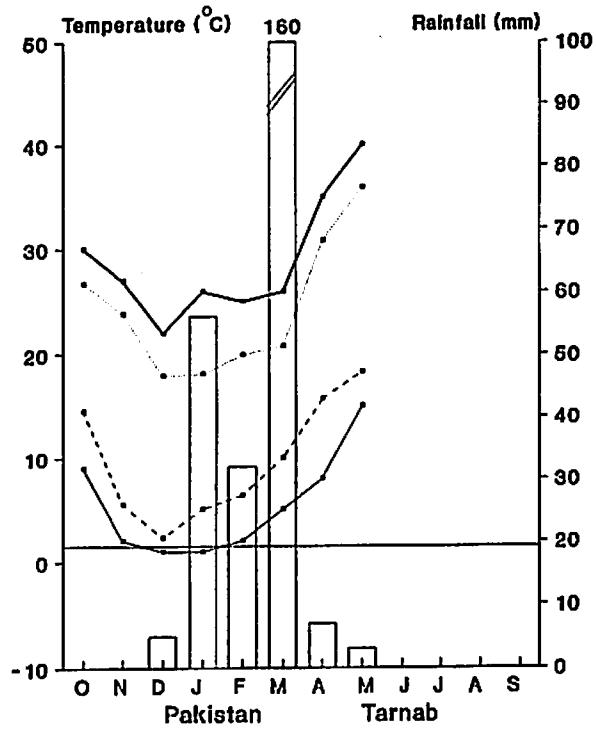

Temperature (°C)
Rainfall (mm)
121.3
O N D J F M A M J J A S
Morocco
Zemamra

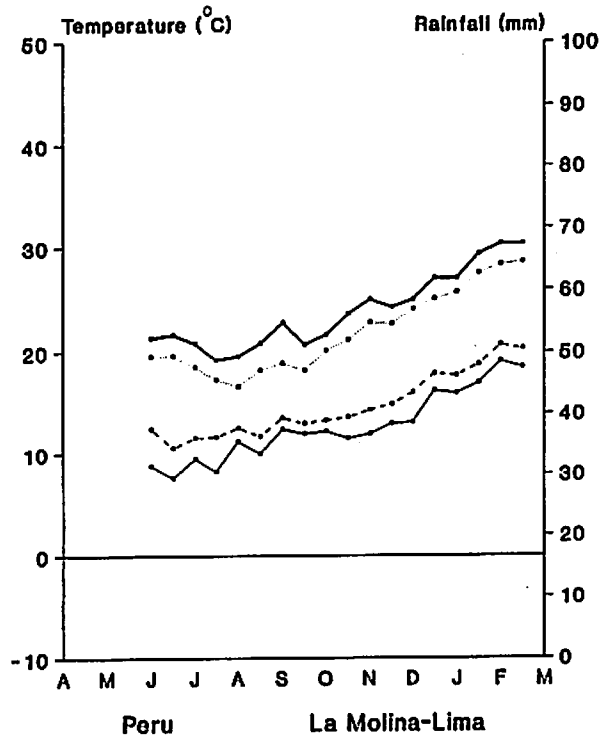

Temperature (°C)
Rainfall (mm)
278
O N D J F M A M J J A S
Nepal
Khumaltar

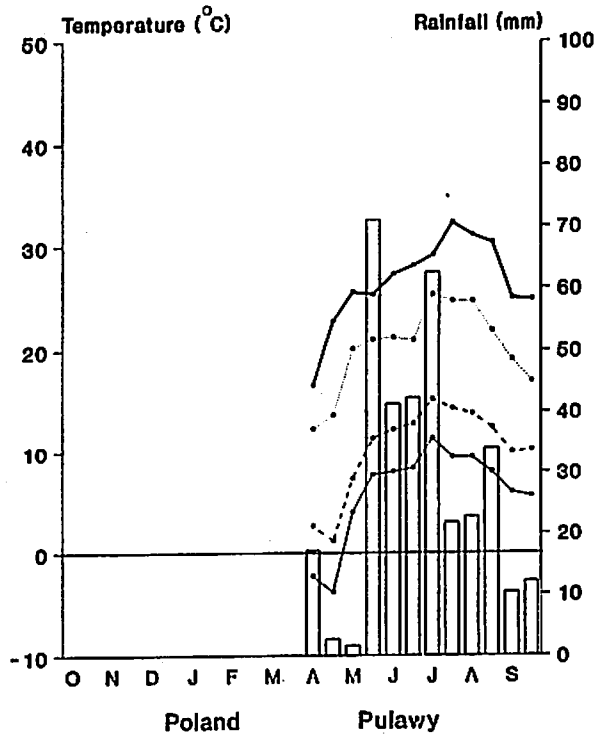

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Pakistan
Faisalabad

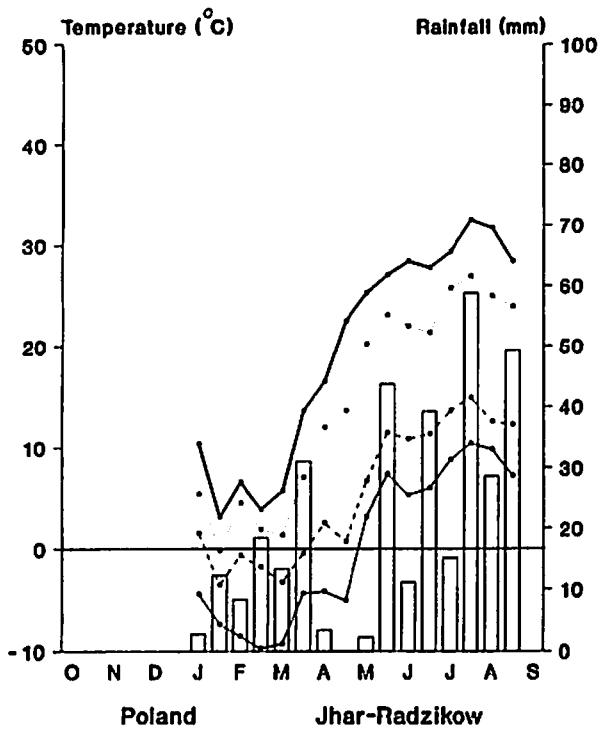

Temperature (°C)
Rainfall (mm)
160
O N D J F M A M J J A S
Pakistan
Peshawar

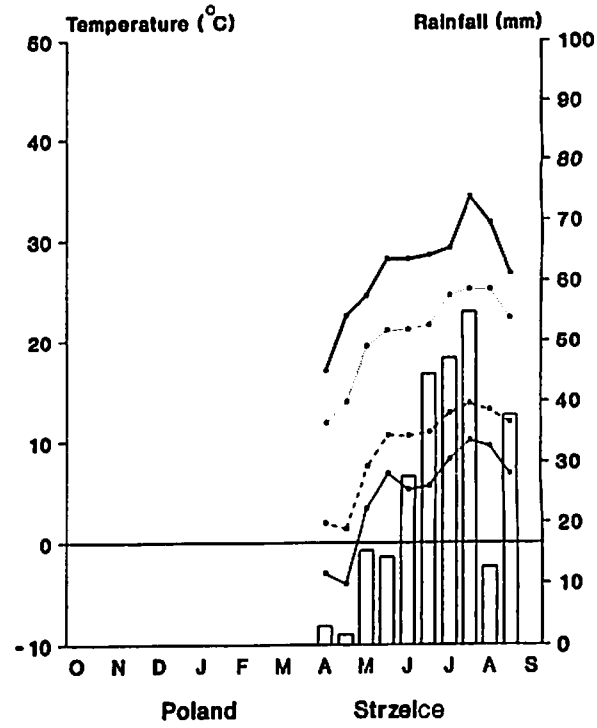

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Pakistan
Sorai Naurang

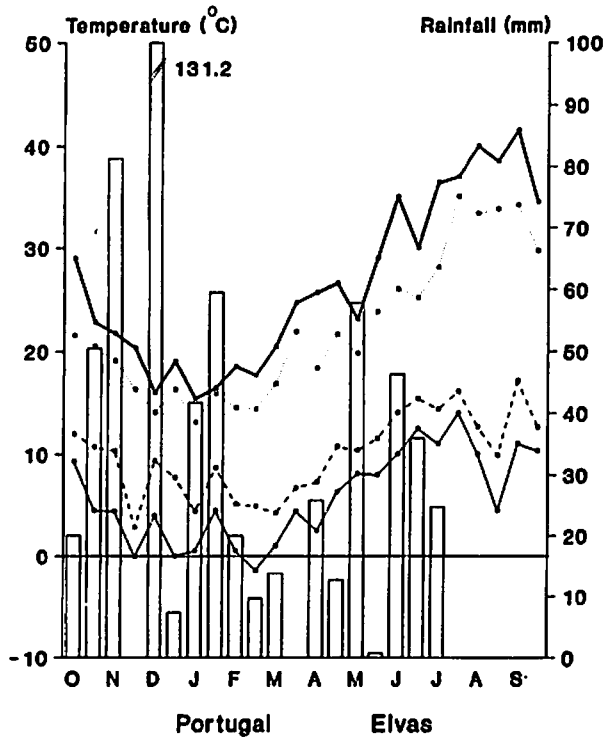

Temperature (°C)
160
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Pakistan
Tarnab

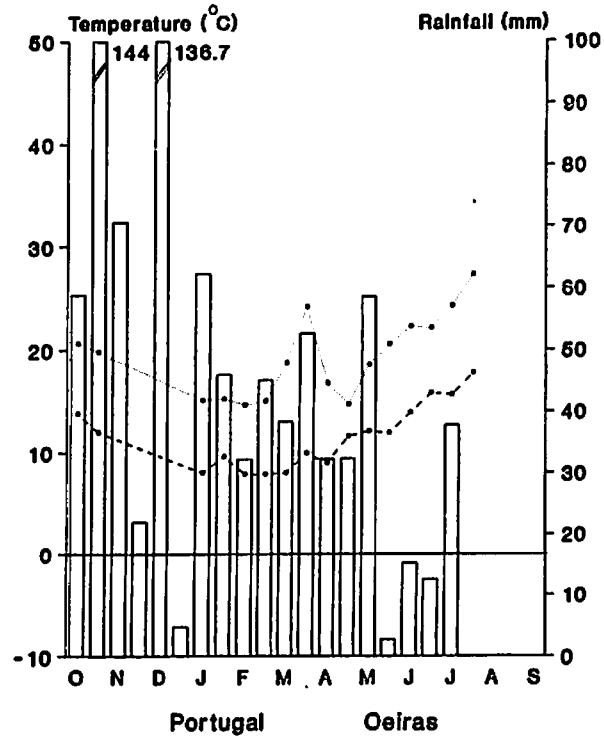

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
A M J J A S O N D J F M
Peru
La Molina-Lima

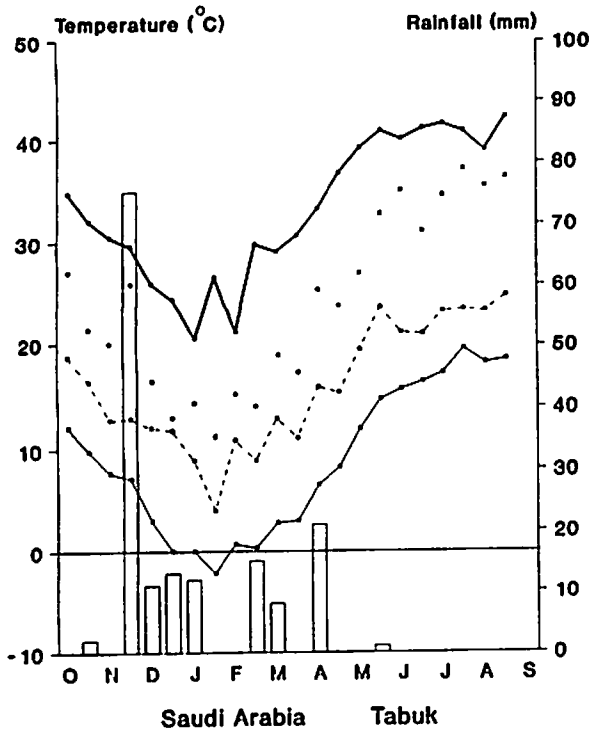

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Poland
Pulawy

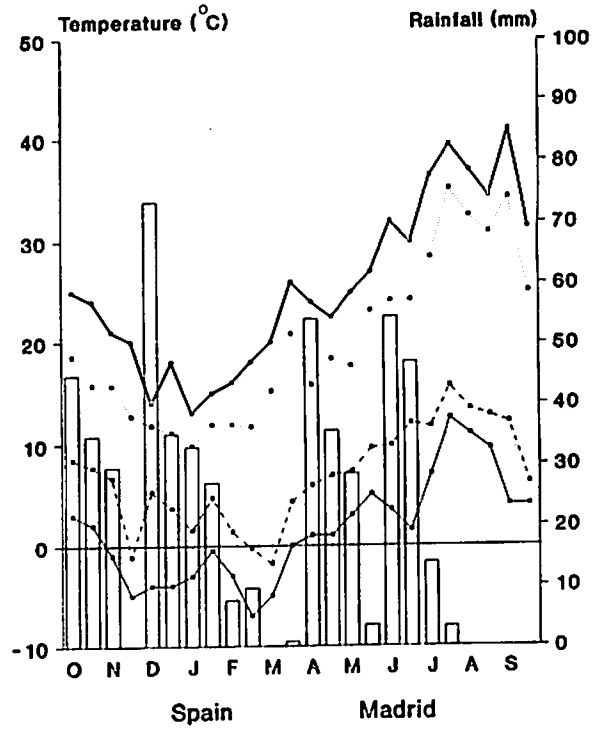

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Poland
Jhar-Radzikow

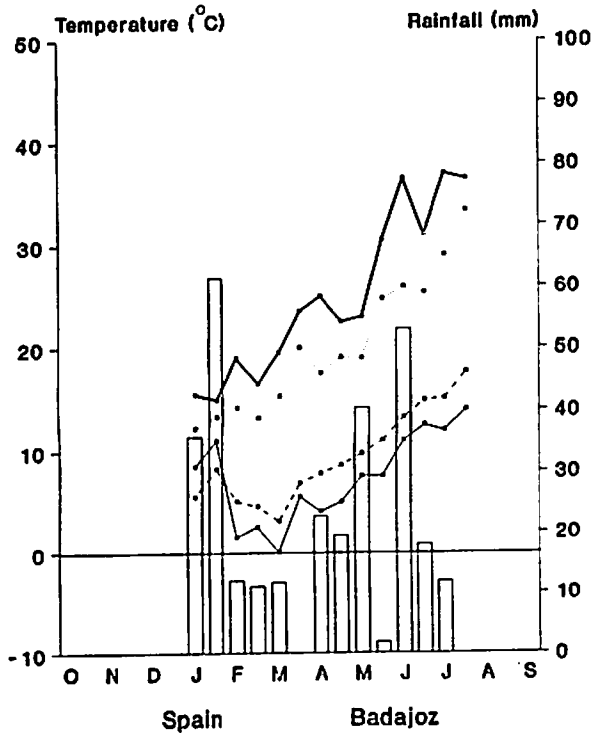

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Poland
Strzelce

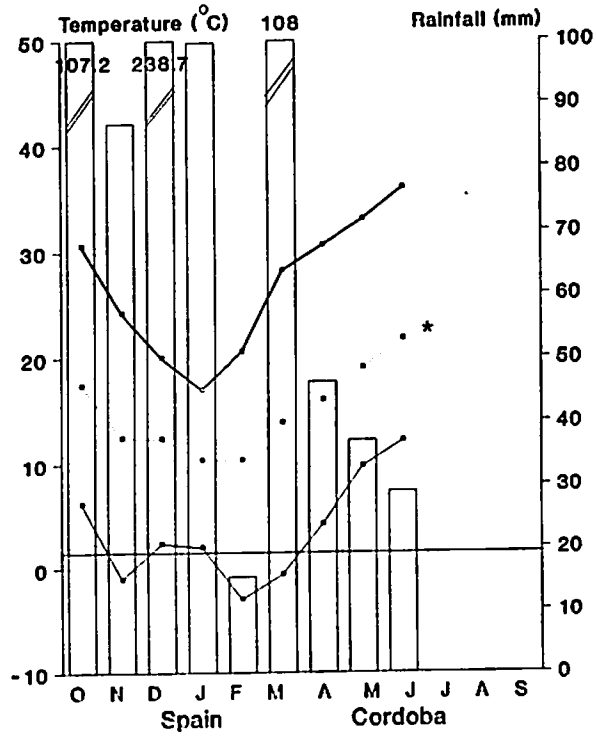

Temperature (°C)
Rainfall (mm)
131.2
O N D J F M A M J J A S
Portugal
Elvas


Temperature (°C)
Rainfall (mm)
144
136.7
O N D J F M A M J J A S
Portugal
Oeiras

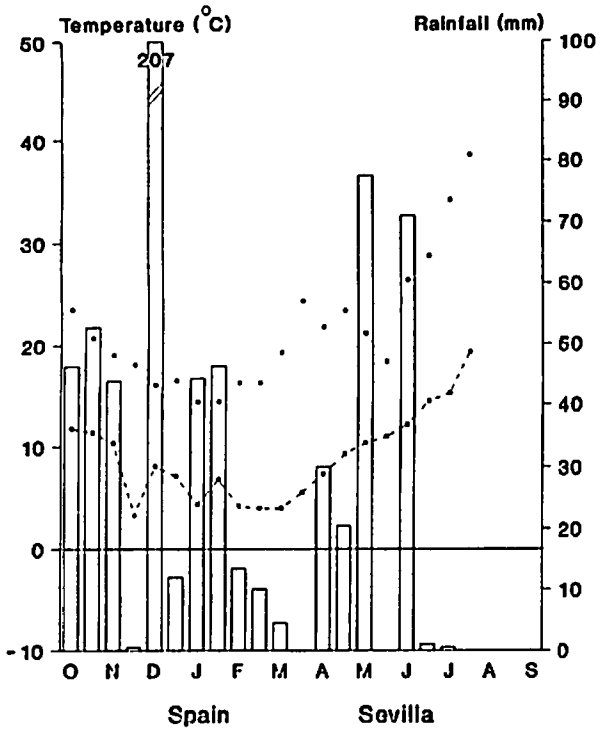


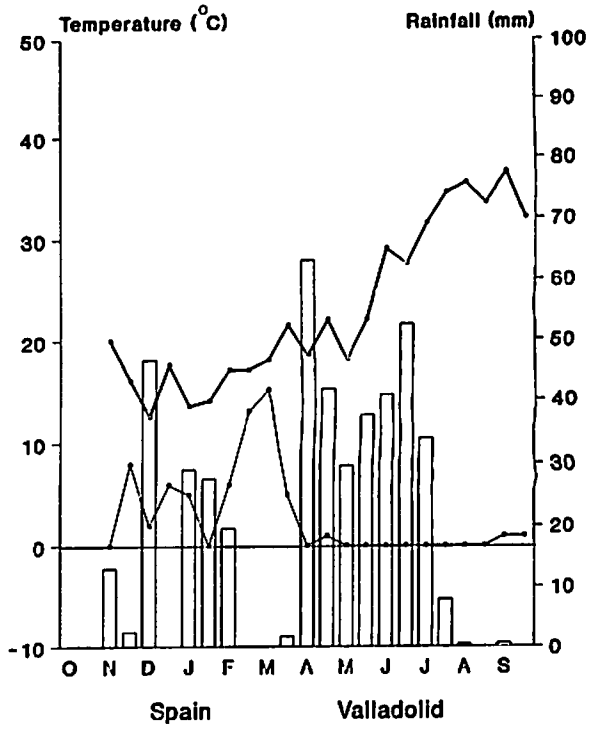


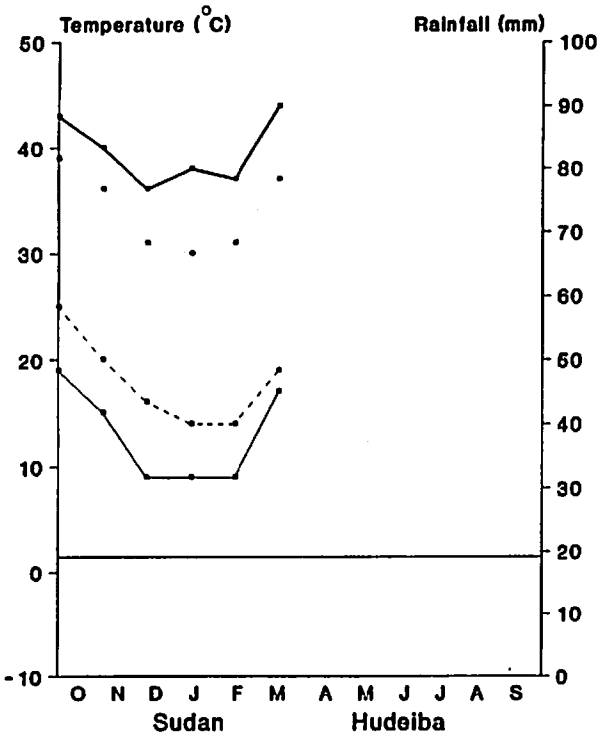


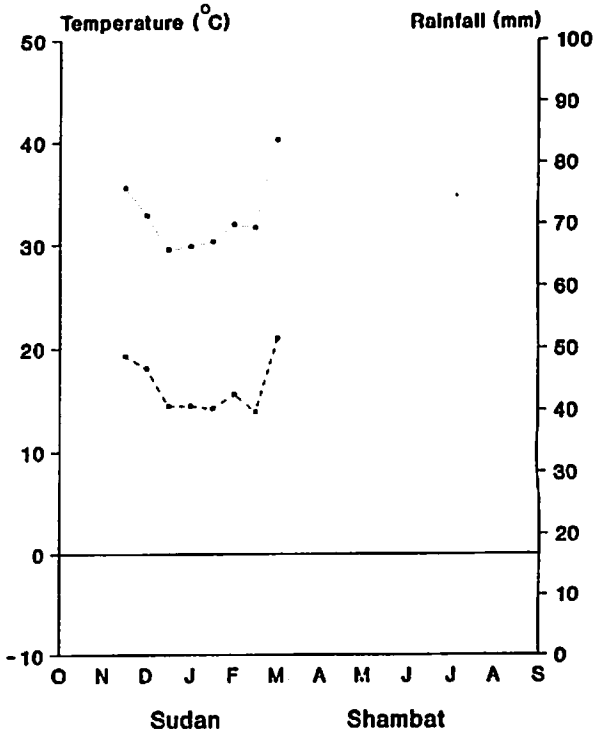


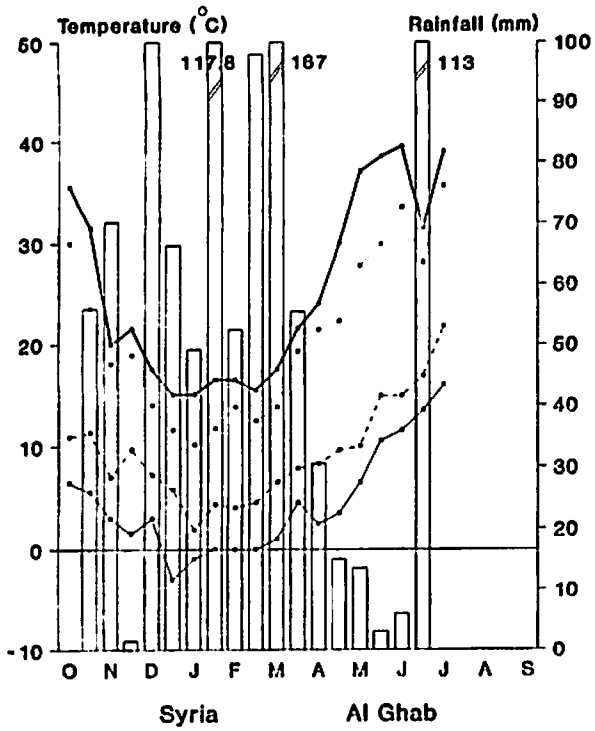
* Average mean temperature.

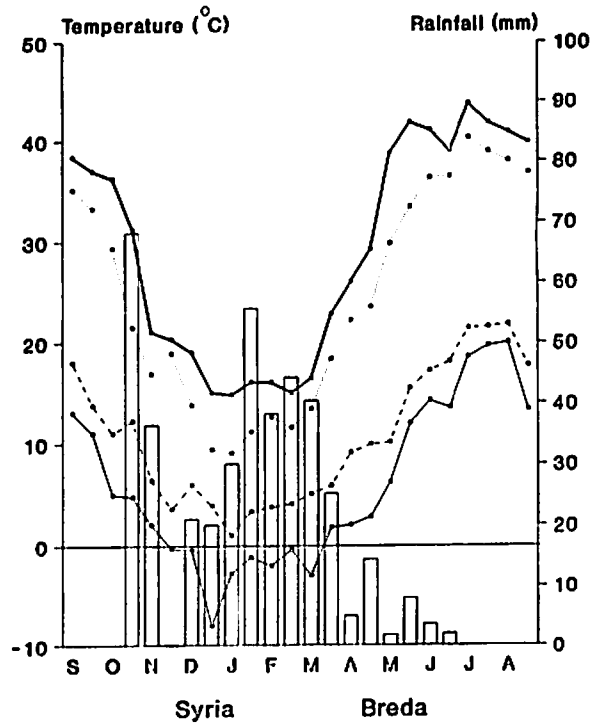

Temperature (°C)
Rainfall (mm)
207
O N D J F M A M J J A S
Spain
Sevilla

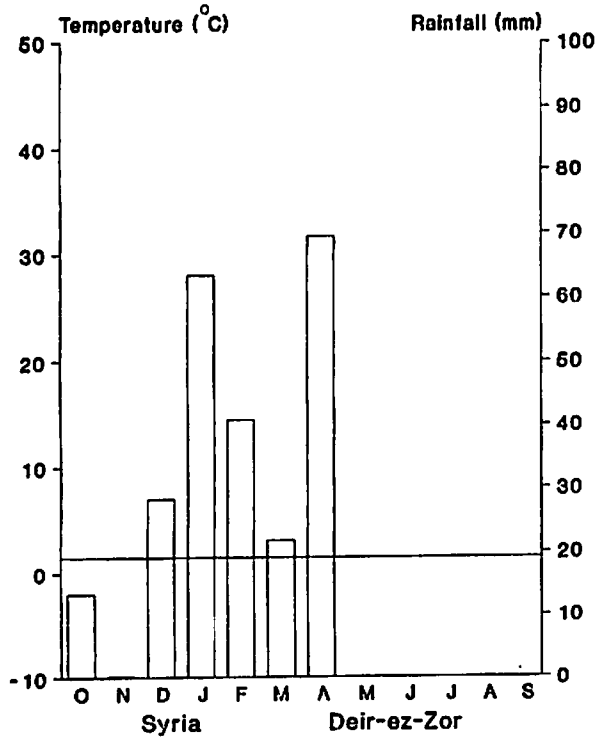

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Spain
Valladolid

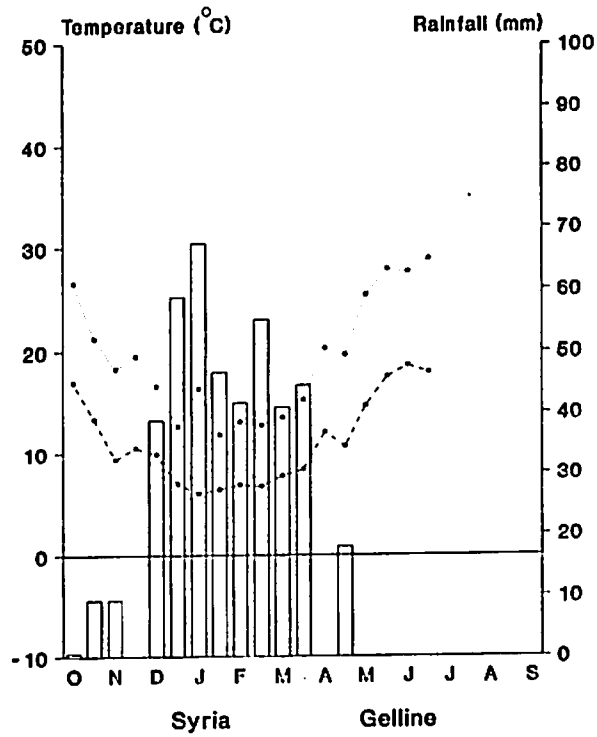

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Sudan
Hudeiba

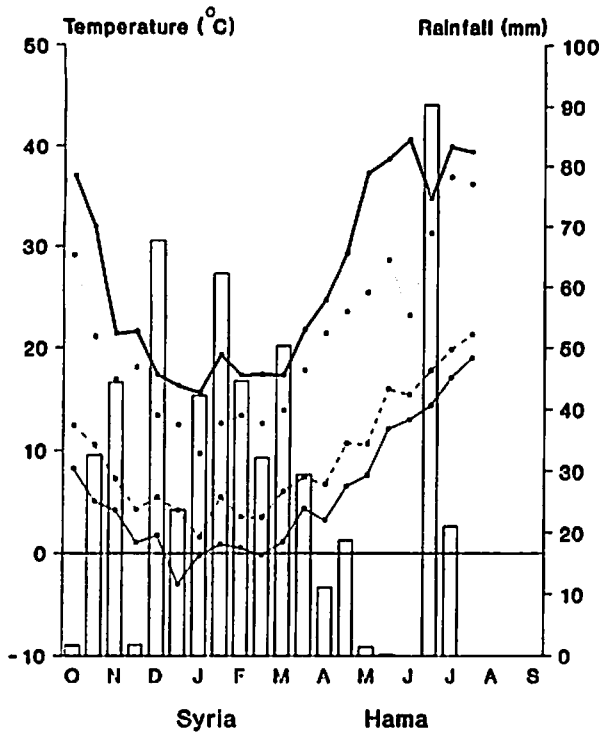

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Sudan
Shambat

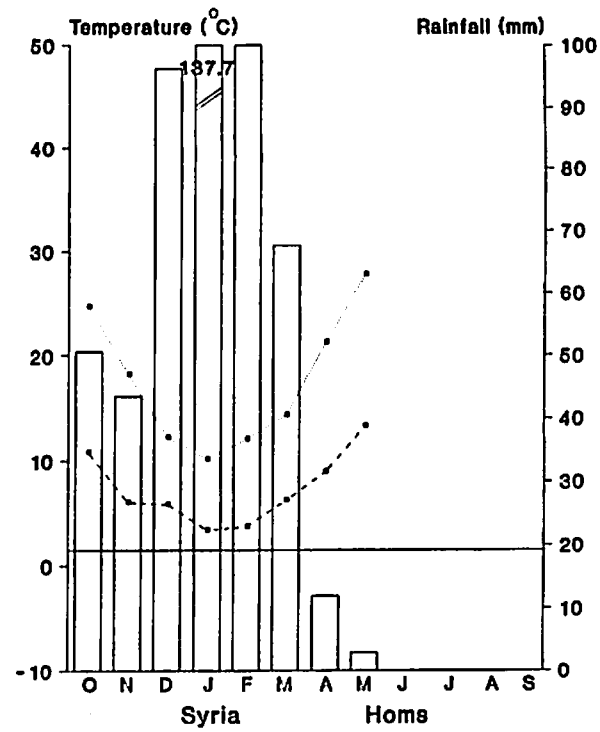

Temperature (°C)
Rainfall (mm)
117.8
167
113
O N D J F M A M J J A S
Syria
Al Ghab

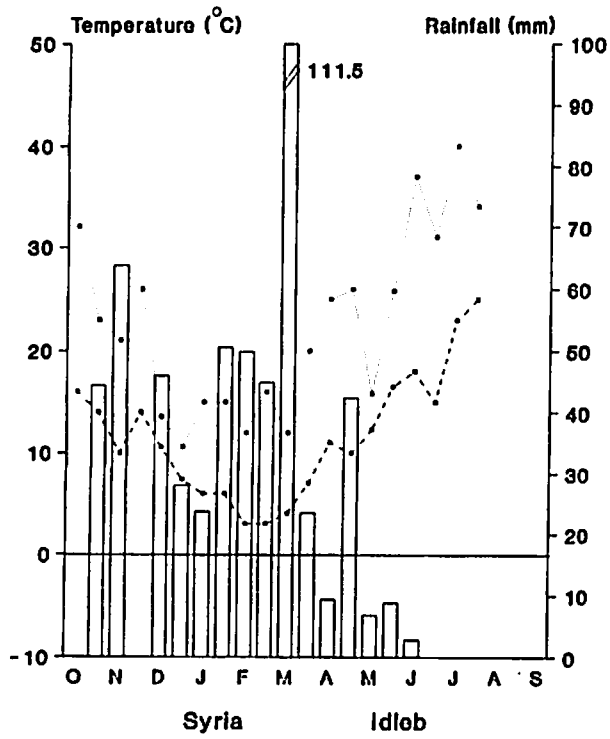

Temperature (°C)
Rainfall (mm)
S O N D J F M A M J J A
Syria
Breda

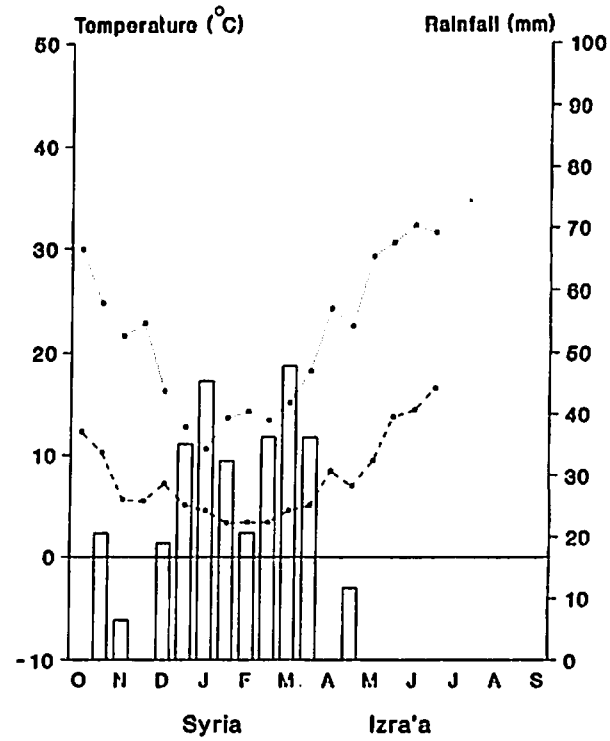

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Syria
Deir-ez-Zor

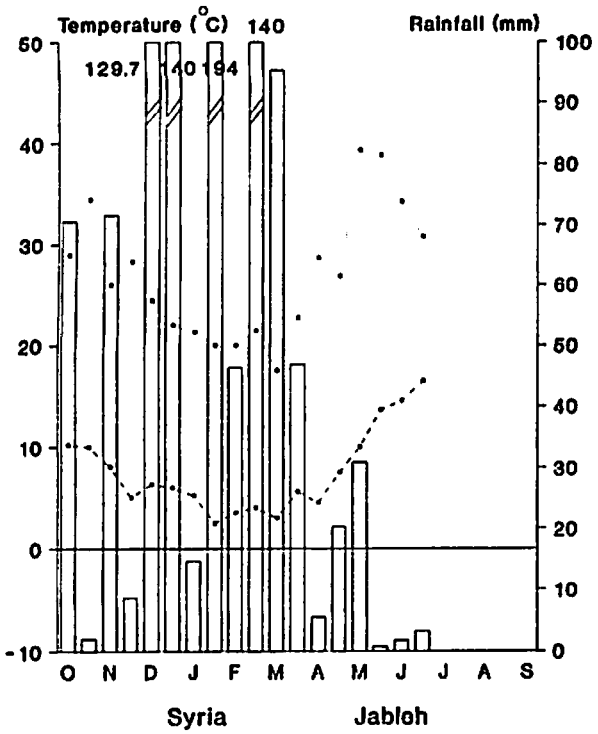

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Syria
Gelline

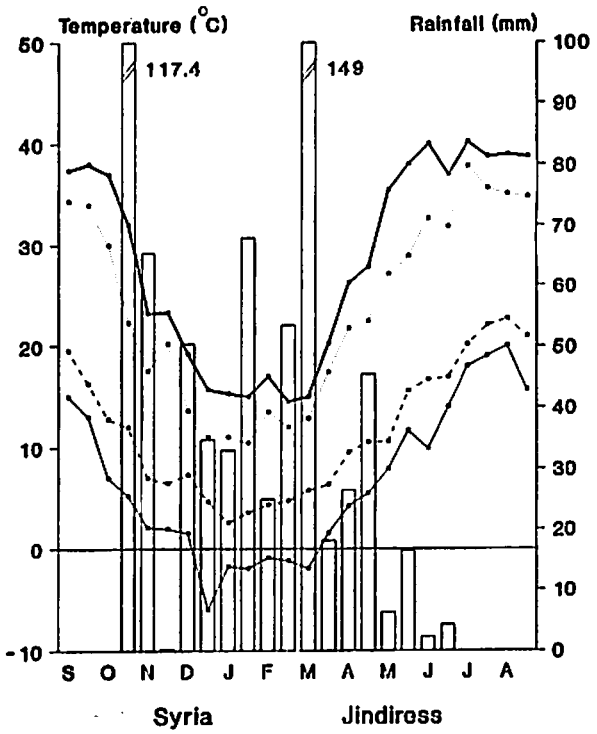

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Syria
Hama

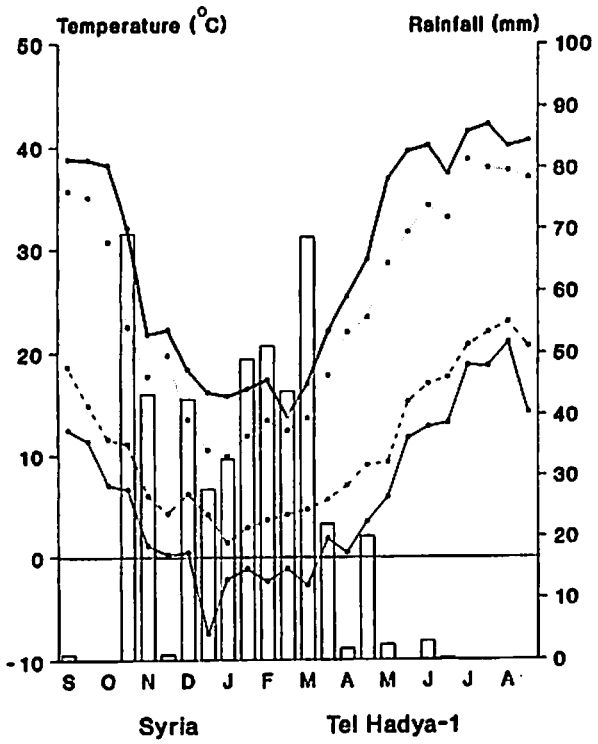

Temperature (°C)
Rainfall (mm)
137.7
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Syria
Homs

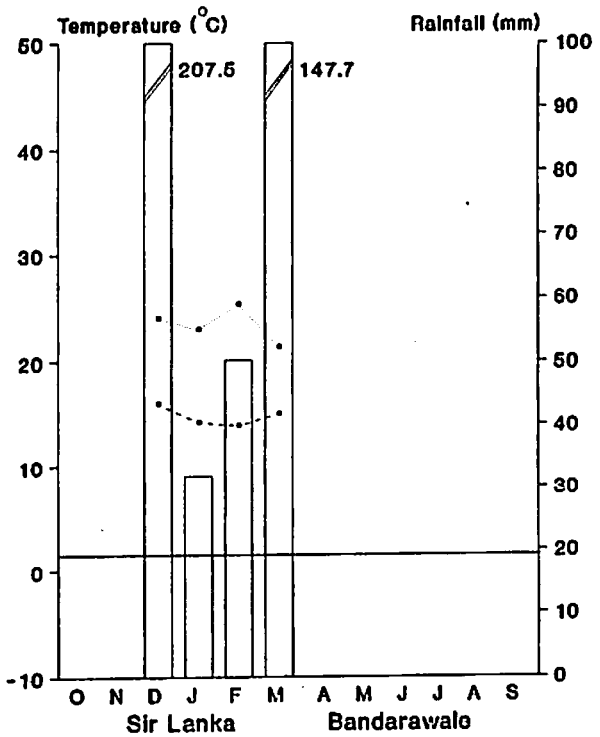

Temperature (°C)
Rainfall (mm)
111.5
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Syria
Idlob

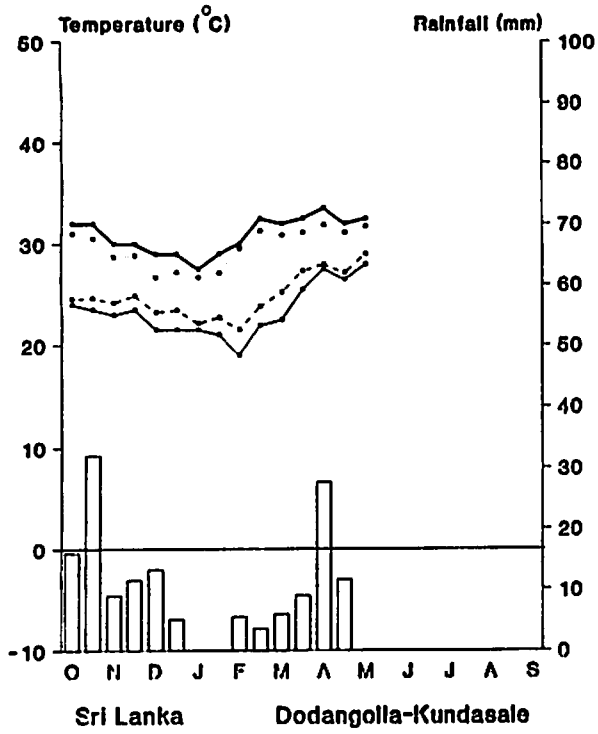

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Syria
Izra'a

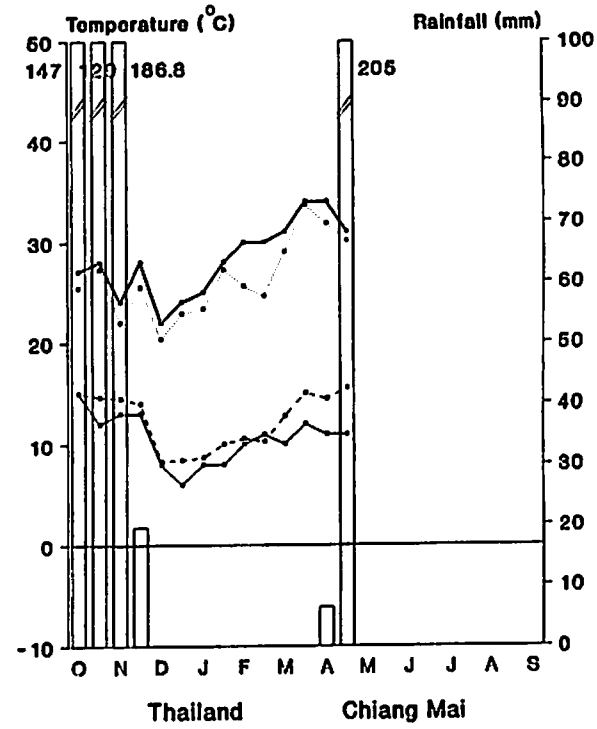

Temperature (°C)
Rainfall (mm)
140
129.7
140
194
O N D J F M A M J J A S
Syria
Jabloh

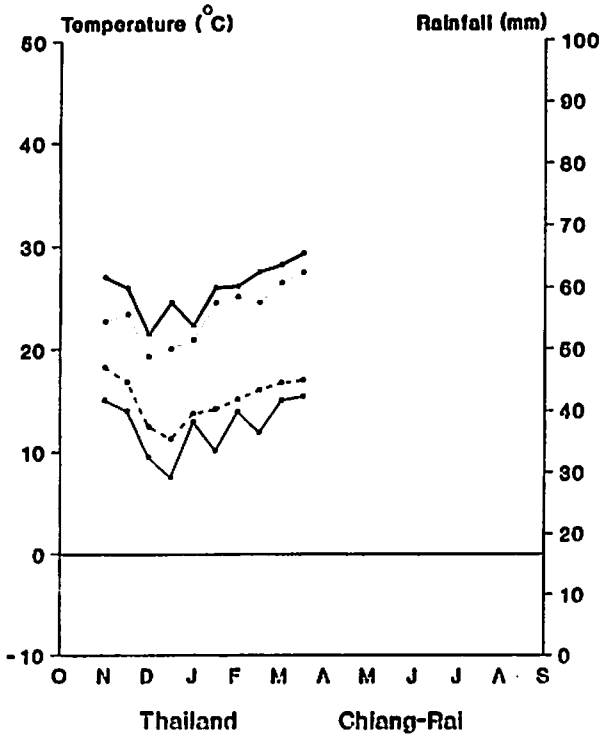

Temperature (°C)
Rainfall (mm)
117.4
149
S O N D J F M A M J J A
Syria
Jindiress

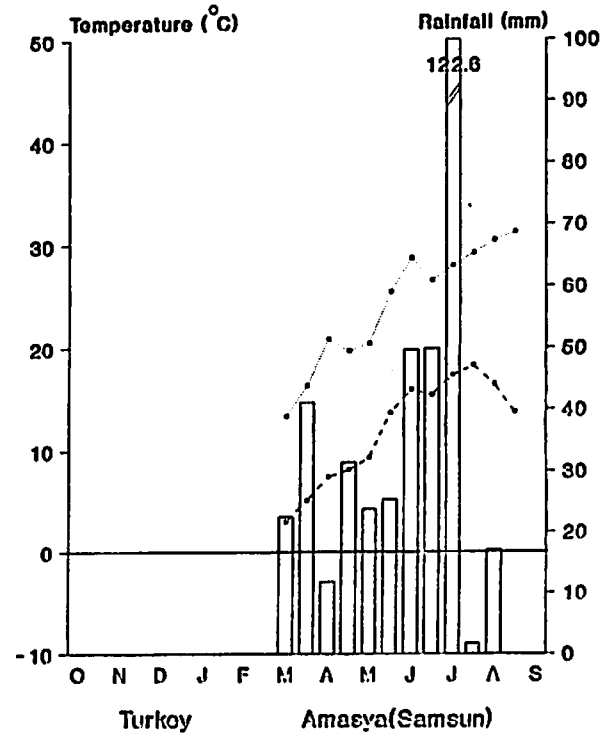

Temperature (°C)
Rainfall (mm)
S O N D J F M A M J J A
Syria
Tel Hadya-1

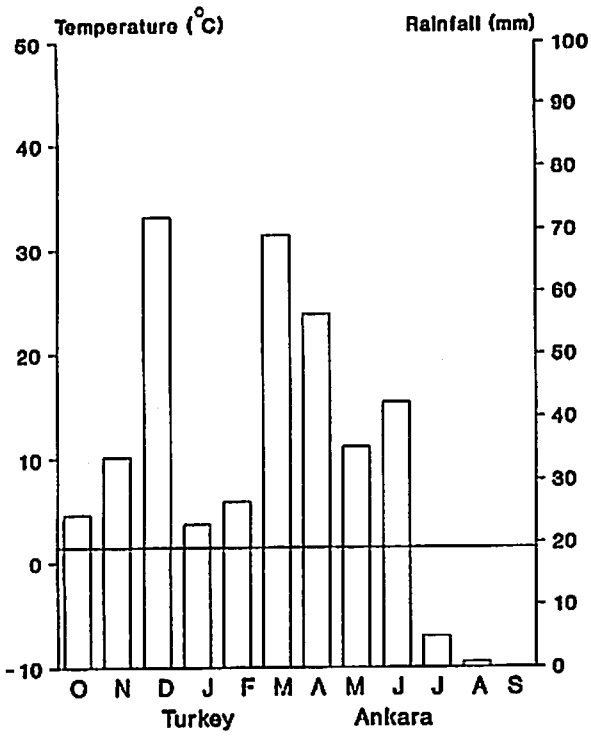

Temperature (°C)
Rainfall (mm)
207.5
147.7
O N D J F M A M J J A S
Sir Lanka
Bandarawale

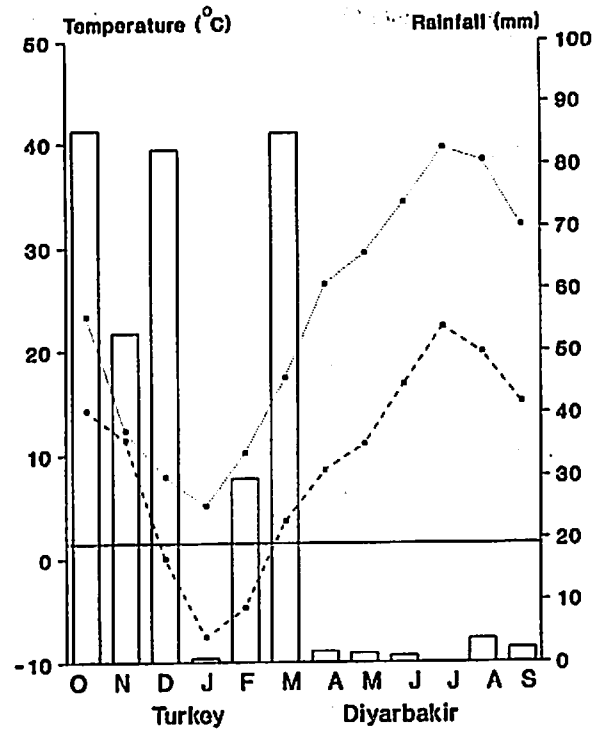

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Sri Lanka
Dodangolla-Kundasale

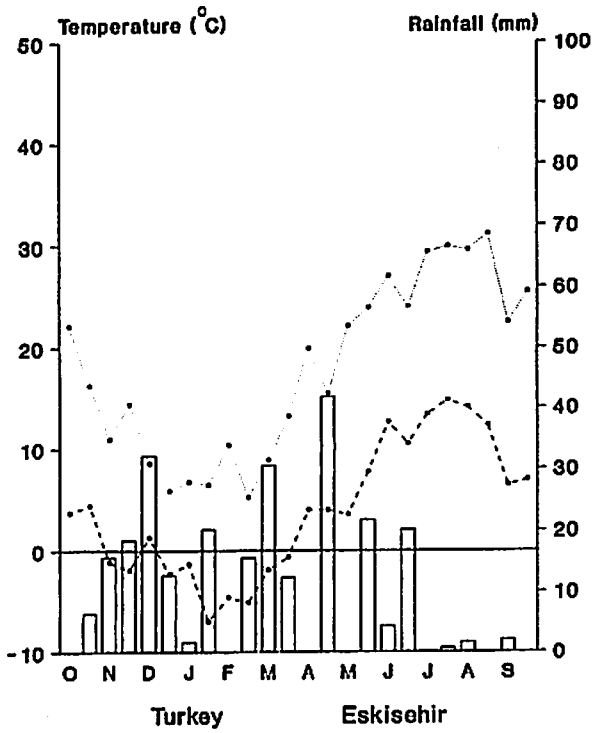

Temperature (°C)
Rainfall (mm)
147
186.8
205
O N D J F M A M J J A S
Thailand
Chiang Mai

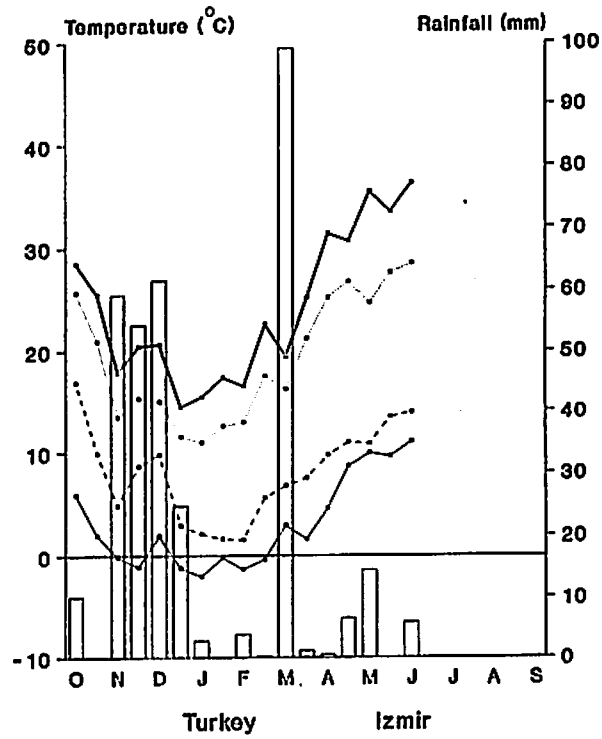

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
Thailand
Chiang-Rai

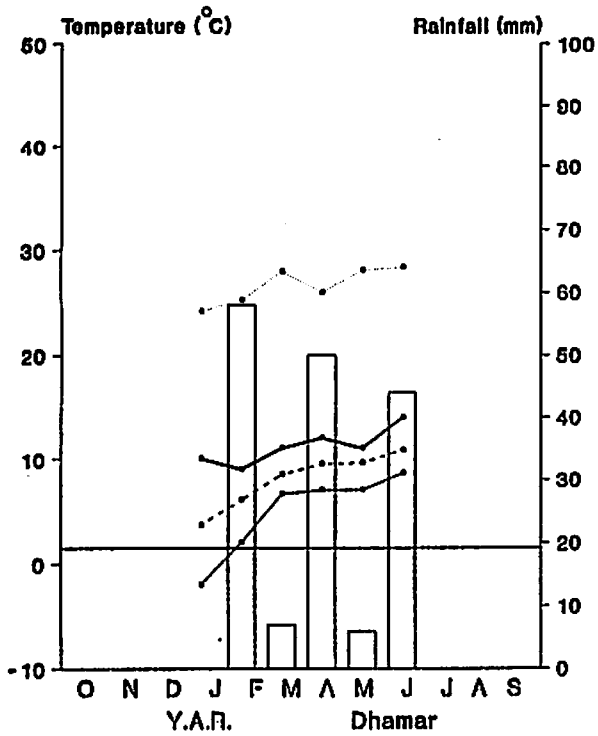

Temperature (°C)
Rainfall (mm)
122.6
O N D J F M A M J J A S
Turkey
Amasya(Samsun)


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Turkey
Ankara


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Turkey
Diyarbakir


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Turkey
Eskisehir


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M. A M J J A S
Turkey
Izmir


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
Y.A.R.
Dhamar