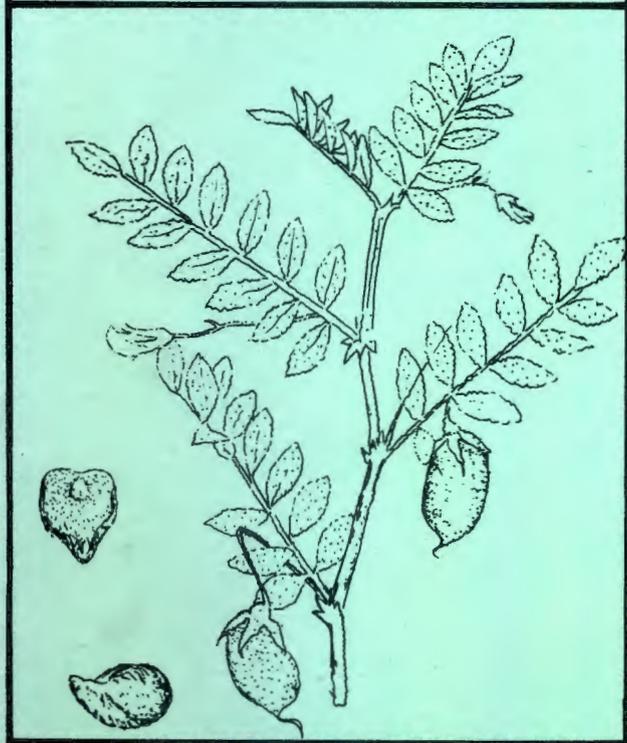
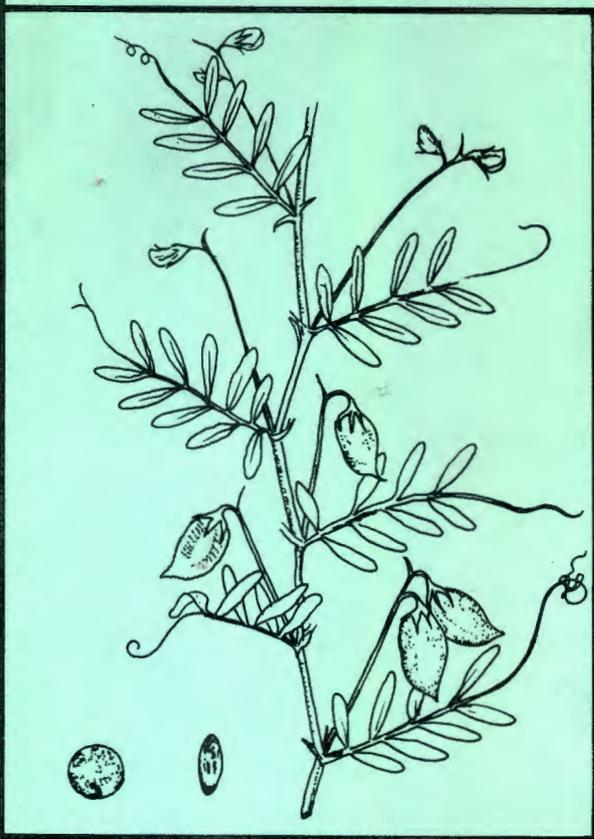


FOOD LEGUME NURSERIES

1988-89



Established in 1977, the International Center for Agricultural Research in the Dry Areas (ICARDA) is governed by an independent Board of Trustees. Based at Aleppo, Syria, it is one of 16 centers supported by the Consultative Group on International Agricultural Research (CGIAR), which is an international group of representatives of donor agencies, eminent agricultural scientists, and institutional administrators from developed and developing countries who guide and support its work.

The CGIAR seeks to enhance and sustain food production and, at the same time, improve socioeconomic conditions of people, through strengthening national research systems in developing countries.

ICARDA focuses its research efforts on areas with a dry summer and where precipitation in winter ranges from 200 to 600 mm. The Center has a world responsibility for the improvement of barley, lentil, and faba bean, and a regional responsibility—in West Asia and North Africa—for the improvement of wheat, chickpea, and pasture and forage crops and the associated farming systems.

Much of ICARDA's research is carried out on a 948-hectare farm at its headquarters at Tel Hadya, about 35 km southwest of Aleppo. ICARDA also manages other sites where it tests material under a variety of agroecological conditions in Syria and Lebanon. However, the full scope of ICARDA's activities can be appreciated only when account is taken of the cooperative research carried out with many countries in West Asia and North Africa.

The results of research are transferred through ICARDA's cooperation with national and regional research institutions, with universities and ministries of agriculture, and through the technical assistance and training that the Center provides. A range of training programs are offered extending from residential courses for groups to advanced research opportunities for individuals. These efforts are supported by seminars, publications, and by specialized information services.

INTERNATIONAL NURSERY REPORT NO. 13
FOOD LEGUME NURSERIES 1988/89

LEGUME IMPROVEMENT PROGRAM
THE INTERNATIONAL CENTER FOR AGRICULTURAL RESEARCH
IN THE DRY AREAS
(ICARDA), P.O. BOX 5466, ALEPPO - SYRIA

JULY 1991

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. Suhaila Arslan and Mr. Murhaf Kharboutly in computerisation of data 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.

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CONTENTS

	Pages
1. INTRODUCTION	1
2. INTERNATIONAL TRIALS AND NURSERIES FOR THE 1988/89 SEASON	1
2.1. DESCRIPTION	1
2.1.1. International Yield Trials (IYT)	1
2.1.2. International Screening Nurseries (ISN)	2
2.1.3. International F ₃ /F ₄ Nurseries (IF ₃ /F ₄ N)	2
2.1.4. International Stress Nurseries (I-N)	3
2.1.5. International Agronomy Trials	3
2.2. Distribution and List of Cooperators	4
2.3. Design, Analysis and Management	4
2.3.1. Design and Analysis	4
2.3.2. Management	4
3. CHICKPEA INTERNATIONAL TRIALS AND NURSERIES	6
3.1. Chickpea International Yield Trial-Spring (CIYT-Sp)	6
3.2. Chickpea International Yield Trial-Winter-Mediterranean Region (CIYT-W-MR)	21
3.3. Chickpea International Yield Trial-Winter-Sub-Tropical Region (CIYT-W-STR)	43
3.4. Chickpea International Yield Trial-Large Seed (CIYT-L)	51
3.5. Chickpea International Yield Trial-Tall (CIYT-T)	73
3.6. Chickpea International Yield Trial-Early (CIYT-E)	93
3.7. Chickpea International Yield Trial-Dual Season (CIYT-DS)	94
3.8. Chickpea International Screening Nursery-Winter (CISN-W)	108
3.9. Chickpea International Screening Nursery-Spring (CISN-Sp)	143
3.10. Chickpea International Screening Nursery-Early (CISN-E)	168
3.11. Chickpea International F ₄ Nursery (CIF ₄ N)	169
3.12. Chickpea International Ascochyta Blight Nursery (CIABN)	175
3.13. Chickpea International Fusarium Wilt Nursery (CIFWN)	181
3.14. Chickpea International Leaf Miner Nursery (CIIMN)	181
3.15. Chickpea International Cold Tolerance Nursery (CICIN)	183
4. FABA BEAN INTERNATIONAL TRIALS AND NURSERIES	187
4.1. Faba Bean International Yield Trial-Large Seed (FBIYT-L)	187
4.2. Faba Bean International Yield Trial-Small Seed (FBIYT-S)	198
4.3. Faba Bean International Yield Trial-Determinate (FBIYT-D)	208
4.4. Faba Bean International Screening Nursery-Large Seed (FBISN-L)	220
4.5. Faba Bean International Screening Nursery-Small Seed (FBISN-S)	220
4.6. Faba Bean International Screening Nursery-Determinate (FBISN-D)	228
4.7. Faba Bean International F ₄ Nursery (FBIF ₄ N)	236
4.8. Faba Bean International Disease Screening Nurseries	236
4.8.1. Faba Bean International Ascochyta Blight Nursery (FBIABN)	246
4.8.2. Faba Bean International Chocolate Spot Nursery (FBICSN)	246
4.8.3. Faba Bean International Rust Nursery (FBIRN)	248

5.	LENTIL INTERNATIONAL TRIALS AND NURSERIES	250
5.1.	Lentil International Yield Trial-Large Seed (LIYT-L)	250
5.2.	Lentil International Yield Trial-Small Seed (LIYT-S)	264
5.3.	Lentil International Yield Trial-Early (LIYT-E)	276
5.4.	Lentil International Screening Nursery-Large Seed (LISN-L)	285
5.5.	Lentil International Screening Nursery-Small Seed (LISN-S)	302
5.6.	Lentil International Screening Nursery-Early (LISN-E)	323
5.7.	Lentil International Screening Nursery-Tall (LISN-T)	346
5.8.	Lentil International F ₃ Nursery (LIF ₃ N)	363
5.9.	Lentil International F ₃ Nursery-Early (LIF ₃ N-E)	365
5.10.	Lentil International Ascochyta Blight Nursery (LIABN)	365
5.11.	Lentil International Cold Tolerance Nursery (LICIN)	368
6.	PEA INTERNATIONAL ADAPTION TRIAL (PIAT)	369
7.	INTERNATIONAL AGRONOMY TRIALS	379
7.1.	International Fertility-Rhizobium Evaluation Trial (IFRT)	379
7.1.1.	Chickpea International Fertility-Rhizobium Evaluation Trial (CIFRT)	379
7.1.2.	Faba Bean International Fertility-Rhizobium Evaluation Trial (FBIFRT)	381
7.1.3.	Lentil International Fertility-Rhizobium Evaluation Trial (LIFRT)	381
7.2.	International Rhizobium Inoculation Response Trial (IRT)	381
7.2.1.	Chickpea International Rhizobium Inoculation Response Trial (CIRT)	383
7.2.2.	Faba Bean International Rhizobium Inoculation Response Trial (FBIRT)	383
7.2.3.	Lentil International Rhizobium Inoculation Response Trial (LIRT)	386
7.3.	International Weed Control Trial (WCT)	386
7.3.1.	Chickpea International Weed Control Trial (CWCT)	386
7.3.2.	Faba Bean International Weed Control Trial (FBWCT)	391
7.3.3.	Lentil International Weed Control Trial (LWCT)	394
7.4.	Faba Bean International Orobancha Chemical Control Trial (FBOCCT)	394
8.	ACKNOWLEDGEMENT	399
APPENDICES		
I.	Distribution of International Trials and Nurseries	400
II.	National Scientists Cooperating in Food Legume International Testing Program	404
III.	ICARDA's Scientists Cooperating in Food Legume International Testing Program	414
IV.	Geographical Details for the Locations	415
V.	Meteorological Details for the Locations	418

Introduction

The international cooperative testing program on food legumes namely faba bean, lentil, 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 1988/89 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. For the second time two new trials on chickpea, Early (CIYT-E) and Dual Season (DS) were distributed. The winter trials in chickpea possess tolerance to cold and ascochyta blight. A trial in faba bean with determinate growth habit and a trial on peas with improved cultivars from different parts of world were supplied to cooperators for the second time 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 of 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 nursery of determinate type of faba bean was supplied for the second time.

2.1.3. INTERNATIONAL F_3/F_4 NURSERIES (IF₃/F₄N)

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 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 environment. In addition the 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_4 Ns for lentil and kabuli chickpea were developed separately for different major environmental conditions. The F_4 faba

beans were developed for selection of materials resistant to *Ascochyta* blight and *Botrytis* diseases and for determinate growth habit.

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, three nurseries in faba bean (*Ascochyta* blight, rust, and chocolate spot, four (*Ascochyta* blight, leaf-miner, *Fusarium* wilt and cold tolerance) in chickpea and two (*Ascochyta* blight and cold tolerance) in lentil 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, Fertility-cum-Rhizobium Inoculation Trial and Rhizobium Inoculation Response Trial. 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 Appendix I is given a list of the trials and nurseries distributed from ICARDA to the different countries; in Appendix II a list of the cooperators, in Appendix III a list of food legume scientists at ICARDA cooperating in international testing program and in Appendix IV 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 V. In total, 1321 sets of trials were distributed to the cooperators. Data were returned for 604 trials and nurseries, representing 45.7% of the total nurseries distributed.

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. 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 the performance of a genotype 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.

For each yield trial or screening 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). For stress nurseries, the data on reaction to stress was requested.

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.

3. CHICKPEA INTERNATIONAL TRIALS AND NURSERIES

Eighteen chickpea international trials and nurseries were available to the cooperators in 1988/89 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. Forty five sets were sent to cooperators in 21 countries. The results were, however, received for 21 trials from 11 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 63 to 75 days for time to flowering (Table 3.1.2.), 110 to 118 days for time to maturity (Table 3.1.3.), and 32 to 44 cm for plant height (Table 3.1.4.). The overall mean for the entries for 100-seed weight, varied from 29 to 42 g, and the entries FLIP 85-3C, FLIP 86-9C, and FLIP 86-12C had the largest seed size (Table 3.1.5.). The location means for 100-seed weight varied from 31 g for El Encin in Spain to 41 g for Terbol in Lebanon.

The highest mean seed yield (Table 3.1.6.) was obtained at Adana in Turkey (3814 kg/ha) and was followed by Khroub in Algeria (2312 kg/ha), Montboucher in France (1682 kg/ha), El Kef in Tunisia (1647 kg/ha) and El Aziziah in Saudi Arabia (1601 kg/ha). The seed yields at Gelline and Tel Hadya in Syria were very poor (< 50 kg/ha). On an average over locations FLIP 84-164C gave the highest seed yield (1511 kg/ha) and was closely followed by ILC 482, FLIP 86-53C, FLIP 84-182C and FLIP 84-7C with seed yields of 1464, 1454, 1415 and 1377 kg/ha, respectively.

Table 3.1.1. Agronomic data for different locations in the CIVT-SP during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Khroub	02.02.89	19.07.89	33	46		-	Treflan	Rabat 9
France	Montboucher	15.02.89	19.07.89		100		-	Trifluraline, Linuron	Cascari
Iran	Karaj	03.04.89	14.07.89	23	72		6	Treflan, Metasystox	Jam
Lebanon	Terbol	20.03.89	25.07.89		50		-	Kerb, Bladex	Lebanese local
Mexico	Padilla Tam	24.11.88	30.05.89	40	30		6	Agresor, Desis	Commercial food
Saudi Arabia	Al Aziziah	03.02.89	30.05.89	70	80		382mm	-	-
Spain	Badajoz	28.02.89	18.07.89	-			-	Terbutryne	Pedrosillano
Spain	El Encin	14.04.89	21.07.89	20	60		-	Terbutryne	1472-GEC 352
Syria	Al Ghab	20.03.89	25.06.89				-	-	Local
Syria	Gelline	04.03.89	21.06.89	20	50		-	-	Local
Syria	Heimo	26.03.89	24.06.89		50		-	-	Balady (Local)
Syria	Idleb	07.03.89	19.07.89		60		-	-	Local
Syria	Jindiress	01.03.89	20.06.89		50		-	Kerb, Bravo	IIC 1929
Syria	Tel Hadya	01.03.89	20.06.89		50		-	Kerb, Bravo	IIC 1929
Tunisia	Beja	14.12.88	NA	NA			NA	NA	NA
Tunisia	El Kef	01.12.88	NA	NA			NA	NA	NA
Tunisia	Oued Meliz	01.12.88	NA	NA			NA	NA	NA
Turkey	Adana	10.12.88	22.05.89	40	80		-	-	NA
Turkey	Diyarbakir	08.12.88	10.06.89	30	60		-	-	Yerli Nohut
Turkey	Izmir	17.03.89	12.07.89	30	60		-	Endosulfan	IIC 195/2

NA = Not available.

Table 3.1.2. Time to flowering (days) of entries at different locations in the CIYT-SP during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA	FRANCE	IRAN	LEBANON
			Khroub+	Montboucher+	Karaj	Terbol
FLIP 84- 2C	X 81 TH 116/ILC 191XILC 262	ICARDA/ICRISAT	99	86	45	65
FLIP 84- 7C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	95	80	41	59
FLIP 84- 12C	X 82 TH 154/ILC 202XILC 254	ICARDA/ICRISAT	99	83	47	65
FLIP 84- 78C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	97	80	45	57
FLIP 84-164C	X 82 TH 101/ILC 215(WH)XILC 195(WH)	ICARDA/ICRISAT	95	80	38	56
FLIP 84-182C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	100	83	41	64
FLIP 85- 3C	X 83 TH 115/FLIP 82-81CXILC 3326	ICARDA/ICRISAT	96	83	39	58
FLIP 85- 11C	X 83 TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	99	83	46	63
FLIP 85- 59C	X 83 TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	101	83	43	62
FLIP 85- 68C	X 82 TH 67/ILC 2593XILC 191	ICARDA/ICRISAT	103	80	48	75
FLIP 85- 86C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	99	80	42	63
FLIP 85- 90C	X 83 TH 4/FLIP 81-42CXFLIP 82-69C	ICARDA/ICRISAT	102	83	45	66
FLIP 86- 9C	X 83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	101	83	44	63
FLIP 86- 12C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	103	83	45	65
FLIP 86- 19C	X 82 TH 101/ILC 215(WH)XILC 195(WH)	ICARDA/ICRISAT	98	80	40	60
FLIP 86- 41C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	100	80	41	61
FLIP 86- 53C	X 83 TH 177/ILC 4090XILC 2912	ICARDA/ICRISAT	85	80	42	50
FLIP 86- 60C	X 83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	100	83	45	60
FLIP 86- 71C	X 83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	99	83	46	62
FLIP 86- 72C	X 83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	100	77	44	63
FLIP 86- 82C	X 83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	101	83	44	63
FLIP 81-293C	Improved check	ICARDA/ICRISAT	99	80	40	62
ILC 482	Long term check	Turkey	89	77	37	56
Local check	-	-	94	86	40	52
Location Mean			98	82	43	61
S.E. of Mean					1.56	0.98
L.S.D. at 5%					4.45	2.80
C.V. (%)					6.31	2.78
Error d.f.					46	46
Significance					*	*

Cont'd. ...

Table 3.1.2. Cont'd. ...

Entry Name	MEXICO	SAUDI ARABIA	SPAIN		SYRIA		
	Padilla Tam	Al Aziziah	Badajoz	El Encin	Al Ghab	Gelline	Heimo
FLIP 84- 2C	67	84	74	68	67	-	51
FLIP 84- 7C	67	77	70	64	56	72	50
FLIP 84- 12C	67	84	72	66	68	-	56
FLIP 84- 78C	67	75	70	63	55	68	43
FLIP 84-164C	63	76	70	63	52	66	44
FLIP 84-182C	67	80	75	61	67	-	54
FLIP 85- 3C	53	78	71	62	52	62	37
FLIP 85- 11C	67	82	72	64	69	72	50
FLIP 85- 59C	67	84	72	61	66	73	53
FLIP 85- 68C	70	86	77	67	73	-	57
FLIP 85- 86C	67	79	72	64	63	-	48
FLIP 85- 90C	67	86	75	67	65	73	53
FLIP 86- 9C	67	84	74	61	69	72	53
FLIP 86- 12C	67	84	72	66	65	-	50
FLIP 86- 19C	67	78	71	62	57	71	49
FLIP 86- 41C	67	80	71	64	60	71	49
FLIP 86- 53C	67	73	64	57	50	56	38
FLIP 86- 60C	67	80	71	61	61	71	49
FLIP 86- 71C	67	79	71	64	63	71	47
FLIP 86- 72C	67	85	72	64	69	72	51
FLIP 86- 82C	67	84	73	63	69	72	53
FLIP 81-293C	64	78	70	63	68	73	51
ILC 482	64	75	68	61	56	70	42
Local check	-	-	68	65	50	59	35
Location Mean	59	73	71	63	62	69	48
S.E. of Mean	1.21	0.95	0.60	0.75	1.63	1.07	1.50
L.S.D. at 5%	3.44	2.70	1.71	2.12	4.64	3.08	4.28
C.V. (%)	3.53	2.25	1.46	2.04	4.55	2.69	5.37
Error d.f.	46	46	46	46	46	34	46
Significance	*	*	*	*	*	*	*

Cont'd. ...

Table 3.1.2. Cont'd. ...

Entry Name	SYRIA			TURKEY			(1)
	Idleb	Jindiress	Tel Hadya	Adana+	Diyarbakir	Izmir	Overall Mean
FLIP 84- 2C	68	75	74	99	89	44	72
FLIP 84- 7C	62	73	69	99	89	42	68
FLIP 84- 12C	70	78	75	99	90	47	73
FLIP 84- 78C	65	70	67	99	87	42	68
FLIP 84-164C	62	70	58	99	87	42	66
FLIP 84-182C	70	75	74	99	88	44	71
FLIP 85- 3C	53	62	57	99	86	42	64
FLIP 85- 11C	66	76	74	99	89	50	72
FLIP 85- 59C	66	74	71	99	89	49	71
FLIP 85- 68C	66	83	77	99	90	49	75
FLIP 85- 86C	69	75	74	99	86	47	70
FLIP 85- 90C	69	77	73	99	88	49	73
FLIP 86- 9C	68	78	71	99	90	49	72
FLIP 86- 12C	67	76	72	99	89	47	72
FLIP 86- 19C	64	72	70	99	89	42	69
FLIP 86- 41C	67	75	72	99	89	47	70
FLIP 86- 53C	60	63	56	99	85	39	63
FLIP 86- 60C	68	73	68	99	88	47	70
FLIP 86- 71C	68	76	70	99	86	49	71
FLIP 86- 72C	68	76	72	99	88	49	71
FLIP 86- 82C	68	76	71	99	89	49	72
FLIP 81-293C	69	75	71	99	87	47	70
ILC 482	61	67	65	99	87	41	65
Local check	58	62	55	99	85	41	
Location Mean	66	73	69	99	88	46	
S.E. of Mean	1.79	1.00	1.68		0.68	1.40	
L.S.D. at 5%	5.10	2.85	4.77		1.93	3.99	
C.V. (%)	4.73	2.37	4.21		1.34	5.34	
Error d.f.	46	46	46		46	46	
Significance	*	*	*		*	*	

(1) Gelline was excluded from the overall mean, * = Significant at $P \leq 0.05$., + Non-replicated.

Table 3.1.3. Time to maturity (days) of entries at different locations in the CIYT-SP during 1988/89.

Entry Name	ALGERIA	FRANCE	IRAN	LEBANON	MEXICO	SAUDI ARABIA	SPAIN	
	Khroub+	Montboucher	Karaj	Terbol	Padilla Tam	Al Aziziah	Badajoz	El Encin
FLIP 84- 2C	158	160	88	111	134	120	127	92
FLIP 84- 7C	152	156	88	109	134	119	127	90
FLIP 84- 12C	152	159	87	119	133	117	125	85
FLIP 84- 78C	158	159	94	104	135	120	128	90
FLIP 84-164C	150	153	86	97	134	111	124	82
FLIP 84-182C	154	159	87	111	134	119	128	87
FLIP 85- 3C	158	167	85	104	134	118	126	89
FLIP 85- 11C	151	157	84	113	134	117	123	91
FLIP 85- 59C	154	158	86	111	134	119	124	84
FLIP 85- 68C	157	160	86	118	134	119	124	92
FLIP 85- 86C	157	164	88	109	134	119	125	90
FLIP 85- 90C	155	160	86	110	135	116	127	90
FLIP 86- 9C	154	157	90	113	134	119	124	87
FLIP 86- 12C	160	163	86	109	136	120	128	91
FLIP 86- 19C	155	159	87	104	133	117	124	88
FLIP 86- 41C	154	156	87	107	133	117	124	87
FLIP 86- 53C	154	160	88	99	134	112	130	82
FLIP 86- 60C	155	160	86	117	136	119	128	88
FLIP 86- 71C	154	159	86	113	133	116	124	89
FLIP 86- 72C	153	156	87	111	135	119	122	85
FLIP 86- 82C	155	157	86	110	135	119	123	85
FLIP 81-293C	149	153	86	108	135	112	124	84
ILC 482	148	153	83	100	134	106	129	82
Local check	-	156	85	93	-	-	126	89
Location Mean	154	158	87	108	124	108	126	88
S.E. of Mean		0.99	2.32	0.85	0.49	0.61	1.30	1.34
L.S.D. at 5%		2.82	-	2.41	1.40	1.74	3.71	3.87
C.V. (%)		1.08	4.63	1.35	0.69	0.98	1.80	2.69
Error d.f.		46	46	46	46	46	46	46
Significance		*	NS	*	*	*	*	*

Cont'd. ...

Table 3.1.3. Cont'd. ...

Entry Name	SYRIA						TURKEY	(1)
	Al Ghab	Gelline+	Heimo	Idleb	Jindiress	Tel Hadya	Diyarbakir	Overall Mean
FLIP 84- 2C	97	-	80	107	117	104	121	117
FLIP 84- 7C	-	-	79	102	117	105	120	115
FLIP 84- 12C	97	-	80	106	119	105	121	116
FLIP 84- 78C	94	103	75	101	115	105	119	116
FLIP 84-164C	91	103	72	96	112	105	120	111
FLIP 84-182C	96	-	81	107	119	105	121	116
FLIP 85- 3C	92	101	76	99	116	104	120	115
FLIP 85- 11C	97	-	76	97	117	105	120	114
FLIP 85- 59C	98	-	80	101	117	106	121	115
FLIP 85- 68C	-	-	90	106	122	104	121	118
FLIP 85- 86C	97	-	78	106	116	106	120	116
FLIP 85- 90C	96	-	78	103	115	104	120	115
FLIP 86- 9C	-	-	80	100	121	104	121	116
FLIP 86- 12C	97	-	81	105	122	105	120	117
FLIP 86- 19C	96	-	75	99	109	104	121	113
FLIP 86- 41C	96	-	81	98	116	104	121	114
FLIP 86- 53C	92	102	72	96	108	105	120	112
FLIP 86- 60C	97	-	77	103	116	104	121	116
FLIP 86- 71C	96	-	75	103	115	106	119	115
FLIP 86- 72C	97	-	78	99	119	105	120	114
FLIP 86- 82C	-	-	78	99	118	105	121	115
FLIP 81-293C	98	104	77	101	111	104	120	113
ILC 482	92	-	70	95	108	104	119	110
Local check	80	100	65	90	105	96	116	
Location Mean	95	102	77	101	116	104	120	
S.E. of Mean	0.45		0.85	2.06	1.18	0.60	0.49	
L.S.D. at 5%	1.29		2.43	5.85	3.37	1.70	1.38	
C.V. (%)	0.83		1.91	3.53	1.77	0.99	0.70	
Error d.f.	38		46	46	46	46	46	
Significance	*		*	*	*	*	*	

(1) Al Ghab and Gelline were excluded from the overall mean., + Non-replicated.

* = Significance at $P < 0.05$, NS = Not significant.

Table 3.1.4. Plant height (cm) of entries at different locations in the CIYT-SP during 1988/89.

Entry Name	ALGERIA	FRANCE	IRAN	LEBANON	MEXICO	SAUDI ARABIA	SPAIN	SYRIA	
	Khroub	Montboucher	Karaj	Terbol	Padilla Tam	Al Aziziah	Badajoz	El Encin	Al Ghab
FLIP 84- 2C	59	56	40	48	51	45	40	44	38
FLIP 84- 7C	53	53	38	38	58	42	34	35	30
FLIP 84- 12C	48	46	41	43	52	40	33	33	35
FLIP 84- 78C	62	58	46	42	64	44	38	43	35
FLIP 84-164C	50	51	33	39	54	37	32	30	35
FLIP 84-182C	52	50	45	38	59	40	36	37	32
FLIP 85- 3C	50	57	38	40	50	47	32	37	38
FLIP 85- 11C	60	59	43	46	63	48	32	38	35
FLIP 85- 59C	62	60	40	44	62	46	40	40	40
FLIP 85- 68C	54	52	40	43	49	45	36	38	30
FLIP 85- 86C	43	48	47	42	50	39	36	38	35
FLIP 85- 90C	57	55	39	40	50	43	34	38	37
FLIP 86- 9C	60	61	36	48	62	46	34	35	37
FLIP 86- 12C	65	58	47	53	66	48	42	40	42
FLIP 86- 19C	57	50	38	42	46	43	32	32	32
FLIP 86- 41C	47	55	40	39	58	39	34	35	32
FLIP 86- 53C	52	46	34	34	46	36	35	38	32
FLIP 86- 60C	63	62	45	42	64	42	42	41	42
FLIP 86- 71C	58	67	43	42	64	41	38	39	40
FLIP 86- 72C	63	62	42	47	62	44	34	34	37
FLIP 86- 82C	62	57	40	42	63	47	34	37	33
FLIP 81-293C	55	50	39	40	59	41	32	37	35
ILC 482	44	43	29	36	42	36	33	32	35
Local check	53	61	31	36	-	-	36	41	27
Location Mean	55	55	40	42	50	37	35	37	35
S.E. of Mean	2.15	2.80	3.04	2.87	3.46	2.26	2.01	1.95	2.28
L.S.D. at 5%	6.11	7.98	8.64	8.16	9.84	6.42	5.73	5.54	6.48
C.V. (%)	6.72	8.85	13.21	11.87	12.02	10.62	9.86	9.06	11.25
Error d.f.	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.1.4. Cont'd. ...

Entry Name	SYRIA					TURKEY		Overall Mean
	Gelline	Heimo	Idleb	Jindiress	Tel Hadya	Diyarbakir	Izmir	
FLIP 84- 2C	24	33	42	32	23	36	50	41
FLIP 84- 7C	22	29	34	29	23	33	42	37
FLIP 84- 12C	21	28	34	28	25	30	48	37
FLIP 84- 78C	29	36	36	32	28	36	45	42
FLIP 84-164C	23	28	33	24	22	27	40	35
FLIP 84-182C	21	30	35	26	23	34	43	38
FLIP 85- 3C	21	27	34	25	20	28	45	37
FLIP 85- 11C	25	30	39	29	25	33	41	40
FLIP 85- 59C	25	33	40	31	27	37	48	42
FLIP 85- 68C	23	29	33	31	20	34	49	38
FLIP 85- 86C	23	28	33	26	22	30	44	36
FLIP 85- 90C	25	29	35	26	23	32	44	38
FLIP 86- 9C	24	33	40	30	25	33	49	41
FLIP 86- 12C	27	38	39	31	27	38	50	44
FLIP 86- 19C	24	29	36	27	22	32	43	37
FLIP 86- 41C	23	29	31	28	20	30	42	36
FLIP 86- 53C	23	25	31	24	20	29	40	34
FLIP 86- 60C	24	32	38	30	27	39	50	43
FLIP 86- 71C	25	30	36	31	22	36	50	41
FLIP 86- 72C	27	33	40	30	23	34	48	41
FLIP 86- 82C	25	33	39	29	23	34	48	40
FLIP 81-293C	23	29	33	28	25	33	39	37
ILC 482	22	26	29	23	18	24	38	32
Local check	21	23	25	21	18	28	45	
Location Mean	24	30	35	28	23	33	45	
S.E. of Mean	1.00	1.31	2.01	0.98	1.70	1.42	2.84	
L.S.D. at 5%	2.84	3.72	5.72	2.80	4.83	4.03	8.09	
C.V. (%)	7.29	7.53	9.90	6.09	12.78	7.52	10.94	
Error d.f.	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	

* = Significant at $P \leq 0.05$.

Table 3.1.5. 100-Seed weight (g) of entries at different locations in the CIYT-SP during 1988/89.

Entry Name	FRANCE	IRAN	LEBANON	MEXICO	SAUDI ARABIA	SPAIN
	Montboucher	Karaj	Terbol	Padilla Tam	Al Aziziah	Badajoz
FLIP 84- 2C	36	33	38	35	44	33
FLIP 84- 7C	36	32	42	35	41	34
FLIP 84- 12C	36	29	44	38	43	33
FLIP 84- 78C	35	36	40	34	39	32
FLIP 84-164C	31	36	37	36	39	32
FLIP 84-182C	32	28	40	31	39	29
FLIP 85- 3C	47	41	46	38	52	37
FLIP 85- 11C	37	36	44	37	40	31
FLIP 85- 59C	37	36	45	33	43	30
FLIP 85- 68C	33	30	35	29	43	32
FLIP 85- 86C	31	23	32	29	34	27
FLIP 85- 90C	42	36	47	34	44	35
FLIP 86- 9C	42	40	45	42	45	33
FLIP 86- 12C	45	36	42	45	48	34
FLIP 86- 19C	34	32	38	33	42	33
FLIP 86- 41C	35	34	41	35	44	29
FLIP 86- 53C	31	25	36	32	38	32
FLIP 86- 60C	40	32	47	39	43	36
FLIP 86- 71C	38	37	48	38	44	36
FLIP 86- 72C	42	42	49	37	43	34
FLIP 86- 82C	42	34	46	43	44	34
FLIP 81-293C	28	28	34	29	35	29
ILC 482	28	30	31	29	34	31
Local check	28	27	38	28	-	27
Location Mean	36	33	41	35	36	32
S.E. of Mean	0.45	0.81	1.54	0.41	0.92	1.30
L.S.D. at 5%	1.28	2.29	4.39	1.16	2.61	3.71
C.V. (%)	2.16	4.23	6.51	2.02	4.42	7.01
Error d.f.	46	46	46	46	46	46
Significance	*	*	*	*	*	*

Cont'd. ...

Table 3.1.5. Cont'd. ...

Entry Name	SPAIN		SYRIA			TURKEY	Overall Mean
	El Encin	Heimo	Idleb	Jindiress	Tel Hadya	Izmir	
FLIP 84- 2C	33	33	37	38	30	37	36
FLIP 84- 7C	33	36	35	39	34	39	36
FLIP 84- 12C	33	37	36	39	36	38	37
FLIP 84- 78C	33	30	32	36	29	41	35
FLIP 84-164C	27	30	30	36	32	35	33
FLIP 84-182C	29	31	34	35	30	34	33
FLIP 85- 3C	33	37	42	44	39	45	42
FLIP 85- 11C	29	29	36	35	41	36	36
FLIP 85- 59C	32	31	37	39	36	39	36
FLIP 85- 68C	29	34	36	38	47	34	35
FLIP 85- 86C	26	28	29	32	29	30	29
FLIP 85- 90C	36	34	37	44	35	43	39
FLIP 86- 9C	36	34	42	45	53	42	42
FLIP 86- 12C	35	34	38	43	57	44	42
FLIP 86- 19C	31	35	36	36	31	40	35
FLIP 86- 41C	31	32	34	37	35	35	35
FLIP 86-53C	24	32	34	30	27	33	31
FLIP 86- 60C	32	39	39	41	37	43	39
FLIP 86- 71C	31	33	38	41	38	42	39
FLIP 86- 72C	35	38	39	42	31	42	40
FLIP 86- 82C	35	34	42	43	36	42	40
FLIP 81-293C	24	31	31	30	28	35	30
ILC 482	24	31	28	28	24	30	29
Local check	37	37	39	35	30	46	
Location Mean	31	33	36	38	35	39	
S.E. of Mean	1.05	2.12	1.64	0.76	0.71	1.42	
L.S.D. at 5%	2.99	6.03	4.66	2.17	2.02	4.05	
C.V. (%)	5.84	11.03	7.89	3.49	3.49	6.40	
Error d.f.	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	

* = Significant at $P \leq 0.05$.

Table 3.1.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-SP during 1988/89.

Entry Name	ALGERIA		FRANCE		IRAN		LEBANON		MEXICO		SAUDI ARABIA		SPAIN	
	Khroub		Montboucher		Karaj		Terbol		Padilla Tam		El Aziziah		Badajoz	
FLIP 84- 2C	1781	21	1489	22	331	23	275	23	849	22	1418	17	452	6
FLIP 84- 7C	2770	4	1794	7	794	13	508	16	967	18	2172	1	311	15
FLIP 84- 12C	2596	8	1506	19	522	20	468	19	975	17	1643	10	389	9
FLIP 84- 78C	2124	17	1775	8	583	17	833	5	1086	15	1607	11	315	14
FLIP 84-164C	2593	9	2034	1	1321	2	1143	2	1603	4	2162	2	330	12
FLIP 84-182C	3153	1	1887	4	786	14	595	10	1860	1	1586	12	204	24
FLIP 85- 3C	1255	23	1548	16	609	16	548	12	999	16	2000	5	278	18
FLIP 85- 11C	2398	11	1605	15	1211	4	601	9	1526	5	1832	7	404	8
FLIP 85- 59C	2151	15	1541	18	1102	7	410	21	1272	9	1238	20	337	11
FLIP 85- 68C	1369	22	1411	24	320	24	111	24	859	21	1513	13	222	23
FLIP 85- 86C	1948	19	1543	17	844	11	511	14	1702	3	1457	16	441	7
FLIP 85- 90C	2226	14	1611	14	893	10	529	13	952	19	1724	8	230	22
FLIP 86- 9C	2294	12	1681	12	567	18	503	17	1204	13	1311	19	300	17
FLIP 86- 12C	1791	20	1503	21	486	21	354	22	1220	12	980	22	341	10
FLIP 86- 19C	2721	5	1831	6	455	22	720	6	801	23	1676	9	319	13
FLIP 86- 41C	2268	13	1871	5	690	15	479	18	1462	6	1491	15	237	20
FLIP 86- 53C	3026	2	1992	2	811	12	1132	3	1335	7	2117	4	778	1
FLIP 86- 60C	2637	6	1505	20	1146	6	460	20	1327	8	1050	21	311	16
FLIP 86- 71C	2434	10	1671	13	1090	8	646	7	1754	2	1379	18	689	2
FLIP 86- 72C	2096	18	1731	10	1158	5	550	11	897	20	939	23	241	19
FLIP 86- 82C	2140	16	1763	9	955	9	508	15	1100	14	1504	14	233	21
FLIP 81-293C	2622	7	1706	11	1261	3	630	8	1270	10	1891	6	537	3
ILC 482	2791	3	1903	3	1481	1	960	4	1239	11	2135	3	502	5
Local Check	-	-	1462	23	551	19	1228	1	172	24	-	-	507	4
Location Mean	2312		1682		832		613		1185		1601		371	
S.E. of Mean	183.97		89.59		217.22		72.34		186.51		190.60		69.43	
L.S.D. at 5%	524.36		255.03		618.31		205.91		530.89		543.24		197.62	
C.V. (%)	13.78		9.23		45.22		20.45		27.27		20.62		32.41	
Error d.f.	44		46		46		46		46		44		46	
Significance	*		*		*		*		*		*		*	
Entry > L. Check	-		10		4		0		23		-		1	

Cont'd. ...

Table 3.1.6. Cont'd. ...

Entry Name	SPAIN				SYRIA									
	El Encin		Al Ghab		Gelline+		Heimo		Idleb		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 2C	503	10	160	17	-	-	113	24	511	22	485	14	4	20
FLIP 84- 7C	491	11	-	-	-	-	234	15	1179	2	708	1	25	10
FLIP 84- 12C	358	21	261	10	-	-	356	9	580	19	434	15	0	21
FLIP 84- 78C	592	6	314	7	24	4	291	10	560	20	602	7	37	7
FLIP 84-164C	561	7	333	6	1693	5	166	21	1173	3	585	9	63	5
FLIP 84-182C	391	18	132	19	-	-	217	17	762	11	589	8	15	13
FLIP 85- 3C	601	5	238	12	52	2	247	13	832	9	628	4	142	2
FLIP 85- 11C	366	20	144	18	-	-	159	22	1112	4	525	13	6	19
FLIP 85- 59C	480	13	356	4	-	-	226	16	662	15	397	18	21	11
FLIP 85- 68C	358	22	-	-	-	-	278	11	647	16	375	20	0	24
FLIP 85- 86C	703	4	354	5	-	-	405	5	992	7	621	5	14	15
FLIP 85- 90C	474	14	190	15	-	-	357	8	533	21	351	22	30	9
FLIP 86- 9C	506	9	-	-	-	-	237	14	644	17	330	24	0	23
FLIP 86- 12C	432	16	108	20	-	-	195	20	509	23	335	23	0	22
FLIP 86- 19C	309	23	168	16	-	-	373	7	947	8	690	3	30	8
FLIP 86- 41C	527	8	267	9	-	-	257	12	674	14	419	16	20	12
FLIP 86- 53C	958	1	582	2	44	3	499	1	738	13	554	11	135	3
FLIP 86- 60C	443	15	196	14	-	-	437	4	383	24	414	17	15	14
FLIP 86- 71C	306	24	248	11	-	-	479	3	1070	5	546	12	11	17
FLIP 86- 72C	487	12	276	8	-	-	214	18	759	12	360	21	12	16
FLIP 86- 82C	390	19	-	-	-	-	149	23	823	10	395	19	10	18
FLIP 81-293C	839	3	200	13	-	-	207	19	642	18	605	6	52	6
ILC 482	430	17	398	3	-	-	397	6	1043	6	571	10	74	4
Local Check	854	2	921	1	81	1	488	2	1220	1	708	2	230	1
Location Mean	515		292		44		291		792		510		39	
S.E. of Mean	124.25		84.43				102.92		168.66		65.19		19.79	
L.S.D. at 5%	353.69		241.73				-		480.09		185.55		56.32	
C.V. (%)	41.78		50.01				61.29		36.90		22.16		86.95	
Error d.f.	46		38				46		46		46		46	
Significance	*		*				NS		*		*		*	
Entry > L. Check	0		0				-		0		0		0	

Cont'd. ...

Table 3.1.6. Cont'd. ...

Entry Name	TUNISIA+				TURKEY						(1) Overall Mean	
	Beja		El Kef		Adana		Diyarbakir		Izmir		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 84- 2C	450	22	1000	22	3624	19	1081	18	1383	12	984	22
FLIP 84- 7C	1300	8	1562	16	4762	2	1054	20	1420	11	1377	5
FLIP 84- 12C	1425	6	1500	17	3942	12	1039	21	1241	17	1186	16
FLIP 84- 78C	625	20	1313	19	4153	8	1244	7	1549	3	1203	13
FLIP 84-164C	2050	1	1875	7	3942	13	1183	8	1457	9	1511	1
FLIP 84-182C	1275	11	2063	4	4815	1	1281	5	1179	20	1415	4
FLIP 85- 3C	1575	3	1625	10	2302	23	1135	14	1611	2	1112	20
FLIP 85- 11C	1300	8	1313	19	4048	9	917	24	1062	24	1274	9
FLIP 85- 59C	1000	12	1000	22	3651	16	1165	10	1284	14	1120	19
FLIP 85- 68C	1325	7	1563	14	3598	22	1119	15	1093	23	1010	21
FLIP 85- 86C	1450	5	1750	9	3942	11	1163	11	1506	6	1311	8
FLIP 85- 90C	1000	12	1813	8	4233	5	1139	13	1444	10	1219	12
FLIP 86- 9C	1500	4	1625	10	4021	10	1063	19	1278	16	1191	15
FLIP 86- 12C	325	24	750	24	3651	17	1081	17	1136	21	943	23
FLIP 86- 19C	775	18	1438	18	4603	3	1372	2	1278	15	1269	10
FLIP 86- 41C	875	14	1938	6	4206	6	1263	6	1519	4	1261	11
FLIP 86- 53C	575	21	2150	3	3783	15	1304	4	1506	5	1454	3
FLIP 86- 60C	875	14	1625	10	3651	18	1085	16	1198	18	1159	17
FLIP 86- 71C	1300	8	1625	10	3598	20	1306	3	1463	8	1335	7
FLIP 86- 72C	1650	2	1563	14	3862	14	954	23	1611	1	1192	14
FLIP 86- 82C	875	14	1313	19	3598	21	1013	22	1284	13	1128	18
FLIP 81-293C	825	17	2250	2	4180	7	1180	9	1179	19	1364	6
ILC 482	400	23	2813	1	4497	4	1159	12	1105	22	1464	2
Local Check	675	19	2063	4	873	24	1531	1	1463	7		
Location Mean	1022		1647		3814		1160		1344			
S.E. of Mean					436.27		121.75		176.53			
L.S.D. at 5%					1241.86		-		-			
C.V. (%)					19.81		18.18		22.76			
Error d.f.					46		46		46			
Significance					*		NS		NS			
Entry > L. Check					23		-		-			

(1) Al Ghab, Gelline and Tel Hadya were excluded from the overall mean., + Non-replicated.

* = 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 1988/89.

Rank	ALGERIA	FRANCE	IRAN	LEBANON	MEXICO	SAUDI ARABIA
	Khroub	Montboucher	Karaj	Terbol	Padilla Tam	El Aziziah
1	FLIP 84-182C	FLIP 86-164C	IIC 482	Local check	FLIP 84-182C	FLIP 84- 7C
2	FLIP 86- 53C	FLIP 86- 53C	FLIP 84-164C	FLIP 84-164C	FLIP 86- 71C	FLIP 84-164C
3	IIC 482	IIC 482	FLIP 81-293C	FLIP 86- 53C	FLIP 85- 86C	IIC 482
4	FLIP 84- 7C	FLIP 84-182C	FLIP 85- 11C	IIC 482	FLIP 84-164C	FLIP 86- 53C
5	FLIP 86- 19C	FLIP 86- 41C	FLIP 86- 72C	FLIP 84- 78C	FLIP 85- 11C	FLIP 85- 3C
Cont'd. ...						
Rank	SPAIN		SYRIA			
	Badajoz	El Encin	Al Ghab	Heimo	Idleb	Jinidiress
1	FLIP 86- 53C	FLIP 86- 53C	Local check	FLIP 86- 53C	Local check	FLIP 84- 7C
2	FLIP 86- 71C	Local check	FLIP 86- 53C	Local check	FLIP 84- 7C	Local check
3	FLIP 81-293C	FLIP 81-293C	IIC 482	FLIP 86- 71C	FLIP 84-164C	FLIP 86- 19C
4	Local check	FLIP 85- 86C	FLIP 85- 59C	FLIP 86- 60C	FLIP 85- 11C	FLIP 85- 3C
5	IIC 482	FLIP 85- 3C	FLIP 85- 86C	FLIP 85- 86C	FLIP 86- 71C	FLIP 85- 86C
Cont'd. ...						
Rank	SYRIA	TUNISIA		TURKEY		
	Tel Hadya	Beja	El Kef	Adana	Diyarbakir	Izmir
1	Local check	FLIP 84-164C	IIC 482	FLIP 84-182C	Local check	FLIP 86- 72C
2	FLIP 85- 3C	FLIP 86- 72C	FLIP 81-293C	FLIP 84- 7C	FLIP 86- 19C	FLIP 85- 3C
3	FLIP 86- 53C	FLIP 85- 3C	FLIP 86- 53C	FLIP 86- 19C	FLIP 86- 71C	FLIP 84- 78C
4	IIC 482	FLIP 86- 9C	FLIP 84-182C	IIC 482	FLIP 86- 53C	FLIP 86- 41C
5	FLIP 84-164C	FLIP 85- 86C	Local check	FLIP 85- 90C	FLIP 84-182C	FLIP 86- 53C FLIP 85- 86C

The brackets indicate entries having the same rank.

The ANOVA for seed yield revealed that the local check was excelled by 10, 4, 23, 1, and 23 entries by a significant margin at Montboucher in France, Karaj in Iran, Padilla Tam in Mexico, Badajoz in Spain and Adana in Turkey, respectively.

The five heaviest seed yielders at each location are given in Table 3.1.7. The entry FLIP 86-53C occurred most frequently and was followed by ILC 482 and FLIP 84-164C among the top five and seemed more adaptable than others.

On the basis of average over two years among the 11 common entries during 1987/88 and 1988/89 (Table 3.1.8), ILC 482 ranked number 1 and was followed by FLIP 84-164C, FLIP 84-182C and FLIP 81-293C with respective seed yields of 1401, 1390, 1388 and 1356 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 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 84- 2C	967	11	984	11	976	11
FLIP 84- 12C	1254	5	1186	7	1220	5
FLIP 84- 78C	1079	7	1203	6	1141	7
FLIP 84-164C	1269	4	1511	1	1390	2
FLIP 84-182C	1360	1	1415	3	1388	3
FLIP 85- 3C	1037	9	1112	9	1075	9
FLIP 85- 59C	1124	6	1120	8	1122	8
FLIP 85- 68C	1037	9	1010	10	1024	10
FLIP 85- 86C	1065	8	1311	5	1188	6
FLIP 81-293C	1347	2	1364	4	1356	4
ILC 482	1337	3	1464	2	1401	1

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 one sets of trails were distributed to cooperators in 19 countries. Results were returned from 38 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 minimum at Marow in Jordan (79 days) and maximum at Perugia in Italy (180 days). The entry means across locations for time to flowering ranged from 117 days to 124 days. ILC 482 took the minimum time to flower. In general, early flowering locations were earlier in maturity.

The plant height varied from 44 cm for ILC 482 to 59 cm for FLIP 84-33C. The entries were very tall at Perugia in Italy (79 cm), and very short at Izra'a in Syria (25 cm).

The location means for 100-seed weight (Table 3.2.5) varied from 28 g (for Oued Smar and Sidi Bel Abbas in Algeria), to 42 g (for Raba'a in Jordan). The overall mean for 100-seed weight for entries ranged between 30 and 42 g, and the entry FLIP 86-13C had the largest seed size.

The seed yield (Table 3.2.6) varied from 196 kg/ha at Izra'a (Syria) to 3272 kg/ha at Perugia (Italy). The ANOVA for seed yield revealed that at 16 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 84-92C (1688 kg/ha) which was closely followed by FLIP 84-79C, FLIP 85-42C, FLIP 81-293C and ILC 482 with respective yields of 1585, 1554, 1543, and 1530 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 and was closely followed by ILC 482, FLIP 84-79C, FLIP 84-80C, FLIP 85-42C and FLIP 81-293C and these lines were comparatively more adaptable.

On the basis of average over two years for the 14 common entries (Table 3.2.8), FLIP 84-92C (1884 kg/ha) ranked number 1 in seed yield and was closely followed by FLIP 84-79C (1706 kg/ha), FLIP 85-93C (1705 kg/ha), and FLIP 84-102C (1688 kg/ha).

Table 3.2.1. Agronomic data for different locations in the CIYT-MR during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Dahmouni	27.12.88	28.06.89	69	48	-	Treflan	ILC 3279	
Algeria	Khroub	14.12.88	18.07.89	17	46	-	Treflan	Rabat 9	
Algeria	Oued Smar	02.01.89	10.07.89	-	92	-	-	Rabat 9	
Algeria	Setif	30.11.88	03.08.89	-	100	-	Treflan	ILC 3279	
Algeria	Tessala	11.12.88	06.06.89	-	46	-	-	Sebdou	
Cyprus	Athalassa	25.11.88	24.05.89	44	54	-	-	Yialousa (ILC 3279)	
France	Montboucher	26.11.88	17.07.89	-	100	-	Trifluraline, Linuron, Isoxaben	Cascari	
Iraq	Bakrajo (Sulaimaniyah)	21.11.88	20.06.89	40	40	-	-	Sulaimaniyah Local	
Italy	Caltagirone	09.01.89	27.06.89	54	60	-	-	Sultano	
Italy	Tarquinia	04.02.89	20.08.89	45	130	1	Benazim	Calia	
Italy	Perugia (Papiano)	15.11.88	03.08.89	-	80	-	Linuron, Thiabendazol, Actellic	Unknown	
Jordan	Marow	26.11.88	26.03.89	20	50	-	-	Jubeiha 1	
Jordan	Raba'a	17.12.88	12.06.89	18	46	-	Decis	Jordan 1	
Lebanon	Terbol	28.11.88	15.06.89	-	50	-	Kerb, Igran	Lebanese Local	
Morocco	Zememra	19.11.88	20.06.89	20	60	-	-	RH 46	
Portugal	Elvas	22.11.88	11.07.89	-	60	60	-	CHK 309	
Spain	Badajoz	07.12.88	-	-	-	-	Terbutrine	Pedrosillano	
Spain	Cordoba	29.11.88	20.06.89	-	-	-	Trialato 10%, Linuron, Trifluraline	Pedrosillano	
Spain	El Encin	27.11.88	10.07.89	32	96	-	Terbutryne (Igran)	GEC 32 - Atalaya	
Spain	Sevilla	28.11.88	28.06.89	-	-	-	Bravo, Daconil	Zegri	
Syria	Al Ghab	11.12.88	28.05.89	-	-	-	-	Ghab 2 (ILC 3279)	
Syria	Gelline	09.01.88	23.05.89	20	50	-	-	Ghab 2 (ILC 3279)	
Syria	Hama	04.12.88	23.05.89	30	80	-	-	Ghab 2 (ILC 3279)	
Syria	Homs	27.11.88	02.06.89	-	50	-	-	Ghab 2 (ILC 3279)	
Syria	Heimo	26.11.88	03.06.89	-	50	-	-	Ghab 2 (ILC 3279)	
Syria	Idleb	27.11.88	20.05.89	-	60	-	-	Ghab 2 (ILC 3279)	
Syria	Izra'a	07.01.89	28.06.89	-	-	-	-	Ghab 2 (ILC 3279)	
Syria	Jableh	16.11.88	22.06.89	-	-	-	-	Ghab 2 (ILC 3279)	
Syria	Jindiress	04.12.88	10.06.89	-	50	-	Kerb, Bravo	Ghab 2 (ILC 3279)	
Syria	Tartus	11.12.88	15.05.89	-	-	-	-	Ghab 2 (ILC 3279)	
Syria	Tel Hadya	04.12.88	10.06.89	-	50	-	Kerb, Bravo	Ghab 2 (ILC 3279)	
Tunisia	Beja	15.12.88	NA	NA	-	-	-	Local Amdoun	
Tunisia	El Kef	01.12.88	NA	NA	-	-	-	Local Amdoun	
Tunisia	Oued Meliz	01.12.88	NA	NA	-	-	-	Local Amdoun	
Turkey	Adana	10.12.88	22.05.89	40	80	-	-	-	
Turkey	Diyarbakir	10.12.89	10.06.89	30	60	-	-	ILC 195	
Turkey	Izmir	24.11.88	06.07.89	30	60	-	Endosulfan	Canitez-87	

NA = Not available.

Table 3.2.2. Time to flowering (days) of entries at different locations in the CIYT-MR during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA			
			Dahmouni	Khroub+	Oued Smar	Setif
FLIP 84- 33C	X 81 TH 146/ILC 72XILC 73	ICARDA/ICRISAT	125	127	108	156
FLIP 84- 79C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	124	127	109	155
FLIP 84- 80C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	124	128	109	153
FLIP 84- 92C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	124	133	108	157
FLIP 84- 99C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	124	123	103	147
FLIP 84-102C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	122	128	106	154
FLIP 84-158C	X 81 TH 247/ILC 482XILC2956	ICARDA/ICRISAT	122	123	101	151
FLIP 85- 42C	X 82 TH 66/ILC2593XILC3279	ICARDA/ICRISAT	124	130	112	157
FLIP 85- 43C	X 82 TH 66/ILC2593XILC3279	ICARDA/ICRISAT	125	131	112	158
FLIP 85- 48C	X 83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	123	127	110	153
FLIP 85- 63C	X 83 TH 25/FLIP 81-69CXFLIP 82-81C	ICARDA/ICRISAT	125	130	111	155
FLIP 85- 74C	X 83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	125	125	106	152
FLIP 85- 92C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	125	129	110	156
FLIP 85- 93C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	120	127	107	147
FLIP 85-118C	X 82 TH 146/ILC 72XILC 73	ICARDA/ICRISAT	120	129	103	156
FLIP 85-119C	X 82 TH 137/(ILC 87XILC194)XILC2956	ICARDA/ICRISAT	126	123	107	152
FLIP 85-133C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	125	125	113	156
FLIP 85-148C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	125	125	112	145
FLIP 86- 10C	X 83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	125	127	105	153
FLIP 86- 13C	X 83 TH 56/ILC3346XILC 604	ICARDA/ICRISAT	122	121	109	147
FLIP 86- 42C	X 83 TH 80/ILC2593XFLIP 81-59C	ICARDA/ICRISAT	122	119	104	148
FLIP 81-293C	Improved check	ICARDA/ICRISAT	122	119	105	148
ILC 482	Long term check	Turkey	117	119	99	144
Local check	-	-	114	127	104	151
Location Mean			123	126	107	152
S.E. of Mean			1.77		2.01	0.07
L.S.D. at 5%			5.03		5.73	0.19
C.V. (%)			2.49		3.25	0.08
Error d.f.			46		46	46
Significance			*		*	*

Cont'd. ...

Table 3.2.2. Cont'd. ...

Entry Name	ALGERIA	CYPRUS	FRANCE	IRAQ	ITALY			JORDAN	LEBANON	
	Sidi Bel - Abbes	Atha- lassa	Montbou- cher	Bakrajo	Caltagirone	Perugia	Tarquinia	Marow	Raba'a	Terbol
FLIP 84- 33C	123	134	176	143	103	182	98	81	121	132
FLIP 84- 79C	123	131	168	141	101	181	97	79	118	132
FLIP 84- 80C	123	129	169	143	100	180	96	79	118	134
FLIP 84- 92C	123	129	172	141	101	179	97	81	117	132
FLIP 84- 99C	120	127	170	144	100	181	95	80	115	129
FLIP 84-102C	123	131	173	134	99	180	96	80	116	132
FLIP 84-158C	120	131	168	145	101	180	95	79	116	131
FLIP 85- 42C	125	133	175	141	102	181	98	81	118	134
FLIP 85- 43C	125	133	171	141	102	180	98	80	117	133
FLIP 85- 48C	126	128	175	142	101	180	97	81	115	130
FLIP 85- 63C	125	129	173	140	102	178	97	81	119	132
FLIP 85- 74C	122	126	173	140	102	177	94	77	115	130
FLIP 85- 92C	125	131	176	145	104	181	98	80	117	131
FLIP 85- 93C	122	126	172	138	102	179	95	77	116	129
FLIP 85-118C	123	131	170	141	101	181	98	80	116	132
FLIP 85-119C	125	130	174	140	102	181	96	76	119	130
FLIP 85-133C	125	134	177	140	104	181	97	81	117	132
FLIP 85-148C	122	131	170	145	100	180	96	77	117	129
FLIP 86- 10C	123	129	176	140	102	180	95	80	115	130
FLIP 86- 13C	122	128	172	145	100	179	97	83	116	129
FLIP 86- 42C	123	127	167	143	100	178	94	77	115	128
FLIP 81-293C	120	127	170	141	102	181	95	79	118	128
ILC 482	110	123	166	146	97	177	93	74	114	128
Local check	117	132	173	146	102	179	94	78	114	128
Location Mean	122	130	172	142	101	180	96	79	117	131
S.E. of Mean	1.17	0.88	1.27	0.44	0.52	1.00	0.81	0.78	1.29	0.59
L.S.D. at 5%	3.34	2.49	3.62	1.25	1.47	-	2.29	2.22	-	1.68
C.V. (%)	1.66	1.17	1.28	0.54	0.89	0.97	1.45	1.71	1.57	0.78
Error d.f.	46	46	46	46	46	46	46	46	23	46
Significance	*	*	*	*	*	NS	*	*	NS	*

Cont'd. ...

Table 3.2.2. Cont'd. ...

Entry Name	MOROCCO		SPAIN			SYRIA				
	Zememra	Elvas	Cordoba	El Encin	Sevilla	Al Ghab	Gelline	Hama	Homs	Heimo
FLIP 84- 33C	129	131	132	168	147	121	97	120	139	144
FLIP 84- 79C	129	128	130	166	141	119	96	117	135	143
FLIP 84- 80C	128	131	128	167	140	118	93	117	135	139
FLIP 84- 92C	127	128	128	167	149	119	95	118	137	139
FLIP 84- 99C	127	125	122	164	147	118	92	117	135	137
FLIP 84-102C	127	131	131	167	148	119	93	118	135	138
FLIP 84-158C	129	130	127	165	138	119	94	117	137	139
FLIP 85- 42C	132	131	134	166	143	121	96	119	136	142
FLIP 85- 43C	127	127	134	166	143	121	96	119	135	139
FLIP 85- 48C	127	128	124	165	149	118	93	117	132	140
FLIP 85- 63C	132	128	126	173	146	119	100	121	139	139
FLIP 85- 74C	127	129	125	166	145	118	100	121	135	142
FLIP 85- 92C	129	128	126	168	146	119	96	118	136	141
FLIP 85- 93C	129	126	126	165	149	118	93	116	132	139
FLIP 85-118C	129	131	127	165	141	119	96	117	134	139
FLIP 85-119C	127	128	130	167	149	119	91	118	137	139
FLIP 85-133C	129	129	132	167	147	119	97	117	135	141
FLIP 85-148C	127	125	129	168	149	118	96	121	138	141
FLIP 86- 10C	129	129	126	166	146	118	97	121	137	139
FLIP 86- 13C	127	125	125	165	141	119	93	116	134	140
FLIP 86- 42C	127	125	122	164	136	117	92	116	134	137
FLIP 81-293C	127	127	125	167	140	119	95	121	140	137
ILC 482	129	127	120	162	127	116	90	115	129	135
Local check	127	124	123	165	150	121	94	120	137	143
Location Mean	128	128	127	166	144	119	95	118	136	140
S.E. of Mean	0.36	1.47	1.60	0.56	0.00	0.42	1.08	0.44	0.24	0.47
L.S.D. at 5%	1.03	4.20	4.56	1.60	0.00	1.20	3.07	1.25	0.68	1.35
C.V. (%)	0.49	2.00	2.18	0.59	0.00	0.62	1.97	0.64	0.31	0.59
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.2.2. Cont'd. ...

Entry Name	SYRIA						TURKEY			(1) Overall Mean
	Idleb	Izra'a	Jableh	Jindiress	Tartus	Tel Hadya	Adana+	Diyarbakir	Izmir	
FLIP 84- 33C	132	99	98	140	107	125	100	133	141	124
FLIP 84- 79C	131	98	96	138	108	123	100	133	139	123
FLIP 84- 80C	131	97	93	135	105	123	100	-	138	122
FLIP 84- 92C	131	98	93	138	107	124	100	133	139	123
FLIP 84- 99C	130	94	92	136	104	122	100	133	137	121
FLIP 84-102C	131	97	95	137	107	124	100	-	139	122
FLIP 84-158C	131	99	94	137	107	124	100	132	138	121
FLIP 85- 42C	132	99	95	138	110	124	100	-	140	124
FLIP 85- 43C	132	99	95	139	108	126	100	133	139	123
FLIP 85- 48C	130	98	95	134	107	122	100	132	139	122
FLIP 85- 63C	130	99	95	139	107	124	100	133	143	124
FLIP 85- 74C	130	99	96	135	104	122	100	133	137	122
FLIP 85- 92C	131	99	97	139	110	124	100	133	144	124
FLIP 85- 93C	130	96	96	134	105	122	100	133	138	121
FLIP 85-118C	131	99	96	136	108	124	100	133	138	122
FLIP 85-119C	130	97	97	136	106	123	100	132	137	122
FLIP 85-133C	131	100	98	138	111	124	100	-	147	124
FLIP 85-148C	130	94	93	136	107	122	100	133	141	122
FLIP 86- 10C	130	98	94	135	104	122	100	133	142	122
FLIP 86- 13C	130	95	96	135	108	122	100	133	140	121
FLIP 86- 42C	130	93	87	133	104	122	100	130	137	120
FLIP 81-293C	130	97	92	136	105	122	100	131	137	121
ILC 482	128	92	85	133	99	120	100	129	137	117
Local check	132	96	95	139	111	126	100	130	141	
Location Mean	131	97	94	137	107	123	100	132	140	
S.E. of Mean	0.24	0.81	1.24	0.59	1.07	0.50		0.23	1.35	
L.S.D. at 5%	0.68	2.30	3.53	1.67	3.05	1.41		0.66	3.85	
C.V. (%)	0.32	1.44	2.28	0.74	1.74	0.70		0.30	1.68	
Error d.f.	46	46	46	46	46	46		38	46	
Significance	*	*	*	*	*	*		*	*	

(1) Diyarbakir was excluded from the overall mean., + Non-replicated.

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

Table 3.2.3. Time to maturity (days) of entries at different locations in the CIYT-MR during 1988/89.

Entry Name	ALGERIA					FRANCE	IRAQ	ITALY	
	Dahmouni	Khroub+	Oued Smar	Setif+	Sidi Bel- Abbes	Montboucher	Bakrajo	Perugia	Tarquinoa
FLIP 84- 33C	166	198	169	241	176	222	185	241	154
FLIP 84- 79C	165	194	168	230	176	220	186	240	152
FLIP 84- 80C	165	193	169	228	176	222	185	243	151
FLIP 84- 92C	165	197	168	231	175	222	185	238	153
FLIP 84- 99C	165	195	167	232	175	219	185	236	143
FLIP 84-102C	163	200	169	236	177	226	186	243	154
FLIP 84-158C	163	193	164	225	176	219	186	241	147
FLIP 85- 42C	165	193	169	241	177	225	185	239	151
FLIP 85- 43C	166	193	169	239	175	225	185	242	154
FLIP 85- 48C	164	193	167	235	177	223	186	238	147
FLIP 85- 63C	166	194	168	233	175	222	185	238	146
FLIP 85- 74C	166	193	167	232	176	222	187	235	148
FLIP 85- 92C	166	195	166	239	176	226	188	238	152
FLIP 85- 93C	161	194	167	230	175	225	186	241	148
FLIP 85-118C	161	194	166	231	177	222	187	239	152
FLIP 85-119C	167	202	169	229	175	228	189	238	149
FLIP 85-133C	166	203	167	231	176	227	189	241	152
FLIP 85-148C	166	200	167	243	176	225	186	238	151
FLIP 86- 10C	166	193	164	245	176	224	187	238	150
FLIP 86- 13C	163	200	168	234	177	220	188	240	154
FLIP 86- 42C	163	198	163	228	175	216	186	239	143
FLIP 81-293C	163	193	164	226	176	219	185	237	143
ILC 482	158	192	166	225	176	221	186	235	145
Local check	155	-	167	231	177	222	187	240	151
Location Mean	164	196	167	233	176	223	186	239	150
S.E. of Mean	1.77		1.70		0.91	0.56	0.63	1.79	1.43
L.S.D. at 5%	5.04		-		-	1.59	1.79	5.09	4.06
C.V. (%)	1.87		1.77		0.89	0.44	0.58	1.30	1.65
Error d.f.	46		46		46	46	46	46	46
Significance	*		NS		NS	*	*	*	*

Cont'd. ...

Table 3.2.3. Cont'd. ...

Entry Name	JORDAN		LEBANON	PORTUGAL	SPAIN			SYRIA		
	Marow	Raba'a	Terbol	Elvas	Cordoba	El Encin	Sevilla	Al Ghab	Gelline	Hama
FLIP 84- 33C	116	164	177	203	188	218	196	167	132	162
FLIP 84- 79C	119	160	174	198	186	218	193	162	131	160
FLIP 84- 80C	115	158	172	198	188	224	193	160	130	160
FLIP 84- 92C	118	159	174	198	187	217	193	162	131	160
FLIP 84- 99C	114	154	168	197	186	210	193	158	129	155
FLIP 84-102C	116	157	173	200	189	220	193	160	126	160
FLIP 84-158C	115	156	168	198	182	215	193	158	129	156
FLIP 85- 42C	119	163	177	203	188	221	193	162	135	160
FLIP 85- 43C	115	160	177	202	188	215	193	162	132	158
FLIP 85- 48C	115	157	174	199	187	213	193	160	132	157
FLIP 85- 63C	114	159	175	198	188	213	193	162	135	162
FLIP 85- 74C	115	157	175	198	188	217	193	161	132	162
FLIP 85- 92C	115	160	175	198	189	215	199	162	133	161
FLIP 85- 93C	115	157	173	202	188	217	193	160	130	157
FLIP 85-118C	116	158	173	198	188	223	193	161	132	159
FLIP 85-119C	118	160	177	198	189	219	193	162	131	161
FLIP 85-133C	119	167	181	203	191	216	198	168	132	161
FLIP 85-148C	116	158	175	198	188	222	193	164	132	162
FLIP 86- 10C	115	160	177	198	189	220	198	162	131	162
FLIP 86- 13C	115	159	172	197	189	217	193	161	130	156
FLIP 86- 42C	116	155	167	198	186	215	193	158	125	156
FLIP 81-293C	115	154	167	198	187	213	193	158	130	158
ILC 482	115	155	167	196	182	208	193	155	126	154
Local check	116	154	170	197	186	219	193	162	131	159
Location Mean	116	158	173	199	187	217	194	161	131	159
S.E. of Mean	0.38	1.23	0.44	2.05	0.49	1.26	0.34	0.60	1.20	0.60
L.S.D. at 5%	1.09	3.51	1.26	-	1.40	3.59	0.97	1.71	3.41	1.70
C.V. (%)	0.57	1.35	0.44	1.79	0.45	1.01	0.30	0.65	1.59	0.65
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	*	*	NS	*	*	*	*	*	*

Cont'd. ...

Table 3.2.3. Cont'd. ...

Entry Name	SYRIA									TURKEY	Overall Mean
	Heimo	Homs	Idleb	Izra'a	Jableh	Jindiress	Tartus	Tel Hadya	Diyarbakir		
FLIP 84- 33C	173	187	172	142	134	184	158	163	177	177	
FLIP 84- 79C	170	179	171	142	133	182	162	163	175	175	
FLIP 84- 80C	171	174	172	141	132	181	157	163	175	175	
FLIP 84- 92C	173	178	171	141	130	181	162	162	175	175	
FLIP 84- 99C	170	173	166	134	126	178	148	158	174	172	
FLIP 84-102C	173	177	173	141	132	182	157	162	176	176	
FLIP 84-158C	171	173	167	139	125	178	148	161	174	172	
FLIP 85- 42C	172	178	174	139	130	182	158	163	177	176	
FLIP 85- 43C	173	177	173	142	131	181	158	163	177	176	
FLIP 85- 48C	173	175	167	136	127	176	158	158	175	174	
FLIP 85- 63C	172	185	169	140	131	182	154	161	175	175	
FLIP 85- 74C	170	180	167	139	130	182	154	158	175	174	
FLIP 85- 92C	172	181	170	140	130	182	157	162	176	176	
FLIP 85- 93C	171	173	167	139	128	178	155	161	175	174	
FLIP 85-118C	172	177	170	141	130	179	160	162	175	175	
FLIP 85-119C	173	181	171	139	131	182	162	163	176	176	
FLIP 85-133C	173	185	172	141	134	182	163	163	177	178	
FLIP 85-148C	173	179	170	138	131	182	158	162	176	176	
FLIP 86- 10C	171	186	168	138	131	184	157	162	177	176	
FLIP 86- 13C	170	174	171	139	129	179	158	161	175	175	
FLIP 86- 42C	171	170	166	135	125	175	145	157	174	171	
FLIP 81-293C	168	175	166	138	124	177	148	160	175	172	
ILC 482	171	169	166	130	122	176	145	157	174	170	
Local check	173	175	173	140	129	181	153	162	173		
Location Mean	172	177	170	139	129	180	156	161	175		
S.E. of Mean	0.27	1.00	0.82	1.24	1.39	0.53	0.75	0.89	0.40		
L.S.D. at 5%	0.76	2.86	2.34	3.52	3.94	1.50	2.14	2.54	1.13		
C.V. (%)	0.27	0.98	0.84	1.54	1.85	0.51	0.84	0.96	0.39		
Error d.f.	46	46	46	46	46	46	46	46	46		
Significance	*	*	*	*	*	*	*	*	*		

* = Significant at $P < 0.05$, NS = Not significant., + Non-replicated.

Table 3.2.4. Plant height (cm) of entries at different locations in the CIYT-MR during 1988/89.

Entry Name	ALGERIA				CYPRUS	IRAQ	ITALY			JORDAN
	Khroub	Oued Smar	Setif	Tessala	Athalassa	Bakrajo	Caltagirone	Perugia	Tarquinia	Marow
FLIP 84- 33C	71	73	54	53	73	50	46	83	63	42
FLIP 84- 79C	47	53	36	40	55	35	33	77	52	45
FLIP 84- 80C	56	51	40	37	58	35	38	77	53	45
FLIP 84- 92C	53	52	42	37	57	35	37	77	55	46
FLIP 84- 99C	68	52	43	47	60	38	39	78	57	44
FLIP 84-102C	63	50	38	42	58	35	35	77	58	44
FLIP 84-158C	52	51	45	43	62	32	34	82	50	42
FLIP 85- 42C	69	58	54	50	70	41	42	83	65	43
FLIP 85- 43C	68	52	51	49	67	39	42	83	60	43
FLIP 85- 48C	68	61	50	40	68	42	44	80	67	44
FLIP 85- 63C	72	70	48	43	72	42	48	78	65	43
FLIP 85- 74C	69	65	50	40	67	42	40	73	60	44
FLIP 85- 92C	66	64	47	45	65	43	39	78	65	43
FLIP 85- 93C	56	47	37	43	58	34	36	80	52	42
FLIP 85-118C	65	58	45	38	67	35	39	85	62	44
FLIP 85-119C	63	59	50	48	67	44	39	88	65	44
FLIP 85-133C	66	62	47	45	65	41	38	77	60	43
FLIP 85-148C	53	49	39	37	52	35	33	75	53	43
FLIP 86- 10C	71	73	51	45	67	44	39	77	73	44
FLIP 86- 13C	67	61	48	43	72	43	42	83	58	44
FLIP 86- 42C	54	37	43	38	55	30	35	77	50	44
FLIP 81-293C	55	52	45	37	60	36	31	73	57	42
ILC 482	53	50	42	35	57	29	36	68	48	45
Local check	56	49	40	38	73	28	41	81	48	45
Location Mean	62	56	45	42	63	38	39	79	58	44
S.E. of Mean	2.40	3.06	0.34	2.45	2.67	2.30	1.74	4.56	2.69	1.52
L.S.D. at 5%	6.83	8.70	0.95	6.97	7.59	6.55	4.96	-	7.66	-
C.V. (%)	6.74	9.40	1.28	10.04	7.27	10.57	7.81	10.03	8.01	6.04
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	NS	*	NS

Cont'd. ...

Table 3.2.4. Cont'd. ...

Entry Name	JORDAN	LEBANON	PORTUGAL	SPAIN			SYRIA			
	Raba'a	Terbol	Elvas	Cordoba	El Encin	Sevilla	Al Ghab	Gelline	Hama	Heimo
FLIP 84- 33C	55	51	72	72	71	76	62	42	48	43
FLIP 84- 79C	36	36	61	63	57	58	47	30	35	32
FLIP 84- 80C	39	39	61	62	57	61	48	36	42	32
FLIP 84- 92C	41	40	60	59	59	63	50	34	38	38
FLIP 84- 99C	44	42	68	65	54	66	55	41	40	40
FLIP 84-102C	39	37	63	62	56	68	48	36	37	32
FLIP 84-158C	44	38	63	59	60	66	50	38	38	37
FLIP 85- 42C	54	45	75	63	65	73	60	41	47	37
FLIP 85- 43C	49	43	68	64	64	70	57	37	43	35
FLIP 85- 48C	50	45	67	66	65	75	60	43	45	36
FLIP 85- 63C	50	46	67	74	61	84	63	41	45	42
FLIP 85- 74C	45	44	65	69	62	67	60	41	42	39
FLIP 85- 92C	50	42	63	67	66	75	53	38	45	42
FLIP 85- 93C	37	34	65	61	52	69	48	30	38	35
FLIP 85-118C	44	41	58	64	62	72	53	35	38	34
FLIP 85-119C	48	39	66	71	65	74	55	39	42	42
FLIP 85-133C	47	38	65	67	67	80	52	34	45	34
FLIP 85-148C	38	35	65	56	52	66	48	32	35	31
FLIP 86- 10C	50	47	68	73	72	74	62	41	47	44
FLIP 86- 13C	46	42	67	65	65	79	53	37	47	34
FLIP 86- 42C	39	35	60	60	57	64	48	34	37	38
FLIP 81-293C	42	37	59	58	60	64	50	36	37	38
ILC 482	38	35	65	53	58	61	47	31	38	38
Local check	42	34	67	58	57	56	58	46	47	41
Location Mean	44	40	65	64	61	69	54	37	41	37
S.E. of Mean	2.00	1.62	3.55	1.93	2.25	2.26	1.70	1.34	1.89	0.58
L.S.D. at 5%	5.70	4.62	-	5.49	6.41	6.44	4.84	3.80	5.38	1.66
C.V. (%)	7.82	6.98	9.45	5.23	6.39	5.66	5.49	6.22	7.90	2.71
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	*	NS	*	*	*	*	*	*	*

Cont'd. ...

Table 3.2.4. Cont'd. ...

Entry Name	SYRIA							TURKEY		Overall Mean
	Homs	Idleb	Izra'a	Jableh	Jindiress	Tartus	Tel Hadya	Diyarbakir	Izmir	
FLIP 84- 33C	73	53	28	64	45	75	47	46	73	59
FLIP 84- 79C	58	42	23	49	31	58	38	34	48	45
FLIP 84- 80C	57	40	23	53	37	60	35	33	54	47
FLIP 84- 92C	60	46	24	50	36	58	34	34	54	47
FLIP 84- 99C	65	46	25	50	36	68	37	36	53	50
FLIP 84-102C	63	42	25	50	37	60	32	34	59	48
FLIP 84-158C	62	44	24	61	41	62	35	33	56	48
FLIP 85- 42C	73	52	25	60	43	70	39	43	61	55
FLIP 85- 43C	73	52	26	60	46	62	33	37	56	53
FLIP 85- 48C	72	50	25	65	43	65	43	40	49	54
FLIP 85- 63C	78	53	25	63	45	77	42	40	63	57
FLIP 85- 74C	67	48	25	61	50	68	43	40	49	53
FLIP 85- 92C	65	49	26	53	42	65	39	42	54	53
FLIP 85- 93C	62	41	22	58	41	55	33	32	51	47
FLIP 85-118C	67	43	24	53	44	60	34	34	56	50
FLIP 85-119C	68	52	30	58	45	68	41	41	59	54
FLIP 85-133C	63	49	24	62	41	68	39	38	58	52
FLIP 85-148C	53	43	24	49	31	57	34	31	51	45
FLIP 86- 10C	73	53	25	61	49	73	47	44	56	57
FLIP 86- 13C	72	53	28	58	43	70	38	39	59	54
FLIP 86- 42C	60	43	25	51	34	57	33	31	51	46
FLIP 81-293C	60	44	25	57	43	62	34	36	54	48
ILC 482	57	41	22	51	34	52	29	30	44	44
Local check	70	51	27	65	45	68	43	32	41	
Location Mean	65	47	25	57	41	64	38	37	54	
S.E. of Mean	1.65	1.55	1.50	4.43	0.63	2.08	1.88	1.49	4.33	
L.S.D. at 5%	4.69	4.40	-	-	1.78	5.92	5.35	4.23	12.33	
C.V. (%)	4.36	5.68	10.33	13.52	2.65	5.62	8.66	7.02	13.77	
Error d.f.	46	46	46	46	46	46	46	46	46	
Significance	*	*	NS	NS	*	*	*	*	*	

* = 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-MR during 1988/89.

Entry Name	ALGERIA				FRANCE	IRAQ	ITALY			JORDAN	LEBANON
	DAHMOUNI+	Oued Smar	Setif+	Tessala (S.B.A.)	Montbou-cher	Bakrajo	Calta-girone	Papiano	Tarqui-nia	Raba'a	Terbol
FLIP 84- 33C	34	33	36	25	39	35	38	41	39	36	40
FLIP 84- 79C	34	29	-	26	34	32	37	39	35	36	37
FLIP 84- 80C	31	28	34	25	35	32	35	37	36	34	36
FLIP 84- 92C	32	25	35	28	37	34	37	36	39	38	37
FLIP 84- 99C	31	26	32	25	37	35	35	39	36	42	41
FLIP 84-102C	32	25	37	27	35	37	35	41	37	37	36
FLIP 84-158C	31	24	29	23	33	30	32	38	31	36	37
FLIP 85- 42C	39	29	44	28	42	41	42	41	40	48	47
FLIP 85- 43C	40	28	38	31	45	39	44	44	45	47	45
FLIP 85- 48C	35	26	39	29	41	38	40	42	43	46	43
FLIP 85- 63C	35	30	34	31	40	37	38	41	42	46	40
FLIP 85- 74C	34	33	39	32	43	42	40	35	43	47	43
FLIP 85- 92C	34	29	37	28	40	39	37	39	40	44	44
FLIP 85- 93C	34	31	35	31	43	37	39	43	40	45	41
FLIP 85-118C	33	29	40	31	39	36	38	39	37	43	42
FLIP 85-119C	34	26	37	30	43	37	39	38	41	48	42
FLIP 85-133C	34	29	30	32	45	42	43	44	44	47	45
FLIP 85-148C	34	32	44	31	42	36	39	37	41	40	41
FLIP 86- 10C	35	32	38	32	42	38	42	42	42	46	45
FLIP 86- 13C	34	34	41	33	48	43	40	41	48	46	51
FLIP 86- 42C	32	29	35	25	44	38	41	42	40	44	42
FLIP 81-293C	34	24	29	24	34	27	35	37	32	32	31
ILC 482	33	22	31	19	33	30	33	34	32	35	33
Local check	34	30	-	25	31	35	31	39	30	38	38
Location Mean	34	28	36	28	39	36	38	40	39	42	41
S.E. of Mean		1.19		1.15	0.70	1.15	0.98	2.67	1.70	1.39	1.10
L.S.D. at 5%		3.39		3.26	1.98	3.28	2.80	-	4.83	3.97	3.14
C.V. (%)		7.27		7.13	3.07	5.53	4.50	11.69	7.54	5.79	4.69
Error d.f.		46		46	46	46	46	46	46	46	46
Significance		*		*	*	*	*	NS	*	*	*

Cont'd. ...

Table 3.2.5. Cont'd. ...

Entry Name	PORTUGAL		SPAIN			SYRIA				TURKEY		(1)
	Elvas	Cordoba	El Encin	Homs	Heimo	Idleb	Jableh	Jindiress	Tel Hadya	Izmir	Overall Mean	
FLIP 84- 33C	36	35	33	39	38	33	40	37	34	32	36	
FLIP 84- 79C	40	34	29	38	30	33	34	32	32	28	33	
FLIP 84- 80C	36	32	30	34	32	34	35	31	31	28	32	
FLIP 84- 92C	36	34	32	38	34	34	37	34	32	31	34	
FLIP 84- 99C	37	35	36	42	32	38	38	33	32	25	35	
FLIP 84-102C	38	34	31	37	33	31	33	32	30	27	33	
FLIP 84-158C	35	30	33	35	32	30	33	31	30	-	31	
FLIP 85- 42C	39	38	39	45	44	44	42	43	37	33	40	
FLIP 85- 43C	40	39	41	46	35	39	44	41	38	34	40	
FLIP 85- 48C	35	42	39	43	36	36	46	39	37	32	38	
FLIP 85- 63C	36	39	35	41	37	35	44	37	36	-	37	
FLIP 85- 74C	38	41	38	44	40	40	46	41	40	-	40	
FLIP 85- 92C	38	36	35	42	39	35	42	41	34	25	37	
FLIP 85- 93C	40	38	36	40	38	39	41	39	37	36	38	
FLIP 85-118C	38	35	33	43	38	38	42	36	33	30	37	
FLIP 85-119C	40	35	36	41	42	39	41	40	38	31	38	
FLIP 85-133C	34	43	36	46	41	37	46	45	41	39	40	
FLIP 85-148C	39	36	34	39	37	34	38	37	37	33	37	
FLIP 86- 10C	38	44	39	44	42	38	45	43	39	35	40	
FLIP 86- 13C	37	45	37	49	44	44	50	45	41	-	42	
FLIP 86- 42C	37	34	37	41	42	33	40	35	37	33	37	
FLIP 81-293C	34	30	29	35	28	28	31	28	27	25	30	
ILC 482	38	26	30	32	29	28	33	27	26	18	30	
Local check	34	24	26	34	29	27	32	29	27	41		
Location Mean	37	36	34	40	36	35	40	36	34	31		
S.E. of Mean	2.29	1.62	0.98	1.09	0.12	2.52	1.40	0.95	1.23	1.12		
L.S.D. at 5%	-	4.62	2.79	3.09	0.35	7.17	3.97	2.69	3.49	3.19		
C.V. (%)	10.64	7.87	4.96	4.68	0.59	12.35	6.08	4.49	6.16	6.27		
Error d.f.	46	46	46	46	46	46	46	46	46	38		
Significance	NS	*	*	*	*	*	*	*	*	*		

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

Table 3.2.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-MR during 1988/89.

Entry Name	ALGERIA										CYPRUS	
	Dahmouni		Khroub		Oued Smar		Setif		Tessala (S.B.A.)		Athalassa	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 33C	379	15	2283	15	594	14	725	17	511	16	2542	7
FLIP 84- 79C	381	14	2630	7	2014	1	937	8	666	11	2569	5
FLIP 84- 80C	548	6	2804	4	882	8	1177	1	773	4	2080	21
FLIP 84- 92C	506	8	3307	1	1287	3	1132	2	688	8	2392	12
FLIP 84- 99C	576	5	3096	2	305	19	499	24	671	10	1599	24
FLIP 84-102C	354	16	2784	6	656	12	1091	5	864	2	2094	20
FLIP 84-158C	334	17	2802	5	548	16	916	9	561	15	2534	8
FLIP 85- 42C	645	3	2448	12	917	7	526	22	572	13	2381	13
FLIP 85- 43C	687	1	2476	11	274	21	1008	7	322	21	2483	10
FLIP 85- 48C	625	4	2294	14	664	11	755	16	589	12	2569	6
FLIP 85- 63C	646	2	2010	22	758	10	819	13	694	7	1996	23
FLIP 85- 74C	458	9	2374	13	1369	2	775	15	702	6	2244	18
FLIP 85- 92C	416	12	2278	16	880	9	507	23	505	17	2254	17
FLIP 85- 93C	389	13	2174	19	1279	4	675	20	804	3	2522	9
FLIP 85-118C	430	11	2570	8	1099	6	701	19	673	9	2317	14
FLIP 85-119C	229	22	2031	21	180	23	856	11	462	19	2681	2
FLIP 85-133C	319	18	1531	23	432	17	582	21	283	22	2271	16
FLIP 85-148C	507	7	2268	17	626	13	863	10	927	1	2208	19
FLIP 86- 10C	305	19	2247	18	1113	5	717	18	492	18	2571	4
FLIP 86- 13C	210	24	2062	20	422	18	841	12	738	5	2075	22
FLIP 86- 42C	278	21	2541	9	56	24	1061	6	192	24	2275	15
FLIP 81-293C	430	10	2484	10	556	15	1127	4	407	20	2594	3
ILC 482	298	20	2932	3	251	22	1131	3	267	23	2827	1
Local check	229	23	195	24	298	20	780	14	561	14	2405	11
Location Mean	424		2359		727		842		580		2353	
S.E. of Mean	110.58		206.45		214.59		126.46		114.41		263.53	
L.S.D. at 5%	-		587.65		610.85		359.97		325.67		-	
C.V. (%)	45.15		15.16		51.09		26.03		34.16		19.40	
Error d.f.	46		46		46		46		46		46	
Significance	NS		*		*		*		*		NS	
Test > L. Check	-		23		7		1		1		-	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	FRANCE		IRAQ		ITALY				JORDAN			
	Montboucher		Bakrajo		Caltagirone		Tarquinia		Perugia		Marow	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 33C	1490	20	983	23	812	22	2122	19	3130	19	358	22
FLIP 84- 79C	1927	6	1156	18	1194	13	2122	18	2973	23	349	23
FLIP 84- 80C	1953	5	1226	14	1176	16	1402	24	3157	18	467	15
FLIP 84- 92C	2340	1	1260	10	1359	8	2847	7	3822	1	734	1
FLIP 84- 99C	1883	8	1198	15	1511	5	3148	3	3570	3	595	7
FLIP 84-102C	1793	10	1229	12	1568	4	2164	17	3003	22	566	10
FLIP 84-158C	1633	15	1153	19	1188	15	1624	23	3360	7	680	3
FLIP 85- 42C	1647	14	1451	2	1114	19	3021	5	3353	8	492	13
FLIP 85- 43C	1980	4	1619	1	1282	9	3132	4	3017	21	413	18
FLIP 85- 48C	1517	19	1400	4	1666	1	3217	2	3284	10	652	4
FLIP 85- 63C	1423	23	1227	13	1445	6	2683	8	3223	14	415	17
FLIP 85- 74C	1353	24	1165	17	1369	7	3011	6	3407	6	410	19
FLIP 85- 92C	1537	16	1428	3	987	21	2286	16	3220	15	360	21
FLIP 85- 93C	1870	9	1392	5	1206	12	2661	10	2886	24	724	2
FLIP 85-118C	1520	18	1372	6	1247	10	3471	1	3337	9	374	20
FLIP 85-119C	1530	17	1047	22	1194	14	2466	11	3193	16	425	16
FLIP 85-133C	1673	13	1331	7	560	24	2085	20	3113	20	315	24
FLIP 85-148C	1760	11	1147	20	1121	18	2434	12	3437	5	645	5
FLIP 86- 10C	1450	22	1282	9	800	23	2370	13	3473	4	516	12
FLIP 86- 13C	1480	21	1053	21	1232	11	2677	9	3157	17	472	14
FLIP 86- 42C	2170	3	1181	16	1599	3	1720	22	3242	11	566	9
FLIP 81-293C	1730	12	1247	11	1143	17	2312	14	3237	13	554	11
ILC 482	1920	7	1285	8	1654	2	2286	15	3703	2	577	8
Local check	2227	2	818	24	1045	20	1910	21	3240	12	632	6
Location Mean	1742		1235		1228		2465		3272		512	
S.E. of Mean	151.47		142.71		143.68		362.85		227.91		72.53	
L.S.D. at 5%	431.16		-		408.98		1032.87		-		206.45	
C.V. (%)	15.06		20.01		20.26		25.49		12.06		24.53	
Error d.f.	46		46		46		46		46		46	
Significance	*		NS		*		*		NS		*	
Test > L. Check	0		-		5		6		-		0	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	JORDAN		LEBANON		PORTUGAL		SPAIN					
	Raba'a		Terbol		Elvas		Cordoba		El Encin		Sevilla	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 33C	1575	17	1608	17	2199	16	1387	21	855	24	2821	13
FLIP 84- 79C	1958	3	1656	10	2833	2	1907	2	1954	2	3217	5
FLIP 84- 80C	1524	19	1635	16	2354	11	1745	6	1381	11	3271	4
FLIP 84- 92C	1712	10	1902	2	2725	3	1626	11	1702	4	3329	3
FLIP 84- 99C	1734	9	1653	11	2310	12	1549	14	1758	3	2450	18
FLIP 84-102C	1637	15	1749	6	2188	18	1791	5	1552	8	3554	2
FLIP 84-158C	1809	8	1757	5	2259	14	1307	23	1437	9	2558	17
FLIP 85- 42C	1977	2	1907	1	2715	4	1464	18	1609	6	2979	9
FLIP 85- 43C	1947	4	1714	7	2491	8	1509	15	1262	14	1883	24
FLIP 85- 48C	1654	13	1688	9	1951	22	1862	4	1700	5	2913	11
FLIP 85- 63C	1556	18	1368	23	2083	21	1485	17	949	22	3179	6
FLIP 85- 74C	1669	11	1492	21	2479	9	1877	3	1283	13	2858	12
FLIP 85- 92C	1522	20	1651	13	2197	17	1695	9	1306	12	2608	16
FLIP 85- 93C	2001	1	1648	14	2715	5	1578	13	1238	16	3775	1
FLIP 85-118C	1652	14	1791	4	2178	19	1460	19	1237	17	3121	7
FLIP 85-119C	1436	24	1460	22	2127	20	1496	16	1200	18	2783	14
FLIP 85-133C	1464	23	1235	24	1653	24	1172	24	902	23	2338	20
FLIP 85-148C	1840	6	1593	18	2544	7	1617	12	1045	19	2400	19
FLIP 86- 10C	1655	12	1651	12	1808	23	1383	22	1253	15	2929	10
FLIP 86- 13C	1481	21	1500	20	2273	13	1740	7	1013	20	3000	8
FLIP 86- 42C	1816	7	1556	19	2435	10	1724	8	1598	7	2046	23
FLIP 81-293C	1468	22	1646	15	2711	6	1953	1	2033	1	2663	15
ILC 482	1627	16	1831	3	2910	1	1631	10	992	21	2313	21
Local check	1927	5	1706	8	2234	15	1407	20	1400	10	2258	22
Location Mean	1693		1642		2349		1599		1361		2802	
S.E. of Mean	188.62		73.40		227.99		180.95		234.24		264.34	
L.S.D. at 5%	-		208.94		646.14		-		666.76		752.46	
C.V. (%)	19.29		7.75		16.74		19.61		29.81		16.34	
Error d.f.	46		46		46		46		46		46	
Significance	NS		*		*		NS		*		*	
Test > L. Check	-		0		1		-		0		7	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	SYRIA											
	Al Ghab		Gelline		Hama		Heimo		Homs		Idleb	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 33C	2090	16	171	15	1270	22	1119	15	1307	20	1092	14
FLIP 84- 79C	2524	1	148	18	1603	5	1289	5	1770	14	1340	4
FLIP 84- 80C	2323	7	306	8	1651	4	1296	4	1679	17	992	22
FLIP 84- 92C	2450	2	351	4	1487	17	1204	10	2219	4	1158	11
FLIP 84- 99C	2116	14	332	6	1524	16	1556	1	2229	3	1176	8
FLIP 84-102C	2328	6	440	2	1593	7	1163	13	2296	2	1043	16
FLIP 84-158C	2307	8	247	11	1698	3	1266	6	1693	16	1312	6
FLIP 85- 42C	2402	3	171	16	1831	1	1031	20	1963	8	1644	1
FLIP 85- 43C	1937	23	252	10	1460	19	1232	8	1893	12	1032	19
FLIP 85- 48C	2143	13	269	9	1577	9	1185	11	1958	9	1173	9
FLIP 85- 63C	1524	24	67	23	772	24	944	22	917	23	1170	10
FLIP 85- 74C	2090	18	87	21	1106	23	1118	16	902	24	991	23
FLIP 85- 92C	2090	17	141	19	1370	21	1215	9	1342	19	1074	15
FLIP 85- 93C	2365	5	197	13	1561	12	806	24	1934	10	1316	5
FLIP 85-118C	2243	10	107	20	1566	10	1003	21	1767	15	1177	7
FLIP 85-119C	2280	9	196	14	1534	15	1096	18	1106	21	1027	21
FLIP 85-133C	1942	21	85	22	1481	18	1040	19	2074	5	1156	12
FLIP 85-148C	2048	19	169	17	1598	6	1173	12	1347	18	1030	20
FLIP 86- 10C	2243	11	55	24	1550	13	1468	2	1072	22	794	24
FLIP 86- 13C	1942	22	314	7	1450	20	814	23	1915	11	1039	17
FLIP 86- 42C	2005	20	240	12	1577	8	1141	14	1781	13	1032	18
FLIP 81-293C	2370	4	346	5	1561	11	1325	3	2349	1	1548	2
ILC 482	2116	15	620	1	1825	2	1265	7	1976	7	1442	3
Local check	2159	12	383	3	1545	14	1100	17	2021	6	1127	13
Location Mean	2168		237		1508		1160		1730		1162	
S.E. of Mean	132.36		30.65		175.81		133.39		268.70		127.30	
L.S.D. at 5%	376.76		87.26		-		-		764.86		362.35	
C.V. (%)	10.57		22.38		20.19		19.91		26.91		18.98	
Error d.f.	46		46		46		46		46		46	
Significance	*		*		NS		NS		*		*	
Test > L. Check	0		1		-		-		0		2	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	SYRIA										TUNISIA	
	Izra'a		Jableh		Jindiress		Tartus		Tel Hadya		Beja	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 33C	175	17	2085	17	1168	21	815	21	738	13	1075	9
FLIP 84- 79C	243	8	2370	9	1718	4	1233	11	1147	1	1538	1
FLIP 84- 80C	249	5	1958	18	1726	2	1233	10	846	5	1350	2
FLIP 84- 92C	317	1	2222	15	1543	6	1153	13	684	16	1313	3
FLIP 84- 99C	243	6	2116	16	1129	24	1302	4	756	11	700	18
FLIP 84-102C	259	4	2381	8	1485	8	1296	5	745	12	838	14
FLIP 84-158C	190	15	2243	14	1289	16	1280	6	1114	2	1175	5
FLIP 85- 42C	79	24	2381	7	1794	1	868	18	624	19	1063	10
FLIP 85- 43C	153	19	2339	13	1723	3	794	22	507	23	513	21
FLIP 85- 48C	212	9	2688	2	1320	15	1243	9	756	10	738	17
FLIP 85- 63C	111	22	2392	6	1136	23	1016	16	519	22	963	12
FLIP 85- 74C	196	12	1672	21	1180	20	1164	12	658	17	1138	7
FLIP 85- 92C	111	21	1524	24	1280	17	852	19	449	24	775	15
FLIP 85- 93C	180	16	2677	4	1432	12	751	23	734	14	1088	8
FLIP 85-118C	196	14	2349	12	1517	7	1275	7	520	21	1000	11
FLIP 85-119C	196	11	1693	20	1346	14	1254	8	910	3	750	16
FLIP 85-133C	138	20	1630	23	1556	5	545	24	631	18	463	23
FLIP 85-148C	196	13	1788	19	1272	18	1037	14	896	4	1275	4
FLIP 86- 10C	101	23	1672	22	1153	22	1021	15	785	8	875	13
FLIP 86- 13C	169	18	2360	11	1475	10	921	17	694	15	675	19
FLIP 86- 42C	243	7	2772	1	1484	9	1307	3	756	9	475	22
FLIP 81-293C	270	2	2444	5	1350	13	1608	1	822	7	588	20
ILC 482	265	3	2677	3	1444	11	1481	2	823	6	225	24
Local check	201	10	2360	10	1233	19	852	20	536	20	1150	6
Location Mean	196		2200		1406		1096		735		906	
S.E. of Mean	42.83		403.10		125.10		185.53		124.75		125.02	
L.S.D. at 5%	121.93		-		356.09		528.10		355.11		298.68	
C.V. (%)	37.94		31.74		15.41		29.32		29.39		19.52	
Error d.f.	46		46		46		46		46		23	
Significance	*		NS		*		*		*		*	
Test > L. Check	0		-		4		2		4		1	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry Name	TUNISIA +				TURKEY						Overall Mean	
	El Kef		Oued Meliz		Adana		Diyarbakir		Izmir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 33C	1500	14	2200	1	1292	16	1452	8	706	11	1332	17
FLIP 84- 79C	1000	18	1175	15	1442	6	1351	16	1136	7	1585	2
FLIP 84- 80C	3000	1	875	21	1500	2	1526	5	1173	6	1521	7
FLIP 84- 92C	1875	7	1600	5	1442	7	1370	12	2049	1	1688	1
FLIP 84- 99C	1500	14	1425	10	1408	8	1422	10	222	20	1464	11
FLIP 84-102C	1563	11	1300	13	1583	1	1398	11	920	9	1522	6
FLIP 84-158C	1625	10	1225	14	1342	13	1595	3	130	24	1434	13
FLIP 85- 42C	813	23	2200	1	1483	3	1583	4	1265	4	1554	3
FLIP 85- 43C	1000	18	1500	8	1300	15	1356	15	1173	5	1419	14
FLIP 85- 48C	1938	5	1175	15	1358	12	1457	7	259	18	1499	10
FLIP 85- 63C	938	21	1525	7	1142	22	1086	23	228	19	1269	22
FLIP 85- 74C	2063	3	1375	12	1400	9	1363	13	136	23	1398	16
FLIP 85- 92C	1250	16	1100	19	1392	10	1010	24	148	22	1279	21
FLIP 85- 93C	1688	9	1175	15	983	23	1444	9	679	12	1502	9
FLIP 85-118C	1563	11	1500	8	1358	11	1360	14	1531	2	1502	8
FLIP 85-119C	1000	18	1150	18	1258	19	1247	21	420	16	1293	20
FLIP 85-133C	375	24	525	24	1242	20	1319	18	957	8	1155	23
FLIP 85-148C	1563	11	1600	5	1475	4	1479	6	722	10	1418	15
FLIP 86- 10C	1125	17	750	22	1233	21	1281	19	636	14	1309	18
FLIP 86- 13C	938	21	1000	20	1292	17	1232	22	170	21	1309	19
FLIP 86- 42C	1938	5	1825	4	1300	14	1281	20	1519	3	1450	12
FLIP 81-293C	1750	8	2150	3	1458	5	1338	17	438	15	1543	4
ILC 482	2938	2	700	23	1283	18	1751	1	296	17	1530	5
Local check	2000	4	1425	10	708	24	1612	2	669	13		
Location Mean	1539		1353		1320		1388		733			
S.E. of Mean					104.00		80.85		260.22			
L.S.D. at 5%					296.03		230.14		740.73			
C.V. (%)					13.65		10.09		61.53			
Error d.f.					46		46		46			
Significance					*		*		*			
Test > L. Check					22		0		3			

* = Significant at $P < 0.05$, NS = Not significant., + Non-replicated.

Table 3.2.7. The five heaviest seed yielding entries at the individual locations in the CIYT-MR during 1988/89.

Rank	ALGERIA					CYPRUS	FRANCE	IRAQ	ITALY
	Dahmouni	Khroub	Oued Smar	Setif	Tessala	Athalassa	Montboucher	Bakrajo	Caltagirone
1	FLIP 85- 43C	FLIP 84- 92C	FLIP 84- 79C	FKIP 84- 80C	FLIP 85-148C	ILC 482	FLIP 84- 92C	FLIP 85- 43C	FLIP 85- 48C
2	FLIP 85- 63C	FLIP 84- 99C	FLIP 85- 74C	FLIP 84- 92C	FLIP 84-102C	FLIP 85-119C	Local check	FLIP 85- 42C	ILC 482
3	FLIP 85- 42C	ILC 482	FLIP 84- 92C	ILC 482	FLIP 85- 93C	FLIP 81-293C	FLIP 86- 42C	FLIP 85- 92C	FLIP 86- 42C
4	FLIP 85- 48C	FLIP 84- 80C	FLIP 85- 93C	FLIP 81-293C	FLIP 84- 80C	FLIP 86- 10C	FLIP 85- 43C	FLIP 85- 48C	FLIP 84-102C
5	FLIP 84- 99C	FLIP 84-158C	FLIP 86- 10C	FLIP 84-102C	FLIP 86- 13C	FLIP 84- 79C FLIP 85- 48C	FLIP 84- 80C	FLIP 85- 93C	FLIP 84- 99C

Cont'd. ...

Rank	ITALY		JORDAN		LEBANON	PORTUGAL	SPAIN		
	Tarquinia	Perugia	Marow	Raba'a	Terbol	Elvas	Cordoba	El Encin	Sevilla
1	FLIP 85-118C	FLIP 84- 92C	FLIP 84- 92C	FLIP 85- 93C	FLIP 85- 42C	ILC 482	FLIP 81-293C	FLIP 81-293C	FLIP 85- 93C
2	FLIP 85- 48C	ILC 482	FLIP 85- 93C	FLIP 85- 42C	FLIP 84- 92C	FLIP 84- 79C	FLIP 84- 79C	FLIP 84- 79C	FLIP 84-102C
3	FLIP 84- 99C	FLIP 84- 99C	FLIP 84-158C	FLIP 84- 79C	ILC 482	FLIP 84- 92C	FLIP 85- 74C	FLIP 84- 99C	FLIP 84- 92C
4	FLIP 85- 43C	FLIP 86- 10C	FLIP 85- 48C	FLIP 85- 43C	FLIP 85-118C	FLIP 85- 42C	FLIP 85- 48C	FLIP 84- 92C	FLIP 84- 80C
5	FLIP 85- 42C	FLIP 85-148C	FLIP 85-148C	Local check	FLIP 84- 158C	FLIP 85- 93C	FLIP 84-102C	FLIP 85- 48C	FLIP 84- 79C

Cont'd. ...

Rank	SYRIA								
	Al Ghab	Gelline	Hama	Heimo	Homs	Idleb	Izra'a	Jableh	Jindiress
1	FLIP 84- 79C	ILC 482	FLIP 85- 42C	FLIP 84- 99C	FLIP 81-293C	FLIP 85- 42C	FLIP 84- 92C	FLIP 86- 42C	FLIP 85- 42C
2	FLIP 84- 92C	FLIP 84-102C	ILC 482	FLIP 86- 10C	FLIP 84-102C	FLIP 81-293C	FLIP 81-293C	FLIP 85- 48C	FLIP 84- 80C
3	FLIP 85- 42C	Local check	FLIP 84-158C	FLIP 81-293C	FLIP 84- 99C	ILC 482	ILC 482	ILC 482	FLIP 85- 43C
4	FLIP 81-293C	FLIP 84- 92C	FLIP 84- 80C	FLIP 84- 80C	FLIP 84- 92C	FLIP 84- 79C	FLIP 84-102C	FLIP 85- 93C	FLIP 84- 79C
5	FLIP 85- 93C	FLIP 81-293C	FLIP 84- 79C	FLIP 84- 79C	FLIP 85-133C	FLIP 85- 93C	FLIP 84- 80C	FLIP 81-293C	FLIP 85-133C

Cont'd. ...

Rank	SYRIA		TUNISIA			TURKEY		
	Tartus	TelHadya	Beja	El Kef	Oued Meliz	Adana	Diyarbakir	Izmir
1	FLIP 81-293C	FLIP 84- 79C	FLIP 84- 79C	FLIP 84- 80C	FLIP 84- 33C	FLIP 84-102C	ILC 482	FLIP 84- 92C
2	ILC 482	FLIP 84-158C	FLIP 84- 80C	ILC 482	FLIP 85- 42C	FLIP 84- 80C	Local check	FLIP 85-118C
3	FLIP 86- 42C	FLIP 85-119C	FLIP 84- 92C	FLIP 85- 74C	FLIP 81-293C	FLIP 85- 42C	FLIP 84-158C	FLIP 86- 42C
4	FLIP 84- 99C	FLIP 85-148C	FLIP 85-148C	Local check	FLIP 86- 42C	FLIP 85-148C	FLIP 85- 42C	FLIP 85- 42C
5	FLIP 84-102C	FLIP 84- 80C	FLIP 84-158C	FLIP 86- 42C	FLIP 85-148C	FLIP 81-293C	FLIP 84- 80C	FLIP 85- 43C

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 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 84- 79C	1827	4	1585	2	1706	2
FLIP 84- 80C	1805	5	1521	6	1663	6
FLIP 84- 92C	2079	1	1688	1	1884	1
FLIP 84- 99C	1777	9	1464	9	1621	8
FLIP 85-102C	1854	3	1522	5	1688	4
FLIP 84-158C	1803	6	1434	10	1619	9
FLIP 85- 43C	1735	11	1419	11	1577	11
FLIP 85- 48C	1739	10	1499	8	1619	9
FLIP 85- 74C	1586	13	1398	13	1492	13
FLIP 85- 93C	1908	2	1502	7	1705	3
FLIP 85-133C	1396	14	1155	14	1276	14
FLIP 85-148C	1655	12	1418	12	1537	12
FLIP 81-293C	1785	8	1543	3	1664	5
ILC 482	1795	7	1530	4	1663	6

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

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. Twenty two test entries from these were the advanced breeding lines developed through hybridization at ICARDA. These 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 each 4 m long with an inter- and intra row spacing of 30- and 10 cm, respectively.

Thirty two sets of trial were distributed to cooperators in 17 countries and the results were returned from 5 sets covering 4 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 in entries ranged from 97-126 days.

Table 3.3.1. Agronomic data for different locations in the CIYT-W-STR during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Bangladesh	Mymensingh	20.11.88	02.04.89	-	-	-	-	Diazinon, Dimecron, Nogos	Bel (Mymensingh Local)
Ethiopia	Debre Zeit	21.08.89	24.12.89	-	-	-	-	-	Dubie
Iraq	Atshana	23.11.88	25.05.89	41	41	-	-	-	Local
Syria	Breda	16.11.88	09.05.89	-	50	-	-	Kerb, Bravo	ILC 3279
Syria	Tel Hadya	03.12.88	21.05.89	-	50	-	-	Kerb, Bravo	ILC 3279

Table 3.3.2. Time to flowering (days) of entries at different locations in the CIYT-W-STR during 1988/89.

Entry Name	Pedigree	Origin	BANGLADESH	ETHIOPIA	IRAQ	SYRIA		Overall Mean
			Mymensingh	Debre-Zeit	Atshana	Breda	Tel Hadya	
FLIP 84- 62C	X 81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	98	71	138	139	122	114
FLIP 84-112C	X 81 TH 53/ILC1920XILC 2506	ICARDA/ICRISAT	105	55	141	138	122	112
FLIP 84-113C	X 81 TH 129/ILC 202XILC 262	ICARDA/ICRISAT	107	77	139	139	122	117
FLIP 84-163C	X 81 TH 113/ILC 191XILC 484	ICARDA/ICRISAT	103	79	139	141	122	117
FLIP 85- 79C	X 83 TH 81/ILC 2593XFLIP 81-67C	ICARDA/ICRISAT	107	77	140	137	121	116
FLIP 85- 94C	X 81 TH 248/ILC 482XILC 3279	ICARDA/ICRISAT	100	70	138	139	122	114
FLIP 85-114C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	97	67	139	140	122	113
FLIP 85-128C	ICCC 25XILC 202	ICARDA/ICRISAT	93	61	138	138	122	110
FLIP 85-135C	X 81 TH 120/ILC 200XILC 484	ICARDA/ICRISAT	103	70	140	138	122	114
FLIP 86- 18C	X 82 TH 127/ILC 482XILC 196	ICARDA/ICRISAT	94	64	135	135	120	110
FLIP 86- 21C	X 83 TH 71/ILC 136XFLIP 81-59W	ICARDA/ICRISAT	107	62	139	138	121	113
FLIP 86- 22C	X 83 TH 87/ILC3395XFLIP 81-67C	ICARDA/ICRISAT	74	39	135	123	113	97
FLIP 86- 24C	X 83 TH 160/ILC4296XFLIP 81-49C	ICARDA/ICRISAT	78	41	134	124	113	98
FLIP 86- 29C	X 84 TH 21/FLIP 82-219CXILC 202	ICARDA/ICRISAT	96	68	139	139	121	113
FLIP 86- 30C	X 84 TH 21/FLIP 82-219CXILC 202	ICARDA/ICRISAT	102	68	137	139	122	114
FLIP 86- 31C	X 82 TH 91/ILC 202XILC 464	ICARDA/ICRISAT	107	70	139	144	123	117
FLIP 86- 44C	X 82 TH 88/ILC3279XILC1407	ICARDA/ICRISAT	101	73	140	138	122	115
FLIP 86- 45C	X 82 TH 101/ILC 215(WH)XILC 195(WH)	ICARDA/ICRISAT	106	69	137	135	121	114
FLIP 86- 47C	X 82 TH 149/(ILC 72XILC 482)XILC2956	ICARDA/ICRISAT	91	65	135	136	121	110
FLIP 86- 49C	X 82 TH 111/ILC 200XILC 482	ICARDA/ICRISAT	100	65	138	137	121	112
FLIP 86- 52C	X 83 TH 165/ILC4090XILC 482	ICARDA/ICRISAT	94	53	134	134	119	107
FLIP 81-293C	Improved check	ICARDA/ICRISAT	106	72	141	138	121	116
ILC 482	Long term check	Turkey	91	60	136	136	120	109
Local check	-	-	86	45	135	144	126	
Location Mean			98	64	138	137	121	
S.E. of Mean			1.96	1.65	0.73	0.52	0.35	
L.S.D. at 5%			5.58	4.70	2.09	1.49	1.00	
C.V. (%)			3.48	4.46	0.92	0.66	0.51	
Error d.f.			46	46	46	46	46	
Significance			*	*	*	*	*	

* = Significant at $P < 0.05$.

Table 3.3.3. Time to maturity (days) of entries at different locations in the CIYT-W-STR during 1988/89.

Entry Name	BANGLADESH	ETHIOPIA	IRAQ	SYRIA		(1) Overall
	Mymensingh	Debre Zeit	Atshana	Breda	Tel Hadya	Mean
FLIP 84- 62C	146	130	165	170	157	160
FLIP 84-112C	149	117	165	170	156	160
FLIP 84-113C	148	125	165	171	156	160
FLIP 84-163C	153	-	165	171	155	161
FLIP 85- 79C	159	120	165	170	156	162
FLIP 85- 94C	150	-	165	170	156	160
FLIP 85-114C	152	-	165	171	156	161
FLIP 85-128C	146	119	165	171	155	159
FLIP 85-135C	144	121	166	170	156	159
FLIP 86- 18C	146	121	165	168	153	158
FLIP 86- 21C	150	123	164	170	155	160
FLIP 86- 22C	145	100	165	167	155	158
FLIP 86- 24C	149	97	164	166	150	157
FLIP 86- 29C	149	121	165	170	156	160
FLIP 86- 30C	149	124	165	170	155	159
FLIP 86- 31C	154	-	166	172	160	163
FLIP 86- 44C	146	-	165	170	153	159
FLIP 86- 45C	152	118	165	170	155	161
FLIP 86- 47C	141	123	165	169	155	157
FLIP 86- 49C	154	121	167	170	155	162
FLIP 86- 52C	149	115	165	168	153	159
FLIP 81-293C	149	123	166	170	156	160
ILC 482	146	120	164	168	154	158
Local check	145	100	165	172	160	
Location Mean	149	118	165	170	155	
S.E. of Mean	3.10	1.63	0.78	0.37	0.89	
L.S.D. at 5%	-	4.67	-	1.06	2.53	
C.V. (%)	3.60	2.40	0.82	0.38	0.99	
Error d.f.	46	36	46	46	46	
Significance	NS	*	NS	*	*	

(1) Debre Zeit was excluded from the overall mean.
 * = Significant at $P < 0.05$, NS = Not significant.

Table 3.3.4. Plant height (cm) of entries at different locations in the CIYT-W-STR during 1988/89.

Entry Name	BANGLADESH	IRAQ	SYRIA		Overall Mean
	Mymensingh	Atshana	Breda	Tel Hadya	
FLIP 84- 62C	68	43	22	39	43
FLIP 84-112C	63	36	22	33	39
FLIP 84-113C	60	40	20	30	38
FLIP 84-163C	57	38	20	32	37
FLIP 85- 79C	61	41	21	32	39
FLIP 85- 94C	63	43	22	36	41
FLIP 85-114C	46	40	19	34	35
FLIP 85-128C	65	39	19	28	38
FLIP 85-135C	67	41	24	43	44
FLIP 86- 18C	63	38	20	31	38
FLIP 86- 21C	51	36	18	33	34
FLIP 86- 22C	54	34	16	28	33
FLIP 86- 24C	71	34	20	33	39
FLIP 86- 29C	67	39	16	30	38
FLIP 86- 30C	56	38	16	29	35
FLIP 86- 31C	68	36	18	35	39
FLIP 86- 44C	73	38	20	33	41
FLIP 86- 45C	60	34	16	28	34
FLIP 86- 47C	71	38	19	32	40
FLIP 86- 49C	63	40	22	36	40
FLIP 86- 52C	57	36	19	29	36
FLIP 81-293C	68	39	20	33	40
ILC 482	60	37	19	31	37
Local check	63	36	26	42	
Location Mean	62	38	20	33	
S.E. of Mean	4.82	1.93	1.14	1.51	
L.S.D. at 5%	13.73	5.50	3.24	4.29	
C.V. (%)	13.42	8.78	9.98	7.94	
Error d.f.	46	46	46	46	
Significance	*	*	*	*	

* = Significant at $P < 0.05$.

Table 3.3.5. 100-Seed weight (g) of entries at different locations in the CIYT-W-STR during 1988/89.

Entry Name	BANGLADESH	ETHIOPIA+	IRAQ	SYRIA		(1) Overall Mean
	Mymensingh	Debre Zeit	Atshana	Breda	Tel Hadya	
FLIP 84- 62C	33	-	32	26	28	30
FLIP 84-112C	24	36	32	26	29	28
FLIP 84-113C	24	-	27	23	24	25
FLIP 84-163C	21	-	30	22	24	24
FLIP 85- 79C	29	-	32	26	30	29
FLIP 85- 94C	29	-	29	24	27	27
FLIP 85-114C	19	-	28	28	30	26
FLIP 85-128C	27	32	27	24	24	25
FLIP 85-135C	21	-	30	26	28	26
FLIP 86- 18C	30	-	28	25	27	27
FLIP 86- 21C	27	35	30	27	29	28
FLIP 86- 22C	30	39	35	30	37	33
FLIP 86- 24C	28	29	33	28	31	30
FLIP 86- 29C	32	-	28	24	28	28
FLIP 86- 30C	30	-	34	23	27	29
FLIP 86- 31C	23	-	30	28	29	28
FLIP 86- 44C	19	-	23	19	21	21
FLIP 86- 45C	22	-	25	19	23	22
FLIP 86- 47C	30	-	28	24	26	27
FLIP 86- 49C	35	-	33	29	29	31
FLIP 86- 52C	29	33	29	24	25	27
FLIP 81-293C	26	36	30	25	27	27
ILC 482	30	-	29	26	25	27
Local check	10	-	30	25	26	
Location Mean	26	34	30	25	27	
S.E. of Mean	2.21		1.24	0.79	0.88	
L.S.D. at 5%	6.30		3.54	2.25	2.51	
C.V. (%)	14.64		7.26	5.49	5.62	
Error d.f.	46		46	46	46	
Significance	*		*	*	*	

(1) Debre Zeit was excluded from the overall Mean, * = Significant at $P \leq 0.05$.
+ Non-replicated.

Table 3.3.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-W-STR during 1988/89.

Entry Name	BANGLADESH		ETHIOPIA+		IRAQ		SYRIA				(1) Overall Mean	
	Mymensingh		Debre Zeit		Atshana		Breda		Tel Hadya		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 84- 62C	423	6	-	-	1208	7	35	22	774	1	1057	2
FLIP 84-112C	260	12	1733	3	1011	15	126	7	597	10	789	11
FLIP 84-113C	116	19	-	-	835	20	25	24	480	20	628	20
FLIP 84-163C	228	14	-	-	1074	11	55	17	504	17	784	13
FLIP 85- 79C	101	21	-	-	1006	16	67	16	461	22	674	19
FLIP 85- 94C	295	11	-	-	1265	6	77	14	640	6	953	6
FLIP 85-114C	26	24	-	-	1072	12	99	12	530	15	691	17
FLIP 85-128C	481	4	2039	1	825	21	67	15	483	19	773	14
FLIP 85-135C	74	22	-	-	938	17	40	21	585	11	696	16
FLIP 86- 18C	370	8	-	-	1129	10	180	5	724	3	928	6
FLIP 86- 21C	35	23	1513	5	711	23	54	18	478	21	526	23
FLIP 86- 22C	349	9	688	7	929	18	189	3	630	8	785	12
FLIP 86- 24C	127	18	811	6	776	22	97	13	543	14	610	21
FLIP 86- 29C	376	7	-	-	1290	5	112	11	633	7	984	5
FLIP 86- 30C	349	10	-	-	1443	1	125	8	437	23	949	7
FLIP 86- 31C	228	15	-	-	842	19	28	23	488	18	683	18
FLIP 86- 44C	143	17	-	-	1300	4	124	9	557	12	848	9
FLIP 86- 45C	112	20	-	-	647	24	41	20	615	9	597	22
FLIP 86- 47C	577	2	-	-	1182	9	185	4	702	4	1032	3
FLIP 86- 49C	233	13	-	-	1065	13	203	2	649	5	797	10
FLIP 86- 52C	466	5	1556	4	1417	2	160	6	545	13	1025	4
FLIP 81-293C	190	16	1925	2	1044	14	47	19	521	16	765	15
ILC 482	550	3	-	-	1349	3	210	1	763	2	1113	1
Local check	1148	1	-	-	1207	8	116	10	378	24		
Location Mean	302		1466		1065		103		572			
S.E. of Mean	123.08				79.85		32.31		79.13			
L.S.D. at 5%	350.34				227.29		91.98		-			
C.V. (%)	70.49				12.98		54.55		23.98			
Error d.f.	46				46		46		46			
Significance	*				*		*		NS			
Test > L. Check	0				1		1		-			

(1) Debre Zeit and Breda were excluded from the overall mean, * = Significant at $P < 0.05$, NS = Not significant.
+ Non-replicated.

Table 3.3.7. The five heaviest seed yielding entries at the individual locations in the CIYT-SIR during 1988/89.

Rank	BANGLADESH	ETHIOPIA	IRAQ	SYRIA	
	Mymensing	Debre Zeit	Atshana	Breda	Tel Hadya
1	Local check	FLIP 85-128C	FLIP 86- 30C	ILC 482	FLIP 84- 62C
2	FLIP 86- 47C	FLIP 81-293C	FLIP 86- 52C	FLIP 86- 49C	ILC 482
3	ILC 482	FLIP 84-112C	ILC 482	FLIP 86- 22C	FLIP 86- 18C
4	FLIP 85-128C	FLIP 86- 52C	FLIP 86- 44C	FLIP 86- 47C	FLIP 86- 47C
5	FLIP 86- 52C	FLIP 86- 21C	FLIP 86- 29C	FLIP 86- 18C	FLIP 86- 49C

Table 3.3.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-W-SIR during 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 84- 62C	2093	2	802	2	1448	1
FLIP 84-112C	1728	8	623	4	1176	8
FLIP 84-163C	1898	4	602	5	1250	5
FLIP 85- 79C	1611	9	522	9	1067	9
FLIP 85- 94C	1797	7	734	3	1266	4
FLIP 85-114C	1829	6	543	8	1186	7
FLIP 85-128C	1836	5	597	6	1217	6
FLIP 81-293C	2124	1	585	7	1355	3
ILC 482	1962	3	887	1	1425	2

The entries FLIP 86-22C and FLIP 86-24C flowered earliest in 97-98 days. The location means for time to flowering varied from 64 days at Debre Zeit in Ethiopia to 138 days at Atshana in Iraq. The locations which flowered earlier were also earlier in maturity.

The mean plant height data across locations revealed that the entry FLIP 85-135C (44 cm) was the tallest and was closely followed by FLIP 84-62C (43 cm). Among the locations, the mean plant height was maximum at Mymensingh in Bangladesh (62 cm). The 100-seed weight for entries varied from 21 g (for FLIP 86-44C) to 33 g (for FLIP 86-22C), and for locations from 25 g (for Breda in Syria) to 34 g (for Debre Zeit in Ethiopia).

The highest seed yield per hectare (Table 3.3.6) was obtained at Debre Zeit in Ethiopia (1466 kg/ha) and was followed by Atshana in Iraq (1065 kg/ha). The seed yield at Breda in Syria was lowest (103 kg/ha). The coefficients of variation at Mymensingh (70.5%) in Bangladesh and Breda (54.55%) in Syria were very high. The ANOVA of the seed yield revealed that one entry each at Atshana in Iraq and at Breda in Syria outyielded the respective local check by a significant margin. The five heaviest yielders at different locations are given in Table 3.3.7. ILC 482 occurred most frequently among the top five heaviest yielders and was respectively more stable.

On the basis of average over two years (Table 3.3.8), the entry FLIP 84-62C (1448 kg/ha) ranked number 1 and was followed by ILC 482, FLIP 81-293C, FLIP 85-94C and FLIP 84-163C with the respective seed yields of 1425, 1355, 1266 and 1250 kg/ha.

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

Material

The Chickpea International Yield Trial-Large Seed comprised of 23 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 five sets were sent to cooperators in 29 countries. The results were, however, received for 40 trials from 14 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.

Table 3.4.1. Agronomic data for different locations in the CIYT-L during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Dahmouni	28.12.89	28.06.89	48	69	-	Treflan	ILC 3279	
Algeria	Guelma	02.01.89	10.09.89	100	-	-	Treflan	-	
Algeria	Khroub	12.12.88	17.07.89	17	46	-	Treflan	Rabat 9	
Algeria	Oued Smar	02.01.89	10.07.89	92	-	-	-	Rabat 9	
Algeria	Setif	30.11.88	16.07.89	100	-	-	Treflan	Rabat 9	
Algeria	Sidi Bel Abbas (Tessala)	11.12.88	12.06.89	46	-	-	-	Sebdou	
Canada	Saskatchewan	08.05.89	20.08.89	-	-	-	Hand weeding	Pakasura	
Chile	Chillan	12.07.89	15.01.90	45	90	-	-	California - INIA	
Chile	Hidango	07.10.89	25.01.90	20	35	-	-	California - INIA	
Costa Rica	Garakito	23.01.89	-	20	60	5	Maloran, Chlorobromuron, Carbofuron, Benlate, Lannate	-	
Cyprus	Athalassa	25.11.88	24.05.89	44	54	-	-	Yialousa (ILC 3279)	
France	Montboucher	16.02.89	20.07.89	100	-	-	Trifluraline, Linuron, Isoxaben	Cascari	
Italy	Caltagirone	05.01.89	27.06.89	54	60	-	-	Principe	
Italy	Tarquinia	06.02.89	20.08.89	45	130	1	Benazim	Principe	
Lebanon	Terbol-W	29.11.88	15.06.89	50	-	-	Kerb, Igran	Lebanese Local	
Lebanon	Terbol-Sp	20.03.89	20.07.89	50	1	-	Kerb, Igran	Lebanese Local	
Morocco	Douyet	06.12.88	15.06.89	-	-	-	-	-	
Portugal	Elvas	23.11.88	13.07.89	-	60	60	-	CHK 309	
Spain	Badajoz	15.12.88	06.07.89	-	-	-	Terbutryne	Pedrosillano	
Spain	Cordoba-1	29.11.88	20.06.89	-	-	-	Aradex BW (Triatato 10%), Trifluraline, Linuron, Bravo	Pedrosillano	
Spain	Cordoba-2	30.11.88	16.06.89	-	-	-	-	Zagri	
Spain	El Encin	23.11.88	10.07.89	32	96	-	Terbutryne, Igran	GEC - 32 Atalaya	
Spain	Sevilla	04.11.88	29.06.89	56	1	-	Alachlor, Afalon	Vilca	
Syria	Al Ghab	11.12.88	27.05.89	-	-	-	-	-	
Syria	Gelline	09.01.89	29.05.89	20	50	-	-	Ghab 1	
Syria	Hama	05.12.88	23.05.89	30	80	-	Hand weeding	Ghab 1	
Syria	Homs	07.12.88	03.06.89	50	-	-	-	Ghab 1	
Syria	Idleb	27.11.88	21.05.89	60	-	-	-	Ghab 1	
Syria	Izra'a	07.01.89	27.05.89	-	-	-	-	Ghab 1	
Syria	Jindiress	23.11.88	25.05.89	-	-	-	-	-	
Syria	Tel Hadya-W	03.12.88	23.05.89	-	-	-	-	-	
Syria	Tel Hadya-Sp	01.03.89	20.06.89	-	-	-	-	ILC 1929	
Tunisia	Beja	20.12.88	NA	-	-	-	-	Amdoun	
Tunisia	El Kef	01.12.88	NA	-	-	-	-	Amdoun	
Tunisia	Oued Meliz	01.12.88	NA	-	-	-	-	Amdoun	
Turkey	Adana	01.01.89	25.05.89	40	80	-	-	-	
Turkey	Amasya	05.04.89	03.08.89	50	60	-	Malathion	Ispanyol	
Turkey	Diyarbakir	10.12.88	10.06.89	30	60	-	-	Guney Sarisi	
Turkey	Erzurum	27.04.89	12.08.89	30	70	-	-	1931	
Turkey	Izmir	06.07.88	06.07.89	30	60	-	Endosulfan	Canitez-87	

NA =Not available.

Table 3.4.2. Time to flowering (days) of entries at different locations in the CIYT-L during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA				
			Dahmouni	Guelma	Khroub	Oued Smar	Setif
FLIP 83- 77C	X 80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	125	107	132	105	158
FLIP 84- 15C	X 82 TH 199/ILC 202(WH)XILC 3355	ICARDA/ICRISAT	118	106	131	100	156
FLIP 84- 17C	X 79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	126	108	141	97	158
FLIP 84- 18C	X 79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	125	107	140	105	156
FLIP 84- 19C	X 79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	123	106	141	99	147
FLIP 85- 1C	X 82 TH 60/ILC 95XILC 2956	ICARDA/ICRISAT	125	106	138	103	157
FLIP 85- 2C	X 82 TH 60/ILC 95XILC 2956	ICARDA/ICRISAT	125	109	138	105	157
FLIP 85- 4C	X 82 TH 66/ILC 2593XILC 3279	ICARDA/ICRISAT	125	109	134	104	161
FLIP 85- 5C	X 81 TH 199/ILC 202(WH)XILC 3355	ICARDA/ICRISAT	126	107	141	100	158
FLIP 85- 46C	X 79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	125	109	138	104	158
FLIP 85- 54C	X 83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	125	105	129	101	149
FLIP 85- 55C	X 83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	125	104	128	103	156
FLIP 85- 56C	X 83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	126	104	127	100	153
FLIP 85- 60C	X 83 TH 25/FLIP 82-69CXFLIP 82-81C	ICARDA/ICRISAT	126	101	129	105	157
FLIP 85- 75C	X 83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	125	101	130	101	148
FLIP 85-134C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	122	105	142	102	158
FLIP 85-135C	X 79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	125	108	148	105	156
FLIP 86- 2C	X 81 TH 179/ILC 112XILC 191	ICARDA/ICRISAT	125	106	139	106	154
FLIP 86- 5C	X 81 TH 199/ILC 202(WH)XILC 3355	ICARDA/ICRISAT	123	106	134	102	154
FLIP 86- 6C	X 81 TH 203/ILC 3279(WH)XILC 3355	ICARDA/ICRISAT	126	105	132	100	152
FLIP 86- 11C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	122	107	134	98	162
FLIP 86- 13C	X 83 TH 56/ILC 3346XILC 604	ICARDA/ICRISAT	125	105	134	104	159
FLIP 86- 62C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	123	106	136	106	152
Local check	-	-	113	106	138	99	146
Location Mean			124	106	136	102	155
S.E. of Mean			1.09	0.09	0.00	1.91	0.00
L.S.D. at 5%			3.10	0.27	0.01	5.44	0.01
C.V. (%)			1.52	0.15	0.00	3.24	0.00
Error d.f.			46	46	46	46	46
Significance			*	*	*	*	*

Cont'd. ...

Table 3.4.2. Cont'd. ...

Entry Name	ALGERIA	CHILE	COSTA RICA	CYPRUS	FRANCE+	ITALY	LEBANON		MOROCCO	
	Tessala (S.B.A.)	Chillan	Garakito	Athala- ssa	Montbou- cher	Caltagi- rone	Tarqui- nia	Terbol-W	Terbol-S	Douyet
FLIP 83- 77C	133	119	77	132	91	105	95	133	68	99
FLIP 84- 15C	127	123	74	129	85	102	92	130	62	97
FLIP 84- 17C	127	121	72	132	91	109	99	133	59	98
FLIP 84- 18C	124	120	70	134	88	109	98	133	59	99
FLIP 84- 19C	131	117	72	129	88	105	97	130	61	101
FLIP 85- 1C	131	121	77	134	91	106	95	132	73	98
FLIP 85- 2C	131	123	77	134	88	108	98	132	74	101
FLIP 85- 4C	132	117	67	135	85	106	98	136	76	98
FLIP 85- 5C	129	123	77	133	88	104	97	132	73	99
FLIP 85- 46C	125	120	75	133	91	110	98	132	59	101
FLIP 85- 54C	125	119	78	129	88	106	92	130	65	98
FLIP 85- 55C	127	120	75	128	88	106	94	130	66	100
FLIP 85- 56C	127	119	72	128	88	106	92	130	62	97
FLIP 85- 60C	127	117	75	128	88	106	92	130	66	99
FLIP 85- 75C	127	121	70	129	88	106	93	130	66	100
FLIP 85-134C	130	122	80	132	88	107	96	132	66	99
FLIP 85-135C	131	120	77	133	91	110	98	132	61	99
FLIP 86- 2C	127	121	77	132	85	106	95	133	76	99
FLIP 86- 5C	131	118	67	134	85	105	98	132	73	98
FLIP 86- 6C	130	118	67	132	85	105	94	132	69	97
FLIP 86- 11C	129	120	73	130	88	108	95	130	66	97
FLIP 86- 13C	127	121	75	128	85	104	93	130	64	101
FLIP 86- 62C	129	117	70	134	91	109	97	132	69	99
Local check	108	121	-	134	91	104	92	128	52	97
Location Mean	128	120	66	131	88	106	95	131	66	99
S.E. of Mean	1.86	0.91	1.93	0.56		0.46	0.73	0.49	1.43	1.15
L.S.D. at 5%	5.28	2.60	5.49	1.60		1.30	2.07	1.41	4.08	-
C.V. (%)	2.52	1.32	5.04	0.74		0.74	1.32	0.65	3.76	2.02
Error d.f.	46	46	46	46		46	46	46	46	46
Significance	*	*	*	*		*	*	*	*	NS

Cont'd. ...

Table 3.4.2. Cont'd. ...

Entry Name	SPAIN					SYRIA				
	Badajoz	Cordoba-1	Cordoba-2	El Encin	Sevilla	Al Ghab	Gelline	Hama	Homs	Idleb
FLIP 83- 77C	117	130	147	167	139	120	96	120	128	131
FLIP 84- 15C	112	124	139	164	138	118	91	117	126	130
FLIP 84- 17C	122	126	150	169	143	121	93	120	132	131
FLIP 84- 18C	139	127	149	167	143	121	93	120	130	131
FLIP 84- 19C	118	129	146	165	141	119	92	119	129	131
FLIP 85- 1C	115	126	140	166	141	121	98	120	131	131
FLIP 85- 2C	114	128	145	166	142	120	94	117	128	131
FLIP 85- 4C	110	134	152	166	144	122	96	119	132	132
FLIP 85- 5C	108	129	153	166	139	119	92	119	127	130
FLIP 85- 46C	110	128	150	170	142	121	93	120	132	132
FLIP 85- 54C	121	123	144	168	137	118	99	121	127	130
FLIP 85- 55C	113	124	136	165	134	118	97	120	129	130
FLIP 85- 56C	119	123	145	165	141	118	97	120	129	130
FLIP 85- 60C	108	125	139	164	138	118	97	120	129	130
FLIP 85- 75C	139	125	139	166	140	119	97	120	127	132
FLIP 85-134C	111	133	154	166	140	121	94	117	130	131
FLIP 85-135C	106	127	146	169	142	122	93	120	132	131
FLIP 86- 2C	109	131	139	164	141	121	95	119	129	131
FLIP 86- 5C	116	128	153	165	138	120	94	118	127	132
FLIP 86- 6C	134	126	143	163	140	119	93	117	127	131
FLIP 86- 11C	134	127	145	164	140	120	94	117	130	130
FLIP 86- 13C	111	124	147	164	137	118	93	117	125	130
FLIP 86- 62C	117	132	147	163	143	120	95	119	127	133
Local check	109	123	154	162	142	119	89	115	121	127
Location Mean	117	127	146	166	140	120	94	119	128	131
S.E. of Mean	9.88	1.89	3.58	0.55	1.09	0.42	0.34	0.32	0.74	0.70
L.S.D. at 5%	-	5.39	10.19	1.58	3.10	1.19	0.96	0.92	2.10	1.98
C.V. (%)	14.59	2.58	4.25	0.58	1.34	0.60	0.62	0.47	0.99	0.92
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	NS	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.4.2. Cont'd. ...

Entry Name	SYRIA				TURKEY				Overall Mean
	Izra'a	Jindiress	Tel Hadya-W	Tel Hadya-S	Amasya	Diyarbakir	Erzurum	Izmir	
FLIP 83- 77C	98	139	124	75	79	134	57	144	112
FLIP 84- 15C	93	133	123	72	96	133	51	138	109
FLIP 84- 17C	101	139	123	64	88	136	51	146	112
FLIP 84- 18C	99	139	123	68	85	137	50	151	113
FLIP 84- 19C	96	139	121	68	88	135	48	145	111
FLIP 85- 1C	98	138	124	75	88	135	57	149	113
FLIP 85- 2C	98	138	124	75	84	136	55	147	113
FLIP 85- 4C	97	140	126	74	92	137	54	151	113
FLIP 85- 5C	99	138	123	73	81	134	54	144	112
FLIP 85- 46C	99	138	124	69	82	137	54	149	112
FLIP 85- 54C	100	134	122	74	87	133	52	140	111
FLIP 85- 55C	99	136	122	72	98	133	52	141	111
FLIP 85- 56C	99	134	122	68	83	134	49	137	110
FLIP 85- 60C	99	135	121	70	92	134	52	138	110
FLIP 85- 75C	100	134	122	71	84	133	48	139	111
FLIP 85-134C	99	137	124	74	79	135	52	149	112
FLIP 85-135C	98	140	124	66	86	137	52	151	112
FLIP 86- 2C	99	139	125	74	79	135	52	145	112
FLIP 86- 5C	99	138	124	74	79	134	53	141	111
FLIP 86- 6C	98	135	124	74	80	135	50	146	111
FLIP 86- 11C	98	136	121	72	87	135	52	149	112
FLIP 86- 13C	96	135	122	71	79	133	55	145	110
FLIP 86- 62C	98	139	125	72	84	134	52	150	112
Local check	95	139	120	55	72	130	52	146	
Location Mean	98	137	123	71	85	135	52	145	
S.E. of Mean	1.19	0.57	0.65	1.49	4.48	0.94	1.44	1.73	
L.S.D. at 5%	3.38	1.63	1.85	4.24	12.75	2.67	4.09	4.91	
C.V. (%)	2.10	0.72	0.91	3.64	9.16	1.21	4.77	2.06	
Error d.f.	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	

* = Significant at $P < 0.05$, NS = Not significant., + Non-replicated.

Table 3.4.3. Time to maturity (days) of entries at different locations in the CIYT-L during 1988/89.

Entry Name	ALGERIA						CHILE	FRANCE	ITALY	LEBANON
	Dahmouni	Guelma	Khroub+	Oued Smar	Setif+	Tessala	Chillan	Montboucher	Tarquinia	Terbol-W
FLIP 83- 77C	166	170	209	162	217	178	181	160	153	175
FLIP 84- 15C	159	174	204	159	209	178	181	156	141	171
FLIP 84- 17C	167	171	212	164	217	177	183	161	153	177
FLIP 84- 18C	166	170	210	162	216	178	181	162	151	175
FLIP 84- 19C	164	171	210	159	210	179	181	159	150	171
FLIP 85- 1C	166	176	211	161	215	178	182	163	146	177
FLIP 85- 2C	166	170	208	162	230	178	183	166	151	181
FLIP 85- 4C	166	176	208	162	216	179	184	167	150	181
FLIP 85- 5C	167	175	208	161	213	181	181	162	148	177
FLIP 85- 46C	166	174	210	162	216	183	181	162	153	176
FLIP 85- 54C	166	172	206	159	219	179	180	158	141	175
FLIP 85- 55C	166	176	207	159	223	178	180	161	141	175
FLIP 85- 56C	167	170	207	161	209	179	181	158	141	176
FLIP 85- 60C	167	168	206	161	215	179	181	160	141	175
FLIP 85- 75C	166	168	207	159	219	178	181	159	141	175
FLIP 85-134C	163	174	209	159	214	179	181	164	151	177
FLIP 85-135C	166	175	213	162	214	179	182	162	153	176
FLIP 86- 2C	166	176	209	161	219	177	181	161	143	177
FLIP 86- 5C	164	171	209	157	230	182	182	160	148	177
FLIP 86- 6C	167	170	207	159	223	178	181	161	145	178
FLIP 86- 11C	161	172	209	162	226	177	180	162	151	177
FLIP 86- 13C	166	175	207	161	216	177	181	161	151	174
FLIP 86- 62C	164	176	212	159	228	177	181	165	151	177
Local check	154	175	-	159	225	177	181	156	143	171
Location Mean	165	179	209	161	218	179	181	161	147	176
S.E. of Mean	1.07	0.87		1.41		0.87	0.65	1.30	1.32	0.46
L.S.D. at 5%	3.05	2.46		-		2.46	1.86	3.70	3.74	1.31
C.V. (%)	1.12	0.84		1.52		0.84	0.62	1.40	1.54	0.45
Error d.f.	46	46		46		46	46	46	46	46
Significance	*	*		NS		*	*	*	*	*

Cont'd. ...

Table 3.4.3. Cont'd. ...

Entry Name	LEBANON		SPAIN				SYRIA			
	Terbol-S	Douyet	Badajoz	Cordoba-1	El Encin	Sevilla	Al Ghab	Gelline	Hama	Homs
FLIP 83- 77C	109	191	192	189	221	210	161	131	162	176
FLIP 84- 15C	114	190	184	182	213	206	159	129	158	172
FLIP 84- 17C	104	190	186	190	217	215	166	130	160	178
FLIP 84- 18C	104	187	183	190	218	214	163	130	160	176
FLIP 84- 19C	102	188	188	189	218	211	160	130	159	177
FLIP 85- 1C	117	188	187	188	219	207	167	133	163	177
FLIP 85- 2C	119	191	197	188	223	209	167	132	162	177
FLIP 85- 4C	121	188	196	191	222	212	168	134	163	178
FLIP 85- 5C	116	189	196	189	217	213	162	131	161	177
FLIP 85- 46C	105	191	183	191	218	215	165	130	161	178
FLIP 85- 54C	111	187	183	187	217	202	161	130	162	175
FLIP 85- 55C	111	191	183	187	213	201	161	132	162	175
FLIP 85- 56C	110	187	184	187	216	207	163	132	162	175
FLIP 85- 60C	112	182	183	187	213	207	161	134	162	174
FLIP 85- 75C	110	190	183	187	215	203	162	130	162	174
FLIP 85-134C	114	187	187	190	220	210	165	131	160	176
FLIP 85-135C	103	182	188	190	217	215	168	131	160	176
FLIP 86- 2C	114	188	193	188	223	211	164	132	159	173
FLIP 86- 5C	121	184	196	189	219	213	163	132	160	173
FLIP 86- 6C	115	184	190	188	225	202	166	131	161	174
FLIP 86- 11C	113	192	193	189	219	207	162	131	159	175
FLIP 86- 13C	110	191	193	189	220	210	161	130	159	174
FLIP 86- 62C	112	186	191	191	217	209	162	133	160	176
Local check	94	187	187	184	218	197	158	127	154	169
Location Mean	111	188	189	188	218	209	163	131	160	175
S.E. of Mean	1.08	3.59	1.87	0.65	1.33	2.01	0.67	0.69	0.51	0.87
L.S.D. at 5%	3.09	-	5.31	1.84	3.78	5.72	1.91	1.98	1.45	2.49
C.V. (%)	1.69	3.31	1.71	0.59	1.06	1.67	0.71	0.92	0.55	0.87
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	NS	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.4.3. Cont'd. ...

Entry Name	SYRIA					TURKEY			Overall Mean
	Idleb	Izra'a	Jindiress	Tel Hadya-W	Tel Hadya-S	Amasya	Diyarbakir	Erzurum	
FLIP 83- 77C	172	139	183	163	105	123	176	108	167
FLIP 84- 15C	168	135	178	163	104	120	175	107	164
FLIP 84- 17C	174	138	182	161	104	115	177	102	167
FLIP 84- 18C	172	140	183	160	104	113	177	103	166
FLIP 84- 19C	171	137	182	155	104	117	175	104	165
FLIP 85- 1C	172	138	184	163	105	126	177	111	168
FLIP 85- 2C	174	140	184	163	104	124	178	110	169
FLIP 85- 4C	175	138	183	165	104	125	178	110	169
FLIP 85- 5C	173	139	181	162	104	127	177	109	168
FLIP 85- 46C	173	139	183	161	104	120	177	105	167
FLIP 85- 54C	169	137	183	158	104	115	176	108	165
FLIP 85- 55C	168	138	183	159	104	118	176	106	166
FLIP 85- 56C	169	138	182	162	104	118	176	107	165
FLIP 85- 60C	169	139	182	158	104	120	176	104	165
FLIP 85- 75C	169	138	183	157	104	120	176	103	165
FLIP 85-134C	170	139	181	163	104	120	176	109	167
FLIP 85-135C	173	138	182	163	104	114	177	105	167
FLIP 86- 2C	173	137	181	164	104	126	176	108	167
FLIP 86- 5C	174	140	182	164	105	120	176	108	168
FLIP 86- 6C	171	139	182	163	104	120	177	108	167
FLIP 86- 11C	169	138	182	160	104	120	177	107	167
FLIP 86- 13C	170	138	178	157	105	120	177	107	166
FLIP 86- 62C	172	140	181	163	105	120	176	109	168
Local check	165	130	181	156	96	120	171	107	
Location Mean	171	138	182	161	104	120	176	107	
S.E. of Mean	0.72	0.85	0.38	0.86	0.25	0.88	0.37	1.06	
L.S.D. at 5%	2.06	2.41	1.07	2.43	0.71	2.51	1.05	3.01	
C.V. (%)	0.73	1.06	0.36	0.92	0.42	1.27	0.36	1.72	
Error d.f.	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	

* = Significant at $P < 0.05$, NS = Not significant., + Non-replicated.

Table 3.4.4. Plant height (cm) of entries at different locations in the CIYT-L during 1988/89.

Entry Name	ALGERIA				CHILE	CYPRUS	FRANCE	ITALY		LEBANON
	Khroub	Oued Smar	Setif	Tessala (S.B.A.)	Chillan	Athalassa	Montboucher	Caltagi- rone	Tarqui- nia	Terbol-w
FLIP 83- 77C	60	64	43	45	59	55	56	29	50	37
FLIP 84- 15C	64	65	40	48	55	55	52	36	62	39
FLIP 84- 17C	64	67	44	47	66	58	54	32	57	40
FLIP 84- 18C	61	63	50	42	61	60	54	34	53	38
FLIP 84- 19C	60	65	48	43	61	55	49	32	53	37
FLIP 85- 1C	66	69	46	40	64	53	53	33	55	36
FLIP 85- 2C	66	71	46	47	71	60	66	36	53	43
FLIP 85- 4C	66	68	50	50	65	62	58	39	58	41
FLIP 85- 5C	73	64	49	53	64	60	60	35	57	44
FLIP 85- 46C	64	62	45	45	62	57	52	33	60	37
FLIP 85- 54C	68	68	50	50	57	60	59	37	55	41
FLIP 85- 55C	72	74	47	48	63	60	57	36	63	42
FLIP 85- 56C	70	70	45	50	59	65	59	34	62	44
FLIP 85- 60C	69	71	45	47	59	62	60	39	63	42
FLIP 85- 75C	70	68	46	48	55	63	60	37	58	42
FLIP 85-134C	70	71	52	55	68	58	57	37	63	46
FLIP 85-135C	66	67	55	45	62	60	54	32	55	40
FLIP 86- 2C	64	61	54	45	60	58	48	32	55	40
FLIP 86- 5C	70	69	49	50	65	58	60	36	57	41
FLIP 86- 6C	69	68	54	48	66	65	61	40	62	46
FLIP 86- 11C	74	73	43	52	64	60	65	40	65	44
FLIP 86- 13C	72	65	48	43	71	63	61	35	58	38
FLIP 86- 62C	72	76	50	48	77	67	63	36	65	46
Local check	58	52	40	42	54	68	56	35	48	32
Location Mean	67	67	48	47	63	60	57	35	58	41
S.E. of Mean	1.66	2.14	0.20	1.95	3.74	2.83	2.76	1.49	3.01	1.59
L.S.D. at 5%	4.73	6.09	0.57	5.55	10.66	8.05	7.86	4.25	8.57	4.51
C.V. (%)	4.30	5.52	0.72	7.16	10.32	8.14	8.34	7.33	9.01	6.75
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.4.4. Cont'd. ...

Entry Name	LEBANON		SPAIN				SYRIA			
	Terbol-S	Badajoz	Cordoba-1	Cordoba-2	El Encin	Sevilla	Al Ghab	Gelline	Hama	Homs
FLIP 83- 77C	38	44	61	73	58	65	52	31	37	53
FLIP 84- 15C	45	45	64	71	52	66	58	41	42	52
FLIP 84- 17C	39	42	59	77	61	66	48	33	38	52
FLIP 84- 18C	35	41	65	70	63	66	48	35	37	52
FLIP 84- 19C	38	46	61	73	62	72	48	33	37	52
FLIP 85- 1C	39	40	59	74	60	67	53	33	40	52
FLIP 85- 2C	46	48	61	77	62	73	53	39	43	52
FLIP 85- 4C	42	46	70	69	64	73	58	39	45	53
FLIP 85- 5C	41	50	63	70	65	66	57	38	47	53
FLIP 85- 46C	38	42	59	76	59	69	48	35	38	52
FLIP 85- 54C	43	45	60	77	62	70	58	35	40	55
FLIP 85- 55C	43	48	66	81	63	72	57	40	43	58
FLIP 85- 56C	46	50	64	78	59	68	57	39	43	57
FLIP 85- 60C	42	47	65	72	66	68	55	37	43	57
FLIP 85- 75C	43	49	63	76	61	74	55	36	40	57
FLIP 85-134C	46	55	69	66	69	79	62	43	45	53
FLIP 85-135C	39	43	62	73	60	70	45	33	40	52
FLIP 86- 2C	45	47	57	70	58	72	53	39	45	52
FLIP 86- 5C	39	49	67	75	63	75	58	39	45	55
FLIP 86- 6C	43	54	66	72	65	74	62	45	48	55
FLIP 86- 11C	47	48	67	78	67	74	62	42	45	58
FLIP 86- 13C	43	52	69	77	67	77	53	39	47	57
FLIP 86- 62C	47	50	67	83	71	80	57	41	45	62
Local check	34	46	58	62	58	73	40	35	38	45
Location Mean	42	47	63	74	62	71	54	38	42	54
S.E. of Mean	2.29	1.60	1.89	3.32	2.46	2.38	1.87	1.30	1.73	1.47
L.S.D. at 5%	6.52	4.56	5.39	9.45	7.01	6.78	5.32	3.69	4.93	4.19
C.V. (%)	9.49	5.91	5.17	7.80	6.85	5.79	5.99	5.97	7.12	4.73
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.4.4. Cont'd. ...

Entry Name	SYRIA					TURKEY				Overall Mean
	Idleb	Izra'a	Jindiress	Tel Hadya-W	Tel Hadya-S	Amasya	Diyarbakir	Erzurum	Izmir	
FLIP 83- 77C	47	23	39	34	25	35	35	25	56	46
FLIP 84- 15C	54	27	44	37	22	37	39	26	53	48
FLIP 84- 17C	46	26	41	34	25	32	38	25	48	47
FLIP 84- 18C	53	24	40	33	25	32	40	26	46	46
FLIP 84- 19C	48	26	39	32	25	29	40	26	49	46
FLIP 85- 1C	53	29	44	33	22	38	37	25	59	47
FLIP 85- 2C	51	28	45	36	23	35	39	27	53	50
FLIP 85- 4C	55	28	49	43	18	38	38	25	49	50
FLIP 85- 5C	52	28	44	36	22	38	36	25	54	50
FLIP 85- 46C	51	25	42	34	27	31	40	26	54	47
FLIP 85- 54C	54	30	43	38	22	36	42	26	51	49
FLIP 85- 55C	56	29	45	41	25	37	42	27	53	51
FLIP 85- 56C	52	28	44	43	27	37	39	27	51	51
FLIP 85- 60C	52	26	44	39	25	39	44	28	51	50
FLIP 85- 75C	54	27	43	38	27	38	39	29	54	50
FLIP 85-134C	50	30	44	37	23	40	42	26	53	52
FLIP 85-135C	52	25	44	35	25	30	38	25	44	47
FLIP 86- 2C	52	25	41	35	22	38	38	27	59	48
FLIP 86- 5C	50	27	47	42	25	34	40	27	61	51
FLIP 86- 6C	58	31	44	42	20	42	41	30	53	53
FLIP 86- 11C	57	28	50	41	28	41	42	29	59	53
FLIP 86- 13C	51	28	43	35	27	35	42	28	50	51
FLIP 86- 62C	56	29	46	40	23	39	44	29	68	54
Local check	44	23	48	32	20	31	31	25	62	
Location Mean	52	27	44	37	24	36	39	27	54	
S.E. of Mean	1.91	1.18	0.70	1.93	2.13	1.56	1.46	0.58	4.23	
L.S.D. at 5%	5.43	3.36	2.00	5.49	-	4.43	4.16	1.65	-	
C.V. (%)	6.36	7.54	2.78	8.99	15.47	7.48	6.42	3.76	13.66	
Error d.f.	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	NS	*	*	*	NS	

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

Table 3.4.5. 100-Seed weight (g) of entries at different locations in the CIYT-L during 1988/89.

Entry Name	ALGERIA				CHILE	FRANCE	ITALY		LEBANON		SPAIN
	Dahmouni+	Oued Smar	Setif+	Tessala (S.B.A.)	Chillan	Montboucher	Caltagirone	Tarquina	Terbol-W	Terbol-S	Badajoz
FLIP 83- 77C	34	37	35	33	36	38	41	43	46	38	36
FLIP 84- 15C	34	36	39	30	43	39	46	44	50	50	38
FLIP 84- 17C	34	41	43	33	42	41	43	49	48	46	34
FLIP 84- 18C	34	37	44	34	41	41	43	49	48	47	32
FLIP 84- 19C	33	40	38	35	38	42	42	49	49	44	37
FLIP 85- 1C	32	41	35	37	47	47	51	51	56	50	38
FLIP 85- 2C	33	40	41	35	49	49	53	52	61	46	43
FLIP 85- 4C	33	41	45	38	44	48	50	52	54	47	39
FLIP 85- 5C	34	36	36	37	44	48	57	47	55	52	42
FLIP 85- 46C	35	36	44	35	40	42	44	47	48	48	34
FLIP 85- 54C	37	31	33	31	38	39	39	41	45	45	33
FLIP 85- 55C	33	34	37	33	40	41	42	43	45	46	36
FLIP 85- 56C	34	33	42	31	38	40	41	43	45	46	36
FLIP 85- 60C	33	33	38	32	38	40	41	42	44	46	34
FLIP 85- 75C	34	34	48	33	39	41	41	44	45	46	36
FLIP 85-134C	35	34	39	33	34	41	41	46	47	42	31
FLIP 85-135C	35	36	38	35	41	41	44	48	47	48	36
FLIP 86- 2C	32	34	37	33	46	43	48	47	53	43	41
FLIP 86- 5C	34	38	38	32	46	47	56	52	54	50	41
FLIP 86- 6C	33	32	41	28	41	43	46	48	53	45	42
FLIP 86- 11C	34	35	36	35	37	42	41	49	46	36	36
FLIP 86- 13C	35	37	44	33	43	42	41	46	50	41	33
FLIP 86- 62C	34	36	47	33	39	42	40	48	45	42	35
Local check	34	32	42	24	44	27	46	45	39	37	28
Location Mean	34	36	40	33	41	42	45	47	49	45	36
S.E. of Mean		2.00		1.68	1.17	0.55	1.04	1.33	1.16	1.96	1.40
L.S.D. at 5%		5.70		4.78	3.33	1.55	2.95	3.77	3.31	5.59	3.99
C.V. (%)		9.63		8.79	4.93	2.25	4.01	4.90	4.11	7.55	6.68
Error d.f.		46		46	46	46	46	46	46	46	46
Significance		*		*	*	*	*	*	*	*	*

63

Cont'd. ...

Table 3.4.5. Cont'd. ...

Entry Name	SPAIN			SYRIA					TURKEY	(1)
	Cordoba	El Encin	Sevilla	Homs	Idleb	Jindriess	Tel Hadya- W	Tel - Hadya-S	Izmir	Overall Mean
FLIP 83- 77C	40	38	43	44	40	40	36	-	37	39
FLIP 84- 15C	40	40	46	45	44	44	42	-	41	42
FLIP 84- 17C	41	38	48	49	41	42	38	33	37	42
FLIP 84- 18C	41	38	50	51	45	42	36	33	32	42
FLIP 84- 19C	44	40	43	44	38	42	37	37	21	41
FLIP 85- 1C	46	45	51	55	50	50	45	43	46	46
FLIP 85- 2C	47	48	51	60	55	55	46	-	-	48
FLIP 85- 4C	49	46	45	49	47	48	47	-	39	46
FLIP 85- 5C	50	46	52	48	47	49	42	-	38	46
FLIP 85- 46C	40	40	49	48	44	43	39	31	33	42
FLIP 85- 54C	36	39	41	43	38	41	38	-	35	38
FLIP 85- 55C	38	42	44	43	40	41	40	30	36	40
FLIP 85- 56C	39	41	38	40	39	42	41	-	41	39
FLIP 85- 60C	39	41	46	44	37	40	39	39	33	39
FLIP 85- 75C	39	41	40	47	37	41	38	38	30	40
FLIP 85-134C	39	37	41	43	41	46	43	-	29	40
FLIP 85-135C	41	38	45	48	43	42	41	34	36	42
FLIP 86- 2C	44	47	47	50	47	46	44	-	41	43
FLIP 86- 5C	47	46	52	51	45	47	48	-	41	46
FLIP 86- 6C	43	48	39	50	42	45	44	-	37	42
FLIP 86- 11C	38	37	36	40	36	43	35	24	33	38
FLIP 86- 13C	42	39	46	48	43	45	38	35	39	41
FLIP 86- 62C	39	37	42	44	39	41	40	34	34	40
Local check	25	26	44	39	25	29	26	29	48	
Location Mean	41	41	45	47	42	43	40	34	36	
S.E. of Mean	1.73	1.19	2.63	1.17	1.51	0.81	1.58	0.87	0.67	
L.S.D. at 5%	4.93	3.38	7.48	3.32	4.29	2.31	4.48	2.54	1.91	
C.V. (%)	7.29	5.06	10.15	4.33	6.24	3.24	6.79	4.46	3.19	
Error d.f.	46	46	46	46	46	46	46	24	44	
Significance	*	*	*	*	*	*	*	*	*	

(1) Izmir and Tel Hadya-S were excluded from the overall mean, * = Significance at $P < 0.05$, NS = Not Significant
+ Non-replicated.

Table 3.4.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-L during 1988/89.

Entry Name	ALGERIA											
	Dahmouni		Guelma		Khroub		Oued Smar		Setif		Tessala	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 77C	376	22	2047	11	4125	1	1528	9	1038	13	654	7
FLIP 84- 15C	390	20	969	21	4065	2	2465	2	1488	3	560	12
FLIP 84- 17C	405	17	1964	14	3034	21	1840	6	740	24	518	14
FLIP 84- 18C	563	8	1854	16	3295	14	938	21	873	20	429	17
FLIP 84- 19C	773	2	2620	1	3283	16	2153	4	1056	12	718	5
FLIP 85- 1C	398	19	2193	9	3393	12	2674	1	908	17	620	11
FLIP 85- 2C	435	16	1505	19	3214	17	1104	19	855	21	213	23
FLIP 85- 4C	651	4	859	22	3426	11	2222	3	1593	2	765	4
FLIP 85- 5C	601	6	2385	3	2921	23	1250	16	919	16	548	13
FLIP 85- 46C	484	9	2052	10	3291	15	1458	10	779	23	500	16
FLIP 85- 54C	617	5	2255	7	3706	7	1979	5	1136	8	625	9
FLIP 85- 55C	450	13	2292	6	3914	4	1135	17	1194	6	698	6
FLIP 85- 56C	443	14	2339	4	4011	3	1625	7	1124	9	620	10
FLIP 85- 60C	479	10	2385	2	3857	6	1250	15	1018	14	798	2
FLIP 85- 75C	404	18	2328	5	3482	10	1597	8	1074	11	772	3
FLIP 85-134C	723	3	1958	15	3372	13	1319	14	901	18	625	8
FLIP 85-135C	442	15	2000	12	2937	22	1122	18	883	19	334	21
FLIP 86- 2C	471	11	677	23	3173	18	1354	13	1196	5	394	19
FLIP 86- 5C	456	12	1490	20	3877	5	993	20	1705	1	230	22
FLIP 86- 6C	941	1	635	24	3051	20	1368	12	1083	10	115	24
FLIP 86- 11C	566	7	1979	13	3564	8	576	24	830	22	504	15
FLIP 86- 13C	377	21	2245	8	3564	9	920	22	1188	7	901	1
FLIP 86- 62C	368	23	1771	18	3083	19	802	23	1010	15	376	20
Local check	239	24	1792	17	325	24	1434	11	1269	4	403	18
Location Mean	502		1858		3332		1463		1077		538	
S.E. of Mean	147.69		421.72		296.32		389.06		134.10		123.16	
L.S.D. at 5%	-		1200.43		843.49		1107.48		381.71		350.57	
C.V. (%)	50.95		39.31		15.40		46.07		21.56		39.63	
Error d.f.	46		46		46		46		46		46	
Significance	NS		*		*		*		*		*	
Test > L. Check	-		0		23		1		1		4	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	CANADA		CHILE				CYPRUS		FRANCE		ITALY	
	Saskatchewan		Chillan		Hidango		Athalassa		Montboucher		Caltagirone	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 77C	897	3	550	21	566	10	2147	9	1626	6	823	6
FLIP 84- 15C	835	7	1271	2	846	3	1903	18	1917	1	1050	2
FLIP 84- 17C	620	20	623	19	432	19	1856	21	1517	12	398	24
FLIP 84- 18C	777	12	511	22	447	18	2282	5	1450	17	498	20
FLIP 84- 19C	790	11	733	14	844	4	2013	12	1621	8	811	8
FLIP 85- 1C	567	22	1421	1	384	20	1908	17	1548	11	781	9
FLIP 85- 2C	791	10	828	7	338	23	1936	14	1487	16	846	5
FLIP 85- 4C	607	21	703	16	382	21	1345	24	1854	2	815	7
FLIP 85- 5C	828	8	854	4	600	9	2318	4	1396	21	912	3
FLIP 85- 46C	899	2	658	17	520	15	1951	13	1502	14	657	16
FLIP 85- 54C	646	19	743	13	556	11	2185	7	1496	15	780	10
FLIP 85- 55C	692	15	863	3	272	24	2219	6	1369	22	605	18
FLIP 85- 56C	686	17	801	9	691	7	2400	2	1623	7	679	14
FLIP 85- 60C	892	4	726	15	723	6	2183	8	1504	13	865	4
FLIP 85- 75C	774	13	628	18	375	22	2383	3	1449	18	775	11
FLIP 85-134C	689	16	465	24	823	5	1778	22	1235	24	463	22
FLIP 85-135C	873	6	472	23	451	17	1934	15	1591	9	530	19
FLIP 86- 2C	796	9	853	5	685	8	1874	20	1549	10	702	13
FLIP 86- 5C	1108	1	771	12	1002	2	2445	1	1702	3	662	15
FLIP 86- 6C	554	23	797	10	554	12	2110	11	1676	5	735	12
FLIP 86- 11C	439	24	831	6	483	16	1629	23	1448	19	495	21
FLIP 86- 13C	883	5	819	8	541	13	1931	16	1683	4	628	17
FLIP 86- 62C	675	18	792	11	527	14	1901	19	1316	23	457	23
Local check	744	14	571	20	1313	1	2138	10	1428	20	1112	1
Location Mean	753		762		598		2032		1541		712	
S.E. of Mean	123.64		134.00		121.01		192.00		90.90		94.17	
L.S.D. at 5%	-		381.43		344.44		546.54		258.74		268.04	
C.V. (%)	28.46		30.47		35.04		16.37		10.22		22.92	
Error d.f.	46		46		46		46		46		46	
Significance	NS		*		*		*		*		*	
Test > L. Check	-		2		0		0		3		0	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	ITALY		LEBANON				MOROCCO		SPAIN			
	Tarquinia		Terbol-Winter		Terbol-Spring		Douyet		Badajoz		Cordoba-1	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 77C	2095	10	1656	10	561	8	2086	6	422	15	1718	14
FLIP 84- 15C	2153	6	1868	3	196	18	2157	2	530	10	2282	1
FLIP 84- 17C	1841	16	1455	20	836	3	2111	4	430	13	1546	17
FLIP 84- 18C	2164	3	1415	22	799	4	2037	7	378	20	1343	22
FLIP 84- 19C	2058	12	1677	8	767	5	2086	5	367	22	2061	5
FLIP 85- 1C	2164	5	1471	17	185	20	1691	19	381	19	1478	19
FLIP 85- 2C	2138	7	1590	11	77	24	1765	17	415	17	1866	11
FLIP 85- 4C	1899	15	1688	7	122	23	1358	24	596	4	2264	2
FLIP 85- 5C	2249	1	1939	1	148	22	1778	16	544	9	1952	10
FLIP 85- 46C	1921	14	1246	24	741	6	1914	14	348	23	1251	23
FLIP 85- 54C	2164	4	1270	23	556	9	1975	10	478	12	1775	12
FLIP 85- 55C	2090	11	1450	21	524	11	1605	21	552	8	1462	20
FLIP 85- 56C	2032	13	1468	18	534	10	1901	15	593	5	1977	7
FLIP 85- 60C	1783	17	1512	12	389	13	2031	8	419	16	1959	9
FLIP 85- 75C	2095	9	1492	15	476	12	2426	1	507	11	1970	8
FLIP 85-134C	1614	20	1479	16	302	14	1704	18	426	14	1713	15
FLIP 85-135C	1624	19	1460	19	852	2	1679	20	370	21	1421	21
FLIP 86- 2C	1286	23	1757	5	212	17	2148	3	570	6	1590	16
FLIP 86- 5C	2132	8	1926	2	156	21	2012	9	633	2	2061	4
FLIP 86- 6C	1598	21	1717	6	193	19	1938	12	700	1	2044	6
FLIP 86- 11C	1720	18	1656	9	225	16	1568	22	556	7	1730	13
FLIP 86- 13C	2217	2	1508	13	616	7	1963	11	404	18	1539	18
FLIP 86- 62C	1466	22	1495	14	294	15	1556	23	213	24	1185	24
Local check	1222	24	1767	4	984	1	1926	13	600	3	2244	3
Location Mean	1905		1582		448		1892		476		1768	
S.E. of Mean	170.84		67.22		59.29		215.15		63.86		161.98	
L.S.D. at 5%	486.300		191.35		168.77		-		181.77		461.09	
C.V. (%)	15.53		7.36		22.94		19.69		23.22		15.87	
Error d.f.	46		46		46		46		46		46	
Significance	*		*		*		NS		*		*	
Test > L. Check	18		0		0		-		0		0	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	SPAIN						SYRIA							
	Cordoba-2		El Encin		Sevilla		Al Ghab		Gelline		Hama		Homs	
	Y	T	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 77C	1100	8	1734	4	3227	4	2344	3	88	18	1429	15	2516	2
FLIP 84- 15C	1100	7	1548	11	3045	8	2312	5	370	4	2042	3	2206	7
FLIP 84- 17C	840	21	1187	21	2846	13	2095	12	234	9	1228	19	1840	16
FLIP 84- 18C	870	20	1183	22	2743	15	1947	20	346	6	1466	14	2381	5
FLIP 84- 19C	1080	10	1509	13	2007	22	2286	6	371	3	1418	16	1822	17
FLIP 85- 1C	977	14	1361	17	2925	12	1810	23	105	17	1307	18	1905	15
FLIP 85- 2C	1013	13	973	24	3008	9	2074	14	122	15	1317	17	2432	3
FLIP 85- 4C	877	18	1356	18	1800	23	2016	16	108	16	2106	2	1769	21
FLIP 85- 5C	1073	11	1327	19	2827	14	2116	9	377	2	1820	6	2194	8
FLIP 85- 46C	3257	1	1140	23	3242	3	1958	18	287	7	1487	13	2065	11
FLIP 85- 54C	1180	4	1653	7	3164	6	2127	8	28	24	1069	23	1815	18
FLIP 85- 55C	1097	9	2198	1	3421	2	2106	10	42	23	1492	12	1908	14
FLIP 85- 56C	1190	3	1777	3	2454	19	2259	7	68	20	1074	22	1982	13
FLIP 85- 60C	1117	6	1657	6	3200	5	2106	11	61	22	1228	20	2304	6
FLIP 85- 75C	1203	2	1727	5	2715	16	2090	13	65	21	1196	21	1995	12
FLIP 85-134C	873	19	1533	12	2933	11	1725	24	142	14	1492	11	1280	24
FLIP 85-135C	750	22	1223	20	3111	7	1968	17	353	5	1709	8	1806	20
FLIP 86- 2C	1053	12	1477	14	2638	17	2333	4	201	10	1862	4	1698	22
FLIP 86- 5C	1120	5	1549	10	3568	1	2772	1	251	8	1788	7	2104	9
FLIP 86- 6C	897	17	1632	8	2583	18	2423	2	181	12	2185	1	1813	19
FLIP 86- 11C	910	16	1437	16	2196	21	1958	19	143	13	1646	9	1568	23
FLIP 86- 13C	943	15	1598	9	2988	10	2053	15	188	11	1550	10	2566	1
FLIP 86- 62C	700	23	1445	15	2257	20	1926	22	72	19	1048	24	2103	10
Local check	580	24	2103	2	0	24	1937	21	550	1	1831	5	2431	4
Location Mean	1075		1514		2704		2114		198		1533		2021	
S.E. of Mean	515.13		194.89		423.39		157.48		31.19		172.01		254.37	
L.S.D. at 5%	-		554.75		1205.19		448.28		88.79		489.63		-	
C.V. (%)	83.00		22.30		27.12		12.90		27.28		19.44		21.80	
Error d.f.	46		46		46		46		46		46		46	
Significance	NS		*		*		*		*		*		NS	
Test > L. Check	-		0		23		2		0		0		-	

Cont'd. ...

Table 3.4.6. Cont'd. ...

Entry Name	SYRIA										TUNISIA			
	Idleb		Izra'a		Jindiress		Tel Hadya-W		Tel Hadya-S		Beja		El Kef	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 77C	1119	9	164	21	1625	3	546	12	3	18	1281	22	1563	13
FLIP 84- 15C	1496	1	307	4	1378	12	866	3	14	11	2813	4	1313	17
FLIP 84- 17C	1024	17	254	6	1493	7	403	23	39	6	1750	16	3063	3
FLIP 84- 18C	921	22	206	16	1548	6	419	21	46	4	1594	19	1625	11
FLIP 84- 19C	1104	11	349	1	1343	15	495	17	58	2	3406	1	2563	7
FLIP 85- 1C	1253	4	233	9	1351	14	605	10	7	14	2125	13	1188	22
FLIP 85- 2C	1251	5	238	8	1800	2	425	20	0	22	844	23	1375	15
FLIP 85- 4C	1141	8	153	23	1825	1	774	5	3	15	1688	17	2500	8
FLIP 85- 5C	1258	3	328	3	1596	4	397	24	0	24	1938	15	1188	22
FLIP 85- 46C	947	21	206	15	1483	9	454	18	41	5	1406	21	1000	24
FLIP 85- 54C	1101	12	201	17	1252	20	539	14	3	17	2688	5	1375	15
FLIP 85- 55C	983	19	206	13	1038	24	580	11	13	13	2563	6	1313	17
FLIP 85- 56C	887	23	206	14	1236	21	660	9	0	19	2938	2	1625	11
FLIP 85- 60C	1009	18	217	12	1150	22	678	7	26	7	2344	10	2375	9
FLIP 85- 75C	952	20	196	19	1286	17	501	15	25	8	2844	3	3438	2
FLIP 85 34C	1156	7	222	11	1267	19	542	13	0	23	2313	11	1438	14
FLIP 85 35C	1062	16	270	5	1420	11	669	8	54	3	2031	14	1938	10
FLIP 86- 2C	1113	10	159	22	1485	8	851	4	0	21	2406	7	4250	1
FLIP 86- 5C	1067	15	228	10	1572	5	1122	1	3	16	2156	12	2938	5
FLIP 86- 6C	1078	13	199	18	1367	13	916	2	0	20	1625	18	3000	4
FLIP 86- 11C	1170	6	180	20	1334	16	499	16	23	9	1438	20	1313	17
FLIP 86- 13C	1075	14	243	7	1280	18	415	22	19	10	2344	9	1250	21
FLIP 86- 62C	713	24	111	24	1437	10	428	19	13	12	563	24	1313	17
Local check	1263	2	328	2	1109	23	741	6	149	1	2406	8	2875	6
Location Mean	1089		225		1403		605		22		2063		1992	
S.E. of Mean	125.98		30.31		96.34		137.15		13.78		254.32			
L.S.D. at 5%	-		86.29		274.24		390.40		39.24		607.59			
C.V. (%)	20.03		23.31		11.89		39.25		106.80		17.44			
Error d.f.	46		46		46		46		46		23			
Significance	NS		*		*		*		*		*			
Test > L. Check	-		0		11		0		0		1			

Cont'd. ...

Table 3.4.6. Cont'd. ...

ENTRY NAME	TUNISIA+		TURKEY										(1)	
	Oued Meliz		Amasya		Adana		Diyarbakir		Erzurum		Izmir		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 77C	2000	6	643	17	4392	2	2198	2	434	6	735	6	1485	4
FLIP 84- 15C	2150	4	981	2	3968	9	1990	7	561	1	1327	2	1613	1
FLIP 84- 17C	1475	16	1172	1	3439	17	1790	14	418	8	1228	3	1381	16
FLIP 84- 18C	1200	24	853	8	3968	8	1963	8	492	2	302	12	1336	18
FLIP 84- 19C	2250	1	722	13	2725	21	1719	20	407	11	337	11	1484	5
FLIP 85- 1C	1850	9	501	22	3810	13	1928	9	307	19	827	4	1388	14
FLIP 85- 2C	1975	7	463	23	4048	5	2035	4	386	13	111	24	1293	20
FLIP 85- 4C	1300	21	531	21	2646	22	1923	10	307	20	175	21	1336	17
FLIP 85- 5C	2150	4	909	6	4524	1	2032	5	354	17	623	8	1455	6
FLIP 85- 46C	1500	15	818	10	4127	4	1825	13	423	7	278	17	1384	15
FLIP 85- 54C	2200	2	932	3	3915	10	1706	21	286	23	235	18	1432	10
FLIP 85- 55C	1550	14	601	20	3730	14	1699	22	413	10	175	22	1396	13
FLIP 85- 56C	1300	21	814	11	3704	15	1909	12	349	18	282	16	1453	8
FLIP 85- 60C	1350	18	679	16	3571	16	1916	11	360	16	284	15	1454	7
FLIP 85- 75C	1600	13	912	5	3995	6	1600	24	439	4	160	23	1492	3
FLIP 85 34C	1700	12	862	7	2513	23	1699	23	296	22	284	14	1259	21
FLIP 85 35C	1275	23	804	12	3122	20	1788	15	418	9	291	13	1302	19
FLIP 86- 2C	1350	18	693	15	3862	11	1748	17	397	12	741	5	1433	9
FLIP 86- 5C	1325	20	626	18	3307	19	2020	6	376	14	1451	1	1579	2
FLIP 86- 6C	1725	11	927	4	3995	7	2047	3	455	3	216	19	1407	12
FLIP 86- 11C	1750	10	848	9	3836	12	1721	19	302	21	698	7	1254	22
FLIP 86- 13C	2200	2	614	19	4259	3	1726	18	439	5	184	20	1415	11
FLIP 86- 62C	1375	17	715	14	3360	18	1783	16	249	24	377	10	1137	23
Local check	1975	7	233	24	1025	24	2286	1	376	15	432	9		
Location Mean	1689		744		3577		1877		385		490			
S.E. of Mean			126.69		402.42		92.19		13.40		230.49			
L.S.D. at 5%			360.63		1145.50		262.43		38.14		656.10			
C.V. (%)			29.50		19.49		8.51		6.03		81.53			
Error d.f.			46		46		46		46		46			
Significance			*		*		*		*		*			
Test > L. Check			20		23		0		9		3			

(1) Tel Hadya-Spring was excluded from the overall mean., * = Significant at $P < 0.05$, NS = Not significant.
+ Non-replicated.

Table 3.4.7. The five heaviest seed yielding entries at the individual locations in the CIYT-L during 1988/89.

Rank	ALGERIA						CANADA	CHILE		CYPRUS
	Dahmouni	Guelma	Khroub	Oued Smar	Setif	Tessala	Saskatchewan	Chillan	Hidango	Athalassa
1	FLIP 86- 6C	FLIP 84- 19C	FLIP 83- 77C	FLIP 85- 1C	FLIP 86- 5C	FLIP 86- 13C	FLIP 86- 5C	FLIP 85- 1C	Local check	FLIP 86- 5C
2	FLIP 84- 19C	FLIP 85- 60C	FLIP 84- 15C	FLIP 84- 15C	FLIP 85- 4C	FLIP 85- 60C	FLIP 85- 46C	FLIP 84- 15C	FLIP 86- 5C	FLIP 85- 56C
3	FLIP 85-134C	FLIP 85- 5C	FLIP 85- 56C	FLIP 85- 4C	FLIP 84- 15C	FLIP 85- 75C	FLIP 83- 77C	FLIP 85- 55C	FLIP 84- 15C	FLIP 85- 75C
4	FLIP 85- 4C	FLIP 85- 56C	FLIP 85- 55C	FLIP 84- 19C	Local check	FLIP 85- 4C	FLIP 85- 60C	FLIP 85- 5C	FLIP 84- 19C	FLIP 85- 5C
5	FLIP 85- 54C	FLIP 85- 75C	FLIP 86- 5C	FLIP 85- 54C	FLIP 86- 2C	FLIP 84- 19C	FLIP 86- 13C	FLIP 86- 2C	FLIP 85-134C	FLIP 84- 18C
Cont'd. ...										
Rank	FRANCE	ITALY		LEBANON		MOROCCO	SPAIN			
	Montboucher	Caltagirone	Tarquinoa	Terbol-W	Terbol-SP	Douyet	Badajoz	Cordoba-1	Cordoba-2	El Encin
1	FLIP 84- 15C	Local check	FLIP 85- 5C	FLIP 85- 5C	Local check	FLIP 85- 75C	FLIP 86- 6C	FLIP 84- 15C	FLIP 85- 46C	FLIP 85- 55C
2	FLIP 85- 4C	FLIP 84- 15C	FLIP 86- 13C	FLIP 86- 5C	FLIP 85-135C	FLIP 84- 15C	FLIP 86- 5C	FLIP 85- 4C	FLIP 85- 75C	Local check
3	FLIP 86- 5C	FLIP 85- 5C	FLIP 84- 18C	FLIP 84- 15C	FLIP 84- 17C	FLIP 86- 2C	Local check	Local check	FLIP 85- 56C	FLIP 85- 56C
4	FLIP 86- 13C	FLIP 85- 60C	FLIP 85- 54C	Local check	FLIP 84- 18C	FLIP 84- 17C	FLIP 85- 4C	FLIP 86- 5C	FLIP 85- 54C	FLIP 83- 77C
5	FLIP 86- 6C	FLIP 85- 2C	FLIP 85- 1C	FLIP 86- 2C	FLIP 84- 19C	FLIP 84- 19C	FLIP 85- 56C	FLIP 84- 19C	FLIP 86- 5C	FLIP 85- 75C
Cont'd. ...										
Rank	SPAIN	SYRIA								
	Sevilla	Al Ghab	Gelline	Hama	Homs	Idleb	Izra'a	Jindiress	Tel Hadya-W	
1	FLIP 86- 5C	FLIP 86- 5C	Local check	FLIP 86- 6C	FLIP 86- 13C	FLIP 84- 15C	FLIP 84- 19C	FLIP 85- 4C	FLIP 86- 5C	
2	FLIP 85- 55C	FLIP 86- 6C	FLIP 85- 5C	FLIP 85- 4C	FLIP 83- 77C	Local check	Local check	FLIP 85- 2C	FLIP 86- 6C	
3	FLIP 85- 46C	FLIP 83- 77C	FLIP 84- 19C	FLIP 84- 15C	FLIP 85- 2C	FLIP 85- 5C	FLIP 85- 5C	FLIP 83- 77C	FLIP 84- 15C	
4	FLIP 83- 77C	FLIP 86- 2C	FLIP 84- 15C	FLIP 86- 2C	Local check	FLIP 85- 1C	FLIP 84- 15C	FLIP 85- 5C	FLIP 86- 2C	
5	FLIP 85- 60C	FLIP 84- 15C	FLIP 85-135C	Local check	FLIP 84- 18C	FLIP 85- 2C	FLIP 85- 33C	FLIP 86- 5C	FLIP 85- 4C	
Cont'd. ...										
Rank	SYRIA	TUNISIA			TURKEY					
	Tel Hadya-SP	Beja	El Kef	Oued Meliz	Adana	Amasya	Diyarbakir	Erzurum	Izmir	
1	Local check	FLIP 84- 19C	FLIP 86- 2C	FLIP 84- 19C	FLIP 85- 5C	FLIP 84- 17C	Local check	FLIP 84- 15C	FLIP 86- 5C	
2	FLIP 84- 19C	FLIP 85- 56C	FLIP 85- 75C	FLIP 85- 54C	FLIP 83- 77C	FLIP 84- 15C	FLIP 83- 77C	FLIP 84- 18C	FLIP 84- 15C	
3	FLIP 85- 35C	FLIP 85- 75C	FLIP 84- 17C	FLIP 86- 13C	FLIP 86- 13C	FLIP 85- 54C	FLIP 86- 6C	FLIP 86- 6C	FLIP 84- 17C	
4	FLIP 84- 18C	FLIP 84- 15C	FLIP 86- 6C	FLIP 84- 15C	FLIP 85- 46C	FLIP 86- 6C	FLIP 85- 2C	FLIP 85- 75C	FLIP 85- 1C	
5	FLIP 85- 46C	FLIP 85- 54C	FLIP 86- 5C	FLIP 85- 5C	FLIP 85- 2C	FLIP 85- 75C	FLIP 85- 5C	FLIP 86- 13C	FLIP 86- 2C	

The bracket indicates entries having the same rank.

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 52 days (for Erzurum, Turkey) to 166 days (for El Encin, Spain), 104 days (for Tel Hadya-spring, Syria) to 218 days (for El Encin, Spain), and 24 cm (for Tel Hadya-spring, Syria) to 74 cm (for Cordoba-2, Spain), respectively. On an average over locations, the entry means ranged from 109 to 113 days for time to flowering, 164 to 169 days for time to maturity, and 46 to 54 cm for plant height. The overall mean for the entries for 100-seed weight, varied from 38 to 48 g, the largest being for FLIP 85-2C (Table 3.4.5). Wide variation in location mean was observed for 100-seed weight, Sidi Bel Abbes exhibiting 33 g and Terbol-winter in Lebanon exhibiting 49 g.

The highest location mean for seed yield (Table 3.4.6) was obtained for Adana in Turkey (3577 kg/ha) and followed by Khroub in Algeria (3332 kg/ha) and Sevilla in Spain (2704 kg/ha). One of the entries, FLIP 85-5C at Adana in Turkey gave as high as 4524 kg/ha. On an average over locations, the five best entries included FLIP 84-15C, FLIP 86-5C, FLIP 85-75C, FLIP 83-77C, and FLIP 84-19C with respective seed yields of 1613, 1579, 1492, 1485 and 1484 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 15 locations (Table 3.4.6).

The five heaviest yielding entries in each of the locations are given in Table 3.4.7. The entry FLIP 84-15C occurred most frequently among the five heaviest yielders and was followed by FLIP 86-5C, FLIP 84-19C and FLIP 85-5C. These lines were comparatively better in adaptation.

On the basis of average of common entries over two years (Table 3.4.8), FLIP 84-19C (1595 kg/ha) ranked number 1 and was closely followed by FLIP 85-60C (1578 kg/ha), FLIP 85-5C (1577 kg/ha) and FLIP 85-55C (1511 kg/ha).

Table 3.4.8. The mean seed yield ($Y = \text{kg/ha}$) and rank (R) of the common entries in CIYT-L during 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 84- 17C	1293	9	1381	7	1337	8
FLIP 84- 18C	1306	8	1336	8	1321	9
FLIP 84- 19C	1705	1	1484	1	1595	1
FLIP 85- 1C	1578	5	1388	5	1483	5
FLIP 85- 4C	1574	6	1336	8	1455	6
FLIP 85- 5C	1698	3	1455	2	1577	3
FLIP 85- 46C	1307	7	1384	6	1346	7
FLIP 85- 55C	1626	4	1396	4	1511	4
FLIP 85- 60C	1702	2	1454	3	1578	2

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 cooperator. Twenty-one of the test entries originated from the materials 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. Sixty sets were sent to cooperators in 25 countries and the results were, however, received for 34 sets from 15 countries. The agronomic information received from the cooperators is given in Table 3.5.1.

Results and Discussion

The location means ranged from 43 days (for Karaj, Iran) to 151 days (for Sevilla, Spain) for time to flowering (Table 3.5.2), 103 days (for Karaj, Iran) to 205 days (for Elvas, Portugal) for time to maturity (Table 3.5.3), 26 cm (for Tel Hadya - spring, Syria) to 89 cm (for Mymensingh, Bangladesh) for plant height (Table 3.5.4), and 27 g/100 seed (for Mymensingh, Bangladesh) to 41 g (for Terbol - winter, Lebanon) for 100-seed weight (Table 3.5.5), respectively. On an average over locations, the entry means ranged from 109 to 115 days for time to flowering, 157 to 162 days for time to maturity, 46 to 54 cm for plant height, and 26 to 43 g for 100-seed weight. The tallest entry across locations was FLIP 86-63C.

The location mean seed yield (Table 3.5.6) was highest for Toshevo in Bulgaria (2717 kg/ha) and was followed by Elvas in Portugal (2458 kg/ha), Diyarbakir in Turkey (2092 kg/ha), Al Ghab in Syria (2040 kg/ha), and Athalassa in Cyprus (1915 kg/ha). The seed yields at Mymensingh in Bangladesh; Gelline, Tel Hadya - spring and Izra'a in Syria; and Marchouch in Morocco were poor (<300 kg/ha). The entry ILC 195 at Toshevo in Bulgaria gave more than 3700 kg/ha. On an average over locations, the entries FLIP 85-45C, FLIP 85-19C, ILC 195, FLIP 85-13C and FLIP 86-61C with respective seed yields of 1302, 1242, 1206, 1175 and 1144 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 9 locations. The five heaviest yielding entries in each of the locations are given in Table 3.5.7. The relative frequency of occurrence of entries among the top five heaviest yielders revealed that ILC 195 and FLIP 85-13C were relatively more adaptable.

Table 3.5.1. Agronomic data for different locations in the CIYT-T during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Sidi Bel Abbes	03.12.88	05.06.89	46			-	-	Sebdou
Algeria	Tessala	11.12.88	15.06.89	46			-	-	Sebdou
Algeria	Zidane	04.01.89	23.06.89	46			-	-	Sebdou
Bangladesh	Mymensingh	20.11.88	10.05.89	-			-	Diazinon, Dimecron, Nogos	Be1 (Mymensingh Local)
Bulgaria	Toshevo	06.01.89	08.08.89	30	60		-	-	Stepnoy 1
Cyprus	Athalassa	25.11.88	24.05.89	44	54		-	-	Cyprus Local
Iran	Karaj	29.11.88	24.06.89	24	72		6	Treflan, Metasystox	Jam
Iraq	Bakrajo	19.11.88	13.06.89	40	40		-	-	Sulaimaniyah Local
Italy	Caltagirone	07.01.89	26.06.89	54	60		-	-	Califfo
Jordan	Marow	26.11.88	01.04.89	18	45		-	-	Jubeiha 1
Jordan	Mushagar	13.02.89	17.06.89	20	50		-	Fusilade	Jubeiha 1
Lebanon	Terbol-W	29.11.88	20.06.89		50		-	Kerb, Igran	Lebanese Local
Lebanon	Terbol-Sp	20.03.89	20.07.89		50		1	Kerb, Igran	Lebanese Local
Morocco	Marchouch	21.11.88	24.07.88	20	41		-	-	PCH 46
Morocco	Zememra	14.11.88	20.06.89	20	60		-	-	RH 46
Portugal	Elvas	22.11.88	10.07.89		60	60	-	-	CHK 309
Spain	Badajoz	15.12.88	05.07.89	-			-	Terbutrine	Pedrosillano
Spain	Cordoba	29.11.88	20.06.89	-			-	Aradex, Trifluraline, Linuron	Pedrosillano
Spain	Sevilla	28.11.88	26.06.89	-			-	Chlorothalonil, Daconil	Pedrosillano
Syria	Al Ghab	11.12.88	28.05.89	-			-	-	Ghab 1
Syria	Gelline	15.01.89	29.05.89	20	50		-	-	Ghab 1
Syria	Idleb	27.11.88	20.05.89		60		-	-	Ghab 1
Syria	Izra'a	07.01.89	28.05.89				-	-	Ghab 1
Syria	Jindiress-W	04.12.88	10.06.89		50		-	Kerb, Bravo	ILC 482
Syria	Jindiress-Sp	27.02.89	02.07.89		50		-	Kerb, Bravo	ILC 1929
Syria	Tel Hadya-W	03.12.88	23.05.89		50		-	Kerb, Bravo	ILC 482
Syria	Tel hadya-Sp	01.03.89	21.06.89		50		-	Kerb, Bravo	ILC 1929
Tunisia	Beja	15.12.88	NA	-			-	-	Amdoun
Tunisa	El Kef	01.12.88	NA	-			-	-	Amdoun
Tunisia	Oued Meliz	01.12.88	NA	-			-	-	Amdoun
Turkey	Adana	01.01.89	25.05.89	40	80		-	-	Amdoun
Turkey	Diyaibakir	10.12.88	10.06.89	30	60		-	-	Guney Sarisi
Turkey	Erzurum	27.04.89	12.08.89	30	70		-	-	1931
Turkey	Izmir	24.11.88	06.07.89	30	60		-	Endosulfan	Canitez-87

NA = Not available.

Table 3.5.2. Time to flowering (days) of entries at different locations in the CIYT-T during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA		BANGLADESH	BULGARIA	
			Sidi Bel Abbas	Tessala	Zidane	Mymensingh	Toshevo
FLIP 84- 6C	X 80 TH 265/(ILC 72XILC 196)XILC 262	ICARDA/ICRISAT	133	123	105	110	130
FLIP 84- 46C	X 81 TH 55/ILC 1920XILC 2956	ICARDA/ICRISAT	129	126	111	112	132
FLIP 85- 4C	X 82 TH 66/ILC 2593XILC 3279	ICARDA/ICRISAT	134	127	111	111	131
FLIP 85- 13C	X 83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	131	121	108	103	130
FLIP 85- 18C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	128	127	112	114	131
FLIP 85- 19C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	133	123	109	102	130
FLIP 85- 44C	X 82 TH 77/ILC 3346XILC 464	ICARDA/ICRISAT	136	127	111	114	132
FLIP 85- 45C	X 82 TH 146/(ILC 445XILC 482)XILC 202	ICARDA/ICRISAT	131	126	108	117	131
FLIP 85- 49C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	134	128	112	112	131
FLIP 85- 57C	X 83 TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	132	123	105	103	130
FLIP 85- 58C	X 83 TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	133	128	107	102	131
FLIP 85- 62C	X 83 TH 29/FLIP 82-60CXFLIP 82-64C	ICARDA/ICRISAT	128	127	109	109	131
FLIP 85- 64C	X 83 TH 25/FLIP 81-69CXFLIP 82-81C	ICARDA/ICRISAT	126	124	112	109	131
FLIP 85- 76C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	129	126	107	110	131
FLIP 85-132C	X 82 TH 66/ILC 2593XILC 3279	ICARDA/ICRISAT	137	124	108	115	132
FLIP 85-142C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	132	126	112	108	131
FLIP 85-151C	L 550XILC 72	ICARDA/ICRISAT	130	114	104	98	130
FLIP 86- 37C	Unknown	ICARDA/ICRISAT	130	123	105	104	130
FLIP 86- 46C	X 82 TH 145/(ILC 136XILC 482)XILC 72	ICARDA/ICRISAT	128	128	108	107	131
FLIP 86- 61C	X 83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	135	126	111	112	131
FLIP 86- 63C	X 83 TH 111/FLIP 81-82CXFLIP 81-60C	ICARDA/ICRISAT	135	131	109	116	132
ILC 195	-	USSR	132	119	105	103	130
ILC 3279	-	USSR	134	126	108	113	132
Local check	-	-	130	138	97	80	127
Location Mean			132	125	108	108	131
S.E. of Mean			2.92	1.49	1.03	2.78	0.31
L.S.D. at 5%			-	4.25	2.94	7.91	0.88
C.V. (%)			3.84	2.06	1.66	4.47	0.41
Error d.f.			46	46	46	46	46
Significance			NS	*	*	*	*

Table 3.5.2. Cont'd. ...

Entry Nmae	CYPRUS	IRAN	IRAQ	ITALY	JORDAN		LEBANON		MOROCCO
	Athalassa	Karaj	Bakrajo	Caltagirone	Marow	Mushagar	Terbol-W	Terbol-SP	Marchouch
FLIP 84- 6C	130	39	145	104	85	88	131	62	114
FLIP 84- 46C	130	44	143	107	84	85	133	66	114
FLIP 85- 4C	133	53	144	104	88	90	134	74	114
FLIP 85- 13C	127	40	142	104	84	86	130	65	114
FLIP 85- 18C	131	42	143	107	86	88	133	69	114
FLIP 85- 19C	128	40	144	107	85	47	132	66	114
FLIP 85- 44C	132	46	144	108	88	89	134	76	114
FLIP 85- 45C	131	45	143	105	84	87	132	67	114
FLIP 85- 49C	132	45	143	107	85	88	134	67	114
FLIP 85- 57C	128	44	143	106	84	85	131	62	114
FLIP 85- 58C	129	43	143	106	86	87	132	64	114
FLIP 85- 62C	130	46	145	107	85	89	134	67	114
FLIP 85- 64C	129	40	145	105	85	87	132	64	114
FLIP 85- 76C	131	43	145	107	85	87	132	69	114
FLIP 85-132C	132	42	145	105	87	87	132	76	114
FLIP 85-142C	131	42	144	107	86	87	132	70	114
FLIP 85-151C	129	39	145	105	84	86	129	64	114
FLIP 86- 37C	127	39	142	104	84	87	130	65	114
FLIP 86- 46C	131	41	146	103	88	88	133	62	114
FLIP 86- 61C	129	45	145	107	-	87	134	62	114
FLIP 86- 63C	130	47	146	107	86	90	134	66	114
ILC 195	128	39	142	105	84	86	132	64	114
ILC 3279	131	40	146	105	85	88	132	76	114
Local check	126	42	144	105	83	85	129	52	114
Location Mean	130	43	144	106	85	85	132	67	114
S.E. of Mean	0.69	1.75	1.10	0.72	0.44	7.92	0.35	0.89	
L.S.D. at 5%	1.95	4.97	-	2.06	1.26	-	0.99	2.52	
C.V. (%)	0.91	7.07	1.32	1.18	0.90	13.12	0.45	2.31	
Error d.f.	46	46	46	46	44	23	46	46	
Significance	*	*	NS	*	*	NS	*	*	

Cont'd. ...

Table 3.5.2. Cont'd. ...

Entry Name	MOROCCO	PORTUGAL	SPAIN			SYRIA			
	Zememra	Elvas	Badajoz	Cordoba	Sevilla	Al GHab	Gelline	Idleb	Izra'a
FLIP 84- 6C	127	124	109	126	155	120	90	130	96
FLIP 84- 46C	125	127	116	131	149	121	91	132	98
FLIP 85- 4C	132	130	134	135	148	121	92	131	100
FLIP 85- 13C	129	127	113	124	152	118	92	130	98
FLIP 85- 18C	129	130	124	128	147	120	91	131	100
FLIP 85- 19C	132	129	116	127	151	118	91	130	99
FLIP 85- 44C	132	130	131	135	149	121	93	132	100
FLIP 85- 45C	127	130	119	127	149	120	89	131	96
FLIP 85- 49C	132	130	127	135	148	120	92	131	99
FLIP 85- 57C	127	127	111	125	152	118	91	130	97
FLIP 85- 58C	127	129	115	131	155	119	90	131	99
FLIP 85- 62C	127	130	133	131	153	120	93	131	99
FLIP 85- 64C	129	129	118	124	149	119	94	131	99
FLIP 85- 76C	129	130	121	128	155	119	93	131	99
FLIP 85-132C	132	130	120	133	151	120	90	132	98
FLIP 85-142C	129	130	127	133	151	121	93	131	100
FLIP 85-151C	129	125	101	124	152	119	87	130	96
FLIP 86- 37C	129	127	116	124	149	118	91	130	99
FLIP 86- 46C	129	130	114	132	156	120	89	131	98
FLIP 86- 61C	127	130	123	132	147	120	91	131	99
FLIP 86- 63C	125	129	133	131	144	121	93	132	99
ILC 195	126	126	110	125	150	118	92	130	96
ILC 3279	129	130	124	133	157	121	90	132	97
Local check	114	124	103	120	155	116	84	127	91
Location Mean	128	129	119	129	151	120	91	131	98
S.E. of Mean	1.48	0.83	2.31	1.59	0.07	0.34	0.76	0.31	0.67
L.S.D. at 5%	4.21	2.37	6.58	4.52	0.19	0.97	2.17	0.88	1.91
C.V. (%)	2.00	1.12	3.36	2.13	0.08	0.49	1.45	0.41	1.19
Error d.f.	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 3.5.2. Cont'd. ...

Entry Name	SYRIA				TURKEY				(1)
	Jindiress- Winter	Jindiress- Spring	Tel Hadya- Winter	Tel Hadya- Spring	Adana+	Diyarbakir	Erzurum	Izmir	Overall Mean
FLIP 84- 6C	138	73	123	66	83	135	55	138	110
FLIP 84- 46C	139	74	123	71	83	137	54	144	111
FLIP 85- 4C	139	83	125	73	83	138	59	151	114
FLIP 85- 13C	134	76	122	71	83	136	52	139	110
FLIP 85- 18C	138	79	125	75	83	137	55	145	113
FLIP 85- 19C	134	76	122	75	83	136	57	139	110
FLIP 85- 44C	139	85	127	76	83	137	61	149	115
FLIP 85- 45C	136	76	123	74	83	136	55	142	112
FLIP 85- 49C	139	77	124	75	83	138	52	142	113
FLIP 85- 57C	136	73	122	71	83	136	54	138	110
FLIP 85- 58C	135	74	123	73	83	136	57	139	111
FLIP 85- 62C	139	79	124	74	83	137	56	151	113
FLIP 85- 64C	138	78	122	72	83	136	52	139	111
FLIP 85- 76C	137	78	124	75	83	137	55	140	112
FLIP 85-132C	138	83	125	74	83	136	59	141	113
FLIP 85-142C	137	82	125	75	83	137	52	144	113
FLIP 85-151C	136	73	123	68	83	133	55	140	109
FLIP 86- 37C	134	75	122	67	83	136	52	138	110
FLIP 86- 46C	138	73	124	71	83	136	58	146	112
FLIP 86- 61C	139	71	124	67	83	137	53	142	112
FLIP 86- 63C	143	75	124	72	83	138	53	151	113
ILC 195	136	72	122	66	83	133	56	137	109
ILC 3279	138	83	126	71	83	134	57	139	113
Local check	139	61	120	56	83	127	55	141	
Location Mean	137	76	124	71	83	136	55	142	
S.E. of Mean	0.55	0.99	0.47	1.41		0.76	1.83	1.73	
L.S.D. at 5%	1.56	2.81	1.34	4.00		2.15	5.20	4.92	
C.V. (%)	0.69	2.25	0.66	3.42		0.96	5.73	2.10	
Error d.f.	46	46	46	46		46	46	46	
Significance	*	*	*	*		*	*	*	

(1) Marow was excluded from the overall mean, * = Significant at $P \leq 0.05$, NS = Not significant, + Non-replicated.

Table 3.5.3. Time to maturity (days) of entries at different locations in the CIYT-T during 1988/89.

Entry Name	ALGERIA			BANGLADESH	BULGARIA	IRAN	IRAQ	JORDAN
	Sidi Bel	Abbes	Tessala	Zidane	Mymensingh	Toshevo	Karaj	Bakrajo
FLIP 84- 6C	184	175	154	165	170	104	189	125
FLIP 84- 46C	184	177	161	164	170	102	186	121
FLIP 85- 4C	183	182	160	156	173	109	187	125
FLIP 85- 13C	184	186	152	164	170	101	185	119
FLIP 85- 18C	184	178	154	165	170	99	186	123
FLIP 85- 19C	184	177	160	164	169	102	186	121
FLIP 85- 44C	184	182	170	155	173	107	187	124
FLIP 85- 45C	184	176	152	165	171	103	188	123
FLIP 85- 49C	184	177	154	164	172	101	186	123
FLIP 85- 57C	184	184	156	164	170	99	186	125
FLIP 85- 58C	184	182	156	164	171	104	188	125
FLIP 85- 62C	184	178	152	165	171	96	187	124
FLIP 85- 64C	184	179	164	164	171	109	188	122
FLIP 85- 76C	183	176	163	164	172	107	187	125
FLIP 85-132C	183	177	159	165	173	103	187	123
FLIP 85-142C	183	191	163	164	169	98	187	123
FLIP 85-151C	184	181	152	164	170	100	186	122
FLIP 86- 37C	183	182	154	164	168	104	186	122
FLIP 86- 46C	184	177	156	165	171	100	188	124
FLIP 86- 61C	184	179	155	165	170	106	187	-
FLIP 86- 63C	183	177	155	165	172	106	187	120
ILC 195	184	180	152	164	170	102	186	119
ILC 3279	184	177	155	164	171	101	187	123
Local check	184	177	152	147	169	101	187	122
Location Mean	184	179	157	163	171	103	187	123
S.E. of Mean	0.55	0.91	2.47	2.92	1.07	2.86	0.73	0.65
L.S.D. at 5%	-	2.58	7.02	8.30	-	-	-	1.86
C.V. (%)	0.51	0.88	2.72	3.10	1.08	4.83	0.67	0.92
Error d.f.	46	46	46	46	46	46	46	44
Significance	NS	*	*	*	NS	NS	NS	*

Cont'd. ...

Table 3.5.3. Cont'd. ...

Entry Name	JORDAN	LEBANON		MOROCCO	PORTUGAL	SPAIN			SYRIA
	Mushagar	Terbol-W	Terbol-SP	Marchouch+	Elvas	Badajoz	Cordoba	Sevilla	Al Ghab
FLIP 84- 6C	122	172	107	196	200	190	190	196	162
FLIP 84- 46C	119	177	110	196	212	194	191	193	161
FLIP 85- 4C	124	183	120	196	209	198	190	193	168
FLIP 85- 13C	118	176	112	196	202	189	188	190	161
FLIP 85- 18C	121	176	113	196	203	196	189	190	162
FLIP 85- 19C	119	174	112	196	204	192	189	193	162
FLIP 85- 44C	124	182	119	196	212	197	189	193	168
FLIP 85- 45C	121	177	116	196	202	196	188	190	162
FLIP 85- 49C	120	175	113	196	212	197	190	193	162
FLIP 85- 57C	118	177	112	196	212	191	190	193	160
FLIP 85- 58C	122	178	113	196	209	197	189	194	164
FLIP 85- 62C	121	176	109	196	202	191	188	193	163
FLIP 85- 64C	118	177	111	196	202	188	187	190	162
FLIP 85- 76C	122	178	116	196	204	200	188	196	164
FLIP 85-132C	120	178	119	196	209	198	189	193	163
FLIP 85-142C	118	178	113	196	209	199	191	193	165
FLIP 85-151C	119	172	110	196	199	191	189	190	163
FLIP 86- 37C	121	176	111	196	202	184	188	190	161
FLIP 86- 46C	120	176	111	196	202	195	188	195	161
FLIP 86- 61C	118	177	108	196	203	194	189	190	162
FLIP 86- 63C	120	173	111	196	203	195	188	190	162
ILC 195	119	174	109	196	200	187	186	190	159
ILC 3279	120	173	115	196	202	187	186	196	162
Local check	118	171	95	196	197	186	185	196	156
Location Mean	120	176	112	196	205	193	189	192	162
S.E. of Mean	1.23	0.78	1.12		1.52	2.12	0.73	0.07	0.86
L.S.D. at 5%	2.94	2.22	3.19		4.33	6.02	2.09	0.19	2.44
C.V. (%)	1.45	0.77	1.73		1.29	1.90	0.67	0.06	0.92
Error d.f.	23	46	46		46	46	46	46	46
Significance	*	*	*		*	*	*	*	*

Cont'd. ...

Table 3.5.3. Cont'd. ...

Entry Name	SYRIA					TURKEY				(1)
	Gelline	Idleb	Izra'a	Jindiress- Winter	Jindiress- Spring	Tel Hadya- Winter	Tel Hadya- Spring	Diyar- bakir	Erzurum	Overall Mean
FLIP 84- 6C	124	170	139	180	116	159	106	177	107	159
FLIP 84- 46C	123	170	140	183	115	161	105	176	108	159
FLIP 85- 4C	129	173	140	183	124	164	106	178	110	161
FLIP 85- 13C	125	170	138	181	116	160	106	176	106	158
FLIP 85- 18C	125	170	141	182	122	164	106	177	108	159
FLIP 85- 19C	125	169	139	180	116	160	105	176	107	158
FLIP 85- 44C	129	173	140	182	124	164	106	178	110	162
FLIP 85- 45C	125	171	139	180	122	161	104	176	105	159
FLIP 85- 49C	124	172	140	182	121	162	106	177	107	159
FLIP 85- 57C	126	170	139	182	116	158	105	177	108	159
FLIP 85- 58C	125	171	141	182	118	163	105	177	107	160
FLIP 85- 62C	125	171	140	182	121	159	105	176	106	158
FLIP 85- 64C	128	171	141	181	116	160	105	175	104	159
FLIP 85- 76C	124	172	141	184	123	164	105	177	109	161
FLIP 85-132C	125	173	139	181	124	164	105	177	109	160
FLIP 85-142C	126	169	141	180	122	164	105	177	110	160
FLIP 85-151C	122	170	140	179	118	161	106	174	106	158
FLIP 86- 37C	124	168	137	181	118	160	105	176	109	158
FLIP 86- 46C	124	171	139	181	122	162	105	176	109	159
FLIP 86- 61C	125	170	140	180	108	161	106	176	105	158
FLIP 86- 63C	124	172	140	181	115	158	105	177	106	158
ILC 195	121	170	137	179	116	160	106	175	106	157
ILC 3279	124	171	138	180	122	163	106	176	107	158
Local check	120	169	129	181	104	156	97	171	109	
Location Mean	125	171	139	181	118	161	105	176	107	
S.E. of Mean	0.94	1.07	0.69	0.56	0.73	1.20	0.61	0.40	0.91	
L.S.D. at 5%	2.67	-	1.97	1.58	2.09	3.41	1.75	1.13	2.58	
C.V. (%)	1.31	1.08	0.86	0.53	1.07	1.29	1.01	0.39	1.47	
Error d.f.	46	46	46	46	46	46	46	46	46	
Significance	*	NS	*	*	*	*	*	*	*	

(1) Marow was excluded from the overall mean, * = Significant at $P < 0.05$, NS = Not significant, + Non-replicated.

Table 3.5.4. Plant height (cm) of entries at different locations in the CIYT-T during 1988/89.

Entry Name	ALGERIA			BANGLADESH	BULGARIA	CYPRUS	IRAN	IRAQ	ITALY	JORDAN
	Sidi Bel Abbes	Tessala	Zidane	Mymensingh	Toshevo	Athalassa	Karaj	Bakrajo	Caltagirone	Marow
FLIP 84- 6C	42	47	37	87	71	62	44	51	33	60
FLIP 84- 46C	41	53	30	96	71	58	53	48	33	55
FLIP 85- 4C	35	37	32	74	73	62	59	47	38	56
FLIP 85- 13C	37	38	33	91	77	60	46	50	32	58
FLIP 85- 18C	36	42	37	82	75	68	54	53	35	55
FLIP 85- 19C	39	43	32	98	70	63	55	49	31	54
FLIP 85- 44C	40	48	33	81	79	62	59	48	35	57
FLIP 85- 45C	38	48	35	81	75	65	54	51	32	53
FLIP 85- 49C	38	40	32	85	76	67	57	49	31	69
FLIP 85- 57C	42	38	33	95	71	60	49	48	33	56
FLIP 85- 58C	42	43	40	101	76	67	50	52	34	53
FLIP 85- 62C	37	43	35	97	73	72	55	51	35	57
FLIP 85- 64C	33	48	37	86	74	65	54	49	38	56
FLIP 85- 76C	37	47	32	108	75	63	56	49	31	56
FLIP 85-132C	40	42	40	72	78	65	49	50	35	59
FLIP 85-142C	35	50	37	104	77	70	53	50	35	56
FLIP 85-151C	38	43	37	81	73	62	50	50	24	50
FLIP 86- 37C	34	50	35	72	70	60	46	47	37	53
FLIP 86- 46C	39	52	37	98	73	70	53	52	32	58
FLIP 86- 61C	37	45	35	77	76	68	53	52	30	-
FLIP 86- 63C	39	55	42	91	81	67	53	51	34	56
ILC 195	37	40	35	80	64	57	37	43	25	50
ILC 3279	42	50	37	103	76	68	45	50	35	61
Local check	38	48	28	100	70	48	36	29	29	44
Location Mean	38	45	35	89	74	64	51	49	33	56
S.E. of Mean	2.76	2.81	2.40	7.60	2.84	2.20	4.26	2.01	3.11	2.74
L.S.D. at 5%	-	7.99	6.83	21.62	-	6.25	12.11	5.71	-	7.81
C.V. (%)	12.53	10.69	11.90	14.77	6.65	5.98	14.48	7.12	16.48	8.51
Error d.f.	46	46	46	46	46	46	46	46	46	44
Significance	NS	*	*	*	NS	*	*	*	NS	*

Cont'd. ...

Table 3.5.4. Cont'd. ...

Entry Name	JORDAN	LEBANON		MOROCCO	PORTUGAL	SPAIN			SYRIA	
	Mushagar	Terbol-W	Terbol-SP	Marchouch+	Elvas	Badajoz	Cordoba	Sevilla	Al Ghab	Gelline
FLIP 84- 6C	60	47	48	76	73	51	65	75	62	39
FLIP 84- 46C	50	46	42	70	73	48	65	68	58	35
FLIP 85- 4C	54	46	41	53	77	48	67	66	60	37
FLIP 85- 13C	50	41	39	63	70	49	62	68	57	38
FLIP 85- 18C	57	48	61	76	78	55	76	73	67	43
FLIP 85- 19C	49	42	46	58	78	51	66	71	57	37
FLIP 85- 44C	59	47	44	61	72	51	69	70	62	39
FLIP 85- 45C	56	48	52	74	75	52	67	73	62	44
FLIP 85- 49C	59	46	48	66	79	50	69	73	62	39
FLIP 85- 57C	54	44	45	73	73	50	61	70	58	37
FLIP 85- 58C	51	47	47	70	76	52	67	75	62	39
FLIP 85- 62C	52	49	44	62	73	53	70	74	63	39
FLIP 85- 64C	55	45	45	73	76	52	73	79	62	39
FLIP 85- 76C	52	44	46	67	73	52	67	71	57	38
FLIP 85-132C	51	46	50	54	73	51	68	74	60	44
FLIP 85-142C	59	48	48	60	74	54	70	76	63	43
FLIP 85-151C	51	44	50	60	75	50	56	70	57	37
FLIP 86- 37C	49	45	43	51	70	50	66	66	62	38
FLIP 86- 46C	57	45	47	68	76	52	69	73	62	39
FLIP 86- 61C	55	45	48	68	76	51	69	73	63	43
FLIP 86- 63C	54	50	48	80	83	55	71	78	62	38
ILC 195	47	41	48	63	74	50	63	58	53	34
ILC 3279	54	49	57	64	74	52	70	71	63	43
Local check	46	35	33	34	74	44	56	54	45	32
Location Mean	53	45	47	64	75	51	67	71	60	39
S.E. of Mean	2.94	1.73	2.93		3.10	1.17	1.83	2.38	1.42	1.22
L.S.D. at 5%	-	4.93	8.34		-	3.33	5.22	6.78	4.04	3.46
C.V. (%)	7.84	6.60	10.87		7.18	3.97	4.76	5.82	4.11	5.41
Error d.f.	23	46	46		46	46	46	46	46	46
Significance	NS	*	*		NS	*	*	*	*	*

Cont'd. ...

Table 3.5.4. Cont'd. ...

Entry Name	SYRIA						TURKEY			(1) Overall Mean
	Idleb	Izra'a	Jindires- Winter	Jindires- Spring	Tel Hadya- Winter	Tel Hadya- Spring	Diyar- bakir	Erzurum	Izmir	
FLIP 84- 6C	59	30	45	35	41	30	46	27	68	52
FLIP 84- 46C	53	29	47	31	43	28	38	26	63	50
FLIP 85- 4C	54	28	45	29	40	22	38	24	50	48
FLIP 85- 13C	53	30	47	33	43	23	37	26	47	48
FLIP 85- 18C	60	31	50	34	46	25	48	27	54	53
FLIP 85- 19C	55	28	45	33	45	22	42	27	68	50
FLIP 85- 44C	58	31	45	35	48	23	42	25	63	51
FLIP 85- 45C	56	29	44	34	41	27	45	28	65	52
FLIP 85- 49C	57	28	47	34	44	25	43	26	68	51
FLIP 85- 57C	54	31	43	31	42	27	41	26	50	49
FLIP 85- 58C	57	31	43	34	47	27	43	29	56	52
FLIP 85- 62C	59	29	44	34	44	27	42	28	58	52
FLIP 85- 64C	56	33	48	33	48	28	41	28	64	52
FLIP 85- 76C	56	29	46	32	44	22	45	27	59	51
FLIP 85-132C	55	31	45	34	41	27	45	28	51	50
FLIP 85-142C	58	29	49	34	48	27	45	30	48	53
FLIP 85-151C	49	25	42	35	43	25	40	24	49	48
FLIP 86- 37C	53	31	43	31	41	28	40	28	54	48
FLIP 86- 46C	58	32	50	36	49	27	43	27	66	53
FLIP 86- 61C	57	30	47	35	46	28	46	27	62	52
FLIP 86- 63C	58	31	47	34	46	27	44	31	68	54
ILC 195	51	28	40	32	40	30	38	28	65	46
ILC 3279	56	32	49	42	47	28	46	30	65	53
Local check	44	23	46	21	31	18	31	26	49	
Location Mean	55	30	46	33	44	26	42	27	59	
S.E. of Mean	1.78	1.25	0.68	1.46	2.19	1.99	1.56	0.69	4.83	
L.S.D. at 5%	5.06	3.55	1.92	4.17	6.23	5.67	4.44	1.95	13.74	
C.V. (%)	5.58	7.32	2.56	7.66	8.69	13.36	6.43	4.36	14.24	
Error d.f.	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	*	

(1) Marow was excluded from the overall mean, * = Significant at $P \leq 0.05$, NS = Not significant, + Non-replicated.

Table 3.5.5. 100-Seed weight (g) of entries at different locations in the CIYT-T during 1988/89.

Entry Name	ALGERIA		BANGLADESH	BULGARIA	IRAN	IRAQ	ITALY	LEBANON	
	Tessala	Zidane	Mymensingh	Toshevo	Karaj	Bakrajo	Caltagirone	Tebol-W	Terbol-SP
FLIP 84- 6C	24	30	25	34	32	31	33	39	35
FLIP 84- 46C	29	28	27	38	33	32	35	37	38
FLIP 85- 4C	35	37	32	47	39	46	45	50	46
FLIP 85- 13C	31	33	28	41	34	37	38	44	46
FLIP 85- 18C	30	29	25	40	38	37	38	40	41
FLIP 85- 19C	27	30	31	36	33	35	36	39	39
FLIP 85- 44C	31	30	32	46	36	40	44	46	38
FLIP 85- 45C	32	30	28	41	35	41	41	36	41
FLIP 85- 49C	28	27	28	37	37	33	35	39	37
FLIP 85- 57C	29	31	30	37	35	36	36	42	42
FLIP 85- 58C	28	31	29	39	29	37	39	41	43
FLIP 85- 62C	29	33	28	46	37	37	43	44	38
FLIP 85- 64C	30	33	27	40	32	38	37	42	37
FLIP 85- 76C	28	33	27	36	30	36	37	40	38
FLIP 85-132C	27	30	24	45	37	34	40	45	38
FLIP 85-142C	32	32	31	43	35	42	43	46	43
FLIP 85-151C	24	28	25	37	33	32	32	38	40
FLIP 86- 37C	32	30	27	46	35	40	41	47	48
FLIP 86- 46C	25	29	26	38	34	34	35	42	39
FLIP 86- 61C	28	30	25	39	32	38	37	44	43
FLIP 86- 63C	24	27	28	38	30	35	34	37	36
ILC 195	21	24	24	28	29	29	26	28	32
ILC 3279	22	24	24	34	35	30	30	33	32
Local check	25	29	11	28	29	38	31	36	38
Location Mean	28	30	27	39	34	36	37	41	40
S.E. of Mean	0.88	1.80	2.51	0.92	2.52	1.49	0.96	2.09	1.97
L.S.D. at 5%	2.51	5.12	7.11	2.61	-	4.25	2.74	5.95	5.62
C.V. (%)	5.44	10.42	16.21	4.07	13.00	7.17	4.51	8.90	8.64
Error d.f.	46	46	46	46	46	46	46	46	46
Significance	*	*	*	*	NS	*	*	*	*

Cont'd. ...

Table 3.5.5. Cont'd. ...

Entry Name	PORTUGAL	SPAIN		SYRIA			TURKEY	Overall Mean	
	Elvas	Badajoz	Cordoba	Idleb	Jindiress Winter	Jindiress Spring	Tel Hadya Winter		Izmir
FLIP 84- 6C	35	32	33	30	32	34	29	29	32
FLIP 84- 46C	33	30	32	33	32	34	29	30	32
FLIP 85- 4C	47	35	50	48	49	50	43	37	43
FLIP 85- 13C	40	36	39	37	40	41	35	32	37
FLIP 85- 18C	39	35	40	37	39	40	36	25	36
FLIP 85- 19C	39	33	35	35	35	38	33	32	35
FLIP 85- 44C	42	37	42	44	41	43	38	34	39
FLIP 85- 45C	42	35	40	42	42	42	37	36	38
FLIP 85- 49C	37	33	37	37	37	36	32	31	34
FLIP 85- 57C	36	32	36	33	34	36	32	32	35
FLIP 85- 58C	38	33	39	35	35	38	35	29	35
FLIP 85- 62C	44	39	40	39	38	38	35	34	38
FLIP 85- 64C	38	33	39	41	39	40	35	34	36
FLIP 85- 76C	37	35	39	33	36	38	35	28	34
FLIP 85-132C	42	37	41	38	36	42	32	31	36
FLIP 85-142C	45	40	39	43	44	44	42	35	40
FLIP 85-151C	36	33	31	33	33	37	29	33	33
FLIP 86- 37C	42	37	40	40	42	44	39	38	39
FLIP 86- 46C	37	31	35	35	36	37	33	30	34
FLIP 86- 61C	38	36	37	38	38	37	36	31	36
FLIP 86- 63C	38	30	34	32	33	35	30	33	33
ILC 195	27	27	24	25	23	26	24	23	26
ILC 3279	30	28	29	30	28	32	27	27	29
Local check	33	29	25	27	27	34	26	40	
Location Mean	38	34	36	36	36	38	33	32	
S.E. of Mean	0.61	1.43	1.08	1.37	0.71	0.79	1.41	1.70	
L.S.D. at 5%	1.74	4.08	3.06	3.89	2.03	2.25	4.00	4.85	
C.V. (%)	2.78	7.38	5.10	6.55	3.41	3.60	7.28	9.29	
Error d.f.	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	

Table 3.5.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-T during 1988/89.

Entry Name	ALGERIA				BANGLADESH		BULGARIA		CYPRUS		IRAN		IRAQ	
	Tessala		Zidane		Mymensingh		Toshevo		Athalassa		Karaj		Bakrajo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 6C	591	9	1002	3	206	6	2157	22	1860	9	707	14	516	24
FLIP 84- 46C	660	6	226	23	164	9	2588	15	1675	17	1097	5	1279	9
FLIP 85- 4C	517	11	608	10	89	18	2744	13	1289	24	1620	1	920	17
FLIP 85- 13C	1014	1	812	5	275	2	2750	12	1959	4	730	11	1294	8
FLIP 85- 18C	436	18	284	21	109	14	2806	11	1665	18	572	18	1163	12
FLIP 85- 19C	497	13	510	16	243	3	3102	5	2013	2	986	7	1494	2
FLIP 85- 44C	623	7	374	19	122	12	2356	18	1499	22	1130	4	831	23
FLIP 85- 45C	750	3	526	15	85	21	2944	10	6268	1	343	24	1341	5
FLIP 85- 49C	403	22	201	24	90	17	2949	9	1967	3	1227	3	1355	4
FLIP 85- 57C	421	19	543	12	212	5	3194	4	1703	14	881	8	1299	7
FLIP 85- 58C	412	21	627	9	122	13	3019	7	1538	21	609	16	1070	15
FLIP 85- 62C	339	23	482	18	58	24	2060	23	1903	6	685	15	1620	1
FLIP 85- 64C	584	10	728	6	86	19	2269	19	1692	16	780	10	1199	10
FLIP 85- 76C	463	16	534	14	212	4	3102	6	1922	5	605	17	1331	6
FLIP 85-132C	610	8	969	4	70	23	2255	21	1863	8	350	23	1192	11
FLIP 85-142C	505	12	276	22	153	10	2375	17	1595	20	720	12	994	16
FLIP 85-151C	486	14	637	7	85	20	2569	16	1703	13	710	13	869	21
FLIP 86- 37C	862	2	538	13	91	16	2269	20	1887	7	531	21	1481	3
FLIP 86- 46C	481	15	1077	2	185	7	2602	14	1379	23	1016	6	858	22
FLIP 86- 61C	734	4	333	20	101	15	3347	2	1778	10	565	20	906	18
FLIP 86- 63C	314	24	488	17	71	22	1741	24	1707	12	567	19	1099	14
ILC 195	421	20	630	8	175	8	3778	1	1748	11	807	9	1145	13
ILC 3279	669	5	583	11	122	11	3000	8	1649	19	507	22	872	20
Local check	440	17	1170	1	1053	1	3231	3	1696	15	1546	2	882	19
Location Mean	551		590		174		2717		1915		804		1125	
S.E. of Mean	116.24		121.09		66.49		198.15		941.32		163.14		118.05	
L.S.D. at 5%	330.88		344.67		189.26		564.03		-		464.39		336.04	
C.V. (%)	36.52		35.56		66.17		12.63		85.15		35.16		18.17	
Error d.f.	46		46		46		46		46		46		46	
Significance	*		*		*		*		NS		*		*	
Test > L. Check	2		0		0		0		-		0		9	

Cont'd. ...

Table 3.5.6. Cont'd. ...

Entry Name	ITALY		JORDAN				LEBANON				MOROCCO		PORTUGAL	
	Caltagirone		Marow		Mushagar		Terbol-Winter		Terbol-Spring		Marchouch		Elvas	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 6C	1006	4	1306	16	1307	12	1513	22	630	2	519	4	2477	13
FLIP 84- 46C	674	18	1512	12	962	23	1640	10	431	6	279	10	2199	20
FLIP 85- 4C	947	7	1086	21	1146	18	1601	13	114	23	123	17	2565	7
FLIP 85- 13C	974	5	1716	6	1435	8	1550	20	421	9	85	20	2688	3
FLIP 85- 18C	644	21	1291	18	816	24	1587	15	233	19	211	11	2190	21
FLIP 85- 19C	714	17	1615	9	1628	2	1725	6	286	16	324	7	3155	1
FLIP 85- 44C	972	6	1464	14	1463	6	1725	5	58	24	187	13	2509	10
FLIP 85- 45C	767	14	1612	10	1313	11	1876	1	302	15	417	5	2822	2
FLIP 85- 49C	590	23	2007	3	1440	7	1667	9	333	13	90	19	2333	18
FLIP 85- 57C	739	15	1950	4	1283	13	1566	19	513	5	318	8	2528	9
FLIP 85- 58C	859	11	1480	13	1036	22	1566	16	259	17	44	23	2255	19
FLIP 85- 62C	893	10	1678	7	1633	1	1725	7	394	10	554	3	2157	22
FLIP 85- 64C	1006	3	1236	20	1196	16	1487	23	349	12	157	15	2352	17
FLIP 85- 76C	642	22	1080	23	1266	14	1778	3	138	21	116	18	2391	16
FLIP 85-132C	932	8	1085	22	1048	21	1619	12	124	22	56	22	2509	11
FLIP 85-142C	565	24	1261	19	1328	10	1593	14	148	20	61	21	1944	24
FLIP 85-151C	734	16	2273	2	1243	15	1799	2	362	11	405	6	2500	12
FLIP 86- 37C	1090	1	1301	17	1101	19	1442	24	582	3	17	24	2579	5
FLIP 86- 46C	1052	2	1662	8	1496	5	1545	21	423	8	194	12	2454	14
FLIP 86- 61C	852	12	-	-	1401	9	1624	11	569	4	147	16	2539	8
FLIP 86- 63C	648	20	1598	11	1601	3	1566	17	249	18	300	9	2141	23
ILC 195	674	19	1444	15	1069	20	1714	8	429	7	983	1	2683	4
ILC 3279	901	9	1716	5	1510	4	1566	18	323	14	741	2	2567	6
Local check	795	13	2443	1	1191	17	1757	4	1074	1	166	14	2451	15
Location Mean	820		1557		1288		1635		364		271		2458	
S.E. of Mean	145.01		259.77		281.88		85.49		63.79		52.86		141.35	
L.S.D. at 5%	-		740.40		-		-		181.58		150.47		402.36	
C.V. (%)	30.65		28.90		30.96		9.06		30.33		33.84		9.96	
Error d.f.	46		44		23		46		46		46		46	
Significance	NS		*		NS		NS		*		*		*	
Test > L. Check	-		0		-		-		0		8		1	

Cont'd. ...

Table 3.5.6. Cont'd. ...

Entry Name	SPAIN						SYRIA							
	Badajoz		Cordoba		Sevilla		Al Ghab		Gelline		Idleb		Izra'a	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 6C	767	12	1626	16	867	20	1815	21	182	4	1563	15	175	13
FLIP 84- 46C	378	24	1488	21	913	18	1894	19	73	13	1674	10	175	12
FLIP 85- 4C	919	7	1954	4	1288	1	2238	5	90	10	1592	14	148	19
FLIP 85- 13C	811	9	1997	3	853	21	1968	15	57	18	1852	4	307	4
FLIP 85- 18C	704	16	1588	18	1030	14	2153	9	32	23	1612	13	222	8
FLIP 85- 19C	1148	1	1929	6	1073	9	2053	12	54	19	1816	5	249	7
FLIP 85- 44C	796	11	2158	2	1212	3	2317	4	62	15	1982	1	143	20
FLIP 85- 45C	974	4	1604	17	1240	2	2021	13	104	8	1698	9	164	15
FLIP 85- 49C	707	15	1476	22	985	17	2222	6	49	20	1739	6	148	18
FLIP 85- 57C	574	22	1710	14	1120	6	2317	3	88	11	1673	11	159	16
FLIP 85- 58C	630	20	1515	20	1063	11	2413	2	79	12	1518	18	79	24
FLIP 85- 62C	685	17	1383	23	1038	12	2524	1	59	16	1718	8	180	11
FLIP 85- 64C	726	14	1833	9	988	16	1434	24	106	7	1464	19	153	17
FLIP 85- 76C	1107	2	1576	19	1087	7	1619	23	37	22	1722	7	101	23
FLIP 85-132C	937	6	1886	7	1178	4	2212	7	110	6	1319	24	296	5
FLIP 85-142C	622	21	1191	24	875	19	1741	22	22	24	1557	16	111	22
FLIP 85-151C	948	5	1829	10	1127	5	2021	14	187	3	1397	23	307	3
FLIP 86- 37C	678	18	1953	5	1072	10	2175	8	69	14	1403	22	180	9
FLIP 86- 46C	548	23	1704	15	992	15	2095	11	59	17	1658	12	180	10
FLIP 86- 61C	805	10	1759	12	1032	13	2106	10	151	5	1457	21	164	14
FLIP 86- 63C	656	19	1768	11	698	23	1894	18	43	21	1458	20	122	21
ILC 195	981	3	1835	8	820	22	1905	17	223	2	1913	2	434	1
ILC 3279	756	13	1717	13	1078	8	1947	16	98	9	1528	17	275	6
Local check	830	8	2191	1	667	24	1873	20	456	1	1878	3	371	2
Location Mean	779		1736		1012		2040		104		1633		202	
S.E. of Mean	145.47		132.64		91.20		164.08		27.20		143.81		65.81	
L.S.D. at 5%	-		377.57		259.60		467.06		77.43		-		187.34	
C.V. (%)	32.36		13.23		15.60		13.93		45.38		15.25		56.50	
Error d.f.	46		46		46		46		46		46		46	
Significance	NS		*		*		*		*		NS		*	
Test > L. Check	-		0		17		2		0		-		0	

Cont'd. ...

Table 3.5.6. Cont'd. ...

Entry Name	SYRIA								TUNISIA			
	Jindiress-Winter		Jindiress-Spring		Tel Hadya-Winter		Tel Hadya-Spring		Beja		El Kef	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84- 6C	967	24	550	7	478	20	58	3	950	11	1500	13
FLIP 84- 46C	1363	7	726	3	541	17	39	4	725	19	1750	10
FLIP 85- 4C	1404	2	274	20	356	24	0	21	800	15	1563	11
FLIP 85- 13C	1392	4	561	6	649	12	6	14	1063	7	2875	3
FLIP 85- 18C	1143	17	280	19	738	6	2	16	913	13	1375	16
FLIP 85- 19C	1243	9	505	10	859	1	13	10	1013	9	2000	8
FLIP 85- 44C	1570	1	203	23	687	8	0	22	1100	5	1188	17
FLIP 85- 45C	1239	10	404	17	577	14	0	23	1088	6	2500	5
FLIP 85- 49C	1392	3	503	12	665	10	4	15	600	20	1563	11
FLIP 85- 57C	1188	14	478	13	390	22	11	12	913	12	2250	6
FLIP 85- 58C	1162	16	505	9	547	16	0	20	1013	10	625	23
FLIP 85- 62C	1218	12	550	8	539	18	39	5	250	24	1813	9
FLIP 85- 64C	1086	19	471	14	630	13	12	11	738	18	1500	13
FLIP 85- 76C	1126	18	261	21	759	5	0	24	575	21	1063	20
FLIP 85-132C	1363	6	213	22	374	23	0	18	750	17	2188	7
FLIP 85-142C	1368	5	189	24	447	21	0	17	413	23	625	23
FLIP 85-151C	983	23	505	11	822	2	25	7	1388	2	1438	15
FLIP 86- 37C	1306	8	462	15	561	15	13	9	1113	4	1188	17
FLIP 86- 46C	1167	15	460	16	661	11	0	19	513	22	1000	22
FLIP 86- 61C	1220	11	752	2	767	4	29	6	1063	8	2875	3
FLIP 86- 63C	1045	20	611	5	508	19	16	8	788	16	3125	2
ILC 195	1012	22	640	4	669	9	89	2	1463	1	1125	19
ILC 3279	1035	21	397	18	696	7	6	13	838	14	1000	21
Local check	1198	13	938	1	799	3	162	1	1263	3	3625	1
Location Mean	1216		477		613		22		889		1740	
S.E. of Mean	115.43		54.53		148.43		17.85		192.17			
L.S.D. at 5%	328.57		155.22		-		50.82		459.10			
C.V. (%)	16.44		19.82		41.92		142.11		30.59			
Error d.f.	46		46		46		46		23			
Significance	*		*		NS		*		*			
Test > L. Check	1		0		-		0		0			

Cont'd. ...

Table 3.5.6. Cont'd. ...

Entry Name	TUNISIA		TURKEY								(1) Overall Mean	
	Oued Meliz+		Adana		Diyarbakir		Erzurum		Izmir		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 84- 6C	-	-	1183	6	1843	22	365	9	1049	6	1047	15
FLIP 84- 46C	1125	14	1142	7	1855	21	392	5	1852	2	1063	14
FLIP 85- 4C	1400	13	1308	1	2417	2	381	8	278	20	1079	9
FLIP 85- 13C	1700	9	1025	17	2062	13	429	2	198	21	1175	4
FLIP 85- 18C	850	17	1000	20	1917	20	349	14	438	17	973	22
FLIP 85- 19C	-	-	1108	9	2257	6	307	17	1735	4	1242	2
FLIP 85- 44C	-	-	1083	12	2272	5	307	18	1012	7	1101	7
FLIP 85- 45C	875	16	975	22	2219	7	381	7	827	12	1302	1
FLIP 85- 49C	1025	15	1042	14	2111	9	339	15	963	8	1070	10
FLIP 85- 57C	1525	12	1083	11	1957	17	302	20	840	11	1112	6
FLIP 85- 58C	1925	4	1208	5	2028	14	259	22	877	9	998	20
FLIP 85- 62C	1775	7	1033	15	2410	3	444	1	506	15	1064	13
FLIP 85- 64C	1775	7	983	21	2015	15	397	4	475	16	996	21
FLIP 85- 76C	2600	1	1008	19	2065	12	302	19	420	19	1011	19
FLIP 85-132C	1550	10	1217	3	2278	4	328	16	685	14	1067	11
FLIP 85-142C	825	18	892	23	1944	18	249	24	87	24	848	23
FLIP 85-151C	-	-	1033	16	2111	10	259	23	428	18	1065	12
FLIP 86- 37C	-	-	1108	8	1923	19	360	10	134	23	1040	17
FLIP 86- 46C	-	-	1017	18	2102	11	286	21	846	10	1036	18
FLIP 86- 61C	1875	5	1067	13	1830	23	407	3	815	13	1144	5
FLIP 86- 63C	1550	10	1092	10	1827	24	349	12	1778	3	1043	16
ILC 195	1825	6	1233	2	1991	16	386	6	2080	1	1206	3
ILC 3279	1975	2	1208	4	2145	8	360	11	1506	5	1089	8
Local check	1975	2	-	-	2630	1	349	13	190	22		
Location Mean	1564		1089		2092		345		834			
S.E. of Mean			110.13		119.29		24.66		202.47			
L.S.D. at 5%			-		339.55		70.19		576.33			
C.V. (%)			17.52		9.88		12.37		42.04			
Error d.f.			44		46		46		46			
Significance			NS		*		*		*			
Test > L. Check			-		0		2		13			

(1) Marow, Tel Hadya-Spring and Oued Meliz were excluded from the overall mean, + Non-replicated
 * = 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 1988/89.

Rank	ALGERIA		BANGLADESH	BULGARIA	CYPRUS	IRAN	IRAQ	ITALY
	Tessala	Zidane	Mymensingh	Toshevo	Athalassa	Karaj	Bakrajo	Caltagirone
1	FLIP 85- 13C	Local check	Local check	ICC 195	FLIP 85- 45C	FLIP 85- 4C	FLIP 85- 62C	FLIP 86- 37C
2	FLIP 86- 37C	FLIP 86- 46C	FLIP 85- 13C	FLIP 86- 61C	FLIP 85- 19C	Local check	FLIP 85- 19C	FLIP 86- 46C
3	FLIP 85- 45C	FLIP 85- 6C	FLIP 85- 19C	Local check	FLIP 85- 49c	FLIP 85- 49c	FLIP 86- 37c	FLIP 85- 64c
4	FLIP 86- 61C	FLIP 85-132C	FLIP 85- 76C	FLIP 85- 57C	FLIP 85- 13C	FLIP 85- 44C	FLIP 85- 49C	FLIP 84- 6C
5	ILC 3279	FLIP 85- 13C	FLIP 85- 57C	FLIP 85- 19C FLIP 85- 76C	FLIP 85- 76C	FLIP 84- 46C	FLIP 85- 45C	FLIP 85- 13C

Cont'd. ...

Rank	JORDAN		LEBANON		MOROCCO	PORTUGAL	SPAIN	
	Marow	Mushagar	Terbol-W	Terbol-SP	Marchouch	Elvas	Badajoz	Cordoba
1	Local check	FLIP 85- 62C	FLIP 85- 45C	Local check	ILC 195	FLIP 85- 19C	FLIP 85- 19C	Local check
2	FLIP 85-151C	FLIP 85- 19C	FLIP 85-151C	FLIP 84- 6C	ILC 3279	FLIP 85- 45C	FLIP 85- 76C	FLIP 85- 44C
3	FLIP 85- 49C	FLIP 86- 63C	FLIP 85- 76C	FLIP 86- 37C	FLIP 85- 62C	FLIP 85- 13C	ILC 195	FLIP 85- 13C
4	FLIP 85- 57C	ILC 3279	Local check	FLIP 86- 61C	FLIP 84- 6C	ILC 195	FLIP 85- 45C	FLIP 85- 4C
5	ILC 3279 FLIP 85- 13C	FLIP 86- 46C	FLIP 85- 44C	FLIP 85- 57C	FLIP 85- 45C	FLIP 86- 37C	FLIP 85-151C	FLIP 86- 37C

Cont'd. ...

Rank	SPAIN				SYRIA			
	Sevilla	Al Ghab	Gelline	Idleb	Izra'a	Jindiress-W	Jindiress-SP	Tel Hadya-W
1	FLIP 85- 4C	FLIP 85- 62C	Local check	FLIP 85- 44C	ILC 195	FLIP 85- 44C	Local check	FLIP 85- 19C
2	FLIP 85- 45C	FLIP 85- 58C	ILC 195	ILC 195	Local check	FLIP 85- 4C	FLIP 86- 61C	FLIP 85-151C
3	FLIP 85- 44C	FLIP 85- 57C	FLIP 85-151C	Local check	FLIP 85-151C	FLIP 85- 49C	FLIP 84- 46C	Local check
4	FLIP 85-132C	FLIP 85- 44C	FLIP 85- 6C	FLIP 85- 13C	FLIP 85- 13C	FLIP 85- 13C	ILC 195	FLIP 86- 61C
5	FLIP 85-151C	FLIP 85- 4C	FLIP 86- 61C	FLIP 85- 19C	FLIP 85-132C	FLIP 85-142C	FLIP 86- 63C	FLIP 85- 76C

Cont'd. ...

Rank	SYRIA		TUNISIA		TURKEY			
	Tel Hadya-SP	Beja	El Kef	Oued Meliz	Adana	Diyarbakir	Erzurum	Izmir
1	Local check	ILC 195	Local check	FLIP 85- 76C	FLIP 85- 4C	Local check	FLIP 85- 62C	ILC 195
2	ILC 195	FLIP 85-151C	FLIP 86- 63C	Local check	ILC 195	FLIP 85- 4C	FLIP 85- 13C	FLIP 84- 46C
3	FLIP 84- 6C	Local check	FLIP 86- 61C	ILC 3279	FLIP 85-132C	FLIP 85- 62C	FLIP 86- 61C	FLIP 86- 63C
4	FLIP 84- 46C	FLIP 86- 37C	FLIP 85- 13C	FLIP 85- 58C	ILC 3279	FLIP 85-132C	FLIP 85- 64C	FLIP 85- 19C
5	FLIP 85- 62C	FLIP 85- 44C	FLIP 85- 45C	FLIP 86- 61C	FLIP 85- 58C	FLIP 85- 44C	FLIP 84- 46C	ILC 3279

The brackets indicate entries having the same rank.

On the basis of common entries over two years (Table 3.5.8) FLIP 85-19C (1550 kg/ha) ranked number 1 and was closely followed by ILC 195 (1535 kg/ha), FLIP 85-45C (1522 kg/ha), FLIP 85-13C (1501 kg/ha), and FLIP 85-57C (1478 kg/ha).

Table 3.5.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-T during 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 84- 46C	1674	9	1063	12	1369	9
FLIP 85- 4C	1519	14	1079	8	1299	13
FLIP 85- 13C	1826	4	1175	4	1501	4
FLIP 85- 18C	1653	10	973	14	1313	11
FLIP 85- 19C	1858	2	1242	2	1550	1
FLIP 85- 44C	1685	8	1101	6	1393	7
FLIP 85- 45C	1742	5	1302	1	1522	3
FLIP 85- 49C	1646	11	1070	9	1358	10
FLIP 85- 57C	1843	3	1112	5	1478	5
FLIP 85- 58C	1616	12	998	13	1307	12
FLIP 85- 62C	1515	15	1064	11	1290	14
FLIP 85-142C	1527	13	848	15	1188	15
FLIP 85-151C	1711	7	1065	10	1388	8
ILC 195	1864	1	1206	3	1535	2
ILC 3279	1721	6	1089	7	1405	6

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

Material

The material for CIYT-E comprised of 22 test entries and two checks. 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 30- and 10 cm respectively.

Thirteen sets of trials were distributed to cooperators in 7 countries and the results were returned from 3 sets covering 2 countries. The agronomic practices employed at different locations are shown in Table 3.6.1.

Table 3.6.1 Agronomic data for different locations in the CIYT-E during 1988/89.

Country/Location	NEPAL		SYRIA	
	Rampur	Breda	Tel Hadya	
Date of planting	13.11.88	16.11.88	03.12.88	
Date of harvesting	07.04.89	09.05.89	23.05.89	
Fertilizer (kg/ha)				
N	10	-	-	
P	40	50	50	
K	20	-	-	
Irrigation	-	-	-	
Insecticide/Fungicide/Herbicide	Sumicidine	Kerb, Bravo	Kerb, Bravo	
Local Check	Dhanush	ILC 3279	ILC 3279	

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. For entry means the time to flowering ranged from 114 days (for ILC 2298) to 125 days (for FLIP 81-34C), for the time to maturity from 152 days to 155 days, and for 100-seed weight from 16 g to 24 g.

The seed yields at different locations varied from 148 to 593 kg/ha (Table 3.6.6). The LSD estimates revealed that 23 entries excelled the respective local check by a significant margin at Breda in Syria. On an average over locations the five best entries included ILC 2694, ILC 2440, ILC 2910, ILC 2904, and ILC 1687.

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

Introduction

The CIYT-DS was supplied for the second time. The main objective of this trial was to find high yielding entries which are suitable for both, winter and spring, seasons.

Material

The material for CIYT-DS 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.

Table 3.6.2. Time to flowering (days) of entries at different locations in the CIYT-E during 1988/89.

Entry Name	Origin	NEPAL		SYRIA		Overall Mean
		Chitawan	Breda	Tel	Hadya	
ILC 1539	Afghanistan	106	130	119		119
ILC 1687	Afghanistan	109	129	115		118
ILC 1748	Afghanistan	108	128	117		118
ILC 2298	Palestine	97	127	118		114
ILC 2439	Palestine	113	132	116		120
ILC 2440	Palestine	108	133	118		120
ILC 2658	Sudan	111	134	117		120
ILC 2659	Sudan	115	136	115		122
ILC 2694	Afghanistan	107	129	117		118
ILC 2824	Afghanistan	108	131	116		118
ILC 2825	Afghanistan	109	128	122		120
ILC 2875	Afghanistan	109	130	119		119
ILC 2876	Afghanistan	109	128	118		118
ILC 2877	Afghanistan	108	129	118		118
ILC 2904	Afghanistan	107	128	117		117
ILC 2905	Afghanistan	109	135	117		120
ILC 2909	Afghanistan	109	128	115		117
ILC 2910	Afghanistan	108	133	118		120
ILC 3141	Turkey	108	131	120		120
ILC 3237	Afghanistan	107	128	119		118
ILC 3766	U.S.S.R.	116	135	115		122
FLIP 81-34C	ICARDA/ICRISAT	117	137	120		125
ILC 482	Turkey	109	134	119		121
Local Check	-	104	143	120		
Location Mean		109	131	118		
S.E. of Mean		1.53	0.94	0.62		
L.S.D. at 5%		4.35	2.67	1.75		
C.V. (%)		2.43	1.23	0.91		
Error df		46	46	46		
Significance		*	*	*		

* = Significant at $P < 0.05$.

Table 3.6.3. Time to maturity (days) of entries at different locations in the CIYT-E during 1988/89.

Entry Name	NEPAL		SYRIA	Overall Mean
	Chitawan	Breda	Tel Hadya	
ILC 1539	139	167	153	153
ILC 1687	139	167	152	152
ILC 1748	139	167	152	153
ILC 2298	138	166	155	153
ILC 2439	139	168	150	152
ILC 2440	138	168	152	153
ILC 2658	139	168	154	153
ILC 2659	139	170	152	154
ILC 2694	139	166	152	152
ILC 2824	140	167	153	153
ILC 2825	139	167	156	154
ILC 2875	139	166	155	154
ILC 2876	139	167	152	153
ILC 2877	139	167	151	152
ILC 2904	139	166	155	153
ILC 2905	139	168	149	152
ILC 2909	139	167	149	152
ILC 2910	139	168	152	153
ILC 3141	139	167	155	154
ILC 3237	139	166	153	153
ILC 3766	140	170	152	154
FLIP 81-34C	140	169	156	155
ILC 482	139	168	153	154
LOCAL CHECK	140	172	156	
Location Mean	139	168	153	
S.E. of Mean	0.66	0.44	1.25	
L.S.D. at 5%	-	1.24	3.55	
C.V. (%)	0.82	0.45	1.41	
Error df	46	46	46	
Significance	NS	*	*	

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

Table 3.6.4. Plant height (cm) of entries at different locations in the CIYT-E during 1988/89.

Entry Name	NEPAL	SYRIA		Overall Mean
	Chitawan	Breda	Tel Hadya	
ILC 1539	65	16	26	36
ILC 1687	71	19	28	39
ILC 1748	67	18	28	38
ILC 2298	58	16	32	35
ILC 2439	53	16	28	32
ILC 2440	61	19	29	36
ILC 2658	57	17	28	34
ILC 2659	70	20	26	39
ILC 2694	72	17	28	39
ILC 2824	66	16	27	36
ILC 2825	64	17	26	36
ILC 2875	58	17	29	35
ILC 2876	62	17	28	36
ILC 2877	66	17	27	37
ILC 2904	73	17	25	38
ILC 2905	53	15	27	32
ILC 2909	66	18	24	36
ILC 2910	62	18	30	36
ILC 3141	59	19	30	36
ILC 3237	67	17	27	37
ILC 3766	57	18	29	35
FLIP 81-34C	58	22	30	36
ILC 482	60	20	36	39
LOCAL CHECK	39	26	32	
Location Mean	62	18	28	
S.E. of Mean	4.64	0.92	1.28	
L.S.D. at 5%	13.21	2.63	3.64	
C.V. (%)	13.00	8.86	7.79	
Error df.	46	46	46	
Significance	*	*	*	

* = Significant at $P < 0.05$.

Table 3.6.5. 100-Seed weight (g) of entries at different locations in the CIYT-E during 1988/89.

Entry Name	SYRIA		Overall Mean
	Breda	Tel Hadya	
ILC 1539	17	16	16
ILC 1687	17	18	17
ILC 1748	17	19	18
ILC 2298	15	20	18
ILC 2439	26	19	22
ILC 2440	27	17	22
ILC 2658	26	17	21
ILC 2659	20	17	19
ILC 2694	16	18	17
ILC 2824	16	18	17
ILC 2825	16	16	16
ILC 2875	17	17	17
ILC 2876	16	18	17
ILC 2877	17	22	19
ILC 2904	16	17	17
ILC 2905	26	20	23
ILC 2909	17	17	17
ILC 2910	17	23	20
ILC 3141	23	22	22
ILC 3237	17	22	19
ILC 3766	23	17	20
FLIP 81-34C	22	26	24
ILC 482	24	22	23
LOCAL CHECK	25	25	
Location Mean	20	19	
S.E. of Mean	0.45	0.63	
L.S.D. at 5%	1.28	1.79	
C.V. (%)	3.95	5.66	
Error df	46	46	
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 1988/89.

Entry Name	NEPAL		SYRIA				Overall	
	Chitawan		Breda		Tel Hadya		Mean	
ILC 1539	371	3	145	17	501	21	339	9
ILC 1687	220	7	183	1	643	8	349	5
ILC 1748	183	14	166	5	460	23	270	17
ILC 2298	145	15	128	21	531	19	268	18
ILC 2439	96	17	148	15	603	10	282	15
ILC 2440	199	13	175	3	686	3	353	2
ILC 2658	42	22	152	11	661	4	285	14
ILC 2659	77	18	115	23	530	20	241	22
ILC 2694	463	2	157	10	587	13	402	1
ILC 2824	297	4	140	19	585	14	341	8
ILC 2825	207	11	158	9	414	24	260	20
ILC 2875	217	8	161	7	658	6	345	6
ILC 2876	261	5	159	8	577	15	332	10
ILC 2877	204	12	147	16	562	16	305	12
ILC 2904	239	6	151	12	657	7	349	4
ILC 2905	30	23	144	18	659	5	278	16
ILC 2909	215	9	163	6	536	18	305	11
ILC 2910	209	10	139	20	709	2	352	3
ILC 3141	53	21	150	13	551	17	251	21
ILC 3237	122	16	174	4	594	12	297	13
ILC 3766	28	24	149	14	602	11	260	19
FLIP 81-34C	60	20	124	22	839	1	341	7
ILC 482	74	19	176	2	468	22	239	23
Local Check	1107	1	40	24	617	9		
Location Mean	213		148		593			
S.E. of Mean	69.50		14.33		73.85			
L.S.D. at 5%	197.84		40.78		-			
C.V. (%)	56.43		16.81		21.57			
Error df	46		46		46			
Significance	*		*		NS			
Test > L. Check	0		23		-			

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

Table 3.7.1. Agronomic data for different locations in the CIYT-DS during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Sidi Bel-Abbes (W)	11.12.88	11.06.89	46			-	-	Sebdou
Algeria	Sidi Bel-Abbes (Sp)	23.02.89	02.07.89	46			-	-	Sebdou
Lebanon	Terbol (W)	28.11.88	15.06.89	50			-	Kerb, Igran	Lebanese Local
Lebanon	Terbol (Sp)	20.03.89	25.07.89	50			1	Kerb, Igran	Lebanese Local
Morocco	Douyet (W)	05.12.88	30.05.89	-			-	-	Pch 46
Morocco	Douyet (Sp)	03.02.89	27.05.89	-			-	-	Pch 37
Morocco	Jema'a Shain (W)	14.11.89	10.05.89	95	111		-	-	Pch 46
Morocco	Jema'a Shain (Sp)	24.02.89	05.07.89	95	111		-	-	Pois chiche 637
Morocco	Marchouch (W)	21.11.88	25.07.89	20	45		-	-	Pois chiche 46
Morocco	Marchouch (Sp)	02.02.89	25.07.89	20	45		-	-	-
Syria	Tel Hadya (W)	04.12.88	23.05.89		50		-	Kerb, Bravo	IIC 1929
Syria	Tel HAdya (Sp)	01.03.89	21.06.89		50		-	Kerb, Bravo	IIC 1929
Tunisia	Beja	14.12.88	NA	NA			NA	NA	NA

NA = Not available.

Table 3.7.2. Time to flowering (days) of entries at different locations in the CIYT-DS during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA		LEBANON	
			Tessala-W	Tessala-S	Terbol-W	Terbol-S
ILC 482	-	Turkey	120	72	127	56
FLIP 81-293C	X79 TH 8/ILC 191XILC 496	ICARDA/ICRISAT	120	79	128	62
FLIP 82-150C	X79 TH 101/ILC 523XILC 183	ICARDA/ICRISAT	120	77	129	62
FLIP 83- 7C	X80 TH 264/(ILC 480XILC 72)XILC 263	ICARDA/ICRISAT	125	80	131	64
FLIP 83- 47C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	123	80	132	66
FLIP 83- 48C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	120	80	131	65
FLIP 84- 8C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	123	74	129	54
FLIP 84- 46C	X81 TH 55/ILC 1920XILC 2956	ICARDA/ICRISAT	125	79	134	65
FLIP 84- 60C	X81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	120	81	130	65
FLIP 84- 72C	X79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	120	79	131	61
FLIP 84- 99C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	120	74	130	60
FLIP 84-109C	X81 TH 44/ILC 1920XILC 187	ICARDA/ICRISAT	120	75	128	58
FLIP 84-120C	X81 TH 15/ILC 480XILC 2956	ICARDA/ICRISAT	125	82	132	76
FLIP 84-124C	X81 TH 53/ILC 1920XILC 2506	ICARDA/ICRISAT	120	80	130	71
FLIP 84-145C	X81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	123	78	129	65
FLIP 84-163C	X81 TH 113/ILC 191XILC 484	ICARDA/ICRISAT	120	78	128	70
FLIP 84-181C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	120	74	130	56
FLIP 84-182C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	122	80	131	66
FLIP 85- 16C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	122	80	131	63
FLIP 85- 62C	X83 TH 29/FLIP 82-60CXFLIP 82-64C	ICARDA/ICRISAT	125	81	134	71
FLIP 85- 92C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	125	80	132	63
FLIP 85-108C	X83 TH 116/FLIP 82-64CXFLIP 82-87C	ICARDA/ICRISAT	120	74	126	54
FLIP 85-135C	X79 TH 221/ILC 72XILC 1922	ICARDA/ICRISAT	125	75	132	59
Local Check	-	-	120	74	129	52
Location Mean			122	78	130	63
S.E. of Mean			0.69	1.16	0.49	1.01
L.S.D. at 5%			1.96	3.30	1.40	2.89
C.V. (%)			0.98	2.58	0.65	2.80
Error d.f.			46	46	46	46
Significance			*	*	*	*

Cont'd. ...

Table 3.7.2. Cont'd. ...

Entry Name	MOROCCO		SYRIA		Overall Mean	
	Jema'a Shain		Tel Hadya		W	S
	W	S	W	S		
ILC 482	102	63	120	64	117	64
FLIP 81-293C	104	57	122	67	118	66
FLIP 82-150C	100	65	122	73	118	69
FLIP 83- 7C	103	51	123	72	121	67
FLIP 83- 47C	106	52	123	69	121	67
FLIP 83- 48C	106	46	123	68	120	65
FLIP 84- 8C	105	51	121	64	120	61
FLIP 84- 46C	104	47	123	73	122	66
FLIP 84- 60C	98	43	122	72	118	65
FLIP 84- 72C	98	51	121	70	117	65
FLIP 84- 99C	102	46	122	66	119	61
FLIP 84-109C	106	52	120	64	118	62
FLIP 84-120C	103	59	124	73	121	72
FLIP 84-124C	95	53	122	73	117	69
FLIP 84-145C	104	46	121	73	119	65
FLIP 84-163C	103	51	123	74	118	68
FLIP 84-181C	103	45	122	66	119	60
FLIP 84-182C	102	50	124	70	120	67
FLIP 85- 16C	102	55	122	70	119	67
FLIP 85- 62C	98	53	124	74	120	70
FLIP 85- 92C	104	53	124	73	121	67
FLIP 85-108C	104	55	119	60	117	61
FLIP 85-135C	104	55	123	68	121	64
Local Check	98	50	126	55		
Location Mean	102	52	122	69		
S.E. of Mean	0.27	0.00	0.31	1.82		
L.S.D. at 5%	0.77	0.00	0.87	5.19		
C.V. (%)	0.46	0.00	0.43	4.59		
Error d.f.	46	46	46	46		
Significance	*	*	*	*		

* = Significant at $P < 0.05$.

Table 3.7.3. Time to maturity (days) of entries at different locations in the CIYT-DS during 1988/89.

Entry Name	ALGERIA		LEBANON		MOROCCO		SYRIA		Overall Mean	
	Tessala		Terbol		Jema'a Shain		Tel Hadya		W	S
	W	S	W	S	W	S	W	S		
ILC 482	175	120	167	100	162	108	154	105	165	108
FLIP 81-293C	181	129	167	108	167	114	155	104	168	114
FLIP 82-150C	180	119	169	108	166	115	156	106	168	112
FLIP 83- 7C	177	118	171	108	173	114	156	105	169	111
FLIP 83- 47C	175	123	174	111	170	115	159	107	169	114
FLIP 83- 48C	177	126	171	111	167	108	157	106	168	113
FLIP 84- 8C	176	119	171	104	167	107	157	106	168	109
FLIP 84- 46C	182	119	176	113	172	115	157	105	172	113
FLIP 84- 60C	181	127	169	110	165	107	156	106	168	113
FLIP 84- 72C	176	119	169	113	165	116	156	105	166	113
FLIP 84- 99C	177	120	168	106	163	126	156	105	166	114
FLIP 84-109C	180	118	168	106	168	126	154	105	168	114
FLIP 84-120C	180	126	174	119	168	125	159	106	170	119
FLIP 84-124C	175	125	168	111	170	120	157	104	167	115
FLIP 84-145C	176	118	169	112	165	112	155	105	166	112
FLIP 84-163C	176	118	167	106	165	116	156	105	166	111
FLIP 84-181C	182	122	168	101	165	118	155	104	167	111
FLIP 84-182C	174	127	175	119	167	126	159	106	169	119
FLIP 85- 16C	177	127	175	111	169	124	157	105	169	117
FLIP 85- 62C	178	123	176	119	167	126	158	105	170	118
FLIP 85- 92C	175	129	175	110	167	126	159	106	169	118
FLIP 85-108C	181	118	167	92	164	126	154	102	166	109
FLIP 85-135C	180	129	176	107	170	120	159	105	171	115
Local Check	175	123	170	93	167	115	160	97		
Location Mean	178	123	171	108	167	118	157	105		
S.E. of Mean	0.75	0.53	0.56	0.88	0.20	0.07	0.52	0.73		
L.S.D. at 5%	2.15	1.50	1.61	2.49	0.58	0.19	1.49	2.07		
C.V. (%)	0.74	0.74	0.57	1.40	0.21	0.10	0.58	1.20		
Error d.f.	46	46	46	46	46	46	46	46		
Significance	*	*	*	*	*	*	*	*		

* = Significant at $P \leq 0.05$.

Table 3.7.4. Plant height (cm) of entries at different locations in the CIYT-DS during 1988/89.

Entry Name	ALGERIA		LEBANON		MOROCCO		SYRIA		Overall Mean	
	Tessala		Terbol		Jema'a Shain		Tel Hadya		W	S
	W	S	W	S	W	S	W	S		
ILC 482	37	43	36	36	60	38	28	22	40	35
FLIP 81-293C	35	40	38	41	85	39	33	23	48	36
FLIP 82-150C	35	38	38	38	53	36	32	23	40	34
FLIP 83- 7C	43	37	46	44	100	44	35	22	56	36
FLIP 83- 47C	37	40	39	40	67	48	32	23	44	38
FLIP 83- 48C	32	35	38	39	80	34	30	23	45	33
FLIP 84- 8C	38	38	38	41	85	33	35	23	49	34
FLIP 84- 46C	36	38	45	42	95	27	36	23	53	33
FLIP 84- 60C	38	40	37	38	75	40	34	25	46	36
FLIP 84- 72C	38	43	36	42	65	41	35	23	44	37
FLIP 84- 99C	45	47	41	43	70	35	35	27	48	38
FLIP 84-109C	33	38	31	33	80	38	24	22	42	33
FLIP 84-120C	38	47	42	47	90	39	37	23	52	39
FLIP 84-124C	35	47	34	42	75	42	32	20	44	38
FLIP 84-145C	41	38	40	37	72	44	31	20	46	35
FLIP 84-163C	37	45	37	44	76	52	31	20	45	40
FLIP 84-181C	37	38	35	37	65	40	28	20	41	34
FLIP 84-182C	37	48	38	40	80	33	30	23	46	36
FLIP 85- 16C	51	42	42	44	85	33	38	27	54	37
FLIP 85- 62C	43	47	50	52	110	30	37	23	60	38
FLIP 85- 92C	42	40	42	44	95	35	38	25	54	36
FLIP 85-108C	35	42	34	33	60	38	27	22	39	34
FLIP 85-135C	41	33	43	39	100	39	33	25	54	34
Local Check	38	38	35	38	65	36	39	18		
Location Mean	38	41	39	41	79	38	33	23		
S.E. of Mean	1.84	1.34	1.42	2.39	3.00	2.44	1.59	1.48		
L.S.D. at 5%	5.23	3.81	4.05	6.80	8.54	6.95	4.52	4.22		
C.V. (%)	8.29	5.66	6.32	10.19	6.60	11.09	8.35	11.28		
Error d.f.	46	46	46	46	46	46	46	46		
Significance	*	*	*	*	*	*	*	*		

* = Significant at $P < 0.05$.

Table 3.7.5. 100-Seed weight (g) of entries at different locations in the CIYT-DS during 1988/89.

Entry Name	ALGERIA		LEBANON		SYRIA	Overall Mean	
	Tessala-W	Tessala-S	Terbol-W	Terbol-S	Tel Hadya-W	W	S
ILC 482	20	27	33	31	25	26	29
FLIP 81-293C	23	23	33	33	25	27	28
FLIP 82-150C	24	26	30	26	24	26	26
FLIP 83- 7C	24	24	40	38	28	31	31
FLIP 83- 47C	25	27	36	36	30	30	32
FLIP 83- 48C	25	25	37	37	28	30	31
FLIP 84- 8C	27	29	40	43	30	32	36
FLIP 84- 46C	25	27	36	38	28	30	32
FLIP 84- 60C	24	25	35	34	26	28	30
FLIP 84- 72C	24	25	35	35	27	29	30
FLIP 84- 99C	24	28	39	40	29	31	34
FLIP 84-109C	21	20	33	35	25	26	27
FLIP 84-120C	23	22	33	30	26	28	26
FLIP 84-124C	21	35	29	32	24	25	33
FLIP 84-145C	26	24	36	37	28	30	30
FLIP 84-163C	22	18	34	28	24	27	23
FLIP 84-181C	25	29	38	37	28	30	33
FLIP 84-182C	29	31	37	36	29	32	33
FLIP 85- 16C	33	29	43	45	37	38	37
FLIP 85- 62C	28	41	45	38	32	35	39
FLIP 85- 92C	28	31	43	42	32	34	37
FLIP 85-108C	22	22	33	31	26	27	26
FLIP 85-135C	29	33	47	47	36	37	40
Local Check	25	25	38	35	26		
Location Mean	25	27	37	36	28		
S.E. of Mean	1.23	1.37	0.75	0.81	0.74		
L.S.D. at 5%	3.50	3.90	2.14	2.29	2.10		
C.V. (%)	8.57	8.82	3.54	3.89	4.55		
Error d.f.	46	46	46	46	46		
Significance	*	*	*	*	*		

* = Significant at $P \leq 0.05$.

Table 3.7.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-DS during 1988/89.

Entry Name	ALGERIA				LEBANON				MOROCCO							
	Tessala-W		Tessala-S		Terbol-W		Terbol-S		Douyet-W		Douyet-S		Marchouch-W		Marchouch-S	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 482	317	16	216	10	1913	2	876	4	2340	10	2062	15	315	17	177	18
FLIP 81-293C	168	21	53	22	1772	9	661	8	2414	8	1957	18	312	18	184	17
FLIP 82-150C	279	18	254	9	1939	1	638	9	2358	9	2586	3	810	8	432	1
FLIP 83- 7C	212	20	68	20	1590	20	571	10	1944	18	1840	20	349	16	187	16
FLIP 83- 47C	478	9	358	2	1802	6	344	22	2772	1	1883	19	1110	2	391	3
FLIP 83- 48C	349	15	194	12	1783	7	471	13	2531	4	2531	5	1017	3	311	9
FLIP 84- 8C	562	8	161	17	1735	10	810	6	2160	13	2444	7	550	12	285	11
FLIP 84- 46C	137	22	61	21	1542	21	439	14	2025	15	2370	8	236	22	158	20
FLIP 84- 60C	588	6	205	11	1704	12	381	19	2500	5	2531	6	1011	4	342	6
FLIP 84- 72C	612	5	306	6	1606	17	407	18	2315	11	1716	21	755	9	227	12
FLIP 84- 99C	760	3	372	1	1688	13	815	5	2049	14	2210	12	520	13	326	8
FLIP 84-109C	408	12	184	14	1659	15	526	11	2457	6	2556	4	810	7	405	2
FLIP 84-120C	469	10	169	16	1730	11	288	23	1809	22	2821	1	623	10	139	21
FLIP 84-124C	375	14	275	7	1540	22	246	24	2642	2	2179	13	964	5	375	5
FLIP 84-145C	402	13	42	24	1775	8	352	21	2259	12	2698	2	876	6	330	7
FLIP 84-163C	134	23	50	23	1857	3	421	15	1907	20	2173	14	616	11	301	10
FLIP 84-181C	650	4	356	3	1820	5	958	3	1852	21	1173	23	364	15	190	15
FLIP 84-182C	822	2	324	5	1680	14	526	12	2543	3	2222	11	1121	1	388	4
FLIP 85- 16C	903	1	269	8	1447	23	407	17	1914	19	1975	17	64	24	133	22
FLIP 85- 62C	95	24	325	4	1841	4	362	20	1988	17	2043	16	407	14	217	13
FLIP 85- 92C	236	19	77	19	1640	16	418	16	2000	16	1667	22	298	20	109	23
FLIP 85-108C	286	17	190	13	1444	24	1013	2	2451	7	2253	10	301	19	200	14
FLIP 85-135C	420	11	174	15	1593	19	749	7	1512	24	2309	9	97	23	164	19
Local Check	578	7	133	18	1598	18	1042	1	1568	23	802	24	242	21	59	24
Location Mean	427		201		1696		572		2180		2125		574		251	
S.E. of Mean	118.01		53.21		54.58		42.93		251.28		300.36		101.30		37.38	
L.S.D. at 5%	335.93		151.48		155.36		122.22		715.28		854.99		288.35		106.41	
C.V. (%)	47.90		45.94		5.57		13.01		19.97		24.48		30.58		25.77	
Error d.f.	46		46		46		46		46		46		46		46	
Significance	*		*		*		*		*		*		*		*	
Test > L. Check	0		6		9		0		11		22		12		18	

Table 3.7.6. Cont'd. ...

Entry Name	MOROCCO				SYRIA				TUNISIA				(1)			
	Jema'a Shain				Tel Hadya				Beja				Overall Mean			
	W		S		W		S		W		W		S			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
ILC 482	2717	7	2250	1	615	5	61	6	700	19	1369	11	940	2		
FLIP 81-293C	2700	8	1792	9	450	15	17	18	1100	10	1303	13	777	16		
FLIP 82-150C	2792	5	1583	15	516	9	30	13	1825	1	1449	6	921	4		
FLIP 83- 7C	2167	20	1375	21	362	22	21	16	725	18	1104	20	677	22		
FLIP 83- 47C	2208	19	1375	19	779	1	33	11	1538	2	1525	2	731	19		
FLIP 83- 48C	2792	4	1667	14	434	18	34	10	1075	11	1484	4	868	11		
FLIP 84- 8C	3042	3	1917	4	573	6	49	7	1200	9	1437	8	944	1		
FLIP 84- 46C	2008	22	1458	17	444	16	7	22	650	22	1065	22	749	17		
FLIP 84- 60C	2375	15	1875	7	654	3	20	17	1388	5	1472	5	892	7		
FLIP 84- 72C	3117	2	2058	2	655	2	38	8	925	13	1510	3	792	13		
FLIP 84- 99C	2750	6	1750	11	458	13	31	12	688	21	1371	10	917	5		
FLIP 84-109C	2667	9	1792	10	485	11	171	4	763	16	1414	9	939	3		
FLIP 84-120C	2392	13	1800	8	401	19	13	20	1038	12	1237	15	872	10		
FLIP 84-124C	2608	10	1583	16	543	8	21	14	388	23	1446	7	780	14		
FLIP 84-145C	2333	17	1875	6	456	14	14	19	763	17	1350	12	885	8		
FLIP 84-163C	2458	11	1717	12	631	4	4	24	1338	7	1267	14	778	15		
FLIP 84-181C	2267	18	1683	13	462	12	79	5	1525	3	1236	16	740	18		
FLIP 84-182C	3125	1	1917	5	387	20	11	21	1413	4	1613	1	898	6		
FLIP 85- 16C	2333	16	1333	23	493	10	35	9	1350	6	1192	18	692	21		
FLIP 85- 62C	1792	24	1275	24	383	21	4	23	900	15	1084	21	704	20		
FLIP 85- 92C	2125	21	1350	22	435	17	21	15	700	20	1123	19	607	23		
FLIP 85-108C	2375	14	1417	18	554	7	207	3	1213	8	1235	17	880	9		
FLIP 85-135C	2417	12	1375	20	327	23	211	1	313	24	1061	23	830	12		
Local Check	1958	23	1917	3	282	24	210	2	913	14						
Location Mean	2480		1672		491		56		1018							
S.E. of Mean	309.22		208.15		91.25		42.79		338.09							
L.S.D. at 5%	-		-		-		121.81		-							
C.V. (%)	21.60		21.56		32.20		132.42		46.98							
Error d.f.	46		46		46		46		23							
Significance	NS		NS		NS		*		NS							
Test > L. Check	-		-		-		0		-							

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

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 6 complete sets covering 4 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 117 days (for FLIP 85-108C, FLIP 84-72C and FLIP 84-124C) to 122 days (for FLIP 84-46C) in winter, and it varied from 60 days (for FLIP 84-181C) to 72 days (for FLIP 84-120C) in spring. The entries which flowered earlier were, in general, also earlier in maturity. The entry FLIP 85-62C was tallest in winter and the entry FLIP 84-163C was tallest in spring. The 100-seed weight for entries varied from 25 g (for FLIP 84-124C) to 38 g (for FLIP 85-16C) in winter, and from 23 g (for FLIP 84-163C) to 40 g (for FLIP 85-135C) in spring.

The high seed yields were obtained at Douyet and Jema'a Shain in Morocco, both in winter and spring (Table 3.7.6). The LSD estimates revealed that 9, 11, and 12 entries in winter at Terbol in Lebanon, and Douyet and Marchouch in Morocco; and 6, 22, and 18 entries in spring at Tessala in Algeria, and Douyet and Marchouch in Morocco, outyielded the respective local checks by a significant margin.

The perusal of Table 3.7.6. revealed that the entries, namely, FLIP 84-99C, FLIP84-181C, and FLIP 84-182C at Tessala in Algeria; ILC 482, FLIP 84-181C at Terbol in Lebanon; FLIP 83-48C, FLIP 84-60C and FLIP 84-109C at Douyet in Morocco; FLIP 83-47C, FLIP 84-60C, FLIP 84-124C, FLIP 84-182C at Marchouch in Morocco; and FLIP 84-8C, FLIP84-72C, FLIP 84-182C at Jema'a Shain in Morocco 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.

Table 3.8.1. The five heaviest seed yielding entries of the individual locations in the CISN-W during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Setif	26.11.88	-	100			-	Treflan	Rabat 9
Bulgaria	Toshevo	19.10.88	08.08.89	30	60		-	-	Stepnoj 1
Chile	Chillan	12.07.89	15.01.90	45	90		-	-	California INIA
Chile	Hidango	24.05.89	12.12.89	20	35		-	-	California INIA
Cyprus	Athalassa	25.11.88	24.05.89	44	54		-	-	Yialousa (ILC 3279)
Ecuador	Quito	NA	NA	18	46		-	Afalon	California INIA
France	Monboucher	25.11.88	17.07.89	100			-	Trifluraline, Linuron, Isoxaben	Cascari
Iran	Karaj	20.11.89	21.06.89	24	72		6	Treflan, Lime, Metasystox	Jam
Iraq	Bakrajo	21.11.88	20.06.89	40	40		-	-	Sulaimaniyah Local
Italy	Tarquinia	04.02.89	20.08.89	45	130		1	hand weeding, Benazim	CALIA
Jordan	Marow	26.11.86	-	20	50		-	-	Jubeiha 1
Lebanon	Terbol	29.11.88	06.89		50		-	Kerb, Igran	Lebanese Local
Mexico	Padilla Tam	24.11.88	30.05.89	40	30		6	Agresor, Decis	Commercial food
Morocco	Marchouch	21.11.88	27.07.89	20	45		-	-	PCH 34
Portugal	Elvas	28.11.88	07.07.89		60		-	-	CHK 309
Portugal	Oeiras	22.12.89	27.06.89	21	63	63	-	-	
Spain	Badajoz	09.12.88	27.06.89	-			-	Terbutryne	Pedrosillano
Spain	Cordoba	09.12.88	13.06.89	-			-	-	Zegri
Spain	El Encin	23.11.88	06.07.89	32	96		-	Terbutryne, Igran	GEC 32 Atalaya
Syria	Aleppo	14.11.89	-		50		-	-	Ghab 2
Syria	Al Ghab	13.12.88	-	-			-	-	Ghab 2
Syria	Gelline	09.01.89	29.05.89	20	50		-	-	GHab 2
Syria	hama	04.12.88	22.05.89	30	80		-	-	Ghab 2
Syria	Izra'a	09.01.89	-	100	110		-	-	Ghab 2
Syria	Jableh	15.01.89	20.06.89	-			-	-	Ghab 2
Syria	Tartus	22.12.88	22.05.89	-			-	-	Ghab 2
Syria	Tel Hadya	04.12.88	21.05.89	-			-	-	ILC 3279
Tunisia	Beja-1	26.12.88	-	-			-	-	Local Amdoun
Tunisia	Beja-2	26.12.88	-	-			-	-	Local Amdoun
Tunisia	El Kef	01.12.88	-	-			-	-	Local Amdoun
Tunisia	Oued Meliz	01.12.88	-	-			-	-	
Turkey	Diyarbakir	10.12.88	11.06.89	30	60		-	-	Canitez 87
Turkey	Samsun	25.10.89	24.07.90	5			-	-	Canitez 87

NA = Not available.

Table 3.8.2. Adjusted time to flowering (days) of entries at different locations in the CISN-W during 1988/89.

Entry Name	Pedigree	Origin	BULGARIA	CHILE	CYPRUS	ECUADOR	FRANCE
			Toshevo	Chillan	Athalassa	Quito	Montboucher
FLIP 86- 50C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	207	118	124	-	171
FLIP 86- 64C	X83 TH 115/FLIP 82-81CXILC 3326	ICARDA/ICRISAT	216	116	123	-	165
FLIP 86- 66C	X83 TH 124/FLIP 82-64CXILC 72	ICARDA/ICRISAT	220	121	132	72	177
FLIP 86- 76C	X83 TH 114/FLIP 82-81CXILC 451	ICARDA/ICRISAT	209	117	129	83	174
FLIP 86- 81C	X82 TH 77/ILC3346XILC 464	ICARDA/ICRISAT	209	116	131	79	170
FLIP 86- 87C	X83 TH 20/FLIP 82-65CXFLIP 82-72C	ICARDA/ICRISAT	210	114	131	83	177
FLIP 86- 88C	X81 TH 179/ILC 112XILC 191	ICARDA/ICRISAT	211	118	133	-	177
FLIP 86- 89C	X81 TH 179/ILC 112XILC 191	ICARDA/ICRISAT	206	118	132	78	174
FLIP 86- 93C	X83 TH 132/ILC 195XFLIP 82-78C	ICARDA/ICRISAT	210	124	129	80	177
FLIP 86- 95C	X83 TH 9/FLIP 81-56C/FLIP 82-65C	ICARDA/ICRISAT	210	120	130	-	173
FLIP 86- 96C	X83 TH 89/ILC3396XFLIP 81-59W	ICARDA/ICRISAT	208	116	129	83	170
FLIP 86- 02C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	209	116	128	77	174
FLIP 86- 04C	X82 TH 148/(ILC 272XILC194)XILC2956	ICARDA/ICRISAT	208	118	125	78	171
FLIP 86- 05C	X83 TH 22/FLIP 82-65CXFLIP 82-81C	ICARDA/ICRISAT	209	118	126	79	173
FLIP 86- 09C	X83 TH 121/FLIP 82-69CXFLIP 82-92C	ICARDA/ICRISAT	208	118	126	-	170
FLIP 86- 11C	X83 TH 25/FLIP 82-69CXFLIP 82-81C	ICARDA/ICRISAT	208	120	127	81	170
FLIP 87- 12C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	208	117	126	-	174
FLIP 87- 17C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	208	121	125	-	174
FLIP 87- 18C	X83 TH 124/FLIP 82-64CXILC 72	ICARDA/ICRISAT	211	124	132	-	180
FLIP 87- 19C	X83 TH 25/FLIP 82-69CXFLIP 82-81C	ICARDA/ICRISAT	208	114	124	81	170
FLIP 87- 20C	X83 TH 105/ILC3279(WH)XILC3394	ICARDA/ICRISAT	209	119	132	81	177
FLIP 87- 21C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	206	114	124	81	174
FLIP 87- 22C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	205	116	126	-	171
FLIP 87- 27C	X83 TH 168/ILC1931XFLIP 82-64C	ICARDA/ICRISAT	208	116	126	-	174
FLIP 87- 28C	X83 TH 8/FLIP 81-56WXFLIP 81-57W	ICARDA/ICRISAT	209	117	132	75	174
FLIP 87- 29C	X83 TH 16/FLIP 81-57WXFLIP 82-72C	ICARDA/ICRISAT	208	121	130	78	174
FLIP 87- 30C	X83 TH 123/FLIP 82-72CXFLIP 82-93C	ICARDA/ICRISAT	208	112	124	83	171
FLIP 87- 31C	X83 TH 6/FLIP 81-41WXFLIP 82-81C	ICARDA/ICRISAT	208	117	126	-	171
FLIP 87- 32C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	208	119	125	80	171
FLIP 87- 33C	X83 TH 123/FLIP 82-72CXFLIP 82-93C	ICARDA/ICRISAT	211	118	130	81	170
FLIP 87- 35C	X83 TH 159/UC5XFLIP 81-59W	ICARDA/ICRISAT	208	113	122	-	168
FLIP 87- 36C	X83 TH 121/FLIP 82-69CXFLIP 82-92C	ICARDA/ICRISAT	210	123	130	-	174
FLIP 87- 37C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	208	117	126	-	174
FLIP 87- 38C	X83 TH 13/FLIP 81-56WXFLIP 82-78C	ICARDA/ICRISAT	219	118	125	-	171
FLIP 87- 39C	X83 TH 35/ILC 295XILC3864	ICARDA/ICRISAT	208	112	126	-	171
FLIP 87- 40C	X84 TH 37/ILC 463XFLIP 82-43C	ICARDA/ICRISAT	208	118	130	79	170

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry Name	Pedigree	Origin	BULGARIA	CHILE	CYPRUS	ECUADOR	FRANCE
			Toshevo	Chillan	Athalassa	Quito	Montboucher
FLIP 87- 41C	X84 TH 64/ILC 484XFLIP 82-64C	ICARDA/ICRISAT	208	114	124	75	168
FLIP 87- 42C	X84 TH 68/ILC 484XFLIP 82-80C	ICARDA/ICRISAT	205	112	124	-	168
FLIP 87- 43C	X84 TH 68/ILC 484XFLIP 82-80C	ICARDA/ICRISAT	205	113	123	65	168
FLIP 87- 45C	X84 TH 74/ILC 482XFLIP 82-80C	ICARDA/ICRISAT	208	114	124	79	167
FLIP 87- 46C	X85 TH 181/ILC3853XFLIP 81-293C	ICARDA/ICRISAT	208	124	132	-	174
FLIP 87- 49C	X85 TH 111/ILC 136XFLIP 82-144C	ICARDA/ICRISAT	208	119	126	75	168
FLIP 87- 50C	X85 TH 126/ILC 451XFLIP 82-130C	ICARDA/ICRISAT	207	117	125	81	168
FLIP 87- 51C	X85 TH 146/ILC2398XFLIP 83- 13C	ICARDA/ICRISAT	205	113	128	65	171
FLIP 87- 52C	X85 TH 147/ILC2398XFLIP 83- 15C	ICARDA/ICRISAT	209	114	123	85	164
FLIP 87- 53C	X85 TH 154/ILC2593XFLIP 81-293C	ICARDA/ICRISAT	208	116	125	-	174
FLIP 87- 54C	X85 TH 158/ILC3443XFLIP 82-130C	ICARDA/ICRISAT	206	121	124	-	168
FLIP 87- 55C	X85 TH 217/ILC2375XILC 187	ICARDA/ICRISAT	205	113	123	81	168
FLIP 87- 60C	X85 TH 276/ILC3843XFLIP 82-191C	ICARDA/ICRISAT	206	114	123	53	170
FLIP 87- 62C	X85 TH 216/ILC3275XFLIP 83-46C	ICARDA/ICRISAT	208	119	128	-	167
FLIP 87- 63C	X84 TH 3/FLIP 81- 3CXILC 451	ICARDA/ICRISAT	205	114	123	83	167
FLIP 87- 64C	X84 TH 3/FLIP 81- 3CXILC 451	ICARDA/ICRISAT	205	112	123	80	165
FLIP 87- 68C	X85 TH 211/ILC2371XFLIP 82-144C	ICARDA/ICRISAT	208	113	123	75	171
FLIP 87- 69C	X83 TH 15/FLIP 81-57WXFLIP 82-69C	ICARDA/ICRISAT	206	120	128	90	170
FLIP 87- 70C	X83 TH 121/FLIP 82-69CXFLIP 82-92C	ICARDA/ICRISAT	208	114	128	-	174
FLIP 87- 76C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	208	115	126	-	174
FLIP 87- 77C	X83 TH 77/ILC1250XFLIP 81-59W	ICARDA/ICRISAT	205	113	126	-	168
FLIP 87- 84C	X84 TH 188/ICCL 81115XFLIP 82-64C	ICARDA/ICRISAT	209	115	128	75	177
FLIP 87- 87C	X85 TH 270/ILC3779XFLIP 81-293C	ICARDA/ICRISAT	208	113	124	81	171
FLIP 87- 88C	X85 TH 111/ILC 136XFLIP 82-144C	ICARDA/ICRISAT	206	115	125	75	168
FLIP 81-293C	Improved check	ICARDA/ICRISAT	208	118	125	80	171
ILC 482	Long term check	Turkey	207	112	123	83	166
Local check	-	-	209	117	133	81	174
Location Mean			208	116	127	78	171
S.E. of Mean			0.71	1.23	0.37	1.57	0.43
L.S.D. at 5% for: Checks			2.46	4.27	1.29	5.43	1.50
Test entries in the same block			4.93	8.53	2.58	10.87	3.00
Test entries in different blocks			5.69	9.85	2.98	12.55	3.46
Checks Vs test entries			4.50	7.79	2.36	9.92	2.74
C.V. (%)			0.68	2.12	0.59	8.16	0.51

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry Name	IRAN	IRAQ	ITALY	LEBANON	MOROCCO	PORTUGAL		SPAIN			SYRIA
	Karaj	Bakrajo	Tarquimia	Terbol	Marchouch	Elvas	Oeiras	Badajoz	Cordoba	El Encin	Aleppo
FLIP 86- 50C	42	145	98	131	110	131	104	128	135	164	143
FLIP 86- 64C	37	145	95	131	110	132	104	129	137	163	145
FLIP 86- 66C	62	146	101	136	114	132	104	135	117	172	147
FLIP 86- 76C	53	144	98	135	110	135	103	130	137	168	142
FLIP 86- 81C	43	146	96	133	114	131	104	118	135	164	-
FLIP 86- 87C	-	144	101	135	115	131	104	132	137	167	149
FLIP 86- 88C	-	141	105	138	114	132	104	131	144	168	150
FLIP 86- 89C	55	141	105	132	114	132	105	126	144	167	-
FLIP 86- 93C	49	144	98	136	109	132	102	130	144	167	-
FLIP 86- 95C	41	144	99	131	114	133	101	114	121	168	145
FLIP 86- 96C	37	143	96	131	109	131	101	116	132	164	143
FLIP 86-102C	43	146	98	133	110	131	103	120	135	165	146
FLIP 86-104C	45	144	98	130	109	132	104	126	122	164	-
FLIP 86-105C	43	145	93	129	109	131	104	118	124	163	-
FLIP 86-109C	37	144	93	129	109	133	101	120	121	163	146
FLIP 86-111C	43	145	99	129	109	132	104	125	132	163	143
FLIP 87- 12C	40	146	97	130	109	133	104	118	149	163	-
FLIP 87- 17C	45	144	98	134	109	133	102	115	119	165	-
FLIP 87- 18C	45	146	101	136	109	132	102	130	130	167	145
FLIP 87- 19C	35	145	93	127	109	132	104	111	116	163	144
FLIP 87- 20C	55	144	94	136	114	133	104	138	149	166	-
FLIP 87- 21C	41	146	98	131	110	130	104	117	123	164	146
FLIP 87- 22C	45	143	95	131	110	135	103	116	137	166	146
FLIP 87- 27C	-	142	95	128	109	132	105	102	122	164	148
FLIP 87- 28C	46	145	100	132	114	132	101	107	122	167	144
FLIP 87- 29C	43	143	95	136	114	132	102	126	136	166	147
FLIP 87- 30C	35	145	98	131	110	131	104	117	137	162	144
FLIP 87- 31C	40	145	94	130	109	133	104	122	135	166	-
FLIP 87- 32C	43	143	98	130	109	132	104	107	122	167	148
FLIP 87- 33C	43	145	99	135	114	131	104	117	138	167	148
FLIP 87- 35C	33	142	94	128	109	133	104	112	127	163	140
FLIP 87- 36C	45	145	98	134	109	132	102	116	122	167	148
FLIP 87- 37C	43	146	98	131	110	132	103	116	135	166	145
FLIP 87- 38C	38	146	98	131	110	132	104	121	135	163	141
FLIP 87- 39C	39	147	95	131	110	131	103	117	135	163	142
FLIP 87- 40C	38	144	93	129	109	132	104	121	124	167	141

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry Name	IRAN	IRAQ	ITALY	LEBANON	MOROCCO	PORTUGAL		SPAIN			SYRIA
	Karaj	Bakrajo	Tarquinia	Terbol	Marchouch	Elvas	Oeiras	Badajoz	Cordoba	El Encin	Aloppo
FLIP 87- 41C	43	144	95	129	110	129	104	111	135	161	144
FLIP 87- 42C	45	143	95	128	109	132	104	103	119	163	143
FLIP 87- 43C	36	145	94	124	109	131	104	108	127	162	137
FLIP 87- 45C	31	146	93	127	109	132	104	110	124	160	143
FLIP 87- 46C	45	146	98	134	109	132	102	127	122	168	-
FLIP 87- 49C	43	145	97	130	109	132	104	132	127	163	-
FLIP 87- 50C	-	147	97	128	109	132	101	113	122	164	143
FLIP 87- 51C	41	145	94	128	109	133	104	114	135	164	142
FLIP 87- 52C	-	145	96	127	109	131	104	110	132	165	-
FLIP 87- 53C	43	146	95	131	115	131	103	131	135	167	143
FLIP 87- 54C	43	144	95	136	109	131	102	103	119	160	-
FLIP 87- 55C	33	144	94	124	109	133	104	111	124	162	143
FLIP 87- 60C	35	146	93	125	109	131	104	108	116	165	-
FLIP 87- 62C	34	146	93	127	114	132	101	113	124	164	141
FLIP 87- 63C	31	143	93	127	109	131	104	111	124	163	141
FLIP 87- 64C	35	144	95	128	109	133	102	105	119	162	-
FLIP 87- 68C	37	143	97	128	109	133	104	113	135	165	143
FLIP 87- 69C	38	145	93	131	109	133	101	119	146	167	-
FLIP 87- 70C	43	144	98	131	110	131	104	113	126	165	145
FLIP 87- 76C	39	142	100	132	109	133	101	122	149	163	140
FLIP 87- 77C	36	144	94	128	123	133	104	113	127	162	139
FLIP 87- 84C	53	145	98	137	110	130	103	108	137	172	151
FLIP 87- 87C	41	144	94	130	109	133	104	115	124	166	139
FLIP 87- 88C	40	142	97	130	109	132	104	122	127	162	137
FLIP 81-293C	44	143	96	129	109	133	104	118	134	165	143
ILC 482	37	145	94	128	109	132	103	110	121	161	141
Local check	44	144	95	130	109	132	104	113	135	164	144
Location Mean	42	144	96	131	110	132	103	117	130	164	141
S.E. of Mean	0.80	0.65	0.56	0.60	0.29	0.84	0.38	2.44	2.58	0.65	1.13
L.S.D. at 5% for:											
Checks	2.77	2.23	1.93	2.08	1.00	2.90	1.32	8.44	8.94	2.25	3.92
T.E. in S.B.	5.53	4.47	3.87	4.16	2.00	5.80	2.64	16.88	17.88	4.50	7.84
T.E. in D.B.	6.39	5.16	4.47	4.80	2.31	6.69	3.05	19.49	20.64	5.20	9.06
Checks Vs T.E.	5.05	4.08	3.53	3.80	1.82	5.29	2.41	15.41	16.32	4.11	7.16
C.V. (%)	3.84	0.90	1.16	0.92	0.53	1.27	0.74	4.16	3.97	0.79	2.04

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry Name	SYRIA								TURKEY		(1)
	Al Ghab	Gelline	Hama	Izra'a	jableh	Jindiress	Tartus	Tel Hadya	Diyarbakir	Samsun	Overall Mean
FLIP 86- 50C	118	96	115	99	94	134	105	124	136	215	126
FLIP 86- 64C	119	97	124	100	96	137	102	121	135	209	126
FLIP 86- 66C	122	97	124	103	101	146	103	125	-	214	130
FLIP 86- 76C	119	97	120	96	102	137	102	123	137	215	127
FLIP 86- 81C	117	96	120	90	95	140	105	118	-	204	126
FLIP 86- 87C	119	96	120	97	104	139	102	124	-	-	128
FLIP 86- 88C	122	97	125	99	103	144	105	126	-	214	130
FLIP 86- 89C	118	96	120	99	98	137	103	125	-	214	128
FLIP 86- 93C	120	99	120	99	101	140	104	123	-	214	129
FLIP 86- 95C	116	93	121	97	94	138	104	122	-	203	125
FLIP 86- 96C	117	96	119	92	94	137	102	121	-	210	124
FLIP 86-102C	119	98	122	99	100	140	102	124	-	-	127
FLIP 86-104C	117	94	125	97	97	139	101	121	-	208	125
FLIP 86-105C	116	97	119	90	95	139	103	121	-	210	124
FLIP 86-109C	115	99	121	97	94	138	102	121	132	210	124
FLIP 86-111C	116	96	121	98	96	134	104	121	-	204	126
FLIP 87- 12C	117	96	121	98	98	139	99	122	-	211	126
FLIP 87- 17C	120	97	119	99	97	139	102	125	-	214	125
FLIP 87- 18C	120	98	119	103	100	140	104	125	-	211	129
FLIP 87- 19C	115	92	117	97	87	134	99	119	131	200	122
FLIP 87- 20C	120	94	121	102	101	140	102	130	-	217	129
FLIP 87- 21C	119	96	121	97	96	139	102	121	-	-	125
FLIP 87- 22C	119	99	122	98	98	140	102	123	-	215	126
FLIP 87- 27C	116	91	117	98	93	134	103	123	-	214	123
FLIP 87- 28C	118	94	120	97	98	137	103	124	-	217	125
FLIP 87- 29C	120	96	120	98	98	137	102	126	-	211	127
FLIP 87- 30C	119	93	117	98	96	138	102	123	132	215	125
FLIP 87- 31C	118	94	116	98	96	138	102	123	-	217	125
FLIP 87- 32C	117	94	124	93	93	138	102	120	-	208	124
FLIP 87- 33C	117	94	119	96	97	137	105	124	-	210	126
FLIP 87- 35C	117	91	114	99	92	134	97	124	131	217	122
FLIP 87- 36C	118	96	120	98	100	137	104	124	-	214	126
FLIP 87- 37C	119	94	117	97	96	134	104	124	-	-	125
FLIP 87- 38C	119	94	117	98	94	138	103	123	132	215	126
FLIP 87- 39C	118	94	117	98	98	133	104	122	-	-	125
FLIP 87- 40C	117	94	117	92	98	134	102	119	131	205	124

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry Name	SYRIA								TURKEY		(1)
	Al Ghab	Gellino	Hama	Izra'a	jableh	Jindiress	Tartus	Tol Hadya	Diyarbakir	Samsun	Overall Mean
FLIP 87- 41C	117	91	115	97	97	134	101	123	-	-	123
FLIP 87- 42C	115	92	117	92	97	133	100	121	131	208	122
FLIP 87- 43C	119	89	114	90	87	132	99	122	132	207	121
FLIP 87- 45C	118	91	115	89	88	134	101	118	131	204	122
FLIP 87- 46C	121	97	121	100	97	140	104	125	-	208	127
FLIP 87- 49C	118	94	116	96	97	137	100	122	-	211	125
FLIP 87- 50C	117	91	116	92	94	134	100	121	-	211	123
FLIP 87- 51C	117	89	114	91	89	134	99	118	132	217	123
FLIP 87- 52C	116	98	119	91	98	137	102	118	-	200	124
FLIP 87- 53C	117	94	122	97	94	139	102	125	-	-	126
FLIP 87- 54C	118	90	115	91	92	137	100	121	-	211	122
FLIP 87- 55C	119	89	116	90	88	132	99	115	131	211	121
FLIP 87- 60C	113	93	119	89	85	129	101	116	129	200	121
FLIP 87- 62C	117	93	117	94	90	133	101	121	132	204	123
FLIP 87- 63C	115	90	117	90	95	134	102	120	-	196	122
FLIP 87- 64C	116	91	115	92	89	134	100	121	-	208	121
FLIP 87- 68C	117	90	116	93	94	133	101	121	132	217	124
FLIP 87- 69C	116	100	125	97	94	133	103	121	132	200	126
FLIP 87- 70C	118	93	117	96	98	139	102	123	-	-	125
FLIP 87- 76C	118	96	120	98	94	139	102	122	-	211	132
FLIP 87- 77C	116	93	116	96	90	132	99	119	131	211	123
FLIP 87- 84C	120	94	121	98	104	139	102	124	-	215	127
FLIP 87- 87C	116	94	121	99	93	137	100	122	-	211	124
FLIP 87- 88C	117	93	116	102	90	136	99	122	-	207	124
FLIP 81-293C	117	94	123	96	93	139	103	121	136	210	125
ILC 482	116	90	115	92	87	133	100	121	131	207	121
Local check	121	96	122	99	99	139	102	126	132	209	
Location Mean	118	94	119	96	95	137	102	122	132	210	
S.E. of Mean	0.61	0.22	0.29	0.83	0.85	0.49	0.50	1.19	0.02	0.88	
L.S.D. at 5% for:											
Checks	2.10	0.76	1.00	2.87	2.96	1.71	1.73	4.11	0.07	3.05	
T.E. in S.B.	4.20	1.53	2.00	5.74	5.91	3.41	3.46	8.22	0.15	6.10	
T.E. in D.B.	4.85	1.76	2.31	6.63	6.82	3.94	4.00	9.49	0.17	7.05	
Checks Vs T.E.	3.83	1.39	1.82	5.24	5.40	3.12	3.16	7.50	0.13	5.57	
C.V. (%)	1.03	0.47	0.48	1.73	1.80	0.72	0.98	1.94	0.07	0.95	

(1) Quito, Karaj, Aleppo, Diyarbakir and samsun were excluded from the overall mean.

Table 3.8.3. Adjusted time to maturity (days) of entries at different locations in the CISN-W during 1988/89.

Entry Name	ALGERIA	BULGARIA	CHILE	FRANCE	IRAN	IRAQ	ITALY	LEBANON
	Setif	Toshevo	Chillan	Montboucher	Karaj	Bakrajo	Tarquimia	Terbol
FLIP 86- 50C	233	277	183	230	108	189	146	179
FLIP 86- 64C	236	277	183	227	95	184	143	175
FLIP 86- 66C	243	282	185	225	103	191	154	177
FLIP 86- 76C	229	277	186	230	102	186	146	177
FLIP 86- 81C	240	276	185	230	104	190	152	182
FLIP 86- 87C	230	277	186	230	-	188	151	177
FLIP 86- 88C	245	280	185	225	-	186	159	185
FLIP 86- 89C	244	280	185	222	103	185	154	183
FLIP 86- 93C	245	279	185	228	100	188	159	185
FLIP 86- 95C	225	276	182	224	103	190	157	178
FLIP 86- 96C	232	273	185	224	103	184	145	176
FLIP 86-102C	231	277	186	227	101	189	146	179
FLIP 86-104C	229	272	185	216	99	188	151	171
FLIP 86-105C	227	277	185	233	108	185	157	178
FLIP 86-109C	221	275	182	227	104	188	152	178
FLIP 86-111C	236	275	185	227	106	190	157	178
FLIP 87- 12C	237	274	184	220	99	186	145	177
FLIP 87- 17C	230	273	185	225	99	187	154	177
FLIP 87- 18C	224	279	185	225	99	189	154	179
FLIP 87- 19C	230	272	182	224	105	186	149	176
FLIP 87- 20C	235	276	187	229	101	186	153	179
FLIP 87- 21C	231	274	186	221	101	191	139	177
FLIP 87- 22C	234	275	186	227	106	188	143	175
FLIP 87- 27C	234	275	185	219	-	184	154	173
FLIP 87- 28C	225	278	184	226	100	185	148	175
FLIP 87- 29C	229	272	185	219	96	185	147	173
FLIP 87- 30C	229	274	183	221	103	188	146	171
FLIP 87- 31C	224	277	187	223	102	185	153	175
FLIP 87- 32C	226	274	185	225	99	185	154	175
FLIP 87- 33C	225	275	185	224	-	182	157	178
FLIP 87- 35C	223	278	187	223	106	183	141	171
FLIP 87- 36C	226	276	185	222	98	186	147	175
FLIP 87- 37C	232	274	186	227	99	191	146	175
FLIP 87- 38C	225	278	183	221	96	188	146	169
FLIP 87- 39C	221	277	183	221	101	190	139	171
FLIP 87- 40C	221	275	185	224	104	183	149	178

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry Name	ALGERIA	BULGARIA	CHILE	FRANCE	IRAN	IRAQ	ITALY	LEBANON
	Setif	Toshevo	Chillan	Montboucher	Karaj	Bakrajo	Tarquinia	Terbol
FLIP 87- 41C	222	274	186	224	96	188	146	167
FLIP 87- 42C	226	272	182	219	99	183	147	169
FLIP 87- 43C	222	273	187	220	107	185	141	162
FLIP 87- 45C	230	275	182	218	102	185	145	170
FLIP 87- 46C	230	276	185	225	99	189	154	181
FLIP 87- 49C	220	278	184	226	104	187	153	171
FLIP 87- 50C	223	281	184	223	-	189	148	173
FLIP 87- 51C	229	274	187	223	103	187	148	171
FLIP 87- 52C	228	272	182	218	-	185	145	170
FLIP 87- 53C	234	277	186	224	101	188	139	171
FLIP 87- 54C	238	272	185	225	100	186	147	175
FLIP 87- 55C	227	276	187	220	103	184	148	167
FLIP 87- 60C	235	274	185	221	104	189	145	170
FLIP 87- 62C	223	274	182	224	102	186	145	172
FLIP 87- 63C	225	270	185	224	102	187	145	170
FLIP 87- 64C	234	271	185	222	97	187	147	167
FLIP 87- 68C	223	273	187	220	104	181	141	171
FLIP 87- 69C	227	273	182	224	102	188	152	176
FLIP 87- 70C	230	277	186	227	102	187	146	177
FLIP 87- 76C	227	275	187	220	100	182	148	177
FLIP 87- 77C	229	273	187	220	106	184	148	171
FLIP 87- 84C	235	277	186	230	101	188	151	177
FLIP 87- 87C	223	273	187	220	100	184	148	171
FLIP 87- 88C	227	273	187	223	100	182	153	173
FLIP 81-293C	222	275	185	223	102	187	149	171
ILC 482	228	273	184	221	99	188	147	170
Local check	235	273	184	221	100	187	147	173
Location Mean	229	275	185	224	100	186	148	174
S.E. of Mean	0.94	0.92	0.71	1.20	1.52	1.34	0.94	0.58
L.S.D. at 5% for:								
Checks	3.26	3.20	2.45	4.15	5.26	4.64	3.25	2.00
T.E. in S.B.	6.52	6.40	4.89	8.30	10.52	9.28	6.50	4.00
T.E. in D.B.	7.53	7.39	5.65	9.58	12.15	10.72	7.50	4.61
Checks Vs T.E.	5.96	5.84	4.47	7.58	9.61	8.47	5.93	3.65
C.V. (%)	0.82	0.67	0.76	1.07	3.05	1.44	1.27	0.67

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry Name	PORTUGAL		SPAIN		SYRIA			
	Elvas	Oeiras	Badajoz	El Encin	Aleppo	Al Ghab	Gelline	Hama
FLIP 86- 50C	206	168	185	219	174	161	129	157
FLIP 86- 64C	204	168	180	215	172	158	130	159
FLIP 86- 66C	207	166	180	220	166	159	129	161
FLIP 86- 76C	206	168	180	219	177	159	132	160
FLIP 86- 81C	206	170	197	219	-	160	132	161
FLIP 86- 87C	203	165	183	219	178	159	129	159
FLIP 86- 88C	207	166	180	218	176	161	132	163
FLIP 86- 89C	207	166	181	219	-	161	130	160
FLIP 86- 93C	207	166	180	220	-	163	130	163
FLIP 86- 95C	203	166	184	221	170	159	128	161
FLIP 86- 96C	203	167	178	219	171	157	128	161
FLIP 86-102C	204	165	179	218	176	160	129	161
FLIP 86-104C	204	166	180	217	-	157	129	159
FLIP 86-105C	207	170	197	217	-	161	129	161
FLIP 86-109C	203	166	184	217	171	159	130	161
FLIP 86-111C	203	166	184	216	175	160	131	162
FLIP 87- 12C	204	169	182	216	-	159	131	161
FLIP 87- 17C	207	166	179	215	-	160	128	160
FLIP 87- 18C	204	166	180	218	174	160	132	161
FLIP 87- 19C	203	167	179	220	174	157	127	160
FLIP 87- 20C	204	169	200	215	-	160	128	160
FLIP 87- 21C	203	165	180	216	172	157	136	161
FLIP 87- 22C	206	168	179	220	178	159	130	161
FLIP 87- 27C	204	166	181	219	170	157	127	159
FLIP 87- 28C	207	166	181	217	176	158	128	158
FLIP 87- 29C	203	166	180	213	168	157	128	155
FLIP 87- 30C	206	168	180	219	175	156	127	155
FLIP 87- 31C	207	166	195	216	-	159	129	158
FLIP 87- 32C	203	166	180	214	167	157	129	161
FLIP 87- 33C	207	170	180	219	166	159	130	161
FLIP 87- 35C	204	166	183	217	170	157	126	156
FLIP 87- 36C	204	166	179	218	172	159	131	160
FLIP 87- 37C	204	165	179	215	176	160	133	159
FLIP 87- 38C	204	168	180	215	173	153	127	156
FLIP 87- 39C	204	165	181	219	173	158	128	155
FLIP 87- 40C	203	170	185	218	173	160	130	160

Table 3.8.3. Cont'd. ...

Entry Name	PORTUGAL		SPAIN		SYRIA			
	Elvas	Oairas	Badajoz	El Encin	Aloppo	Al Ghab	Golline	Hama
FLIP 87- 41C	203	165	179	217	171	156	125	154
FLIP 87- 42C	203	166	180	215	167	157	126	159
FLIP 87- 43C	204	166	181	212	171	156	125	155
FLIP 87- 45C	203	167	178	217	171	156	127	155
FLIP 87- 46C	207	166	180	216	-	159	130	161
FLIP 87- 49C	204	166	181	216	-	157	127	156
FLIP 87- 50C	204	166	181	216	172	157	125	158
FLIP 87- 51C	204	166	181	211	169	157	125	158
FLIP 87- 52C	203	167	178	217	-	157	126	159
FLIP 87- 53C	206	165	180	214	172	157	130	158
FLIP 87- 54C	203	166	180	217	-	158	127	158
FLIP 87- 55C	204	166	184	211	167	158	126	155
FLIP 87- 60C	203	170	179	214	-	156	127	159
FLIP 87- 62C	203	170	180	217	168	157	129	158
FLIP 87- 63C	203	167	178	216	171	156	126	157
FLIP 87- 64C	203	166	178	213	-	157	126	153
FLIP 87- 68C	204	166	181	215	171	156	125	158
FLIP 87- 69C	203	166	180	220	-	156	-	163
FLIP 87- 70C	203	165	180	218	178	160	131	159
FLIP 87- 76C	204	166	183	215	168	159	129	161
FLIP 87- 77C	204	166	181	215	170	156	126	158
FLIP 87- 84C	204	165	179	220	179	159	129	159
FLIP 87- 87C	204	166	184	211	170	158	126	157
FLIP 87- 88C	204	169	180	216	169	156	128	157
FLIP 81-293C	204	167	180	214	173	157	128	158
ILC 482	203	166	180	216	172	156	126	156
Local check	204	168	182	216	172	159	130	161
Location Moan	204	167	181	216	172	158	128	159
S.E. of Moan	0.28	0.5	0.64	0.91	1.19	0.38	0.36	0.43
L.S.D. at 5% for:	0.96	1.73	2.22	3.16	4.12	1.32	1.26	1.50
T.E. in S.B.	1.91	3.46	4.43	6.32	8.24	2.64	2.51	3.00
T.E. in D.B.	2.21	4.00	5.12	7.29	9.51	3.05	2.90	3.46
Checks Vs T.E.	1.75	3.16	4.04	5.77	7.52	2.41	2.30	2.74
C.V. (%)	0.27	0.6	0.71	0.84	1.78	0.48	0.58	0.55

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry Name	SYRIA					TURKEY		(1)
	Izra'a	Jableh	Jindiress	Tartus	Tel Hadya	Diyarbakir	Samsun	Overall Mean
FLIP 86- 50C	137	129	181	144	158	176	272	182
FLIP 86- 64C	130	127	176	139	155	175	272	179
FLIP 86- 66C	139	137	181	149	157	177	271	184
FLIP 86- 76C	134	135	180	147	155	176	268	181
FLIP 86- 81C	136	138	181	143	160	178	266	184
FLIP 86- 87C	137	136	181	144	155	178	-	182
FLIP 86- 88C	139	140	182	149	162	178	271	185
FLIP 86- 89C	139	136	180	145	161	177	271	183
FLIP 86- 93C	139	138	182	137	161	178	271	184
FLIP 86- 95C	132	136	179	146	155	175	266	181
FLIP 86- 96C	128	128	176	138	154	175	269	179
FLIP 86-102C	137	134	182	144	157	176	-	182
FLIP 86-104C	131	130	177	139	154	175	265	179
FLIP 86-105C	136	136	181	143	155	177	266	183
FLIP 86-109C	135	136	182	143	155	173	266	181
FLIP 86-111C	137	136	182	146	158	176	269	183
FLIP 87- 12C	138	133	183	148	157	177	268	182
FLIP 87- 17C	138	137	181	139	157	176	271	181
FLIP 87- 18C	140	136	181	149	160	178	271	183
FLIP 87- 19C	131	128	178	136	154	175	266	179
FLIP 87- 20C	139	134	183	148	157	178	274	184
FLIP 87- 21C	137	132	182	144	155	177	-	180
FLIP 87- 22C	136	129	182	144	155	175	272	181
FLIP 87- 27C	136	128	176	139	155	176	271	180
FLIP 87- 28C	134	133	179	148	156	176	274	181
FLIP 87- 29C	133	130	177	137	161	174	265	179
FLIP 87- 30C	136	129	176	147	154	174	272	179
FLIP 87- 31C	137	129	177	145	156	176	274	181
FLIP 87- 32C	130	128	179	139	156	175	265	180
FLIP 87- 33C	137	136	180	143	155	176	272	181
FLIP 87- 35C	130	124	176	138	156	174	274	178
FLIP 87- 36C	136	134	180	140	157	177	268	180
FLIP 87- 37C	133	133	179	147	155	175	-	181
FLIP 87- 38C	127	127	175	137	154	174	272	178
FLIP 87- 39C	131	129	175	144	154	174	-	178
FLIP 87- 40C	135	136	176	136	154	176	272	180

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry Name	SYRIA					TURKEY		(1)
	Izra'a	Jableh	Jindiress	Tartus	Tol Hadya	Diyarbakir	Samsun	Overall Mean
FLIP 87- 41C	127	127	175	139	154	176	-	178
FLIP 87- 42C	129	128	175	137	155	175	267	178
FLIP 87- 43C	129	124	176	138	155	174	268	177
FLIP 87- 45C	127	128	175	136	152	174	266	177
FLIP 87- 46C	140	134	182	144	162	177	265	183
FLIP 87- 49C	129	131	177	140	157	175	268	179
FLIP 87- 50C	129	131	178	140	155	174	268	179
FLIP 87- 51C	129	129	176	138	154	174	274	179
FLIP 87- 52C	127	128	176	136	153	174	272	178
FLIP 87- 53C	132	132	176	144	154	174	-	179
FLIP 87- 54C	131	129	180	134	157	176	265	180
FLIP 87- 55C	129	122	177	138	149	174	268	178
FLIP 87- 60C	127	128	175	136	148	174	266	178
FLIP 87- 62C	128	128	175	136	154	176	266	178
FLIP 87- 63C	127	128	175	138	153	174	266	178
FLIP 87- 64C	129	128	175	134	154	174	271	178
FLIP 87- 68C	131	126	177	138	155	174	268	178
FLIP 87- 69C	134	128	175	143	155	174	272	180
FLIP 87- 70C	136	134	180	144	158	176	-	181
FLIP 87- 76C	137	129	182	138	157	175	268	180
FLIP 87- 77C	133	124	176	138	155	175	268	179
FLIP 87- 84C	134	135	181	144	155	176	272	182
FLIP 87- 87C	131	124	178	138	154	175	268	178
FLIP 87- 88C	139	136	179	135	157	175	268	180
FLIP 81-293C	131	129	178	144	155	175	268	179
ILC 482	129	129	175	137	153	175	268	178
Local check	138	135	180	144	159	177	270	
Location Mean	133	131	178	141	156	175	269	
S.E. of Mean	0.69	0.86	0.28	1.95	0.94	0.43	1.57	
L.S.D. at 5% for:								
Checks	2.38	2.98	0.96	6.73	3.26	1.50	5.42	
T.E. in S.B.	4.76	5.97	1.91	13.46	6.52	3.00	10.84	
T.E. in D.B.	5.49	6.89	2.21	15.55	7.53	3.46	12.51	
Checks Vs T.E.	4.34	5.45	1.75	12.29	5.96	2.74	9.89	
C.V. (%)	1.03	1.32	0.31	2.76	1.21	0.49	1.31	

(1) Karaj, Aleppo, Gelline and Samsun were excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 3.8.4. Adjusted plant height (cm) of entries at different blocks in the CISN-W during 1988/89.

Entry Name	ALGERIA	BULGARIA	CHILE	CYPRUS	IRAN	IRAQ	ITALY	LEBANON	MOROCCO
	Setif	Toshevo	Chilian	Athalassa	Karaj	Bakrajo	Tarquinia	Terbol	Marchouch
FLIP 86- 50C	40	70	48	59	33	39	49	41	62
FLIP 86- 64C	42	62	50	59	43	39	54	44	53
FLIP 86- 66C	53	78	57	68	70	37	54	55	27
FLIP 86- 76C	48	73	66	69	54	54	64	47	57
FLIP 86- 81C	53	75	57	59	48	53	65	45	68
FLIP 86- 87C	48	75	55	59	-	49	49	51	53
FLIP 86- 88C	47	81	60	58	-	52	59	50	41
FLIP 86- 89C	45	74	55	58	34	32	49	42	36
FLIP 86- 93C	47	68	52	63	53	42	54	50	50
FLIP 86- 95C	48	66	54	59	34	43	55	40	60
FLIP 86- 96C	40	54	42	54	38	48	40	40	46
FLIP 86-102C	50	74	46	64	42	29	59	41	67
FLIP 86-104C	47	68	48	58	39	37	49	38	22
FLIP 86-105C	54	56	52	59	63	43	70	45	63
FLIP 86-109C	46	70	57	59	28	53	60	48	32
FLIP 86-111C	54	72	52	64	50	53	65	52	63
FLIP 87- 12C	49	63	48	64	30	37	62	41	76
FLIP 87- 17C	51	76	55	68	50	42	64	48	38
FLIP 87- 18C	54	81	50	68	52	57	59	55	63
FLIP 87- 19C	41	63	52	54	28	63	70	40	63
FLIP 87- 20C	54	77	73	64	30	42	67	49	52
FLIP 87- 21C	53	68	61	59	44	49	64	49	37
FLIP 87- 22C	46	74	61	64	40	54	64	47	72
FLIP 87- 27C	48	71	57	53	-	27	59	38	54
FLIP 87- 28C	47	66	65	59	44	37	42	43	51
FLIP 87- 29C	45	64	45	58	40	42	49	38	58
FLIP 87- 30C	45	72	67	64	42	44	59	47	65
FLIP 87- 31C	42	65	48	54	48	47	52	41	51
FLIP 87- 32C	45	61	40	58	34	27	44	35	25
FLIP 87- 33C	52	66	59	64	30	38	60	42	72
FLIP 87- 35C	36	60	39	49	62	47	47	36	58
FLIP 87- 36C	49	73	45	73	33	47	59	48	60
FLIP 87- 37C	47	74	71	59	39	39	59	39	63
FLIP 87- 38C	42	56	45	54	51	44	34	37	57
FLIP 87- 39C	43	68	61	54	34	39	49	44	58
FLIP 87- 40C	51	52	52	59	26	53	50	42	45

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	ALGERIA	BULGARIA	CHILE	CYPRUS	IRAN	IRAQ	ITALY	LEBANON	MOROCCO
	Setif	Toshevo	Chillan	Athalassa	Karaj	Bakrajo	Tarquinia	Terbol	Marchouch
FLIP 87- 41C	46	59	56	54	29	19	44	34	50
FLIP 87- 42C	45	54	45	53	35	47	44	35	20
FLIP 87- 43C	42	54	48	44	38	17	42	34	62
FLIP 87- 45C	40	56	47	49	30	53	50	38	74
FLIP 87- 49C	44	60	50	44	42	47	47	39	43
FLIP 87- 50C	44	60	52	49	-	-	42	36	56
FLIP 87- 51C	37	46	43	44	33	42	42	39	54
FLIP 87- 52C	37	56	37	49	-	48	35	35	49
FLIP 87- 53C	46	70	56	54	51	44	54	39	59
FLIP 87- 54C	43	64	38	58	33	27	49	38	45
FLIP 87- 55C	39	51	48	44	33	37	47	33	53
FLIP 87- 60C	41	60	44	49	27	53	60	38	77
FLIP 87- 62C	36	49	32	49	29	53	40	38	39
FLIP 87- 63C	37	56	37	49	28	53	40	38	74
FLIP 87- 64C	42	55	40	58	39	47	49	40	36
FLIP 87- 68C	44	51	48	49	26	52	42	39	52
FLIP 87- 69C	39	55	42	59	29	38	55	38	62
FLIP 87- 70C	49	77	59	64	44	29	54	54	65
FLIP 87- 76C	43	59	58	59	43	47	52	41	57
FLIP 87- 77C	39	53	51	54	28	52	57	39	65
FLIP 87- 84C	58	89	65	59	64	34	59	49	60
FLIP 87- 87C	41	64	49	49	36	57	57	36	39
FLIP 87- 88C	40	47	38	44	36	-	47	36	35
FLIP 81-293C	46	64	50	56	42	40	50	39	57
ILC 482	43	54	46	54	39	46	46	38	58
Local check	36	60	46	63	33	39	40	37	49
Location Mean	45	64	51	57	40	43	52	41	54
S.E. of Mean	1.46	3.16	2.06	2.39	3.16	3.37	2.00	0.90	4.84
L.S.D. at 5% for:									
Checks	5.04	10.93	7.13	8.28	10.92	11.67	6.91	3.12	16.76
T.E. in S.B.	10.07	21.86	14.26	16.56	21.84	23.33	13.83	6.24	33.52
T.E. in D.B.	11.63	25.24	16.46	19.13	25.21	26.94	15.97	7.20	38.71
Checks Vs T.E.	9.20	19.96	13.02	15.12	19.94	21.30	12.63	5.70	30.61
C.V. (%)	6.50	9.86	8.12	8.38	15.94	16.11	7.71	4.35	18.05

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	PORTUGAL		SPAIN			SYRIA			
	Elvas	Oeiras	Badajoz	Cordoba	El Encin	Aleppo	Al Ghab	Golline	Hama
FLIP 86- 50C	45	60	53	65	56	43	50	31	40
FLIP 86- 64C	64	55	45	65	50	47	50	34	40
FLIP 86- 66C	56	90	46	70	70	39	60	42	45
FLIP 86- 76C	54	45	58	72	68	40	60	33	45
FLIP 86- 81C	54	68	52	75	74	-	59	42	47
FLIP 86- 87C	50	75	58	70	66	36	55	34	45
FLIP 86- 88C	49	72	50	72	74	33	55	43	45
FLIP 86- 89C	66	79	64	68	58	-	60	39	40
FLIP 86- 93C	75	89	48	65	60	-	60	36	45
FLIP 86- 95C	47	84	44	73	67	40	49	31	37
FLIP 86- 96C	51	69	41	54	55	48	49	34	32
FLIP 86-102C	56	55	60	78	67	37	55	32	40
FLIP 86-104C	54	67	47	68	54	-	50	36	35
FLIP 86-105C	54	72	50	79	67	-	59	43	47
FLIP 86-109C	51	89	44	68	75	45	49	36	47
FLIP 86-111C	58	57	52	63	62	42	59	41	52
FLIP 87- 12C	54	57	52	75	66	-	55	42	43
FLIP 87- 17C	53	64	56	74	64	-	65	41	50
FLIP 87- 18C	57	61	50	77	65	39	65	50	50
FLIP 87- 19C	48	89	49	72	72	38	49	37	37
FLIP 87- 20C	59	72	59	76	76	-	55	41	48
FLIP 87- 21C	50	65	62	81	56	32	50	38	50
FLIP 87- 22C	58	65	55	68	63	37	55	35	45
FLIP 87- 27C	59	74	63	66	62	37	50	34	40
FLIP 87- 28C	54	70	54	60	58	47	50	33	38
FLIP 87- 29C	63	87	40	64	40	47	50	31	40
FLIP 87- 30C	58	75	47	70	71	36	60	36	45
FLIP 87- 31C	54	52	48	65	63	-	50	36	38
FLIP 87- 32C	65	55	42	64	56	41	50	31	40
FLIP 87- 33C	50	74	46	65	69	32	54	36	42
FLIP 87- 35C	42	82	46	63	50	43	40	32	38
FLIP 87- 36C	60	67	44	78	56	41	60	42	50
FLIP 87- 37C	54	75	61	65	68	43	55	36	45
FLIP 87- 38C	47	80	48	63	55	43	55	28	40
FLIP 87- 39C	52	65	54	63	59	41	50	34	40
FLIP 87- 40C	47	79	49	62	55	37	44	33	42

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	PORTUGAL		SPAIN			SYRIA			
	Elvas	Ooiras	Badajoz	Cordoba	El Encin	Aloppo	Al Ghab	Gellino	Hama
FLIP 87- 41C	50	60	53	69	54	30	45	29	35
FLIP 87- 42C	56	47	42	66	43	37	50	33	35
FLIP 87- 43C	51	69	28	50	56	42	40	29	28
FLIP 87- 45C	40	74	50	64	61	39	49	34	32
FLIP 87- 46C	61	67	47	80	63	-	60	42	45
FLIP 87- 49C	48	82	43	62	56	-	50	35	38
FLIP 87- 50C	45	73	41	67	53	46	45	32	33
FLIP 87- 51C	51	72	34	57	48	46	40	32	23
FLIP 87- 52C	47	66	34	53	57	-	44	32	27
FLIP 87- 53C	48	70	54	70	60	35	50	31	35
FLIP 87- 54C	67	72	53	69	52	-	45	34	40
FLIP 87- 55C	49	67	37	59	51	42	40	27	28
FLIP 87- 60C	47	94	47	69	65	-	49	31	37
FLIP 87- 62C	44	87	36	59	61	33	49	35	37
FLIP 87- 63C	47	79	47	54	57	42	44	34	32
FLIP 87- 64C	50	69	37	63	40	-	45	34	35
FLIP 87- 68C	49	90	50	59	56	41	40	33	33
FLIP 87- 69C	47	84	44	68	57	-	54	31	37
FLIP 87- 70C	58	60	60	68	65	36	50	32	45
FLIP 87- 76C	62	57	50	66	67	47	50	33	38
FLIP 87- 77C	55	92	45	56	46	45	50	32	28
FLIP 87- 84C	43	80	56	74	83	38	55	34	40
FLIP 87- 87C	51	72	48	72	55	41	50	31	38
FLIP 87- 88C	39	71	40	58	47	36	45	29	33
FLIP 81-293C	46	68	43	66	56	40	49	33	35
ILC 482	45	79	46	66	49	39	50	32	35
Local check	55	72	51	65	61	39	58	43	45
Location Mean	52	72	48	67	59	40	52	35	39
S.E. of Mean	2.00	7.79	3.32	2.84	1.98	3.27	1.91	1.48	1.18
L.S.D. at 5% for:									
Checks	6.91	26.96	11.48	9.82	6.85	11.31	6.61	5.12	4.08
T.E. in S.B.	13.83	53.92	22.96	19.64	13.70	22.62	13.21	10.24	8.16
T.E. in D.B.	15.97	62.26	26.51	22.68	15.81	26.12	15.26	11.82	9.42
Checks Vs T.E.	12.63	49.23	20.96	17.93	12.50	20.66	12.06	9.35	7.45
C.V. (%)	7.71	21.74	13.82	8.53	6.69	21.22	7.39	8.39	5.99

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	SYRIA					TURKEY		(1) Overall Mean
	Izra'a	Jableh	Jindireess	Tartus	Tel Hadya	Diyarbakir	Samsun	
FLIP 86- 50C	21	54	36	31	29	29	65	47
FLIP 86- 64C	23	64	46	36	42	44	83	49
FLIP 86- 66C	29	63	46	39	42	-	102	54
FLIP 86- 76C	24	70	49	36	42	42	86	54
FLIP 86- 81C	29	55	40	46	47	46	90	55
FLIP 86- 87C	24	62	44	36	41	38	-	53
FLIP 86- 88C	29	74	45	44	40	-	91	54
FLIP 86- 89C	25	62	41	49	39	-	83	52
FLIP 86- 93C	26	62	43	44	39	-	73	54
FLIP 86- 95C	19	63	35	36	40	36	75	50
FLIP 86- 96C	21	43	30	40	32	26	77	43
FLIP 86-102C	25	59	41	31	41	34	-	52
FLIP 86-104C	26	60	37	44	38	-	74	47
FLIP 86-105C	28	62	43	46	47	41	85	55
FLIP 86-109C	28	65	40	46	39	36	79	52
FLIP 86-111C	29	68	46	41	41	44	77	55
FLIP 87- 12C	27	69	40	34	37	37	88	53
FLIP 87- 17C	24	60	44	44	40	-	103	54
FLIP 87- 18C	30	70	49	39	43	-	94	57
FLIP 87- 19C	24	52	43	41	44	49	72	52
FLIP 87- 20C	25	73	47	39	36	43	101	57
FLIP 87- 21C	25	64	46	36	41	39	-	53
FLIP 87- 22C	25	69	37	46	39	43	83	54
FLIP 87- 27C	23	60	41	34	29	-	82	51
FLIP 87- 28C	23	73	41	29	40	-	81	50
FLIP 87- 29C	25	40	34	34	28	-	73	47
FLIP 87- 30C	25	61	41	31	38	34	85	54
FLIP 87- 31C	25	63	36	39	27	40	91	47
FLIP 87- 32C	19	53	32	39	32	-	66	44
FLIP 87- 33C	27	61	34	41	38	35	67	53
FLIP 87- 35C	21	53	30	34	25	27	77	44
FLIP 87- 36C	25	72	46	44	35	-	74	54
FLIP 87- 37C	25	63	48	31	39	39	-	54
FLIP 87- 38C	21	44	36	31	32	29	76	45
FLIP 87- 39C	21	54	36	36	39	32	-	49
FLIP 87- 40C	27	58	41	31	36	37	67	48

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry Name	SYRIA					TURKEY		(1) Overall Mean
	Izra'a	Jablöh	Jindiress	Tartus	Tol Hadya	Diyarbakir	Samsun	
FLIP 87- 41C	18	41	36	41	29	26	-	45
FLIP 87- 42C	25	50	35	39	30	-	71	42
FLIP 87- 43C	21	49	31	34	22	37	70	42
FLIP 87- 45C	22	45	31	36	30	34	62	46
FLIP 87- 46C	29	60	46	39	43	-	76	57
FLIP 87- 49C	24	63	36	29	33	-	72	46
FLIP 87- 50C	21	55	28	24	23	-	71	44
FLIP 87- 51C	21	56	26	34	29	27	61	41
FLIP 87- 52C	20	43	31	30	28	31	-	40
FLIP 87- 53C	22	57	36	31	34	34	-	49
FLIP 87- 54C	27	50	32	39	35	-	84	47
FLIP 87- 55C	22	59	27	29	20	26	69	41
FLIP 87- 60C	24	54	33	31	34	34	66	48
FLIP 87- 62C	23	43	32	41	30	31	38	43
FLIP 87- 63C	19	48	29	31	30	31	60	44
FLIP 87- 64C	22	44	33	34	33	-	75	43
FLIP 87- 68C	24	57	30	34	28	33	73	45
FLIP 87- 69C	21	42	38	36	34	34	72	47
FLIP 87- 70C	26	62	41	41	44	39	-	54
FLIP 87- 76C	27	68	42	29	37	39	90	50
FLIP 87- 77C	21	45	36	44	31	35	71	47
FLIP 87- 84C	23	59	46	36	44	43	103	56
FLIP 87- 87C	25	58	34	34	34	45	86	47
FLIP 87- 88C	19	43	26	44	28	-	65	40
FLIP 81-293C	24	57	38	39	36	33	80	47
ILC 482	22	51	36	33	33	27	67	46
Local check	26	66	46	41	41	40	74	
Location Mean	24	58	38	37	35	36	77	
S.E. of Mean	1.58	2.24	1.81	2.51	1.55	1.00	1.59	
L.S.D. at 5% for:								
Checks	5.47	7.73	6.24	8.69	5.36	3.45	5.51	
T.E. in S.B.	10.94	15.46	12.49	17.38	10.71	6.90	11.02	
T.E. in D.B.	12.63	17.86	14.42	20.07	12.37	7.96	12.72	
Checks Vs T.E.	9.99	14.12	11.40	15.87	9.78	6.30	10.06	
C.V. (%)	13.23	7.77	9.38	13.56	8.76	7.63	4.76	

(1) Karaj, Bakrajo, Aleppo, Diyarbakir and Samsun were excluded from the overall mean.

Table 3.8.5. 100-Seed weight (g) of entries at different locations in the CISN-W during 1988/89.

Entry Name	ALGERIA	BULGARIA	FRANCE	IRAN	IRAQ	ITALY	LEBANON	MEXICO	PORTUGAL
	Setif	Toshevo	Montboucher	Karaj	Bakrajo	Tarquinia	Terbol	Padilla Tam	Elvas
FLIP 86- 50C	36	47	42	35	27	43	46	34	36
FLIP 86- 64C	23	36	42	31	34	43	41	29	35
FLIP 86- 66C	36	44	38	37	37	43	39	32	36
FLIP 86- 76C	28	43	41	37	41	48	46	30	40
FLIP 86- 81C	39	48	44	42	45	49	50	90	40
FLIP 86- 87C	36	41	40	-	32	46	42	33	37
FLIP 86- 88C	40	57	44	-	48	48	55	90	44
FLIP 86- 89C	38	42	43	43	42	38	44	24	38
FLIP 86- 93C	42	55	52	43	49	43	57	30	44
FLIP 86- 95C	33	41	36	40	39	50	42	34	36
FLIP 86- 96C	33	41	43	39	38	48	49	-	41
FLIP 86-102C	38	43	40	36	38	50	-	34	42
FLIP 86-104C	27	32	30	28	25	38	31	24	29
FLIP 86-105C	34	41	36	38	41	43	42	37	35
FLIP 86-109C	34	40	40	37	42	45	43	40	38
FLIP 86-111C	37	49	44	44	47	58	50	-	38
FLIP 87- 12C	40	47	41	32	28	35	44	29	39
FLIP 87- 17C	-	38	39	37	39	53	45	29	36
FLIP 87- 18C	37	45	39	39	39	48	41	-	37
FLIP 87- 19C	29	33	29	29	31	44	35	20	32
FLIP 87- 20C	32	39	31	30	34	27	35	-	31
FLIP 87- 21C	37	44	38	42	39	42	48	30	39
FLIP 87- 22C	38	43	43	40	41	53	46	37	35
FLIP 87- 27C	37	45	44	-	40	48	45	32	38
FLIP 87- 28C	36	38	36	35	30	36	39	30	32
FLIP 87- 29C	35	35	35	33	32	38	36	35	33
FLIP 87- 30C	31	33	34	34	32	42	38	28	31
FLIP 87- 31C	40	42	44	33	34	35	41	31	38
FLIP 87- 32C	33	36	38	34	42	33	40	31	36
FLIP 87- 33C	35	40	41	33	39	45	42	37	31
FLIP 87- 35C	34	41	41	32	25	34	39	30	38
FLIP 87- 36C	32	38	40	30	34	48	39	32	35
FLIP 87- 37C	-	42	37	39	38	54	46	-	37
FLIP 87- 38C	28	33	35	29	29	40	37	32	28
FLIP 87- 39C	31	33	28	28	32	41	39	-	35
FLIP 87- 40C	30	40	31	33	40	43	41	31	37

Cont'd. ...

Table 3.8.5. Cont'd. ...

Entry Name	ALGERIA	BULGARIA	FRANCE	IRAN	IRAQ	ITALY	LEBANON	MEXICO	PORTUGAL
	Sotif	Toshevo	Montboucher	Karaj	Bakrajo	Tarquinia	Terbol	Padilla Tam	Elvas
FLIP 87- 41C	23	22	25	18	20	32	22	17	22
FLIP 87- 42C	35	35	36	35	34	33	37	33	36
FLIP 87- 43C	33	34	35	26	27	28	33	31	35
FLIP 87- 45C	29	31	32	29	34	38	37	27	32
FLIP 87- 46C	37	38	37	35	37	58	39	20	38
FLIP 87- 49C	-	33	34	28	29	41	31	25	31
FLIP 87- 50C	38	27	28	-	-	36	28	22	27
FLIP 87- 51C	40	35	33	29	33	29	35	70	34
FLIP 87- 52C	30	38	35	-	35	35	35	-	32
FLIP 87- 53C	30	32	29	24	27	40	32	24	31
FLIP 87- 54C	36	40	46	38	37	38	42	32	39
FLIP 87- 55C	35	35	36	28	40	34	38	31	33
FLIP 87- 60C	32	29	31	30	33	38	35	25	32
FLIP 87- 62C	34	34	31	32	36	39	35	31	35
FLIP 87- 63C	36	29	30	31	32	39	34	27	29
FLIP 87- 64C	34	32	29	29	27	38	33	29	31
FLIP 87- 68C	29	34	34	23	34	25	30	26	29
FLIP 87- 69C	32	40	41	36	41	49	44	34	36
FLIP 87- 70C	38	42	37	35	39	48	-	17	40
FLIP 87- 76C	40	47	45	36	38	38	43	35	38
FLIP 87- 77C	37	36	39	28	28	30	40	34	37
FLIP 87- 84C	40	43	41	39	44	56	45	-	39
FLIP 87- 87C	31	32	32	-	37	27	35	27	30
FLIP 87- 88C	29	27	25	28	-	41	24	19	24
FLIP 81-293C	29	32	30	28	33	39	32	26	29
ILC 482	30	31	31	30	30	35	34	28	31
Local check	31	27	28	28	34	30	37	28	30
Location Mean	34	37	36	32	35	40	39	32	34
S.E. of Mean	1.57	0.48	0.61	0.78	2.32	2.72	0.87	0.01	0.75
L.S.D. at 5% for:									
Checks	5.44	1.66	2.11	2.71	8.02	9.41	3.01	0.05	2.60
T.E. in S.B.	10.89	3.33	4.22	5.42	16.03	18.81	6.01	0.10	5.19
T.E. in D.B.	12.57	3.84	4.87	6.26	18.51	21.72	6.94	0.12	5.99
Checks Vs T.E.	9.94	3.04	3.85	4.95	14.64	17.17	5.49	0.09	4.74
C.V. (%)	9.82	2.59	3.41	4.91	13.63	13.59	4.96	0.10	4.39

Cont'd. ...

Table 3.8.5. Cont'd. ...

Entry Name	PORTUGAL	SPAIN		SYRIA				TURKEY	Overall Mean	(1)
	Oeiras	Badajoz	El Encin	Aleppo *	Jableh	Jindiress	Tel Hadya	Samsun		
FLIP 86- 50C	50	35	30	40	41	37	35	43	39	
FLIP 86- 64C	55	30	22	38	41	32	31	37	37	
FLIP 86- 66C	49	29	30	-	41	35	31	42	38	
FLIP 86- 76C	55	43	31	40	40	39	33	40	41	
FLIP 86- 81C	32	37	46	-	52	40	36	40	43	
FLIP 86- 87C	60	35	35	39	40	35	32	-	40	
FLIP 86- 88C	34	39	43	-	54	48	37	53	46	
FLIP 86- 89C	59	40	34	-	43	40	14	44	39	
FLIP 86- 93C	54	43	45	-	57	52	42	-	49	
FLIP 86- 95C	42	33	37	-	45	37	31	41	39	
FLIP 86- 96C	47	37	42	-	43	38	35	41	41	
FLIP 86-102C	70	38	37	35	46	40	35	-	44	
FLIP 86-104C	34	27	24	-	34	28	26	32	30	
FLIP 86-105C	42	29	35	-	48	35	32	35	39	
FLIP 86-109C	42	37	38	46	45	38	34	45	40	
FLIP 86-111C	37	39	33	-	50	43	39	52	44	
FLIP 87- 12C	24	39	35	-	45	39	38	48	37	
FLIP 87- 17C	49	30	30	-	45	38	29	50	40	
FLIP 87- 18C	44	37	30	-	42	40	31	45	39	
FLIP 87- 19C	37	27	33	-	35	30	26	36	33	
FLIP 87- 20C	14	35	31	-	34	32	27	39	30	
FLIP 87- 21C	55	40	37	41	45	38	36	-	41	
FLIP 87- 22C	50	39	31	-	39	37	34	44	41	
FLIP 87- 27C	39	45	33	-	46	41	31	45	40	
FLIP 87- 28C	49	39	34	-	38	36	26	41	36	
FLIP 87- 29C	39	31	28	-	33	31	29	43	33	
FLIP 87- 30C	49	30	34	-	36	29	26	38	35	
FLIP 87- 31C	59	40	32	-	40	35	32	41	39	
FLIP 87- 32C	39	29	32	-	39	34	30	33	36	
FLIP 87- 33C	32	32	39	-	45	39	31	47	38	
FLIP 87- 35C	59	36	30	-	39	36	30	40	37	
FLIP 87- 36C	44	-	35	31	38	38	30	42	38	
FLIP 87- 37C	55	38	29	28	43	39	34	-	41	
FLIP 87- 38C	50	29	23	45	32	27	25	35	32	
FLIP 87- 39C	50	32	28	33	34	28	26	-	34	
FLIP 87- 40C	37	34	36	-	40	33	33	38	37	

Cont'd. ...

Table 3.8.5. Cont'd. ...

Entry Name	PORTUGAL	SPAIN		SYRIA				TURKEY	(1)
	Ooiras	Badajoz	El Encin	Aleppo *	Jableh	Jindiross	Tel Hadya	Samsun	Overall Mean
FLIP 87- 41C	40	22	20	38	23	16	18	-	24
FLIP 87- 42C	44	33	32	-	36	32	29	38	35
FLIP 87- 43C	49	32	28	-	34	31	28	41	33
FLIP 87- 45C	32	29	32	-	32	27	28	35	32
FLIP 87- 46C	34	28	32	-	35	36	29	40	37
FLIP 87- 49C	39	27	30	-	31	28	25	32	32
FLIP 87- 50C	44	27	26	-	26	25	24	26	26
FLIP 87- 51C	49	35	26	-	36	30	30	37	34
FLIP 87- 52C	42	30	37	-	36	32	29	31	35
FLIP 87- 53C	50	31	26	43	32	25	25	-	32
FLIP 87- 54C	49	36	35	-	41	38	33	37	39
FLIP 87- 55C	39	34	26	-	43	34	29	36	34
FLIP 87- 60C	47	28	32	-	32	27	29	33	33
FLIP 87- 62C	37	33	34	-	34	31	27	35	34
FLIP 87- 63C	37	25	35	-	32	28	25	34	32
FLIP 87- 64C	34	20	31	-	32	27	26	31	31
FLIP 87- 68C	44	28	29	-	30	27	24	40	31
FLIP 87- 69C	47	32	40	-	44	37	37	48	41
FLIP 87- 70C	55	39	34	-	46	36	33	-	41
FLIP 87- 76C	54	34	32	-	45	39	38	44	41
FLIP 87- 77C	54	35	26	-	39	33	30	40	35
FLIP 87- 84C	60	37	32	33	46	38	32	46	43
FLIP 87- 87C	49	32	27	-	32	27	26	37	32
FLIP 87- 88C	44	24	23	41	25	21	20	26	25
FLIP 81-293C	41	27	28	43	32	27	25	34	31
ILC 482	43	29	27	-	33	26	26	36	31
Local check	43	30	22	31	31	28	24	38	
Location Mean	45	32	31	39	38	33	29	40	
S.E. of Mean	4.06	0.91	0.80		0.49	0.44	1.34	1.39	
L.S.D. at 5% for:									
Checks	14.05	3.16	2.76		1.70	1.52	4.65	4.79	
T.E. in S.B.	28.10	6.32	5.53		3.39	3.05	9.30	9.58	
T.E. in D.B.	32.45	7.30	6.38		3.92	3.52	10.74	11.07	
Checks Vs T.E.	25.66	5.77	5.05		3.10	2.78	8.49	8.75	
C.V. (%)	18.20	5.69	5.14		2.58	2.68	9.21	8.12	

(1) Setif, Terbol, Padilla Tam, Badajoz, Aleppo and Samsun 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 3.8.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-W during 1988/89.

Entry Name	ALGERIA		BULGARIA		CHILE		CYPRUS		FRANCE		IRAN		IRAQ	
	Setif		Toshevo		Chillan		Athalassa		Montboucher		Karaj		Bakrajo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 50C	869	48	3352	16	440	17	1709	72	1736	12	914	25	2615	3
FLIP 86- 64C	413	59	935	62	384	24	559	63	213	62	0	61	1531	31
FLIP 86- 66C	757	52	1120	61	201	52	1253	53	481	58	714	36	1448	34
FLIP 86- 76C	957	38	2602	43	415	20	1651	33	1513	21	148	56	1165	43
FLIP 86- 81C	913	45	3796	13	88	59	1273	52	1850	8	506	44	2037	12
FLIP 86- 87C	1391	10	4574	2	359	28	1676	30	1466	23	-	-	2365	7
FLIP 86- 88C	224	60	2731	38	51	62	712	62	658	55	-	-	656	51
FLIP 86- 89C	669	56	2454	48	138	56	1178	54	1170	41	428	48	648	52
FLIP 86- 93C	191	61	2315	51	282	41	1478	43	1940	6	1011	22	1456	33
FLIP 86- 95C	1580	5	4741	1	494	9	1773	18	1403	25	1506	10	1195	41
FLIP 86- 96C	780	51	4019	9	507	8	1356	47	1721	13	1706	6	2245	9
FLIP 86-102C	1180	23	2796	32	103	58	1834	11	1307	28	182	55	2240	10
FLIP 86-104C	991	36	3315	17	126	57	2003	7	846	53	777	32	2440	6
FLIP 86-105C	1202	20	2630	41	213	50	1481	42	1062	45	1335	14	1953	14
FLIP 86-109C	1080	28	2935	28	344	31	1156	55	1174	40	1152	15	1270	40
FLIP 86-111C	1035	30	4352	4	219	48	1365	46	1185	38	900	27	1545	30
FLIP 87- 12C	1372	11	3037	27	284	40	2323	1	1279	30	615	40	126	58
FLIP 87- 17C	-	-	3148	22	82	60	2028	5	1158	43	640	39	1698	21
FLIP 87- 18C	1357	12	2593	46	451	16	1795	15	1181	39	460	47	1373	38
FLIP 87- 19C	702	53	3380	15	488	11	1748	20	1209	36	1038	21	2478	4
FLIP 87- 20C	1461	7	1981	53	234	46	756	61	1644	16	1072	18	1017	48
FLIP 87- 21C	1135	26	4241	6	290	36	1609	36	483	57	725	34	1698	23
FLIP 87- 22C	902	46	3130	23	253	43	1817	12	730	54	668	37	2331	8
FLIP 87- 27C	1180	24	2926	29	276	42	1712	24	975	47	-	-	1056	46
FLIP 87- 28C	1483	6	2870	31	659	1	1415	45	2456	2	1055	19	0	61
FLIP 87- 29C	935	43	3315	18	51	61	1870	10	1317	27	1411	12	1831	16
FLIP 87- 30C	946	41	2741	37	603	2	1709	26	925	50	417	49	2448	5
FLIP 87- 31C	1806	2	3093	26	240	44	1648	34	3032	1	2123	1	459	54
FLIP 87- 32C	824	49	2648	39	288	37	1645	35	1211	35	645	38	1040	47
FLIP 87- 33C	1435	8	4046	7	288	39	1715	23	1679	14	1043	20	1387	37
FLIP 87- 35C	1028	31	1426	59	365	27	1698	28	1279	31	2089	2	1151	44
FLIP 87- 36C	880	47	3120	25	407	21	1687	29	952	48	125	57	1273	39
FLIP 87- 37C	1035	29	4019	8	321	33	1892	9	407	60	274	50	1698	22
FLIP 87- 38C	980	37	1185	60	290	35	1809	13	1825	9	571	41	2698	2
FLIP 87- 39C	946	42	1741	56	471	12	1084	58	130	63	45	58	1448	36
FLIP 87- 40C	957	39	2796	34	226	47	1573	38	274	61	529	42	1553	29

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	ALGERIA		BULGARIA		CHILE		CYPRUS		FRANCE		IRAN		IRAQ	
	Setif		Toshevo		Chillan		Athalassa		Montboucher		Karaj		Bakrajo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 41C	913	44	2296	52	359	29	2067	3	1007	46	474	46	2906	1
FLIP 87- 42C	991	35	509	63	307	34	1712	25	1605	17	891	28	356	55
FLIP 87- 43C	1217	19	2537	47	465	13	1315	48	1597	18	1106	16	1076	45
FLIP 87- 45C	1013	34	4574	3	457	14	1715	22	1738	11	1632	8	1770	17
FLIP 87- 46C	1191	22	2787	35	494	10	1428	44	952	49	965	24	1448	35
FLIP 87- 49C	150	62	1870	54	234	45	806	60	2103	4	1986	4	0	60
FLIP 87- 50C	1194	21	1815	55	215	49	1156	56	1291	29	-	-	-	-
FLIP 87- 51C	1150	25	2870	30	403	22	1281	51	1168	42	523	43	0	59
FLIP 87- 52C	680	55	2630	40	513	7	1656	31	1915	7	-	-	1645	25
FLIP 87- 53C	1080	27	2796	33	534	5	2159	2	866	52	0	62	2181	11
FLIP 87- 54C	646	57	3259	19	426	19	1562	40	1075	44	1085	17	1573	27
FLIP 87- 55C	1339	13	1648	58	378	25	1798	14	1485	22	969	23	751	50
FLIP 87- 60C	1257	16	3852	10	401	23	2023	6	1226	34	1472	11	1662	24
FLIP 87- 62C	1224	17	2630	42	338	32	1115	57	1274	32	1815	5	2020	13
FLIP 87- 63C	1224	18	4296	5	288	38	1740	21	562	56	2043	3	1478	32
FLIP 87- 64C	957	40	3204	21	169	54	1978	8	870	51	874	29	1615	26
FLIP 87- 68C	2328	1	3204	20	596	3	1790	17	2291	3	1706	7	301	56
FLIP 87- 69C	813	50	3852	11	-	-	1298	49	1209	37	489	45	1553	28
FLIP 87- 70C	1013	32	1685	57	190	53	959	59	413	59	262	51	573	53
FLIP 87- 76C	1294	15	2593	44	453	15	1573	39	1544	19	838	30	1751	19
FLIP 87- 77C	1339	14	2759	36	528	6	1656	32	1656	15	900	26	1917	15
FLIP 87- 84C	1013	33	2352	49	584	4	1792	16	1325	26	720	35	848	49
FLIP 87- 87C	1683	3	2593	45	203	51	1590	37	1256	33	198	53	201	57
FLIP 87- 88C	1672	4	2315	50	428	18	1490	41	1515	20	769	33	0	62
FLIP 81-293C	1408	9	3417	14	348	30	1769	19	1407	24	834	31	1719	20
ILC 482	700	54	3125	24	147	55	2054	4	1738	10	1526	9	1765	18
Local check	497	58	3847	12	369	26	1288	50	2046	5	1336	13	1177	42
Location Mean	1037		2953		324		1585		1341		956		1518	
S.E. of Mean	200.70		272.44		95.69		145.38		186.53		162.65		384.23	
L.S.D. at 5% for:														
Checks	694.43		942.66		331.10		503.01		645.41		562.76		1329.45	
T.E. in S.B.	1388.87		1885.32		662.21		1006.01		1290.81		1125.52		2658.90	
T.E. in D.B.	1603.72		2176.98		764.65		1161.64		1490.50		1299.64		3070.24	
Checks Vs T.E.	1268.05		1721.32		604.60		918.50		1178.52		1027.61		2427.60	
C.V. (%)	39.66		18.46		59.06		18.35		27.81		37.16		55.86	
T.E. > L. Check	2		0		0		1		0		0		0	

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	ITALY		JORDAN		LEBANON		MEXICO		MOROCCO		PORTUGAL			
	Tarquinia		Marow		Terbol		Padilla Tam		Marchouch		Elvas		Oeiras	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 50C	1778	22	352	11	2164	10	991	21	147	39	1677	46	1236	47
FLIP 86- 64C	1683	29	133	35	1212	59	0	55	4	58	1302	60	607	58
FLIP 86- 66C	1608	35	-	-	1402	54	873	24	493	12	1191	63	1083	52
FLIP 86- 76C	1365	44	-	-	1688	45	483	39	101	44	2260	6	407	62
FLIP 86- 81C	1503	40	267	21	2259	7	0	56	159	35	2247	7	1198	48
FLIP 86- 87C	1270	49	-	-	1942	28	1245	13	207	29	2510	2	1693	38
FLIP 86- 88C	2529	4	476	5	1275	57	389	42	149	38	1733	42	1255	46
FLIP 86- 89C	1196	52	-	-	1466	52	739	30	202	30	1316	58	1369	44
FLIP 86- 93C	2180	10	727	1	1910	29	1089	16	155	37	1483	52	683	55
FLIP 86- 95C	899	59	330	15	2101	17	0	54	610	8	2497	3	2969	14
FLIP 86- 96C	995	56	515	4	2259	6	-	-	0	63	2205	8	1512	43
FLIP 86-102C	1429	42	337	14	-	-	425	41	21	56	2635	1	978	53
FLIP 86-104C	1577	36	387	7	1593	49	1056	18	159	36	1358	56	1855	37
FLIP 86-105C	1884	18	215	27	2069	20	722	31	0	62	1205	62	655	56
FLIP 86-109C	1280	47	-	-	1878	34	122	53	0	61	1788	40	2712	21
FLIP 86-111C	1725	26	237	25	1878	35	-	-	48	51	1330	57	426	61
FLIP 87- 12C	1937	16	-	-	2143	11	794	28	35	53	2135	11	1312	45
FLIP 87- 17C	2275	8	307	17	1529	51	-	-	337	20	1649	47	2226	27
FLIP 87- 18C	1862	19	227	26	1910	31	-	-	198	31	1358	55	2112	31
FLIP 87- 19C	1376	43	359	10	2005	24	272	49	165	33	2038	19	3484	9
FLIP 87- 20C	2032	12	-	-	1762	42	-	-	79	48	1802	37	1140	50
FLIP 87- 21C	1619	32	114	36	1624	48	137	52	49	50	1469	53	2778	18
FLIP 87- 22C	2127	11	284	19	1974	26	583	37	26	55	2010	23	2150	29
FLIP 87- 27C	1608	34	307	18	1878	37	852	25	380	17	1233	61	855	54
FLIP 87- 28C	1143	54	183	30	2143	13	1448	9	2	60	2135	12	3140	10
FLIP 87- 29C	1640	31	-	-	1878	38	-	-	915	5	2024	20	1655	40
FLIP 87- 30C	1556	38	-	-	2132	14	641	34	32	54	1635	49	636	57
FLIP 87- 31C	1968	15	-	-	2492	2	1311	12	3	59	1927	29	2969	13
FLIP 87- 32C	720	61	252	24	1021	61	1010	20	116	41	1941	27	2541	24
FLIP 87- 33C	1757	25	364	9	1783	41	1050	19	83	47	1830	36	2055	32
FLIP 87- 35C	3492	1	-	-	1889	32	1861	2	246	25	1969	26	2455	25
FLIP 87- 36C	1989	14	159	33	1593	50	1835	3	246	26	1524	51	2198	28
FLIP 87- 37C	2349	6	276	20	2005	23	-	-	76	49	2010	21	0	63
FLIP 87- 38C	984	57	379	8	1751	43	987	22	101	45	2052	16	1121	51
FLIP 87- 39C	1778	21	178	32	1307	56	-	-	383	16	2010	22	2007	34
FLIP 87- 40C	2772	3	-	-	1878	36	255	51	283	23	1705	44	426	60

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	ITALY		JORDAN		LEBANON		MEXICO		MOROCCO		PORTUGAL			
	Tarquinia		Marow		Torbol		Padilla Tam		Marchouch		Elvas		Oeiras	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 41C	1270	48	414	6	1212	58	1458	8	742	7	1927	28	550	59
FLIP 87- 42C	1545	39	181	31	1910	30	1473	7	213	28	1358	54	2855	16
FLIP 87- 43C	1302	45	90	37	2333	4	1323	11	243	27	1802	38	3597	8
FLIP 87- 45C	1757	24	-	-	2132	15	838	26	994	3	2080	14	4112	3
FLIP 87- 46C	2275	9	308	16	1656	46	431	40	525	11	1733	41	1626	41
FLIP 87- 49C	1778	23	-	-	2143	12	1686	4	160	34	2177	9	2026	33
FLIP 87- 50C	984	58	660	2	2016	22	1057	17	1012	2	1635	50	3140	11
FLIP 87- 51C	698	62	-	-	2270	5	357	43	479	13	1802	39	3026	12
FLIP 87- 52C	0	63	-	-	2069	19	-	-	254	24	2122	13	4141	2
FLIP 87- 53C	1905	17	44	46	2101	16	675	33	180	32	1969	25	2836	17
FLIP 87- 54C	2021	13	257	23	1212	60	-	-	477	14	1983	24	1855	36
FLIP 87- 55C	3206	2	-	-	2206	8	1482	6	98	46	1844	33	3740	6
FLIP 87- 60C	1280	46	-	-	1974	27	980	23	597	9	1913	30	2712	20
FLIP 87- 62C	1852	20	-	-	2196	9	1142	15	808	6	1830	34	1169	49
FLIP 87- 63C	1185	53	-	-	2386	3	597	36	936	4	1830	35	1884	35
FLIP 87- 64C	1196	51	205	29	2037	21	693	32	566	10	1649	48	2569	22
FLIP 87- 68C	889	60	337	13	2524	1	1369	10	359	18	2427	4	3626	7
FLIP 87- 69C	1566	37	266	22	1402	53	617	35	462	15	1705	45	2141	30
FLIP 87- 70C	1238	50	-	-	-	-	0	57	16	57	1885	31	2321	26
FLIP 87- 76C	2381	5	-	-	1381	55	532	38	351	19	2052	18	3826	4
FLIP 87- 77C	1619	33	-	-	1889	33	828	27	106	42	2177	10	2855	15
FLIP 87- 84C	1683	28	66	38	1624	47	-	-	284	22	1719	43	1607	42
FLIP 87- 87C	2317	7	-	-	1984	25	1877	1	104	43	2344	5	3769	5
FLIP 87- 88C	1714	27	536	3	2079	18	1219	14	1416	1	2052	17	4169	1
FLIP 81-293C	1651	30	215	28	1738	44	1504	5	138	40	1865	32	1664	39
ILC 482	1111	55	155	34	1873	39	790	29	337	21	2063	15	2764	19
Local check	1492	41	351	12	1865	40	257	50	43	52	1313	59	2564	23
Location Mean	1618		294		1872		853		287		1836		2110	
S.E. of Mean	332.91		37.60		162.72		143.20		66.10		174.68		479.61	
L.S.D. at 5% for:														
Checks	1151.90		130.11		563.00		495.46		228.72		604.42		1659.48	
T.E. in S.B.	2303.80		260.22		1126.00		990.92		457.44		1208.84		3318.97	
T.E. in D.B.	2660.20		300.48		1300.20		1144.22		528.21		1395.84		3832.41	
Checks Vs T.E.	2103.39		237.58		1028.05		904.72		417.65		1103.68		3030.25	
C.V. (%)	41.15		39.05		18.01		40.28		48.49		19.03		45.47	
T.E. > L. Check	0		2		0		13		15		4		0	

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	SPAIN						SYRIA							
	Badajoz		Cordoba		El Encin		Aleppo		Al Ghab		Gelline		Hama	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 50C	944	19	3140	16	2549	37	245	17	2124	17	212	53	1690	16
FLIP 86- 64C	433	61	2590	33	1212	59	303	11	442	63	112	62	1056	61
FLIP 86- 66C	533	54	1457	55	698	62	175	25	1489	45	328	35	2071	3
FLIP 86- 76C	556	52	1790	46	1464	54	301	12	2315	6	117	61	1310	46
FLIP 86- 81C	544	53	3847	4	3848	13	-	-	2399	3	354	30	1765	11
FLIP 86- 87C	744	35	3090	19	4518	4	286	15	2569	2	228	49	1754	12
FLIP 86- 88C	578	48	1757	48	1360	56	130	32	1299	54	117	60	1468	33
FLIP 86- 89C	1422	2	3657	7	3254	22	-	-	2188	11	189	56	1532	28
FLIP 86- 93C	778	32	2557	35	2222	47	-	-	1331	51	139	59	1722	15
FLIP 86- 95C	500	58	5097	1	4034	11	194	21	2146	14	421	23	1320	45
FLIP 86- 96C	822	27	1697	50	4029	12	194	22	2272	8	604	12	1669	19
FLIP 86-102C	1033	13	3040	21	4054	10	432	3	1553	42	150	57	1532	27
FLIP 86-104C	722	37	3357	11	3253	23	-	-	1966	21	339	33	1341	43
FLIP 86-105C	356	62	3197	13	3164	25	-	-	1447	46	282	44	1479	32
FLIP 86-109C	567	50	3647	8	3608	17	585	1	2272	9	254	46	1066	60
FLIP 86-111C	500	57	1997	45	1600	53	162	26	2082	18	337	34	1384	40
FLIP 87- 12C	667	43	2207	44	2541	39	-	-	2241	10	195	54	1585	22
FLIP 87- 17C	822	25	3957	3	2012	49	-	-	1331	52	145	58	1659	20
FLIP 87- 18C	700	39	3757	6	1094	60	119	34	2378	4	695	5	2325	1
FLIP 87- 19C	644	45	1597	54	4457	5	42	48	1701	34	382	27	1479	31
FLIP 87- 20C	611	47	1257	61	2257	44	-	-	1955	22	212	52	1267	51
FLIP 87- 21C	789	31	3990	2	1956	50	356	7	1362	49	912	2	1373	41
FLIP 87- 22C	978	17	2340	42	1280	57	114	37	1553	41	106	63	-	-1
FLIP 87- 27C	1544	1	3757	5	1045	61	65	46	1934	23	817	3	2325	2
FLIP 87- 28C	822	26	1257	60	3655	16	113	38	1415	47	212	51	1521	29
FLIP 87- 29C	744	34	2907	27	2863	29	63	47	2124	16	284	41	1976	4
FLIP 87- 30C	689	41	1690	52	2547	38	149	28	1680	36	428	22	1246	56
FLIP 87- 31C	1122	8	2357	41	2325	41	-	-	1987	20	245	47	1553	25
FLIP 87- 32C	678	42	3107	18	2097	48	-	-	2378	5	328	36	1754	14
FLIP 87- 33C	511	56	1397	56	2233	46	294	13	1606	39	476	19	1257	52
FLIP 87- 35C	1078	10	1357	57	3214	24	153	27	1098	60	373	29	1553	26
FLIP 87- 36C	467	59	2657	30	2297	43	328	9	1807	30	289	39	1563	24
FLIP 87- 37C	822	29	2440	38	2944	27	198	20	1807	31	289	40	1500	30
FLIP 87- 38C	1089	9	2940	26	1693	52	405	5	1870	27	489	17	1754	13
FLIP 87- 39C	978	16	2490	36	4659	3	285	16	505	62	295	38	1310	47
FLIP 87- 40C	289	63	3147	15	3592	18	229	19	685	61	476	18	1447	34

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	SPAIN						SYRIA							
	Badajoz		Cordoba		El Encin		Aleppo		Al Ghab		Gellino		Hama	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 41C	1044	11	3190	14	3076	26	320	10	1362	50	395	25	1246	54
FLIP 87- 42C	811	30	3257	12	2759	34	100	40	2283	7	634	9	1944	5
FLIP 87- 43C	722	36	2957	23	2256	45	127	33	1860	28	417	24	1362	42
FLIP 87- 45C	467	60	2797	29	5537	1	22	57	2146	15	587	13	1574	23
FLIP 87- 46C	556	51	2857	28	3344	21	-	-	1235	56	245	48	1405	39
FLIP 87- 49C	1033	12	2457	37	4783	2	-	-	1923	24	339	32	1839	8
FLIP 87- 50C	1000	15	2257	43	2673	35	95	41	1669	37	450	20	1299	48
FLIP 87- 51C	900	21	1107	62	1239	58	347	8	1320	53	634	8	1045	62
FLIP 87- 52C	578	49	1747	49	4153	9	-	-	1860	29	549	14	1320	44
FLIP 87- 53C	1322	3	3490	10	4217	7	396	6	2188	12	284	43	1246	53
FLIP 87- 54C	833	23	3132	17	2777	33	-	-	1172	58	284	42	1690	17
FLIP 87- 55C	1022	14	1307	58	1415	55	115	35	1574	40	523	16	1426	35
FLIP 87- 60C	911	20	3547	9	4415	6	-	-	1892	26	643	7	1415	37
FLIP 87- 62C	656	44	1297	59	3517	20	188	23	1415	48	815	4	1860	6
FLIP 87- 63C	511	55	2597	31	3534	19	115	36	1606	38	626	11	1288	50
FLIP 87- 64C	611	46	3057	20	3786	15	-	-	1680	35	534	15	1849	7
FLIP 87- 68C	1211	6	2557	34	2907	28	178	24	2177	13	384	26	1775	10
FLIP 87- 69C	822	28	2597	32	2311	42	-	-	1542	43	226	50	1193	58
FLIP 87- 70C	833	24	1690	51	2551	36	-	-	1172	59	445	21	1246	55
FLIP 87- 76C	756	33	1757	47	1810	51	287	14	1288	55	189	55	1299	49
FLIP 87- 77C	689	40	757	63	422	63	137	30	1796	32	373	28	1426	36
FLIP 87- 84C	867	22	2390	40	2860	30	242	18	1235	57	267	45	1405	38
FLIP 87- 87C	1144	7	2957	24	3818	14	107	39	3066	1	350	31	1680	18
FLIP 87- 88C	1244	4	3007	22	2793	32	484	2	1796	33	1317	1	1807	9
FLIP 81-293C	711	38	2945	25	4174	8	426	4	1905	25	304	37	1238	57
ILC 482	944	18	2438	39	2820	31	135	31	2063	19	675	6	1587	21
Local check	1244	5	1638	53	2345	40	139	29	1516	44	633	10	1071	59
Location Mean	823		2547		2860		220		1757		414		1471	
S.E. of Mean	122.68		288.13		286.41		69.97		173.54		84.90		100.77	
L.S.D. at 5% for:														
Checks	424.50		996.95		991.00		242.08		600.45		293.77		348.68	
T.E. in S.B.	848.99		1993.89		1982.01		484.17		1200.90		587.55		697.36	
T.E. in D.B.	980.33		2302.35		2288.63		559.07		1386.68		678.44		805.24	
Checks Vs T.E.	775.14		1820.44		1809.59		442.05		1096.43		536.44		636.69	
C.V. (%)	29.83		22.63		20.03		79.93		19.75		41.04		13.70	
T.E. > L. Check	0		10		7		1		1		1		15	

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	SYRIA										TUNISIA	
	Izra'a		Jableh		Jindireess		Tartus		Tol Hadya		Beja-l	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 50C	352	34	836	62	1183	29	259	40	309	46	1554	14
FLIP 86- 64C	320	42	1185	60	821	54	164	56	404	38	354	61
FLIP 86- 66C	172	57	1947	35	958	48	0	62	292	47	354	60
FLIP 86- 76C	257	48	1503	53	1513	5	577	12	430	33	1154	38
FLIP 86- 81C	479	15	1915	37	1229	24	549	14	375	41	1221	32
FLIP 86- 87C	225	51	1757	42	1519	4	323	29	557	15	1504	16
FLIP 86- 88C	172	58	804	63	1123	38	79	57	95	61	554	56
FLIP 86- 89C	204	55	2074	27	1155	32	270	36	184	56	1004	45
FLIP 86- 93C	172	59	1376	57	1225	25	79	59	406	37	1504	17
FLIP 86- 95C	384	25	1471	54	988	46	460	16	622	9	1521	15
FLIP 86- 96C	542	5	1661	46	1356	14	206	53	781	1	721	52
FLIP 86-102C	98	63	1630	48	1443	9	228	49	455	30	504	58
FLIP 86-104C	362	33	2430	13	996	43	333	27	425	34	854	49
FLIP 86-105C	384	26	2106	26	1254	21	613	10	521	23	921	48
FLIP 86-109C	352	35	2042	31	810	56	714	6	679	6	1221	31
FLIP 86-111C	384	24	1979	34	1216	26	365	25	565	13	1021	43
FLIP 87- 12C	426	20	2044	30	1329	16	439	18	453	32	1471	20
FLIP 87- 17C	140	61	1693	44	1034	42	270	38	286	49	754	51
FLIP 87- 18C	458	18	2265	16	1212	27	0	61	114	60	604	55
FLIP 87- 19C	479	14	2614	6	994	44	1063	2	698	5	1271	30
FLIP 87- 20C	267	47	1746	43	884	53	407	21	339	43	1121	40
FLIP 87- 21C	320	41	2011	33	1290	18	259	42	531	21	1454	21
FLIP 87- 22C	130	62	1414	55	452	63	386	22	480	28	1404	22
FLIP 87- 27C	362	31	2582	8	1606	2	238	46	394	40	1004	44
FLIP 87- 28C	204	54	2127	25	1163	31	312	31	256	52	1771	8
FLIP 87- 29C	362	32	1566	50	1244	22	238	45	25	63	554	57
FLIP 87- 30C	193	56	1534	52	751	59	196	54	512	24	454	59
FLIP 87- 31C	426	21	2698	5	1132	37	757	5	85	62	1471	19
FLIP 87- 32C	299	44	2265	17	1358	13	206	51	267	51	854	50
FLIP 87- 33C	511	7	2614	7	1407	12	429	19	502	26	1571	13
FLIP 87- 35C	362	29	2508	9	1500	7	630	8	193	55	1621	11
FLIP 87- 36C	426	22	2074	28	1257	20	0	63	337	44	704	53
FLIP 87- 37C	257	50	2201	20	1665	1	228	48	468	29	1304	29
FLIP 87- 38C	479	12	2074	29	922	51	259	39	550	16	2004	3
FLIP 87- 39C	161	60	1312	59	967	47	259	41	576	12	704	54
FLIP 87- 40C	479	13	963	61	1172	30	302	33	762	3	971	46

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	SYRIA										TUNISIA	
	Izra'a		Jableh		Jindiross		Tartus		Tel Hadya		Boja-1	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 41C	288	45	1566	51	1424	10	259	43	334	45	54	63
FLIP 87- 42C	458	17	1788	41	1422	11	460	15	235	54	1654	10
FLIP 87- 43C	489	11	1810	40	922	50	1328	1	167	58	2071	2
FLIP 87- 45C	574	4	2150	23	632	61	619	9	775	2	1721	9
FLIP 87- 46C	331	40	1820	39	799	58	79	58	171	57	1354	26
FLIP 87- 49C	331	39	2254	18	903	52	280	35	243	53	1471	18
FLIP 87- 50C	362	27	1873	38	1043	40	280	34	161	59	1921	4
FLIP 87- 51C	489	10	2190	22	992	45	757	4	548	17	1921	5
FLIP 87- 52C	352	37	2868	4	1483	8	238	47	629	7	2221	1
FLIP 87- 53C	257	49	1947	36	808	57	-	-	290	48	1104	41
FLIP 87- 54C	362	30	1630	47	1333	15	302	32	584	11	1354	25
FLIP 87- 55C	616	2	2317	15	694	60	376	24	485	27	1371	24
FLIP 87- 60C	574	3	2455	12	1553	3	175	55	705	4	1321	27
FLIP 87- 62C	733	1	2995	3	1039	41	937	3	413	35	1821	6
FLIP 87- 63C	511	8	1344	58	1051	39	206	52	533	20	1771	7
FLIP 87- 64C	521	6	3503	1	1136	36	270	37	527	22	1204	33
FLIP 87- 68C	362	28	2508	10	1233	23	566	13	624	8	921	47
FLIP 87- 69C	352	36	2138	24	1508	6	365	26	597	10	1321	28
FLIP 87- 70C	225	53	2011	32	598	62	450	17	455	31	1204	34
FLIP 87- 76C	299	43	1683	45	1138	35	217	50	510	25	1171	35
FLIP 87- 77C	267	46	2254	19	1151	34	312	30	548	18	1171	36
FLIP 87- 84C	225	52	1630	49	814	55	323	28	404	39	254	62
FLIP 87- 87C	489	9	3492	2	1151	33	376	23	408	36	1021	42
FLIP 87- 88C	458	16	2381	14	1183	28	693	7	364	42	1621	12
FLIP 81-293C	333	38	2460	11	943	49	421	20	540	19	1163	37
ILC 482	421	23	2190	21	1292	17	595	11	560	14	1125	39
Local check	429	19	1413	56	1281	19	238	44	284	50	1375	23
Location Mean	365		1998		1142		381		433		1204	
S.E. of Mean	90.53		223.92		130.03		107.04		64.50		99.57	
L.S.D. at 5% for:												
Checks	313.24		774.76		449.91		370.35		223.18		344.50	
T.E. in S.B.	626.47		1549.53		899.81		740.71		446.35		689.00	
T.E. in D.B.	723.39		1789.24		1039.01		855.29		515.40		795.59	
Checks Vs T.E.	571.97		1414.73		821.54		676.27		407.52		629.06	
C.V. (%)	49.65		22.41		22.78		57.55		29.79		16.54	
T.E. > L. Check	0		4		0		3		5		3	

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	TUNISIA						TURKEY				(1) Overall Mean	
	Beja-2		El Kof		Oued Meliz		Diyarbakir		Samsun		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 86- 50C	2113	2	0	63	2550	16	1077	30	2902	12	1522	50
FLIP 86- 64C	913	44	3893	48	1300	58	761	58	711	49	1002	62
FLIP 86- 66C	313	63	7396	12	2134	34	691	60	3166	10	1275	61
FLIP 86- 76C	1563	12	3143	51	1450	52	1139	23	2584	17	1409	55
FLIP 86- 81C	1179	26	3498	49	2383	20	1126	25	711	50	1813	24
FLIP 86- 87C	1413	17	3143	55	1500	49	970	39	-	-	1846	20
FLIP 86- 88C	663	54	4646	41	2034	41	914	44	1585	34	1287	60
FLIP 86- 89C	413	61	1896	62	3134	2	1163	19	1109	44	1531	48
FLIP 86- 93C	1163	30	5646	29	3384	1	1203	16	538	52	1659	28
FLIP 86- 95C	1179	27	5998	21	2083	38	1072	31	813	47	2090	5
FLIP 86- 96C	479	59	8748	6	2733	9	819	51	1606	32	1954	15
FLIP 86-102C	763	52	2143	61	1200	61	1321	9	-	-	1518	52
FLIP 86-104C	913	46	4146	44	1534	48	980	38	5585	1	1662	36
FLIP 86-105C	879	47	3998	46	2183	32	801	53	971	46	1520	51
FLIP 86-109C	1129	34	6498	17	2083	40	903	47	3714	6	1856	19
FLIP 86-111C	1029	39	5748	26	1583	45	810	52	2051	23	1562	45
FLIP 87- 12C	1296	21	4963	37	2484	18	1106	28	2066	22	1772	27
FLIP 87- 17C	563	56	9999	1	2584	14	1331	8	4252	2	2027	9
FLIP 87- 18C	563	55	4896	39	2284	25	1287	12	2963	11	1660	37
FLIP 87- 19C	1129	33	5248	34	2983	3	868	49	1937	27	1915	16
FLIP 87- 20C	796	50	5963	23	2284	24	1097	29	2015	25	1507	53
FLIP 87- 21C	1613	7	5143	35	1400	54	1268	14	-	-	1812	25
FLIP 87- 22C	1613	8	3143	54	1450	51	1157	21	2425	19	1473	54
FLIP 87- 27C	913	45	2146	60	2784	7	963	40	1592	33	1558	47
FLIP 87- 28C	1446	15	9999	3	1984	42	1120	27	3177	9	2053	7
FLIP 87- 29C	413	60	6396	19	2684	10	1438	5	4125	4	1771	28
FLIP 87- 30C	1163	28	2893	57	1750	44	1188	18	1473	37	1334	58
FLIP 87- 31C	1346	18	7213	14	1084	62	1160	20	4129	3	1964	14
FLIP 87- 32C	1013	40	3896	47	2934	5	767	57	1319	39	1647	40
FLIP 87- 33C	1679	6	4748	40	2183	30	1379	6	1289	40	1795	26
FLIP 87- 35C	1246	24	7713	9	2184	29	906	46	1558	35	1884	17
FLIP 87- 36C	513	57	4896	38	2234	27	958	41	2823	13	1619	43
FLIP 87- 37C	1113	35	2643	58	1300	57	1294	10	-	-	1561	46
FLIP 87- 38C	2363	1	3143	53	2900	6	948	42	3568	8	1622	42
FLIP 87- 39C	1013	41	3143	52	1250	60	681	61	-	-	1374	56
FLIP 87- 40C	829	49	5748	27	2083	39	521	63	1041	45	1563	44

Cont'd. ...

Table 3.8.6. Cont'd. ...

Entry Name	TUNISIA						TURKEY				(1) Overall Mean	
	Beja-2		El KeF		Oued Meliz		Diyarbakir		Samsun		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 87- 41C	363	62	5893	25	1500	50	1006	35	140	59	1531	49
FLIP 87- 42C	2113	3	4646	42	2234	26	1189	17	3712	7	1753	30
FLIP 87- 43C	1346	19	9713	4	2334	23	1244	15	1126	43	2023	10
FLIP 87- 45C	1529	14	4998	36	2383	21	1054	33	2533	18	2166	2
FLIP 87- 46C	913	43	5896	24	2684	11	1136	24	2220	20	1707	34
FLIP 87- 49C	1196	25	9999	2	2534	17	737	59	1856	28	2109	3
FLIP 87- 50C	1446	16	8713	7	2134	33	1124	26	-	-	1842	23
FLIP 87- 51C	1896	5	5713	28	1284	59	1555	2	770	48	1632	41
FLIP 87- 52C	1579	9	6248	20	2783	8	1499	4	-	-	2050	8
FLIP 87- 53C	713	53	2893	56	1350	55	899	48	-	-	1715	33
FLIP 87- 54C	1563	11	8896	5	2584	13	1283	13	1458	38	1977	12
FLIP 87- 55C	1296	22	5463	31	1034	63	773	56	643	51	1681	35
FLIP 87- 60C	1529	13	4248	43	2383	19	788	54	1543	36	1998	11
FLIP 87- 62C	1579	10	5998	22	2183	31	1050	34	2032	24	1769	29
FLIP 87- 63C	1929	4	6498	16	2583	15	1001	37	2768	14	1880	18
FLIP 87- 64C	1163	29	7396	13	2084	37	785	55	2601	16	1973	13
FLIP 87- 68C	1046	38	8463	8	1934	43	1511	3	1634	31	2103	4
FLIP 87- 69C	1329	20	5498	30	2133	35	850	50	2743	15	1750	31
FLIP 87- 70C	1263	23	3393	50	1400	53	654	62	-	-	1320	59
FLIP 87- 76C	1146	32	6463	18	1534	46	929	43	1145	42	1732	32
FLIP 87- 77C	846	48	7713	10	1534	47	911	45	440	53	1658	39
FLIP 87- 84C	513	58	2643	59	1350	56	1143	22	1759	30	1354	57
FLIP 87- 87C	1096	37	7713	11	2334	22	1062	32	2097	21	2199	1
FLIP 87- 88C	946	42	6963	15	2584	12	1333	7	1805	29	2062	6
FLIP 81-293C	1113	36	5391	32	2113	36	1003	36	4116	5	1844	22
ILC 482	775	51	5250	33	2188	28	1293	11	1956	26	1844	21
Local check	1150	31	4063	45	2950	4	1956	1	1160	41		
Location Mean	1128		5394		2138		1107		2129			
S.E. of Mean	120.26		1741.43		367.66		146.36		246.19			
L.S.D. at 5% for:												
Checks	416.10		6025.46		1272.12		506.41		851.82			
T.E. in S.B.	832.19		12050.91		2544.25		1012.81		1703.64			
T.E. in D.B.	960.94		13915.19		2937.85		1169.49		1967.19			
Checks Vs T.E.	759.80		11002.59		2322.92		924.70		1555.44			
C.V. (%)	21.33		64.57		34.39		26.44		26.36			
T. > L. Check	4		0		0		0		14			

(1) Setif, Chillan, Karaj, Bakrajo, Marow, Terbol, Padilla Tam, Marchouch, Aleppo, Hama, Tartus and Samsun were excluded from the overall Mean, T.E. = Test entry, S.B. = Same block, D.B. = Different blocks.

Table 3.8.7. The five heaviest seed yielding entries at the individual locations in the CISN-W during 1988/89.

Rank	ALGERIA	BULGARIA	CHILE	CYPRUS	FRANCE	IRAN	IRAQ	ITALY
	Setif	Toshevo	Chillan	Athalassa	Montboucher	Karaj	Bakrajo	Tarquinia
1	FLIP 87- 68C	FLIP 86- 95C	FLIP 87- 28C	FLIP 87- 12C	FLIP 87- 31C	FLIP 87- 31C	FLIP 87- 41C	FLIP 87- 35C
2	FLIP 87- 31C	FLIP 86- 87C	FLIP 87- 30C	FLIP 87- 53C	FLIP 87- 28C	FLIP 87- 35C	FLIP 87- 38C	FLIP 87- 55C
3	FLIP 87- 87C	FLIP 87- 45C	FLIP 87- 68C	FLIP 87- 41C	FLIP 87- 68C	FLIP 87- 63C	FLIP 86- 50C	FLIP 87- 40C
4	FLIP 87- 88C	FLIP 86-111C	FLIP 87- 84C	ILC 482	FLIP 87- 49C	FLIP 87- 49C	FLIP 87- 19C	FLIP 86- 88C
5	FLIP 86- 95C	FLIP 87- 63C	FLIP 87- 53C	FLIP 87- 17C	Local check	FLIP 87- 62C	FLIP 87- 30C	FLIP 87- 76C

Cont'd. ...

Rank	JORDAN	LEBANON	MEXICO	MOROCCO	PORTUGAL		SPAIN	
	Marow	Terbol	Padilla Tam	Marchouch	Elvas	Oefras	Badajoz	Cordoba
1	FLIP 86- 93C	FLIP 87- 68C	FLIP 87- 87C	FLIP 87- 88C	FLIP 86-102C	FLIP 87- 88C	FLIP 87- 27C	FLIP 86- 95C
2	FLIP 87- 50C	FLIP 87- 31C	FLIP 87- 35C	FLIP 87- 50C	FLIP 86- 87C	FLIP 87- 52C	FLIP 86- 89C	FLIP 87- 21C
3	FLIP 87- 88C	FLIP 87- 63C	FLIP 87- 36C	FLIP 87- 45C	FLIP 86- 95C	FLIP 87- 45C	FLIP 87- 53C	FLIP 87- 17C
4	FLIP 86- 96C	FLIP 87- 43C	FLIP 87- 49C	FLIP 87- 63C	FLIP 87- 68C	FLIP 87- 76C	FLIP 87- 88C	FLIP 86- 81C
5	FLIP 86- 88C	FLIP 87- 51C	FLIP 81-293C	FLIP 87- 29C	FLIP 87- 87C	FLIP 87- 87C	Local check	FLIP 87- 27C FLIP 87- 18C

Cont'd. ...

Rank	SPAIN		SYRIA					
	El Encin	Aleppo	Al Ghab	Gelline	Hama	Izra'a	Jableh	Jindress
1	FLIP 87- 45C	FLIP 86-109C	FLIP 87- 87C	FLIP 87- 88C	FLIP 87- 18C	FLIP 87- 62C	FLIP 87- 64C	FLIP 87- 37C
2	FLIP 87- 49C	FLIP 87- 88C	FLIP 86- 87C	FLIP 87- 21C	FLIP 87- 27C	FLIP 87- 55C	FLIP 87- 87C	FLIP 87- 27C
3	FLIP 87- 39C	FLIP 86-102C	FLIP 86- 81C	FLIP 87- 27C	FLIP 86- 66C	FLIP 87- 60C	FLIP 87- 62C	FLIP 87- 60C
4	FLIP 86- 87C	FLIP 81-293C	FLIP 87- 18C	FLIP 87- 62C	FLIP 87- 29C	FLIP 87- 45C	FLIP 87- 52C	FLIP 86- 87C
5	FLIP 87- 19C	FLIP 87- 38C	FLIP 87- 32C	FLIP 87- 18C	FLIP 87- 42C	FLIP 86- 96C	FLIP 87- 31C	FLIP 86- 76C

Cont'd. ...

Rank	SYRIA		TUNISIA				TURKEY	
	Tartus	TelHadya	Beja-1	Baja-2	El Kef	Oued Meliz	Diyarbakir	Samsun
1	FLIP 87- 43C	FLIP 86- 96C	FLIP 87- 52C	FLIP 87- 38C	FLIP 87- 17C	FLIP 86- 93C	Local check	FLIP 86-104C
2	FLIP 87- 19C	FLIP 87- 45C	FLIP 87- 43C	FLIP 86- 50C	FLIP 87- 49C	FLIP 86- 89C	FLIP 87- 51C	FLIP 87- 17C
3	FLIP 87- 62C	FLIP 87- 40C	FLIP 87- 38C	FLIP 87- 42C	FLIP 87- 28C	FLIP 87- 19C	FLIP 87- 68C	FLIP 87- 31C
4	FLIP 87- 51C	FLIP 87- 60C	FLIP 87- 50C	FLIP 87- 63C	FLIP 87- 43C	Local check	FLIP 87- 52C	FLIP 87- 29C
5	FLIP 87- 31C	FLIP 87- 19C	FLIP 87- 51C	FLIP 87- 51C	FLIP 87- 54C	FLIP 87- 32C	FLIP 87- 29C	FLIP 81-293C

The brackets indicate entries having the same rank.

Methods and Management

The entries were sown in single row non-replicated plots of 4m length in an augmented block design. 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.

Fifty six sets of nursery were distributed to cooperators in 25 countries and the results were received from 34 locations in 18 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 means for time to flowering, time to maturity, plant height, and 100-seed weight, ranged from 42 days at Karaj in Iran to 210 days at Samsun in Turkey; 100 days at Karaj in Iran to 275 days at Toshevo in Bulgaria; 24 cm at Izra'a in Syria to 77 cm at Samsun in Turkey; and 29 g at Tel Hadya in Syria to 45 g at Oeiras in Portugal, respectively. On the basis of average over all locations, the entries ILC 482, FLIP 87-43C, FLIP 87-55C, FLIP 87-60C and FLIP 87-64C were among the earliest to flower and FLIP 87-43C and FLIP 87-45C were earlier to mature. The entries FLIP 87-18C, FLIP 87-46C, and FLIP 87-20C were among the tallest; and entries, FLIP 86-88C, and FLIP 86-93C, had the largest seed size (> 45g/100-seed).

The adjusted seed yields of entries are presented in Table 3.8.6. Seed yields were high at El Kef in Tunisia (5394 kg/ha), Toshevo in Bulgaria (2953 kg/ha), and El Encin (2860 kg/ha) and Cordoba (2547 kg/ha) in Spain. The ANOVA for seed yield revealed that at 18 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 87-31C, FLIP 87-88C, FLIP 87-45C, FLIP 87-49C, FLIP 87-68C and FLIP 87-87C 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 60 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.

Table 3.9.1. Agronomic data for different locations in the CISN-SP during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Brazil	Maracaju	28.04.89	05.05.89	-			-	NA	
Brazil	Passo Fundo	25.07.89	22.12.89	18	40		-	NA	
Brazil	Santa Maria	07.06.89	29.11.89	8	60	50	-	-	
Chile	Valdivia	18.10.89	21.03.90	32	100	50	-	Linuron	
Ethiopia	Debre Zeit	02.08.89	20.12.89	-			-	-	
France	Montboucher	09.02.89	27.07.89		100		-	Trifluraline, Linuron, Isoxaben	
Iran	Karaj	03.04.89	17.08.89	24	72		6	Treflan, metasystox	
Iraq	Dohuk	09.03.89	05.06.89	22	25		-	-	
Jordan	Jubeiha	25.11.89	04.04.90	20	50		-	-	
Lebanon	Terbol							Lebanese Local	
Mexico	Padilla Tam								
Morocco	Marchouch	02.02.89	25.07.89	20	45		-	-	
Spain	Cordoba	12.03.89	20.07.89	-			-	-	
Syria	Al Ghab	20.03.89	04.07.89	-			-	-	
Syria	Gelline	04.03.89	21.06.89	20	50		-	-	
Syria	Hama	18.02.89	12.06.89	30	80		-	hand weeding	
Syria	Idleb	07.03.89	21.06.89		60		-	-	
Syria	Jindiress	01.03.88	20.06.89		50		-	Kerb, Bravo	
Syria	Tel Hadya	01.03.89	20.06.89		50		-	Kerb, Bravo	
Tunisia	Beja-1	26.12.88	NA	-			-	-	
Tunisia	Beja-2	26.12.88	NA	-			-	-	
Tunisia	El Kef	02.12.88	NA	-			-	-	
Tunisia	Oued Meliz	01.12.88	NA	-			-	-	
Turkey	Amasya	13.04.89	03.08.89	50	60		-	Malathion	
Tunisia	Diyarbakir	10.12.88	10.06.89	30	60		-	-	
Turkey	Izmir	12.03.89	17.07.89	30	60		-	Endosulfan	

NA = Not available.

Table 3.9.2. Adjusted time to flowering (days) of entries at different locations in the CISN-SP during 1988/89.

Entry Name	Pedigree	Origin	BRAZIL			CHILE	ETHIOPIA	IRAN
			Maracaju	Passo-Fundo	Santa-Maria	Valdivia	Debre-Zeit	Karaj
FLIP 86- 26C	X82 TH 60/ILC 95XILC2956	ICARDA/ICRISAT	100	88	102	66	84	46
FLIP 86- 90C	X82 TH147/(ILC 445XILC 484)XILC3279	ICARDA/ICRISAT	102	86	125	63	87	51
FLIP 86- 91C	X82 TH147/(ILC 445XILC 484)XILC3279	ICARDA/ICRISAT	98	82	102	63	73	43
FLIP 86- 92C	X83 TH 29/FLIP 81-60CXFLIP 82-64C	ICARDA/ICRISAT	103	86	127	75	79	52
FLIP 86- 94C	X83 TH 68/ILC 95XFLIP 82-59C	ICARDA/ICRISAT	98	82	111	63	71	45
FLIP 86- 97C	X83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	90	83	98	69	85	48
FLIP 86- 98C	X82 TH137/(ILC 97XILC 194)XILC2956	ICARDA/ICRISAT	98	84	125	66	78	49
FLIP 86- 99C	X83 TH 19/FLIP 82-65CXFLIP 82-69C	ICARDA/ICRISAT	98	83	110	65	82	43
FLIP 86-100C	X82 TH137/(ILC 97XILC 194)XILC2956	ICARDA/ICRISAT	102	86	127	69	77	54
FLIP 86-101C	X82 TH137/(ILC 97XILC 194)XILC2956	ICARDA/ICRISAT	98	90	121	70	72	52
FLIP 86-103C	X82 TH146/(ILC 445XILC 482)XILC 202	ICARDA/ICRISAT	95	87	110	69	82	46
FLIP 86-106C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	98	82	125	69	80	54
FLIP 86-107C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	89	84	125	73	78	42
FLIP 86-108C	X83 TH 25/FLIP 82-69CXFLIP 82-81C	ICARDA/ICRISAT	89	84	124	70	77	47
FLIP 86-110C	X82 TH 91/ILC 202XILC 464	ICARDA/ICRISAT	96	91	110	62	77	46
FLIP 87- 1C	X85 TH139/ILC 620XFLIP 82-59C	ICARDA/ICRISAT	101	78	125	66	76	49
FLIP 87- 2C	X85 TH162/ILC3488XFLIP 83-13C	ICARDA/ICRISAT	77	76	89	-	56	40
FLIP 87- 3C	X85 TH184/ILC3853XFLIP 82-127C	ICARDA/ICRISAT	96	82	111	70	78	45
FLIP 87- 4C	X85 TH199/ILC4293XFLIP 82-243C	ICARDA/ICRISAT	80	86	71	58	52	35
FLIP 87- 5C	X85 TH230/ILC3395XFLIP 83-13C	ICARDA/ICRISAT	98	81	74	57	52	39
FLIP 87- 6C	X85 TH246/ILC3398XFLIP 83-13C	ICARDA/ICRISAT	75	80	99	63	57	38
FLIP 87- 7C	X85 TH246/ILC3398XFLIP 83-13C	ICARDA/ICRISAT	77	86	86	58	54	34
FLIP 87- 8C	X85 TH246/ILC3398XFLIP 83-13C	ICARDA/ICRISAT	77	86	109	58	54	36
FLIP 87- 9C	X85 TH230/ILC3395XFLIP 83-13C	ICARDA/ICRISAT	80	74	110	61	39	51
FLIP 87- 10C	X85 TH230/ILC3395XFLIP 83-13C	ICARDA/ICRISAT	80	79	98	54	44	29
FLIP 87- 11C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	95	83	98	69	84	43
FLIP 87- 13C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	87	77	121	62	77	43
FLIP 87- 14C	X83 TH159/ILC 5XFLIP 81-59W	ICARDA/ICRISAT	84	80	99	63	67	40
FLIP 87- 15C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	-	86	124	70	73	55
FLIP 87- 16C	X83 TH 22/FLIP 81-65CXFLIP 82-81C	ICARDA/ICRISAT	-	87	122	65	85	48
FLIP 87- 23C	X83 TH 21/FLIP 81-65CXFLIP 82-78C	ICARDA/ICRISAT	98	78	113	72	79	46
FLIP 87- 24C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	86	89	122	69	83	48
FLIP 87- 25C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	103	84	114	72	79	46
FLIP 87- 26C	L550XILC 72	ICARDA/ICRISAT	81	80	125	66	70	51
FLIP 87- 34C	X83 TH159/UC5XFLIP 81-59W	ICARDA/ICRISAT	80	74	102	58	42	33
FLIP 87- 44C	X84 TH 46/ILC 576XFLIP 82-59C	ICARDA/ICRISAT	84	74	102	63	71	35

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	Pedigree	Origin	BRAZIL			CHILE	ETHIOPIA	IRAN
			Maracaju	Passo-Fundo	Santa-Maria	Valdivia	Debre-Zeit	Karaj
FLIP 87- 47C	X85 TH215/ILC2375XFLIP 83-15C	ICARDA/ICRISAT	77	88	92	55	57	34
FLIP 87- 48C	X85 TH218/ILC2375XILC2380	ICARDA/ICRISAT	83	88	102	55	58	35
FLIP 87- 56C	X85 TH242/ILC3397XFLIP 82-130C	ICARDA/ICRISAT	81	80	102	58	39	39
FLIP 87- 57C	X85 TH246/ILC3398XFLIP 83-13C	ICARDA/ICRISAT	77	78	71	55	48	34
FLIP 87- 58C	X85 TH264/ILC3777XFLIP 83-46C	ICARDA/ICRISAT	75	78	71	55	46	35
FLIP 87- 59C	X85 TH274/ILC3843XFLIP 82-130C	ICARDA/ICRISAT	75	78	74	55	46	32
FLIP 87- 61C	X85 TH294/ILC4293XFLIP 83-13C	ICARDA/ICRISAT	106	86	89	58	52	38
FLIP 87- 65C	X83 TH 3/FLIP 81-41CXFLIP 82-65C	ICARDA/ICRISAT	93	74	102	61	63	39
FLIP 87- 66C	X83 TH 8/FLIP 81-56WXFLIP 81-57W	ICARDA/ICRISAT	100	82	114	66	67	51
FLIP 87- 67C	X85 TH187/ILC4295XFLIP 82-191C	ICARDA/ICRISAT	84	76	102	61	75	51
FLIP 87- 71C	X83 TH 19/FLIP 81-65CXFLIP 82-69C	ICARDA/ICRISAT	100	80	114	69	83	51
FLIP 87- 72C	X83 TH115/FLIP 82-81CXILC3326	ICARDA/ICRISAT	75	83	74	62	54	34
FLIP 87- 73C	X83 TH 23/FLIP 82-69CXFLIP 82-72C	ICARDA/ICRISAT	100	82	114	69	75	51
FLIP 87- 74C	X83 TH 20/FLIP 81-65CXFLIP 82-72C	ICARDA/ICRISAT	97	91	123	69	84	46
FLIP 87- 75C	X84 TH 73/ILC 482XFLIP 82-73C	ICARDA/ICRISAT	79	81	88	62	67	34
FLIP 87- 78C	X83 TH118/FLIP 82-66CXFLIP 82-81C	ICARDA/ICRISAT	96	88	127	75	72	56
FLIP 87- 79C	X83 TH325/(ILC470XILC2956)XFLIP 81-	ICARDA/ICRISAT	80	83	106	65	83	39
FLIP 87- 80C	X83 TH132/ILC 95XFLIP 82-78C	ICARDA/ICRISAT	79	77	110	65	78	43
FLIP 87- 81C	X84 TH139/ILC3307XFLIP 82-64C	ICARDA/ICRISAT	102	74	114	66	75	51
FLIP 87- 82C	X84 TH139/ILC3307XFLIP 82-64C	ICARDA/ICRISAT	103	80	111	63	81	46
FLIP 87- 83C	X84 TH186/ICCL81169XFLIP 82-64C	ICARDA/ICRISAT	101	88	122	70	66	54
FLIP 87- 85C	X85 TH248/ILC3398XFLIP 83-46C	ICARDA/ICRISAT	81	74	92	58	53	34
FLIP 87- 86C	X85 TH257/ILC3713XFLIP 82-127C	ICARDA/ICRISAT	79	80	102	61	50	48
FLIP 87- 89C	X85 TH294/ILC4293XFLIP 83-13C	ICARDA/ICRISAT	77	74	110	58	54	37
FLIP 81-293C	Improved check	ICARDA/ICRISAT	97	81	105	68	80	43
ILC 482	Long term check	-	85	77	100	63	71	39
Local check		-	-	-	-	64	47	47
Location Mean			86	81	102	64	68	43
S.E. of Mean			3.04	0.68	1.52	1.61	2.71	1.94
L.S.D. at 5%	for: Checks		10.53	3.05	5.25	5.56	9.39	6.70
	Test entries in the same block		21.06	6.09	10.51	11.12	18.78	13.40
	Test entries in different blocks		24.31	7.46	12.13	12.84	21.69	15.47
	Checks Vs Test entries		19.22	5.90	9.59	10.16	17.15	12.24
C.V. (%)			7.42	1.66	3.04	5.12	8.02	8.95

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	IRAQ	LEBANON	SYRIA					TURKEY		(1)	
	Dohuk	Terbol	Al Ghab	Gelline	Hama	Idleb	Jindiress	Tol Hadya	Diyarbakir	Izmir	Overall Mean
FLIP 86- 26C	47	64	67	-	71	69	70	78	86	49	71
FLIP 86- 90C	56	64	62	-	71	66	73	76	85	-	74
FLIP 86- 91C	24	65	62	-	66	65	67	74	90	51	65
FLIP 86- 92C	45	77	69	-	83	72	78	76	93	-	76
FLIP 86- 94C	23	59	56	63	66	64	65	70	90	51	64
FLIP 86- 97C	59	63	74	73	70	69	73	79	92	47	73
FLIP 86- 98C	46	64	69	-	78	71	75	82	49	49	75
FLIP 86- 99C	90	63	75	73	69	70	74	76	91	47	76
FLIP 86-100C	55	65	75	-	75	73	74	81	87	-	76
FLIP 86-101C	60	67	76	67	74	66	76	70	90	51	75
FLIP 86-103C	54	63	61	-	69	65	67	74	92	47	71
FLIP 86-106C	54	67	74	-	80	72	75	80	89	-	76
FLIP 86-107C	54	65	70	-	80	72	75	81	90	49	75
FLIP 86-108C	58	66	69	-	78	70	73	78	90	49	75
FLIP 86-110C	25	63	67	73	66	68	66	75	93	-	68
FLIP 87- 1C	59	62	67	-	70	64	70	76	88	49	72
FLIP 87- 2C	44	49	53	64	63	62	60	59	90	44	59
FLIP 87- 3C	81	67	75	66	76	71	73	75	92	52	76
FLIP 87- 4C	42	47	58	55	57	53	54	54	88	39	55
FLIP 87- 5C	47	55	51	61	62	57	59	53	81	40	57
FLIP 87- 6C	54	55	60	61	59	53	56	54	87	44	60
FLIP 87- 7C	46	52	55	57	60	53	53	56	84	42	58
FLIP 87- 8C	45	53	53	54	57	57	57	55	89	44	60
FLIP 87- 9C	42	49	52	56	59	53	52	51	84	49	57
FLIP 87- 10C	43	47	51	61	60	52	54	53	87	35	55
FLIP 87- 11C	60	65	75	71	72	70	73	76	91	47	72
FLIP 87- 13C	47	63	57	73	66	67	65	74	90	47	69
FLIP 87- 14C	50	61	64	63	65	64	65	70	91	44	66
FLIP 87- 15C	54	65	65	-	51	71	73	74	92	51	72
FLIP 87- 16C	54	69	75	-	75	70	76	80	94	48	76
FLIP 87- 23C	58	64	65	-	73	69	75	78	87	49	72
FLIP 87- 24C	59	67	76	70	77	64	77	76	-	-	76
FLIP 87- 25C	57	66	69	-	79	70	73	78	89	49	74
FLIP 87- 26C	46	63	65	66	72	71	68	70	89	42	71
FLIP 87- 34C	47	50	57	56	60	51	52	56	82	-	57
FLIP 87- 44C	56	52	57	65	65	62	64	70	88	49	64

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry Name	IRAQ	LEBANON	SYRIA					TURKEY		(1)	
	Dohuk	Terbol	Al Ghab	Gelline	Hama	Idleb	Jindiress	Tel Hadya	Diyarbakir	Izmir	Overall Mean
FLIP 87- 47C	50	50	53	61	65	60	57	57	85	42	60
FLIP 87- 48C	48	46	54	56	63	55	57	57	86	37	60
FLIP 87- 56C	42	47	52	59	58	53	54	52	86	42	56
FLIP 87- 57C	42	47	52	55	57	53	53	52	87	39	53
FLIP 87- 58C	43	47	52	54	57	53	53	51	87	44	53
FLIP 87- 59C	44	48	54	54	57	51	52	53	83	37	53
FLIP 87- 61C	50	51	54	54	60	56	58	55	90	44	59
FLIP 87- 65C	56	53	55	58	68	60	62	63	86	37	63
FLIP 87- 66C	53	61	65	67	68	69	70	74	90	50	70
FLIP 87- 67C	54	57	66	69	68	71	72	70	88	42	69
FLIP 87- 71C	46	67	64	-	75	72	74	77	91	50	73
FLIP 87- 72C	44	47	51	62	59	53	60	54	87	35	56
FLIP 87- 73C	54	67	68	-	72	70	72	78	87	50	73
FLIP 87- 74C	52	61	75	68	72	70	70	68	94	47	74
FLIP 87- 75C	61	55	58	70	65	63	66	70	93	40	64
FLIP 87- 78C	55	59	63	70	72	71	70	74	91	49	73
FLIP 87- 79C	56	59	76	72	65	65	72	76	91	40	71
FLIP 87- 80C	60	61	76	67	70	68	74	74	76	47	72
FLIP 87- 81C	55	65	64	67	72	69	69	70	89	49	70
FLIP 87- 82C	55	67	70	66	70	70	67	74	92	51	72
FLIP 87- 83C	54	67	78	64	74	65	70	70	91	44	73
FLIP 87- 85C	47	48	52	56	60	54	56	57	85	37	57
FLIP 87- 86C	54	55	58	66	65	64	62	70	89	42	64
FLIP 87- 89C	48	50	56	58	60	54	54	56	83	42	59
FLIP 81-293C	53	65	67	-	74	69	73	76	91	47	71
ILC 482	50	56	58	67	65	64	66	67	86	44	65
Local check	50	57	53	63	66	60	60	61	87	42	
Location Mean	51	59	62	63	67	64	66	68	88	45	
S.E. of Mean	2.35	1.28	1.16	0.87	0.47	1.01	1.44	1.68	2.19	1.30	
L.S.D. at 5% for:											
Checks	8.13	4.43	4.03	3.90	1.63	3.50	4.99	5.80	7.59	4.51	
T.E. in S.B.	16.26	8.86	8.05	7.79	3.26	6.99	9.97	11.61	15.18	9.03	
T.E. in D.B.	18.78	10.23	9.30	9.55	3.77	8.07	11.51	13.40	17.53	10.42	
Checks Vs T.E.	14.85	8.09	7.35	7.55	2.98	6.38	9.10	10.60	13.86	8.24	
C.V. (%)	9.21	4.36	3.74	3.64	1.40	3.18	4.37	4.96	5.07	6.44	

(1) Maracaju, Valdivia, Gelline, Diyarbakir and Izmir were excluded from the overall mean.

Table 3.9.3. Adjusted time to maturity (days) of entries at different locations in the CISN-SP during 1988/89.

Entry Name	BRAZIL			CHILE	ETHIOPIA	FRANCE	IRAN	JORDAN
	Maracaju	Passo Fundo	Santa Maria	Valdivia	Dobre Zoit	Montboucher	Karaj	Juboiha
FLIP 86- 26C	171	151	169	87	-	155	128	105
FLIP 86- 90C	178	151	170	96	-	161	128	104
FLIP 86- 91C	167	146	169	92	124	156	125	98
FLIP 86- 92C	176	151	174	94	-	164	123	105
FLIP 86- 94C	165	138	168	92	-	156	119	98
FLIP 86- 97C	171	145	168	87	-	157	121	105
FLIP 86- 98C	158	151	169	90	-	161	128	105
FLIP 86- 99C	162	145	169	90	-	157	126	105
FLIP 86-100C	177	151	168	88	-	158	127	108
FLIP 86-101C	163	152	168	92	127	153	123	108
FLIP 86-103C	168	151	168	96	-	154	126	106
FLIP 86-106C	156	145	159	85	-	158	118	109
FLIP 86-107C	156	145	169	85	-	158	123	107
FLIP 86-108C	152	151	175	87	-	155	128	108
FLIP 86-110C	164	151	169	90	-	157	127	106
FLIP 87- 1C	176	145	170	87	-	161	121	105
FLIP 87- 2C	163	138	169	-	116	162	122	96
FLIP 87- 3C	167	138	168	89	131	153	119	109
FLIP 87- 4C	142	138	168	89	121	162	122	98
FLIP 87- 5C	163	137	169	87	116	166	127	91
FLIP 87- 6C	166	138	169	89	120	162	125	95
FLIP 87- 7C	151	151	169	87	110	158	128	92
FLIP 87- 8C	142	146	169	92	119	162	126	97
FLIP 87- 9C	152	137	169	76	127	164	126	95
FLIP 87- 10C	129	137	169	83	113	166	124	91
FLIP 87- 11C	167	145	168	87	-	154	123	105
FLIP 87- 13C	143	137	169	93	-	163	126	91
FLIP 87- 14C	167	146	168	80	119	165	119	108
FLIP 87- 15C	-	152	174	92	-	165	135	111
FLIP 87- 16C	-	151	168	96	-	163	127	107
FLIP 87- 23C	173	145	169	90	130	152	121	106
FLIP 87- 24C	166	151	174	93	-	166	136	105
FLIP 87- 25C	155	151	170	96	-	161	124	106
FLIP 87- 26C	156	145	169	91	127	158	116	107
FLIP 87- 34C	177	137	167	83	126	155	121	91
FLIP 87- 44C	176	137	169	78	125	152	120	95

Cont'd. ...

Table 3.9.3. Cont'd. ...

Entry Name	BRAZIL			CHILE	ETHIOPIA	FRANCE	IRAN	JORDAN
	Maracaju	Passo Fundo	Santa Maria	Valdivia	Debre Zeit	Montboucher	Karaj	Jubeiha
FLIP 87- 47C	152	137	169	83	127	149	122	93
FLIP 87- 48C	152	137	167	78	117	152	123	93
FLIP 87- 56C	152	145	166	85	109	152	122	100
FLIP 87- 57C	142	138	166	85	97	150	119	96
FLIP 87- 58C	142	138	169	85	98	150	122	96
FLIP 87- 59C	147	137	167	83	100	152	123	92
FLIP 87- 61C	167	138	168	80	113	153	119	94
FLIP 87- 65C	152	137	166	76	119	149	116	100
FLIP 87- 66C	175	145	169	81	-	152	116	97
FLIP 87- 67C	173	137	166	76	-	155	117	97
FLIP 87- 71C	176	145	169	85	-	155	119	106
FLIP 87- 72C	143	137	168	83	121	160	123	91
FLIP 87- 73C	173	145	169	81	-	155	124	108
FLIP 87- 74C	168	151	168	93	-	163	123	106
FLIP 87- 75C	169	145	168	83	119	154	120	91
FLIP 87- 78C	176	151	174	94	129	161	120	97
FLIP 87- 79C	166	145	169	87	-	154	119	106
FLIP 87- 80C	169	137	168	90	131	154	125	106
FLIP 87- 81C	168	137	168	81	-	161	119	98
FLIP 87- 82C	167	146	168	89	-	165	115	109
FLIP 87- 83C	168	152	168	89	115	156	121	109
FLIP 87- 85C	152	137	169	83	116	158	120	152
FLIP 87- 86C	173	145	169	85	126	161	120	98
FLIP 87- 89C	152	137	170	78	114	161	123	93
FLIP 81-293C	170	145	168	86	128	152	120	106
ILC 482	159	138	168	79	124	152	120	94
Local check	-	-	-	88	108	153	124	90
Location Mean	162	144	169	86	131	157	123	101
S.E. of Mean	3.72	0.18	0.29	1.34	2.83	0.56	1.57	2.00
L.S.D. at 5% for:								
Checks	12.87	0.80	1.00	4.65	9.80	1.93	5.42	6.93
T.E. in S.B.	25.74	1.59	2.00	9.30	19.60	3.87	10.84	13.85
T.E. in D.B.	29.72	1.95	2.31	10.74	22.63	4.47	12.51	16.00
Checks Vs T.E.	23.50	1.54	1.82	8.49	17.89	3.53	9.89	12.65
C.V. (%)	5.01	0.25	0.36	3.15	7.80	0.71	2.56	3.97

Cont'd. ...

Table 3.9.3. Cont'd. ...

Entry Name	LEBANON		SYRIA				TURKEY	(1)
	Terbol	Al Ghab	Gelline	Hama	Idleb	Jindiross	Diyarbakir	Overall Mean
FLIP 86- 26C	107	95	-	112	99	120	121	127
FLIP 86- 90C	111	96	-	110	103	119	121	128
FLIP 86- 91C	110	103	-	110	106	122	122	126
FLIP 86- 92C	114	-	-	111	105	116	125	129
FLIP 86- 94C	106	101	103	110	101	109	121	123
FLIP 86- 97C	107	-	-	111	100	121	119	125
FLIP 86- 98C	107	-	-	114	102	120	120	128
FLIP 86- 99C	109	-	-	110	100	121	119	126
FLIP 86-100C	114	-	-	111	106	117	122	128
FLIP 86-101C	106	-	103	107	102	115	122	126
FLIP 86-103C	105	-	-	111	104	121	119	126
FLIP 86-106C	110	-	-	111	105	117	126	126
FLIP 86-107C	114	-	-	111	101	117	124	127
FLIP 86-108C	109	-	-	112	101	120	122	128
FLIP 86-110C	109	-	-	111	104	121	121	128
FLIP 87- 1C	101	-	-	106	99	119	122	125
FLIP 87- 2C	98	99	101	104	96	106	122	121
FLIP 87- 3C	108	-	-	110	106	121	122	125
FLIP 87- 4C	98	97	100	104	93	107	121	121
FLIP 87- 5C	101	86	106	102	91	106	119	121
FLIP 87- 6C	106	99	102	104	96	107	121	122
FLIP 87- 7C	97	78	98	96	90	104	119	120
FLIP 87- 8C	102	96	100	100	92	107	121	122
FLIP 87- 9C	104	76	100	97	86	101	122	120
FLIP 87- 10C	93	76	97	100	89	106	117	119
FLIP 87- 11C	109	-	107	111	100	120	118	125
FLIP 87- 13C	107	-	106	107	98	108	118	122
FLIP 87- 14C	102	-	103	106	98	115	121	125
FLIP 87- 15C	114	-	93	114	105	115	122	131
FLIP 87- 16C	113	-	-	111	104	121	119	128
FLIP 87- 23C	105	-	-	109	99	119	122	125
FLIP 87- 24C	107	-	-	115	104	121	122	130
FLIP 87- 25C	107	-	-	112	102	120	121	127
FLIP 87- 26C	106	-	105	109	98	110	122	124
FLIP 87- 34C	93	75	104	101	87	104	120	118
FLIP 87- 44C	93	95	99	103	92	105	122	119

Cont'd. ...

Table 3.9.3. Cont'd. ...

Entry Name	LEBANON		SYRIA				TURKEY	(1)
	Terbol	Al Ghab	Gelline	Hama	Idleb	Jindiress	Diyarbakir	Overall Mean
FLIP 87- 47C	97	90	103	104	94	105	119	119
FLIP 87- 48C	83	80	99	99	91	105	118	117
FLIP 87- 56C	100	91	104	104	98	110	122	122
FLIP 87- 57C	86	82	94	98	88	106	120	117
FLIP 87- 58C	86	83	93	98	89	106	120	117
FLIP 87- 59C	83	77	103	93	86	104	116	115
FLIP 87- 61C	92	86	99	99	90	106	122	118
FLIP 87- 65C	90	77	103	97	86	101	122	116
FLIP 87- 66C	102	-	104	103	102	111	122	122
FLIP 87- 67C	104	-	-	105	98	111	122	121
FLIP 87- 71C	108	-	-	109	102	116	123	125
FLIP 87- 72C	95	79	98	103	89	106	119	119
FLIP 87- 73C	110	-	-	109	102	117	120	125
FLIP 87- 74C	107	-	-	111	104	120	120	127
FLIP 87- 75C	103	-	105	105	95	106	118	120
FLIP 87- 78C	104	-	-	105	102	110	123	125
FLIP 87- 79C	103	-	107	111	99	121	117	124
FLIP 87- 80C	103	-	105	107	96	114	121	112
FLIP 87- 81C	106	-	106	105	96	110	122	122
FLIP 87- 82C	108	-	104	106	101	108	120	125
FLIP 87- 83C	106	-	103	106	98	109	121	125
FLIP 87- 85C	89	75	98	98	87	104	119	123
FLIP 87- 86C	104	91	105	105	97	110	123	123
FLIP 87- 89C	99	80	104	102	91	113	119	121
FLIP 81-293C	105	92	-	109	101	116	120	124
ILC 482	99	95	104	105	97	108	120	120
Local check	100	82	103	104	93	104	121	
Location Mean	103	87	102	106	97	112	120	
S.E. of Mean	0.93	3.09	0.29	0.40	1.04	1.14	0.91	
L.S.D. at 5% for:								
Checks	3.21	10.69	1.30	1.38	3.60	3.94	3.15	
T.E. in S.B.	6.42	21.38	2.60	2.77	7.20	7.89	6.29	
T.E. in D.B.	7.42	24.69	3.18	3.19	8.32	9.11	7.26	
Checks Vs T.E.	5.86	19.52	2.52	2.53	6.58	7.20	5.74	
C.V. (%)	1.81	13.47	0.87	0.75	2.14	2.04	1.51	

(1) Maracaju, Valdivia, Debre Zeit, Al Ghab and Gelline were excluded from the overall mean.

Table 3.9.4. Plant height (cm) of entries at different locations in the CISN-SP during 1988/89.

Entry Name	BRAZIL		CHILE		IRAN	IRAQ	LEBANON	MOROCCO	SYRIA
	Maracaju	Passo Fundo	Santa Maria	Valdivia	Karaj	Dohuk	Terbol	Marchouch	Al Ghab
FLIP 86- 26C	94	34	74	31	35	29	45	56	32
FLIP 86- 90C	96	31	81	31	40	32	44	52	32
FLIP 86- 91C	99	34	66	35	46	31	41	65	37
FLIP 86- 92C	116	42	98	42	56	38	39	76	32
FLIP 86- 94C	93	35	65	30	36	29	29	54	32
FLIP 86- 97C	96	33	84	32	44	36	45	50	39
FLIP 86- 98C	80	28	81	33	46	33	38	69	37
FLIP 86- 99C	98	40	78	32	46	37	42	66	34
FLIP 86-100C	96	35	76	34	50	35	50	71	32
FLIP 86-101C	83	34	65	32	34	31	36	44	32
FLIP 86-103C	101	39	85	33	31	38	44	52	39
FLIP 86-106C	89	35	85	40	48	36	44	69	37
FLIP 86-107C	89	32	93	36	49	35	48	68	37
FLIP 86-108C	64	37	89	37	45	33	49	70	37
FLIP 86-110C	76	40	83	31	52	38	37	57	39
FLIP 87- 1C	72	25	59	20	36	24	32	53	32
FLIP 87- 2C	71	35	68	-	40	29	31	53	32
FLIP 87- 3C	81	32	57	30	36	31	31	48	37
FLIP 87- 4C	66	32	51	27	35	30	34	59	32
FLIP 87- 5C	71	27	63	30	39	28	34	28	34
FLIP 87- 6C	88	28	52	27	39	24	33	31	32
FLIP 87- 7C	57	28	54	25	34	30	32	56	32
FLIP 87- 8C	69	34	57	31	38	30	23	46	32
FLIP 87- 9C	57	31	63	24	40	34	35	73	32
FLIP 87- 10C	61	22	58	25	25	28	30	58	34
FLIP 87- 11C	74	38	76	32	28	34	33	63	34
FLIP 87- 13C	92	25	80	30	39	31	41	33	39
FLIP 87- 14C	81	38	60	28	27	26	35	49	32
FLIP 87- 15C	-	32	78	34	28	33	30	66	37
FLIP 87- 16C	-	47	88	32	46	38	36	67	39
FLIP 87- 23C	96	28	91	27	48	34	41	59	37
FLIP 87- 24C	76	25	88	37	49	37	50	61	27
FLIP 87- 25C	74	25	89	39	52	33	42	59	37
FLIP 87- 26C	84	35	78	34	43	31	33	54	37
FLIP 87- 34C	61	22	46	21	24	27	28	46	22
FLIP 87- 44C	94	21	69	23	26	26	33	45	32

Cont'd. ...

Table 3.9.4. Cont'd. ...

Entry Name	BRAZIL			CHILE	IRAN	IRAQ	LEBANON	MOROCCO	SYRIA
	Maracaju	Passo Fundo	Santa Maria	Valdivia	Karaj	Dohuk	Terbol	Marchouch	Al Ghab
FLIP 87- 47C	67	22	64	24	32	20	29	47	27
FLIP 87- 48C	67	31	61	19	37	20	27	57	32
FLIP 87- 56C	79	23	66	23	32	26	37	51	27
FLIP 87- 57C	73	34	55	23	33	31	25	41	32
FLIP 87- 58C	51	37	50	25	25	31	35	23	32
FLIP 87- 59C	59	21	48	20	33	28	33	54	32
FLIP 87- 61C	76	35	60	25	23	26	26	30	27
FLIP 87- 65C	59	26	46	21	30	29	28	44	27
FLIP 87- 66C	84	35	52	25	35	33	38	56	32
FLIP 87- 67C	86	30	68	25	29	28	36	56	27
FLIP 87- 71C	99	29	95	32	37	35	40	71	37
FLIP 87- 72C	63	31	87	26	27	36	51	24	34
FLIP 87- 73C	84	27	66	23	42	24	27	70	32
FLIP 87- 74C	81	35	77	34	29	28	38	51	29
FLIP 87- 75C	71	38	70	27	35	28	38	48	34
FLIP 87- 78C	92	40	88	32	35	28	36	62	32
FLIP 87- 79C	71	24	63	23	35	31	39	37	39
FLIP 87- 80C	71	28	68	33	18	35	39	33	24
FLIP 87- 81C	82	23	85	29	46	31	36	47	27
FLIP 87- 82C	71	27	54	24	26	24	23	47	27
FLIP 87- 83C	66	35	55	30	37	29	33	42	32
FLIP 87- 85C	61	25	63	22	33	23	29	40	22
FLIP 87- 86C	81	31	66	24	37	27	30	48	32
FLIP 87- 89C	62	22	54	22	38	24	42	61	27
FLIP 81-293C	88	34	63	27	42	31	37	53	34
ILC 482	64	25	60	23	27	25	30	52	28
Local check	-	-	-	31	30	23	31	31	25
Location Mean	78	31	70	28	36	30	35	51	32
S.E. of Mean	4.40	1.69	2.49	1.08	1.90	0.99	2.16	4.61	1.91
L.S.D. at 5% for:									
Checks	15.24	7.62	8.61	3.74	6.58	3.42	7.48	15.96	6.61
T.E. in S.B.	30.48	15.23	17.21	7.48	13.16	6.85	14.96	31.93	13.21
T.E. in D.B.	35.19	18.65	19.88	8.63	15.20	7.91	17.28	36.87	15.26
Checks Vs T.E.	27.83	14.75	15.72	6.82	12.02	6.25	13.66	29.15	12.06
C.V. (%)	12.29	10.87	7.66	7.64	10.49	6.61	12.19	17.92	11.97

Cont'd. ...

Table 3.9.4. Cont'd. ...

Entry Name	SYRIA					TURKEY			Overall Mean
	Gelline	Hama	Idleb	Jindiress	Tel Hadya	Amasya	Diyarbakir	Izmir	
FLIP 86- 26C	27	36	36	27	19	36	30	34	37
FLIP 86- 90C	28	36	34	27	19	34	30	31	37
FLIP 86- 91C	24	34	30	30	19	37	28	41	39
FLIP 86- 92C	32	39	44	34	23	48	37	57	47
FLIP 86- 94C	24	29	32	30	19	31	28	36	35
FLIP 86- 97C	26	41	35	28	19	38	40	36	40
FLIP 86- 98C	23	41	40	27	19	41	30	37	41
FLIP 86- 99C	27	41	39	30	24	41	32	46	42
FLIP 86-100C	25	39	39	34	28	39	34	42	43
FLIP 86-101C	24	29	30	27	19	35	30	36	34
FLIP 86-103C	28	41	40	30	19	39	42	46	42
FLIP 86-106C	28	39	35	35	28	45	35	45	44
FLIP 86-107C	29	39	43	34	23	41	36	48	45
FLIP 86-108C	23	41	40	32	24	41	25	42	43
FLIP 86-110C	28	41	34	26	24	38	43	41	42
FLIP 87- 1C	21	31	32	24	19	33	24	32	33
FLIP 87- 2C	27	29	33	29	19	33	24	31	35
FLIP 87- 3C	25	34	33	27	19	36	23	36	34
FLIP 87- 4C	24	29	30	27	19	27	28	39	34
FLIP 87- 5C	26	31	30	22	24	30	35	36	33
FLIP 87- 6C	20	29	30	27	19	29	25	33	31
FLIP 87- 7C	22	31	31	25	19	31	35	33	34
FLIP 87- 8C	21	34	31	29	19	32	28	31	33
FLIP 87- 9C	22	29	35	24	23	28	25	36	36
FLIP 87- 10C	23	31	29	24	19	29	32	37	32
FLIP 87- 11C	28	41	35	27	19	42	40	37	39
FLIP 87- 13C	25	36	30	24	24	39	39	31	36
FLIP 87- 14C	25	29	28	23	19	29	24	36	33
FLIP 87- 15C	23	24	32	28	19	38	28	47	37
FLIP 87- 16C	33	41	33	29	19	38	43	47	44
FLIP 87- 23C	27	36	33	32	19	42	33	37	41
FLIP 87- 24C	30	41	42	26	19	38	44	37	42
FLIP 87- 25C	27	41	37	35	24	39	23	42	41
FLIP 87- 26C	31	34	34	31	23	34	36	47	39
FLIP 87- 34C	19	26	31	23	19	26	20	32	28
FLIP 87- 44C	22	31	30	21	19	30	23	27	31

Cont'd. ...

Table 3.9.4. Cont'd. ...

Entry Name	SYRIA					TURKEY			Overall Mean
	Gelline	Hama	Idleb	Jindiress	Tel Hadya	Amasya	Diyarbakir	Izmir	
FLIP 87- 47C	22	26	25	25	19	27	29	33	30
FLIP 87- 48C	24	31	30	26	19	33	22	32	33
FLIP 87- 56C	23	29	32	22	23	35	25	34	33
FLIP 87- 57C	25	24	29	22	14	28	28	41	31
FLIP 87- 58C	20	24	33	28	19	28	28	31	30
FLIP 87- 59C	21	26	30	20	19	27	28	32	31
FLIP 87- 61C	22	29	29	22	19	26	19	46	30
FLIP 87- 65C	26	29	30	23	23	28	25	32	30
FLIP 87- 66C	27	34	32	28	23	33	26	42	36
FLIP 87- 67C	22	34	37	24	23	35	29	47	36
FLIP 87- 71C	25	39	34	29	28	42	34	48	43
FLIP 87- 72C	29	36	34	29	24	37	41	41	38
FLIP 87- 73C	25	29	29	26	23	33	27	32	35
FLIP 87- 74C	23	36	32	27	19	34	38	42	37
FLIP 87- 75C	26	36	33	26	19	29	34	41	36
FLIP 87- 78C	26	29	33	26	23	35	35	32	38
FLIP 87- 79C	24	36	35	24	19	31	37	46	35
FLIP 87- 80C	27	36	33	21	19	38	34	36	33
FLIP 87- 81C	25	24	34	26	23	39	31	37	36
FLIP 87- 82C	22	29	31	25	14	32	28	36	30
FLIP 87- 83C	24	34	30	23	19	34	29	41	34
FLIP 87- 85C	22	36	33	23	19	30	27	27	31
FLIP 87- 86C	26	29	32	24	23	32	30	37	34
FLIP 87- 89C	22	26	29	26	19	31	33	42	34
FLIP 81-293C	-	34	34	28	20	35	29	40	37
ILC 482	22	29	29	24	19	31	27	36	31
Local check	22	25	28	21	19	35	34	35	
Location Mean	25	33	33	26	20	34	30	38	
S.E. of Mean	0.76	1.82	0.51	0.67	0.72	0.96	1.37	2.27	
L.S.D. at 5% for:									
Checks	3.44	6.28	1.75	2.33	2.50	3.34	4.76	7.86	
T.E. in S.B.	6.87	12.57	3.51	4.65	4.99	6.67	9.51	15.72	
T.E. in D.B.	8.42	14.51	4.05	5.37	5.77	7.70	10.98	18.15	
Checks vs T.E.	6.66	11.48	3.20	4.25	4.56	6.09	8.68	14.35	
C.V. (%)	6.22	11.15	3.10	5.11	7.07	5.63	9.03	12.02	

(1) Maracaju, Valdivia and Gelline were excluded from the overall mean.

Table 3.9.5. 100-Seed weight (g) of entries at different locations in the CISN-SP during 1988/89.

Entry Name	BRAZIL		FRANCE	IRAN	IRAQ	LEBANON	MEXICO		SYRIA		(1) Overall Mean
	Santa Maria	Montboucher	Karaj	Dohuk	Terbol	Padilla Tam	Idleb	Jindiress			
FLIP 86- 26C	32	39	40	22	39	39	39	38	34		
FLIP 86- 90C	37	47	44	42	47	37	42	-	43		
FLIP 86- 91C	38	44	40	38	43	-	41	45	41		
FLIP 86- 92C	36	47	37	32	36	18	32	-	37		
FLIP 86- 94C	38	48	44	48	52	-	46	51	46		
FLIP 86- 97C	36	43	44	28	43	35	36	40	37		
FLIP 86- 98C	35	40	41	32	41	32	42	38	38		
FLIP 86- 99C	37	42	47	28	46	38	40	38	39		
FLIP 86-100C	33	38	42	32	46	34	41	42	38		
FLIP 86-101C	35	35	43	28	39	32	37	38	35		
FLIP 86-103C	31	36	46	38	42	-	37	41	37		
FLIP 86-106C	33	42	45	32	44	36	35	42	37		
FLIP 86-107C	32	44	41	32	47	-	41	40	39		
FLIP 86-108C	35	39	42	32	42	10	37	38	37		
FLIP 86-110C	42	49	51	38	48	43	40	44	44		
FLIP 87- 1C	35	40	44	32	43	39	43	35	39		
FLIP 87- 2C	39	47	44	38	46	-	39	44	42		
FLIP 87- 3C	33	42	36	28	47	29	43	43	39		
FLIP 87- 4C	31	36	35	38	37	23	35	42	36		
FLIP 87- 5C	37	47	-	48	45	-	41	41	44		
FLIP 87- 6C	25	48	39	48	43	-	41	45	41		
FLIP 87- 7C	39	46	47	42	42	43	40	41	41		
FLIP 87- 8C	38	42	41	38	42	-	43	40	41		
FLIP 87- 9C	40	46	42	52	51	38	46	42	47		
FLIP 87- 10C	37	47	44	38	41	39	42	40	41		
FLIP 87- 11C	36	41	42	38	42	28	38	36	39		
FLIP 87- 13C	34	42	42	38	42	-	27	37	37		
FLIP 87- 14C	29	40	33	38	33	27	34	37	35		
FLIP 87- 15C	33	42	37	28	42	32	36	40	36		
FLIP 87- 16C	33	44	47	28	39	36	42	-	37		
FLIP 87- 23C	26	31	31	22	33	24	30	29	28		
FLIP 87- 24C	45	44	43	28	43	33	38	-	40		
FLIP 87- 25C	32	42	38	32	36	26	35	36	35		
FLIP 87- 26C	27	35	38	22	39	28	33	30	31		
FLIP 87- 34C	28	36	34	42	38	32	37	33	36		
FLIP 87- 44C	32	29	35	32	35	28	33	36	32		

Cont'd. ...

Table 3.9.5. Cont'd. ...

Entry Name	BRAZIL	FRANCE	IRAN	IRAQ	LEBANON	MEXICO	SYRIA		(1)
	Santa Maria	Montboucher	Karaj	Dohuk	Terbol	Padilla Tam	Idleb	Jindireess	Overall Mean
FLIP 87- 47C	32	39	42	32	40	35	35	37	36
FLIP 87- 48C	27	36	35	42	32	-	28	30	33
FLIP 87- 56C	27	37	38	32	35	-	32	29	32
FLIP 87- 57C	32	40	31	38	35	-	36	33	36
FLIP 87- 58C	33	35	38	38	34	-	33	35	35
FLIP 87- 59C	34	37	41	42	33	28	36	33	36
FLIP 87- 61C	29	34	30	28	31	27	33	31	31
FLIP 87- 65C	23	30	32	32	28	30	28	25	28
FLIP 87- 66C	30	29	39	32	39	28	39	35	34
FLIP 87- 67C	24	31	31	22	32	26	32	29	28
FLIP 87- 71C	35	43	40	42	44	31	35	40	40
FLIP 87- 72C	36	44	46	28	39	-	38	38	37
FLIP 87- 73C	32	38	41	42	40	29	37	37	38
FLIP 87- 74C	38	47	45	38	50	-	42	43	43
FLIP 87- 75C	27	33	35	28	33	30	27	31	29
FLIP 87- 78C	29	40	40	22	39	34	32	34	32
FLIP 87- 79C	35	39	47	28	43	31	38	-	37
FLIP 87- 80C	30	34	38	28	38	31	31	32	32
FLIP 87- 81C	34	39	41	32	42	28	39	37	37
FLIP 87- 82C	34	37	36	28	37	32	37	38	35
FLIP 87- 83C	35	39	36	28	40	29	35	35	35
FLIP 87- 85C	33	37	38	42	38	-	36	36	37
FLIP 87- 86C	27	40	41	42	39	31	34	36	37
FLIP 87- 89C	33	32	33	42	35	-	39	32	36
FLIP 81-293C	25	29	34	25	33	28	30	30	29
ILC 482	24	30	29	30	30	25	28	28	28
Local check	-	28	33	30	38	31	38	34	
Location Mean	30	38	38	33	39	33	36	37	
S.E. of Mean	0.50	0.26	1.70	1.67	0.99	0.55	0.79	0.81	
L.S.D. at 5% for:									
Checks	1.73	0.91	5.87	5.77	3.43	1.89	2.72	2.80	
T.E. in S.B.	3.45	1.81	11.75	11.53	6.86	3.78	5.44	5.60	
T.E. in D.B.	3.99	2.09	13.57	13.32	7.93	4.37	6.28	6.47	
Checks Vs T.E.	3.15	1.65	10.73	10.53	6.27	3.45	4.97	5.12	
C.V. (%)	3.29	1.38	8.87	10.00	5.07	4.65	4.36	4.82	

(1) Karaj, Padilla Tam and Jindireess were excluded from the overall mean.

Table 3.9.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-SP during 1988/89.

Entry Name	BRAZIL						CHILE		FRANCE		IRAN		IRAQ	
	Maracaju		Passo Fundo		Santa Maria		Valdivia		Montboucher		Karaj		Dohuk	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 26C	435	13	517	46	1323	15	499	11	3507	7	527	52	133	42
FLIP 86- 90C	179	39	866	14	1361	11	429	20	2783	22	619	50	339	28
FLIP 86- 91C	481	9	463	52	1317	16	482	12	3344	10	2232	5	340	27
FLIP 86- 92C	-	-	539	45	215	61	31	62	2095	52	1386	29	-	-
FLIP 86- 94C	324	21	552	43	1419	8	609	5	2774	23	1409	25	325	29
FLIP 86- 97C	37	50	1060	4	1360	12	289	39	2719	27	769	45	76	52
FLIP 86- 98C	479	10	771	19	1152	27	632	4	3772	2	733	49	93	48
FLIP 86- 99C	281	24	1098	3	1494	3	448	19	2866	19	763	47	66	53
FLIP 86-100C	547	4	806	17	1243	21	285	40	3142	12	2575	1	-	-
FLIP 86-101C	243	31	913	12	885	45	380	27	2115	48	1206	34	230	34
FLIP 86-103C	-	-	571	41	1131	31	207	51	2736	26	180	58	136	41
FLIP 86-106C	166	42	660	30	494	57	165	54	2142	47	2152	6	-	-
FLIP 86-107C	291	23	717	25	1313	17	44	61	2295	45	2140	7	-	-
FLIP 86-108C	247	30	618	37	1355	13	328	36	2330	44	967	39	98	46
FLIP 86-110C	112	43	469	51	1278	19	416	23	2166	46	180	57	176	36
FLIP 87- 1C	172	40	1215	2	1114	32	283	42	2701	30	1390	28	302	31
FLIP 87- 2C	274	25	418	53	1343	14	-	-	1674	57	1809	13	495	16
FLIP 87- 3C	224	33	596	39	803	50	355	30	2685	31	815	42	420	22
FLIP 87- 4C	337	18	507	48	1114	33	526	9	2915	18	2426	4	415	23
FLIP 87- 5C	-	-	513	47	674	51	480	13	2054	53	-	-	531	13
FLIP 87- 6C	256	28	304	58	911	43	457	17	2009	54	1518	21	430	20
FLIP 87- 7C	485	7	580	40	834	48	556	6	2425	40	1019	38	548	12
FLIP 87- 8C	399	14	152	59	219	60	774	1	1797	56	2575	3	550	11
FLIP 87- 9C	54	47	412	54	602	54	317	37	1560	60	1935	10	578	8
FLIP 87- 10C	-	-	94	61	814	49	499	10	1501	61	369	54	426	21
FLIP 87- 11C	-	-	634	33	1468	4	353	31	2560	34	0	61	121	45
FLIP 87- 13C	-	-	729	24	1278	18	467	14	1607	59	0	62	271	32
FLIP 87- 14C	237	32	558	42	1412	9	450	18	1638	58	792	44	385	25
FLIP 87- 15C	193	38	88	62	1025	40	330	35	3085	14	1478	22	90	51
FLIP 87- 16C	-	-	380	56	586	55	143	57	2348	43	238	56	11	55
FLIP 87- 23C	397	15	694	27	1146	28	232	48	1877	55	561	51	148	38
FLIP 87- 24C	-	-	380	55	1145	29	245	47	2401	41	815	43	-	-
FLIP 87- 25C	335	20	790	18	1241	22	340	33	3348	9	1527	20	93	49
FLIP 87- 26C	110	44	704	26	481	58	152	55	2101	50	1883	12	-	-
FLIP 87- 34C	485	8	625	35	625	53	423	21	2489	36	390	53	564	10
FLIP 87- 44C	260	27	1056	5	1235	23	416	24	3848	1	733	48	488	17

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	BRAZIL						CHILE		FRANCE		IRAN		IRAQ	
	Maracaju		Passo Fundo		Santa Maria		Valdivia		Montboucher		Karaj		Dohuk	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 47C	485	6	961	8	1215	24	632	3	2395	42	1727	14	608	5
FLIP 87- 48C	166	41	650	31	860	47	207	52	2583	32	1401	26	573	9
FLIP 87- 56C	335	19	952	9	1961	1	412	25	3066	16	1980	9	622	4
FLIP 87- 57C	693	3	628	34	1463	5	336	34	3203	11	1540	19	640	3
FLIP 87- 58C	781	1	317	57	1063	37	546	7	2715	28	1369	30	510	14
FLIP 87- 59C	722	2	675	28	1507	2	378	28	3548	6	1453	24	608	6
FLIP 87- 61C	224	34	615	38	1000	41	285	41	2832	20	843	41	705	2
FLIP 87- 65C	91	46	736	23	545	56	146	56	2801	21	2575	2	397	24
FLIP 87- 66C	247	29	1294	1	1187	26	215	50	3707	3	1563	18	122	44
FLIP 87- 67C	54	48	1015	7	424	59	88	58	2483	37	1460	23	197	35
FLIP 87- 71C	360	16	539	44	1142	30	88	59	2554	35	1255	33	-	-
FLIP 87- 72C	-	-	107	60	643	52	194	53	2095	51	38	59	501	15
FLIP 87- 73C	479	11	882	13	1097	35	279	43	3572	5	1186	35	-	-
FLIP 87- 74C	-	-	844	15	1030	39	302	38	3683	4	0	60	51	54
FLIP 87- 75C	93	45	666	29	1462	6	340	32	3066	15	1289	32	371	26
FLIP 87- 78C	10	51	755	21	151	62	0	63	3130	13	1695	15	141	40
FLIP 87- 79C	-	-	755	22	1246	20	277	44	3042	17	335	55	91	50
FLIP 87- 80C	437	12	825	16	1100	34	664	2	2560	33	2003	8	146	39
FLIP 87- 81C	41	49	755	20	888	44	457	16	3377	8	1923	11	97	47
FLIP 87- 82C	224	35	482	50	867	46	406	26	1232	63	1020	37	310	30
FLIP 87- 83C	212	36	501	49	1069	36	419	22	2109	49	938	40	250	33
FLIP 87- 85C	204	37	625	36	1057	38	531	8	1395	62	767	46	588	7
FLIP 87- 86C	272	26	945	10	913	42	222	49	2772	24	1695	16	159	37
FLIP 87- 89C	310	22	644	32	1202	25	277	45	2436	39	1401	27	468	18
FLIP 81-293C	511	5	1044	6	1391	10	265	46	2707	29	1350	31	133	43
ILC 482	344	17	941	11	1419	7	360	29	2760	25	1173	36	447	19
Local check	-	-	-	-	-	-	459	15	2441	38	1596	17	712	1
Location Mean	292		693		1024		348		2603		1243		348	
S.E. of Mean	195.64		165.70		95.84		77.64		254.11		460.51		39.49	
L.S.D. at 5% for:														
Checks	676.94		745.55		331.63		268.64		879.23		1593.39		136.64	
T.E. in S.B.	1353.88		1491.11		663.25		537.27		1758.46		3186.77		273.28	
T.E. in D.B.	1563.33		1826.23		765.86		620.39		2030.49		3679.77		315.56	
Checks Vs T.E.	1236.11		1443.98		605.56		490.53		1605.49		2909.55		249.51	
C.V. (%)	171.07		47.79		18.72		44.60		19.53		76.03		26.28	
Test > L. Check	-		-		-		0		0		0		0	

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	JORDAN		LEBANON		MEXICO		MOROCCO		SPAIN		SYRIA	
	Jubeiha		Terbol		Padilla Tam		Marchouch		Cordoba		Al Ghab	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 26C	97	17	278	14	1715	2	972	10	925	43	-	-
FLIP 86- 90C	97	6	167	43	424	29	296	51	825	50	-	-
FLIP 86- 91C	20	44	106	52	38	50	425	46	1508	14	281	23
FLIP 86- 92C	97	19	-	-	70	48	326	50	442	62	-	-
FLIP 86- 94C	20	42	169	42	38	49	801	17	1258	25	312	21
FLIP 86- 97C	78	36	325	3	1148	7	378	47	1725	8	199	30
FLIP 86- 98C	97	7	198	32	1007	10	527	37	1075	35	-	-
FLIP 86- 99C	273	2	238	23	230	38	607	33	1225	26	199	25
FLIP 86-100C	97	9	156	45	684	17	462	42	1692	9	-	-
FLIP 86-101C	-	-	296	10	1063	9	900	12	508	60	154	39
FLIP 86-103C	-	-	143	48	-	-	744	22	725	54	199	33
FLIP 86-106C	97	12	61	56	203	39	728	24	792	53	-	-
FLIP 86-107C	97	28	45	57	-	-	724	25	792	52	-	-
FLIP 86-108C	97	14	175	38	286	34	532	36	1225	28	-	-
FLIP 86-110C	-	-	175	39	514	27	886	14	1125	32	199	29
FLIP 87- 1C	97	16	246	21	918	12	717	26	1625	11	-	-
FLIP 87- 2C	20	48	304	8	38	53	663	30	858	48	471	12
FLIP 87- 3C	20	45	74	55	734	14	796	18	1508	16	154	38
FLIP 87- 4C	20	41	320	6	200	43	498	40	1658	10	376	16
FLIP 87- 5C	-	-	286	12	-	-	607	34	1025	36	358	19
FLIP 87- 6C	20	50	19	62	38	52	701	28	858	47	312	22
FLIP 87- 7C	97	22	151	46	599	23	523	39	625	56	688	2
FLIP 87- 8C	20	49	42	58	38	54	1142	3	1508	15	661	3
FLIP 87- 9C	97	24	37	59	115	47	138	58	1342	20	578	7
FLIP 87- 10C	177	4	190	35	635	21	0	62	1075	33	358	18
FLIP 87- 11C	-	-	230	27	168	44	777	20	175	63	199	26
FLIP 87- 13C	-	-	214	28	-	-	203	56	875	46	199	28
FLIP 87- 14C	1443	1	201	31	683	18	489	41	958	41	154	40
FLIP 87- 15C	20	47	19	61	238	37	58	61	1008	40	154	42
FLIP 87- 16C	6	52	95	53	1164	6	260	53	525	59	199	24
FLIP 87- 23C	97	31	143	47	378	31	151	57	1225	27	-	-
FLIP 87- 24C	-	-	198	34	880	13	446	44	1025	37	199	27
FLIP 87- 25C	97	26	183	37	945	24	205	55	1075	34	-	-
FLIP 87- 26C	97	10	251	19	157	45	877	15	2342	2	-	-
FLIP 87- 34C	97	20	206	30	540	25	108	59	1125	31	402	15
FLIP 87- 44C	97	8	278	15	657	20	729	23	1275	24	593	6

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	JORDAN		LEBANON		MEXICO		MOROCCO		SPAIN		SYRIA	
	Jubeiha		Terbol		Padilla Tam		Marchouch		Cordoba		Al Ghab	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 47C	97	13	500	1	1548	3	1087	5	1225	29	720	1
FLIP 87- 48C	97	23	294	11	203	42	918	11	2275	3	466	13
FLIP 87- 56C	97	33	172	40	-	-	1000	9	1792	7	102	44
FLIP 87- 57C	20	51	423	2	38	55	427	45	858	49	630	4
FLIP 87- 58C	20	43	185	36	38	51	1181	2	1508	13	598	5
FLIP 87- 59C	97	11	198	33	365	32	675	29	2425	1	529	9
FLIP 87- 61C	20	46	249	20	246	36	1049	6	658	55	534	8
FLIP 87- 65C	97	34	29	60	124	46	525	38	942	42	451	14
FLIP 87- 66C	97	30	267	17	261	35	840	16	1942	4	-	-
FLIP 87- 67C	97	15	108	51	1207	5	1047	7	1392	18	-	-
FLIP 87- 71C	97	32	315	7	928	11	454	43	1192	30	-	-
FLIP 87- 72C	76	37	159	44	-	-	0	63	1025	39	358	17
FLIP 87- 73C	97	18	140	49	432	28	1135	4	1442	17	-	-
FLIP 87- 74C	125	5	270	16	-	-	327	49	1525	12	199	35
FLIP 87- 75C	-	-	238	24	673	19	765	21	1025	38	199	34
FLIP 87- 78C	97	21	323	5	315	33	633	31	1392	19	-	-
FLIP 87- 79C	68	38	325	4	610	22	352	48	1275	22	199	31
FLIP 87- 80C	-	-	254	18	1364	4	271	52	925	44	199	32
FLIP 87- 81C	97	25	172	41	695	16	707	27	592	57	-	-
FLIP 87- 82C	-	-	122	50	1096	8	210	54	458	61	154	43
FLIP 87- 83C	-	-	74	54	384	30	622	32	1858	5	154	41
FLIP 87- 85C	97	27	238	22	203	40	1018	8	525	58	529	10
FLIP 87- 86C	97	35	235	25	-	-	889	13	1292	21	-	-
FLIP 87- 89C	97	29	302	9	203	41	790	19	1275	23	339	20
FLIP 81-293C	46	39	208	29	1905	1	534	35	1838	6	187	36
ILC 482	24	40	230	26	716	15	1261	1	875	45	156	37
Local check	222	3	284	13	540	26	83	60	813	51	484	11
Location Mean	113		204		634		608		1173		337	
S.E. of Mean	63.82		42.64		179.68		89.01		200.74		63.46	
L.S.D. at 5% for:												
Checks	220.83		147.54		621.70		307.99		694.56		219.58	
T.E. in S.B.	441.66		295.09		1243.40		615.98		1389.12		439.15	
T.E. in D.B.	509.98		340.74		1435.76		711.27		1604.02		507.09	
Checks Vs T.E.	403.24		269.42		1135.24		562.40		1268.28		400.95	
C.V. (%)	175.59		41.82		66.70		29.26		34.23		65.70	
T.E. > L. Check	1		0		1		29		3		0	

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	SYRIA								TUNISIA			
	Gelline		Hama		Idlob		Jindiross		Boja-1		Boja-2	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86- 26C	41	30	796	40	871	15	201	42	1388	18	1163	23
FLIP 86- 90C	41	27	1019	15	411	53	42	56	1288	25	1613	4
FLIP 86- 91C	10	39	902	32	410	54	427	22	1121	39	729	44
FLIP 86- 92C	-	-	151	62	593	40	-	-	271	63	246	61
FLIP 86- 94C	55	23	934	27	635	31	687	3	821	50	629	52
FLIP 86- 97C	-	-	468	57	941	8	158	46	1571	9	1213	20
FLIP 86- 98C	41	29	606	50	426	52	61	52	1788	6	1113	26
FLIP 86- 99C	-	-	563	51	391	57	139	48	1471	15	713	46
FLIP 86-100C	-	-	500	55	528	48	167	44	1021	46	1096	27
FLIP 86-101C	22	37	902	30	995	5	427	23	1371	20	829	40
FLIP 86-103C	-	-	1008	16	521	50	31	58	1071	43	1213	19
FLIP 86-106C	-	-	341	60	503	51	27	59	621	56	696	48
FLIP 86-107C	-	-	119	63	648	30	52	54	571	58	696	49
FLIP 86-108C	41	32	542	52	581	44	162	45	1388	19	963	36
FLIP 86-110C	-	-	722	46	801	19	253	39	571	57	613	55
FLIP 87- 1C	41	31	1272	1	406	55	61	51	1338	22	963	35
FLIP 87- 2C	38	33	997	20	885	11	630	7	1121	38	729	42
FLIP 87- 3C	10	41	966	24	310	59	402	28	1471	13	1029	31
FLIP 87- 4C	94	18	997	19	565	45	783	2	1721	7	1179	21
FLIP 87- 5C	91	19	944	25	396	56	463	14	821	51	113	62
FLIP 87- 6C	88	20	839	38	865	16	630	6	1271	29	729	43
FLIP 87- 7C	219	10	987	21	831	17	645	5	1238	32	1063	28
FLIP 87- 8C	105	17	1220	3	655	28	814	1	1271	30	929	38
FLIP 87- 9C	174	13	1008	17	973	6	675	4	921	47	996	33
FLIP 87- 10C	80	22	976	23	606	39	444	18	871	48	13	63
FLIP 87- 11C	-	-	849	35	751	23	50	55	1171	35	963	37
FLIP 87- 13C	47	24	849	37	616	35	368	31	1121	40	613	53
FLIP 87- 14C	33	34	902	31	875	14	306	38	1121	42	829	41
FLIP 87- 15C	10	40	331	61	285	62	421	26	521	59	429	57
FLIP 87- 16C	-	-	532	53	206	63	-	-	421	61	263	60
FLIP 87- 23C	41	28	479	56	301	60	54	53	1538	11	1363	12
FLIP 87- 24C	-	-	437	58	526	49	-	-	771	52	463	56
FLIP 87- 25C	41	26	384	59	606	38	156	47	838	49	613	54
FLIP 87- 26C	-	-	627	49	673	27	230	40	671	54	1246	15
FLIP 87- 34C	324	5	733	45	591	42	201	41	1138	37	1063	29
FLIP 87- 44C	163	14	1146	7	876	13	493	13	2188	2	2063	2

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	SYRIA								TUNISIA			
	Gelline		Hama		Idleb		Jindiress		Beja-1		Beja-2	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 47C	185	11	669	48	706	26	448	16	2388	1	2213	1
FLIP 87- 48C	452	4	1114	8	561	46	423	24	1038	44	663	50
FLIP 87- 56C	269	7	1103	9	1123	2	446	17	1421	17	1746	3
FLIP 87- 57C	538	3	870	34	615	36	598	9	421	60	429	58
FLIP 87- 58C	594	2	870	33	295	61	605	8	1221	34	979	34
FLIP 87- 59C	635	1	1050	11	876	12	588	10	1938	4	713	45
FLIP 87- 61C	260	8	934	28	540	47	535	11	1471	16	1379	11
FLIP 87- 65C	135	15	532	54	968	7	421	25	621	55	646	51
FLIP 87- 66C	-	-	1040	13	1048	4	351	33	1371	21	1496	7
FLIP 87- 67C	-	-	786	43	748	24	198	43	1571	10	1446	8
FLIP 87- 71C	-	-	1167	6	593	41	40	57	1571	8	1246	16
FLIP 87- 72C	224	9	817	39	606	37	368	30	771	53	313	59
FLIP 87- 73C	-	-	786	42	898	10	351	34	1221	33	1396	9
FLIP 87- 74C	-	-	786	41	311	58	133	50	1121	41	1163	24
FLIP 87- 75C	80	21	944	26	631	33	323	35	1271	27	713	47
FLIP 87- 78C	-	-	1008	18	628	34	402	29	1321	23	1246	17
FLIP 87- 79C	-	-	913	29	591	43	-	-	1271	28	1263	14
FLIP 87- 80C	24	36	849	36	631	32	133	49	1271	26	1113	25
FLIP 87- 81C	8	42	1262	2	1058	3	503	12	1321	24	1396	10
FLIP 87- 82C	27	35	1188	5	740	25	433	19	1471	12	1029	32
FLIP 87- 83C	16	38	1029	14	765	21	433	20	321	62	1229	18
FLIP 87- 85C	308	6	1050	12	906	9	308	36	1988	3	1563	6
FLIP 87- 86C	2	43	1198	4	813	18	427	21	1471	14	1346	13
FLIP 87- 89C	180	12	765	44	761	22	410	27	1838	5	1563	5
FLIP 81-293C	-	-	698	47	650	29	357	32	1163	36	1038	30
ILC 482	43	25	1095	10	779	20	306	37	1038	45	888	39
Local check	117	16	976	22	1130	1	452	15	1263	31	1163	22
Location Mean	151		845		690		357		1186		997	
S.E. of Mean	21.48		96.30		120.16		80.07		106.07		148.37	
L.S.D. at 5% for:	96.64		333.20		415.78		277.06		367.00		513.37	
T.E. in S.B.	193.29		666.39		831.55		554.12		733.99		1026.74	
T.E. in D.B.	236.72		769.48		960.19		639.85		847.54		1185.58	
Checks Vs T.E.	187.18		608.42		759.21		505.92		670.14		937.43	
C.V. (%)	47.16		22.79		34.82		48.44		17.89		29.76	
T.E. > L. Check	6		0		0		0		4		1	

Cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	TUNISIA				TURKEY						(1) Overall Mean	
	El Kef		Oued Meliz		Amasya		Diyarbakir		Izmir		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 86- 26C	3250	47	1917	10	1095	44	837	24	284	56	1275	24
FLIP 86- 90C	6000	5	1367	41	1108	42	820	26	358	51	1352	19
FLIP 86- 91C	1583	60	750	60	1184	30	640	50	617	35	1007	50
FLIP 86- 92C	2000	57	717	61	1396	14	473	62	1160	14	708	62
FLIP 86- 94C	3833	29	1150	50	1394	17	1054	11	506	40	1195	34
FLIP 86- 97C	4167	25	1517	32	1284	21	694	45	346	52	1318	20
FLIP 86- 98C	4000	27	1867	12	1203	29	740	37	358	50	1306	21
FLIP 86- 99C	3667	33	1767	18	1157	35	707	43	198	59	1211	33
FLIP 86-100C	4000	26	2417	2	1205	28	851	21	2123	1	1416	11
FLIP 86-101C	4333	21	1750	20	1184	31	1547	2	1840	2	1358	17
FLIP 86-103C	5917	7	2017	7	1220	27	778	30	568	38	1357	18
FLIP 86-106C	1750	59	1567	28	1624	5	246	63	1235	13	897	57
FLIP 86-107C	1250	62	1467	35	1497	9	509	59	1568	4	947	56
FLIP 86-108C	2750	53	1117	51	1178	33	544	58	506	41	1054	42
FLIP 86-110C	2917	50	1217	48	776	59	974	12	568	37	1017	47
FLIP 87- 1C	6500	4	2267	3	1298	19	1055	10	1395	8	1607	4
FLIP 87- 2C	3333	43	1500	33	1508	7	676	46	877	24	1126	38
FLIP 87- 3C	3583	36	1600	26	1184	32	707	42	321	54	1176	35
FLIP 87- 4C	2583	54	1650	23	1495	10	743	36	395	48	1223	30
FLIP 87- 5C	4167	24	1417	39	547	62	756	33	494	43	988	53
FLIP 87- 6C	2833	51	1250	44	1298	20	845	23	173	60	994	51
FLIP 87- 7C	4700	15	1467	37	1140	39	735	38	877	25	1212	32
FLIP 87- 8C	2333	56	1500	34	1425	13	951	13	25	61	1011	49
FLIP 87- 9C	3500	39	967	56	1231	25	700	44	938	22	1022	46
FLIP 87- 10C	4417	19	1117	52	1093	46	654	49	12	62	896	58
FLIP 87- 11C	3917	28	1567	29	1011	51	876	19	1383	9	1222	31
FLIP 87- 13C	4667	16	767	59	1125	40	1125	8	494	42	1085	40
FLIP 87- 14C	1333	61	1400	40	1159	34	880	18	469	45	948	55
FLIP 87- 15C	333	63	1200	49	1356	18	734	39	654	34	742	61
FLIP 87- 16C	3417	42	1217	45	960	56	720	40	716	30	843	60
FLIP 87- 23C	3750	30	1667	22	1394	15	615	53	951	20	1153	36
FLIP 87- 24C	1917	58	1367	42	788	58	476	61	494	44	855	59
FLIP 87- 25C	3250	45	1067	54	695	61	766	31	469	46	1035	45
FLIP 87- 26C	3500	38	1817	15	1269	22	580	57	1494	7	1242	26
FLIP 87- 34C	3750	31	917	57	1095	45	477	60	247	57	1013	48
FLIP 87- 44C	6000	6	2467	1	886	57	882	17	543	39	1698	3

cont'd. ...

Table 3.9.6. Cont'd. ...

Entry Name	TUNISIA				TURKEY						(1)	
	El Kef		Oued Meliz		Amasya		Diyarbakir		Izmir		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87- 47C	7750	1	1967	8	1394	16	1153	7	802	28	1762	1
FLIP 87- 48C	6750	3	1417	38	1038	48	833	25	1358	10	1490	7
FLIP 87- 56C	5750	10	2067	6	1091	47	1562	1	716	31	1701	2
FLIP 87- 57C	3333	44	800	58	1521	6	845	22	321	53	1077	41
FLIP 87- 58C	3583	35	700	62	1508	8	658	48	0	63	1119	39
FLIP 87- 59C	5500	12	1217	47	708	60	669	47	580	36	1485	8
FLIP 87- 61C	4333	22	1550	30	225	63	1174	6	988	18	1266	25
FLIP 87- 65C	2750	52	1067	55	1250	23	713	41	679	33	987	54
FLIP 87- 66C	3500	37	1867	11	1675	2	637	51	1160	15	1535	5
FLIP 87- 67C	4250	23	1767	19	964	55	606	54	975	19	1305	22
FLIP 87- 71C	3250	48	1467	36	1142	37	637	52	1309	12	1238	28
FLIP 87- 72C	4417	17	1267	43	1652	3	800	28	198	58	990	52
FLIP 87- 73C	3500	40	1617	24	1440	11	940	14	1568	3	1442	10
FLIP 87- 74C	3667	34	1217	46	1023	50	747	35	716	29	1229	29
FLIP 87- 75C	4417	20	1567	27	985	54	920	15	864	26	1302	23
FLIP 87- 78C	3500	41	1617	25	996	52	597	55	1309	11	1240	27
FLIP 87- 79C	6917	2	1917	9	1099	43	791	29	938	21	1513	6
FLIP 87- 80C	4417	18	267	63	1030	49	1267	5	383	49	1144	37
FLIP 87- 81C	3250	46	1867	13	1631	4	1291	4	1531	6	1406	14
FLIP 87- 82C	3083	49	1800	17	1121	41	1076	9	914	23	1053	43
FLIP 87- 83C	2583	55	1550	31	994	53	751	34	284	55	1049	44
FLIP 87- 85C	5750	9	1817	16	1711	1	593	56	432	47	1378	15
FLIP 87- 86C	3750	32	1867	14	1231	26	820	27	1049	17	1373	16
FLIP 87- 89C	5500	13	1117	53	1425	12	766	32	802	27	1412	12
FLIP 81-293C	5063	14	1688	21	1141	38	867	20	1093	16	1408	13
ILC 482	5875	8	2113	4	1238	24	886	16	704	32	1473	9
Local check	5563	11	2100	5	1148	36	1316	3	1537	5		
Location Mean	4121		1552		1186		840		817			
S.E. of Mean	367.40		141.24		66.56		124.34		258.01			
L.S.D. at 5% for:												
Checks	1271.23		488.69		230.31		430.21		892.73			
T.E. in S.B.	2542.45		977.38		460.63		860.42		1785.46			
T.E. in D.B.	2935.77		1128.58		531.89		993.53		2061.67			
Checks Vs T.E.	2321.28		892.35		420.56		785.57		1630.14			
C.V. (%)	17.83		18.20		11.22		29.60		63.13			
T.E. > L. Check	0		0		5		0		0			

(1) Maracaju, Valdivia, Karaj, Dohuk, Jubeiha, Padilla Tam, Al Ghab, Gelline and Jindiress were excluded from the overall mean.

Table 3.9.7. The five heaviest seed yielding entries at the individual locations in the CISW-SP during 1988/89.

Rank	BRAZIL			CHILE	FRANCE	IRAN	IRAQ	JORDAN
	Maracaju	Passo Fundo	Santa Maria	Valdivia	Montboucher	Karaj	Dohuk	Jubeiha
1	FLIP 87- 58C	FLIP 87- 66C	FLIP 87- 56C	FLIP 87- 8C	FLIP 87- 44C	FLIP 86-100C	Local check	FLIP 87- 14C
2	FLIP 87- 59C	FLIP 87- 1C	FLIP 87- 59C	FLIP 87- 80C	FLIP 86- 98C	FLIP 87- 65C	FLIP 87- 61C	FLIP 86- 99C
3	FLIP 87- 57C	FLIP 86- 99C	FLIP 86- 99C	FLIP 87- 47C	FLIP 87- 66C	FLIP 87- 8C	FLIP 87- 57C	Local check
4	FLIP 86-100C	FLIP 86- 97C	FLIP 87- 11C	FLIP 86- 98C	FLIP 87- 74C	FLIP 87- 4C	FLIP 87- 56C	FLIP 87- 10C
5	FLIP 81-293C	FLIP 87- 44C	FLIP 87- 57C	FLIP 86- 94C	FLIP 87- 73C	FLIP 86- 91C	FLIP 87- 47C FLIP 87- 59C	FLIP 87- 74C

Cont'd. ...

Rank	LEBANON	MEXICO	MOROCCO	SPAIN	SYRIA			
	Terbol	Padilla Tam	Marchouch	Cordoba	Al Ghab	Gelline	Hama	Idleb
1	FLIP 87- 47C	FLIP 81-293C	ILC 482	FLIP 87- 59C	FLIP 87- 47C	FLIP 87- 59C	FLIP 87- 1C	Local check
2	FLIP 87- 57C	FLIP 86- 26C	FLIP 87- 58C	FLIP 87- 26C	FLIP 87- 7C	FLIP 87- 58C	FLIP 87- 81C	FLIP 87- 81C
3	FLIP 86- 97C	FLIP 87- 47C	FLIP 87- 8C	FLIP 87- 48C	FLIP 87- 8C	FLIP 87- 57C	FLIP 87- 8C	FLIP 87- 66C
4	FLIP 87- 79C	FLIP 87- 80C	FLIP 87- 73C	FLIP 87- 66C	FLIP 87- 57C	FLIP 87- 48C	FLIP 87- 86C	FLIP 87- 66C
5	FLIP 87- 78C	FLIP 87- 67C	FLIP 87- 47C	FLIP 87- 83C	FLIP 87- 58C	FLIP 87- 34C	FLIP 87- 82C	FLIP 86-101C

Cont'd. ...

Rank	SYRIA	TUNISIA				TURKEY		
	Jindiress	Beja-1	Beja-2	El Kef	Oued Meliz	Amasya	Diyarbakir	Izmir
1	FLIP 87- 8C	FLIP 87- 47C	FLIP 87- 47C	FLIP 87- 47C	FLIP 87- 44C	FLIP 87- 85C	FLIP 87- 56C	FLIP 86-100C
2	FLIP 87- 4C	FLIP 87- 44C	FLIP 87- 44C	FLIP 87- 79C	FLIP 86-100C	FLIP 87- 66C	FLIP 86-101C	FLIP 86-101C
3	FLIP 86- 94C	FLIP 87- 85C	FLIP 87- 56C	FLIP 87- 48C	FLIP 87- 1C	FLIP 87- 72C	Local check	FLIP 87- 73C
4	FLIP 87- 9C	FLIP 87- 59C	FLIP 86- 90C	FLIP 87- 1C	ILC 482	FLIP 87- 81C	FLIP 87- 81C	FLIP 86-107C
5	FLIP 87- 7C	FLIP 87- 89C	FLIP 87- 89C FLIP 87- 85C	FLIP 86- 90C FLIP 87- 44C	Local check	FLIP 86-106C	FLIP 87- 80C	Local check

The brackets indicate entries having the same rank.

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 15 test entries an augmented block design. The spacings between and within rows were 45- and 10 cm, respectively.

Forty-six sets of nursery were distributed to cooperators in 22 countries and the results were received from 26 locations in 14 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 43 to 102 days, 86 to 169 days, 20 to 78 cms and 30 to 39 g/100-seeds, respectively. The entries FLIP 87-57C, FLIP 87-58C and FLIP 87-59C flowered earliest in 53 days and were also among the earliest to mature. The maximum plant height of 47 cm was obtained for FLIP 86-92C and largest seed size of 47 g for FLIP 87-9C.

The adjusted seed yields for the entries are given in Table 3.9.6. On the basis of overall mean, FLIP 87-47C gave the highest yield (1762 kg/ha) and was followed by FLIP 87-56C (1701 kg/ha), FLIP 87-44C (1698 kg/ha), FLIP 87-1C (1607 kg/ha) and FLIP 87-66C (1535 kg/ha) etc. The location mean was highest for El-kef in Tunisia (4121 kg/ha) and was followed by Montboucher in France (2603 kg/ha). 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 entry FLIP 87-47C occurred most frequently (9 times) among the top five heaviest yielders at varying locations and was relatively more adaptable.

3.10. CHICKPEA INTERNATIONAL SCREENING NURSERY - EARLY (CISN-E)

The Chickpea International Screening Nursery - Early comprised 48 test entries and three checks.

Methods and Management

The entries were planted in single row plots of 4 m length. The three checks were repeatedly grown in blocks of 15 test entries in an augmented block design. The spacing between and within rows were 45- and 10 cm, respectively. Twelve sets of nursery were distributed to cooperators in 8 countries and the results were received from 3 locations in 3 countries. The agronomic details received from the cooperators are presented in Table 3.10.1.

Table 3.10.1 Agronomic data for different locations in the CISN-E during 1988/89.

Country/Location	NEPAL	PAKISTAN	SYRIA
	Rampur	Dokri	Breda
Date of planting	13.11.88	05.11.88	16.11.88
Date of harvesting	07.04.89	08.04.89	09.05.89
Fertilizer (kg/ha)			
N	10	35	-
P	40	70	50
K	20	-	-
Irrigation	-	-	-
Insecticide/Fungicide/Herbicide	Sumicidine	-	Kerb, Bravo
Local Check	Dhanush	Cholla	ILC 3279

Results and Discussions

The mean time to flowering, time to maturity, plant height and seed yield are given in Table 3.10.2. The entry ILC 2608 flowered earlier at Rampur in Nepal and was followed by FLIP 80-23C, FLIP 81-60C, ILC 2623, ILC 2611, ILC 3829, FLIP 81-339C, ILC 2827, ILC 3186 and ILC 4355, and the entries ILC 1283, ILC 1757, ILC 2301, ILC 2325, ILC 2673, ILC 2820, ILC 2827, ILC 2948 and ILC 4487 flowered earlier at Breda in Syria. At Dokri in Pakistan, ILC 2948 flowered earlier in 38 days and a few other earlier flowering lines numbered ILC 2640, ILC 307, ILC 2623 and ILC 2670 etc. There was no similarity between the earliest lines at different locations. Seed yields of some of the entries were negligible at Dokri (Pakistan) and Rampur (Nepal). The five best at Rampur included local check (1603 kg/ha), ILC 2287 (1391 kg/ha), ILC 2827 (1049 kg/ha), ILC 1283 (1050 kg/ha), ILC 2608 (1031 kg/ha); at Dokri, ILC 2827 (563 kg/ha), ILC 2287 (313 kg/ha), ILC 3186 (250 kg/ha), FLIP 85-97C (219 kg/ha), and ILC 680 (188 kg/ha); and at Breda in Syria included ILC 4487, ILC 4321, ILC 2373, ILC 680, and ILC 4355.

3.11. CHICKPEA INTERNATIONAL F₄ NURSERY (CIF₄N)

Material

The material for the Chickpea International F₄ Trial comprised 23 F₄ populations which were derived from different crosses, and two checks, namely ILC 482 which was supplied by ICARDA and the others 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 nursery was planted in a systematic block design. The suggested plot size was 4 rows, 4 meter long with an inter- and intra row spacings of 30 - and 10 cm, respectively. Twenty sets of the nursery were

Table 3.10.2. Adjusted time to flowering (DFLR) in days, time to maturity (DMAT) in days, plant height (PTHT) in cm and seed yield (YLD) in kg/ha of entries at different locations in the CISN-E during 1988/89.

Entry Name	Origin	Pedigree	NEPAL - Rampur					PAKISTAN - Dokri	
			DFLR	DMAT	PTHT	YLD	Rank	DFLR	DMAT
ILC 307	IRAN	-	108	142	63	0	14	77	141
ILC 318	IRAN	-	105	143	63	950	7	-	-
ILC 679	IRAN	-	107	143	61	0	14	-	-
ILC 680	IRAN	-	105	143	66	0	14	81	143
ILC 1283	India	-	104	142	69	1050	4	-	-
ILC 1291	Turkey	-	100	143	64	0	14	-	-
ILC 1757	Afghanistan	-	105	141	66	0	14	79	144
ILC 1806	Pakistan	-	105	142	63	450	13	80	-
ILC 1927	India	-	106	143	56	919	8	-	-
ILC 1957	India	-	112	142	63	0	14	-	-
ILC 2239	Iran	-	105	143	58	963	6	-	-
ILC 2287	Iran	-	105	143	63	1319	2	81	142
ILC 2289	Cyprus	-	105	142	67	0	14	81	-
ILC 2301	Iran	-	105	142	57	0	14	78	-
ILC 2325	Iran	-	104	142	64	0	14	-	-
ILC 2352	Iran	-	106	142	65	0	14	-	-
ILC 2373	Mexico	-	108	143	64	0	14	-	-
ILC 2608	Greece	-	97	143	64	1031	5	-	-
ILC 2611	Egypt	-	100	141	63	0	14	-	-
ILC 2623	Iran	-	100	142	58	719	9	77	-
ILC 2640	Ethiopia	-	104	142	58	0	14	58	-
ILC 2670	Sudan	-	104	142	54	488	12	77	141
ILC 2671	Sudan	-	106	141	60	563	11	83	-
ILC 2673	Ethiopia	-	110	142	65	0	14	-	-
ILC 2685	Afghanistan	-	105	141	69	0	14	-	-
ILC 2791	Afghanistan	-	108	142	49	0	14	-	-
ILC 2820	Afghanistan	-	104	142	72	0	14	-	-

Cont'd. ...

Table 3.10.2. Cont'd. ...

Entry Name	Origin	Pedigree	NEPAL - Rampur					PAKISTAN - Dokri	
			DFLR	DMAT	PTHT	YLD	Rank	DFLR	DMAT
ILC 2827	Afghanistan	-	100	143	56	1044	3	79	141
ILC 2872	Afghanistan	-	106	141	71	0	14	78	145
ILC 2948	Afghanistan	-	104	142	64	644	10	38	139
ILC 3186	Turkey	-	100	143	63	0	14	81	143
ILC 3447	Spain	-	107	141	64	0	14	-	-
ILC 3459	Spain	-	106	142	66	0	14	82	-
ILC 3688	Chile	-	112	142	63	0	14	-	-
ILC 3727	Mexico	-	107	141	54	0	14	83	-
ILC 3743	Mexico	-	105	142	63	0	14	-	-
ILC 3829	Morocco	-	100	143	68	0	14	-	-
ILC 4321	Spain	-	104	142	68	0	14	-	-
ILC 4355	Jordan	-	100	141	62	0	14	83	-
ILC 4487	Syria	-	104	142	70	0	14	83	143
FLIP80- 23C	ICARDA/ICRISAT	X75TA206/NEC1614XNEC317	99	142	66	0	14	81	143
FLIP81- 35C	ICARDA/ICRISAT	X75TA49/NEC1540XE100	105	142	64	0	14	-	-
FLIP81- 60C	ICARDA/ICRISAT	X87TH21/ILC 1298XILC 1255	99	142	66	0	14	82	-
FLIP81-325C	ICARDA/ICRISAT	X79TH50/ILC 591XILC 200	107	141	58	0	14	-	-
FLIP81-339C	ICARDA/ICRISAT	X79TH64/ILC 194	100	143	59	0	14	-	-
FLIP81-363C	ICARDA/ICRISAT	X79TH50/ILC 591XILC 200	104	142	63	0	14	81	143
FLIP85- 96C	ICARDA/ICRISAT	X81TH105/ILC 72XILC 484	107	141	69	0	14	-	-
FLIP85- 97C	ICARDA/ICRISAT	X81TH105/ILC 72XILC 484	108	143	63	0	14	79	143
ILC 482	Turkey	-	104	142	62	0	14	82	-
FLIP 81-293C	ICARDA/ICRISAT	X79TH293/ILC 191XILC 496	107	143	67	0	14	81	143
Local check	-	-	103	142	51	1603	1	81	144
Location Mean			105	142	62	230		78	143
S.E. of Mean			1.37	0.37	3.56				
L.S.D. at 5% for: Checks			4.73	1.29	12.32				
Checks Vs Test Entries			9.46	2.58	24.63				
Test entries in the same Block			10.92	2.98	28.44				
Test entries in different blocks			8.64	2.36	22.49				
C.V. (%)			2.62	0.63	11.41				
Test > L. Check			2	0	0				

Cont'd. ...

Table 3.10.2. Cont'd. ...

Entry Name	PAKISTAN - Dokri			SYRIA - Breda				
	PTHT	YLD	Rank	DFLR	DMAT	PTHT	YLD	Rank
ILC 307	41	125	7	133	168	16	167	25
ILC 318	-	0	16	130	168	16	196	16
ILC 679	-	0	16	137	168	22	209	14
ILC 680	45	188	5	130	166	17	247	4
ILC 1283	-	0	16	128	166	18	177	20
ILC 1291	-	0	16	135	167	21	240	6
ILC 1757	52	94	12	129	166	18	221	11
ILC 1806	-	0	16	136	170	18	79	44
ILC 1927	-	0	16	137	169	18	145	29
ILC 1957	-	0	16	132	168	19	56	47
ILC 2239	-	0	16	132	168	14	139	31
ILC 2287	57	313	2	137	170	16	120	37
ILC 2289	-	0	16	133	167	18	158	27
ILC 2301	-	0	16	129	168	15	123	36
ILC 2325	-	0	16	128	166	17	113	38
ILC 2352	-	0	16	136	169	13	34	48
ILC 2373	-	0	16	135	170	16	247	3
ILC 2608	-	0	16	137	168	18	183	18
ILC 2611	-	0	16	135	168	13	94	42
ILC 2623	-	0	16	130	166	18	104	41
ILC 2640	-	0	16	-	-	-	-	-
ILC 2670	38	88	15	134	168	15	129	34
ILC 2671	-	0	16	132	166	19	164	26
ILC 2673	-	0	16	129	167	17	25	49
ILC 2685	-	0	16	130	166	20	234	7
ILC 2791	-	0	16	138	168	15	174	23
ILC 2820	-	0	16	129	166	17	82	43
ILC 2827	47	563	1	126	166	13	171	24
ILC 2872	60	125	7	130	168	22	177	22

Cont'd. ...

Table 3.10.2. Cont'd. ...

Entry Name	PAKISTAN - Dokri			SYRIA - Breda				
	PTHT	YLD	Rank	DFLR	DMAT	PTHT	YLD	Rank
ILC 2948	38	100	11	128	166	18	212	13
ILC 3186	52	250	3	133	168	20	228	8
ILC 3447	-	0	16	130	169	17	139	32
ILC 3459	-	0	16	136	169	17	126	35
ILC 3688	-	0	16	143	170	19	75	45
ILC 3727	-	0	16	137	166	22	221	10
ILC 3743	-	0	16	131	166	20	221	9
ILC 3829	-	0	16	137	167	18	177	21
ILC 4321	-	0	16	135	168	24	247	2
ILC 4355	-	0	16	132	166	19	240	5
ILC 4487	58	125	7	129	168	19	272	1
FLIP80- 23C	70	94	12	137	169	18	199	15
FLIP81- 35C	-	0	16	133	168	17	133	33
FLIP81- 60C	-	0	16	139	170	26	104	40
FLIP81-325C	-	0	16	138	169	23	183	19
FLIP81-339C	-	0	16	135	168	22	215	12
FLIP81-363C	43	163	6	138	170	19	110	39
FLIP85- 96C	-	0	16	140	170	20	158	28
FLIP85- 97C	53	219	4	138	172	20	69	46
ILC 482	-	0	16	134	168	20	190	17
FLIP 81-293C	52	94	12	137	170	21	144	30
Local check	52	119	10	143	172	26	-	-
Location Mean	51	52		135	169	19	162	
S.E. of Mean				0.81	0.40	0.95	26.46	
L.S.D. at 5% for:								
Checks				2.81	1.38	3.30	119.04	
Checks Vs test entries				5.62	2.77	6.60	238.09	
Test entries in the same block				6.49	3.19	7.62	291.59	
Test entries in different blocks				5.13	2.53	6.03	230.56	
C.V. (%)				1.23	0.48	10.20	33.48	
Test > L. Check				0	0	0	0	

Table 3.11.1. Number of plants selected by cooperators in the CIF4N during 1988/89.

Cross No./ Entry	Pedigree	Origin	CHILE	ETHIOPIA	FRANCE	ITALY	SPAIN	TURKEY	
			Chillan	Debre - Zeit	Mont- boucher	Tarquini a	Badajoz	Diyar- bakir	Izmir
86TH 84	FLIP84-18C X FLIP83- 15C	ICARDA/ICRISAT	1	9	50	5	3	44	85
86TH 94	FLIP84-19C X FLIP83- 15C	ICARDA/ICRISAT	3	5	50	5	3	151	95
86TH108	FLIP84-12C X FLIP82-127C	ICARDA/ICRISAT	2	6	20	30	3	4	25
86TH109	FLIP84-12C X FLIP83- 15C	ICARDA/ICRISAT	5	-	30	30	2	5	35
86TH111	FLIP82-64C X ILC 482	ICARDA/ICRISAT	3	-	30	5	1	6	95
86TH121	ILC3683 X FLIP81-41W	ICARDA/ICRISAT	3	2	-	5	-	26	25
86TH124	ILC3853 X FLIP81-293C	ICARDA/ICRISAT	4	7	-	30	-	16	105
86TH129	ILC4295 X FLIP81-41W	ICARDA/ICRISAT	2	2	20	5	-	31	155
86TH134	FLIP84-48C X ILC 7	ICARDA/ICRISAT	4	9	100	5	2	12	45
86TH141	FLIP84-46C X ILC 482	ICARDA/ICRISAT	2	-	50	5	7	51	-
86TH142	FLIP84-46C X ILC 484	ICARDA/ICRISAT	1	2	30	1	4	5	35
86TH165	ILC3546 X ILC3856	ICARDA/ICRISAT	2	2	-	5	-	15	35
86TH225	FLIP82-64C X ILC 482	ICARDA/ICRISAT	2	1	50	5	-	27	15
86TH226	FLIP82-64C X ILC 263	ICARDA/ICRISAT	2	-	-	5	-	10	55
86TH227	FLIP84-18C X ILC 482	ICARDA/ICRISAT	2	17	50	5	-	113	205
86TH231	ILC4296 X FLIP81-293C	ICARDA/ICRISAT	2	25	20	5	-	84	55
86TH233	ILC4296 X FLIP83- 15C	ICARDA/ICRISAT	2	17	-	5	-	22	105
86TH234	ILC4296 X FLIP84- 33C	ICARDA/ICRISAT	3	6	-	5	-	18	125
86TH238	ILC 237 X FLIP83- 15C	ICARDA/ICRISAT	4	2	50	5	3	14	45
86TH239	ILC 237 X FLIP84- 33C	ICARDA/ICRISAT	4	2	-	30	5	14	125
86TH311	(ILC3512XFLIP81-293C) XILC3512	ICARDA/ICRISAT	3	5	20	5	-	48	15
86TH317	(ILC3499XFLIP82-127C) XILC3499	ICARDA/ICRISAT	3	4	20	30	2	154	225
86TH345	(ILC4291XFLIP82- 59C) XILC4291	ICARDA/ICRISAT	2	10	-	5	-	61	45
ILC 482	-	Turkey	3	-	20	-	1	-	-
Local check	-	-	3	-	-	-	-	-	-

distributed to cooperators in 15 countries. The results were, however, received back for 10 nursery from 8 countries.

Results and Discussion

The data on number of plant selections made are given in Tables 3.11.1.

Seven crosses, 86TH 84, 86TH 94, 86 TH 108, 86 TH 134, 86 TH 142, 86 TH 238, 86 TH 317 resulted in good segregants for selection across all the locations.

3.12. 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 these trials 36 test

entries were 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.

Twenty seven sets of CIABN-A and 21 sets of CIABN-B were distributed to cooperators in 12 and 9 countries, respectively. The results were, however, received for 12 sets for CIABN-A and 4 sets for CIABN-B.

Results and Discussion

The performance of the entries in each location is presented in Table 3.12.1. and discussed as under:

Algeria: The nursery was conducted at Setif and Sidi Bel Abbes. All the entries except ILC 5909, FLIP 84-87C, FLIP 85-110C, at Setif and ILC 3279, ILC 5928, FLIP 83-49C, FLIP 83-72C, FLIP 84-87C, FLIP 84-99C, FLIP 84-102C, FLIP 85-110C, FLIP 85-116C and FLIP 85-118C (which took rating between 6 and 9) were rated between 1 and 5. The susceptible check took rating of 9.

Bulgaria: The nursery was conducted at Toshevo. There was no disease development and thus data were not collected.

France: The nursery was conducted at Montboucher. All the entries except ILC 3868, FLIP 87-504C, ICC 13251 and ICC 13269 took rating between 1 and 5 and were tolerant or resistant.

Italy: The nursery was sown at Tarquinia. All the entries except susceptible check (which was rated at 8) were rated between 1 and 3.

Lebanon: The nursery was conducted at Terbol. All the test entries were rated at 1 and the susceptible check had rating 9.

Portugal: The nursery was sown at Elvas. Twenty four kabuli and 7 desi lines were rated as resistant or tolerant (between 1 and 5 rating) and others as susceptible.

Spain: The nursery was conducted at Badajoz. All the entries except FLIP 83-49C, FLIP 84-92C, FLIP 84-182C, FLIP 85-94C which took rating of 7 were rated between 3 and 5.

Syria: The nursery was sown at Al-Ghab, Tartus and Tel Hadya. There was no disease at Al Ghab and Tartus. At Tel Hadya all the entries were rated between 1 and 5 except susceptible check (which rated 9).

Turkey: The nursery was sown at Amasya and Erzurum. At Amasya all the entries except the susceptible check (which took rating of 8) took rating between 2 and 5.

At Erzurum all the entries including the susceptible check were rated between 1 and 4.

The frequency of occurrence of the lines among the resistant (ratings between 1 and 4) at various locations revealed that ILC 72, ILC 202, ILC 4421, FLIP 82-150C, FLIP 83-47C, FLIP 83-97C, FLIP 84-78C, FLIP 84-79C, FLIP 84-80C, FLIP 84-92C, FLIP 84-93C, FLIP 84-99C, FLIP 85-94C, FLIP 86-32C, ICC 13302, ICC 13266, ICC 13508, ICC 13528, and ICC 13555 were the better resistant sources.

Table 3.12.1. Reaction of chickpea entries to ascochyta blight in CIABN during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA		BULGARIA	FRANCE	ITALY
			Setif	Sidi Bel- Abbes	Toshevo	Mont- boucher	Tarqui- nia
ILC 72	Lot No. 4	USSR via Spain	1	2	1	1	1
ILC 200	Stepnoj 1	USSR	1	5	1	1	1
ILC 202	VYR 32	USSR	3	5	1	1	1
ILC 2506	-	USSR	5	3	1	1	1
ILC 2956	-	USSR	1	4	1	1	1
ILC 3279	-	USSR	1	7	1	1	1
ILC 3868	Plovdiv 8	Bulgaria	3	3	1	9	1
ILC 4421	-	USSR	1	3	1	3	1
ILC 5928	-	USSR via Morocco	3	6	1	1	1
ILC 5889	K-16	USSR	3	5	1	1	1
ILC 5894	K-165	USSR	3	5	1	1	1
ILC 5909	K-1207	USSR	7	5	1	3	1
ILC 5913	K-1231	USSR	5	4	1	1	1
ILC 6090	K-980	USSR	3	5	1	2	3
FLIP 82-150C	X79 TH 101/ILC 523XILC 183	ICARDA/ICRISAT	3	4	1	3	1
FLIP 83- 46C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	5	1	5	1
FLIP 83- 47C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	2	1	1	1
FLIP 83- 48C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	5	5	1	2	1
FLIP 83- 49C	X80 TH 181/ILC 3279XILC1108	ICARDA/ICRISAT	3	6	1	1	1
FLIP 83- 72C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	7	1	1	1
FLIP 83- 97C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3	4	1	1	2
FLIP 84- 78C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3	4	1	1	1
FLIP 84- 79C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	2	4	1	1	1
FLIP 84- 80C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3	4	1	1	1
FLIP 84- 83C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3	5	1	1	1
FLIP 84- 87C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	7	7	1	3	1
FLIP 84- 91C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	5	1	1	1
FLIP 84- 92C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	3	1	2	1
FLIP 84- 93C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	1	2	1	3	1
FLIP 84- 99C	X80 TH 176/ILC 72XILC 215	ICARDA/ICRISAT	3	6	1	2	1

Cont'd. ...

Table 3.12.1. Cont'd. ...

Entry Name	Pedigree	Origin	ALGERIA			BULGARIA	FRANCE	ITALY
			Setif	Sidi Bel- Abbes	Bel-	Toshevo	Mont- boucher	Tarqui- nia
FLIP 84-102C	X80 TH 176/IILC 72XIILC 215	ICARDA/ICRISAT	1	6		1	2	2
FLIP 84-112C	X81 TH 53/IILC1920XIILC2506	ICARDA/ICRISAT	5	5		1	1	1
FLIP 84-133C	X81 TH 129/IILC 202XIILC 262	ICARDA/ICRISAT	1	5		1	5	1
FLIP 84-137C	X81 TH 241/IILC 482XIILC 201	ICARDA/ICRISAT	1	5		1	1	2
FLIP 84-182C	X80 TH 176/IILC 72XIILC 215	ICARDA/ICRISAT	3	5		1	1	1
FLIP 85- 94C	X81 TH 248/IILC 482XIILC3279	ICARDA/ICRISAT	1	4		1	3	1
FLIP 85-110C	X83 TH 6/FLIP 81-41CXFLIP 82-81C	ICARDA/ICRISAT	7	7		1	1	1
FLIP 85-116C	X80 TH 176/IILC 72XIILC 215	ICARDA/ICRISAT	3	6		1	1	1
FLIP 85-118C	X82 TH 146/IILC 72XIILC 73	ICARDA/ICRISAT	5	6		1	3	1
FLIP 86- 32C	X82 TH 121/IILC 182XIILC 484	ICARDA/ICRISAT	4	5		1	1	1
FLIP 87-501C	X82 TH 170/RC32XIIOC1772	ICARDA/ICRISAT	NT	NT		NT	2	1
FLIP 87-502C	X82 TH 171/C44XIIOC1772	ICARDA/ICRISAT	NT	NT		NT	3	2
FLIP 87-503C	H208XE100Y-1	ICARDA/ICRISAT	NT	NT		NT	5	1
FLIP 87-504C	H208XE100Y-1	ICARDA/ICRISAT	NT	NT		NT	7	1
FLIP 87-505C	H208XE100Y-1	ICARDA/ICRISAT	NT	NT		NT	5	1
FLIP 87-506C	H208XE100Y-1	ICARDA/ICRISAT	NT	NT		NT	3	1
FLIP 87-507C	H208XE100Y-2	ICARDA/ICRISAT	NT	NT		NT	4	1
FLIP 87-508C	H208XE100Y-2	ICARDA/ICRISAT	NT	NT		NT	5	1
FLIP 87-509C	IILC3279XH75-35	ICARDA/ICRISAT	NT	NT		NT	5	1
FLIP 87-510C	IILC3279XH75-35	ICARDA/ICRISAT	NT	NT		NT	5	1
ICC 13251	-	-	NT	NT		NT	7	1
ICC 13266	-	-	NT	NT		NT	3	1
ICC 13269	-	-	NT	NT		NT	7	1
ICC 13301	-	-	NT	NT		NT	2	1
ICC 13416	-	-	NT	NT		NT	3	2
ICC 13497	-	-	NT	NT		NT	3	1
ICC 13508	-	-	NT	NT		NT	1	1
ICC 13528	-	-	NT	NT		NT	4	1
ICC 13555	-	-	NT	NT		NT	3	1
ICC 13728	-	-	NT	NT		NT	5	1
IILC 263 (Susceptible repeated check)	-	-	9	9		1	9	8

Table 3.12.1. Cont'd. ...

Entry Name	LEBANON	PORTUGAL	SPAIN	SYRIA		TURKEY	
	Terbol	Elvas	Badajoz	Al Ghab	Tel Hadya	Amasya	Erzurum
IIC 72	1	4	5	1	4	2	3
IIC 200	1	6	5	1	4	3	1
IIC 202	1	4	5	1	4	2	3
IIC 2506	1	6	5	1	4	2	3
IIC 2956	1	5	5	1	5	2	2
IIC 3279	1	5	5	1	5	2	1
IIC 3868	1	6	5	1	5	2	3
IIC 4421	1	5	5	1	4	2	1
IIC 5928	1	5	5	1	5	2	3
IIC 5889	1	5	5	1	4	2	3
IIC 5894	1	6	5	1	5	2	3
IIC 5909	1	4	5	1	3	2	3
IIC 5913	1	6	5	1	4	3	2
IIC 6090	1	6	3	1	5	3	1
FLIP 82-150C	1	6	5	1	4	2	1
FLIP 83- 46C	1	5	5	1	4	2	3
FLIP 83- 47C	1	5	5	1	4	2	2
FLIP 83- 48C	1	4	5	1	4	2	1
FLIP 83- 49C	1	5	7	1	5	2	1
FLIP 83- 72C	1	6	5	1	4	2	2
FLIP 83- 97C	1	5	5	1	4	2	2
FLIP 84- 78C	1	5	5	1	4	2	2
FLIP 84- 79C	1	4	5	1	4	2	1
FLIP 84- 80C	1	4	5	1	5	2	1
FLIP 84- 83C	1	5	5	1	5	2	2
FLIP 84- 87C	1	7	5	1	4	5	3
FLIP 84- 91C	1	6	5	1	4	2	2
FLIP 84- 92C	1	4	7	1	4	2	2
FLIP 84- 93C	1	6	5	1	4	2	1
FLIP 84- 99C	1	3	5	1	4	2	2

Cont'd. ...

Table 3.12.1. Cont'd. ...

Entry Name	LEBANON	PORTUGAL	SPAIN	SYRIA		TURKEY	
	Terbol	Elvas	Badajoz	Al Ghab	Tel Hadya	Amasya	Erzurum
FLIP 84-102C	1	5	5	1	5	2	2
FLIP 84-112C	1	5	5	1	4	2	2
FLIP 84-133C	1	6	5	1	4	2	4
FLIP 84-137C	1	6	5	1	4	2	1
FLIP 84-182C	1	6	7	1	4	2	1
FLIP 85- 94C	1	5	7	1	4	4	1
FLIP 85-110C	1	6	5	1	5	2	3
FLIP 85-116C	1	5	5	1	4	2	3
FLIP 85-118C	1	7	5	1	4	2	3
FLIP 86- 32C	1	4	5	1	5	2	2
FLIP 87-501C	NT	3	5	NT	5	NT	NT
FLIP 87-502C	NT	7	5	NT	4	NT	NT
FLIP 87-503C	NT	7	5	NT	4	NT	NT
FLIP 87-504C	NT	8	5	NT	4	NT	NT
FLIP 87-505C	NT	7	5	NT	4	NT	NT
FLIP 87-506C	NT	7	5	NT	4	NT	NT
FLIP 87-507C	NT	7	5	NT	4	NT	NT
FLIP 87-508C	NT	7	5	NT	3	NT	NT
FLIP 87-509C	NT	5	5	NT	4	NT	NT
FLIP 87-510C	NT	4	5	NT	4	NT	NT
ICC 13251	NT	7	5	NT	4	NT	NT
ICC 13266	NT	3	5	NT	4	NT	NT
ICC 13269	NT	7	5	NT	4	NT	NT
ICC 13301	NT	3	3	NT	3	NT	NT
ICC 13416	NT	5	5	NT	4	NT	NT
ICC 13497	NT	5	5	NT	4	NT	NT
ICC 13508	NT	3	5	NT	3	NT	NT
ICC 13528	NT	3	5	NT	4	NT	NT
ICC 13555	NT	3	5	NT	3	NT	NT
ICC 13728	NT	7	5	NT	4	NT	NT
IIC 263 (Susceptible repeated check	9	9	7	5	9	8	4

NT = Not tested.

3.13. CHICKPEA INTERNATIONAL FUSARIUM WILT NURSERY (CIFWN)

Introduction

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

Material

The CIFWN included 23 test entries and one susceptible check ILC 4090, repeated after every two test entries.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 4m long accomodating 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.

Five sets of nursery were sent to cooperators in 5 countries but the results were received back from only two locations, Zemenra in Morocco and Cordoba in Spain.

Results and Discussion

Four entries were rated as resistant and 8 as tolerant at Zemenra in Morocco FLIP 82-78C, FLIP 84-46C, FLIP 85-29C, and FLIP 85-32C and five entries namely FLIP 82-180C, FLIP 84-34C, FLIP 85-29C, FLIP 85-32C and FLIP 85-35C at Cordoba in Spain showed killing less than 25% (Table 3.13.1).

There was no similarity in reaction of entries to fusarium wilt between Zemenra in Morocco and Cordoba in Spain.

3.14. CHICKPEA INTERNATIONAL LEAF MINER NURSERY (CILMN)

Material

The Chickpea International Leaf Miner Nursery comprised 30 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

Table 3.13.1. Reaction of chickpea entries to Fusarium wilt in CIFWN during 1988/89.

Entry Name	Pedigree	Origin	MOROCCO	SPAIN *	
			Zememra	Cordoba	
				Date 1	Date 2
ILC 837	RPIP(K) 12-071-03794	IRAN	9	20.00	100.00
ILC 848	RPIP(K) -	IRAN	9	71.25	100.00
ILC 850	RPOP(K) 12-071-03809	IRAN	9	78.75	100.00
ILC 851	RPIP(K) 12-071-03810	IRAN	9	68.75	100.00
ILC 857	RPIP(K) 12-071-03815	IRAN	9	63.75	100.00
ILC 858	RPIP(K) 12-071-03816	IRAN	9	70.00	100.00
ILC 860	RPIP(K) 12-071-3819	IRAN	9	53.75	100.00
ILC 871	RPIP(K) 12-071-3836	IRAN	9	61.25	100.00
ILC 904	RPIP(K) 12-071-03875	IRAN	9	71.25	100.00
ILC 911	RPIP(K) 12-071-03884	IRAN	9	80.00	100.00
FLIP 82- 78C	X70 TH 219/ILC 201XILC 3279	ICARDA/ICRISAT	3	6.25	69.40
FLIP 82-180C	X79 TH 220/ILC 72XILC 480	ICARDA/ICRISAT	5	1.25	24.15
FLIP 84- 32C	X81 TH 105/ILC 72XILC 484	ICARDA/ICRISAT	5	88.75	99.85
FLIP 84- 34C	X81 TH 9/ILC 480XILC 202	ICARDA/ICRISAT	5	1.25	12.50
FLIP 84- 46C	X81 TH 55/ILC 1920XILC 2956	ICARDA/ICRISAT	3	17.50	99.80
FLIP 84- 88C	X80 TH 177/ILC 195XILC 482	ICARDA/ICRISAT	5	18.75	99.55
FLIP 84- 97C	X80 TH 181/ILC3279XILC1108	ICARDA/ICRISAT	7	0	39.30
FLIP 85- 20C	BG 209XILC 72	ICARDA/ICRISAT	5	3.75	8.35
FLIP 85- 29C	X81 TH 106/ILC 72XIICC 4935	ICARDA/ICRISAT	3	0	50.00
FLIP 85- 30C	X81 TH 106/ILC 72XIICC 4935	ICARDA/ICRISAT	5	0	50.00
FLIP 85- 32C	X81 TH 106/ILC 72XIICC 4935	ICARDA/ICRISAT	3	2.50	20.70
FLIP 85- 33C	X81 TH 114/ILC191XIICC 4935	ICARDA/ICRISAT	5	26.25	55.10
FLIP 85- 35C	X81 TH 114/ILC 191XIICC 4935	ICARDA/ICRISAT	5	12.50	18.50
ILC 4090 (Amdon)	Repeated Susceptible check every 2 test row		9	85.00	100.00

* = % killing, Date 1 and Date 2 = 2 and 3 months after sowing.

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.

Eight sets of leaf miner nursery were distributed to cooperators in 6 countries and the results were received for 6 sets from 4 countries.

Results and Discussion

At Sidi Bel Abbes in Algeria the damage ranged from 15% to 40% (susceptible check) (Table 3.14.1). At Amasya in Turkey, four entries ILC 655, ILC 992, ILC 1334 and ILC 3828 with rating of 3 as compared to susceptible check (rating = 7) were resistant.

3.15. 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 experimental design was randomized complete block with two replications. The suggested plot size was one row 2 m long accommodating 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 different stages of cold occurrence. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Thirty-two sets of CICIN were distributed to cooperators in sixteen countries, however, the results were received for 13 sets from 9 countries.

Results and Discussion

Out of 17 locations returning the data books, the cold tolerance reaction was recorded only at eight locations (Table 3.15.1). The

Table 3.14.1. Reaction of chickpea entries to leaf miner in CIIMN during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA*	TURKEY
			Sidi Bel- Abbes	Amasya
ILC 316	-	Iran	40	5
ILC 394	-	Iran	15	5
ILC 655	-	Iran	35	3
ILC 822	-	Iran	30	5
ILC 992	-	Iran	30	3
ILC 1003	-	Iran	25	7
ILC 1009	-	Iran	35	5
ILC 1048	-	Iran	35	5
ILC 1216	-	Iran	40	7
ILC 1334	-	Afghanistan	40	3
ILC 3800	L-1852	Mexico	40	5
ILC 3828	Pch 65	Morocco	40	3
ILC 5351	PRT 82-A-140-B	Portugal	35	7
ILC 5580	ARI 00379	Cyprus	30	7
ILC 5591	PARC 1030-1	Pakistan	35	5
ILC 5600	PARC 1041-1	Pakistan	35	5
ILC 5609	PARC 1042-3	Pakistan	40	7
ILC 5614	PARC 1045-1	Pakistan	25	7
ILC 5615	PARC 1046-1	Pakistan	35	7
ILC 5616	PARC 1046-2	Pakistan	25	5
ILC 5621	PARC 1049-2	Pakistan	30	7
ILC 5624	PARC 1051-2	Pakistan	30	5
ILC 5641	PARC 1060-3	Pakistan	35	5
ILC 5648	PARC 1062-5	Pakistan	25	7
ILC 5655	PARC 1067-2	Pakistan	35	5
ILC 5664	PARC 1071-4	Pakistan	30	7
ILC 5665	PARC 1071-5	Pakistan	30	5
ILC 5667	PARC 1071-7	Pakistan	35	7
ILC 5682	PARC 1079-2	Pakistan	35	7
ILC 5901	K-1154	USSR	25	7
ILC 3397	(Repeated susceptible check)	-	40	7

* = % damage.

Table 3.15.1. Reaction of chickpea entries to cold tolerance in CICTN during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA	BULGARIA	IRAN	POLAND	SYRIA		TURKEY	
			Setif	Toshevo	Karaj	Pulawy	Breda	Homs	Tel- Hadya	Erzurum
ILC 794	-	Iran	7	1	11	5	4	5	4	13
ILC 1071	-	Iran	7	1	6	5	3	5	8	10
ILC 1240	-	Iran	7	1	10	5	4	5	6	12
ILC 1244	-	Turkey	7	1	13	3	4	3	8	14
ILC 1251	-	Turkey	1	1	15	5	4	7	7	11
ILC 1256	-	Afghanistan	7	1	16	5	4	7	8	11
ILC 1455	-	Afghanistan	7	1	11	3	3	3	4	12
ILC 1463	-	Afghanistan	7	1	8	5	3	5	4	11
ILC 1464	-	Afghanistan	7	1	7	5	3	5	4	11
ILC 1485	-	Afghanistan	7	1	11	5	4	5	8	10
ILC 1767	-	Chile	7	1	8	5	4	5	8	11
ILC 1875	-	India	7	1	11	3	4	5	8	15
ILC 1982	-	Iran	7	1	16	5	4	5	4	9
ILC 3287	-	Pakistan	7	1	8	3	3	7	4	11
ILC 3465	-	Spain	5	1	14	3	3	5	4	13
ILC 3468	-	Spain	5	1	13	3	3	5	4	12
ILC 3470	-	Spain	5	1	13	3	3	3	4	9
ILC 3677	-	Chile	7	1	11	3	3	5	9	16
ILC 3857	-	Morocco	7	1	6	5	3	5	7	9
ILC 3861	-	Morocco	7	1	5	5	3	3	9	12
FLIP 82- 85C	X79TH118/ILC1920XILC 195	ICARDA/ICRISAT	1	1	7	3	3	3	8	10
FLIP 82-114C	X79TH123/ILC1929XILC 200	ICARDA/ICRISAT	1	1	9	3	4	7	8	14
FLIP 82-115C	X80TH199/ILC3279XIC78184	ICARDA/ICRISAT	1	1	2	3	3	5	6	12
FLIP 82-131C	X79TH 23/ILC 262XILC 783	ICARDA/ICRISAT	1	1	12	3	3	3	7	17
FLIP 82-204C	X79TH 1/ILC 118XILC 183	ICARDA/ICRISAT	1	1	7	3	3	3	7	12
FLIP 83- 3C	X81TH 44/ILC1920XILC 187	ICARDA/ICRISAT	1	1	15	3	3	7	7	9
FLIP 83- 66C	X80TH113/ILC1920XILC 202	ICARDA/ICRISAT	1	1	12	5	3	5	4	13
FLIP 83- 99C	X80TH263/(ILC72XILC263)XILC1919	ICARDA/ICRISAT	1	1	6	3	3	3	8	14
FLIP 84-106C	X81TH 44/ILC1920XILC 187	ICARDA/ICRISAT	5	1	15	3	3	3	6	8
FLIP 84-112C	X81TH 53/ILC1920XILC2506	ICARDA/ICRISAT	1	1	12	3	3	5	6	10
FLIP 84-176C	X80TH199/ILC3279XIC78184	ICARDA/ICRISAT	1	1	9	3	3	3	4	14
FLIP 84-188C	X81TH 48/ILC1920XILC 201	ICARDA/ICRISAT	1	1	15	3	3	3	4	5
FLIP 85- 5C	X81TH199/ILC202(WH)XILC3355	ICARDA/ICRISAT	1	1	8	3	3	3	9	8
FLIP 85- 72C	X83TH 5/FLIP 81-41CXFLIP 82-72C	ICARDA/ICRISAT	1	1	9	3	3	3	7	8
FLIP 85- 84C	X80TH113/ILC1920XILC 200	ICARDA/ICRISAT	1	1	11	3	3	3	4	13
FLIP 85- 93C	X83TH 23/FLIP82-69CXFLIP82-72C	ICARDA/ICRISAT	1	1	5	3	3	3	4	12
FLIP 85-133C	X83TH 23/FLIP 82-69CXFLIP82-72C	ICARDA/ICRISAT	1	1	11	5	3	3	6	13
FLIP 86- 85C	X83TH132/ILC195XFLIP82-78C	ICARDA/ICRISAT	1	1	15	3	3	3	4	11
FLIP 86- 86C	X83TH 18/FLIP81-57CXFLIP82-72C	ICARDA/ICRISAT	1	1	9	5	3	3	4	13
FLIP 86- 87C	X83TH 20/FLIP82-65CXFLIP82-72C	ICARDA/ICRISAT	1	1	18	3	3	3	7	13
ILC 533 (Susceptible check repeated after every 2 test entries).		Egypt	7	1	-	7	7	7	9	18

results are discussed as under:

At Toshevo in Bulgaria, there was no injury due to cold and all entries including check were rated at 1.

At Setif in Algeria, 20 test entries were rated at 1 and were more tolerant than others.

At Karaj in Iran, the entries FLIP 82-115C, FLIP 85- 93C, and ILC 3861 showed relatively resistant reaction.

At Pulawy in Poland all the test entries took rating between 3 and 5; and the susceptible check took a rating of 7.

At Homs in Syria, six entries took 7 rating and the remaining were rated between 3 and 5. At Tel Hadya in Syria, however, 16 entries took rating of 4 and all others 6 or more. At Breda in Syria all the test entries except susceptible check (which took 7 rating) were rated at 3 or 4.

At Erzurum in Turkey, the entry FLIP 84-188C showed the least damage and was closely followed by FLIP 85- 5C, FLIP 85- 72C, FLIP 84-106C, ILC 1982, ILC 3470, and ILC 3857.

The data on the frequency of occurrence among the tolerant lines across locations indicated that some of the entries including FLIP 84-188C, ILC 3465, ILC 3468, ILC 3470, FLIP 82-115C, FLIP 83- 66C, FLIP 84-176C, FLIP 85- 84C, FLIP 85- 93C, FLIP 86- 85C, FLIP 86- 86C exhibited broad based tolerance to cold.

4. FABIA BEAN INTERNATIONAL TRIALS AND NURSERIES

Introduction

Sixteen sets of trials and nurseries were available to cooperators. These included yield trials, screening nurseries, F₄ 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. FABIA 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 accommodating 100 seeds per plot. Twenty five sets of trial were distributed to cooperators in 16 countries. Results were reported from 18 trials covering 11 countries. Agronomic data received from the cooperators are presented in Table 4.1.1.

Results and Discussion

The location means for time to flowering (Table 4.1.2) ranged from 75 days for Pairumani (Bolivia) to 115 days for Tel Hadya (Syria). The overall mean for entries for time to flowering ranged from 96 to 98. In general, early flowering locations were earlier in maturity (Tables 4.1.2 and 4.1.3). Location mean for Tessala in Algeria (Table 4.1.4) was very low (37 cm) and very high at Pairumani in Bolivia (92 cm). The range in plant height among entries was from 59 cm for Reina Blanca to 69 cm for Lattakia local and FLIP 84-114FB.

The mean seed yield and rank of entries at different locations are given in Table 4.1.5. The mean seed yield at Hama, Deir-Ez-Zor and Homs in Syria, Terbol in Lebanon and Izmir in Turkey were very high. The ANOVA for the experimental design for seed yield revealed that the differences between entry means were significant at 4 out of 15 locations analysed for seed yield (Table 4.1.5). At two locations, Deir-Ez-Zor and Tel Hadya in Syria 5 and 6 entries exceeded the respective local check in seed yields by a significant margin. The

Table 4.1.1. Agronomic data for different locations in the FBIYT-L during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Tessala	07.12.88	-	-	-	-	-	Aquadulce	
Bolivia	Pairumani	03.05.89	15.11.90	20	50	10	-	Pairumani 1	
Chile	Hidango	24.05.89	10.12.89	20	35	-	-	CPH 24	
Cyprus	Athalassa	06.12.88	05.06.89	21	48	3	Pirimor, Treflan	Local (ARI 00139)	
Lebanon	Terbol	24.11.88	15.06.89		50	2	Kerb, Igran	Lebanese Local	
Morocco	Douyet	30.11.88	NA						
Morocco	Jema'a Shain	05.12.88	15.06.89	95	111	-	-	F269	
Spain	Cordoba	28.11.88	30.05.89	-		-	Trialato, Trifluraline, Linuron	Alameda	
Syria	Al Ghab	24.11.88	-		50	5	-	-	
Syria	Deir-Ez-Zor	28.11.88	08.06.89	5	8	6	-	-	
Syria	Hama	29.11.88	29.05.89	25	80	4	-	-	
Syria	Homs	24.11.88	28.05.89	25	80	2	Supracid, Decis	-	
Syria	Tel Hadya	11.11.88	28.05.89		50	-	Tribunil, Fusilade, Lancer Gramaxone	IIB 1814	
Tunisia	Beja	17.11.88	-	-		-	-	Local Large	
Tunisia	Oued Meliz	21.11.88	-	-		-	-	Local Large	
Turkey	Diyarbakir	10.12.88	-	-		-	-	-	
Turkey	Izmir	23.11.88	14.06.89	30	60	-	Endosulfan	Fresen 87	

NA = Not available.

Table 4.1.2. Time to flowering (days) of entries at different locations in the FBIYT-L during 1988/89.

Entry Name	ILB/ Cross No.	ALGERIA	BOLIVIA	CYPRUS	ECUADOR	LEBANON	MOROCCO	SPAIN
		(Tessala) Sidi Bel Abbès	Pairumani	Athalassa	Santa Catalina	Terbol	Jema'a Shain	Cordoba
FLIP 82- 30 FB	X79L130	92	75	93	75	108	83	99
FLIP 82- 45 FB	1817	93	72	93	79	107	85	99
FLIP 84-104 FB	S82061	89	78	97	81	108	85	100
FLIP 84-107 FB	S81064	90	77	96	78	106	85	99
FLIP 84-114 FB	S82094	90	74	94	79	107	85	99
FLIP 84-127 FB	S82116	95	78	95	78	107	81	100
FLIP 84-128 FB	S82118	91	70	95	79	105	85	98
FLIP 84-138 FB	S82415	90	74	93	80	105	81	99
FLIP 85- 89 FB	L81015	92	76	94	79	106	76	99
FLIP 87- 26 FB	S82148	92	73	93	79	108	83	99
FLIP 87-137 FB	S82471	90	77	95	81	106	81	99
FLIP 87-141 FB	MS87002	91	72	95	79	105	83	99
FLIP 87-146 FB	S82148	92	76	94	75	108	85	99
FLIP 88- 1 FB	S82471	95	75	94	80	107	81	99
FLIP 88- 2 FB	S82471	90	80	95	79	107	85	99
79TA 22	9	89	78	94	80	106	90	99
79S 4	1814	97	74	97	79	107	81	100
80S 44027	X77TA64	95	74	94	79	106	81	99
80S 80135	X79S171	90	69	94	78	105	83	100
Lattakia Local	1815	93	77	95	81	106	78	99
Reina Blanca	1270	92	77	95	75	107	80	99
Turkish Local	1821	93	77	94	80	107	85	100
ILB 1814	1814	95	82	95	80	106	85	100
Local Check	-	91	75	83	92	106	76	100
Location Mean		92	75	94	79	107	83	99
S.E. of Mean		1.06	2.41	0.22	0.89	0.65	0.00	0.37
L.S.D. at 5%		3.03	-	0.63	2.54	1.84	0.01	1.05
C.V. (%)		2.00	5.53	0.41	1.94	1.05	0.01	0.64
Error d.f.		46	46	46	46	46	46	46
Significance		*	NS	*	*	*	*	*

Cont'd. ...

Table 4.1.2. Cont'd. ...

Entry Name	SYRIA					TURKEY	Overall Mean
	Aleppo	Deir-Ez-Zor	Hama	Homs	Tel Hadya	Izmir	
FLIP 82- 30 FB	106	101	94	110	116	115	97
FLIP 82- 45 FB	105	99	90	109	115	106	96
FLIP 84-104 FB	106	102	93	109	115	111	98
FLIP 84-107 FB	106	101	93	110	116	115	98
FLIP 84-114 FB	106	99	92	109	115	111	97
FLIP 84-127 FB	106	101	93	111	116	111	98
FLIP 84-128 FB	105	98	91	108	114	108	96
FLIP 84-138 FB	105	99	92	108	114	108	96
FLIP 85- 89 FB	106	100	92	109	115	109	97
FLIP 87- 26 FB	106	99	93	109	114	113	97
FLIP 87-137 FB	106	101	93	110	116	113	97
FLIP 87-141 FB	106	99	92	109	114	111	97
FLIP 87-146 FB	106	99	92	108	115	109	97
FLIP 88- 1 FB	105	101	92	110	114	111	97
FLIP 88- 2 FB	105	101	94	109	115	108	97
79TA 22	106	101	93	109	115	111	98
79S 4	106	103	93	108	115	115	98
80S 44027	106	99	92	110	116	108	97
80S 80135	106	98	91	109	115	108	96
Lattakia Local	107	101	92	109	114	115	97
Reina Blanca	106	101	92	110	116	115	97
Turkish Local	105	100	92	109	115	117	98
ILB 1814	106	99	93	110	114	108	98
Local Check	105	98	89	108	115	108	
Location Mean	106	100	92	109	115	111	
S.E. of Mean	0.56	0.68	0.74	0.64	0.53	1.92	
L.S.D. at 5%	-	1.94	2.11	-	-	5.48	
C.V. (%)	0.92	1.18	1.39	1.01	0.80	3.00	
Error d.f.	46	46	46	46	46	46	
Significance	NS	*	*	NS	NS	*	

* = Significance at $P < 0.05$, NS = Not significant.

Table 4.1.3. Time to maturity (days) of entries at different locations in the FBIYT-L during 1988/89.

Entry Name	ALGERIA	BOLIVIA	LEBANON	MOROCCO	SPAIN	SYRIA
	Tessala	Pairumani	Terbol	Jema'a Shain	Cordoba	Aleppo
FLIP 82- 30 FB	159	174	174	148	184	144
FLIP 82- 45 FB	164	167	175	146	182	144
FLIP 84-104 FB	154	177	176	152	182	144
FLIP 84-107 FB	159	174	175	151	184	145
FLIP 84-114 FB	159	169	174	148	182	144
FLIP 84-127 FB	169	175	173	146	182	141
FLIP 84-128 FB	154	158	175	152	182	144
FLIP 84-138 FB	159	169	173	139	182	142
FLIP 85- 89 FB	164	171	174	146	183	138
FLIP 87- 26 FB	155	164	173	148	182	142
FLIP 87-137 FB	159	171	175	146	182	139
FLIP 87-141 FB	155	168	173	148	182	141
FLIP 87-146 FB	169	170	173	151	184	143
FLIP 88- 1 FB	167	170	175	148	183	143
FLIP 88- 2 FB	164	176	173	141	182	141
79TA 22	159	179	175	148	182	142
79S 4	170	174	175	144	184	145
80S 44027	164	171	175	148	182	143
80S 80135	154	170	175	152	182	141
Lattakia Local	164	167	175	148	182	141
Reina Blanca	164	172	174	152	183	142
Turkish Local	167	168	176	146	183	142
ILB 1814	169	176	177	152	183	141
Local Check	156	167	177	146	182	145
Location Mean	162	171	175	148	183	142
S.E. of Mean	0.54	2.92	0.82	0.00	0.30	1.11
L.S.D. at 5%	1.52	8.31	2.35	0.01	0.85	3.17
C.V. (%)	0.57	2.96	0.82	0.00	0.28	1.35
Error d.f.	46	46	46	46	46	46
Significance	*	*	*	*	*	*

Cont'd. ...

Table 4.1.3. Cont'd. ...

Entry Name	SYRIA				TURKEY	Overall Mean
	Deir-Ez-Zor	Hama	Homs	Tel Hadya	Izmir	
FLIP 82- 30 FB	170	158	176	167	176	166
FLIP 82- 45 FB	171	161	176	166	176	166
FLIP 84-104 FB	170	159	176	167	173	166
FLIP 84-107 FB	170	159	176	167	176	167
FLIP 84-114 FB	171	160	175	166	178	166
FLIP 84-127 FB	170	160	176	167	174	167
FLIP 84-128 FB	170	156	176	167	176	164
FLIP 84-138 FB	171	158	176	167	174	165
FLIP 85- 89 FB	170	158	176	167	174	166
FLIP 87- 26 FB	171	159	177	165	171	164
FLIP 87-137 FB	169	161	177	167	174	166
FLIP 87-141 FB	170	159	175	165	174	165
FLIP 87-146 FB	169	158	177	164	176	167
FLIP 88- 1 FB	170	160	178	167	176	167
FLIP 88- 2 FB	171	160	175	166	174	166
79TA 22	171	159	177	167	176	167
79S 4	169	162	176	169	178	168
80S 44027	169	161	176	167	174	166
80S 80135	169	161	176	167	176	166
Lattakia Local	169	162	177	167	176	166
Reina Blanca	170	156	176	166	174	166
Turkish Local	169	162	178	166	176	167
ILB 1814	171	162	178	167	178	169
Local Check	170	160	179	168	180	
Location Mean	170	160	177	167	175	
S.E. of Mean	0.66	1.27	0.74	0.92	1.48	
L.S.D. at 5%	-	3.61	-	-	-	
C.V. (%)	0.67	1.38	0.73	0.96	1.46	
Error d.f.	46	46	46	46	46	
Significance	NS	*	NS	NS	NS	

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

Table 4.1.4. Plant height (cm) of entries at different locations in the FBIYT-L during 1988/89.

Entry Name	ALGERIA	BOLIVIA	CHILE	CYPRUS	LEBANON	MOROCCO	SPAIN	SYRIA
	Tessala	Pairumani	Hidango	Athalassa	Terbol	Jema'a Shain	Cordoba	Aleppo
FLIP 82- 30 FB	42	88	75	54	72	92	65	67
FLIP 82- 45 FB	37	83	80	60	73	83	80	71
FLIP 84-104 FB	30	78	72	57	70	77	75	67
FLIP 84-107 FB	40	93	78	53	77	92	75	73
FLIP 84-114 FB	37	95	80	62	72	105	78	69
FLIP 84-127 FB	35	85	75	57	65	87	76	73
FLIP 84-128 FB	38	102	70	52	63	80	65	74
FLIP 84-138 FB	37	82	77	62	70	70	78	68
FLIP 85- 89 FB	38	82	67	54	72	73	64	71
FLIP 87- 26 FB	40	95	67	55	72	75	63	73
FLIP 87-137 FB	40	98	82	60	75	83	74	68
FLIP 87-141 FB	35	78	78	57	70	88	72	61
FLIP 87-146 FB	38	87	72	56	67	90	67	75
FLIP 88- 1 FB	37	92	77	68	75	80	74	67
FLIP 88- 2 FB	37	98	77	59	70	83	76	74
79TA 22	40	98	80	58	75	90	70	70
79S 4	43	90	73	56	72	83	65	70
80S 44027	42	98	78	57	73	70	75	68
80S 80135	38	98	80	59	72	87	70	68
Lattakia Local	40	90	72	59	72	102	89	69
Reina Blanca	37	87	63	51	63	70	65	69
Turkish Local	32	88	72	58	77	65	74	70
ILB 1814	35	100	72	64	75	85	80	69
Local Check	30	110	75	56	77	85	72	69
Location Mean	37	92	75	58	72	83	73	70
S.E. of Mean	2.13	5.66	4.02	2.28	2.97	2.92	4.83	3.52
L.S.D. at 5%	6.08	16.12	-	6.50	-	8.31	-	-
C.V. (%)	9.89	10.72	9.33	6.86	7.20	6.08	11.50	8.74
Error d.f.	46	46	46	46	46	46	46	46
Significance	*	*	NS	*	NS	*	NS	NS

Cont'd. ...

Table 4.1.4. Cont'd. ...

Entry Name	SYRIA				TURKEY		Overall Mean
	Deir-Ez-Zor	Hama	Homs	Tel Hadya	Diyarbakir	Izmir	
FLIP 82- 30 FB	56	77	79	40	43	58	65
FLIP 82- 45 FB	57	80	85	43	45	74	68
FLIP 84-104 FB	57	77	81	38	45	68	64
FLIP 84-107 FB	53	75	84	40	39	66	67
FLIP 84-114 FB	54	80	82	40	43	66	69
FLIP 84-127 FB	50	72	72	38	34	59	63
FLIP 84-128 FB	43	70	81	35	36	56	62
FLIP 84-138 FB	53	70	76	43	43	63	64
FLIP 85- 89 FB	49	77	81	40	41	61	62
FLIP 87- 26 FB	47	77	82	43	38	59	63
FLIP 87-137 FB	54	75	85	40	37	71	67
FLIP 87-141 FB	43	70	83	40	40	66	63
FLIP 87-146 FB	50	73	78	37	39	61	64
FLIP 88- 1 FB	54	80	85	45	41	71	68
FLIP 88- 2 FB	58	77	78	33	40	63	66
79TA 22	57	77	88	42	41	68	68
79S 4	50	83	88	40	41	74	66
80S 44027	55	77	86	43	44	74	67
80S 80135	52	80	83	37	40	61	66
Lattakia Local	46	80	86	47	39	74	69
Reina Blanca	49	68	73	33	38	59	59
Turkish Local	57	77	83	38	40	69	64
ILB 1814	50	77	86	43	40	73	68
Local Check	49	78	84	43	-	79	
Location Mean	52	76	82	40	40	66	
S.E. of Mean	3.99	3.35	3.56	3.05	2.18	4.76	
L.S.D. at 5%	-	-	-	-	-	13.56	
C.V. (%)	13.33	7.62	7.51	13.15	9.36	12.45	
Error d.f.	46	46	46	46	44	46	
Significance	NS	NS	NS	NS	NS	*	

* = Significant at $P < 0.05$, 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 1988/89.

Entry Name	BOLIVIA		CHILE		CYPRUS		LEBANON		MOROCCO				SPAIN		SYRIA	
	Pairumani		Hidango		Athalassa		Terbol		Douyet		Jema'a Shain		Cordoba		Aleppo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82- 30 FB	842	22	1921	19	1417	21	3012	22	800	19	2333	16	2045	21	1739	17
FLIP 82- 45 FB	1048	17	2294	6	978	24	3309	11	756	22	2500	10	1894	22	2389	1
FLIP 84-104 FB	896	18	1869	20	2046	2	3148	18	817	17	2583	7	2680	7	1522	23
FLIP 84-107 FB	1700	3	2114	13	1547	15	3644	3	1011	9	2667	3	2515	12	1967	8
FLIP 84-114 FB	1254	10	2474	4	1918	6	3247	15	1033	6	2333	15	2531	10	2100	6
FLIP 84-127 FB	863	20	2488	3	1791	10	2889	23	1733	1	2225	19	2770	5	1922	10
FLIP 84-128 FB	1194	13	2179	11	1509	18	3222	16	767	21	2292	18	3029	1	1250	24
FLIP 84-138 FB	856	21	2244	7	1741	12	3696	2	1544	2	2125	20	2610	8	1739	18
FLIP 85- 89 FB	800	23	1752	24	1741	13	3443	6	1022	8	2500	11	2291	15	1556	22
FLIP 87- 26 FB	2094	2	1945	18	1354	22	3160	17	711	24	1417	24	2250	16	1633	20
FLIP 87-137 FB	1313	7	2107	14	1511	17	3074	20	811	18	2542	9	1873	23	1817	13
FLIP 87-141 FB	1146	14	2209	10	1977	4	3284	14	1222	3	1750	22	2856	3	1789	14
FLIP 87-146 FB	1248	11	2755	1	2043	3	3420	8	1144	4	2625	4	2518	11	2056	7
FLIP 88- 1 FB	1200	12	2168	12	1916	7	3309	10	944	12	2625	6	2055	20	1644	19
FLIP 88- 2 FB	1388	5	2541	2	1544	16	3037	21	744	23	2708	2	2164	18	1556	21
79TA 22	1094	16	2241	8	1767	11	2864	24	922	13	3333	1	2119	19	2100	5
79S 4	896	19	2027	15	1302	23	3123	19	1078	5	2000	21	2566	9	2167	3
80S 44027	1340	6	2377	5	1587	14	3383	9	956	11	2500	12	2189	17	1944	9
80S 80135	1133	15	2218	9	1923	5	3431	7	1022	7	2333	17	2833	4	1911	11
Lattakia Local	1292	8	1985	17	1507	19	3531	4	906	14	1583	23	3019	2	1889	12
Reina Blanca	1525	4	2001	16	1908	8	3292	13	878	16	2333	14	2348	13	1744	16
Turkish Local	1277	9	1805	23	1464	20	3444	5	878	15	2583	8	2702	6	1756	15
ILB 1814	785	24	1853	21	1802	9	3309	12	800	20	2375	13	1557	24	2111	4
Local Check	2802	1	1809	22	2343	1	3728	1	1000	10	2625	5	2344	14	2178	2
Location Mean	1249		2141		1693		3292		979		2370		2407		1853	
S.E. of Mean	225.34		230.61		272.26		212.99		313.21		399.66		321.97		181.92	
L.S.D. at 5%	641.45		-		-		-		-		-		-		517.84	
C.V. (%)	31.24		18.66		27.85		11.16		55.40		29.20		23.17		17.00	
Error d.f.	46		46		46		46		46		46		46		46	
Significance	*		NS		NS		NS		NS		NS		NS		*	
Test > L. Check	0		-		-		-		-		-		-		0	

Cont'd. ...

Table 4.1.5. Cont'd. ...

Entry Name	SYRIA								TUNISIA				TURKEY		Overall Mean	
	Deir-Ez-Zor		Hama		Homs		Tel Hadya		Beja		Oued Meliz		Izmir		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R				
FLIP 82- 30 FB	3522	16	3867	19	3256	17	1047	20	2633	18	1900	14	3216	15	2237	21
FLIP 82- 45 FB	4122	10	3978	15	3983	5	1043	21	2900	8	1883	17	3037	20	2408	13
FLIP 84-104 FB	4089	11	3844	21	3467	12	1107	12	2742	13	1750	21	3111	17	2378	15
FLIP 84-107 FB	5739	2	4256	6	3733	8	1102	13	3342	1	1742	22	3543	5	2708	1
FLIP 84-114 FB	5161	3	4261	5	3400	14	1034	22	2892	9	1900	14	2988	21	2568	4
FLIP 84-127 FB	4278	8	4767	1	3256	18	1053	19	3092	5	2167	5	3500	6	2586	2
FLIP 84-128 FB	2967	19	3883	18	2656	22	1172	8	2592	20	1917	12	3407	9	2269	20
FLIP 84-138 FB	5939	1	4044	12	2900	21	1264	3	2617	19	1842	18	3407	8	2571	3
FLIP 85- 89 FB	3722	14	3994	13	2400	23	1182	7	3042	7	2092	8	3099	18	2309	19
FLIP 87- 26 FB	2678	23	4089	9	3111	19	1351	1	2550	22	1983	11	3210	16	2236	22
FLIP 87-137 FB	3561	15	3511	24	4011	4	927	24	2725	15	1708	23	3278	13	2318	18
FLIP 87-141 FB	2922	20	4450	2	4133	2	1207	5	2875	10	2092	8	3784	3	2513	9
FLIP 87-146 FB	3144	18	4406	3	3011	20	1264	4	2717	16	2350	3	2765	24	2498	10
FLIP 88- 1 FB	4400	6	3867	20	3411	13	1291	2	3058	6	2117	7	2901	22	2460	12
FLIP 88- 2 FB	4756	5	3817	22	3911	6	1061	17	2725	14	2425	2	3438	7	2521	8
79TA 22	4833	4	3989	14	3733	9	1187	6	2842	11	1775	19	3364	10	2544	5
79S 4	2811	21	4067	11	3611	11	1074	16	2650	17	2150	6	3290	12	2321	17
80S 44027	4056	12	4072	10	4456	1	1093	14	3192	3	1758	20	3068	19	2531	7
80S 80135	4344	7	3972	17	3278	16	1076	15	2833	12	2217	4	3568	4	2540	6
Lattakia Local	2356	24	3978	16	4078	3	1059	18	2575	21	2492	1	3309	11	2370	16
Reina Blanca	3372	17	4167	7	3633	10	1161	9	3200	2	1900	14	3796	2	2484	11
Turkish Local	4167	9	4144	8	3333	15	1119	10	2450	23	2025	10	2877	23	2402	14
ILB 1814	3967	13	3811	23	1972	24	1117	11	2400	24	1917	12	3247	14	2202	23
Local Check	2717	22	4306	4	3867	7	967	23	3125	4	1700	24	4085	1		
Location Mean	3901		4064		3442		1123		2824		1992		3304			
S.E. of Mean	679.49		274.61		482.62		77.18		231.27		194.76		256.85			
L.S.D. at 5%	1934.18		-		-		219.69		-		-		-			
C.V. (%)	30.17		11.70		24.29		11.90		14.19		16.94		13.47			
Error d.f.	46		46		46		46		46		46		46			
Significance	*		NS		NS		*		NS		NS		NS			
Test > L. Check	5		-		-		6		-		-		-			

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

Table 4.1.6. The five heaviest seed yielding entries at the individual locations in the FBIYT-L during 1988/89.

Rank	<u>BOLIVIA</u>	<u>CHILE</u>	<u>CYPRUS</u>	<u>LEBANON</u>	<u>MOROCCO</u>
	Pairumani	Hidango	Athalassa	Terbol	Douyet
1	Local check	FLIP 87-146 FB	Local check	Local check	FLIP 84-127 FB
2	FLIP 87- 26 FB	FLIP 88- 2 FB	FLIP 84-104 FB	FLIP 84-138 FB	FLIP 84-138 FB
3	FLIP 84-107 FB	FLIP 84-127 FB	FLIP 87-146 FB	FLIP 84-107 FB	FLIP 87-141 FB
4	Reina blanca	FLIP 84-114 FB	FLIP 87-141 FB	Lattakia local	FLIP 87-146 FB
5	FLIP 88- 2 FB	80S 44027	80S 80135	Turkish local	79S 4
Cont'd. ...					
Rank	<u>MOROCCO</u>	<u>SPAIN</u>	<u>SYRIA</u>		
	Jema'a Shain	Cordoba	Aleppo	Deir-Ez-Zor	Hama
1	79TA 22	FLIP 84-128 FB	FLIP 82- 45 FB	FLIP 84-138 FB	FLIP 84-127 FB
2	FLIP 88- 2 FB	Lattakia local	Local check	FLIP 84-107 FB	FLIP 87-141 FB
3	FLIP 84-107 FB	FLIP 87-141 FB	79S 4	FLIP 84-114 FB	FLIP 87-146 FB
4	FLIP 87-146 FB	80S 80135	ILB 1814	79TA 22	Local check
5	Local check	FLIP 84-127 FB	79TA 22	FLIP 88- 2 FB	FLIP 84-114 FB
	FLIP 88- 1 FB		FLIP 84-114 FB		
Cont'd. ...					
Rank	<u>SYRIA</u>		<u>TUNISIA</u>		<u>TURKEY</u>
	Homs	Tel Hadya	Beja	Oued Meliz	Izmir
1	80S 44027	FLIP 87- 26 FB	FLIP 84-107 FB	Lattakia local	Local check
2	FLIP 87-141 FB	FLIP 88- 1 FB	Reina blanca	FLIP 88- 2 FB	Reina blanca
3	Lattakia local	FLIP 84-138 FB	80S 44027	FLIP 87-146 FB	FLIP 87-141 FB
4	FLIP 87-137 FB	FLIP 87-146 FB	Local check	80S 80135	80S 80135
5	FLIP 82- 45 FB	FLIP 87-141 FB	FLIP 84-127 FB	FLIP 84-127 FB	FLIP 84-107 FB

The bracket indicates entries having the same rank.

entry FLIP 84-107 FB yielded the highest (2708 kg/ha) across the locations and was followed by FLIP 84-127 FB, FLIP 84-138 FB, FLIP 84-114 FB and 79TA 22 with seed yields of 2586, 2571, 2568 and 2544 kg/ha respectively. The five heaviest yielders at each location are presented in Table 4.1.6.

On the basis of overall mean over two years (1987/88 and 1988/89) Reina Blanca ranked number 1 and was followed by 80S 80135, 80S 44027, 79TA 22 and FLIP 82-45FB with seed yields of 2716, 2664, 2646, 2591 and 2585 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 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 82-30 FB	2583	6	2237	9	2410	9
FLIP 82-45 FB	2761	3	2408	5	2585	5
79TA 22	2637	5	2544	1	2591	4
79S 4	2555	8	2321	8	2438	7
80S 44027	2761	4	2531	3	2646	3
80S 80135	2788	2	2540	2	2664	2
Lattakia local	2475	9	2370	7	2423	8
Reina blanca	2947	1	2484	4	2716	1
Turkish local	2575	7	2402	6	2489	6
ILB 1814	2365	10	2202	10	2284	10

4.2. FABA BEAN INTERNATIONAL YIELD TRIAL-SMALL SEED (FBIYT-S)

Material

The Faba Bean International Yield Trial - Small Seed (FBIYT-S) comprised 23 test entries and one local check to be supplied by the cooperator. All these entries were tested for their superior performance at least once either in regional trial or in international screening nursery.

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 of 0.50 m accommodating 140 seeds per plot. Twenty five sets of the trial were distributed in 16 countries and the results were returned from 16 locations from 10 countries. The agronomic details received from the cooperators for different locations are given in Table 4.2.1.

Results and Discussion

The location means for time to flowering, time to maturity and plant

Table 4.2.1. Agronomic data for different locations in the FBIYT-S during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Ressala	07.12.88	-		46		-	Sidi Aich	
Cyprus	Dromolaxia	12.12.86	17.05.89	21	48		Treflan, Pirimor	Local (ARI 00139)	
Greece	Larissa	05.12.88	28.06.89		60		Prometryne, Carboxin, Endosulfan	Polycarpi	
Iraq	Atshana	19.11.88	06.05.89	81	81		-	Local	
Italy	Tarquinoa	30.01.89	21.06.89	45	130	1	Rogodan, Decis	Tarquinoa	
Lebanon	Terbol	24.11.88	15.06.89		50	2	Kerb, Igran	Lebanese Local	
Morocco	Allal Tazi	24.02	27.06	-		-	-	-	
Spain	Cordoba	28.11.88	30.05.89	-		-	Trialato, Trifluraline, Linuron	-	
Spain	Sevilla	29.11.88	05.06.89	42	21	-	Topogard, Terbutryne, Rogor	Areces	
Syria	Aleppo	24.11.88			50	5			
Syria	Deir-Ez-Zor	28.11.88	12.06.89	5	8	6	-	-	
Syria	Homs	24.11.88	28.05.89	25	80	2	Supracid, Decis	-	
Syria	Tel Hadya	11.11.88	28.05.89		50	-	Tribunil, Fusilade, Lancer Gramaxone	ILB 1814	
Tunisia	Beja	17.11.88	-	-		-	-	-	
Tunisia	Oued Meliz	21.11.88	-	-		-	-	-	

Table 4.2.2. Time to flowering (days) of entries at different locations in the FBIYT-S during 1988/89.

Entry Name	ILB/ Cross No.	ALGERIA	CYPRUS	GREECE	IRAQ	ITALY	LEBANON
		Tessala	Dromolaxia	Larissa	Atshana	Tarquinia	Terbol
FLIP 83- 1 FB 5		91	86	116	89	65	105
FLIP 83- 3 FB X79S 12		92	86	116	90	65	105
FLIP 83- 88 FB S81232		93	86	118	88	65	105
FLIP 83- 89 FB S81232		88	88	117	92	69	106
FLIP 83-105 FB 79S 33024		90	86	116	89	65	105
FLIP 83-106 FB 1814		91	85	117	91	65	105
FLIP 87-162 FB D85056		92	89	118	94	69	109
FLIP 87-163 FB 1816		90	87	116	93	69	107
FLIP 87-164 FB 1816		89	86	118	91	69	106
FLIP 87-167 FB L82005		92	88	118	93	69	108
FLIP 87-169 FB L83149		88	85	116	91	69	105
FLIP 87-170 FB L83136		93	88	118	87	69	108
FLIP 88- 3 FB S85224		92	86	118	90	74	108
FLIP 88- 4 FB S85300		89	85	117	95	69	108
FLIP 88- 5 FB S85300		91	88	117	95	69	109
FLIP 88- 6 FB S85301		91	88	118	90	69	109
B 87148	3026	88	86	119	94	69	108
B 87149	3026	89	86	116	93	69	107
B 87259	2282	88	87	118	86	69	109
B 87263	2282	90	88	117	92	69	108
80S 50088	X75TA 150	90	89	117	88	69	107
Giza 3	1819	91	86	117	94	65	106
ILB 1812	1812	91	86	118	92	69	107
Local Check	-	92	78	126	89	69	106
Location Mean		90	86	118	91	68	107
S.E. of Mean		1.42	0.41	0.63	0.89	0.00	0.44
L.S.D. at 5%		-	1.17	1.78	2.52	0.00	1.24
C.V. (%)		2.72	0.82	0.92	1.69	0.00	0.71
Error d.f.		46	46	46	46	46	46
Significance		NS	*	*	*	*	*

Cont'd. ...

Table 4.2.2. Cont'd. ...

Entry Name	SPAIN		SYRIA				Overall Mean
	Cordoba	Sevilla	Aleppo	Deir-Ez-Zor	Homs	Tel Hadya	
FLIP 83- 1 FB	99	85	106	101	108	115	97
FLIP 83- 3 FB	100	85	105	99	108	114	97
FLIP 83- 88 FB	100	90	106	100	109	114	98
FLIP 83- 89 FB	101	90	105	101	108	116	98
FLIP 83-105 FB	99	85	106	100	107	115	97
FLIP 83-106 FB	100	85	105	98	107	114	97
FLIP 87-162 FB	101	90	107	104	112	116	100
FLIP 87-163 FB	100	90	107	101	110	115	99
FLIP 87-164 FB	100	85	106	102	109	115	98
FLIP 87-167 FB	100	90	107	103	109	116	99
FLIP 87-169 FB	100	85	105	99	108	115	97
FLIP 87-170 FB	102	90	106	103	110	116	99
FLIP 88- 3 FB	100	85	106	101	109	114	99
FLIP 88- 4 FB	100	85	106	100	109	117	98
FLIP 88- 5 FB	99	90	106	102	110	115	99
FLIP 88- 6 FB	101	90	105	102	109	117	99
B 87148	102	90	106	103	112	119	100
B 87149	99	90	106	101	110	117	99
B 87259	99	85	107	103	111	119	98
B 87263	99	85	106	102	111	119	99
80S 50088	102	90	106	102	109	115	99
Giza 3	100	85	106	99	110	115	98
ILB 1812	101	85	105	102	109	114	98
Local Check	100	85	106	98	107	114	
Location Mean	100	87	106	101	109	116	
S.E. of Mean	0.41	0.00	0.56	0.67	0.74	0.39	
L.S.D. at 5%	1.16	0.01	-	1.92	2.09	1.12	
C.V. (%)	0.70	0.01	0.92	1.16	1.16	0.59	
Error d.f.	46	46	46	46	46	46	
Significance	*	*	NS	*	*	*	

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

Table 4.2.3. Time to maturity (days) of entries at different locations in the FBIYT-S during 1988/89.

Entry Name	ALGERIA	GREECE	IRAQ	ITALY	LEBANON	SPAIN		SYRIA				Overall Mean
	Tessala	Larissa	Atshana	Tarqu- uinia	Terbol	Cordoba	Sevilla	Aleppo	Deir-Ez- Zor	Homs	Tel Hadya	
FLIP 83- 1 FB	154	180	162	131	173	182	162	143	170	179	166	164
FLIP 83- 3 FB	169	181	163	134	173	182	162	143	169	179	166	166
FLIP 83- 88 FB	169	181	164	132	172	182	165	143	170	176	165	165
FLIP 83- 89 FB	161	178	167	132	171	182	166	143	170	175	165	165
FLIP 83-105 FB	159	178	165	134	173	182	162	146	169	177	166	165
FLIP 83-106 FB	162	178	169	131	171	182	163	143	169	175	167	164
FLIP 87-162 FB	163	180	166	137	174	182	166	142	169	176	166	166
FLIP 87-163 FB	163	178	166	134	173	182	164	143	168	176	167	165
FLIP 87-164 FB	159	179	165	131	172	182	164	145	168	176	166	164
FLIP 87-167 FB	164	178	167	134	173	182	166	145	169	177	167	166
FLIP 87-169 FB	159	176	161	132	174	182	162	147	170	178	168	164
FLIP 87-170 FB	169	179	163	134	172	182	166	145	169	176	166	166
FLIP 88- 3 FB	164	185	161	134	175	182	162	143	170	178	166	166
FLIP 88- 4 FB	159	179	168	134	176	182	163	145	168	176	169	165
FLIP 88- 5 FB	164	182	161	137	173	182	165	143	169	178	168	166
FLIP 88- 6 FB	164	187	161	140	177	183	163	140	171	182	169	167
B 87148	156	181	161	136	176	182	164	139	170	178	170	165
B 87149	159	176	165	134	175	182	166	143	169	178	168	165
B 87259	154	177	165	132	174	182	162	145	170	175	168	164
B 87263	164	176	166	132	177	182	162	142	169	176	170	165
80S 50088	169	183	162	137	175	182	164	142	170	179	165	166
Giza 3	163	178	163	136	172	182	162	144	168	177	169	165
ILB 1812	162	184	161	134	175	182	162	144	170	178	164	165
Local Check	164	189	167	134	172	182	162	142	168	176	167	
Location Mean	162	180	164	134	174	182	164	143	169	177	167	
S.E. of Mean	1.18	1.46	0.82	1.67	0.98	0.15	0.00	1.52	0.71	0.89	0.98	
L.S.D. at 5%	3.35	4.15	2.33	4.76	2.78	0.42	0.01	-	-	2.54	2.78	
C.V. (%)	1.26	1.40	0.86	2.16	0.98	0.14	0.00	1.84	0.73	0.87	1.01	
Error d.f.	46	46	46	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	NS	NS	*	*	

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

Table 4.2.4. Plant height (cm) of entries at different locations in the FBIYT-S during 1988/89.

Entry Name	ALGERIA	CYPRUS	GREECE	IRAQ	ITALY	LEBANON	MOROCCO
	Tessala	Dromolaxia	Larissa	Atshana	Tarquinoa	Terbol	Allal Tazi
FLIP 83- 1 FB	43	56	58	38	73	67	87
FLIP 83- 3 FB	40	54	66	43	80	75	80
FLIP 83- 88 FB	47	56	63	45	77	73	75
FLIP 83- 89 FB	43	56	68	39	75	67	82
FLIP 83-105 FB	38	57	68	39	83	75	82
FLIP 83-106 FB	42	59	66	42	78	72	80
FLIP 87-162 FB	43	56	64	47	83	70	89
FLIP 87-163 FB	38	55	66	42	68	73	81
FLIP 87-164 FB	38	53	66	45	73	72	75
FLIP 87-167 FB	37	51	63	43	85	72	96
FLIP 87-169 FB	40	59	73	34	75	67	77
FLIP 87-170 FB	47	61	66	51	85	72	93
FLIP 88- 3 FB	43	58	60	44	77	77	92
FLIP 88- 4 FB	32	53	67	41	78	70	82
FLIP 88- 5 FB	42	53	68	50	90	73	86
FLIP 88- 6 FB	40	60	67	42	80	78	87
B 87148	38	49	70	42	68	53	74
B 87149	37	47	70	39	65	68	78
B 87259	40	54	66	43	73	58	78
B 87263	40	51	71	39	73	60	65
80S 50088	40	56	74	42	83	77	81
Giza 3	42	58	64	42	87	72	86
ILB 1812	48	56	56	50	78	72	93
Local Check	47	57	79	44	73	68	80
Location Mean	41	55	67	43	78	70	82
S.E. of Mean	3.58	3.23	4.63	2.63	3.23	3.57	5.89
L.S.D. at 5%	-	-	-	7.48	9.19	10.16	-
C.V. (%)	15.13	10.13	12.03	10.64	7.20	8.83	12.38
Error d.f.	46	46	46	46	46	46	46
Significance	NS	NS	NS	*	*	*	NS

Cont'd. ...

Table 4.2.4. Cont'd. ...

Entry Name	SPAIN		SYRIA				Overall Mean
	Cordoba	Sevilla	Aleppo	Deir-Ez-Zor	Homs	Tel Hadya	
FLIP 83- 1 FB	63	44	59	63	70	33	58
FLIP 83- 3 FB	61	46	61	60	78	37	60
FLIP 83- 88 FB	60	49	55	54	77	37	59
FLIP 83- 89 FB	56	48	59	67	73	38	59
FLIP 83-105 FB	65	42	56	53	84	38	60
FLIP 83-106 FB	58	45	56	50	82	38	59
FLIP 87-162 FB	61	46	56	58	79	35	61
FLIP 87-163 FB	58	40	63	45	77	37	57
FLIP 87-164 FB	60	40	65	64	82	38	59
FLIP 87-167 FB	67	44	53	50	84	42	60
FLIP 87-169 FB	60	46	65	58	68	38	58
FLIP 87-170 FB	66	41	64	56	79	38	63
FLIP 88- 3 FB	66	38	52	60	87	40	61
FLIP 88- 4 FB	63	41	60	57	73	38	58
FLIP 88- 5 FB	61	43	54	57	84	37	61
FLIP 88- 6 FB	61	43	55	71	82	43	62
B 87148	47	43	58	45	64	32	53
B 87149	47	38	61	48	78	38	55
B 87259	47	41	55	46	60	30	53
B 87263	50	33	57	51	75	38	54
80S 50088	66	42	57	58	79	38	61
Giza 3	61	41	55	57	81	38	60
ILB 1812	69	49	49	66	86	38	62
Local Check	58	45	53	54	74	37	
Location Mean	60	43	57	56	77	37	
S.E. of Mean	3.17	3.44	3.54	8.41	3.49	2.68	
L.S.D. at 5%	9.02	-	-	-	9.92	-	
C.V. (%)	9.20	13.93	10.67	25.96	7.81	12.39	
Error d.f.	46	46	46	46	46	46	
Significance	*	NS	NS	NS	*	NS	

* = Significance at $P < 0.05$, 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 1988/89.

Entry Name	CYPRUS		GREECE		IRAQ		ITALY		LEBANON		MOROCCO				SPAIN	
	Dromolaxia		Larissa		Atshana		Tarquinia		Terbol		Allal Tazi		Douyet		Cordoba	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 1 FB	691	12	2040	9	442	14	2406	16	4432	3	2213	12	1300	17	2031	10
FLIP 83- 3 FB	359	21	1853	17	381	20	3511	2	3845	10	2467	9	1278	19	2086	7
FLIP 83- 88 FB	1334	1	1649	22	555	5	3094	4	4284	6	2718	4	1722	7	2293	2
FLIP 83- 89 FB	357	22	2077	8	623	1	2489	13	3593	17	2342	11	1400	14	2228	3
FLIP 83-105 FB	1026	3	2148	5	423	17	2833	8	3725	15	2103	15	1333	16	1913	13
FLIP 83-106 FB	1267	2	2098	7	483	9	2872	7	3802	12	2553	7	1556	10	2083	8
FLIP 87-162 FB	651	15	2183	4	602	2	3561	1	3125	24	1797	18	1189	20	1191	22
FLIP 87-163 FB	557	17	1739	18	456	13	2011	23	4289	5	1774	19	944	23	1951	12
FLIP 87-164 FB	743	9	1892	15	378	21	2239	20	3457	21	1656	21	1811	4	2070	9
FLIP 87-167 FB	562	16	1703	20	461	12	2800	9	3790	13	2718	5	1633	8	1478	17
FLIP 87-169 FB	1006	4	2246	3	508	7	2922	6	3531	19	2528	8	2044	1	2110	5
FLIP 87-170 FB	912	6	2122	6	431	15	2583	11	3852	9	2912	2	1767	5	2666	1
FLIP 88- 3 FB	191	24	1700	21	481	10	2294	18	3924	8	1493	22	1300	18	1625	15
FLIP 88- 4 FB	708	11	1738	19	317	24	1794	24	4274	7	2766	3	1433	13	1537	16
FLIP 88- 5 FB	666	13	2012	11	506	8	3294	3	3841	11	1683	20	1611	9	1757	14
FLIP 88- 6 FB	470	19	1944	14	374	22	2361	17	3214	23	1488	23	1344	15	755	24
B 87148	538	18	1991	12	544	6	2239	19	4427	4	2173	13	1856	3	1470	18
B 87149	429	20	1522	24	361	23	2956	5	3467	20	2154	14	2011	2	1095	23
B 87259	659	14	2013	10	422	18	2533	12	3735	14	1833	17	1456	12	1443	20
B 87263	242	23	1630	23	401	19	2189	21	4575	1	830	24	1511	11	1456	19
80S 50088	909	7	2546	1	586	3	2028	22	3630	16	2667	6	1000	22	2126	4
Giza 3	840	8	2389	2	429	16	2417	15	3573	18	2395	10	1744	6	2099	6
ILB 1812	740	10	1976	13	583	4	2417	14	3333	22	1880	16	800	24	1421	21
Local Check	983	5	1883	16	468	11	2711	10	4496	2	2963	1	1022	21	1978	11
Location Mean	702		1962		467		2606		3842		2171		1461		1786	
S.E. of Mean	192.75		254.67		32.51		466.02		434.33		426.58		320.53		255.42	
L.S.D. at 5%	548.68		-		92.53		-		-		-		-		727.06	
C.V. (%)	47.58		22.48		12.05		30.97		19.58		34.03		38.00		24.77	
Error d.f.	46		46		46		46		46		46		46		46	
Significance	*		NS		*		NS		NS		NS		NS		*	
Test > L. Check	0		-		4		-		-		-		-		0	

Cont'd. ...

Table 4.2.5. Cont'd. ...

Entry Name	SPAIN		SYRIA								TUNISIA				Overall Mean	
	Sevilla		Aleppo		Deir-Ez-Zor		Homs		Tel Hadya		Beja		Oued Meliz		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 1 FB	2208	10	1622	18	5344	4	2556	20	1174	4	2742	6	2092	17	2220	10
FLIP 83- 3 FB	2500	7	1589	20	4689	7	3283	9	1089	10	2783	4	2850	1	2304	6
FLIP 83- 88 FB	2779	5	2311	1	5278	5	3444	5	1059	14	3033	1	2433	7	2533	1
FLIP 83- 89 FB	2843	3	1844	9	5967	2	3578	3	1066	12	2825	3	2183	15	2361	2
FLIP 83-105 FB	1676	20	2000	3	3867	16	2967	15	1238	2	2400	18	2358	9	2134	13
FLIP 83-106 FB	2795	4	1633	17	4089	12	3244	10	1224	3	2592	10	2642	3	2329	4
FLIP 87-162 FB	2173	12	1644	16	3500	21	2867	17	809	22	2525	15	2233	12	2003	15
FLIP 87-163 FB	1596	22	1833	10	3500	20	2722	19	1034	16	2333	19	1833	20	1905	19
FLIP 87-164 FB	1923	16	1678	15	4244	10	2944	16	1163	6	2967	2	2383	8	2103	14
FLIP 87-167 FB	1859	17	2044	2	3244	23	3239	11	1124	9	2650	7	2717	2	2135	12
FLIP 87-169 FB	2176	11	1967	4	4856	6	3056	13	1291	1	2583	11	2117	16	2329	3
FLIP 87-170 FB	2365	9	1900	7	3667	19	3344	7	999	18	2767	5	2200	13	2299	7
FLIP 88- 3 FB	1853	18	1589	19	3900	15	3389	6	1156	7	2608	9	2000	18	1967	16
FLIP 88- 4 FB	1776	19	1467	22	3956	14	1838	24	920	19	2183	22	1617	23	1888	20
FLIP 88- 5 FB	1673	21	1789	12	3956	13	3672	2	1168	5	2567	13	2200	14	2160	11
FLIP 88- 6 FB	2122	13	1922	6	3811	17	3011	14	822	21	2442	17	1883	19	1864	21
B 87148	2093	14	1156	24	3300	22	2311	22	913	20	2133	23	1500	24	1910	18
B 87149	1385	24	1711	14	3233	24	2767	18	1013	17	2192	21	1725	22	1868	22
B 87259	2417	8	1533	21	4178	11	2167	23	772	23	2450	16	2317	11	1995	17
B 87263	1484	23	1367	23	3767	18	2478	21	740	24	1842	24	1767	21	1752	23
80S 50088	2583	6	1711	13	4544	8	3311	8	1063	13	2233	20	2500	5	2229	9
Giza 3	1981	15	1944	5	5678	3	3133	12	1051	15	2617	8	2500	4	2319	5
ILB 1812	2865	2	1811	11	6556	1	3506	4	1073	11	2533	14	2483	6	2265	8
Local Check	3067	1	1889	8	4467	9	3978	1	1147	8	2583	12	2325	10		
Location Mean	2175		1748		4316		3034		1046		2524		2202			
S.E. of Mean	451.69		160.99		912.93		486.43		79.30		197.99		366.37			
L.S.D. at 5%	-		458.26		-		-		225.73		563.57		-			
C.V. (%)	35.98		15.95		36.64		27.77		13.13		13.59		28.81			
Error d.f.	46		46		46		46		46		46		46			
Significance	NS		*		NS		NS		*		*		NS			
Test > L. Check	-		0		-		-		0		0		-			

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

Table 4.2.6. The five heaviest seed yielding entries at the individual locations in the FBIYT-S during 1988/89.

Rank	CYPRUS		GREECE		IRAQ		ITALY		LEBANON	
	Dromolaxia		Larissa		Atshana		Tarquinia		Terbol	
1	FLIP 83- 88 FB	80S 50088	FLIP 83- 89 FB	FLIP 87-162 FB	B 87263					
2	FLIP 83-106 FB	Giza 3	FLIP 87-162 FB	FLIP 83- 3 FB	Local check					
3	FLIP 83-105 FB	FLIP 87-169 FB	80S 50088	FLIP 88- 5 FB	FLIP 83- 1 FB					
4	FLIP 87-169 FB	FLIP 87-162 FB	ILB 1812	FLIP 83- 88 FB	B 87148					
5	Local check	FLIP 83-105 FB	FLIP 83- 88 FB	B 87149	FLIP 87-163 FB					
Cont'd. ...										
Rank	MOROCCO		SPAIN		SYRIA					
	Allal Tazi		Douyet		Cordoba		Sevilla		Aleppo	
1	Local check	FLIP 87-169 FB	FLIP 87-170 FB	Local check	FLIP 83- 88 FB					
2	FLIP 87-170 FB	B 87149	FLIP 83- 88 FB	ILB 1812	FLIP 87-167 FB					
3	FLIP 88- 4 FB	B 87148	FLIP 83- 89 FB	FLIP 83- 89 FB`	FLIP 83-105 FB					
4	FLIP 83- 88 FB	FLIP 87-164 FB	80S 50088	FLIP 83-106 FB	FLIP 87-169 FB					
5	FLIP 87-167 FB	FLIP 87-170 FB	FLIP 87-169 FB	FLIP 83- 88 FB	Giza 3					
Cont'd. ...										
Rank	SYRIA		TUNISIA							
	Deir-Ez-Zor		Homs		Tel Hadya		Beja		Oued Meliz	
1	ILB 1812	Local check	FLIP 87-169 FB	FLIP 83- 88 FB	FLIP 83- 3 FB					
2	FLIP 83- 89 FB	FLIP 88- 5 FB	FLIP 83-105 FB	FLIP 87-164 FB	FLIP 87-167 FB					
3	Giza 3	FLIP 83- 89 FB	FLIP 83-106 FB	FLIP 83- 89 FB	FLIP 83-106 FB					
4	FLIP 83- 1 FB	ILB 1812	FLIP 83- 1 FB	FLIP 83- 3 FB	Giza 3					
5	FLIP 83- 88 FB	FLIP 83- 88 FB	FLIP 88- 5 FB	FLIP 87-170 FB	80S 50088					

height are given in Tables 4.2.2, 4.2.3, and 4.2.4, respectively. The entry means over locations ranged from 97 to 100 days for time to flowering, 164 to 167 days for time to maturity, and 53 to 63 cm for plant height.

The mean seed yield and rank of entries at different locations are given in Table 4.2.5. Out of 15 locations reporting seed yield, at 6 locations only at Atshana in Iraq some of the test entries exceeded the respective local check by a significant margin. The five heaviest yielders at each location are given in Table 4.2.6.

The mean performance of the common entries over 1987/88 and 1988/89 are given in Table 4.2.7. On the basis of overall mean over two years FLIP 83-88 FB ranked number 1 and was followed by FLIP 83-106 FB, FLIP 83-3 FB, FLIP 83-105 FB and Giza 3.

Table 4.2.7. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in FBIYT-S during 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 83- 1 FB	3066	5	2220	7	2643	6
FLIP 83- 3 FB	3332	3	2304	4	2818	3
FLIP 83- 88 FB	3440	1	2533	1	2987	1
FLIP 83-105 FB	3328	4	2134	8	2731	4
FLIP 83-106 FB	3430	2	2329	2	2880	2
80S 50088	2853	8	2229	6	2541	8
Giza 3	3033	6	2319	3	2676	5
ILB 1812	2936	7	2265	5	2601	7

4.3. FAB A 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 m accommodating 120 seeds per plot. Twenty five of the trial were distributed to cooperators in 17 countries but the results were returned for 18 sets from 12 countries. The agronomic details received from the cooperators are presented in Table 4.3.1.

Table 4.3.1. Agronomic data for different locations in the FBIYT-D during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Tessala	07.12.88			46		-	-	Aquadulce
Bolivia *	Pairumani	25.05.90	28.11.90	20	50		10	-	Pairumani 1
Canada	La Pocatiere	18.05.89	07.09.89	23	90		-	Treflan, Anilin	19x27 (Determinate)
Cyprus	Athalassa	06.12.88	05.06.89	21	48		3	Trefluran, Pirimor	Local (ARI 00139)
Iraq	Dohuk	13.11.88	20.05.89	40	46		-	-	Dohuk Local
Iraq	Mosul	30.11.88	29.05.89	40	100		5	Malathion	Aquadulce
Italy	Caltagirone	10.01.89	29.06.89	54	60		-	-	Manfredini
Lebanon	Terbol	24.11.88	15.06.89		50		-	Kerb, Igran	Lebanese Local
Morocco	Jema'a Shain	23.11.88	05.07.89	95	111		-	-	F 269
Morocco	Douyet	01.12.88							
Spain	Cordoba	01.12.88	15.06.89	-			-	Croneton	Areces
Syria	Deir-Ez-Zor	28.11.88	04.06.89	5	8		7	-	
Syria	Hama	29.11.88	27.05.89	25	80		4	Supracid	
Syria	Tel Hadya	12.11.88	28.05.89		50		-	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
Tunisia	Beja	17.11.88	-	-			-	-	Local FVL
Tunisia	Oued Meliz	21.11.88	-	-			-	-	
Turkey	Izmir	23.11.88	13.06.89	30	60		-	Endosulfan	Eresen-87

* The trial was conducted during 1989/90.

Table 4.3.2. Time to flowering (days) of entries at different locations in the FBIYT-D during 1988/89.

Entry Name	ILB/	ALGERIA	BOLIVIA	CANADA +	CYPRUS	IRAQ		ITALY
		Tessala	Pairumani	La Pocatiere	Athalassa	Dohuk	Mosul	Caltagirone
FLIP 84-230	FB S82226	90	74	190	93	131	102	82
FLIP 84-237	FB S82237	89	74	190	93	130	101	82
FLIP 84-240	FB S82238	99	77	190	96	131	102	84
FLIP 84-243	FB S82239	98	80	190	97	133	102	84
FLIP 84-244	FB S82241	99	76	190	94	129	103	82
FLIP 84-246	FB S82229	98	74	190	94	131	101	82
FLIP 85-172	FB S82238	95	71	190	97	130	102	84
FLIP 86-107	FB S82229	98	76	190	94	131	101	84
FLIP 86-109	FB S82238	99	79	190	95	130	102	85
FLIP 86-118	FB S82232	89	72	190	94	131	102	83
FLIP 86-122	FB S82238	95	81	190	94	132	102	85
FLIP 86-125	FB S82238	98	79	190	97	133	102	84
FLIP 86-136	FB D83063	95	78	190	95	133	102	86
FLIP 86-143	FB D83279	92	73	190	95	132	103	84
FLIP 86-144	FB D83279	95	69	190	95	131	102	84
FLIP 86-145	FB D83032	92	72	190	95	131	103	86
FLIP 86-146	FB D83066	98	73	190	95	132	103	86
FLIP 88- 8	FB D84264	91	73	190	96	131	102	85
ILB 1814	1814	95	74	190	94	130	101	84
Local Check	-	95	71	190	83	128	101	82
Location Mean		95	75	190	94	131	102	84
S.E. of Mean		0.08	2.51		0.42	0.62	0.58	0.66
L.S.D. at 5%		0.21	-		1.21	1.78	-	1.90
C.V. (%)		0.14	5.80		0.77	0.82	0.99	1.37
Error d.f.		38	38		38	38	38	38
Significance		*	NS		*	*	NS	*

Cont'd. ...

Table 4.3.2. Cont'd. ...

Entry Name	LEBANON		MOROCCO		SPAIN		SYRIA		TURKEY		Overall Mean
	Terbol		Jema'a	Shain Douyet+	Cordoba		Deir-Ez-Zor	Hama	Tel Hadya	Izmir	
FLIP 84-230 FB	109	98	88		97		105	94	116	113	106
FLIP 84-237 FB	109	103	88		97		104	94	116	113	105
FLIP 84-240 FB	109	107	81		97		106	95	115	113	107
FLIP 84-243 FB	112	102	88		99		107	98	118	117	108
FLIP 84-244 FB	109	104	81		97		105	96	117	115	106
FLIP 84-246 FB	110	107	81		97		107	96	116	115	107
FLIP 85-172 FB	111	107	81		98		105	95	117	115	106
FLIP 86-107 FB	110	98	88		98		105	96	116	111	106
FLIP 86-109 FB	110	98	88		98		107	94	117	117	107
FLIP 86-118 FB	110	104	88		97		105	95	115	115	106
FLIP 86-122 FB	113	107	88		101		106	99	118	115	108
FLIP 86-125 FB	115	102	88		100		107	100	117	115	108
FLIP 86-136 FB	113	103	88		101		107	100	119	115	108
FLIP 86-143 FB	112	99	88		98		107	96	117	117	107
FLIP 86-144 FB	111	107	89		99		106	99	118	117	107
FLIP 86-145 FB	110	98	81		97		106	96	117	117	106
FLIP 86-146 FB	117	98	90		100		107	102	118	117	108
FLIP 88- 8 FB	112	107	88		98		106	97	116	117	107
ILB 1814	107	108	81		97		103	94	114	111	106
Local Check	107	107	88		101		99	90	114	107	
Location Mean	111	103	86		98		106	96	117	115	
S.E. of Mean	0.56	0.37			0.89		0.58	0.98	0.44	1.68	
L.S.D. at 5%	1.60	1.07			2.54		1.67	2.79	1.26	4.81	
C.V. (%)	0.87	0.63			1.56		0.96	1.75	0.66	2.54	
Error d.f.	38	38			38		38	38	38	38	
Significance	*	*			*		*	*	*	*	

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* = Significance at $P < 0.05$, NS = Not significance, + Non-replicated.

Table 4.3.3. Time to maturity (days) of entries at different locations in the FBIYT-D during 1988/89.

Entry Name	ALGERIA	BOLIVIA	CANADA +	IRAQ	ITALY +	LEBANON	MOROCCO	
	Tessala	Pairumani	La Pocatiere	Dohuk	Mosul	Caltagirone	Terbol Jema'a Shain	
FLIP 84-230 FB	154	174	250	188	172	170	175	173
FLIP 84-237 FB	153	174	250	186	171	170	173	173
FLIP 84-240 FB	169	174	250	188	171	170	173	174
FLIP 84-243 FB	169	174	250	190	172	170	175	170
FLIP 84-244 FB	169	177	250	188	172	170	174	174
FLIP 84-246 FB	166	173	250	186	171	170	173	173
FLIP 85-172 FB	165	171	250	186	172	170	173	168
FLIP 86-107 FB	168	177	250	182	171	170	171	168
FLIP 86-109 FB	169	178	250	178	172	170	170	174
FLIP 86-118 FB	153	171	250	186	172	170	173	168
FLIP 86-122 FB	163	181	250	190	172	170	175	166
FLIP 86-125 FB	169	181	250	188	172	170	175	173
FLIP 86-136 FB	165	176	250	186	172	170	170	159
FLIP 86-143 FB	160	174	250	187	173	170	175	170
FLIP 86-144 FB	165	169	250	188	172	170	175	171
FLIP 86-145 FB	157	148	250	188	173	170	175	173
FLIP 86-146 FB	168	170	250	190	172	170	175	168
FLIP 88- 8 FB	153	172	250	182	173	170	171	170
ILB 1814	165	171	250	187	171	170	174	166
Local Check	165	170	250	178	171	170	176	170
Location Mean	163	173	250	186	172	170	174	170
S.E. of Mean	1.45	5.58		2.60	0.79		0.74	0.22
L.S.D. at 5%	4.14	-		7.45	-		2.13	0.64
C.V. (%)	1.53	5.60		2.42	0.80		0.74	0.23
Error d.f.	38	38		38	38		38	38
Significance	*	NS		*	NS		*	*

Cont'd. ...

Table 4.3.3. Cont'd. ...

Entry Name	MOROCCO	SPAIN	SYRIA			TURKEY	Overall Mean
	Douyet+	Cordoba+	Deir-Ez-Zor	Hama	Tel Hadya	Izmir	
FLIP 84-230 FB	180	161	170	163	167	170	176
FLIP 84-237 FB	180	161	171	162	167	174	176
FLIP 84-240 FB	180	161	169	162	163	170	177
FLIP 84-243 FB	180	161	169	163	168	172	177
FLIP 84-244 FB	180	161	170	162	166	172	178
FLIP 84-246 FB	180	161	168	163	163	170	176
FLIP 85-172 FB	180	161	169	161	166	173	176
FLIP 86-107 FB	180	161	169	161	163	172	176
FLIP 86-109 FB	186	161	169	160	163	172	177
FLIP 86-118 FB	186	161	169	162	166	174	176
FLIP 86-122 FB	180	161	170	163	167	175	177
FLIP 86-125 FB	180	161	170	163	167	174	178
FLIP 86-136 FB	180	161	168	160	168	173	175
FLIP 86-143 FB	180	161	170	164	166	174	177
FLIP 86-144 FB	175	161	169	165	167	176	177
FLIP 86-145 FB	180	161	169	163	167	175	175
FLIP 86-146 FB	186	161	168	163	163	173	177
FLIP 88- 8 FB	180	161	170	162	166	170	175
ILB 1814	180	161	170	162	163	179	176
Local Check	186	161	168	161	167	178	
Location Mean	181	161	169	162	166	173	
S.E. of Mean			0.81	0.60	0.79	1.52	
L.S.D. at 5%			-	1.72	2.27	4.34	
C.V. (%)			0.82	0.64	0.83	1.52	
Error d.f.			38	38	38	38	
Significance			NS	*	*	*	

* = Significance at $P < 0.05$, NS = Not significance, + Non-replicated.

Table 4.3.4. Plant height (cm) of entries at different locations in the FBIYT-D during 1988/89.

Entry Name	ALGERIA	BOLIVIA	CANADA	CYPRUS	IRAQ	ITALY	LEBANON	MOROCCO	
	Tessala	Pairumani	La Pocatiere	Athalassa	Dohuk	Mosul	Caltagirone	Terbol Jema'a Shain	
FLIP 84-230 FB	28	47	47	41	24	41	33	48	100
FLIP 84-237 FB	32	47	55	45	24	34	35	45	33
FLIP 84-240 FB	35	45	51	44	22	33	36	47	38
FLIP 84-243 FB	35	48	49	50	23	34	36	42	47
FLIP 84-244 FB	35	50	55	57	23	36	34	48	57
FLIP 84-246 FB	27	48	47	42	25	42	37	43	32
FLIP 85-172 FB	32	48	52	44	27	38	39	47	43
FLIP 86-107 FB	28	42	51	47	25	37	39	47	52
FLIP 86-109 FB	32	42	50	47	25	34	38	43	37
FLIP 86-118 FB	30	45	52	42	28	41	34	48	40
FLIP 86-122 FB	33	58	52	49	25	40	39	53	42
FLIP 86-125 FB	32	43	42	48	28	38	37	50	40
FLIP 86-136 FB	32	45	52	48	28	33	39	41	73
FLIP 86-143 FB	38	43	51	45	26	38	34	44	42
FLIP 86-144 FB	38	48	52	41	25	38	35	50	43
FLIP 86-145 FB	38	58	57	46	28	49	40	47	43
FLIP 86-146 FB	37	48	49	47	23	39	37	47	33
FLIP 88- 8 FB	30	42	52	41	23	34	35	44	45
ILB 1814	28	75	68	66	43	54	40	78	57
Local Check	32	85	47	66	42	58	42	78	37
Location Mean	33	50	51	48	27	40	37	50	47
S.E. of Mean	3.56	3.78	3.87	3.18	1.85	3.45	1.51	2.42	1.52
L.S.D. at 5%	-	10.82	-	9.09	5.28	9.87	4.33	6.93	4.35
C.V. (%)	18.92	12.98	10.65	11.48	11.90	15.07	7.09	8.47	5.64
Error d.f.	38	38	19	38	38	38	38	38	38
Significance	NS	*	NS	*	*	*	*	*	*

Cont'd. ...

Table 4.3.4. Cont'd. ...

Entry Name	MOROCCO	SPAIN	SYRIA			TUNISIA	TURKEY	Overall Mean
	Douyet+	Cordoba	Deir-Ez-Zor	Hama	Tel Hadya	Beja	Izmir	
FLIP 84-230 FB	61	51	45	50	18	52	38	45
FLIP 84-237 FB	55	54	45	50	27	56	35	42
FLIP 84-240 FB	65	49	34	53	26	46	53	42
FLIP 84-243 FB	45	58	34	52	32	53	32	42
FLIP 84-244 FB	46	50	37	50	27	53	48	44
FLIP 84-246 FB	60	52	33	52	24	51	38	41
FLIP 85-172 FB	52	51	37	48	28	52	53	43
FLIP 86-107 FB	62	46	37	48	28	53	42	43
FLIP 86-109 FB	70	45	38	45	26	54	47	42
FLIP 86-118 FB	66	54	47	55	25	47	43	44
FLIP 86-122 FB	50	63	42	55	31	51	45	46
FLIP 86-125 FB	70	56	42	52	29	56	48	44
FLIP 86-136 FB	50	45	35	48	26	53	45	43
FLIP 86-143 FB	65	55	44	53	30	46	47	44
FLIP 86-144 FB	41	58	28	52	28	49	40	42
FLIP 86-145 FB	60	59	42	58	28	43	47	47
FLIP 86-146 FB	65	57	41	53	27	47	43	43
FLIP 88- 8 FB	52	47	34	48	30	52	47	41
ILB 1814	61	90	71	80	44	59	68	61
Local Check	45	93	44	72	44	51	73	57
Location Mean	57	57	41	54	29	51	47	
S.E. of Mean		2.87	4.86	2.28	2.14	4.33	5.53	
L.S.D. at 5%		8.21	13.91	6.54	6.13	-	15.82	
C.V. (%)		8.78	20.72	7.36	12.85	14.65	20.51	
Error d.f.		38	38	38	38	38	38	
Significance		*	*	*	*	NS	*	

* = Significance at $P < 0.05$, NS = Not significant, + Non-replicated.

Table 4.3.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBIYT-D during 1988/89.

Entry Name	BOLIVIA		CANADA		CYPRUS		IRAQ				ITALY		LEBANON		MOROCCO			
	Pairumani		La Pocatiere		Athalassa		Dohuk		Mosul		Caltagirone		Terbol		Jema'a Shain		Douyet	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-230 FB	750	13	5420	2	1724	9	234	15	1448	15	1256	6	2753	9	1958	12	247	17
FLIP 84-237 FB	942	6	4583	8	1851	5	237	14	1562	11	1247	7	2329	20	2208	8	432	10
FLIP 84-240 FB	727	18	4396	12	1490	14	179	20	1262	19	1291	5	2818	7	1875	14	401	13
FLIP 84-243 FB	744	14	4523	9	1823	6	202	19	2100	1	1123	16	2333	19	1708	16	191	20
FLIP 84-244 FB	738	16	4649	7	1538	11	271	9	1895	2	1217	12	2798	8	2083	10	451	9
FLIP 84-246 FB	854	10	4438	11	1856	4	207	18	1586	9	1475	1	2681	13	1683	17	605	2
FLIP 85-172 FB	625	20	3632	20	1524	12	317	5	1886	3	1235	9	2735	10	1708	15	611	1
FLIP 86-107 FB	740	15	4832	6	1744	8	342	2	1429	16	1123	17	3343	3	2500	3	512	5
FLIP 86-109 FB	656	19	4891	4	1507	13	276	7	1538	12	1316	4	2986	6	2083	11	204	19
FLIP 86-118 FB	858	8	4174	16	1797	7	328	4	1662	7	1244	8	3035	5	2458	4	500	6
FLIP 86-122 FB	910	7	5450	1	2383	3	233	16	1843	4	1377	2	3068	4	2167	9	599	3
FLIP 86-125 FB	1167	2	3873	17	1453	16	243	13	1607	8	1227	10	2691	12	2542	1	457	8
FLIP 86-136 FB	858	9	4278	13	1394	17	292	6	1743	5	1178	13	2654	15	2542	2	346	14
FLIP 86-143 FB	815	11	4481	10	1164	19	257	11	1710	6	1158	14	2733	11	1633	18	500	7
FLIP 86-144 FB	954	5	4182	15	1134	20	274	8	1581	10	1148	15	2667	14	1500	20	432	11
FLIP 86-145 FB	1042	3	4847	5	1583	10	270	10	1462	14	1218	11	2617	16	1917	13	321	15
FLIP 86-146 FB	775	12	4215	14	1231	18	244	12	1212	20	1076	19	2430	18	1542	19	247	18
FLIP 88- 8 FB	733	17	3837	18	1474	15	213	17	1410	18	1103	18	2536	17	2417	6	562	4
ILB 1814	983	4	4964	3	2433	2	338	3	1505	13	1318	3	3531	2	2375	7	315	16
Local Check	1990	1	3682	19	2511	1	629	1	1429	17	-	-	4074	1	2458	5	414	12
Location Mean	893		4467		1681		279		1593		1228		2841		2068		417	
S.E. of Mean	126.37		205.89		219.37		72.23		209.30		95.93		186.52		309.82		115.76	
L.S.D. at 5%	361.81		497.59		628.11		-		-		-		534.05		-		-	
C.V. (%)	24.51		6.52		22.61		44.79		22.75		13.53		11.37		25.95		48.05	
Error d.f.	38		19		38		38		38		36		38		38		38	
Significance	*		*		*		NS		NS		NS		*		NS		NS	
Test > L. Check	0		15		0		-		-		-		0		-		-	

Cont'd. ...

Table 4.3.5. Cont'd. ...

Entry Name	MOROCCO		SPAIN		SYRIA				TUNISIA				TURKEY		Overall Mean			
	ENA Meknes+		Cordoba		Deir-Ez-Zor		Hama		Tel Hadya		Beja		Oued Meliz		Izmir		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-230 FB	1200	15	2222	12	2500	12	3917	7	801	16	1608	19	2542	9	2444	7	1943	8
FLIP 84-237 FB	1767	5	2250	11	2067	15	3378	20	903	8	1950	6	2792	5	2272	13	1928	10
FLIP 84-240 FB	2000	2	1910	19	2433	13	3872	9	864	10	1725	14	2150	17	2506	6	1876	13
FLIP 84-243 FB	733	20	2118	16	1672	17	3639	17	834	13	1625	18	2008	20	1877	20	1721	19
FLIP 84-244 FB	1233	13	2257	10	2667	11	3500	18	914	5	1683	16	2183	15	1957	19	1884	12
FLIP 84-246 FB	1700	6	2590	5	1389	20	3772	13	816	15	1817	12	2583	8	2747	2	1929	9
FLIP 85-172 FB	1300	11	2417	8	1594	19	3400	19	927	4	1708	15	2817	4	2370	8	1812	16
FLIP 86-107 FB	1233	13	2715	4	4167	3	3883	8	913	7	1925	8	2592	7	2099	18	2123	3
FLIP 86-109 FB	1333	10	2139	15	3256	7	3706	15	721	18	1942	7	3008	3	2259	14	1989	6
FLIP 86-118 FB	1533	8	2528	6	3144	8	4417	1	914	6	2083	3	2375	12	2253	15	2077	4
FLIP 86-122 FB	1867	3	2451	7	3400	5	3950	5	830	14	1833	11	2167	16	2654	3	2187	2
FLIP 86-125 FB	1300	11	2187	14	3767	4	3944	6	766	17	1958	5	2392	11	2364	9	1996	5
FLIP 86-136 FB	1100	17	1833	20	1856	16	3789	12	842	12	1858	10	2083	18	2284	12	1819	15
FLIP 86-143 FB	967	18	2222	13	3400	6	3839	11	692	19	2192	2	2708	6	2136	17	1918	11
FLIP 86-144 FB	1633	7	2306	9	2189	14	4017	4	863	11	1858	9	2267	14	2321	11	1843	14
FLIP 86-145 FB	900	19	2806	3	2833	10	3867	10	881	9	1733	13	2342	13	2623	4	1957	7
FLIP 86-146 FB	1200	15	2028	17	3078	9	3772	14	681	20	1633	17	2442	10	2235	16	1767	18
FLIP 88- 8 FB	1867	3	1938	18	1633	18	3644	16	946	3	1450	20	2067	19	2333	10	1774	17
ILB 1814	1400	9	3708	1	4422	1	4178	3	1162	1	2325	1	3292	1	2556	5	2400	1
Local Check	3500	1	3326	2	4200	2	4206	2	1078	2	1958	4	3100	2	4179	1		
Location Mean	1488		2398		2783		3834		868		1843		2495		2423			
S.E. of Mean			159m.08		878.24		203.18		62.37		201.30		260.46		203.72			
L.S.D. at 5%			455.47		-		-		178.57		-		745.75		583.29			
C.V. (%)			11.49		54.65		9.18		12.45		18.92		18.08		14.56			
Error d.f.			38		38		38		38		38		38		38			
Significance			*		NS		NS		*		NS		*		*			
Test > L. Check			0		-		-		0		-		0		0			

* = Significant at $P < 0.05$, NS = Not significant, + Non-replicated.

Table 4.3.6. The five heaviest seed yielding entries at the individual locations in the FBIYT-D during 1988/89.

Rank	BOLIVIA		CANADA		CYPRUS		IRAQ		ITALY	
	Pairumani		La Pocatiere		Athalassa		Dohuk	Mosul	Caltagirone	
1	Local check		FLIP 86-122 FB		Local check		Local check	FLIP 84-243 FB	FLIP 84-246 FB	
2	FLIP 86-125 FB		FLIP 84-230 FB		ILB 1814		FLIP 86-107 FB	FLIP 84-244 FB	FLIP 86-122 FB	
3	FLIP 86-145 FB		ILB 1814		FLIP 86-122 FB		ILB 1814	FLIP 85-172 FB	ILB 1814	
4	ILB 1814		FLIP 86-109 FB		FLIP 84-246 FB		FLIP 86-118 FB	FLIP 86-122 FB	FLIP 86-109 FB	
5	FLIP 86-144 FB		FLIP 86-145 FB		FLIP 84-237 FB		FLIP 85-172 FB	FLIP 86-136 FB	FLIP 84-240 FB	
Cont'd. ...										
Rank	LEBANON		MOROCCO		SPAIN		SYRIA			
	Terbol		Douyet		ENA Mekness		Jema'a Shain	Cordoba	Deir-Ez-Zor	
1	Local check		FLIP 85-172 FB		Local check		FLIP 86-125 FB	ILB 1814	ILB 1814	
2	ILB 1814		FLIP 84-246 FB		FLIP 84-240 FB		FLIP 86-136 FB	Local check	Local check	
3	FLIP 86-107 FB		FLIP 86-122 FB		FLIP 86-122 FB		FLIP 86-107 FB	FLIP 86-145 FB	FLIP 86-107 FB	
4	FLIP 86-122 FB		FLIP 88- 8 FB		FLIP 88- 8 FB		FLIP 86-118 FB	FLIP 86-107 FB	FLIP 86-125 FB	
5	FLIP 86-118 FB		FLIP 86-107 FB		FLIP 84-237 FB		Local check	FLIP 84-246 FB	FLIP 86-122 FB FLIP 86-143 FB	
Cont'd. ...										
Rank	SYRIA			TUNISIA						
	Hama	Tel Hadya		Beja	Oued Meliz		Izmir			
1	FLIP 86-118 FB	ILB 1814		ILB 1814	ILB 1814		Local check			
2	Local check	Local check		FLIP 86-143 FB	Local check		FLIP 84-246 FB			
3	ILB 1814	FLIP 88- 8 FB		FLIP 86-118 FB	FLIP 86-109 FB		FLIP 86-122 FB			
4	FLIP 86-144 FB	FLIP 85-172 FB		Local check	FLIP 85-172 FB		FLIP 86-145 FB			
5	FLIP 86-122 FB	FLIP 84-244 FB		FLIP 86-125 FB	FLIP 84-237 FB		ILB 1814			

The bracket indicates entries having the same rank.

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 Pairumani in Bolivia (75 days) and was followed by Caltagirone in Italy (84 days) and Douyet in Morocco (86 days). The entry means for time to flowering across locations varied from 105 to 108 days, and FLIP 84-237 FB was the earliest to flower. In general, the early flowering locations were also earlier in maturity. The plant height was shortest at Dohuk in Iraq (27 cm), Tel Hadya in Syria (29 cm) and Tessala in Algeria (33 cm). At Cordoba in Spain the plant height was tallest (57 cm).

The location mean for seed yield ranged between 279 and 4467 kg/ha, Dohuk in Iraq yielding the lowest and La Pocatiere in Canada yielding the highest (Table 4.3.5). The indeterminate check, IIB 1814 gave the highest yield (2400 kg/ha) across locations and was followed by determinate entries, FLIP 86-122 FB, FLIP 86-107 FB, FLIP 86-118 FB, and FLIP 86-125 FB with seed yields of 2187, 2123, 2077 and 1996 kg/ha, respectively. The five heaviest seed yielding entries at each of the locations are given in Table 4.3.6.

The mean performance of the common entries over 1987/88 and 1988/89 are given in Table 4.3.7 on the basis of overall mean over 2 years IIB 1814 ranked number 1 and was followed by determinate entries FLIP 86-107 FB, FLIP 86-118 FB, FLIP 86-145 FB, and FLIP 84-244 FB.

Table 4.3.7. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in FBIYT-D during 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
FLIP 84-230 FB	2192	7	1943	5	2068	6
FLIP 84-237 FB	2104	10	1928	7	2016	10
FLIP 84-240 FB	2164	9	1876	10	2020	9
FLIP 84-243 FB	1995	13	1721	13	1858	13
FLIP 84-244 FB	2264	6	1884	9	2074	5
FLIP 84-246 FB	2185	8	1929	6	2057	8
FLIP 86-107 FB	2477	2	2123	2	2300	2
FLIP 86-118 FB	2348	4	2077	3	2213	3
FLIP 86-143 FB	2057	12	1918	8	1988	11
FLIP 86-144 FB	2079	11	1843	11	1961	12
FLIP 86-145 FB	2270	5	1957	4	2114	4
FLIP 86-146 FB	2354	3	1767	12	2061	7
IIB 1814	3031	1	2400	1	2716	1

4.4. 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. Thirty sets of the nursery were distributed to the cooperators in 16 countries. The results were, however, received for 18 sets from 9 countries. The agronomic data received from the cooperators are presented in Table 4.4.1.

Results and Discussion

The entry means over all the locations revealed that FLIP 84-70 FB and FLIP 86-36 FB flowered earliest in 94 days (Table 4.4.2). The mean time to maturity and plant height for entries however, ranged from 162 to 165 days (Table 4.4.3), and 54 to 70 cm (Table 4.4.4), respectively.

The adjusted seed yield for the entries based on augmented design is presented in Table 4.4.5. Seed yields ranged from 251 kg/ha for ENA Mekness in Morocco to 5296 kg/ha for Izmir in Turkey. Among the entries, FLIP 84-70 FB with seed yield of 3391 kg/ha ranked number one and was closely followed by FLIP 86-36 FB (3238 kg/ha), 85/340 (3184 kg/ha), Agadulce (3182 kg/ha), FLIP 84-94 FB (3139 kg/ha) etc. The LSD estimates at different locations revealed that at 4 locations, namely Gorgan in Iraq, Terbol in Lebanon, Allal Tazi in Morocco, and Hama in Syria 1, 3, 1 and 1 test entries exceeded the respective local check by a significant margin. The five heaviest yielders at each location are presented in Table 4.4.6.

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

Material

The Faba Bean International Screening Nursery-Small Seed comprised 36 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.

Table 4.4.1. Agronomic data for different locations in the FBISN-L during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Chile	Hidango	24.05.89	10.12.89	20	35		-	-	LPH 24
Iran	Gorgan	15.11.88	10.06.89	-			1	-	Barkat
Jordan	Jordan Valley	16.10.88	-	50	50		-	-	
Lebanon	Terbol	24.11.88	15.06.89		50		2	Kerb, Igran	Lebanese Local
Morocco	Allal Tazi	24.02.89	20.06.89	-			-	-	-
Morocco	ENA Meknes	11.11.88	-	-			-	-	-
Morocco	Jema'a Shain	23.12.88	01.07.89	95	111		-	-	F 269
Syria	Al Ghab	13.12.88	18.03.89	-			-	-	-
Syria	Deir-Ez-Zor	03.12.88	15.06.89	5	8		6	-	
Syria	Hama	03.12.88	25.05.89	25	80		4	-	
Syria	Idleb	24.11.88	16.05.89	20	60		3	-	-
Syria	Tel Hadya	12.11.88	29.05.89		50		-	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
Tunisia	Beja-1	19.11.88	-	-			-	-	-
Tunisia	Beja-2	20.11.88	-	-			-	-	-
Tunisia	Oued Meliz	24.11.88	-	-			-	-	-
Turkey	Diyarbakir	10.12.88	-	-			-	-	-
Turkey	Izmir	24.11.88	15.06.89	30	60		-	Endosulfan	Fresez - 87

Table 4.4.2. Adjusted time to flowering (days) of entries at different locations in the FBISN-L during 1988/89.

Entry Name	ILB/ Cross No.	ECUADOR	IRAN	LEBANON	MOROCCO	SYRIA			TURKEY		Overall Mean	
		Santa - Catalina	Gorgan+	Terbol	Jema'a- Shain	Al Ghab	Deir-Ez- Zor	Hama	Idleb	Tel Hadya		Izmir
FLIP 82- 27 FB X79S 131		69	81	107	91	93	100	93	110	115	108	97
FLIP 82- 28 FB X79S 178		67	81	105	85	93	98	90	109	114	114	96
FLIP 84- 70 FB S82007		67	81	107	86	93	98	90	104	114	104	94
FLIP 84- 77 FB S82014		70	81	107	79	92	98	95	111	115	114	96
FLIP 84- 94 FB S82026		67	81	107	85	92	98	94	109	114	104	95
FLIP 84-118 FB S82103		72	81	105	87	94	99	93	108	115	112	97
FLIP 84-147 FB S82442		76	81	109	92	94	103	95	113	116	108	99
FLIP 84-151 FB S82471		89	81	106	93	94	98	92	105	115	107	98
FLIP 84-153 FB S82486		89	81	106	87	93	98	92	109	114	111	98
FLIP 85- 14 FB S82026		74	81	105	92	93	99	91	110	114	118	98
FLIP 85- 81 FB S82479		67	81	105	85	92	98	94	109	115	114	96
FLIP 86- 35 FB S83172		89	81	108	92	93	100	91	110	114	111	99
FLIP 86- 36 FB S83172		67	81	107	79	92	100	90	108	114	104	94
FLIP 87- 2 FB L82013		74	81	107	87	94	99	94	109	114	118	98
FLIP 87- 3 FB L82014		69	81	107	87	91	98	95	113	115	108	96
FLIP 87- 10 FB L82082		89	81	108	79	94	98	91	109	115	111	98
FLIP 87- 13 FB S82023		89	81	106	82	93	98	91	105	114	107	97
FLIP 87- 16 FB S82026		89	81	106	87	92	99	89	110	114	107	97
FLIP 87- 17 FB S82049		67	81	105	87	93	98	94	111	115	114	96
FLIP 87- 22 FB S82115		72	81	107	91	94	98	96	107	114	118	98
FLIP 87- 23 FB S82116		89	81	108	87	93	100	91	111	115	117	99
FLIP 87- 27 FB S82148		74	81	107	82	91	98	93	109	115	108	96
FLIP 87- 28 FB S82148		89	81	106	83	92	98	92	110	114	117	98
FLIP 87- 34 FB S83100		69	81	109	99	93	100	94	110	114	118	99
FLIP 87- 37 FB S83166		92	81	106	79	93	98	91	109	114	111	97
FLIP 87- 38 FB S83172		70	81	109	83	93	98	96	110	116	114	97
FLIP 87- 40 FB S83112		2	81	109	87	93	101	94	104	114	108	89
FLIP 87- 70 FB S82148		67	81	105	87	92	100	95	104	114	114	96
FLIP 87-140 FB MS 86001		92	81	106	92	94	98	92	105	114	107	98
FLIP 87-147 FB S82112		94	81	110	87	95	103	95	116	116	117	101
FLIP 87-148 FB S82070		76	81	109	89	92	101	94	113	115	112	98
FLIP 87-149 FB S82035		69	81	105	79	93	98	95	107	114	118	96
85/4-63	-	72	81	107	92	94	100	94	108	115	118	98
85/340	-	76	81	107	87	94	101	95	109	115	112	98
NSRT-116	-	89	81	106	95	95	100	93	109	115	111	99
Aquadulce	1266	62	81	107	79	91	100	94	108	115	114	95
ILB 1270	1270	79	81	107	92	92	100	95	109	115	114	98
ILB 1814	1814	77	81	106	79	93	99	93	108	114	111	96
Local Check		71	81	106	87	93	101	87	104	115	110	
Location Mean		75	81	107	87	93	99	93	109	115	112	
S.E. of Mean		10.99		0.90	0.02	0.39	0.61	1.31	1.07	0.56	1.98	
L.S.D. at 5% for: Checks		43.16		3.54	0.08	1.51	2.39	5.12	4.21	2.20	7.78	
T.E. in S.B.		74.75		6.14	0.13	2.62	4.14	8.87	7.29	3.82	13.47	
T.E. in D.B.		86.31		7.09	0.15	3.02	4.78	10.25	8.41	4.41	15.56	
Checks Vs T.E.		70.48		5.79	0.12	2.47	3.90	8.37	6.87	3.60	12.70	
C.V. (%)		25.38		1.47	0.04	0.72	1.06	2.44	1.71	0.85	3.08	

T.E. = Test entries, S.B. = Same block. D.B. = Different blocks, + Location not analysed thus mean values are unadjusted.

Table 4.4.3. Adjusted time to maturity (days) of entries at different locations in the FBISN-L during 1988/89.

Entry Name	IRAN	LEBANON	MOROCCO		SYRIA			TURKEY		Overall Mean
	Gorgan+	Terbol	Jema'a	Shain	Al Ghab	Deir-Ez-Zor	Hama	Idlob	Tel Hadya	
FLIP 82- 27 FB	166	174	148	156	167	164	171	165	172	165
FLIP 82- 28 FB	166	170	154	153	168	155	167	165	173	164
FLIP 84- 70 FB	166	170	146	157	166	155	168	166	173	163
FLIP 84- 77 FB	166	168	148	154	168	163	167	166	173	164
FLIP 84- 94 FB	166	170	146	159	166	160	168	166	170	164
FLIP 84-118 FB	166	172	147	156	164	159	170	164	172	163
FLIP 84-147 FB	166	174	144	160	165	164	172	165	172	165
FLIP 84-151 FB	166	174	148	158	167	162	172	166	165	164
FLIP 84-153 FB	166	170	150	157	164	156	170	167	167	163
FLIP 85- 14 FB	166	174	144	158	167	157	169	165	172	164
FLIP 85- 81 FB	166	170	140	155	166	160	168	165	170	162
FLIP 86- 35 FB	166	170	144	157	164	160	170	167	170	163
FLIP 86- 36 FB	166	172	138	155	166	160	172	166	180	164
FLIP 87- 2 FB	166	172	140	158	168	155	168	164	172	163
FLIP 87- 3 FB	166	172	148	156	167	164	169	165	169	164
FLIP 87- 10 FB	166	172	146	158	166	162	169	166	170	164
FLIP 87- 13 FB	166	170	154	155	164	159	169	167	167	164
FLIP 87- 16 FB	166	170	158	156	164	160	170	166	167	164
FLIP 87- 17 FB	166	168	146	157	166	163	168	165	170	163
FLIP 87- 22 FB	166	174	148	158	164	160	172	165	172	164
FLIP 87- 23 FB	166	174	153	159	166	161	172	165	170	165
FLIP 87- 27 FB	166	170	144	155	165	159	169	164	168	162
FLIP 87- 28 FB	166	170	153	154	164	156	169	165	167	163
FLIP 87- 34 FB	166	172	153	154	165	160	168	164	169	163
FLIP 87- 37 FB	166	170	148	154	166	157	169	166	167	163
FLIP 87- 38 FB	166	170	144	159	168	160	167	166	173	164
FLIP 87- 40 FB	166	174	143	159	166	165	173	165	173	165
FLIP 87- 70 FB	166	170	146	159	168	163	168	166	173	164
FLIP 87-140 FB	166	172	143	157	167	157	169	166	165	163
FLIP 87-147 FB	166	170	150	160	166	160	172	167	167	164
FLIP 87-148 FB	166	170	148	154	167	161	169	163	169	163
FLIP 87-149 FB	166	170	142	158	165	157	168	163	172	162
85/4-63	166	174	144	156	167	164	169	165	169	164
85/340	166	174	144	157	168	161	168	165	172	164
NSRT-116	166	170	153	159	164	156	173	166	170	164
Aquadulce	166	170	146	157	165	156	168	165	168	162
ILB 1270	166	169	152	156	165	157	169	165	173	164
ILB 1814	166	172	148	159	166	163	169	167	174	165
Local Check	166	169	144	158	166	156	171	168	177	
Location Mean	166	171	147	157	166	160	169	166	171	
S.E. of Mean		1.33	0.18	0.78	0.87	1.11	1.5	0.62	2.89	
L.S.D. at 5% for:										
Checks		5.23	0.72	3.07	3.42	4.34	5.70	2.45	11.36	
T.E. in S.B.		9.07	1.24	9.32	5.92	7.52	9.88	4.24	19.67	
T.E. in D.B.		10.47	1.44	6.14	6.84	8.68	11.41	4.90	22.71	
Checks Vs T.E.		8.55	1.17	5.01	5.59	7.09	9.32	4.00	18.55	
C.V. (%)		1.35	0.22	0.86	0.91	1.20	1.49	0.65	2.92	

T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.
 + Location not analysed thus mean values are unadjusted.

Table 4.4.4. Plant height (cm) of entries at different locations in the FBISN-L during 1988/89.

Entry Name	CHILE	IRAN	LEBANON	MOROCCO		SYRIA			TUNISIA	TURKEY	(1)		
	Hidango	Gorgan	Terbol	Allal-Tazi+	Joma'a-Shain	Al Ghab	Deir-Ez-Zor	Hama	Idleb	Tel-Hadya	Beja	Izmir	Overall Mean
FLIP 82- 27 FB	71	64	70	40	61	62	62	86	82	39	50	88	67
FLIP 82- 28 FB	61	85	62	-	84	49	59	74	77	31	62	71	66
FLIP 84- 70 FB	71	68	67	-	104	54	69	79	65	31	52	81	67
FLIP 84- 77 FB	66	76	57	-	104	49	61	69	76	29	39	66	63
FLIP 84- 94 FB	71	79	57	-	104	59	64	79	71	31	55	56	66
FLIP 84-118 FB	66	65	65	-	81	62	63	86	71	36	40	78	65
FLIP 84-147 FB	66	71	65	81	91	47	43	71	64	26	38	68	59
FLIP 84-151 FB	59	71	53	87	80	59	63	74	85	35	46	69	63
FLIP 84-153 FB	79	64	48	105	85	44	58	74	76	48	45	64	62
FLIP 85- 14 FB	81	80	65	86	86	62	63	76	78	33	48	83	69
FLIP 85- 81 FB	81	70	57	-	79	59	69	79	73	31	45	66	64
FLIP 86- 35 FB	69	64	58	92	80	64	68	74	78	38	47	64	64
FLIP 86- 36 FB	66	71	72	-	79	44	59	79	74	31	42	81	63
FLIP 87- 2 FB	86	81	60	73	91	57	75	81	83	46	38	78	70
FLIP 87- 3 FB	81	75	60	91	71	62	63	81	77	36	48	83	67
FLIP 87- 10 FB	64	63	63	104	75	59	73	79	82	47	44	74	66
FLIP 87- 13 FB	79	58	58	96	85	54	63	69	76	33	58	69	64
FLIP 87- 16 FB	69	66	58	101	85	49	63	79	84	43	49	64	64
FLIP 87- 17 FB	71	77	62	-	104	49	64	79	74	31	52	66	66
FLIP 87- 22 FB	56	82	70	-	91	62	58	76	75	46	50	78	68
FLIP 87- 23 FB	59	73	58	89	75	54	73	74	78	43	49	79	65
FLIP 87- 27 FB	76	78	62	-	84	54	60	74	75	31	40	61	63
FLIP 87- 28 FB	79	68	58	103	85	44	53	69	78	43	48	59	62
FLIP 87- 34 FB	71	69	70	35	46	62	63	81	80	34	49	78	64
FLIP 87- 37 FB	79	74	53	109	90	49	53	69	76	36	46	64	63
FLIP 87- 38 FB	71	71	67	-	104	54	59	79	71	26	52	76	66
FLIP 87- 40 FB	76	80	67	-	84	54	49	74	84	41	47	81	67
FLIP 87- 70 FB	71	71	57	-	104	49	64	74	76	26	46	76	65
FLIP 87-140 FB	49	71	58	92	85	49	63	74	82	33	43	69	61
FLIP 87-147 FB	64	48	48	99	65	34	38	74	76	50	48	49	54
FLIP 87-148 FB	81	66	60	89	81	62	63	76	73	31	49	63	64
FLIP 87-149 FB	61	71	60	-	96	57	48	66	72	38	47	63	62
85/4-63	71	65	70	-	66	52	62	76	81	41	45	68	63
85/340	86	76	55	80	96	57	75	76	70	33	58	78	69
NSRT-116	89	68	48	101	70	44	53	69	71	40	42	74	61
Aquadulce	71	85	62	-	94	49	65	69	75	40	45	66	66
ILB 1270	63	72	52	98	105	47	48	67	74	36	46	64	61
ILB 1814	70	74	63	103	102	57	65	80	83	37	54	81	70
Local Check	68	65	55	82	92	63	60	67	77	37	44		
Location Mean	70	71	60	89	88	54	60	75	76	36	47	71	
S.E. of Mean	5.97	3.81	1.18		2.75	2.55	5.97	2.55	3.38	2.39	4.22	3.73	
L.S.D. at 5% for:													
Checks	23.44	14.97	4.63		10.79	9.99	23.44	9.99	13.27	9.39	16.55	14.63	
T.E. in S.B.	40.59	25.92	8.01		18.69	17.31	40.59	17.31	22.98	16.26	28.67	25.34	
T.E. in D.B.	46.87	29.93	9.25		21.58	19.99	46.87	19.99	26.54	18.78	33.10	29.26	
Checks Vs T.E.	38.28	24.44	7.56		17.62	16.32	38.28	16.32	21.67	15.34	27.03	23.89	
C.V. (%)	14.73	9.29	3.42		5.44	8.17	17.10	5.89	7.66	11.39	15.40	9.13	

(1) Allal Tazi was excluded from the overall mean., T.E. = Test entries. S.B. = Same block, D.B. = Different blocks.
 + Location not analysed thus mean values are unadjusted.

Table 4.4.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-L during 1988/89.

Entry Name	CHILE		IRAN		JORDAN		LEBANON		MOROCCO				SYRIA			
	Hidango		Gorgan		Jordan Valley		Terbol		Allal Tazi		ENA Meknes		Joma'a Shain		Al Ghab	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82- 27 FB	2148	22	3773	31	1639	27	4186	10	4167	7	78	34	1813	26	1422	26
FLIP 82- 28 FB	1702	28	5162	10	1516	30	3801	18	5667	1	300	12	2790	12	1300	29
FLIP 84- 70 FB	2327	16	5787	4	2015	21	4393	5	3667	17	398	9	1790	29	2367	4
FLIP 84- 77 FB	2267	18	3704	34	2211	15	3060	33	2167	37	275	14	1420	34	867	38
FLIP 84- 94 FB	2452	11	4745	13	2791	2	4023	13	4667	4	34	37	2790	11	2233	5
FLIP 84-118 FB	1523	31	4815	12	2152	18	4334	6	4167	8	58	35	1813	27	2089	9
FLIP 84-147 FB	1183	37	1898	39	1096	33	2408	38	1167	39	0	39	1063	38	822	39
FLIP 84-151 FB	1200	35	4190	25	1417	31	4309	8	3667	14	485	5	2897	9	2011	13
FLIP 84-153 FB	3295	1	4398	16	2034	20	3198	30	2667	35	328	11	3277	4	1344	28
FLIP 85- 14 FB	2168	21	4398	22	2836	1	4408	4	2667	32	110	28	1943	22	1889	19
FLIP 85- 81 FB	2872	4	5787	2	2335	11	3875	16	3167	24	433	8	540	39	1900	17
FLIP 86- 35 FB	1860	27	4398	19	1671	26	4087	12	3667	15	205	16	1777	30	2411	3
FLIP 86- 36 FB	2052	25	6204	1	2227	13	5727	1	4667	3	136	25	2540	16	1300	30
FLIP 87- 2 FB	2438	12	4398	23	2286	12	2853	34	3167	26	7	38	2193	20	2156	6
FLIP 87- 3 FB	3038	3	3981	30	2696	5	4112	11	3667	18	118	27	3063	8	1722	22
FLIP 87- 10 FB	1510	32	3356	37	1349	32	2458	37	3667	20	95	32	2397	18	2078	11
FLIP 87- 13 FB	3055	2	4190	27	1944	23	3717	23	4167	11	664	4	3147	7	1411	27
FLIP 87- 16 FB	2210	20	4398	18	1982	22	3717	22	2667	34	132	26	4147	1	1944	15
FLIP 87- 17 FB	2077	24	4537	15	2349	10	3727	21	2167	36	166	20	1790	28	1033	35
FLIP 87- 22 FB	1153	38	5231	8	2190	16	4556	3	3167	23	97	31	2063	21	1456	25
FLIP 87- 23 FB	1190	36	3981	29	493	37	3124	31	4667	5	201	17	2647	14	2078	10
FLIP 87- 27 FB	2492	10	3704	33	2741	4	3949	14	2667	33	138	23	2540	15	1233	33
FLIP 87- 28 FB	2295	17	3981	28	1594	28	2717	35	3167	25	258	15	3277	3	1144	34
FLIP 87- 34 FB	1403	33	4398	21	1044	34	3445	26	3667	16	452	6	1063	37	989	36
FLIP 87- 37 FB	2090	23	5440	5	1716	25	3272	29	4167	13	773	1	2647	13	1944	16
FLIP 87- 38 FB	2382	13	3704	32	2162	17	3282	28	2667	29	153	22	1290	35	1833	20
FLIP 87- 40 FB	2382	14	5162	11	-99	35	4986	2	2667	30	105	30	1920	23	1900	18
FLIP 87- 70 FB	2602	7	4620	14	2781	3	3727	20	2667	31	709	3	1920	24	2500	2
FLIP 87-140 FB	805	39	4190	26	620	36	3865	17	4167	12	180	18	2397	17	2144	8
FLIP 87-147 FB	1590	30	2731	38	-99	39	1865	39	2167	38	93	33	1777	31	878	37
FLIP 87-148 FB	2768	5	4398	20	2558	7	3445	27	4167	9	712	2	2813	10	1989	14
FLIP 87-149 FB	1663	29	5440	6	2221	14	4260	9	3167	22	451	7	1438	33	1656	24
85/4-63	1363	34	3565	36	-99	38	3667	24	5167	2	42	36	1188	36	2156	7
85/340	2548	8	4398	24	2441	8	3890	15	2667	28	179	19	3213	5	1822	21
NSRT-116	2495	9	4398	17	2119	19	3569	25	4167	10	109	29	1897	25	1278	32
Aquadulce	2362	15	5787	3	2562	6	4319	7	3667	19	162	21	4040	2	1700	23
ILB 1270	1905	26	3681	35	1771	24	2691	36	4500	6	137	24	3193	6	1289	31
ILB 1814	2265	19	5347	7	1583	29	3778	19	3500	21	385	10	2210	19	2044	12
Local Check	2745	6	5208	9	2411	9	3081	32	3000	27	296	13	1667	32	2500	1
Location Mean	2127		4488		2000		3622		3500		251		2278		1744	
S.E. of Mean	229.92		135.97		210.99		220.37		408.25		130.03		398.40		406.73	
L.S.D. at 5% for:																
Checks	902.48		533.70		828.20		865.00		1602.48		510.39		1563.82		1596.54	
T.E. in S.B.	1563.14		924.39		1434.48		1498.22		2775.58		884.02		2708.62		2765.28	
T.E. in D.B.	1804.96		1067.39		1656.40		1730.00		3204.97		1020.78		3127.65		3193.07	
Checks Vs T.E.	1473.96		871.66		1352.65		1412.75		2617.24		833.59		2554.10		2607.53	
C.V. (%)	18.72		5.25		19.79		10.54		20.20		89.81		30.29		40.38	
T.E. > L. Check	0		1		0		3		1		0		0		0	

Cont'd. ...

Table 4.4.5. Cont'd. ...

Entry Name	SYRIA								TUNISIA						TURKEY		(1)	
	Deir-Ez-Zor		Hama		Idlob		Tel HAdya		Beja-1		Beja-2		Oued Meliz		Ismir		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 82- 27 FB	4452	13	3407	31	1927	39	542	11	2261	28	2199	25	2611	35	4728	25	2648	31
FLIP 82- 28 FB	4196	15	3985	19	3189	8	456	19	3478	2	1577	39	2944	26	5545	17	3073	8
FLIP 84- 70 FB	5130	4	4719	3	3829	2	534	13	2878	10	2577	13	3594	6	6878	4	3391	1
FLIP 84- 77 FB	3996	17	3085	37	2839	24	486	16	3028	5	2377	21	3194	16	5789	13	2570	33
FLIP 84- 94 FB	3930	18	4552	5	3619	4	634	7	3528	1	1910	35	2994	23	4967	24	3139	5
FLIP 84-118 FB	3185	28	4907	2	3102	11	446	20	2961	7	2599	10	3161	18	6253	8	3028	11
FLIP 84-147 FB	1985	39	1841	39	2742	26	546	10	1461	38	1866	36	1011	39	3179	37	1545	38
FLIP 84-151 FB	2685	34	3907	22	3004	14	198	39	2761	14	3488	1	3144	20	3276	36	2748	27
FLIP 84-153 FB	4019	16	3407	30	3864	1	457	18	2611	20	2288	24	3594	5	3313	35	2804	23
FLIP 85- 14 FB	4919	8	4474	8	2372	34	328	35	2711	17	2199	26	3211	13	6542	5	2956	14
FLIP 85- 81 FB	4330	14	3485	29	2904	21	375	32	2928	8	1777	38	2594	36	8700	2	3044	10
FLIP 86- 35 FB	2285	36	4074	13	3819	3	342	34	2411	23	2088	32	3894	4	3831	33	2743	28
FLIP 86- 36 FB	3463	25	4019	17	2884	22	675	4	2728	16	2577	12	3094	21	6500	6	3238	2
FLIP 87- 2 FB	3719	22	3607	26	2417	33	857	1	3011	6	2332	22	2911	27	9816	1	3059	9
FLIP 87- 3 FB	4985	6	3841	24	2932	19	424	23	2211	29	2599	11	2811	29	5061	23	2971	13
FLIP 87- 10 FB	2085	38	3307	34	2794	25	265	38	2111	32	2154	30	3144	19	4224	29	2376	36
FLIP 87- 13 FB	2852	33	4241	11	2964	17	376	31	2261	27	2554	15	2694	32	5965	11	2950	15
FLIP 87- 16 FB	3092	30	3941	21	3174	9	502	15	2161	31	2821	2	2794	30	3905	32	2774	24
FLIP 87- 17 FB	5863	1	4585	4	2879	23	434	22	2078	34	2310	23	2694	33	5804	12	2810	22
FLIP 87- 22 FB	4785	9	4341	10	2167	37	639	6	2061	35	2399	20	3061	22	5268	20	2830	18
FLIP 87- 23 FB	3619	24	4074	14	2979	15	435	21	1461	39	2154	29	2994	24	3913	31	2634	32
FLIP 87- 27 FB	2463	35	4052	16	3074	13	415	26	2778	13	1910	34	3244	10	3656	34	2554	34
FLIP 87- 28 FB	2885	32	3307	35	2909	20	646	5	2111	33	2754	4	2894	28	2091	38	2429	35
FLIP 87- 34 FB	3785	20	4407	9	3102	12	535	12	2761	15	2532	16	3211	14	5779	14	2769	26
FLIP 87- 37 FB	3819	19	4007	18	3529	5	383	29	1661	37	2754	5	3244	11	5283	18	3001	12
FLIP 87- 38 FB	4596	10	4052	15	2979	16	404	27	3178	3	2044	33	3194	15	6404	7	2811	21
FLIP 87- 40 FB	2130	37	3985	20	2639	30	382	30	3078	4	2644	9	4044	3	5174	22	2880	17
FLIP 87- 70 FB	5330	3	4152	12	3504	6	726	2	2828	12	2510	18	3244	12	5582	15	3108	6
FLIP 87-140 FB	3685	23	4541	6	3109	10	468	17	2311	24	2154	28	4444	1	3920	30	2825	19
FLIP 87-147 FB	4485	11	2974	38	2054	38	324	36	2261	26	2554	14	2294	37	1016	39	1938	37
FLIP 87-148 FB	3319	26	3774	25	2272	35	631	8	2261	25	2666	8	3261	9	5216	21	2913	16
FLIP 87-149 FB	3319	27	3874	23	2707	28	716	3	2911	9	2532	17	2711	31	4698	27	2770	25
85/4-63	4919	7	3507	28	2597	32	420	25	2011	36	2666	7	3361	8	5550	16	2812	20
85/340	5452	2	5774	1	2637	31	354	33	2661	18	1866	37	2211	38	8083	3	3184	3
NSRT-116	3752	21	3207	36	2244	36	305	37	2511	22	2821	3	3544	7	4720	26	2735	29
Aquadulce	4463	12	3352	32	2944	18	556	9	2878	11	2710	6	4144	2	4649	28	3182	4
ILB 1270	3178	29	3322	33	2673	29	390	28	2183	30	2155	27	2683	34	6215	9	2680	30
ILB 1814	4989	5	4500	7	3303	7	510	14	2650	19	2444	19	3167	17	5274	19	3091	7
Local Check	3089	31	3567	27	2710	27	423	24	2600	21	2133	31	2983	25	6198	10		
Location Mean	3816		3887		2906		471		2524		2359		3060		5296			
S.E. of Mean	928.38		319.98		234.96		96.13		239.70		331.50		233.53		1022.36			
L.S.D. at 5% for:																		
Checks	3644.14		1256.00		922.27		377.35		940.87		1301.21		916.67		4013.02			
T.E. in S.B.	6311.84		2175.46		1597.42		653.58		1629.63		2253.77		1587.73		6950.75			
T.E. in D.B.	7283.29		2512.01		1844.54		754.69		1881.73		2602.43		1833.35		8026.03			
Checks Vs T.E.	5951.76		2051.36		1506.29		616.30		1536.66		2125.19		1497.15		6554.22			
C.V. (%)	42.13		14.26		14.01		35.37		16.45		24.34		13.22		33.43			
T.E. > L. Check	0		1		0		0		0		0		0		0			

(1) Jordan Valley was excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 4.4.6. The five heaviest seed yielding entries at the individual locations in the FBISN-L during 1988/89.

Rank	CHILE	IRAN	JORDAN	LEBANON	MOROCCO	
	Hidango	Gorgan	Jordan Valley	Terbol	Allal Tazi	ENA Mekness
1	FLIP 84-153 FB	FLIP 86- 36 FB	FLIP 85- 14 FB	FLIP 86- 36 FB	FLIP 82- 28 FB	FLIP 87- 37 FB
2	FLIP 87- 13 FB	FLIP 85- 81 FB	FLIP 84- 94 FB	FLIP 87- 40 FB	85/4-63	FLIP 87-148 FB
3	FLIP 87- 3 FB	Aquadulce	FLIP 87- 70 FB	FLIP 87- 22 FB	FLIP 86- 36 FB	FLIP 87- 70 FB
4	FLIP 85- 81 FB	FLIP 84- 70 FB	FLIP 87- 27 FB	FLIP 85- 14 FB	FLIP 84- 94 FB	FLIP 87- 13 FB
5	FLIP 87-148 FB	FLIP 87- 37 FB	FLIP 87- 3 FB	FLIP 84- 70 FB	FLIP 87- 23 FB	FLIP 84-151 FB

Cont'd. ...

Rank	MOROCCO	SYRIA			
	Jema'a Shain	Al Ghab	Deir-Ez-Zor	Hama	Idleb
1	FLIP 87- 16 FB	Local check	FLIP 87- 17 FB	85/340	FLIP 84-153 FB
2	Aquadulce	FLIP 87- 70 FB	85/340	FLIP 84-118 FB	FLIP 84- 70 FB
3	FLIP 87- 28 FB	FLIP 86- 35 FB	FLIP 87- 70 FB	FLIP 84- 70 FB	FLIP 86- 35 FB
4	FLIP 84-153 FB	FLIP 84- 70 FB	FLIP 84- 70 FB	FLIP 87- 17 FB	FLIP 84- 94 FB
5	85/340	FLIP 84- 94 FB	IIB 1814	FLIP 84- 94 FB	FLIP 87- 37 FB

Cont'd. ...

Rank	SYRIA	TUNISIA		TURKEY
	Tel Hadya	Beja-1	Beja-2	Izmir
1	FLIP 87- 2 FB	FLIP 84- 94 FB	FLIP 84-151 FB	FLIP 87- 2 FB
2	FLIP 87- 70 FB	FLIP 82- 28 FB	FLIP 87- 16 FB	Aquadulce
3	FLIP 87-149 FB	FLIP 87- 38 FB	NSRT 116	FLIP 87- 40 FB
4	FLIP 86- 36 FB	FLIP 87- 40 FB	FLIP 87- 28 FB	FLIP 86- 35 FB
5	FLIP 87- 28 FB	FLIP 84- 77 FB	FLIP 87- 37 FB	FLIP 84-153 FB
				FLIP 85- 14 FB
				FLIP 84- 70 FB

The bracket indicates entries having the same rank.

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, respectively. The whole experimental unit was divided into three blocks. Thirty sets of the nursery were distributed to the cooperators in 20 countries and the results were received from 16 locations representing 12 countries. The agronomic data received from the cooperators are presented in Table 4.5.1.

Results and Discussion

The entry means over all locations revealed that FLIP 84-179 FB, FLIP 85-16 FB, FLIP 86-80 FB and FLIP 86-85 FB, flowered earliest in 92 days (Table 4.5.2). Among the locations, the flowering was earliest at Valdivia in Chile (66 days), and latest at Tel Hadya in Syria 115 days (Table 4.5.3) and for the plant height ranged from 57 to 70 cm (Table 4.5.4). The expression of plant height was maximum 100 cm at Allal Tazi in Morocco.

The adjusted seed yield for the entries based on augmented design is presented in Table 4.5.5. Seed yields were quite high at Tarquinia in Italy (4615 kg/ha). Among the entries FLIP 86-82 FB ranked number one and was followed by FLIP 86-80 FB, 80S 43977, FLIP 85-28FB and FLIP 85-13 FB, with seed yields of 2919, 2835, 2824, 2810 and 2787 kg/ha, respectively. The LSD estimates revealed that only at Gorgan in Iran, Terbol in Lebanon, Elvas in Portugal, Cordoba in Spain, and Oued Meliz in Tunisia 1, 5, 26, 1 and 4 entries exceeded the respective local check by a significant margin. The five heaviest yielders at each location are presented in Table 4.5.6. The frequency of occurrence of entries among the top five across locations was high for FLIP 85-28 FB, FLIP 86-82 FB, FLIP 86-86 FB, and 80S 43977. These lines were comparatively more adaptable than others.

4.6. FABA BEAN INTERNATIONAL SCREENING NURSERY-DETERMINATE (FBLSN-D)

Material

The Faba Bean International Screening Nursery Determinate comprised 24 test entries and two checks. One of the checks namely ILB 1814 (an indeterminate check) 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.

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 sets of the nursery were distributed to the cooperators in 19 countries. The results were,

Table 4.5.1. Agronomic data for different locations in the FBISN-S during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Bangladesh	Mymensingh	24.11.89	03.89	-	-	-	-	F 64	
Chile	Valdivia	13.09.89	14.02.90	32	100	50	-	Linuron	
Iran	Ahvaz	30.10.88		14	55		-	-	
Iran	Gorgan	15.11.88	10.06.89	-			1	-	
Iraq	Arbil	24.11.88	11.06.89	18	40		-	-	
Italy	Tarquinia	30.01.89	30.06.89	45	130		1	Rogodan, Decis	
Jordan	Jordan Valley	16.10.88		50	50		-	-	
Lebanon	Terbol	24.11.88	15.06.89		50		2	Kerb, Igran	
Morocco	Allal Tazi	NA							
Morocco	Jema'a Shain	23.12.88	24.06.89	95	111		-	-	
Portugal	Elvas	09.12.88	07.06.89		60	60	-	Malatox	
Spain	Cordoba	17.12.89	15.06.89	-			-	Croneton	
Syria	Tel Hadya	12.11.88	27.05.89		50		-	Tribunil, Fusilade, Lancer, Gramaxone	
Tunisia	Beja-1	19.11.88	-	-			-	-	
Tunisia	Beja-2	20.11.88	-	-			-	-	
Tunisia	Oued Meliz	24.11.88	-	-			-	-	

Table 4.5.2. Adjusted time to flowering (days) of entries at different locations in the FBISN-S during 1988/89.

Entry Name	ILB/ Cross No.	CHILE		IRAN		IRAQ	ITALY	LEBANON	MOROCCO	PORTUGAL	SPAIN	SYRIA	(1)
		Valdivia	Ahvaz	Gor- gan+	Arbil	Tarq- uinia	Terbol	Joma'a- Shain	Elvas	Gor- gan	Tel- Hadya	Overall Mean	
FLIP 83- 16 FB S81056		64	100	81	111	69	106	86	100	85	116	95	
FLIP 84- 59 FB S82166		66	103	81	111	69	105	80	89	86	116	93	
FLIP 84-162 FB S82018		62	106	81	103	69	106	93	101	87	114	96	
FLIP 84-179 FB S82088		63	93	81	112	69	105	84	89	83	116	92	
FLIP 84-211 FB S82010		66	103	81	108	69	105	79	101	86	114	94	
FLIP 85- 7 FB S82018		62	96	81	108	69	106	78	101	87	114	93	
FLIP 85- 13 FB S82026		-	100	81	111	69	104	86	88	85	115	93	
FLIP 85- 16 FB S82031		67	90	81	111	69	104	90	88	82	114	92	
FLIP 85- 28 FB S82083		64	100	81	110	69	106	88	100	87	115	95	
FLIP 85- 48 FB S82138		64	90	81	111	69	106	88	88	87	114	93	
FLIP 86- 75 FB S83127		67	100	81	112	74	106	82	100	85	116	95	
FLIP 86- 79 FB S83150		66	103	81	112	69	105	74	101	86	116	94	
FLIP 86- 80 FB S83202		67	90	81	111	69	106	82	88	85	114	92	
FLIP 86- 82 FB S83213		61	100	81	109	69	104	82	88	85	116	93	
FLIP 86- 85 FB S83232		63	93	81	112	69	105	80	89	83	115	92	
FLIP 86- 86 FB S83233		62	96	81	107	69	106	88	101	87	114	94	
FLIP 86- 88 FB L82086		66	93	81	110	69	105	82	101	86	114	93	
FLIP 87- 42 FB Sol. Lat. 82-5059-1-1		66	103	81	111	74	107	84	104	88	116	96	
FLIP 87- 43 fb Sol. Lat. 82-30047-1-1-2		67	100	81	112	74	106	86	88	85	116	94	
FLIP 87- 44 fb Sol. Lat. 82-31787-2-2		65	106	81	106	69	106	80	89	87	115	93	
FLIP 87- 49 fb Sol. Lat. 85-3-16		68	106	81	108	69	110	80	104	84	114	95	
FLIP 87- 51 FB Sol. Lat. 85-5-24		64	100	81	111	69	108	80	103	85	118	95	
FLIP 87- 55 FB Sol. Lat. 85-10-5		69	93	81	112	69	109	89	89	86	117	94	
FLIP 87- 58 FB Sol. Lat. 85-12-14		69	103	81	111	74	109	76	104	86	116	96	
FLIP 87- 64 FB L83136		69	103	81	114	74	111	74	104	88	116	96	
FLIP 87- 66 FB S82088		65	96	81	108	69	106	78	104	87	114	94	
FLIP 87- 71 FB S82165		68	96	81	106	69	108	84	101	87	115	94	
FLIP 87- 77 FB S83195		65	96	81	107	69	106	78	101	87	114	93	
FLIP 88- 7 FB S85045		64	100	81	111	69	106	88	103	87	117	96	
B 87160	3026	68	106	81	110	69	110	80	104	87	118	96	
B 87246	2282	69	93	81	113	69	107	76	101	86	116	94	
B 87249	2282	65	96	81	108	74	108	84	89	87	117	94	
B 87258	2282	65	96	81	106	69	108	88	101	84	115	94	
80S 43977	X77TA60	67	100	81	111	69	104	90	88	85	114	94	
Palacio	-	66	103	81	113	74	107	94	104	86	118	98	
Brocal	-	68	106	81	108	69	108	84	101	84	116	95	
ILB 1270	1270	66	103	81	110	69	107	89	102	85	116	96	
ILB 1814	1814	65	96	81	108	69	106	85	102	86	114	94	
Local Check		64	100	81	113	69	105	81	103	84	114		
Location Mean		66	99	81	110	70	106	83	98	86	115		
S.E. of Mean		1.41	2.36		1.73	0.00	1.02	2.16	1.16	0.71	0.33		
L.S.D. at 5% for: Checks		5.55	9.25		6.80	0.00	4.00	8.48	4.53	2.78	1.31		
Test entries in the same block		9.62	16.03		11.78	0.00	6.92	14.69	7.85	4.81	2.27		
Test entries in different blocks		11.10	18.50		13.60	0.00	8.00	16.96	9.07	5.55	2.62		
Checks Vs test entries		9.07	15.11		11.10	0.00	6.53	13.85	7.40	4.53	2.14		
C.V. (%)		3.83	4.12		2.73	0.00	1.66	4.49	2.03	1.43	0.50		

(1) Valdivia was excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = different blocks.
 + Location not analysed thus mean values are unadjusted.

Table 4.5.3. Adjusted time to maturity (days) of entries at different locations in the FBISN-S during 1988/89.

Entry Name	IRAN		IRAQ	ITALY	LEBANON	MOROCCO	PORTUGAL	SYRIA	Overall Mean
	Ahvaz	Gorgan+	Arbil	Tarquiniã	Terbol	Jena'a Shain	Elvas	Tel Hadya	
FLIP 83- 16 FB	173	166	148	133	171	146	165	164	158
FLIP 84- 59 FB	175	166	150	135	170	142	165	164	158
FLIP 84-162 FB	177	166	148	135	171	145	164	163	159
FLIP 84-179 FB	170	166	155	135	174	142	165	165	159
FLIP 84-211 FB	175	166	158	140	170	145	165	164	160
FLIP 85- 7 FB	172	166	148	135	171	137	164	165	157
FLIP 85- 13 FB	173	166	159	133	171	144	168	165	160
FLIP 85- 16 FB	168	166	158	133	171	146	165	163	159
FLIP 85- 28 FB	173	166	148	133	169	143	165	165	158
FLIP 85- 48 FB	168	166	152	133	169	144	165	163	158
FLIP 86- 75 FB	175	166	154	138	169	144	169	166	160
FLIP 86- 79 FB	175	166	154	135	170	140	165	164	159
FLIP 86- 80 FB	168	166	156	138	171	140	169	165	159
FLIP 86- 82 FB	173	166	153	133	173	138	165	164	158
FLIP 86- 85 FB	170	166	154	140	170	131	165	165	158
FLIP 86- 86 FB	172	166	154	140	173	147	171	166	161
FLIP 86- 88 FB	170	166	153	135	170	146	165	162	158
FLIP 87- 42 FB	175	166	158	140	172	144	165	165	161
FLIP 87- 43 fb	173	166	153	138	171	140	168	166	159
FLIP 87- 44 fb	177	166	148	135	171	142	164	165	158
FLIP 87- 49 fb	177	166	152	140	171	139	171	166	160
FLIP 87- 51 FB	173	166	152	138	171	140	172	166	160
FLIP 87- 55 FB	170	166	152	140	172	148	165	164	160
FLIP 87- 58 FB	175	166	151	140	170	136	165	164	158
FLIP 87- 64 FB	175	166	148	140	170	140	165	164	159
FLIP 87- 66 FB	172	166	151	135	171	142	164	164	158
FLIP 87- 71 FB	172	166	153	135	171	143	171	166	160
FLIP 87- 77 FB	172	166	155	140	173	137	171	166	160
FLIP 88- 7 FB	173	166	158	138	171	144	168	166	161
B 87160	177	166	155	140	173	143	171	166	161
B 87246	170	166	154	140	172	140	165	165	159
B 87249	172	166	150	135	169	147	164	166	159
B 87258	172	166	148	135	171	145	164	163	158
80S 43977	173	166	150	138	171	140	168	164	159
Palacio	175	166	158	135	170	154	165	165	161
Brocal	177	166	158	135	171	145	164	165	160
ILB 1270	175	166	148	136	170	148	166	164	159
ILB 1814	172	166	157	139	173	143	172	166	161
Local Check	173	166	158	134	171	140	172	166	
Location Mean	173	166	153	136	171	142	167	165	
S.E. of Mean	1.45		0.19	0.96	0.47	3.45	0.58	0.39	
L.S.D. at 5% for:									
Checks	5.68		0.76	3.78	1.85	13.56	2.27	1.51	
T.E. in S.B.	9.54		1.31	6.54	3.21	23.48	3.93	2.62	
T.E. in D.B.	11.36		1.51	7.55	3.70	27.11	4.53	3.02	
Checks Vs T.E.	9.27		1.23	6.17	3.02	22.14	3.70	2.47	
C.V. (%)	1.45		0.22	1.22	0.48	4.20	0.60	0.40	

T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.
 + Location not analysed thus mean values are unadjusted.

Table 4.5.4. Adjusted plant height (cm) of entries at different locations in the FBISN-S during 1988/89.

Entry Name	CHILE	IRAN		IRAQ	ITALY	LEBANON	MOROCCO		PORTUGAL	SPAIN	SYRIA	TUNISIA	(1)
	Valdivia	Ahvaz	Gorgan	Arbil	Tarquinia	Terbol	Allal-Tazi	Jema'a-Shain	Elvas	Cordoba	Tel - Hadya	Oued-Meliz	Overall Mean
FLIP 83- 16 FB	44	70	70	33	82	57	99	73	54	85	34	48	64
FLIP 84- 59 FB	41	80	99	39	80	59	99	77	54	84	31	49	68
FLIP 84-162 FB	46	76	84	43	88	59	117	51	59	87	33	42	67
FLIP 84-179 FB	42	60	56	35	75	49	106	52	50	81	39	48	59
FLIP 84-211 FB	40	64	91	29	85	59	97	97	57	79	34	40	66
FLIP 85- 7 FB	36	75	65	39	88	64	111	61	63	87	36	38	66
FLIP 85- 13 FB	2	64	68	36	97	52	83	43	59	88	39	56	62
FLIP 85- 16 FB	42	69	80	36	87	57	87	93	50	86	36	53	67
FLIP 85- 28 FB	41	69	68	40	87	47	81	93	53	85	34	48	64
FLIP 85- 48 FB	48	74	78	27	82	62	96	73	52	87	34	54	65
FLIP 86- 75 FB	53	79	62	30	77	47	101	63	62	75	39	49	62
FLIP 86- 79 FB	47	70	88	34	85	54	101	87	58	85	40	45	68
FLIP 86- 80 FB	38	74	73	28	77	62	77	93	57	81	44	46	65
FLIP 86- 82 FB	46	79	65	43	97	57	86	93	59	74	29	58	67
FLIP 86- 85 FB	35	75	83	34	75	59	83	57	63	88	32	50	63
FLIP 86- 86 FB	37	71	64	38	83	64	108	86	63	87	38	48	68
FLIP 86- 88 FB	34	86	82	36	75	49	104	87	56	86	39	48	68
FLIP 87- 42 FB	37	68	83	31	90	49	89	102	58	84	49	49	68
FLIP 87- 43 fb	51	77	77	37	87	47	106	73	62	76	37	52	66
FLIP 87- 44 fb	37	71	78	32	83	54	104	66	54	81	28	42	63
FLIP 87- 49 fb	46	74	67	30	83	59	111	96	58	80	38	46	67
FLIP 87- 51 FB	42	74	64	38	92	52	104	73	55	81	34	54	66
FLIP 87- 55 FB	43	71	83	34	85	59	99	107	56	85	42	51	70
FLIP 87- 58 FB	32	78	75	24	90	54	88	57	61	88	34	52	64
FLIP 87- 64 FB	39	58	91	28	70	59	114	72	54	76	44	54	65
FLIP 87- 66 FB	39	63	57	34	78	64	125	101	58	82	42	45	68
FLIP 87- 71 FB	41	69	63	34	78	59	120	91	67	83	38	43	68
FLIP 87- 77 FB	41	66	57	40	88	59	118	51	64	91	33	47	65
FLIP 88- 7 FB	37	82	75	37	82	52	103	68	58	80	42	55	67
B 87160	41	67	57	32	73	49	115	86	63	79	38	48	64
B 87246	48	68	79	29	90	54	97	62	47	84	44	45	63
B 87249	29	54	67	29	78	64	105	96	42	81	33	45	63
B 87258	38	84	42	34	78	49	79	56	39	87	33	46	57
80S 43977	40	72	75	38	82	47	97	78	61	84	29	46	64
Palacio	44	55	75	29	75	49	102	72	61	77	29	45	61
Brocal	38	62	55	32	83	54	109	71	62	79	28	40	61
ILB 1270	35	68	73	40	75	48	92	75	51	77	36	45	62
ILB 1814	43	72	62	36	87	57	98	65	61	85	38	51	65
Local Check	51	73	76	39	78	57	99	73	67	77	47	43	
Location Mean	40	71	72	35	82	55	100	75	57	82	37	47	
S.E. of Mean	1.62	4.48	2.39	0.39	2.36	2.55	6.43	12.30	1.43	2.92	3.17	1.15	
L.S.D. at 5% for:													
Checks	6.34	17.57	9.37	1.51	9.25	9.99	25.25	48.28	5.62	11.47	12.44	4.50	
T.E. in S.B.	10.99	30.43	16.24	2.62	16.03	17.31	43.73	83.62	9.73	19.87	21.54	7.80	
T.E. in D.B.	12.69	35.14	18.75	3.02	18.50	19.99	50.49	96.55	11.24	22.94	24.87	9.00	
Checks Vs T.E.	10.36	28.70	15.31	2.47	15.11	16.32	41.23	78.85	9.18	18.73	20.31	7.35	
C.V. (%)	6.91	10.95	5.76	1.90	4.96	8.02	11.17	28.34	4.31	6.16	14.91	4.19	

T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 4.5.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-S during 1988/89.

Entry Name	CHILE		IRAN				IRAQ		ITALY		JORDAN		LEBANON		MOROCCO	
	Valdivia		Ahvaz		Gorgan		Arbil		Tarquinia		Jordan Valley		Terbol		Allal Tazi	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 16 FB	1047	11	2590	23	3958	19	565	18	3756	27	1128	13	3819	3	3133	19
FLIP 84- 59 FB	902	15	3149	17	3958	17	1008	2	5689	6	1243	9	3029	16	2927	23
FLIP 84-162 FB	838	20	2183	28	3750	25	996	3	3689	28	783	30	2708	27	4365	7
FLIP 84-179 FB	1009	13	1883	34	4583	7	385	29	3656	30	834	27	3251	10	1552	36
FLIP 84-211 FB	1136	6	2883	18	3750	21	635	12	5056	15	1127	14	2733	24	2132	26
FLIP 85- 7 FB	791	22	2049	30	2708	32	636	11	3356	32	919	18	2782	23	4650	4
FLIP 85- 13 FB	-99	39	2679	22	4375	10	970	5	7689	1	1424	4	3449	8	1278	38
FLIP 85- 16 FB	820	21	4657	1	4167	15	493	23	4789	19	909	20	3004	18	2963	22
FLIP 85- 28 FB	447	36	3323	13	4375	9	986	4	5422	8	1480	3	3856	2	2113	27
FLIP 85- 48 FB	773	24	4435	2	3958	20	293	32	4289	24	1095	15	3152	13	4158	8
FLIP 86- 75 FB	1693	2	3212	14	4375	11	216	35	5156	11	1204	10	2856	20	4123	9
FLIP 86- 79 FB	1016	12	3327	12	3750	23	586	17	4556	21	788	28	1473	39	3572	18
FLIP 86- 80 FB	500	34	4301	4	6667	1	671	9	5089	13	325	39	2486	33	3848	13
FLIP 86- 82 FB	1007	14	3701	7	5000	5	1030	1	5189	10	2128	1	3597	5	1503	37
FLIP 86- 85 FB	762	26	2549	24	3125	28	464	24	2989	37	600	35	2584	31	887	39
FLIP 86- 86 FB	498	35	2038	31	3125	29	210	36	5722	5	385	37	4041	1	4390	5
FLIP 86- 88 FB	702	29	3694	8	3333	27	500	22	5389	9	866	24	2510	32	3802	14
FLIP 87- 42 FB	629	33	2438	26	4167	13	203	37	4256	25	867	23	2436	34	1757	34
FLIP 87- 43 FB	1920	1	3390	11	5625	2	630	15	5089	14	1382	5	2634	30	3858	12
FLIP 87- 44 FB	738	28	2705	21	2917	30	691	8	3656	29	784	29	3671	4	5145	3
FLIP 87- 49 FB	1564	3	1060	38	2708	33	35	39	3289	36	1036	16	2263	37	3785	15
FLIP 87- 51 FB	900	16	3657	9	5208	3	634	13	3822	26	1378	6	3152	14	1683	35
FLIP 87- 55 FB	1076	10	1905	33	3750	22	561	20	4456	22	880	22	3029	17	1957	28
FLIP 87- 58 FB	322	38	2438	27	4167	14	119	38	5889	3	863	25	2733	25	1907	32
FLIP 87- 64 FB	789	23	1772	36	4375	8	401	27	2389	38	984	17	3251	11	1912	31
FLIP 87- 66 FB	1091	9	2149	29	2500	34	333	31	3289	35	646	34	3078	15	3605	17
FLIP 87- 71 FB	758	27	1960	32	2917	31	343	30	2222	39	349	38	3412	9	3895	11
FLIP 87- 77 FB	891	17	2483	25	2292	38	529	21	3589	31	732	31	2708	26	5735	1
FLIP 88- 7 FB	333	37	3190	15	3542	26	564	19	4722	20	1532	2	2782	22	1928	29
B 87160	1111	8	860	39	2292	37	281	33	3322	33	893	21	2412	35	4385	6
B 87246	1329	5	3549	10	3958	16	393	28	4989	17	836	26	2881	19	1777	33
B 87249	664	32	4372	3	1667	39	631	14	3322	34	1279	8	2708	28	3940	10
B 87258	1131	7	1816	35	2292	35	436	26	5556	7	543	36	1745	38	2590	24
80S 43977	860	18	3768	5	5208	4	866	7	5889	2	1341	7	3449	7	1918	30
Palacio	856	19	3172	16	3750	24	641	10	4322	23	722	32	2658	29	2142	25
Brocal	764	25	1527	37	2292	36	239	34	5122	12	696	33	2263	36	5705	2
ILB 1270	682	31	2870	19	3958	18	599	16	5000	16	1176	11	3210	12	3090	20
ILB 1814	691	30	2830	20	4653	6	439	25	5789	4	917	19	3580	6	3060	21
Local Check	1533	4	3748	6	4306	12	967	6	4878	18	1132	12	2815	21	3665	16
Location Mean	992		2871		3852		560		4615		992		2965		3121	
S.E. of Mean	82.48		472.28		302.70		143.77		896.25		280.56		116.69		352.15	
L.S.D. at 5% for:																
Checks	323.74		1853.83		1188.18		564.34		3518.03		1101.29		458.03		1382.29	
T.E. in S.B.	560.74		3210.93		2057.99		977.46		6093.41		1907.48		793.33		2394.20	
T.E. in D.B.	647.49		3707.66		2376.37		1128.67		7036.07		2202.57		916.05		2764.58	
Checks Vs T.E.	528.75		3027.75		1940.59		921.70		5746.79		1798.67		748.07		2257.61	
C.V. (%)	15.97		28.49		13.61		44.49		33.64		48.97		6.82		19.54	
T.E. > L. Check	0		0		1		0		0		0		5		0	

Cont'd. ...

Table 4.5.5. Cont'd. ...

Entry Name	MOROCCO		PORTUGAL		SPAIN		SYRIA		TUNISIA						(1)	
	Jema'a Shain		Elvas		Cordoba		Tol Hadya		Beja-1		Beja-2		Oued Meliz		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 83- 16 FB	772	36	2450	32	3273	14	374	33	3050	11	2763	9	3894	4	2538	18
FLIP 84- 59 FB	1172	33	2815	18	2954	26	490	16	2517	27	3296	2	3161	16	2672	7
FLIP 84-162 FB	1431	29	3664	1	3523	6	366	35	2833	20	1874	37	3544	9	2551	17
FLIP 84-179 FB	1672	25	2553	28	3037	24	564	8	3847	1	2163	30	3311	14	2378	30
FLIP 84-211 FB	2672	5	2848	17	2204	38	523	12	2917	16	2430	20	3061	20	2498	20
FLIP 85- 7 FB	1556	27	3164	6	2773	29	437	29	3583	2	2541	17	3594	7	2482	23
FLIP 85- 13 FB	2147	11	3164	5	3190	16	574	7	3200	7	1829	39	3044	22	2787	5
FLIP 85- 16 FB	897	35	2545	29	3065	23	463	22	2450	30	2829	8	1844	39	2505	19
FLIP 85- 28 FB	1947	18	3140	7	2648	33	629	4	3500	3	2629	14	3294	15	2810	4
FLIP 85- 48 FB	2147	13	2926	13	3898	3	474	20	2200	34	2029	32	2394	34	2675	6
FLIP 86- 75 FB	1772	24	3035	10	2690	32	507	15	2700	23	2296	26	2594	31	2624	11
FLIP 86- 79 FB	2047	15	2481	31	3454	9	508	14	2367	33	3030	4	2911	24	2489	22
FLIP 86- 80 FB	522	39	2640	25	4231	2	651	2	2550	26	2363	23	3344	13	2835	2
FLIP 86- 82 FB	2647	6	2878	16	3481	8	296	38	2900	18	2963	5	3544	10	2919	1
FLIP 86- 85 FB	672	38	2910	14	2704	30	379	32	2167	35	2763	10	2911	25	1979	38
FLIP 86- 86 FB	2181	10	3212	4	3106	21	666	1	2483	29	2541	18	3094	18	2657	9
FLIP 86- 88 FB	1047	34	2505	30	2579	36	438	28	1917	36	2630	12	2311	35	2394	29
FLIP 87- 42 FB	2347	8	2434	33	3120	19	530	11	2917	17	2630	13	3061	21	2369	31
FLIP 87- 43 fb	2097	14	3259	3	1523	39	370	34	2750	21	1829	38	2194	37	2616	13
FLIP 87- 44 fb	1806	23	2735	22	3523	7	444	26	3083	9	2341	24	2744	29	2589	15
FLIP 87- 49 fb	2556	7	2688	24	2690	31	459	24	2483	28	2341	25	3894	3	2235	35
FLIP 87- 51 FB	2772	3	2897	15	2940	27	626	5	3150	8	2229	28	2444	33	2614	14
FLIP 87- 55 FB	1422	30	2767	20	3329	11	479	18	1917	37	2563	16	3111	17	2295	33
FLIP 87- 58 FB	772	37	2953	12	3370	10	564	9	2667	25	2430	21	3011	23	2420	27
FLIP 87- 64 FB	1922	21	1862	39	3620	5	464	21	3017	13	2896	7	3361	12	2302	32
FLIP 87- 66 FB	2681	4	3021	11	3315	13	563	10	2683	24	2274	27	3644	6	2413	28
FLIP 87- 71 FB	3181	1	3116	8	3856	4	381	31	2833	19	2008	34	4094	2	2469	25
FLIP 87- 77 FB	2806	2	2807	19	3023	25	444	27	2733	22	1941	36	2794	27	2473	24
FLIP 88- 7 FB	2147	12	2593	27	2606	35	444	25	2450	31	2963	6	2794	28	2447	26
B 87160	1431	28	2426	34	2356	37	481	17	1633	38	1941	35	3544	8	2018	37
B 87246	1947	19	2720	23	3329	12	475	19	3067	10	3296	1	2661	30	2563	16
B 87249	1556	26	2221	36	3231	15	326	37	1483	39	2474	19	2594	32	2272	34
B 87258	1181	32	2212	37	4606	1	429	30	2383	32	2008	33	1894	38	2121	36
80S 43977	2272	9	3616	2	2898	28	459	23	3400	5	2163	29	2294	36	2824	3
Palacio	2047	16	2601	26	3120	18	275	39	3317	6	3230	3	4661	1	2618	12
Brocal	1931	20	3069	9	2606	34	351	36	2933	15	2408	22	3794	5	2495	21
ILB 1270	1883	22	2754	21	3167	17	512	13	3467	4	2578	15	2900	26	2655	10
ILB 1814	1283	31	2325	35	3111	20	615	6	3033	12	2089	31	3517	11	2660	8
Local Check	2000	17	1984	38	3083	22	649	3	2950	14	2756	11	3067	19		
Location Mean	1815		2714		3110		494		2810		2471		3087			
S.E. of Mean	351.72		93.18		224.10		44.38		456.59		433.77		116.47			
L.S.D. at 5% for:																
Checks	1380.58		365.74		879.63		174.21		1792.23		1702.65		457.17			
T.E. in S.B.	2391.23		633.49		1523.57		301.74		3104.23		2949.08		791.84			
T.E. in D.B.	2761.15		731.49		1759.27		348.42		3584.45		3405.30		914.34			
Checks Vs T.E.	2254.81		597.35		1436.65		284.53		2927.14		2780.84		746.67			
C.V. (%)	33.56		5.95		12.48		15.56		28.15		30.40		6.54			
T.E. > L. Check	0		26		1		0		0		0		4			

(1) Valdivia was excluded from the overall mean, T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 4.5.6. The five heaviest seed yielding entries at the individual locations in the FBISN-S during 1988/89.

Rank	CHILE	IRAN		IRAQ	ITALY
	Valdivia	Ahvaz	Gorgan	Arbil	Tarquinoa
1	FLIP 87- 43 FB	FLIP 85- 16 FB	FLIP 86- 80 FB	FLIP 86- 82 FB	FLIP 85- 13 FB
2	FLIP 87- 75 FB	FLIP 85- 48 FB	FLIP 87- 43 FB	FLIP 84- 59 FB	80S 43977
3	FLIP 87- 49 FB	B 87249	FLIP 87- 51 FB	FLIP 84-162 FB	FLIP 87- 58 FB
4	Local check	FLIP 86- 80 FB	80S 43977	FLIP 85- 28 FB	ILB 1814
5	B 87246	80 S 43977	FLIP 86- 82 FB	FLIP 85- 13 FB	FLIP 86- 86 FB
					Cont'd. ...
Rank	JORDAN	LEBANON	MOROCCO		PORTUGAL
	Jordan Valley	Terbol	Allal Tazi	Jema'a Shain	Elvas
1	FLIP 86- 82 FB	FLIP 86- 86 FB	FLIP 87- 77 FB	FLIP 87- 71 FB	FLIP 84-162 FB
2	FLIP 88- 7 FB	FLIP 85- 28 FB	Brocal	FLIP 87- 77 FB	80S 43977
3	FLIP 85- 28 FB	FLIP 83- 16 FB	FLIP 87- 44 FB	FLIP 87- 51 FB	FLIP 87- 43 FB
4	FLIP 85- 13 FB	FLIP 87- 44 FB	FLIP 85- 7 FB	FLIP 87- 66 FB	FLIP 86- 86 FB
5	FLIP 87- 43 FB	FLIP 86- 82 FB	FLIP 86- 86 FB	FLIP 84-211 FB	[FLIP 85- 13 FB FLIP 85- 7 FB
					Cont'd. ...
Rank	SPAIN	SYRIA	TUNISIA		
	Cordoba	Tel Hadya	Beja-1	Beja-2	Oued Meliz
1	B 87258	FLIP 86- 86 FB	FLIP 84-179 FB	B 87246	Palacio
2	FLIP 86- 80 FB	FLIP 86- 80 FB	FLIP 85- 7 FB	FLIP 84- 59 FB	FLIP 87- 71 FB
3	FLIP 85- 48 FB	Local check	FLIP 85- 28 FB	Palacio	FLIP 87- 49 FB
4	FLIP 87- 71 FB	FLIP 85- 28 FB	ILB 1270	FLIP 86- 79 FB	FLIP 83- 16 FB
5	FLIP 87- 64 FB	FLIP 87- 51 FB	80S 43977	[FLIP 86- 82 FB FLIP 88- 7 FB	Brocal

The brackets indicate entries having the same rank,

however, received for 19 sets from 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 86-110 FB flowered earliest in 100 days (Table 4.6.2.). The entry means for time to maturity (Table 4.6.3) ranged from 163 to 167 days and for plant height (Table 4.6.4) ranged from 41 to 62 cm.

The adjusted seed yield for the entries based on augmented design is presented in Table 4.6.5. Seed yields were very high at Izmir in Turkey (4097 kg/ha), and Deir-Ez-Zor in Syria (3607 kg/ha). Among the entries, indeterminate entry ILB 1814 with seed yield of 3356 kg/ha ranked number one and was closely followed by determinate entries FLIP 86-115 FB (2346 kg/ha), FLIP 86-123 FB (2274 kg/ha), FLIP 86-117 FB (2192 kg/ha) and FLIP 86-105 FB (2131 kg/ha) etc. The LSD estimates at different locations revealed that at only 3 locations, namely Elvas (Portugal), Homs (Syria) and Oued Meliz (Tunisia), 5, 1 and 1 test entries exceeded the respective local check by a significant margin. The determinate entries FLIP 86-115 FB, and FLIP 86-123 FB 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 4.6.6.

4.7. FABA BEAN INTERNATIONAL F₄ NURSERY (FBIF₄N)

Three different Faba bean F₄ Nurseries, namely Ascochyta Blight (FBIF₄N-A), Botrytis (FBIF₄N-B) and Determinate (FBIF₄N-D) were available during the season. for making plant selections. These nurseries were distributed to 5, 10 and 12 cooperators in 5, 8 and 9 countries respectively. The list of materials supplied in these nurseries alongwith the plants selected by the national programs are given in Tables 4.7.1, 4.7.2 and 4.7.3 respectively.

4.8. 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

Table 4.6.1. Agronomic data for different locations in the FBISN-D during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/	Local Check Herbicide
				N	P	K			
Algeria	Sidi Bel Abbas	03.12.88	-		46		-	-	Aquadulce
Chile	Hidango	24.05.89	10.12.89	20	35		-	-	LPH 24
Iran	Ahvaz	01.11.88	19.05.89	14	55		14	-	Zohreh
Iraq	Dohuk	09.11.88	22.05.89	40	46		-	-	Dohuk Local
Iraq	Mosul	30.11.88	29.05.89	40	100		5	Malathion	Aquadulchie
Jordan	Jordan Valley	16.10.88	-	50	50		-	-	-
Lebanon	Terbol	24.11.88	15.06.89		50		2	Kerb, Igran	Lebanese local
Morocco	Allal Tazi								
Morocco	ENA Meknes	11.12.88	-	-			-	-	Aquadulce
Morocco	Jema'a Shain	23.12.88	30.05.89	95	111		-	-	F 269
Poland	Strzelce	06.04.89	16.08.89		120	180	-	Linurex, Pirimor	RAH 485-D
Portugal	Elvas	09.12.88	08.06.89		60	60	-	Malatox	Beja
Syria	Deir-Ez-Zor	03.12.88	15.06.89	5	8		1	-	
Syria	Homs	24.11.88	28.05.89	25	80		2	Supracid, Decis	
Syria	Tel Hadya	11.11.88	28.05.89		50		-	Tribunil, Fusilade, Lancer, Gramaxone	ILB 1814
Tunisia	Beja	17.11.88	-	-			-	-	-
Tunisia	Oued Meliz	24.11	-	-			-	-	-
Turkey	Izmir	24.11.88	15.06.89	30	60		-	Endosulfan	Fresen - 87

Table 4.6.2. Adjusted time to flowering (days) of entries at different locations in the FBISN-D during 1988/89.

Entry Name	ILB/ Cross No.	ALGERIA	ECUADOR	IRAN	IRAQ		LEBANON	MOROCCO	POLAND	PORTUGAL	SYRIA		TURKEY	Overall Mean	
		Sidi Bel- Abbes	Santa- Catalina	Ahvaz	Dohuk	Mosul	Terbol	Jema'a- Shain	Str- zolco	Elvas	Deir- Ez-Zor	Homs	Tol- Hadya		Izmir
FLIP 84-233 FB	S82231	102	75	103	134	101	110	92	59	110	99	110	120	116	102
FLIP 85-154 FB	S82218	106	80	103	133	101	110	108	57	101	102	109	121	116	104
FLIP 85-171 FB	S82238	99	82	103	135	101	110	92	56	104	100	112	120	116	102
FLIP 86-103 FB	S82251	103	77	103	136	101	112	104	60	110	101	118	121	121	105
FLIP 86-104 FB	S82221	99	82	103	134	103	108	93	60	104	102	113	119	116	103
FLIP 86-105 FB	S82221	103	75	103	132	101	106	87	60	95	100	110	120	116	101
FLIP 86-110 FB	S82238	103	75	103	134	101	110	87	55	95	98	111	120	110	100
FLIP 86-112 FB	S82241	111	82	110	135	101	112	91	61	110	101	115	121	116	105
FLIP 86-114 FB	S82244	111	82	103	136	101	112	108	59	104	101	107	122	116	109
FLIP 86-115 FB	S82244	104	78	103	136	101	110	97	58	101	99	114	122	116	103
FLIP 86-116 FB	S82252	103	75	103	129	101	108	97	60	101	100	108	119	116	101
FLIP 86-117 FB	S82221	99	82	103	131	103	108	93	62	95	104	118	119	116	103
FLIP 86-119 FB	S82238	103	82	103	136	103	108	87	66	104	102	111	120	116	103
FLIP 86-123 FB	S82238	110	82	91	129	101	110	97	58	95	102	112	119	116	102
FLIP 86-124 FB	S82238	111	82	103	131	103	108	89	62	95	102	115	118	116	103
FLIP 86-128 FB	S82238	108	78	103	139	101	112	97	63	110	103	115	121	116	105
FLIP 86-135 FB	D83033	105	75	103	131	101	106	99	57	101	100	111	118	110	101
FLIP 86-139 FB	D83164	109	78	91	136	101	106	89	59	101	98	112	121	116	101
FLIP 86-147 FB	D83104	105	80	103	136	103	108	108	63	110	104	116	118	116	105
FLIP 87- 94 FB	D83002	111	82	110	139	101	114	93	59	110	102	115	122	116	106
FLIP 87-101 FB	D83080	108	80	103	136	103	110	99	63	110	101	116	120	116	105
FLIP 87-126 FB	D84184	107	82	103	140	103	120	99	66	110	104	116	122	116	107
FLIP 88- 9 FB	D84233	107	82	103	136	103	112	97	59	104	101	114	122	121	105
FLIP 88- 10 FB	D84250	107	83	103	140	101	111	87	66	110	103	115	123	121	105
ILB 1814	1814	111	75	103	129	101	106	87	61	95	100	110	119	116	101
Local Check	-	102	90	103	129	100	106	97	63	104	103	106	120	110	
Location Mean		106	80	103	134	101	109	95	61	103	101	112	120	116	
S.E. of Mean		3.89	0.00	0.00	0.00	0.35	0.00	0.01	0.00	0.00	0.71	1.77	0.00	0.00	
L.S.D. at 5% for: Checks		69.87	0.00	0.00	0.00	6.35	0.01	0.13	0.00	0.00	12.70	31.76	0.01	0.00	
T.E. in S.B.		98.82	0.00	0.00	0.00	8.97	0.01	0.18	0.00	0.00	17.97	44.92	0.01	0.00	
T.E. in D.B.		121.02	0.00	0.00	0.00	10.99	0.01	0.22	0.00	0.00	22.00	55.01	0.01	0.00	
Checks Vs T.E.		104.82	0.00	0.00	0.00	9.52	0.01	0.19	0.00	0.00	19.06	47.65	0.01	0.00	
C.V. (%)		5.20	0.00	0.00	0.00	0.49	0.00	0.01	0.00	0.00	0.99	2.23	0.00	0.00	

T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 4.6.3. Adjusted time to maturity (days) of entries at different locations in the FBISN-D during 1988/89.

Entry Name	ALGERIA	IRAN	IRAQ +		LEBANON	MOROCCO	POLAND	PORTUGAL	SYRIA			TURKEY	Overall Mean
	Sidi Bel-Abbes	Ahvaz	Dohuk	Mosul	Terbol	Jema'a-Shain	Strzelce	Elvas	Deir-Ez-zor	Homs	Tel Hadya	Izmir	
FLIP 84-233 FB	166	166	194	171	168	138	120	164	165	179	170	179	165
FLIP 85-154 FB	171	166	194	171	168	133	115	164	165	176	169	169	163
FLIP 85-171 FB	166	166	194	171	168	133	120	164	165	177	170	169	164
FLIP 86-103 FB	171	166	194	171	172	148	118	166	168	175	170	179	166
FLIP 86-104 FB	166	166	194	171	174	143	118	166	168	177	169	169	165
FLIP 86-105 FB	166	166	194	171	172	138	130	166	169	175	170	172	166
FLIP 86-110 FB	161	166	194	171	168	129	120	164	165	177	170	172	163
FLIP 86-112 FB	171	170	194	171	172	140	120	164	168	180	170	179	167
FLIP 86-114 FB	176	166	194	171	170	140	117	164	167	178	170	172	165
FLIP 86-115 FB	166	166	194	171	172	138	120	164	167	177	170	172	165
FLIP 86-116 FB	166	166	194	171	168	138	121	164	165	189	169	169	165
FLIP 86-117 FB	166	166	194	171	172	143	126	166	169	176	170	179	166
FLIP 86-119 FB	166	166	194	171	172	138	130	166	169	176	170	172	166
FLIP 86-123 FB	171	156	194	171	168	138	115	164	165	177	170	169	163
FLIP 86-124 FB	176	166	194	171	172	129	117	166	166	173	170	169	164
FLIP 86-128 FB	175	166	194	171	174	133	122	166	168	175	170	172	165
FLIP 86-135 FB	171	166	194	171	172	129	117	166	166	176	168	169	164
FLIP 86-139 FB	171	156	194	171	168	133	119	164	167	178	170	172	164
FLIP 86-147 FB	171	166	194	171	172	138	122	173	168	174	170	172	166
FLIP 87- 94 FB	176	170	194	171	168	129	120	167	165	178	170	179	166
FLIP 87-101 FB	175	166	194	171	172	129	121	169	166	176	169	169	165
FLIP 87-126 FB	171	166	194	171	172	143	130	173	169	177	170	172	167
FLIP 88- 9 FB	171	166	194	171	168	133	121	164	165	176	170	169	164
FLIP 88- 10 FB	171	166	194	171	174	133	130	169	169	178	170	172	166
ILB 1814	168	166	194	171	172	133	126	169	167	180	170	172	166
Local Check	168	166	194	171	172	140	125	167	167	179	170	179	
Location Mean	169	166	194	171	171	136	122	166	166	177	170	173	
S.E. of Mean	3.54	0.00			0.00	0.01	1.77	3.54	0.00	3.18	0.35	0.00	
L.S.D. at 5% for:													
Checks	63.52	0.01			0.00	0.19	31.76	63.52	0.00	57.17	6.35	0.05	
T.E. in S.B.	89.83	0.01			0.00	0.27	44.92	89.83	0.00	80.85	8.98	0.07	
T.E. in D.B.	110.02	0.01			0.00	0.33	55.01	110.02	0.00	99.02	11.00	0.09	
Checks Vs T.E.	95.30	0.01			0.00	0.29	47.65	95.30	0.00	85.77	9.53	0.08	
C.V. (%)	2.96	0.00			0.00	0.01	2.05	3.01	0.00	2.54	0.30	0.00	

T.E. = Test entries, S.B. = Same block, D.B. = Different blocks, + Locations not analysed thus mean values are unadjusted.

Table 4.6.4. Adjusted plant height (cm) of entries at different locations in the FBISN-D during 1988/89.

Entry Name	ALGERIA	CHILE	IRAN	IRAQ		LEBANON	MOROCCO	POLAND	PORTUGAL	SYRIA		TURKEY	(1)		
	Sidi Bel- Abbes	Hidango	Ahvaz	Dohuk	Mosul	Terbol	Allal- Tazi+	Jema'a- Shain	Str- zelce	Elvas	Deir- Es-Zor	Homs	Tel- Hadya	Iznir	Moan
FLIP 84-233 FB	28	64	85	26	38	64	-	50	68	24	45	67	35	61	50
FLIP 85-154 FB	28	64	80	29	38	39	-	45	50	33	35	60	53	36	45
FLIP 85-171 FB	33	59	70	39	35	37	-	50	62	33	35	58	38	41	45
FLIP 86-103 FB	18	61	80	23	43	41	65	65	53	43	45	51	52	42	47
FLIP 86-104 FB	23	61	70	38	40	66	67	70	55	37	45	56	47	42	50
FLIP 86-105 FB	18	56	90	28	46	46	54	45	44	30	50	55	37	42	45
FLIP 86-110 FB	23	69	75	36	37	44	-	35	66	27	35	50	31	39	43
FLIP 86-112 FB	33	59	67	35	37	39	-	40	56	33	35	52	38	47	44
FLIP 86-114 FB	18	49	80	38	38	39	-	55	58	38	40	55	43	44	46
FLIP 86-115 FB	28	59	70	29	34	39	-	65	61	35	45	57	43	42	47
FLIP 86-116 FB	28	49	70	28	70	39	-	35	52	28	37	50	38	44	44
FLIP 86-117 FB	23	86	95	27	42	41	52	55	49	34	40	52	29	40	47
FLIP 86-119 FB	23	61	95	21	41	41	42	35	59	38	40	63	32	45	46
FLIP 86-123 FB	28	59	65	29	32	39	-	30	55	36	35	45	43	45	41
FLIP 86-124 FB	23	66	90	21	36	41	78	40	45	37	32	55	42	39	44
FLIP 86-128 FB	23	71	85	25	44	41	64	50	46	31	35	46	47	42	45
FLIP 86-135 FB	23	61	75	27	41	41	58	35	53	36	25	49	32	38	41
FLIP 86-139 FB	28	64	75	37	36	44	-	45	62	30	42	54	48	44	47
FLIP 86-147 FB	18	66	85	24	41	41	71	75	53	38	40	51	42	41	47
FLIP 87- 94 FB	23	59	75	33	41	44	-	45	65	31	35	58	53	41	46
FLIP 87-101 FB	28	76	81	21	44	41	73	50	55	39	30	50	42	42	46
FLIP 87-126 FB	23	76	90	23	54	43	42	65	53	39	50	59	42	41	51
FLIP 88- 9 FB	28	54	65	40	39	34	-	30	59	30	37	52	41	38	42
FLIP 88- 10 FB	28	61	90	26	46	66	55	50	48	36	55	63	42	40	50
ILB 1814	23	80	93	46	78	38	89	85	63	50	58	80	64	49	62
Local Check	23	78	98	40	70	40	84	85	62	54	63	81	55	56	
Location Mean	24	65	82	31	46	43	64	54	56	37	42	58	44	44	
S.E. of Mean	0.00	1.77	10.61	3.54	5.39	1.77		0.01	1.06	1.38	3.54	2.83	4.24	6.72	
L.S.D. at 5% for:															
Checks	0.00	31.76	190.56	63.52	96.87	31.76		0.25	19.06	24.77	63.52	50.82	76.22	120.69	
T.E. in S.B.	0.00	44.92	269.49	89.83	136.99	44.92		0.36	26.95	35.03	89.83	72.87	107.80	170.68	
T.E. in D.B.	0.00	55.01	330.06	110.02	167.78	55.01		0.44	33.01	42.91	110.02	88.02	132.03	209.04	
Checks Vs T.E.	0.00	47.65	285.89	95.30	145.33	47.65		0.38	28.59	37.17	95.30	76.24	114.35	181.06	
C.V. (%)	0.00	3.84	18.40	16.22	16.54	5.81		0.04	2.67	5.33	11.83	6.93	13.68	21.71	

(1) Allal Tazi was excluded from the overall mean., T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.
 + Location not analysed thus mean values are unadjusted.

Table 4.6.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-D during 1988/89.

Entry Name	CHILE		IRAN		IRAQ		JORDAN		LEBANON		MOROCCO					
	Hidango		Ahvaz		Dohuk		Mosul		Jordan Valley		Terbol		Allal Taxi		Jema'a Shain	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-233 FB	2116	17	2228	18	1130	10	721	12	1297	9	1648	23	1895	13	-	-
FLIP 85-154 FB	2001	18	1961	23	1360	5	1350	1	160	24	1204	25	1845	15	1219	9
FLIP 85-171 FB	1996	19	3294	5	1280	6	750	10	160	20	1870	21	1855	14	1719	5
FLIP 86-103 FB	2489	11	1506	26	450	22	250	24	2228	2	2648	12	1280	17	1531	6
FLIP 86-104 FB	2124	16	1661	25	680	19	364	20	2525	1	2685	10	225	21	1731	4
FLIP 86-105 FB	2624	9	4794	2	220	25	164	25	1813	7	3241	5	-	-	1031	13
FLIP 86-110 FB	1976	20	2117	22	1720	2	579	13	843	13	2685	11	2470	9	719	19
FLIP 86-112 FB	1241	25	2850	8	1500	4	579	14	160	18	1870	19	2880	7	1844	2
FLIP 86-114 FB	1961	21	2183	21	1100	11	321	23	647	17	1722	22	1425	16	-	-
FLIP 86-115 FB	2181	15	2917	7	1230	7	864	5	160	22	1500	24	3285	4	1094	11
FLIP 86-116 FB	981	26	2739	10	810	15	521	15	2038	3	1870	20	2440	10	719	18
FLIP 86-117 FB	3469	3	2239	17	1160	8	479	17	1032	11	2944	8	2340	11	1781	3
FLIP 86-119 FB	2614	10	1883	24	440	23	507	16	712	16	3389	3	-	-	1281	8
FLIP 86-123 FB	2666	8	3361	4	1700	3	150	26	160	21	1944	18	4315	1	469	22
FLIP 86-124 FB	2449	12	2194	20	330	24	336	22	-	-	2500	14	2325	12	31	24
FLIP 86-128 FB	3129	5	2194	19	480	21	793	8	1836	6	3167	6	905	19	906	16
FLIP 86-135 FB	2389	13	2794	9	880	13	1050	4	1916	5	2796	9	175	22	531	21
FLIP 86-139 FB	1586	24	2650	12	760	16	721	11	160	19	2463	15	2675	8	1219	10
FLIP 86-147 FB	2729	6	2683	11	690	18	479	18	1990	4	3241	4	990	18	1031	14
FLIP 87- 94 FB	1586	23	3139	6	1140	9	864	6	160	23	1944	17	3045	6	344	23
FLIP 87-101 FB	2699	7	2572	14	730	17	1221	2	1122	10	3093	7	530	20	656	20
FLIP 87-126 FB	2364	14	2350	16	140	26	793	9	1782	8	2500	13	-	-	1281	7
FLIP 88- 9 FB	1716	22	2628	13	830	14	350	21	160	25	848	26	3340	3	1094	12
FLIP 88- 10 FB	3139	4	2572	15	670	20	1107	3	808	14	2352	16	-	-	781	17
ILB 1814	3690	2	4144	3	1050	12	857	7	921	12	4889	1	4188	2	938	15
Local Check	4118	1	5111	1	2230	1	471	19	800	15	3741	2	3073	5	2000	1
Location Mean	2494		2858		1000		642		1024		2621		2159		1081	
S.E. of Mean	705.34		526.40		0.00		151.52		226.16		288.08		1573.31		44.20	
L.S.D. at 5% for:																
Checks	12672.32		9457.48		0.00		2722.30		4063.33		5175.74		28266.58		794.16	
T.E. in S.B.	17921.37		13374.90		0.00		3849.92		5746.42		7319.60		39974.98		1123.12	
T.E. in D.B.	21949.10		16380.84		0.00		4715.17		7037.89		8964.64		48959.15		1375.53	
Checks Vs T.E.	19011.35		14188.37		0.00		4084.07		6095.92		7764.78		42406.28		1191.43	
C.V. (%)	39.99		26.05		0.00		33.39		32.99		15.55		118.23		6.07	
T.E. > L. Check	0		0		0		0		0		0		0		0	

Cont'd. ...

Tablo 4.6.5. Cont'd. ...

Entry Name	POLAND		PORTUGAL		SYRIA				TUNISIA				TURKEY		(1)			
	Strzelce		Elvas		Deir-Ez-Zor		Homs		Tel Hadya		Beja		Oued Meliz		Izmir		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-233 FB	791	21	827	26	2200	24	1950	17	650	23	1238	25	2063	23	5241	4	1754	21
FLIP 85-154 FB	1654	2	1089	22	2467	23	2350	13	847	18	1488	21	2513	13	4722	7	1923	16
FLIP 85-171 FB	867	17	1161	18	2133	25	2483	11	902	14	1788	18	2763	11	4648	8	1995	10
FLIP 86-103 FB	1092	10	1006	25	3600	13	1517	23	856	16	2063	12	2538	12	1944	23	1689	23
FLIP 86-104 FB	849	18	1268	14	3133	16	2517	10	1019	8	1363	23	2288	18	1500	26	1650	25
FLIP 86-105 FB	1176	8	1554	6	3133	14	3183	5	919	12	2413	2	2188	22	2093	22	2131	5
FLIP 86-110 FB	1269	5	1827	3	3000	17	683	26	784	21	2138	10	3113	4	3907	13	1984	12
FLIP 86-112 FB	1064	11	1042	23	2467	22	3417	4	776	22	1938	14	2913	7	3167	17	1909	17
FLIP 86-114 FB	975	12	1446	9	5333	2	1683	21	491	25	2088	11	2213	21	4426	9	1996	9
FLIP 86-115 FB	1891	1	1923	2	3867	8	2683	7	854	17	1938	15	3413	3	5241	3	2346	2
FLIP 86-116 FB	617	25	1137	19	2800	18	2017	16	613	24	1238	26	2463	15	3685	15	1653	24
FLIP 86-117 FB	846	19	1649	5	4067	5	2317	14	1082	7	2213	7	1938	25	4093	11	2192	4
FLIP 86-119 FB	775	22	1315	12	4133	4	2450	12	1467	3	2313	5	2338	17	3648	16	2098	7
FLIP 86-123 FB	1207	7	1661	4	3667	11	1950	18	913	13	1638	20	3613	2	5093	5	2274	3
FLIP 86-124 FB	814	20	1387	10	3733	10	1317	25	1200	4	2213	8	2438	16	1944	24	1758	20
FLIP 86-128 FB	762	23	1196	17	4000	7	1717	19	882	15	2213	9	2488	14	2685	21	1977	14
FLIP 86-135 FB	936	13	1220	16	3133	15	2583	9	952	9	1663	19	2238	20	3130	18	1982	13
FLIP 86-139 FB	931	14	1518	8	2467	21	1617	22	784	20	1938	16	2763	10	4130	10	1871	18
FLIP 86-147 FB	618	24	1006	24	4067	6	2650	8	1163	6	2313	4	2288	19	3056	19	2075	8
FLIP 87- 94 FB	1597	3	1137	20	2133	26	1683	20	806	19	1388	22	2813	9	4796	6	1925	15
FLIP 87-101 FB	902	15	1244	15	3867	9	2050	15	948	10	2363	3	2938	6	2981	20	2124	6
FLIP 87-126 FB	614	26	1125	21	2733	20	3717	3	934	11	1363	24	1538	26	3870	14	1849	19
FLIP 88- 9 FB	874	16	1518	7	2800	19	1350	24	391	26	1838	17	2913	8	3907	12	1689	22
FLIP 88- 10 FB	1257	6	1292	13	3667	12	2783	6	1189	5	2013	13	1938	24	1833	25	1985	11
ILB 1814	1388	4	2119	1	6267	1	3767	2	2186	1	2875	1	4575	1	5815	2	3356	1
Local Check	1162	9	1321	11	4933	3	5000	1	1896	2	2250	6	3050	5	8667	1		
Location Mean	1053		1372		3607		2507		1057		1979		2713		4097			
S.E. of Mean	154.86		8.42		659.97		683.54		1.31		441.94		17.68		1492.78			
L.S.D. at 5% for:																		
Checks	2782.19		151.24		11857.14		12280.61		23.53		7940.05		317.60		26820.73			
T.E. in S.B.	3934.62		213.88		16768.53		17367.41		33.27		11229.93		449.16		37928.82			
T.E. in D.B.	4818.90		261.95		20537.17		21270.64		40.75		13752.57		550.10		46453.13			
Checks Vs T.E.	4173.92		226.89		17788.40		18423.70		35.29		11911.88		476.8		40235.67			
C.V. (%)	20.80		0.87		25.88		38.56		0.18		31.59		0.92		51.53			
T.E. > L. Check	0		5		0		1		0		0		1		0			

(1) Jordan Valley, Allal Tazi and Jema'a Shain were excluded from the overall mean.

T.E. = Test entries, S.B. = Same block, D.B. = Different blocks.

Table 4.6.6. The five heaviest seed yielding entries at the individual locations in the FBISN-D during 1988/89.

Rank	CHILE	IRAN	IRAQ		JORDAN	LEBANON
	Hidango	Ahvaz	Dohuk	Mosul	Jordan Valley	Terbol
1	Local check	Local check	Local check	FLIP 85-154 FB	FLIP 86-104 FB	ILB 1814
2	ILB 1814	FLIP 86-105 FB	FLIP 86-110 FB	FLIP 87-101 FB	FLIP 86-103 FB	Local check
3	FLIP 86-117 FB	ILB 1814	FLIP 86-123 FB	FLIP 88- 10 FB	FLIP 86-116 FB	FLIP 86-119 FB
4	FLIP 88- 10 FB	FLIP 86-123 FB	FLIP 86-112 FB	FLIP 86-135 FB	FLIP 86-147 FB	FLIP 86-147 FB
5	FLIP 86-128 FB	FLIP 85-171 FB	FLIP 85-154 FB	FLIP 86-115 FB FLIP 87- 94 FB	FLIP 86-135 FB	FLIP 86-105 FB
Cont'd. ...						
Rank	MOROCCO		POLAND	PORTUGAL	SYRIA	
	Allal Tazi	Jema'a Shain	Strzelce	Elvas	Deir-Ez-Zor	
1	FLIP 86-123 FB	Local check	FLIP 86-115 FB	ILB 1814	ILB 1814	
2	ILB 1814	FLIP 86-112 FB	FLIP 85-154 FB	FLIP 86-115 FB	FLIP 86-114 FB	
3	FLIP 88- 9 FB	FLIP 86-117 FB	FLI 87- 94 FB	FLIP 86-110 FB	Local check	
4	FLIP 86-115 FB	FLIP 86-104 FB	ILB 1814	FLIP 86-123 FB	FLIP 86-119 FB	
5	Local check	FLIP 85-171 FB	FLIP 86-110 FB	FLIP 86-117 FB	FLIP 86-117 FB FLIP 86-147 FB	
Cont'd. ...						
Rank	SYRIA		TUNISIA		TURKEY	
	Homs	Tel Hadya	Beja	Oued Meliz	Izmir	
1	Local check	ILB 1814	ILB 1814	ILB 1814	Local check	
2	ILB 1814	Local check	FLIP 86-105 FB	FLIP 86-123 FB	ILB 181	
3	FLIP 87-126 FB	FLIP 86-119 FB	FLIP 87-101 FB	FLIP 86-115 FB	FLIP 86-115 FB	
4	FLIP 86-112 FB	FLIP 86-124 FB	FLIP 86-147 FB	FLIP 86-110 FB	FLIP 84-233 FB	
5	FLIP 86-105 FB	FLIP 88- 10 FB	FLIP 86-119 FB	Local check	FLIP 86-123 FB	

The brackets indicate entries having the same rank.

Table 4.7.1. No. of plants selected by the cooperators in the FBIF4N-A during 1988/89.

Entry Name (Cross No.)	Parents	<u>Turkey</u> Izmir
S86063	FLIP 82- 25 FB; BPL 436, Sel. 80 Lat. 14422	-
S86064	Giza 3; BPL 436, Sel. 80 Lat. 14422	-
S86101	FLIP 82- 39 FB; BPL 472, Sel. 80 Lat. 14435-1	15
S86102	FLIP 82- 13 FB; BPL 472, Sel. 80 Lat. 14435-1	-
S86107	FLIP 84- 76 FB; BPL 472, Sel. 80 Lat. 14435-4	15
S86111	FLIP 83- 42 FB; BPL 818, Sel. 80 Lat. 15035-2	-
S86113	FLIP 84-148 FB; BPL 74, Sel. 79 Lat. 70015-1	-
S86132	FLIP 82- 34 FB; 80 Lat. 14335-2	-
S86137	Turkish Local; 84 Lat. L82012	-
ILB 1814	-	-
ILB 1812	-	-
Local check	-	-

Table 4.7.2. No. of plants selected by the cooperators in the FBIF4N-B during 1988/89.

Entry Name (Cross No.)	Parents	<u>ITALY</u>	<u>PORTUGAL</u>	<u>TURKEY</u>
		Tarquini	Elvas	Izmir
S86035	79S 653; BPL 710, Sel. 81 Lat. 24897-2	6	-	25
S86036	80S 50088; BPL 710, Sel. 81 Lat. 24857-2	7	5	-
S86037	78S 49907; BPL 710, Sel. 81 Lat. 24897-2	8	-	-
S86043	FLIP 84-171 FB; BPL 261, Sel. 81 Lat. 24694-4	6	5	-
S86044	FLIP 84-177 FB; BPL 261, Sel. 81 Lat. 24694-4	5	-	-
S86045	ILB 3187; BPL 261, Sel. 81 Lat. 24694-4	4	-	-
S86046	80S 44056; BPL 261, Sel. 81 Lat. 24694-4	8	-	-
S86056	FLIP 82- 19 FB; BPL 1752, Sel. 81 Lat. 25090	5	5	-
ILB 1814	-	-	-	-
ILB 1270	-	-	5	-
Local Check	-	-	-	-

Table 4.7.3. No. of plants selected by the cooperators in the FBIF4N-D during 1988/89.

Entry Name (Cross No.)	Parents	GREECE	POLAND
		Larissa	Strzelce
D86034	Reina Blanca; FLIP 84-231 FB	-	2
D87022	D84076-2-1; D84076-3-3	-	3
D87023	D84017-4-2; D84076-3-3	-	2
D87024	D84076-2-1; D84076-3-3	2	3
D87025	D84017-4-2; D84076-3-1	3	3
D87028	D84076-2-1; D84076-3-4	-	3
D87029	D84017-4-2; D84270-2-2	-	8
D87030	D84076-2-1; D84270-2-2	-	5
D87031	D84027-2-1; D84270-2-2	-	9
D87032	D84064-3-1; D84270-2-2	-	5
D87033	D84027-2-2; D84270-2-2	-	3
D87034	D84064-3-1; D84270-2-2	-	-
D87035	D84027-2-2; D84270-2-2	-	-
D87036	D84064-3-1; D84270-2-2	1	3
D87037	D84027-2-2; D84177-5-2	-	2
D87038	D84064-3-1; D84177-5-2	1	2
D87039	D84027-2-2; D84177-5-2	-	4
D87040	D84076-3-4; D84177-5-2	3	3
D87041	D84076-3-5; D84019-2-2	3	2
D87044	D84076-3-5; D83213-4-1	2	4
D87047	D84046-1-1; D84270-2-2	3	7
D87048	D84017-4-2; D84270-2-2	2	-
D87049	D84046-1-1; D84270-2-2	-	-
D87050	D84182-4-1; D84270-2-2	-	3
D87062	D84076-3-4; IVS5	2	8
D87065	D84174-13-2; IVS6	6	5
D87066	D84153-9-1; IVS6	7	3
ILB 1814	-	-	-
ILB 1270	-	-	-
Local check	-	-	-

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.

4.8.1. FABA BEAN INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (FBIABN)

Material

The Faba bean International Ascochyta Blight Nursery included 22 test entries. The susceptible check was the local land race from the location where the nursery was to be grown.

Results and Discussion

Eight sets of FBIABN were distributed to cooperators in 8 countries. The results were, however, received from 3 locations. The results from locations reporting disease scores are presented here (Table 4.8.1).

Poland: The nursery was conducted at Radzikow. Eight entries namely A87175, A8721, A8729, A8759, A87218, A87245, A87273, and A87304 showed reaction between 4 and 5.

Syria: The nursery was conducted at Hama. All the entries including the susceptible check showed rating of 1.

U.K.: The nursery was conducted at Cambridgeshire. All the entries except A8729, A87215, A87273, Giza4 and the susceptible check showed reaction between 1 and 5.

Across locations, six entries namely A87175, A8721, A8759, A87218, A87245 and A87304 showed tolerant reactions.

4.8.2. FABA BEAN INTERNATIONAL CHOCOLATE SPOT NURSERY (FBICSN)

Material

The Faba Bean International Chocolate Spot Nursery included 22 test entries. The susceptible check was the local land race from the location where the nursery was to be grown.

Results and Discussion

Eight sets of FBICSN were distributed to cooperators in 8 countries, but the results were received back from 4 locations covering 4 countries. The disease scores were reported by 2 cooperators (Table 4.8.2.) and are discussed below:

Table 4.8.1. Reaction of faba bean entries to ascochyta blight in FBIABN at different locations during 1988/89.

Entry Name	BPL/ Cross No.	<u>POLAND</u> Radzikow	<u>SYRIA</u> Hama	<u>U.K.</u> Cambridge- shire
A876	BPL 365	6	1	5
A8712	BPL 472	6	1	4
A87175	S83135	5	1	3
A8715	BPL 818	6	1	3
A8717	A2	6	1	3
A8719	L83118	6	1	4
A8721	L83120	5	1	1
A8729	L83127	5	1	6
A8735	L83129	6	1	3
A8759	L82001	5	1	4
A87212	BPL 2138	6	1	3
A87215	BPL 2139	6	1	6
A87218	BPL 2144	5	1	4
A87223	BPL 2145	6	1	5
A87233	BPL 2148	6	1	4
A87245	BPL 2148	4	1	3
A87253	BPL 2152	7	1	5
A87273	BPL 2165	5	1	6
A87187	S83135	6	1	5
A87304	31818-1	4	1	2
ILB 1814	ILB 1814	6	1	5
Giza 4	Giza 4	6	1	8
Local susceptible check		6	1	6

Ethiopia: The nursery was conducted at Holetta. The reaction of entries revealed that all the entries except B8711, B7248, IIB 1814 and the susceptible check were resistant or tolerant.

U.K.: The nursery was conducted at Cambridgeshire. All the entries except B8722, B87111, and susceptible check were tolerant or resistant.

Across locations, the major differences between scores were noticed for B8722 indicating the differential reaction probably due to differences in Physiological race.

4.8.3. FABA BEAN INTERNATIONAL RUST NURSERY (FBIRN)

Material

The Faba Bean International Rust Nursery included 14 test entries. The susceptible check was the local land race from the location where the nursery was to be grown.

Results and Discussion

Eight sets of FBIRN were distributed to cooperators in 8 countries. The results were received from 3 locations in 3 countries and are presented.

The disease reaction of the entries to rust (Uromyces fabae) at different locations is given in Table 4.8.3.

Ethiopia: The nursery was conducted at Holetta. All the entries except R8710 showed rating of 3 or 5. Local susceptible check also showed 5 rating.

Italy: The nursery was conducted at Tarquinia. All the entries Except R8717, R8727, R8754, and local susceptible check showed tolerant or resistant reaction.

U.K.: The nursery was conducted at Cambridgeshire. Nine were rated between 3 and 5. Others including the susceptible check showed rating of 6.

Across locations seven entries namely, R878, R8724, R8742, R8759, R8761, R8715 and IIB 1814 were relatively tolerant lines.

Table 4.8.2. Reaction of faba bean entries to chocolate spot in FBICSN at different locations during 1988/89.

Entry Name	ILB/BPL/ Cross No.	Reaction	
		ETHIOPIA Holetta	U.K. Cambridgeshire
B8724	L83108	5	5
B8711	BPL 1179	7	5
B8715	BPL 1179	5	4
B8722	L83106	3	7
B8727	L83114	5	4
B87100	S83059	5	5
B87103	S83061	5	4
B87111	S83075	5	6
B87118	S83081	5	5
B87140	ILB 3025	3	3
B87142	ILB 3026	5	2
B87143	ILB 3026	5	4
B87158	ILB 3026	5	5
B87175	ILB 3027	5	5
B87187	ILB 3033	3	3
B87195	ILB 3034	3	4
B87201	ILB 3036	3	4
B87247	ILB 2282	5	5
B87248	ILB 2282	7	5
ILB 1814	-	7	5
Rebaya-40	-	5	5
Local susceptible check		7	8

Table 4.8.3. Reaction of faba bean entries to rust in FBIRN at different locations during 1988/89.

Entry Name	BPL/ Cross No.	Reaction		
		ETHIOPIA Holetta	ITALY Tarquinia	U.K. Cambridgeshire
R878	BPL 263	3	5	3
R8710	BPL 406	7	5	6
R8717	BPL 484	5	7	6
R8724	15563-2	5	5	4
R8727	L82014	5	6	5
R8735	BPL 552	5	3	6
R8742	BPL 571	5	5	5
R8746	BPL 588	5	3	6
R8754	BPL 627	5	6	5
R8759	BPL 663	5	3	3
R8761	BPL 665	5	3	4
B8715	BPL1179	5	5	5
ILB 1814	-	5	5	5
Rebaya-40	-	3	5	6
Local susceptible check		5	7	6

5. LENTIL INTERNATIONAL TRIALS AND NURSERIES

Fourteen lentil international trials and nurseries were available to cooperators in 1988/89 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 International 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 sets of the trial were sent to cooperators in 28 countries. The results were, however, returned from 29 trials from 16 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 49 days (for Zanjan in Iran) to 150 days (for Lincoln Newzealand); 86 days (for Ghazvin in Iran) to 208 days (for El Encin in Spain); 18 cm (for Izra'a in Syria) to 39 cm (for Poland in Pulawy), respectively.

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 17 out of 25 locations reporting the yield data. The seed yields varied from 99 kg/ha at Sidi Iaidi in Morocco to 2651 kg/ha at Guelma in Algeria. Among significant locations, at 10 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 84-148L, FLIP 87-16L, FLIP 87-12L, FLIP 87-17L, and 81S 38326 with seed yields of 1312, 1253, 1221, 1219, and 1217 kg/ha,

Table 5.1.1. Agronomic data for different locations in the LIYT-L during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
ALGERIA	Dahmouni-Tiaret	28.12.1988	21.06.1989	48	69		-	Treflan	Metropole
ALGERIA	Guelma	24.12.1988	20.06.1989		100		-	Treflan	NA
ALGERIA	Khroub	05.12.1988	28.06.1989	17	46		-	Treflan	Syrie-229
ALGERIA	Setif	29.11.1988	06.1989		100		-	Treflan	L.B. Chile
ALGERIA	Sidi Bel Abbas	03.12.1988	30.05.1989		46		-	-	Syrie-229
AUSTRALIA	Mintaro	25.05.1989	05.01.1990		125		-	Treflan & Lexone	ILL 5750
CHILE	Chillan	20.06.1989	15.12.1989		90		-	Treflan & Lexone	Oraueau-INIA
ECUADOR	Ambata	NA	NA	18	46		-	Afalon	IMIAP-406
IRAN	Ghazvin	11.04.1989	28.06.1989		100		-	-	Ghazvin
IRAN	Zanjan	20.04.1989	25.07.1989			150	7	-	Zanzan Local
IRAQ	Mahit (mosul)	10.01.1989	05.06.1989	-			-	-	Dohouk L.
JORDAN	Marow	24.11.1988	09.05.1989	18	45		-	-	Jordan 1
JORDAN	Mushagar	23.11.1988	21.05.1989	20	50		-	-	Jordan 1
LEBANON	Terbol	24.11.1988	10.05.1989		50		-	Kerb & Bladex	Idleb 1
MOROCCO	Sidi Laidi	15.11.1988	05.05.1989	-			-	Kerb & Bladex	U 24
NEWZEALAND	Lincoln	15.05.1989	24.12.1989	-			-	Bravo & Metasystox	Titore
POLAND	Pulawy	07.04.1989	03.08.1989		90		-	Afalon	Jnebisowska
SAUDI ARABIA	Al Aziziah	05.02.1989	22.05.1989	70	80		353mm	Dimethoate	NA
SPAIN	El Ensia	15.11.1988	20.06.1989	32	96		-	Prometryne	Angel-1
SYRIA	Breda	16.11.1988	05.05.1989	-			-	-	Hurani-1
SYRIA	Gelline	04.12.1988	08.05.1989	20	50		-	-	Idleb-1
SYRIA	Heimo	26.11.1988	23.05.1989		50		-	-	Idleb-1
SYRIA	Idleb	29.11.1988	08.05.1989		60		-	-	Idleb-1
SYRIA	Izra'a	02.01.1989	30.05.1989	-			-	-	Idleb-1
SYRIA	Tel Hadya	29.11.1988	27.05.1989		50		-	Kerb, Bladex	ILL 4401
TURKEY	Diyarbakir	09.12.1988	01.06.1989	30	60		-	-	Yerli Kirmizi
Tunisia	Beja	22.11.1988	-	-			-	-	Ouslatia
Tunisia	El-Kef	12.11.1988	-	-			-	-	-

NA = Not available

Table 5.1.2. Time to flowering (days) of entries at different locations in the LIYT-L during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA			
			Dahmouni	Guelma	Khroub+	Setif
Local large	-	Syria	146	104	127	122
Nablus	-	Palestine	143	104	123	119
78S 26002	-	Jordan	136	104	117	124
81S 38326	-	Syria	144	105	119	121
FLIP84- 27L	ILL 20 X ILLWL1	ICARDA	137	100	117	120
FLIP84-145L	ILL 101 X ILL 866	ICARDA	135	90	112	118
FLIP84-148L	ILL 889 X ILL 588	ICARDA	146	104	125	120
FLIP85- 35L	ILL 466 X ILL 212	ICARDA	132	100	116	119
FLIP85- 38L	ILL 466 X ILL 212	ICARDA	144	100	125	118
FLIP86- 2L	ILL 466 X ILL 212	ICARDA	135	99	116	119
FLIP86- 3L	ILL 466 X ILL 212	ICARDA	138	100	115	121
FLIP86- 5L	ILL 466 X ILL 212	ICARDA	139	100	116	118
FLIP86- 8L	ILL 466 X ILL 212	ICARDA	144	104	119	113
FLIP86- 10L	ILL 466 X ILL 212	ICARDA	139	99	117	121
FLIP86- 16L	ILL4349 X ILL4605	ICARDA	137	90	110	122
FLIP87- 2L	ILL 262 X ILL 350	ICARDA	144	104	124	116
FLIP87- 3L	ILL 262 X ILL 784	ICARDA	144	104	125	121
FLIP87- 5L	ILL2126 X ILL 643	ICARDA	146	104	124	120
FLIP87- 8L	ILL2129 X ILL 262	ICARDA	145	104	125	118
FLIP87- 12L	ILL 1 X ILL 262	ICARDA	133	104	127	117
FLIP87- 13L	ILL1880 X ILL 253	ICARDA	135	104	124	122
FLIP87- 16L	ILL 8 X ILL 212	ICARDA	139	104	117	115
FLIP87- 17L	ILL 8 X ILL 212	ICARDA	139	100	117	115
LOCAL CHECK	-		120	106	124	118
Location Mean			139	102	120	119
S.E. of Mean			0.06	0.14		0.07
L.S.D. at 5%			0.16	0.09		0.19
C.V. (%)			0.07	0.23		0.10
Error d.f.			46	46		46
Significance			*	*		*

+ Non-replicated

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	ALGERIA	CHILE	IRAN		IRAQ	JORDAN		LEBANON	NEWZEALAND	POLAND
	Sidi Bel Abbes	Chillan	Ghazvin	Zanjan	Mahit	Marow	Mushager	Terbol	Lincoln	Pulawy
Local large	123	117	62	46	104	130	134	125	152	58
Nablus	120	112	61	53	102	130	134	124	149	56
78S 26002	117	111	62	45	102	130	131	123	146	55
81S 38326	122	117	62	50	100	130	133	125	148	58
FLIP84- 27L	116	112	59	45	106	130	131	123	146	56
FLIP84-145L	117	108	60	50	100	122	133	123	150	57
FLIP84-148L	120	114	60	53	102	131	132	124	152	58
FLIP85- 35L	118	112	60	51	104	130	130	124	149	56
FLIP85- 38L	123	115	58	45	106	131	132	124	155	58
FLIP86- 2L	117	111	57	45	102	130	131	124	150	56
FLIP86- 3L	120	111	59	53	100	130	131	123	149	56
FLIP86- 5L	117	111	61	49	100	130	131	121	150	56
FLIP86- 8L	117	112	59	53	101	129	131	124	150	55
FLIP86- 10L	118	111	60	45	106	131	131	123	150	56
FLIP86- 16L	112	108	62	52	100	120	132	123	150	57
FLIP87- 2L	121	117	62	53	102	131	133	125	155	59
FLIP87- 3L	120	114	64	53	102	130	133	124	148	59
FLIP87- 5L	118	115	59	49	102	129	133	124	150	58
FLIP87- 8L	123	117	64	49	106	129	134	125	155	60
FLIP87- 12L	119	111	60	53	104	130	131	123	149	56
FLIP87- 13L	124	112	63	52	104	129	132	124	150	58
FLIP87- 16L	116	111	61	45	102	130	131	123	146	55
FLIP87- 17L	117	111	61	45	102	131	131	123	146	55
LOCAL CHECK	121	117	60	45	106	131	132	131	157	66
Location Mean	119	112	61	49	103	129	132	124	150	57
S.E. of Mean	1.51	0.70	1.50	0.07	0.52	0.51	0.49	0.38	0.14	0.25
L.S.D. at 5%	4.30	1.98	-	0.19	1.49	1.44	1.40	1.08	0.39	0.71
C.V. (%)	2.20	1.07	4.28	0.24	0.88	0.68	0.65	0.53	0.16	1.75
Error d.f.	46	46	46	46	46	46	46	46	46	46
Significance	*	*	NS	*	*	*	*	*	*	*

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	SAUDI ARABIA		SPAIN		SYRIA				TURKEY	Overall Mean
	Al Aziziah	El Encin	Breda	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local large	75	155	130	122	116	126	103	124	127	114
Nablus	69	148	123	117	113	123	95	118	126	111
78S 26002	75	146	124	116	113	123	96	120	121	110
81S 38326	80	154	129	122	114	123	100	124	124	113
FLIP84- 27L	75	148	123	117	112	123	95	117	125	110
FLIP84-145L	70	144	120	110	112	121	94	111	124	108
FLIP84-148L	75	147	125	118	115	123	98	121	127	113
FLIP85- 35L	75	147	123	115	112	122	93	117	122	110
FLIP85- 38L	75	153	126	119	114	123	95	122	127	127
FLIP86- 2L	75	145	123	113	112	122	92	117	122	109
FLIP86- 3L	71	144	123	112	112	122	92	117	120	110
FLIP86- 5L	74	146	123	113	112	121	94	116	120	106
FLIP86- 8L	73	150	124	116	113	122	93	118	122	110
FLIP86- 10L	74	146	122	115	112	122	94	117	116	110
FLIP86- 16L	69	144	121	111	111	121	95	112	123	108
FLIP87- 2L	79	153	125	120	115	123	99	122	128	113
FLIP87- 3L	76	149	125	121	115	123	101	123	126	113
FLIP87- 5L	80	150	126	122	115	123	97	120	125	112
FLIP87- 8L	77	149	126	121	115	123	99	122	127	114
FLIP87- 12L	76	148	123	116	113	122	94	119	124	111
FLIP87- 13L	74	147	125	119	113	123	97	121	127	106
FLIP87- 16L	76	147	123	113	113	121	94	118	122	110
FLIP87- 17L	76	147	123	112	113	121	93	118	121	109
LOCAL CHECK	-	171	127	118	113	121	95	121	126	
Location Mean	75	149	124	117	113	122	96	119	124	
S.E. of Mean	0.68	0.81	0.60	0.97	0.64	0.47	0.70	0.61	0.95	
L.S.D. at 5%	1.95	2.29	1.70	2.77	1.82	1.35	1.99	1.73	2.70	
C.V. (%)	1.59	0.94	0.83	1.44	0.98	0.67	1.27	0.89	1.33	
Error d.f.	44	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	*	

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

Table 5.1.3. Time to maturity (days) of entries at different locations in the LIYT-L during 1988/89.

Entry Name	ALGERIA			AUSTRALIA	CHILE	IRAN		IRAQ	JORDAN		LEBANON
	Dahmouni	Guelma	Sidi Bel	Abbes	Mintaro+	Chillan	Ghazvin	Zanjan	Mahit	Marow	Mushagar
Local large	162	146	166	203	161	92	93	137	170	164	164
Nablus	159	147	169	203	160	86	90	138	166	161	161
78S 26002	152	146	165	190	157	83	94	136	165	161	158
81S 38326	160	148	165	203	161	91	90	136	170	164	162
FLIP84- 27L	153	147	166	203	162	81	94	137	167	161	158
FLIP84-145L	154	146	169	210	162	83	100	136	162	160	160
FLIP84-148L	162	147	171	200	161	88	90	136	168	162	161
FLIP85- 35L	151	148	172	205	161	84	93	136	167	161	157
FLIP85- 38L	160	146	164	203	161	84	90	138	168	164	161
FLIP86- 2L	151	147	168	203	161	83	93	137	168	160	157
FLIP86- 3L	154	147	171	203	161	84	98	137	166	161	155
FLIP86- 5L	155	145	172	203	161	86	105	137	166	161	158
FLIP86- 8L	160	148	171	195	161	85	93	137	162	161	159
FLIP86- 10L	155	147	172	203	161	85	93	137	168	160	160
FLIP86- 16L	153	145	169	203	163	85	110	138	165	160	153
FLIP87- 2L	160	148	168	203	161	87	93	136	168	163	161
FLIP87- 3L	160	146	171	190	162	90	100	137	167	162	161
FLIP87- 5L	157	147	173	198	161	86	105	137	167	163	161
FLIP87- 8L	161	147	166	198	163	91	93	137	168	162	161
FLIP87- 12L	152	147	171	198	159	85	100	136	165	162	158
FLIP87- 13L	151	148	164	198	158	88	100	138	168	160	161
FLIP87- 16L	155	147	167	190	159	85	120	137	163	160	156
FLIP87- 17L	154	146	170	198	157	87	98	137	166	160	160
LOCAL CHECK	145	147	169	198	161	86	120	139	167	161	167
Location Mean	156	147	169	200	161	86	98	137	167	161	160
S.E. of Mean	0.53	0.42	3.05		0.73	2.14	0.03	0.65	0.95	0.65	0.59
L.S.D. at 5%	1.51	1.19	-		2.08	-	0.07	-	2.69	1.85	1.68
C.V. (%)	0.59	0.49	3.13		0.79	4.31	0.04	0.82	0.98	0.70	0.64
Error d.f.	46	46	46		46	46	23	46	46	46	46
Significance	*	*	NS		*	NS	*	NS	*	*	*

+ Non-replicated

Cont'd. ...

Table 5.1.3. Cont'd. ...

Entry Name	MOROCCO	POLAND	SAUDI ARABIA	SPAIN	SYRIA					TURKEY		Overall Mean
	Sidi Laidi	Pulawy	Al Aziziah	El Encin	Breda	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local large	168	111	113	214	168	153	151	158	143	158	172	153
Nablus	168	110	111	206	158	145	146	156	141	153	173	150
78S 26002	164	110	106	204	159	145	147	156	141	152	173	148
81S 38326	168	111	112	211	161	153	147	158	142	156	171	152
FLIP84- 27L	164	113	105	208	157	148	149	157	141	153	173	150
FLIP84-145L	160	118	113	213	152	144	142	155	142	147	173	150
FLIP84-148L	168	112	109	211	159	150	146	158	141	153	169	151
FLIP85- 35L	164	116	106	207	156	145	148	156	140	151	173	150
FLIP85- 38L	168	111	106	205	159	145	146	157	142	153	173	150
FLIP86- 2L	164	112	106	211	156	145	146	156	137	152	173	149
FLIP86- 3L	164	111	112	207	156	144	145	157	140	152	173	150
FLIP86- 5L	164	112	108	205	155	144	144	156	141	149	173	150
FLIP86- 8L	164	111	113	206	156	144	144	156	137	153	173	149
FLIP86- 10L	164	112	107	210	156	147	147	157	140	149	172	150
FLIP86- 16L	160	111	105	205	149	143	142	153	140	147	173	149
FLIP87- 2L	168	112	105	213	160	151	147	158	141	153	172	151
FLIP87- 3L	168	112	111	212	159	151	147	159	142	155	172	152
FLIP87- 5L	168	111	112	209	160	149	149	157	140	153	172	152
FLIP87- 8L	168	117	110	216	159	152	147	158	140	153	172	152
FLIP87- 12L	168	111	114	200	159	146	147	156	141	153	170	150
FLIP87- 13L	168	111	111	215	157	148	144	157	139	153	172	150
FLIP87- 16L	164	110	105	202	159	144	145	155	138	151	171	149
FLIP87- 17L	164	111	105	202	158	144	142	155	140	151	168	148
LOCAL CHECK	164	117	-	211	159	145	144	156	141	154	172	
Location Mean	166	112	109	208	158	147	146	157	140	152	172	
S.E. of Mean	0.13	0.60	0.60	1.19	1.57	1.38	1.41	0.53	1.06	0.66	0.89	
L.S.D. at 5%	0.37	1.71	1.70	3.38	4.47	3.94	4.00	1.51	3.00	1.88	2.53	
C.V. (%)	0.14	0.93	0.95	0.99	1.72	1.63	1.67	0.58	1.30	0.75	0.90	
Error d.f.	46	46	44	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	*	*	*	

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

Table 5.1.4. Plant height (cm) of entries at different locations in the LIYT-L during 1988/89.

Entry Name	ALGERIA			CHILE		IRAN		IRAQ	JORDAN		LEBANON	MOROCCO
	Guelma	Khroub	Setif	Sidi Bel Abbes	Chillan	Ghazvin	Zanjan	Mahit	Marow	Mushagar	Terbol	Sidi Laidi
Local large	34	39	26	23	31	25	25	28	23	33	35	30
Nablus	36	32	27	22	30	25	20	25	26	30	36	30
78S 26002	38	35	25	20	28	25	22	22	25	30	33	31
81S 38326	38	34	27	23	34	25	24	27	27	33	35	30
FLIP84- 27L	40	33	25	21	31	25	23	27	27	30	30	30
FLIP84-145L	23	38	35	25	32	26	25	25	23	35	37	32
FLIP84-148L	32	32	25	23	27	25	22	25	22	32	33	28
FLIP85- 35L	38	37	27	23	28	26	20	24	26	30	30	30
FLIP85- 38L	36	33	26	20	29	26	23	25	25	32	32	32
FLIP86- 2L	32	33	26	22	32	25	22	24	28	30	33	32
FLIP86- 3L	36	36	29	20	31	25	20	26	26	30	33	32
FLIP86- 5L	30	33	27	23	29	25	19	26	28	30	31	30
FLIP86- 8L	34	36	29	21	30	24	20	28	23	33	35	32
FLIP86- 10L	34	32	28	22	29	25	25	27	25	29	33	30
FLIP86- 16L	34	38	34	26	39	26	25	27	27	34	39	28
FLIP87- 2L	38	33	23	20	26	26	23	28	24	31	32	30
FLIP87- 3L	34	36	24	25	26	26	20	26	20	28	32	33
FLIP87- 5L	36	38	27	22	30	25	22	27	25	30	34	28
FLIP87- 8L	38	36	24	23	31	26	21	27	22	29	34	27
FLIP87- 12L	38	38	30	23	33	25	22	24	24	32	34	31
FLIP87- 13L	35	36	26	20	27	26	23	27	23	32	36	29
FLIP87- 16L	38	37	27	25	35	24	21	25	25	30	34	29
FLIP87- 17L	36	35	29	20	31	25	20	26	26	31	34	33
LOCAL CHECK	34	36	24	25	42	26	24	29	22	31	38	27
Location Mean	35	35	27	22	31	25	22	26	25	31	34	30
S.E. of Mean	0.20	1.63	0.28	1.85	1.73	0.69	0.20	1.49	1.73	1.17	1.11	0.06
L.S.D. at 5%	0.58	-	0.79	-	4.93	-	0.58	-	-	3.32	3.15	0.16
C.V. (%)	1.01	8.00	1.79	14.33	9.69	4.68	1.60	9.96	12.11	6.53	5.66	0.32
Error d.f.	46	46	46	46	46	46	46	46	46	46	46	46
Significance	*	NS	*	NS	*	NS	*	NS	NS	*	*	*

Cont'd. ...

Table 5.1.4. Cont'd. ...

Entry Name	NEWZEALAND	POLAND	SAUDI ARABIA	SPAIN	SYRIA					TURKEY		Overall Mean
	Lincoln	Pulawy	Al Aziziah	El Encin	Breda	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local large	39	40	24	37	17	27	28	35	18	21	26	29
Nablus	36	38	23	38	18	27	29	36	18	22	26	28
78S 26002	40	36	22	36	19	26	25	38	15	19	19	27
81S 38326	37	45	25	34	18	28	30	37	17	21	23	29
FLIP84- 27L	31	37	21	34	19	26	26	38	16	21	24	28
FLIP84-145L	31	35	23	42	22	28	30	36	20	21	25	29
FLIP84-148L	36	38	21	38	18	26	25	35	17	20	19	27
FLIP85- 35L	33	34	25	35	19	26	26	34	18	21	24	28
FLIP85- 38L	37	37	22	36	17	26	27	38	16	20	22	28
FLIP86- 2L	35	33	24	37	21	26	28	38	19	20	25	28
FLIP86- 3L	34	35	20	33	19	28	29	36	19	20	25	28
FLIP86- 5L	36	37	22	34	20	27	29	37	19	21	25	26
FLIP86- 8L	41	40	25	34	20	27	28	38	20	20	25	29
FLIP86- 10L	35	34	22	34	19	25	29	36	19	21	24	28
FLIP86- 16L	31	51	21	44	21	29	31	36	20	22	25	29
FLIP87- 2L	40	36	22	36	20	24	25	37	17	20	21	27
FLIP87- 3L	32	40	23	30	19	25	24	38	15	20	22	27
FLIP87- 5L	36	41	22	36	17	25	26	35	18	22	23	28
FLIP87- 8L	44	35	23	37	20	26	26	35	17	21	23	28
FLIP87- 12L	38	44	23	40	18	26	29	35	18	21	25	29
FLIP87- 13L	36	40	25	38	20	27	28	36	19	21	23	25
FLIP87- 16L	41	39	23	36	18	27	27	37	19	22	22	29
FLIP87- 17L	38	37	22	36	19	27	26	36	19	19	25	28
LOCAL CHECK	35	60	-	38	19	26	26	36	17	22	29	
Location Mean	36	39	23	36	19	26	27	36	18	21	24	
S.E. of Mean	2.89	2.29	1.38	1.81	0.86	0.58	1.04	1.49	0.84	0.75	1.53	
L.S.D. at 5%	-	6.53	-	5.15	2.46	1.66	2.97	-	2.39	-	4.36	
C.V. (%)	13.83	10.12	10.52	8.60	7.85	3.81	6.57	7.12	8.11	6.31	11.16	
Error d.f.	46	46	44	46	46	46	46	46	46	46	46	
Significance	NS	*	NS	*	*	*	*	NS	*	NS	*	

* = 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 LIYT-L during 1988/89.

Entry Name	ALGERIA								AUSTRALIA		CHILE		IRAN	
	Dahmouni		Guelma		Khroub		Setif		Mintaro		Chillan		Ghazvin	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local large	232	9	2437	19	1769	20	1655	6	2113	12	1430	5	182	22
Nablus	201	16	2743	11	2201	13	1345	20	2207	11	1230	10	256	20
78S 26002	163	17	2840	7	2583	5	1329	21	2901	2	1147	12	387	11
81S 38326	277	4	2799	9	2446	10	1950	2	2377	7	1311	7	40	24
FLIP84- 27L	118	23	2569	15	2033	14	1573	12	2398	6	1046	19	398	10
FLIP84-145L	125	22	2313	22	1143	24	1587	9	398	24	545	24	551	4
FLIP84-148L	131	20	2917	4	7181	1	1548	13	1606	20	964	21	327	16
FLIP85- 35L	128	21	2354	20	2791	4	1520	15	2302	9	931	23	591	3
FLIP85- 38L	212	12	2910	5	1959	16	1434	17	2922	1	1304	8	318	18
FLIP86- 2L	97	24	2500	18	2571	6	1607	8	2275	10	1070	17	509	5
FLIP86- 3L	246	7	2771	10	1788	19	1727	3	1915	15	1131	13	367	14
FLIP86- 5L	324	1	2667	13	1940	17	1718	4	1882	16	1093	16	349	15
FLIP86- 8L	227	10	2715	12	2506	9	1270	23	2647	3	1769	1	382	12
FLIP86- 10L	285	2	2271	23	1708	22	1683	5	1788	18	961	22	467	6
FLIP86- 16L	212	13	2347	21	1857	18	1275	22	763	23	1013	20	451	7
FLIP87- 2L	260	5	2507	17	2273	11	1362	19	1822	17	1116	14	144	23
FLIP87- 3L	284	3	2556	16	2213	12	1635	7	1468	22	1055	18	262	19
FLIP87- 5L	211	14	2875	6	3547	2	904	24	1964	14	1190	11	376	13
FLIP87- 8L	218	11	2646	14	1761	21	1537	14	1588	21	1348	6	402	9
FLIP87- 12L	260	6	2993	3	1993	15	1469	16	2498	5	1445	4	616	2
FLIP87- 13L	202	15	2000	24	1545	23	1397	18	1748	19	1099	15	224	21
FLIP87- 16L	163	18	3042	2	3324	3	1583	10	2375	8	1487	3	322	17
FLIP87- 17L	135	19	3049	1	2563	7	1579	11	2646	4	1295	9	416	8
LOCAL CHECK	246	8	2806	8	2548	8	2828	1	2026	13	1722	2	687	1
Location Mean	207		2651		2427		1563		2026		1196		376	
S.E. of Mean	67.95		202.07		1154.81		239.98		242.62		143.70		109.28	
L.S.D. at 5%	-		575.20		-		683.11		690.62		409.04		311.06	
C.V. (%)	56.96		13.20		82.42		26.59		20.74		20.81		50.35	
Error d.f.	46		46		46		46		46		46		46	
Significance	NS		*		NS		*		*		*		*	
Test > L. Check	-		-		-		-		2		-		-	

Table 5.1.5. Cont'd. ...

Entry Name	IRAN		IRAQ		JORDAN				LEBANON		MOROCCO		NEWZEALAND	
	Zanjan		Mahit		Marow		Mushagar		Terbol		Sidi Laidi		Lincoln	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local large	694	21	109	24	533	19	1151	5	1241	19	-	-	2779	8
Nablus	685	22	114	23	822	3	1193	4	1519	9	89	5	2392	12
78S 26002	926	9	148	12	733	9	922	19	1639	1	116	3	2588	11
81S 38326	898	12	137	17	578	16	1320	2	1426	14	58	12	3216	3
FLIP84- 27L	796	18	141	15	844	2	1041	16	1463	12	32	15	2067	17
FLIP84-145L	852	16	173	5	289	24	725	23	1204	23	420	1	952	24
FLIP84-148L	946	6	143	13	556	18	1036	17	1333	18	-	-	2906	7
FLIP85- 35L	1019	4	141	14	800	4	1120	9	1565	7	88	6	1902	20
FLIP85- 38L	898	13	136	18	600	14	1125	7	1361	16	-	-	2165	14
FLIP86- 2L	1130	1	162	8	911	1	1001	18	1634	2	69	9	2078	15
FLIP86- 3L	898	11	126	21	800	5	1125	8	1583	6	87	7	2244	13
FLIP86- 5L	713	20	197	3	758	7	1092	13	1500	10	47	14	1830	21
FLIP86- 8L	898	10	262	1	470	21	1093	12	1454	13	73	8	2072	16
FLIP86- 10L	935	7	207	2	622	12	1099	11	1588	5	96	4	2051	18
FLIP86- 16L	861	15	139	16	370	23	691	24	1528	8	222	2	1217	22
FLIP87- 2L	806	17	158	10	644	11	1055	14	1213	22	58	10	3281	1
FLIP87- 3L	1065	3	135	19	622	13	1105	10	1213	21	-	-	2040	19
FLIP87- 5L	583	24	175	4	756	8	864	21	1218	20	-	-	3118	4
FLIP87- 8L	778	19	166	7	511	20	873	20	1380	15	-	-	3262	2
FLIP87- 12L	926	8	133	20	578	17	1338	1	1620	4	-	-	3069	5
FLIP87- 13L	667	23	158	9	593	15	1146	6	1352	17	-	-	2636	10
FLIP87- 16L	870	14	155	11	770	6	1055	15	1630	3	58	11	2683	9
FLIP87- 17L	991	5	172	6	644	10	1241	3	1472	11	53	13	3054	6
LOCAL CHECK	1093	2	122	22	422	22	735	22	1102	24	24	16	1026	23
Location Mean	872		155		635		1048		1427		99		2359	
S.E. of Mean	134.58		34.38		100.17		135.46		70.51		23.95		280.27	
L.S.D. at 5%	-		-		285.14		-		200.72		69.17		797.79	
C.V. (%)	26.73		38.53		27.34		22.39		8.56		41.78		20.58	
Error d.f.	46		46		46		46		46		30		46	
Significance	NS		NS		*		NS		*		*		*	
Test > L. Check	-		-		9		-		18		4		21	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	POLAND		SAUDI ARABIA		SPAIN		SYRIA					
	Pulawy		Al Aziziah		El Encin		Breda		Gelline		Heimo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local large	823	7	1038	22	860	23	69	22	287	24	1243	5
Nablus	356	23	1707	1	1541	3	232	10	721	11	1363	2
78S 26002	560	17	1502	11	1287	12	226	11	888	1	1036	17
81S 38326	928	4	1418	14	1502	6	68	23	525	20	1420	1
FLIP84- 27L	636	13	1409	15	1163	18	324	8	840	2	1188	6
FLIP84-145L	414	20	1109	21	1019	21	364	4	528	19	978	18
FLIP84-148L	694	9	1640	3	1172	16	133	19	644	15	1067	13
FLIP85- 35L	628	14	1502	10	1294	11	356	5	802	3	908	22
FLIP85- 38L	643	11	724	23	1518	5	159	17	768	7	1044	16
FLIP86- 2L	569	16	1544	9	1524	4	400	2	659	13	942	19
FLIP86- 3L	187	24	1289	18	1171	17	349	7	798	4	1301	3
FLIP86- 5L	464	19	1489	12	875	22	399	3	693	12	1051	15
FLIP86- 8L	724	8	1604	5	1305	10	262	9	741	10	1088	12
FLIP86- 10L	636	12	1627	4	1240	13	350	6	628	16	1171	8
FLIP86- 16L	1147	1	1387	16	1617	2	477	1	541	18	903	23
FLIP87- 2L	560	18	1567	7	1192	15	131	20	494	22	888	24
FLIP87- 3L	864	6	1482	13	818	24	168	16	742	9	1053	14
FLIP87- 5L	1024	2	1289	19	1228	14	184	15	520	21	917	21
FLIP87- 8L	393	22	1560	8	1320	9	124	21	403	23	1095	11
FLIP87- 12L	928	3	1283	20	1473	7	154	18	657	14	1284	4
FLIP87- 13L	404	21	1604	6	1053	20	216	13	614	17	936	20
FLIP87- 16L	683	10	1684	2	1651	1	223	12	753	8	1183	7
FLIP87- 17L	615	15	1382	17	1331	8	194	14	778	6	1103	10
LOCAL CHECK	888	5	-	24	1116	19	56	24	781	5	1140	9
Location Mean	657		1341		1261		234		658		1096	
S.E. of Mean	89.63		122.53		160.96		30.34		96.65		152.92	
L.S.D. at 5%	255.14		348.80		458.19		86.36		275.11		-	
C.V. (%)	23.63		15.83		22.11		22.44		25.43		24.17	
Error d.f.	46		46		46		46		46		46	
Significance	*		*		*		*		*		NS	
Test > L. Check	1		23		2		18		0		-	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	SYRIA				TURKEY		TUNISIA				Overall (1) Mean	
	Idleb		Tel Hadya		Diyarbakir		Beja		El Kef		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R		
Local large	1679	19	180	24	413	11	1033	4	776	22	1030	20
Nablus	2152	5	331	8	339	16	983	7	922	12	1148	9
78S 26002	1620	21	322	9	282	22	1033	5	1094	4	1173	6
81S 38326	1977	11	227	22	381	15	1117	2	875	15	1217	5
FLIP84- 27L	1946	14	361	2	320	19	992	6	868	17	1106	14
FLIP84-145L	1585	23	283	17	280	23	733	24	976	7	797	23
FLIP84-148L	1689	18	292	15	382	14	967	8	1211	2	1312	1
FLIP85- 35L	1776	16	350	6	388	13	817	21	1101	3	1129	11
FLIP85- 38L	1946	13	318	10	508	3	800	22	991	6	1115	12
FLIP86- 2L	2292	1	359	3	452	9	892	16	956	9	1172	7
FLIP86- 3L	2280	2	349	7	521	2	867	19	830	19	1111	13
FLIP86- 5L	2162	4	401	1	426	10	925	11	899	13	1077	17
FLIP86- 8L	1944	15	292	14	330	18	908	13	741	23	1154	8
FLIP86- 10L	2268	3	351	5	479	7	875	17	870	16	1090	15
FLIP86- 16L	2138	6	356	4	277	24	900	14	961	8	976	22
FLIP87- 2L	1288	24	267	21	296	20	1267	1	1266	1	1077	16
FLIP87- 3L	1617	22	267	19	332	17	933	10	1078	5	1042	19
FLIP87- 5L	1667	20	267	20	295	21	1075	3	922	11	1132	10
FLIP87- 8L	1728	17	303	12	498	5	900	15	797	21	1066	18
FLIP87- 12L	2003	10	281	18	502	4	875	18	922	10	1221	3
FLIP87- 13L	1971	12	298	13	396	12	783	23	898	14	997	21
FLIP87- 16L	2120	7	307	11	477	8	833	20	698	24	1253	2
FLIP87- 17L	2028	9	286	16	484	6	942	9	864	18	1219	4
LOCAL CHECK	2046	8	214	23	584	1	917	12	828	20		
Location Mean	1913		303		402		932		931			
S.E. of Mean	158.08		28.68		49.71		88.95		121.95			
L.S.D. at 5%	449.99		81.64		141.50		-		-			
C.V. (%)	14.31		16.42		21.43		16.53		22.69			
Error d.f.	46		46		46		46		46			
Significance	*		*		*		NS		NS			
Test > L. Check	-		13		-		-		-			

(1) Sidi Laidi is excluded from the overall mean., * = Significant at $P < 0.05$, NS = Not significant.

Table 5.1.6. The five heaviest seed yielding entries at the individual locations in the LIYT-L during 1988/89.

Rank	ALGERIA				AUSTRALIA	CHILE	IRAN		IRAQ
	Dahmouni	Guelma	Khroub	Setif	Mintaro	Chillan	Ghazvin	Zanjan	Mahit
1	FLIP 86- 5L	FLIP 87- 17L	FLIP 84-148L	Local check	FLIP 85- 38L	FLIP 86- 8L	Local check	FLIP 86- 2L	FLIP 86- 8L
2	FLIP 86- 10L	FLIP 87- 16L	FLIP 87- 5L	81S 38326	78S 26002	Local check	FLIP 87- 12L	Local check	FLIP 86- 10L
3	FLIP 87- 3L	FLIP 87- 12L	FLIP 87- 16L	FLIP 86- 3L	FLIP 86- 8L	FLIP 87- 16L	FLIP 85- 35L	FLIP 87- 3L	FLIP 86- 5L
4	81S 38326	FLIP 84-148L	FLIP 85- 35L	FLIP 86- 5L	FLIP 87- 17L	FLIP 87- 12L	FLIP 84-145L	FLIP 85- 35L	FLIP 87- 5L
5	FLIP 87- 2L	FLIP 85- 38L	78S 26002	FLIP 86- 10L	FLIP 87- 12L	Local check	FLIP 86- 2L	FLIP 87- 17L	FLIP 84-145L
Cont'd. ...									
Rank	JORDAN		LEBANON	MOROCCO	NEWZEALAND	POLAND	SAUDI ARABIA	SPAIN	
	Marow	Mushagar	Terbol	Sidi Laidi	Lincoln	Pulawy	Al Aziziah	El Encin	
1	FLIP 86- 2L	FLIP 87- 12L	78S 26002	FLIP 84-145L	FLIP 87- 2L	FLIP 86- 16L	Nablus	FLIP 87- 16L	
2	FLIP 84- 27L	81S 38326	FLIP 86- 2L	FLIP 86- 16L	FLIP 87- 8L	FLIP 87- 5L	FLIP 87- 16L	FLIP 86- 16L	
3	Nablus	FLIP 87- 17L	FLIP 87- 16L	78S 26002	81S 38326	FLIP 87- 12L	FLIP 84-148L	Nablus	
4	FLIP 85- 35L	Nablus	FLIP 87- 12L	FLIP 86- 10L	FLIP 87- 5L	81S 38326	FLIP 86- 10L	FLIP 86- 2L	
5	FLIP 86- 3L	Local large	FLIP 86- 10L	Nablus	FLIP 87- 12L	Local check	FLIP 86- 8L	FLIP 85- 38L	
Cont'd. ...									
Rank	SYRIA				TURKEY		TURKEY		
	Breda	Gelline	Heimo	Idleb	Tel Hadya	Diyarbakir	Beja	El Kef	
1	FLIP 86- 16L	78S 26002	81S 38326	FLIP 86- 2L	FLIP 86- 5L	Local check	FLIP 87- 2L	FLIP 87- 2L	
2	FLIP 86- 2L	FLIP 84- 27L	Nablus	FLIP 86- 3L	FLIP 84- 27L	FLIP 86- 3L	81S 38326	FLIP 84-148L	
3	FLIP 86- 5L	FLIP 85- 35L	FLIP 86- 3L	FLIP 86- 10L	FLIP 86- 2L	FLIP 85- 38L	FLIP 87- 5L	FLIP 85- 35L	
4	FLIP 84-145L	FLIP 86- 3L	FLIP 87- 12L	FLIP 86- 5L	FLIP 86- 16L	FLIP 87- 12L	Local large	78S 26002	
5	FLIP 85- 35L	Local check	Local large	Nablus	FLIP 860 10L	FLIP 87- 8L	78S 26002	FLIP 87- 3L	

respectively.

The five best entries at different locations are given in Table 5.1.6. Some of the lines, namely, FLIP 87-12L, FLIP 86-2L, and FLIP 86-10L, occurred most frequently among the top five heaviest yielders and were thus comparatively widely adapted.

On the basis of average over two years for the common entries (Table 5.1.7), FLIP 84-148L ranked number 1 and was followed by 78S 26002, FLIP 86-8L, FLIP 85-38L, and 81S 38326 with seed yields of 1180, 1179, 1178, 1115, and 1112 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 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
Syrian local large	954	13	1030	12	992	13
Nabulus	1001	12	1148	6	1075	11
78S 26002	1184	2	1173	3	1179	2
81S 38326	1006	11	1217	2	1112	5
FLIP 84- 27L	1078	6	1106	10	1092	8
FLIP 84- 148L	1048	9	1312	1	1180	1
FLIP 85- 35L	1063	7	1129	7	1096	6
FLIP 85- 38L	1114	3	1115	8	1115	4
FLIP 86- 2L	1016	10	1172	4	1094	7
FLIP 86- 3L	1060	8	1111	9	1086	10
FLIP 86- 5L	1095	5	1077	11	1086	9
FLIP 86- 8L	1201	1	1115	5	1178	3
FLIP 86- 16L	1113	4	976	13	1045	12

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 three replications. The suggested plot size was four rows each 4 m long with an inter row spacing of 25 cm. Thirty five sets of trial were distributed to cooperators in 16 countries. The results were received for 18 trials from 9 countries and are reported. The agronomic

Table 5.2.1. Agronomic data for different locations in the LIYT-S during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/ Herbicide	Local Check
				N	P	K			
ALGERIA	Beni Slimane	28.12.1988	27.05.1989	50	100		-	Treflan	Syrie 229
ALGERIA	Setif	29.11.1988	01.06.1989		100		-	Treflan	Syrie 229
ALGERIA	Sidi Bel Abbas	03.12.1988	30.05.1989		46		-	-	Syrie 229
AUSTRALIA	Turretfield	13.06.1989	05.01.1990		60		-	Treflan, Lexore & Lemat	ILL 5750
LEBANON	Terbol	24.11.1988	10.05.1989		50		-	Kerb & Bladex	Idleb-1
MOROCCO	Sidi Laidi	16.11.1988	05.05.1989	-			-	-	U 24
NEWZEALAND	Lincoln	15.05.1989	24.12.1989	-			-	Bravo & Metasystox	Titare
SPAIN	El-Encia	16.11.1988	20.06.1989	32	96		-	Gesagard	Angela
SYRIA	Breda	16.11.1988	05.05.1989	-			-	-	Hurani-1
SYRIA	Gelline	04.12.1988	06.1989	20	50		-	-	Hurani-1
SYRIA	Heimo	26.11.1988	29.05.1989		50		-	-	Hurani-1
SYRIA	Idleb	29.11.1988	07.06.1989		60		-	-	Idleb-1
SYRIA	Izraa	24.12.1988	12.06.1989	20	50		-	-	Hurani-1
SYRIA	Tel Hadya	29.11.1988	27.05.1989		50		-	Kerb, Bladex	ILL 4400
TUNISIA	Beja	23.11.1988	-	-			-	-	Ouslatia
TUNISIA	El-Kef	12.11.1988	-	-			-	-	-
TURKEY	Diyarbakir	09.12.1988	01.06.1989	30	60		-	-	Yerli Kirmizi

Table 5.2.2. Time to flowering (days) of entries at different locations in the LIYT-S during 1988/89.

Entry Name	Pedigree	Origin	ALGERIA			LEBANON	NEWZEALAND
			Beni Slimane	Setif	Sidi Bel Abbes	Terbol	Lincoln
Local small	-	Syria	103	120	122	125	157
78S 26013	-	Jordan	102	121	118	125	155
FLIP84- 29L	ILL 20 X ILWL 1	ICARDA	100	109	121	123	150
FLIP84- 44L	ILL 500 X ILL 1719	ICARDA	106	121	118	125	155
FLIP84- 51L	ILL 883 X ILL470	ICARDA	98	108	122	124	155
FLIP84- 58L	ILL 39 X ILL 479	ICARDA	106	122	120	128	157
FLIP84- 59L	ILL 39 X ILL 784	ICARDA	105	122	119	125	155
FLIP84-105L	ILL 253 X ILL 470	ICARDA	103	116	120	123	150
FLIP85- 15L	ILL 101 X ILL 262	ICARDA	103	114	119	123	157
FLIP85- 22L	ILL 262 X ILL 479	ICARDA	103	118	118	124	155
FLIP86- 29L	ILL 501 X ILL 2	ICARDA	103	113	120	124	150
FLIP86- 32L	(ILL176 X ILL226)X(ILL345 X ILL217)	ICARDA	103	122	121	125	155
FLIP86- 63L	(ILL294 X ILL 35)X(ILL445 X ILL173)	ICARDA	101	118	121	124	155
FLIP86- 64L	(ILL445 X ILL47-)X(ILL333 X ILL199)	ICARDA	104	116	117	124	155
FLIP87- 27L	ILL 223 X ILL 2669	ICARDA	103	120	120	125	150
FLIP87- 30L	ILL 223 X ILL 2669	ICARDA	101	118	120	124	148
FLIP87- 36L	ILL 223 X ILL 2669	ICARDA	105	112	119	125	148
FLIP87- 39L	ILL 223 X ILL 2669	ICARDA	101	121	120	125	150
FLIP87- 48L	ILL4354 X ILL 922	ICARDA	105	112	117	125	155
FLIP87- 53L	ILL 4400 X ILL 703	ICARDA	106	115	121	131	155
FLIP87- 55L	ILL 4400 X ILL 703	ICARDA	101	119	119	126	155
FLIP87- 56L	ILL 2129 X ILL 13	ICARDA	98	113	123	124	150
FLIP87- 57L	ILL 2129 X ILL 13	ICARDA	103	113	120	123	157
Local check	-		100	122	119	131	163
Location Mean			103	117	120	125	154
S.E. of Mean			1.03	0.00	2.19	0.46	0.00
L.S.D. at 5%			2.94	0.00	-	1.30	0.00
C.V. (%)			1.74	0.00	3.17	0.63	0.00
Error d.f.			46	46	46	46	46
Significance			*	*	NS	*	*

Cont'd. ...

Table 5.2.2. CONT'd. ...

Entry Name	SPAIN			SYRIA				TURKEY	Overall Mean
	El Encin	Breda	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local small	152	126	122	135	124	100	123	128	126
78S 26013	154	124	122	136	127	102	125	127	126
FLIP84- 29L	144	121	114	132	121	98	116	122	121
FLIP84- 44L	156	128	123	137	127	106	126	127	127
FLIP84- 51L	147	122	116	134	123	99	113	125	122
FLIP84- 58L	154	132	123	136	128	103	127	127	128
FLIP84- 59L	155	133	122	137	127	103	124	126	127
FLIP84-105L	148	125	120	135	123	98	121	127	124
FLIP85- 15L	147	124	119	133	123	99	121	127	124
FLIP85- 22L	152	124	120	136	123	101	122	126	125
FLIP86- 29L	147	124	119	135	123	99	119	127	123
FLIP86- 32L	152	128	121	135	126	101	124	128	126
FLIP86- 63L	150	125	121	134	123	98	124	128	125
FLIP86- 64L	154	125	120	134	123	100	121	127	125
FLIP87- 27L	148	123	119	136	126	102	124	126	125
FLIP87- 30L	148	123	120	134	127	100	125	126	124
FLIP87- 36L	150	124	121	135	126	101	125	127	125
FLIP87- 39L	150	123	119	134	127	103	125	126	125
FLIP87- 48L	151	126	119	135	123	100	121	127	124
FLIP87- 53L	155	128	122	134	128	103	129	128	127
FLIP87- 55L	151	124	120	135	125	100	123	126	125
FLIP87- 56L	149	122	117	134	123	99	120	125	123
FLIP87- 57L	147	123	116	134	123	98	120	125	123
Local check	172	125	122	136	123	101	118	127	
Location Mean	151	125	120	135	125	101	122	126	
S.E. of Mean	0.95	0.50	0.68	0.39	0.46	0.81	0.87	0.75	
L.S.D. at 5%	2.70	1.44	1.94	1.10	1.30	2.31	2.46	2.13	
C.V. (%)	1.09	0.70	0.99	0.50	0.63	1.40	1.23	1.03	
Error d.f.	46	46	46	46	46	46	46	46	
Significance	*	*	*	*	*	*	*	*	

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

Table 5.2.3. Time to maturity (days) of entries at different locations in the LIYT-S during 1988/89.

Entry Name	ALGERIA			AUSTRALIA	LEBANON	MOROCCO	SPAIN
	Beni Slimane	Setif+	Sidi Bel Abbes	Turretfield	Terbol	Sidi Laidi	El Encin
Local small	136	213	167	172	156	166	199
78S 26013	137	206	166	167	151	167	197
FLIP84- 29L	135	213	169	171	158	157	202
FLIP84- 44L	136	195	169	172	159	166	198
FLIP84- 51L	134	209	170	171	158	151	211
FLIP84- 58L	138	204	168	171	161	167	207
FLIP84- 59L	138	196	169	168	160	167	204
FLIP84-105L	137	206	166	175	157	164	202
FLIP85- 15L	135	209	167	174	158	160	201
FLIP85- 22L	137	215	173	170	155	164	198
FLIP86- 29L	138	198	170	166	157	163	201
FLIP86- 32L	135	209	167	171	157	160	202
FLIP86- 63L	135	208	170	174	154	164	198
FLIP86- 64L	136	217	173	170	157	160	198
FLIP87- 27L	135	197	168	165	152	162	199
FLIP87- 30L	135	198	167	174	153	165	197
FLIP87- 36L	137	197	169	174	152	166	197
FLIP87- 39L	135	197	167	168	153	161	199
FLIP87- 48L	137	207	170	169	161	160	197
FLIP87- 53L	138	207	166	170	159	166	205
FLIP87- 55L	134	213	166	174	158	163	204
FLIP87- 56L	135	194	172	177	153	158	198
FLIP87- 57L	135	197	170	171	156	167	196
Local check	138	204	169	172	167	158	210
Location Mean	136	205	169	171	157	163	201
S.E. of Mean	0.68		3.19	1.65	0.91	0.11	1.58
L.S.D. at 5%	1.93		-	4.69	2.58	0.32	4.51
C.V. (%)	0.86		3.28	1.67	1.00	0.12	1.37
Error d.f.	46		46	46	46	46	46
Significance	*		NS	*	*	*	*

Table 5.2.3. Cont'd. ...

Entry Name	SYRIA						TURKEY	Overall Mean
	Breda	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local small	157	151	166	156	141	154	169	165
78S 26013	156	145	167	156	143	152	173	163
FLIP84- 29L	155	145	164	156	146	150	174	164
FLIP84- 44L	158	149	170	157	146	154	172	164
FLIP84- 51L	158	146	166	158	142	153	174	164
FLIP84- 58L	161	154	168	158	148	158	172	167
FLIP84- 59L	160	147	167	157	139	156	173	164
FLIP84-105L	158	145	163	156	147	151	173	164
FLIP85- 15L	159	148	163	156	146	151	173	164
FLIP85- 22L	155	144	163	155	139	152	168	163
FLIP86- 29L	155	145	162	154	140	151	170	162
FLIP86- 32L	158	147	166	156	145	155	172	164
FLIP86- 63L	156	148	161	155	141	151	170	163
FLIP86- 64L	157	146	164	155	147	151	174	165
FLIP87- 27L	155	144	164	156	144	157	171	162
FLIP87- 30L	155	145	164	157	143	159	173	163
FLIP87- 36L	154	145	164	157	143	159	173	163
FLIP87- 39L	156	144	164	156	145	159	173	163
FLIP87- 48L	158	145	164	155	145	152	172	164
FLIP87- 53L	160	151	164	158	144	158	171	165
FLIP87- 55L	158	153	163	157	145	151	172	165
FLIP87- 56L	155	145	165	155	145	151	173	163
FLIP87- 57L	156	144	166	155	142	151	173	163
Local check	158	148	165	156	144	151	174	
Location Mean	157	147	165	156	144	154	172	
S.E. of Mean	0.80	1.21	0.50	0.40	1.97	1.17	0.82	
L.S.D. at 5%	2.28	3.44	1.42	1.13	-	3.33	2.33	
C.V. (%)	0.88	1.43	0.52	0.44	2.37	1.32	0.83	
Error d.f.	46	46	46	46	46	46	46	
Significance	*	*	*	*	NS	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant, + Non-replicated.

Table 5.2.4. Plant height (cm) of different locations in the LIYT-S during 1988/89.

Entry Name	ALGERIA			LEBANON	MOROCCO	NEWZEALAND	SPAIN
	Ben Slimane	Setif	Sidi Bel Abbes	Terbol	Sidi Laidi	Lincoln	El Encin
Local small	26	30	23	34	31	32	34
78S 26013	24	24	22	32	33	37	33
FLIP84- 29L	18	30	21	31	28	31	33
FLIP84- 44L	28	27	23	35	26	26	34
FLIP84- 51L	28	32	22	37	35	35	35
FLIP84- 58L	28	30	23	36	28	38	39
FLIP84- 59L	23	28	20	35	31	32	34
FLIP84-105L	23	31	21	35	30	35	35
FLIP85- 15L	28	27	20	34	28	38	36
FLIP85- 22L	24	30	22	34	28	27	34
FLIP86- 29L	22	25	20	34	29	31	36
FLIP86- 32L	26	27	23	34	28	31	32
FLIP86- 63L	24	24	20	33	29	34	33
FLIP86- 64L	27	28	22	33	30	28	33
FLIP87- 27L	27	27	23	31	28	34	35
FLIP87- 30L	23	26	22	31	30	31	34
FLIP87- 36L	30	26	25	32	28	28	33
FLIP87- 39L	23	28	24	32	30	28	35
FLIP87- 48L	25	30	23	35	32	27	33
FLIP87- 53L	26	28	19	34	32	44	35
FLIP87- 55L	23	30	24	33	28	34	34
FLIP87- 56L	21	26	20	34	28	30	35
FLIP87- 57L	23	25	22	33	32	36	30
Local check	25	29	20	36	30	26	39
Location Mean	25	28	22	34	30	32	34
S.E. of Mean	2.28	0.30	1.83	0.98	0.07	3.12	1.78
L.S.D. at 5%	-	0.65	-	2.78	0.19	8.87	-
C.V. (%)	15.86	1.43	14.51	5.04	0.40	16.76	8.98
Error d.f.	46	46	46	46	46	46	46
Significance	NS	*	NS	*	*	*	NS

Cont'd. ...

Table 5.2.4. Cont'd. ...

Entry Name	SYRIA						TURKEY	Overall Mean
	Breda	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local small	16	25	28	35	18	20	22	27
78S 26013	17	28	27	35	19	20	22	27
FLIP84- 29L	19	27	29	37	21	19	28	27
FLIP84- 44L	18	27	30	36	18	21	24	27
FLIP84- 51L	19	29	30	38	22	23	27	29
FLIP84- 58L	18	28	31	37	20	23	22	29
FLIP84- 59L	19	26	30	37	21	19	26	27
FLIP84-105L	20	27	29	37	21	22	24	28
FLIP85- 15L	17	27	30	38	21	21	22	28
FLIP85- 22L	18	27	28	32	18	18	21	26
FLIP86- 29L	20	27	26	34	21	21	23	27
FLIP86- 32L	18	27	29	34	19	21	24	27
FLIP86- 63L	18	27	26	33	21	20	24	26
FLIP86- 64L	16	27	27	35	19	18	24	26
FLIP87- 27L	19	27	30	37	20	22	25	27
FLIP87- 30L	20	27	30	34	21	22	24	27
FLIP87- 36L	22	27	30	34	19	22	24	27
FLIP87- 39L	20	28	28	36	19	22	26	27
FLIP87- 48L	19	28	31	38	21	21	23	28
FLIP87- 53L	17	27	30	38	20	22	24	28
FLIP87- 55L	18	27	28	38	22	21	23	27
FLIP87- 56L	19	27	29	35	19	21	27	27
FLIP87- 57L	16	28	28	36	18	20	25	27
Local check	19	28	28	36	20	21	27	
Location Mean	18	27	29	36	20	21	24	
S.E. of Mean	1.25	0.61	0.62	1.39	0.90	1.06	1.06	
L.S.D. at 5%	-	1.73	1.76	-	2.56	-	3.01	
C.V. (%)	11.71	3.86	3.71	6.70	7.87	8.81	7.57	
Error d.f.	46	46	46	46	46	46	46	
Significance	NS	*	*	NS	*	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 1988/89.

Entry Name	ALGERIA				AUSTRALIA		LEBANON		NEWZEALAND		SPAIN		SYRIA	
	Beni Slimane		Setif		Turretfield		Terbol		Lincoln		El Encin		Breda	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local small	2389	19	1262	13	1067	19	1144	23	2034	15	1107	16	221	19
78S 26013	2511	13	1132	19	1744	9	1565	3	2091	12	1255	13	274	9
FLIP84- 29L	2483	15	1340	8	1779	7	1352	16	2092	11	962	21	342	2
FLIP84- 44L	2061	22	963	24	1892	6	1440	8	2154	8	1162	14	232	15
FLIP84- 51L	2633	10	1394	5	2278	3	1769	1	3033	1	1656	1	262	11
FLIP84- 58L	2083	21	1025	22	2268	4	1269	20	1806	18	726	24	88	24
FLIP84- 59L	2022	24	1196	16	2714	1	1347	18	2551	5	1293	11	188	20
FLIP84-105L	2850	6	1563	2	1077	18	1356	14	1438	20	1089	17	229	16
FLIP85- 15L	2494	14	1470	3	514	23	1370	13	1017	23	1615	2	162	21
FLIP85- 22L	3644	1	1375	6	641	22	1176	22	1501	19	1079	19	324	6
FLIP86- 29L	2039	23	1175	17	1426	13	1519	5	1939	16	1410	5	270	10
FLIP86- 32L	2222	20	1229	14	1473	11	1398	11	2171	7	903	22	242	14
FLIP86- 63L	2428	17	1048	21	838	20	1259	21	1294	21	1073	20	224	17
FLIP86- 64L	2556	12	1315	9	832	21	1347	17	1254	22	1313	9	147	22
FLIP87- 27L	2417	18	1146	18	1252	16	1426	9	2064	14	1334	7	327	3
FLIP87- 30L	3250	4	1108	20	1416	15	1398	12	2067	13	1123	15	280	8
FLIP87- 36L	2806	7	1283	10	1748	8	1343	19	1809	17	1300	10	324	5
FLIP87- 39L	3078	5	988	23	1417	14	1491	6	2118	10	1285	12	326	4
FLIP87- 48L	2789	8	1607	1	1466	12	1403	10	2146	9	1426	4	262	13
FLIP87- 53L	2672	9	1271	12	2360	2	1644	2	3016	2	1329	8	143	23
FLIP87- 55L	3400	3	1202	15	1081	17	1352	15	2468	6	896	23	262	12
FLIP87- 56L	3494	2	1354	7	501	24	1537	4	2638	4	1529	3	318	7
FLIP87- 57L	2583	11	1279	11	2245	5	1481	7	2937	3	1343	6	347	1
Local check	2450	16	1425	4	1648	10	1074	24	1008	24	1081	18	223	18
Location Mean	2640		1256		1487		1394		2027		1220		251	
S.E. of Mean	335.76		109.87		343.31		94.94		268.57		138.01		29.72	
L.S.D. at 5%	955.75		312.75		977.25		270.24		764.50		392.84		84.59	
C.V. (%)	22.03		15.15		40.00		11.80		22.95		19.59		20.52	
Error d.f.	46		46		46		46		46		46		46	
Significance	*		*		*		*		*		*		*	
Test > L. Check	2		0		1		18		18		3		7	

Table 5.2.5. Cont'd. ...

Entry Name	SYRIA								TUNISIA				TURKEY		Overall Mean	
	Gelline		Heimo		Idleb		Tel Hadya		Beja		El Kef		Diyarbakir		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R				
Local small	309	20	1017	9	2243	3	273	17	842	20	656	23	233	18	1057	22
78S 26013	538	4	825	20	1934	16	289	14	883	17	1211	5	200	22	1175	9
FLIP84- 29L	523	6	792	22	1951	14	347	4	1050	4	1068	13	488	2	1183	8
FLIP84- 44L	396	14	942	12	2114	7	314	7	1017	8	1047	15	451	6	1156	13
FLIP84- 51L	552	3	1095	3	2097	9	273	18	992	13	1438	3	407	8	1420	1
FLIP84- 58L	211	24	829	19	1785	17	242	20	1342	1	1044	16	224	21	1067	21
FLIP84- 59L	378	15	1038	8	1744	21	169	24	1000	9	1595	1	481	3	1265	5
FLIP84-105L	363	18	1047	6	2018	12	367	2	1025	6	843	20	364	10	1116	15
FLIP85- 15L	555	1	1151	2	2418	1	290	13	992	12	839	21	326	12	1087	18
FLIP85- 22L	333	19	1088	4	1769	19	346	5	875	18	649	24	270	15	1076	20
FLIP86- 29L	470	9	937	13	2059	11	312	8	833	22	1088	11	196	23	1120	14
FLIP86- 32L	505	7	873	17	1983	13	183	23	1000	10	906	19	302	14	1099	17
FLIP86- 63L	233	23	977	10	2086	10	273	16	700	24	698	22	317	13	960	23
FLIP86- 64L	479	8	1068	5	2251	2	316	6	983	14	927	18	336	11	1080	19
FLIP87- 27L	421	13	907	15	1760	20	241	21	833	21	1125	9	235	17	1106	16
FLIP87- 30L	440	12	805	21	1693	24	377	1	867	19	1172	7	191	24	1156	12
FLIP87- 36L	458	10	732	23	1701	23	278	15	1033	5	1240	4	227	20	1163	11
FLIP87- 39L	552	2	690	24	1719	22	306	10	1000	11	1052	14	265	16	1163	10
FLIP87- 48L	532	5	836	18	2231	4	301	11	1158	3	1156	8	228	19	1253	6
FLIP87- 53L	378	16	910	14	1784	18	218	22	1283	2	1109	10	463	5	1327	3
FLIP87- 55L	272	22	1154	1	2098	8	367	3	908	16	984	17	411	7	1204	7
FLIP87- 56L	295	21	1039	7	2178	6	271	19	1017	7	1208	6	371	9	1268	4
FLIP87- 57L	458	11	895	16	2194	5	296	12	808	23	1536	2	502	1	1350	2
Local check	377	17	963	11	1947	15	311	9	925	15	1072	12	473	4		
Location Mean	418		942		1990		290		974		1069		332			
S.E. of Mean	65.68		99.30		135.70		39.53		85.56		168.65		70.27			
L.S.D. at 5%	186.95		-		386.26		112.53		243.56		480.08		200.03			
C.V. (%)	27.24		18.26		11.81		23.62		15.22		27.32		36.70			
Error d.f.	46		46		46		46		46		46		46			
Significance	*		NS		*		*		*		*		*			
Test > L. Check	0		-		1		0		2		1		0			

* = Significant at $P < 0.05$, NS = Not significant,

Table 5.2.6. The five heaviest seed yielding entries at the individual locations in the LIVT-S during 1988/89.

Rank	ALGERIA		AUSTRALIA	LEBANON	NEWZEALAND	SPAIN	SYRIA
	Beni Slimane	Setif	Turretfield	Terbol	Lincoln	El Encin	Breda
1	FLIP 85- 22L	FLIP 87- 48L	FLIP 84- 59L	FLIP 84- 51L	FLIP 84- 51L	FLIP 84- 51L	FLIP 87- 57L
2	FLIP 87- 56L	FLIP 84-105L	FLIP 87- 53L	FLIP 87- 53L	FLIP 87- 53L	FLIP 85- 15L	FLIP 84- 29L
3	FLIP 87- 55L	FLIP 85- 15L	FLIP 84- 51L	78S 26013	FLIP 87- 57L	FLIP 87- 56L	FLIP 87- 27L
4	FLIP 87- 30L	Local check	FLIP 84- 58L	FLIP 87- 56L	FLIP 87- 56L	FLIP 87- 48L	FLIP 87- 39L
5	FLIP 87- 39L	FLIP 84- 51L	FLIP 87- 57L	FLIP 86- 29L	FLIP 84- 59L	FLIP 86- 29L	FLIP 87- 36L

Cont'd. ...

Rank	SYRIA				TUNISIA	TURKEY
	Gelline	Heimo	Idleb	Tel Hadya	Beja	El Kef Diyarbakir
1	FLIP 85- 15L	FLIP 87- 55L	FLIP 85- 15L	FLIP 87- 30L	FLIP 84- 58L	FLIP 84- 59L FLIP 87- 57L
2	FLIP 87- 39L	FLIP 85- 15L	FLIP 86- 64L	FLIP 84-105L	FLIP 87- 53L	FLIP 87- 57L FLIP 84- 29L
3	FLIP 84- 51L	FLIP 84- 51L	Local small	FLIP 87- 55L	FLIP 87- 48L	FLIP 84- 51L FLIP 84- 59L
4	78S 26013	FLIP 85- 22L	FLIP 87- 48L	FLIP 84- 29L	FLIP 84- 29L	FLIP 87- 36L Local check
5	FLIP 87- 48L	FLIP 86- 64L	FLIP 87- 57L	FLIP 85- 22L	FLIP 87- 36L	78S 26013 FLIP 87- 53L

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 101 days for Izra'a in Syria to 154 days for Lincoln in Newzealand; 136 days for Beni Slimane in Algeria to 205 days for Setif in Algeria; and 18 cm for Breda in Syria to 36 cm for Idleb in Syria, respectively. The entries FLIP 84-51L and FLIP 84-58L with plant height of 29 cm were among the tallest.

The seed yields and rank of entries at different locations are given in Table 5.2.5. The ANOVA revealed that the differences among the entries were significant for 13 out of 14 locations reporting data. The seed yields varied from 251 kg/ha at Breda in Syria to 2640 kg/ha at Beni Slimane in Algeria. 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- 51L, FLIP 87- 57L, FLIP 87-53L, FLIP 87-56L, and FLIP 84- 59L with seed yields of 1420, 1350, 1327, 1268, and 1265 kg/ha, respectively.

The five best entries at different locations are given in Table 5.2.6. The lines, FLIP 84- 51L and FLIP 87- 57L occurred most frequently among the top five than others and were thus comparatively widely adapted.

On the basis of average over two years for the common entries (Table 5.2.7), FLIP 84- 51L ranked number 1 and was closely followed by FLIP 84-29L, FLIP 84- 58L, 78S 26013, and FLIP 84- 59L with seed yields of 1393, 1357, 1329, 1320, and 1292 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 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
Local Small	1120	14	1057	13	1089	14
78S 26013	1465	3	1175	4	1320	4
FLIP 84- 29L	1531	2	1183	3	1357	2
FLIP 84- 44L	1279	9	1156	5	1218	8
FLIP 84- 51L	1366	6	1420	1	1393	1
FLIP 84- 58L	1590	1	1067	12	1329	3
FLIP 84- 59L	1319	8	1265	2	1292	5
FLIP 84-105L	1151	13	1116	7	1134	12
FLIP 85- 15L	1242	12	1087	9	1165	11
FLIP 85- 22L	1264	10	1076	11	1170	10
FLIP 86- 29L	1453	4	1120	6	1287	6
FLIP 86- 32L	1320	7	1099	8	1210	9
FLIP 86- 63L	1246	11	960	14	1103	13
FLIP 86- 64L	1374	5	1080	10	1227	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 3 replications. The suggested plot size was four rows each 4 m long with an inter row spacing of 25 cm. Thirty five sets of trials were distributed to cooperators in 20 countries. The results were received for 11 trials from 11 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 48 days for Debre Zeit in Ethiopia to 154 days for Rabiah in Iraq; 105 days for Bvumbwe in Malawi to 187 days for Rabiah in Iraq; and 16 cm for Rabiah in Iraq to 52 cm for Debre Zeit in Ethiopia, respectively. On an average over locations, the entry means ranged from 92 to 110 days for time to flowering, 139 to 151 days for time to maturity, and 28 to 35 cm for plant height. The highest seed yield (Table 5.3.5) was obtained at Faisalabad in Pakistan (1564 kg/ha) and was followed by Passo Fundo in Brazil (1434 kg/ha), and Delhi in India (1309 kg/ha). The seed yield at Rabiah in Iraq was, however, extremely poor (63 kg/ha).

On an average over locations, the five best entries included Pant L 639, Pant L 406, LL 57, FLIP 84-112L and Precoz with respective seed yields of 956, 906, 898, 854, 843 kg/ha.

The ANOVA for seed yield revealed that at 5 locations the local check was excelled by some entries by a significant margin ($P \leq 0.05$).

The five best entries in each of the locations are given in Table 5.3.6. The entries, Pant L 639, LL 1, Precoz and FLIP 84-112L occurred most frequently among the five heaviest yielders and were thus comparatively better in adaptation.

On the basis of average performance over two years for the common entries (Table 5.3.7), Precoz ranked number 1 and was closely followed by Pant L 639, FLIP 86-38L, L 1057, and FLIP 86-39L with seed yields of 1223, 1183, 1148, 1132, and 1120 kg/ha, respectively.

Table 5.3.1. Agronomic data for different locations in the LIYT-E during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
BANGLADESH	Mymensingh	18.11.1988	20.04.1989	-			-	-	BM 681
BRAZIL	Passo Fundo	24.07.1989	20.12.1989	17	70		-	-	DF 6.69
ETHIOPIA	Debre Zeit	24.07.1989	-	-			-	Bravo & Benlate	EL 142
INDIA	Delhi	-	-	-			-	-	L4076-
IRAQ	Rabiah	16.11.1988	01.06.1989	-			-	-	Dohouk Local
MALAWI	Buvmbwe	15.06.1989	20.10.1989	25			5	-	-
Mynamar	Kyehmon	26.11.1988	31.03.1989	-			2	-	Hmone Ywa Local
NEPAL	Khumaltar	06.11.1988	28.04.1989	20	40	20	-	-	Simrik
NEWZEALAND	Lincoln	15.05.1989	24.12.1989	-			-	Metasystox	Titae
PAKISTAN	Faisalabad	21.11.1988	07.05.1989	20	60		1	-	Masoor 85
SYRIA	Tel Hadya	29.11.1988	27.05.1989		50		-	Kerb, Bladex	ILL 4401

Table 5.3.2. Time to flowering (days) of entries at different locations in the LIYT-E during 1988/89.

Entry Name	Parentage	Origin	BANGLADESH	BRAZIL	ETHIOPIA	INDIA
			Mymensingh	Passo Fundo	Debre Zeit	Delhi
EL 42	-	Ethiopia	92	83	47	82
ILL 1866	-	Syria	103	89	57	100
ILL 1983	-	Ethiopia	93	78	44	89
L 1057	-	Ethiopia	89	71	43	87
L 1327	-	Ethiopia	103	87	71	100
Pant L 406	-	India	90	79	45	89
Pant L 639	-	India	92	71	43	90
L 1278	-	India	89	80	43	88
L 1282	-	India	92	74	40	86
LL 1	-	India	92	74	43	88
LL 37	-	India	92	78	47	91
LL 57	-	India	102	82	52	102
162	-	Pakistan	93	71	44	90
Precoz	-	Argentina	89	76	52	71
FLIP84- 60L	ILL 500 X ILL 254	ICARDA	110	85	57	95
FLIP84-112L	ILL 883 X ILL 470	ICARDA	86	81	46	88
FLIP84-133L	ILL 883 X ILL 470	ICARDA	94	84	41	80
FLIP86- 38L	ILL 262 X ILL 3458	ICARDA	98	75	51	84
FLIP86- 39L	ILL 1 X ILL 936	ICARDA	93	77	43	86
FLIP86- 50L	ILL 4349 X ILL 4605	ICARDA	85	76	53	74
FLIP87- 70L	ILL 2526 X ILL 253	ICARDA	91	71	46	83
FLIP87- 75L	ILL 4380 X ILL 99	ICARDA	94	79	45	86
FLIP87- 76L	ILL 4353 X ILL 4354	ICARDA	116	74	48	82
Local check	-		64	97	49	86
Location Mean			93	79	48	87
S.E. of Mean			3.16	1.42	0.99	1.47
L.S.D. at 5%			9.00	4.03	2.80	4.20
C.V. (%)			5.86	3.11	3.57	2.92
Error d.f.			46	46	46	46
Significance			*	*	*	*

Cont'd. ...

Table 5.3.2. Cont'd. ...

Entry Name	IRAQ	MALAWI	MYNAMAR	NEPAL	NEWZEALAND	PAKISTAN	SYRIA	(1) Overall Mean
	Rabiah	Burmbwe	Kyehmon	Khumaltar	Lincoln	Faisalabad	Tel Hadya	
EL 42	155	62	68	119	139	94	112	98
ILL 1866	153	73	-	129	148	107	117	108
ILL 1983	152	67	72	119	150	89	119	100
L 1057	153	65	67	119	140	90	117	97
L 1327	153	77	-	131	150	112	118	110
Pant L 406	153	69	75	119	148	97	119	101
Pant L 639	153	69	75	119	148	94	118	100
L 1278	153	69	69	118	148	95	120	100
L 1282	154	66	75	119	146	95	120	99
LL 1	154	68	71	119	142	97	119	100
LL 37	153	69	73	128	148	99	119	102
LL 57	155	78	-	128	155	111	127	109
162	155	70	75	119	142	94	118	100
Precoz	153	57	66	92	139	80	111	92
FLIP84- 60L	152	70	-	127	148	106	118	107
FLIP84-112L	155	63	60	91	148	94	113	97
FLIP84-133L	153	53	54	91	142	82	111	93
FLIP86- 38L	153	64	72	124	139	97	111	100
FLIP86- 39L	155	67	-	114	146	95	111	99
FLIP86- 50L	153	58	61	94	139	82	111	93
FLIP87- 70L	154	66	75	115	146	89	115	98
FLIP87- 75L	153	68	75	115	139	93	114	99
FLIP87- 76L	154	62	66	119	139	89	110	99
Local check	160	-	58	111	163	91	119	
Location Mean	154	67	69	116	146	95	116	
S.E. of Mean	0.33	1.02	1.78	2.08	0.00	0.62	0.58	
L.S.D. at 5%	0.94	2.91	5.10	5.91	0.00	1.77	1.66	
C.V. (%)	0.37	2.66	4.48	3.11	0.00	1.14	0.87	
Error d.f.	46	44	36	46	46	46	46	
Significance	*	*	*	*	*	*	*	

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

Table 5.3.3. Time to maturity (days) of entries at different locations in the LIYT-E during 1988/89.

Entry Name	BANGLADESH	BRAZIL	INDIA	IRAQ	MALAWI	MYNAMAR	NEPAL	PAKISTAN	SYRIA	(1)
	Mymensingh	Passo Fundo	Delhi	Rabiah	Buvmbwe	Kyehmon	Khumaltar	Faisalabad	Tel Hadya	Overall Mean
EL 42	144	128	129	191	105	127	163	155	148	145
ILL 1866	152	132	137	188	110	-	172	162	151	151
ILL 1983	130	125	124	181	102	125	161	146	152	140
L 1057	130	122	127	181	105	125	163	152	152	141
L 1327	145	131	140	184	110	-	173	164	151	150
Pant L 406	130	123	134	191	106	130	170	155	152	145
Pant L 639	130	119	129	185	105	130	162	145	152	141
L 1278	130	123	123	192	104	127	162	153	151	142
L 1282	130	129	128	185	102	135	162	148	151	142
LL 1	130	124	132	188	103	129	162	151	152	143
LL 37	131	125	130	185	107	130	164	154	153	144
LL 57	138	120	138	184	108	-	171	160	153	147
162	130	128	127	188	104	134	162	150	151	143
Precoz	140	118	119	186	99	127	171	141	146	140
FLIP84- 60L	155	121	139	188	108	-	172	161	152	149
FLIP84-112L	144	126	132	191	110	120	172	159	155	149
FLIP84-133L	145	130	131	192	112	110	169	149	158	148
FLIP86- 38L	145	115	126	183	104	130	169	157	147	143
FLIP86- 39L	139	127	132	187	110	-	165	155	151	146
FLIP86- 50L	137	124	124	181	99	120	166	144	148	140
FLIP87- 70L	130	110	119	192	102	135	161	146	150	139
FLIP87- 75L	133	125	128	192	104	135	162	147	149	143
FLIP87- 76L	145	129	116	184	100	126	162	154	147	142
Local check	112	147	134	188	-	115	160	150	153	
Location Mean	136	125	129	187	105	127	166	152	151	
S.E. of Mean	1.44	1.88	3.23	0.55	0.94	0.02	0.38	0.62	0.62	
L.S.D. at 5%	4.11	5.36	9.20	1.57	2.69	0.05	1.08	1.77	1.75	
C.V. (%)	1.83	2.61	4.34	0.51	1.55	0.03	0.40	0.71	0.71	
Error d.f.	46	46	46	46	44	36	46	46	46	
Significance	*	*	*	*	*	*	*	*	*	

(1) Kyehmon is excluded from the overall mean, * = 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 1988/89.

Entry Name	BANGLADESH	BRAZIL	ETHIOPIA	INDIA	IRAQ	MALAWI	MYNAMAR	NEPAL	NEWZEALAND	PAKISTAN	SYRIA	Overall Mean
	Mymen-singh	Passo-Fundo	Debre Zeit	Delhi	Rabiah	Buvmbwe	Kyehmon	Khumal-tar	Lincoln	Faisal-abad	Tel Hadya	
EL 42	31	20	54	39	16	27	22	27	32	47	18	30
ILL 1866	31	18	56	48	15	24	18	24	28	59	18	31
ILL 1983	43	19	50	55	16	25	22	27	27	51	16	32
L 1057	37	24	55	61	13	26	21	27	28	51	15	33
L 1327	30	17	64	50	17	30	20	24	34	52	23	33
Pant L 406	38	23	54	55	15	27	25	34	29	52	16	33
Pant L 639	42	25	50	57	14	25	24	30	28	55	18	33
L 1278	39	23	49	58	15	26	25	31	30	53	16	33
L 1282	42	25	48	51	18	26	22	30	29	44	17	32
LL 1	36	25	47	51	17	26	25	30	25	51	14	32
LL 37	40	21	50	51	14	26	20	28	25	57	16	32
LL 57	31	22	56	55	18	27	19	34	31	49	18	33
162	39	25	50	58	15	25	22	27	27	51	15	32
Precoz	30	22	55	44	16	25	27	27	26	44	20	30
FLIP84- 60L	30	26	57	49	14	30	19	25	32	48	21	32
FLIP84-112L	44	30	51	45	16	31	27	26	29	53	22	34
FLIP84-133L	30	18	46	47	15	30	25	23	36	50	20	31
FLIP86- 38L	28	23	56	45	15	26	22	23	20	52	20	30
FLIP86- 39L	36	18	39	42	16	25	18	24	27	46	19	28
FLIP86- 50L	34	23	55	43	21	28	21	42	32	60	24	35
FLIP87- 70L	32	23	50	41	15	21	22	23	20	43	13	28
FLIP87- 75L	34	22	47	40	13	24	25	27	24	41	17	29
FLIP87- 76L	31	27	57	45	16	26	24	33	28	47	21	32
Local check	33	16	56	61	22	-	24	27	31	50	21	
Location Mean	35	22	52	50	16	26	22	28	28	50	18	
S.E. of Mean	2.33	0.95	2.15	5.11	0.36	1.30	2.45	1.40	2.96	0.90	0.98	
L.S.D. at 5%	6.64	2.69	6.13	-	1.02	3.71	-	3.79	-	2.56	2.79	
C.V. (%)	11.54	7.36	7.14	17.86	3.89	8.57	18.91	8.62	18.18	3.10	9.35	
Error d.f.	46	46	46	46	46	44	46	46	46	46	46	
Significance	*	*	*	NS	*	*	NS	8	NS	*	*	

* = Significant at $P < 0.05$, 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 1988/89.

Entry Nema	BANGLADESH		BRAZIL		ETHIOPIA		INDIA		IRAQ		MALAWI	
	Mymensingh		Passo Fundo		Debre Zeit		Delhi		Rabiah		Bvumbwe	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
EL 42	38	22	887	22	478	14	771	22	66	6	818	19
ILL 1866	38	21	1540	9	537	13	229	24	57	8	862	17
ILL 1983	656	7	967	21	803	9	1542	7	100	4	1002	10
L 1057	656	6	1496	11	357	17	1979	2	50	14	1213	1
L 1327	51	17	1147	18	7	24	396	23	51	13	382	23
Pant L 406	711	5	1280	16	590	12	1438	10	43	15	887	15
Pant L 639	789	1	1878	4	157	23	1425	11	111	3	1022	8
L 1278	600	10	1193	17	278	21	1125	18	23	24	951	12
L 1282	644	8	1291	15	337	19	1500	8	259	1	1089	5
LL 1	711	4	1933	2	357	18	1667	5	23	23	1098	3
LL 37	733	3	1127	20	622	11	1229	16	62	7	840	18
LL 57	456	11	1507	10	1068	4	1375	13	25	21	780	20
162	644	9	1836	5	327	20	1708	4	82	5	996	11
Precoz	211	15	1573	8	1033	5	2163	1	132	2	1082	6
FLIP84- 60L	90	16	1460	13	160	22	813	21	40	17	951	13
FLIP84-112L	44	19	2218	1	768	10	1292	15	34	19	673	22
FLIP84-133L	29	24	1422	14	887	7	1334	14	28	20	762	21
FLIP86- 38L	45	18	1827	6	1860	1	1229	17	56	10	1009	9
FLIP86- 39L	300	14	824	23	408	15	1750	3	43	16	1091	4
FLIP86- 50L	44	20	1489	12	837	8	1093	19	23	22	1044	7
FLIP87- 70L	422	12	1893	3	1482	2	1417	12	57	9	1104	2
FLIP87- 75L	356	13	1129	19	360	16	1479	9	39	18	884	16
FLIP87- 76L	33	23	1696	7	893	6	875	20	54	11	896	14
Local check	756	2	813	24	1342	3	1583	6	54	12	-	-
Location Mean	377		1434		664		1309		63		932	
S.E. of Mean	81.80		131.14		210.72		308.30		34.44		104.28	
L.S.D. at 5%	232.84		373.28		599.81		877.58		98.04		297.20	
C.V. (%)	37.54		15.84		54.93		40.80		94.70		19.38	
Error d.f.	46		46		46		46		46		44	
Significance	*		*		*		*		*		*	
Test > L. Check	0		17		0		0		1		1	

Cont'd. ...

Table 5.3.5. COnt'd. ...

Entry Name	MYNAMAR		NEPAL		NEWZEALAND		PAKISTAN		SYRIA		Overall Mean	
	KyeHmon		Khumaltar		Lincoln		Faisalabad		Tel Hadya		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
EL 42	191	14	663	11	555	11	1007	23	239	13	519	22
ILL 1866	0	-	518	13	1135	1	1160	22	302	8	580	21
ILL 1983	159	17	465	15	231	20	1729	8	211	16	715	15
L 1057	451	7	505	14	695	8	1632	14	171	20	837	6
L 1327	0	-	128	24	783	5	708	24	424	2	371	23
Pant L 406	138	18	2413	1	520	13	1715	9	228	14	906	2
Pant L 639	478	6	1902	3	708	6	1875	3	177	19	956	1
L 1278	382	9	1031	4	374	15	2014	1	162	21	739	14
L 1282	98	19	128	23	1024	4	1667	12	196	18	748	13
LL 1	521	4	744	9	204	22	1674	10	147	23	825	8
LL 37	433	8	459	17	292	18	1736	7	152	22	699	17
LL 57	0	-	2367	2	696	7	1292	21	318	7	898	3
162	225	12	700	10	298	17	1674	11	123	24	783	11
Precoz	496	5	398	18	468	14	1458	18	257	12	843	5
FLIP84- 60L	0	-	396	19	535	12	1667	13	324	6	585	20
FLIP84-112L	296	10	928	5	1087	3	1764	5	284	9	854	4
FLIP84-133L	885	1	144	22	1095	2	1736	6	222	15	777	12
FLIP86- 38L	173	16	463	16	225	21	1528	16	358	4	797	9
FLIP86- 39L	0	-	271	21	282	19	1326	20	499	1	618	19
FLIP86- 50L	789	3	885	7	599	10	1542	15	340	5	790	10
FLIP87- 70L	186	15	892	6	146	23	1340	19	202	17	831	7
FLIP87- 75L	202	13	277	20	123	24	1917	2	267	10	639	18
FLIP87- 76L	275	11	777	8	358	16	1521	17	386	3	706	16
Local check	828	2	653	12	675	9	1854	4	264	11		
Location Mean	300		754		546		1564		261			
S.E. of Mean	64.21		174.40		200.07		81.01		41.89			
L.S.D. at 5%	182.77		496.43		569.51		230.59		119.24			
C.V. (%)	37.03		40.04		63.45		8.97		27.85			
Error d.f.	46		46		46		46		46			
Significance	*		*		*		*		*			
Test > L. Check	0		3		0		0		3			

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

Table 5.3.6. The five heaviest seed yielding entries at the individual locations in the LIYT-E during 1988/89.

	<u>BANGLADESH</u>	<u>BRAZIL</u>	<u>ETHIOPIA</u>	<u>INDIA</u>	<u>IRAQ</u>	<u>MALAWI</u>
Rank	Mymensingh	Passo Fundo	Debre Zeit	New Delhi	Rabiah	Bvumbwe
1	Pant L 639	FLIP 84-112L	FLIP 86- 38L	Precoz	L 1282	L 1057
2	Local check	LL 1	FLIP 87- 70L	L 1057	Precoz	FLIP 87- 70L
3	LL 37	FLIP 87- 70L	Local check	FLIP 86- 39L	Pant L 639	LL 1
4	LL 1	Pant L 639	LL 57	162	ILL 1983	FLIP 86- 39L
5	Pant L 406	162	Precoz	LL 1	162	L 1282
Cont'd. ...						
	<u>MYANMAR</u>	<u>NEPAL</u>	<u>NEWZEALAND</u>	<u>PAKISTAN</u>	<u>SYRIA</u>	
Rank	Kyehmon	Khumaltar	Lincoln	Faisalabad	Tel Hadya	
1	FLIP 84-133L	Pant L 406	ILL 1866	ILL 1278	FLIP 86- 39L	
2	Local check	LL 57	FLIP 84-133L	FLIP 87- 75L	L 1327	
3	FLIP 86- 50L	Pant L 639	FLIP 84-112L	Pant L 639	FLIP 87- 76L	
4	LL 1	L 1278	L 1282	Local check	FLIP 86- 38L	
5	Precoz	FLIP 84-112L	L 1327	FLIP 84-112L	FLIP 86- 50L	

Table 5.3.7. The mean seed yield (Y=kg/ha) and rank (R) of the common entries in LIYT-E during 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
EL 42	1124	15	519	16	822	15
ILL 1866	846	17	580	15	713	16
L 1057	1426	4	837	6	1132	4
L 1327	981	16	371	17	676	17
Part L 406	1313	11	906	2	1110	6
Part L 639	1409	5	956	1	1183	2
L 1278	1381	6	739	11	1060	11
L 1282	1322	10	748	10	1035	13
LL 1	1362	8	825	7	1094	7
LL 37	1372	7	699	12	1036	12
LL 57	1240	13	898	3	1069	9
162	1354	9	783	9	1069	10
Precoz	1604	2	843	5	1224	1
FLIP 84- 60L	1134	14	585	14	860	14
FLIP 84-112L	1286	12	854	4	1070	8
FLIP 86- 38L	1498	3	797	8	1148	3
FLIP 86- 39L	1622	1	618	13	1120	5

5.4. LENTIL INTERNATIONAL SCREENING NURSERY-LARGE SEED (LISN-L)

Material

The material for the Lentil International Screening Nursery-Large Seed comprised of 35 test entries and one local check which 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 a 6X6 simple lattice design with two replications. The suggested plot size was single row 4 m long with inter row spacing of 25 cm. Fifty two sets of screening nursery were sent to cooperators in 25 countries and the results were received from 34 locations from 17 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 Oroumieh in Iran (44 days) and latest at El Encin in Spain (151 days). The entry means over all locations revealed that FLIP 87-20L was the earliest to flower in 95 days and FLIP84-144L and FLIP 89-1L were the latest to flower in 104 days. The entry mean for time to

Table 5.4.1. Agronomic data for different locations in the LISN-L during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
ALGERIA	Khroub	27.12.1988	28.06.1989	17	46		-	Treflan	Syrie 229
ALGERIA	Setif	29.11.1988	07.06.1989	100	100		-	Treflan	L.B. chile
ALGERIA	Sidi Bel Abbes	01.12.1988	30.05.1989		46		-	Treflan	Syrei 229
AUSTRIA	Grob-Enzersdorf	28.04.1989	11.08.1989	25	60		-	Tribunil	Lenka
BANGLADESH	Hymensingh	19.11.1988	20.04.1989	-			-	-	-
BULGARIA	Toshevo	24.03.1989	17.07.1989	30	60		-	Aphalon	Nasloda
CANADA	Manitoba	17.05.1989	22.08.1989	10	37		-	Bentazon	Eston
CHILE	Chillan	19.06.1989	05.12.1989		90		-	-	Araucaria-INIA
CHILE	Valdivia	09.09.1989	NH	32	100	50	-	Linuron	NA
ETHIOPIA	Debre Zeit	21.07.1989	15.11.1989	-			-	Benlate & Bravo	NEL- 358
IRAN	Ghazvin	09.04.1989	27.06.1989		100		-	-	Ghazvin
IRAN	Karaj	04.04.1989	24.06.1989	-			-	Treflan & Metasystox	Ghazvin
IRAN	Maragheh	04.04.1989	15.07.1989	14	37		-	-	NA
IRAN	Oroumieh	03.05.1989	01.08.1989	18	46	2	-	Novacron	Mardam
JORDAN	Jubeiha	10.12.1988	NA	20	50		-	-	Jordan -1
JORDAN	Marow	24.11.1988	09.05.1989	18	45		-	-	Jordan -1
JORDAN	Mushagar	23.11.1988	21.05.1989	20	50		-	Sumithion	Jordan -1
JORDAN	Raba'a	18.12.1988	20.05.1989	20	50		-	-	Jordan -1
JORDAN	Ramtha	01.11.1988	05.1989	20	50		-	-	Jordan -1
LEBANON	Terbol	24.11.1988	10.05.1989		50		-	Kerb, Bladex	Idleb -1
PAKISTAN	Faisalabad	21.11.1988	07.05.1989	20	60		1	-	Masoor 85
PORTUGAL	Elvas	13.02.1989	02.06.1989		60	60	-	-	E-8891 (L-474)
QATAR	Raudat Harmah	06.11.1988	26.04.1989	90	150	14	-	-	Unknown
SPAIN	El Encin	16.11.1988	21.06.1989	32	96		-	Prometryne	Angela
SYRIA	Aleppo	14.11.1988	03.05.1989		50		-	-	Idleb -1
SYRIA	Gelline	04.12.1988	08.05.1989	20	50		-	-	Idleb -1
SYRIA	Heimo	26.11.1988	25.05.1989		50		-	-	Idleb -1
SYRIA	Idleb	30.11.1988	09.05.1989	25	60		-	-	Idleb -1
SYRIA	Izra'a	02.01.1989	30.05.1989	-			-	-	Idleb-1
SYRIA	Tel Hadya	29.11.1988	27.05.1989		50		-	Kerb, Bladex	ILL 4401
TUNISIA	Beja -1	23.11.1988	NA		NA		-	NA	NA
TUNISIA	Beja -2	23.11.1988	NA		NA		-	NA	NA
TUNISIA	El Kef	23.11.1988	NA		NA		-	NA	NA
TURKEY	Diyarbakir	09.11.1988	01.06.1989	30	60		-	-	NA

NH = Not harvested, NA = Not available

Table 5.4.2. Adjusted time to flowering (days) of entries at different locations in the LISN-L during 1988/89.

Selection	ALGERIA			AUSTRIA		BULGARIA	CHILE		ETHIOPIA	IRAN	
	ILL	Khroub+	Setif	Sidi Bel Abbes	Grob- Enzersdorf	Toshevo	Chillan	Valdivia	Dobre Zeit	Ghasvin	Karaj
Local large	4400	105	110	121	51	68	117	78	75	62	51
FLIP 84-144L	5814	112	124	124	52	68	120	78	90	62	57
FLIP 84-156L	5825	109	122	121	51	72	119	78	78	59	57
FLIP 85-7L	5845	112	132	123	49	67	119	74	82	62	59
FLIP 86-13L	5999	97	114	103	50	65	116	74	54	61	56
FLIP 87-4L	6194	110	131	123	51	67	120	77	79	62	56
FLIP 87-6L	6196	111	122	121	51	67	120	76	62	55	51
FLIP 87-11L	6201	111	120	121	50	67	120	74	64	60	57
FLIP 87-15L	6205	105	105	120	45	67	113	72	61	56	49
FLIP 87-20L	6210	97	114	102	50	66	113	77	50	61	51
FLIP 88-1L	6425	105	108	122	45	67	112	74	57	60	49
FLIP 88-2L	6426	108	122	122	48	65	116	74	61	61	53
FLIP 88-3L	6427	109	117	121	49	66	120	78	66	61	50
FLIP 88-4L	6428	99	114	120	49	66	117	78	65	61	52
FLIP 88-5L	6429	107	122	123	52	72	119	71	75	59	57
FLIP 88-6L	6430	104	111	113	47	65	112	72	60	58	50
FLIP 88-7L	6431	103	106	103	47	65	112	78	54	55	50
FLIP 88-8L	6432	104	107	117	45	65	115	75	59	62	51
FLIP 88-9L	6433	106	114	117	49	69	120	73	76	60	55
FLIP 88-10L	6434	109	121	125	51	68	119	76	84	63	58
FLIP 88-11L	6435	104	109	120	47	65	113	79	63	60	52
FLIP 88-12L	6436	105	106	117	46	65	112	71	62	60	54
FLIP 88-13L	6437	109	111	122	48	66	113	78	70	56	56
FLIP 88-14L	6438	108	130	123	50	67	113	79	92	62	55
FLIP 88-32L	6456	96	107	103	48	65	113	73	53	61	51
FLIP 89-1L	6759	110	133	125	51	69	120	78	89	63	56
FLIP 89-2L	6760	109	121	120	52	69	119	75	83	61	56
FLIP 89-3L	6761	111	120	122	51	70	119	80	76	59	56
FLIP 89-4L	6762	113	121	120	52	67	120	78	87	62	60
FLIP 89-5L	6763	106	119	121	46	65	118	75	72	61	53
FLIP 89-6L	6764	109	120	123	52	65	120	76	71	62	57
FLIP 89-7L	6765	106	112	121	48	65	117	79	63	60	52
FLIP 89-8L	6766	106	117	124	50	67	119	74	67	61	57
FLIP 89-9L	6767	111	121	124	51	68	119	79	88	58	59
FLIP 89-10L	6768	113	120	113	52	72	119	78	87	58	52
Local check		104	133	113	50	71	120	73	54	62	52
Location Mean		107	118	119	49	67	117	76	70	60	54
S.E. of Mean			0.42	3.28	0.68	1.29	1.30	2.05	3.08	1.77	2.19
L.S.D. at 5%			1.20	9.55	1.99	3.76	3.74	5.96	8.84	5.15	6.37
C.V. (%)			0.50	3.90	1.95	2.72	1.58	3.82	6.23	4.16	5.71
Error d.f.			35	25	25	25	35	25	35	25	25
Significance			*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 5.4.2. Cont'd. ...

Selection	IRAN			JORDAN			LEBANON	PAKISTAN	PORTUGAL	
	Maragah	Oroumiah	Jubeiha	Marow	Mushagar	Raba'a	Ramtha	Terbol	Faisalabad	Elvas
Local large	50	43	89	132	134	117	85	124	111	107
FLIP 84-144L	52	45	91	136	135	116	83	127	109	106
FLIP 84-156L	56	45	89	134	133	114	83	125	109	111
FLIP 85-7L	52	41	91	133	134	117	84	125	111	105
FLIP 86-13L	48	43	84	132	134	115	83	125	81	104
FLIP 87-4L	53	45	91	134	135	116	84	125	111	107
FLIP 87-6L	49	43	89	136	134	117	82	127	109	111
FLIP 87-11L	49	43	90	137	133	116	84	125	106	110
FLIP 87-15L	50	43	84	134	132	112	84	123	105	105
FLIP 87-20L	45	45	84	132	133	117	82	125	82	101
FLIP 88-1L	48	43	85	134	130	112	82	123	101	107
FLIP 88-2L	49	45	89	133	134	113	83	125	109	108
FLIP 88-3L	46	43	90	134	135	116	82	125	111	104
FLIP 88-4L	50	43	85	136	133	115	82	125	106	107
FLIP 88-5L	55	45	89	137	134	113	84	125	110	109
FLIP 88-6L	55	43	85	134	133	112	83	123	98	107
FLIP 88-7L	52	45	86	135	131	112	83	123	97	107
FLIP 88-8L	48	45	85	133	133	113	83	123	101	107
FLIP 88-9L	51	45	89	131	133	114	82	124	111	107
FLIP 88-10L	52	43	89	132	134	115	82	125	112	105
FLIP 88-11L	52	43	87	135	133	113	83	125	108	108
FLIP 88-12L	50	43	87	134	132	113	83	125	99	108
FLIP 88-13L	52	40	86	131	132	114	82	122	117	108
FLIP 88-14L	52	45	91	135	134	117	82	123	113	108
FLIP 88-32L	42	45	82	136	131	112	84	123	97	108
FLIP 89-1L	56	45	90	134	134	118	83	127	113	108
FLIP 89-2L	52	43	89	134	133	115	82	125	110	110
FLIP 89-3L	55	44	90	133	134	115	83	125	108	105
FLIP 89-4L	55	44	90	136	135	117	84	125	113	109
FLIP 89-5L	48	41	87	133	133	114	83	125	109	108
FLIP 89-6L	51	43	89	133	134	116	84	125	111	108
FLIP 89-7L	53	45	86	156	133	114	84	121	109	108
FLIP 89-8L	47	43	89	136	133	116	84	125	108	105
FLIP 89-9L	54	45	90	134	134	116	82	125	112	105
FLIP 89-10L	48	43	90	136	135	115	83	127	112	108
Local check	55	43	84	136	132	114	84	131	91	105
Location Mean	51	44	88	135	133	115	83	125	106	107
S.E. of Mean	2.30	0.37	1.06	1.45	0.59	1.16	0.79	0.28	0.64	1.75
L.S.D. at 5%	6.60	1.08	3.09	4.23	1.72	3.32	2.31	0.81	1.87	-
C.V. (%)	6.42	1.20	1.71	1.53	0.63	1.43	1.35	0.32	0.85	2.31
Error d.f.	35	25	25	25	25	35	25	35	25	25
Significance	*	*	*	*	*	*	*	*	*	NS

Cont'd. ...

Table 5.4.2. Cont'd. ...

Selection	QATAR		SPAIN		SYRIA				TURKEY	Overall Mean	
	Rawdat Harmah		El Encin	Aleppo	Gellino	Heimo	Idleb	Izra'a	Tel Hadya		Diyarbakir
Local large	107		152	131	119	114	126	92	124	125	101
FLIP 84-144L	111		154	133	121	117	126	99	127	128	104
FLIP 84-156L	110		151	132	120	113	125	97	126	125	102
FLIP 85-7L	110		151	134	120	115	125	97	126	127	103
FLIP 86-13L	101		148	123	111	113	120	96	118	128	96
FLIP 87-4L	113		152	132	120	114	125	100	127	129	103
FLIP 87-6L	108		154	134	121	116	127	101	128	128	102
FLIP 87-11L	103		156	134	120	114	124	98	126	128	101
FLIP 87-15L	100		151	129	118	113	123	93	121	124	98
FLIP 87-20L	78		150	127	111	113	121	96	118	120	95
FLIP 88-1L	103		146	127	113	113	124	90	121	124	97
FLIP 88-2L	110		148	132	119	114	125	97	124	126	100
FLIP 88-3L	106		156	135	120	115	126	101	127	131	101
FLIP 88-4L	106		150	130	119	114	124	95	124	120	99
FLIP 88-5L	112		153	132	119	115	125	96	126	128	102
FLIP 88-6L	101		148	128	115	113	123	93	125	125	98
FLIP 88-7L	97		150	129	114	113	123	91	121	124	97
FLIP 88-8L	102		150	129	116	113	123	91	124	126	98
FLIP 88-9L	110		149	132	118	113	124	97	123	127	101
FLIP 88-10L	112		150	133	119	114	124	97	124	127	102
FLIP 88-11L	107		148	131	118	113	124	95	122	125	99
FLIP 88-12L	106		148	131	116	114	123	92	125	125	98
FLIP 88-13L	112		145	129	113	113	123	92	120	129	100
FLIP 88-14L	109		148	127	119	115	125	97	128	127	102
FLIP 88-32L	103		148	124	112	113	120	95	119	127	96
FLIP 89-1L	111		154	133	121	116	127	97	126	129	104
FLIP 89-2L	109		149	134	119	113	126	98	124	124	102
FLIP 89-3L	110		153	130	119	116	125	95	126	127	102
FLIP 89-4L	112		154	132	120	115	124	95	127	128	103
FLIP 89-5L	112		150	131	118	115	125	96	122	126	100
FLIP 89-6L	112		152	135	119	114	124	97	125	129	102
FLIP 89-7L	107		148	126	118	113	123	93	124	126	100
FLIP 89-8L	111		153	134	120	117	125	98	126	127	101
FLIP 89-9L	112		154	134	121	117	126	99	127	129	103
FLIP 89-10L	112		154	133	121	117	125	97	126	131	103
Local check	101		171	129	116	113	124	93	130	126	
Location Mean	107		151	131	118	114	124	96	124	127	
S.E. of Mean	0.73		1.31	1.25	0.84	0.56	0.74	2.10	1.01	0.50	
L.S.D. at 5%	2.13		3.82	3.64	2.41	1.61	2.11	6.12	2.95	1.45	
C.V. (%)	0.97		1.23	1.35	1.01	0.69	0.84	3.11	1.15	0.56	
Error d.f.	25		25	25	35	35	35	25	25	25	
Significance	*		*	*	*	*	*	*	*	*	

+ Location not analysed thus mean values are unadjusted., * = Significant at $P < 0.05$, NS = Not significant.

Table 5.4.3. Adjusted time to maturity (days) of entries at different locations in the LISN-L during 1988/89.

Selection	ALGERIA			BULGARIA	CHILE		IRAN	
	Khroub+	Setif	Sidi Bel Abbas	Toshevo	Chillan	Valdivia	Karaj	Maragheh
Local large	157	181	165	106	160	90	87	73
FLIP 84-144L	165	181	168	108	162	89	87	79
FLIP 84-156L	168	188	165	109	162	89	89	83
FLIP 85-7L	162	176	168	107	161	93	89	77
FLIP 86-13L	156	184	168	106	162	89	90	74
FLIP 87-4L	161	184	165	107	162	93	87	78
FLIP 87-6L	165	186	168	108	162	89	88	75
FLIP 87-11L	163	185	167	108	161	89	88	77
FLIP 87-15L	149	173	163	108	160	89	86	68
FLIP 87-20L	155	179	167	108	162	85	87	70
FLIP 88-1L	149	177	164	107	160	89	87	73
FLIP 88-2L	169	184	166	107	160	85	88	77
FLIP 88-3L	157	187	166	105	161	91	87	73
FLIP 88-4L	155	177	167	107	161	85	88	75
FLIP 88-5L	165	184	167	110	163	92	88	81
FLIP 88-6L	165	174	164	109	160	86	86	74
FLIP 88-7L	149	170	165	108	160	87	87	70
FLIP 88-8L	149	177	165	107	161	86	87	73
FLIP 88-9L	158	187	168	109	161	85	88	75
FLIP 88-10L	164	184	167	106	160	94	89	78
FLIP 88-11L	153	181	165	106	162	93	89	79
FLIP 88-12L	158	185	164	106	161	89	87	73
FLIP 88-13L	157	174	167	107	161	91	88	75
FLIP 88-14L	158	178	165	106	162	91	88	78
FLIP 88-32L	155	184	163	106	160	90	89	69
FLIP 89-1L	164	184	169	108	163	89	88	80
FLIP 89-2L	166	185	168	108	162	91	88	83
FLIP 89-3L	167	183	167	107	162	92	89	78
FLIP 89-4L	170	172	165	108	161	92	87	78
FLIP 89-5L	164	185	168	107	161	86	87	76
FLIP 89-6L	164	186	168	106	163	86	89	77
FLIP 89-7L	168	179	167	106	161	92	88	75
FLIP 89-8L	153	170	168	106	161	94	88	76
FLIP 89-9L	166	184	165	107	160	93	89	78
FLIP 89-10L	168	177	166	109	162	89	88	77
Local check	154	173	172	110	163	87	88	77
Location Mean	160	180	166	107	161	89	88	76
S.E. of Mean		0.72	1.23	1.16	0.78	2.43	0.89	1.66
L.S.D. at 5%		2.09	3.58	-	2.24	7.07	-	4.85
C.V. (%)		0.56	1.04	1.52	0.68	3.84	1.44	3.10
Error d.f.		25	25	25	35	25	25	25
Significance		*	*	NS	*	*	NS	*

Cont'd. ...

Table 5.4.3. Cont'd. ...

Selection	IRAN		JORDAN		LEBANON	PAKISTAN	PORTUGAL	QATAR
	Oroumieh	Marow	Mushagar	Raba'a	Terbol	Faisalabad	Elvas	Rawdat Harmah
Local large	73	164	155	147	153	165	149	154
FLIP 84-144L	77	168	163	147	165	161	153	165
FLIP 84-156L	81	167	162	149	166	161	152	164
FLIP 85-7L	74	167	163	149	162	162	152	162
FLIP 86-13L	73	167	161	147	164	141	152	143
FLIP 87-4L	81	167	165	149	162	163	153	164
FLIP 87-6L	74	165	163	151	167	161	153	164
FLIP 87-11L	73	167	161	147	165	158	152	150
FLIP 87-15L	73	166	160	145	155	159	151	146
FLIP 87-20L	74	158	162	142	153	141	151	137
FLIP 88-1L	74	165	161	143	158	158	151	143
FLIP 88-2L	81	163	160	147	160	159	152	163
FLIP 88-3L	81	166	162	148	162	165	152	154
FLIP 88-4L	74	166	160	144	163	159	152	158
FLIP 88-5L	81	167	160	149	162	162	153	162
FLIP 88-6L	74	167	162	146	159	158	151	145
FLIP 88-7L	81	164	160	145	155	146	153	143
FLIP 88-8L	73	164	160	145	157	158	152	143
FLIP 88-9L	74	165	160	149	159	165	152	157
FLIP 88-10L	81	166	163	148	162	165	152	165
FLIP 88-11L	73	165	162	150	166	160	151	160
FLIP 88-12L	74	168	162	152	162	156	149	157
FLIP 88-13L	74	164	155	144	153	163	152	163
FLIP 88-14L	81	163	161	146	161	165	152	160
FLIP 88-32L	77	164	161	147	159	155	153	144
FLIP 89-1L	81	168	162	149	166	166	152	156
FLIP 89-2L	81	171	162	149	165	161	151	164
FLIP 89-3L	73	166	162	148	161	161	153	161
FLIP 89-4L	73	166	162	147	166	165	153	163
FLIP 89-5L	74	167	160	149	162	161	152	162
FLIP 89-6L	81	166	160	147	165	163	152	166
FLIP 89-7L	74	168	161	144	161	161	153	160
FLIP 89-8L	73	168	160	150	159	160	149	159
FLIP 89-9L	81	167	164	147	166	164	153	160
FLIP 89-10L	74	167	164	148	165	166	153	159
Local check	73	167	160	149	167	151	151	164
Location Mean	76	166	161	147	161	160	152	157
S.E. of Mean	0.96	1.14	0.93	1.36	0.91	0.69	0.77	0.81
L.S.D. at 5%	2.76	3.31	2.72	3.95	2.61	2.01	2.25	2.36
C.V. (%)	1.78	0.97	0.82	1.30	0.80	0.61	0.72	0.73
Error d.f.	35	25	25	25	35	25	25	25
Significance	*	*	*	*	*	*	*	*

Cont'd. ...

Table 5.4.3. Cont'd. ...

Selection	SPAIN		SYRIA					TURKEY	Overall Mean
	El Encin	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local large	197	159	143	144	153	136	152	169	143
FLIP 84-144L	208	168	149	150	156	143	169	171	148
FLIP 84-156L	207	169	148	150	157	141	164	171	148
FLIP 85-7L	209	167	147	150	155	141	168	170	147
FLIP 86-13L	213	162	145	146	154	140	161	170	145
FLIP 87-4L	207	167	147	147	155	142	164	171	147
FLIP 87-6L	211	169	151	151	155	142	169	170	148
FLIP 87-11L	209	167	148	148	155	140	169	170	146
FLIP 87-15L	201	163	144	141	153	136	156	171	142
FLIP 87-20L	203	162	143	141	154	142	152	170	142
FLIP 88-1L	200	160	144	142	154	138	154	170	142
FLIP 88-2L	196	164	146	146	155	140	154	170	145
FLIP 88-3L	211	168	149	148	155	143	161	172	147
FLIP 88-4L	207	165	147	145	155	138	161	171	145
FLIP 88-5L	208	164	147	145	155	139	160	170	147
FLIP 88-6L	199	161	146	144	154	138	162	170	144
FLIP 88-7L	201	166	144	143	153	135	157	170	142
FLIP 88-8L	200	161	145	144	153	136	157	170	143
FLIP 88-9L	201	165	146	144	154	138	159	170	145
FLIP 88-10L	209	166	148	148	155	139	159	171	147
FLIP 88-11L	207	165	147	149	156	138	168	171	146
FLIP 88-12L	208	166	145	149	155	137	168	170	146
FLIP 88-13L	202	164	143	142	155	137	155	168	144
FLIP 88-14L	209	162	143	146	155	140	161	170	146
FLIP 88-32L	207	166	143	142	155	136	164	172	144
FLIP 89-1L	210	170	149	151	156	142	167	170	148
FLIP 89-2L	204	166	149	148	157	143	162	170	148
FLIP 89-3L	206	165	146	150	156	141	169	170	147
FLIP 89-4L	209	169	148	154	154	143	170	170	148
FLIP 89-5L	207	167	145	151	156	138	159	171	146
FLIP 89-6L	208	167	145	145	154	140	161	170	147
FLIP 89-7L	198	166	144	143	154	137	164	170	146
FLIP 89-8L	204	164	148	146	155	140	161	169	145
FLIP 89-9L	209	168	148	150	156	141	168	171	148
FLIP 89-10L	208	165	148	152	156	140	169	170	148
Local check	211	162	145	145	153	137	167	170	148
Location Mean	206	165	146	147	155	139	162	170	
S.E. of Mean	2.49	1.61	1.43	1.31	0.51	1.11	2.06	0.41	
L.S.D. at 5%	7.24	4.68	4.17	3.83	1.48	3.24	6.00	1.19	
C.V. (%)	1.71	1.38	1.39	1.27	0.47	1.13	1.80	0.34	
Error d.f.	25	25	25	25	35	25	25	25	
Significance	*	*	*	*	*	*	*	*	

+ Location not analysed thus mean values are unadjusted., * = Significant at $P < 0.05$, NS = Not significant.

Table 5.4.4. Adjusted plant height (cm) of entries at different locations in the LISN-L during 1988/89.

Selection	ALGERIA			AUSTRIA	BULGARIA	CHILE		IRAN	
	Khroub+	Setif	Sidi Bel Abbes	Grob- Enzersdorf	Toshevo	Chillan	Valdivia	Ghazvin	Karaj
Local large	33	24	17	33	25	28	41	22	30
FLIP 84-144L	32	28	20	33	23	30	40	23	36
FLIP 84-156L	32	25	17	33	24	35	48	22	35
FLIP 85-7L	34	30	24	38	33	33	47	23	33
FLIP 86-13L	35	28	22	28	25	32	39	22	32
FLIP 87-4L	33	31	20	30	24	30	47	22	30
FLIP 87-6L	35	31	19	25	22	30	45	21	31
FLIP 87-11L	32	31	21	30	28	27	43	23	32
FLIP 87-15L	35	32	18	28	25	28	44	24	31
FLIP 87-20L	31	29	16	40	23	30	45	21	33
FLIP 88-1L	31	31	24	33	26	28	42	24	29
FLIP 88-2L	35	24	20	33	26	30	50	24	30
FLIP 88-3L	31	31	15	33	29	27	44	24	26
FLIP 88-4L	35	26	20	33	27	30	46	23	32
FLIP 88-5L	32	30	19	33	27	30	48	23	30
FLIP 88-6L	35	25	16	28	22	30	46	25	27
FLIP 88-7L	36	25	20	30	21	28	39	23	29
FLIP 88-8L	35	30	20	25	23	28	43	24	29
FLIP 88-9L	34	29	18	35	27	25	44	27	33
FLIP 88-10L	30	30	21	33	27	33	47	24	29
FLIP 88-11L	34	28	20	33	24	27	43	21	31
FLIP 88-12L	30	22	22	30	20	30	42	21	28
FLIP 88-13L	31	27	19	33	26	30	45	24	33
FLIP 88-14L	28	27	23	30	30	33	43	24	32
FLIP 88-32L	36	26	17	30	27	25	44	24	30
FLIP 89-1L	33	30	21	30	26	30	41	21	34
FLIP 89-2L	35	26	20	35	19	30	45	22	32
FLIP 89-3L	35	27	18	25	32	28	42	22	32
FLIP 89-4L	30	26	18	28	31	30	43	24	29
FLIP 89-5L	37	25	22	28	23	28	41	24	28
FLIP 89-6L	34	28	19	30	28	32	47	21	31
FLIP 89-7L	35	27	23	30	32	32	49	24	32
FLIP 89-8L	32	27	15	30	21	30	46	25	32
FLIP 89-9L	30	30	18	35	27	32	40	22	33
FLIP 89-10L	40	26	25	33	32	28	41	23	32
Local check	32	26	17	43	50	35	48	22	33
Location Mean	33	28	20	31	27	30	44	23	31
S.E. of Mean		0.64	2.22	2.00	3.44	2.00	1.80	1.13	2.45
L.S.D. at 5%		1.87	6.47	5.64	10.01	-	5.23	-	-
C.V. (%)		3.28	16.07	8.88	18.32	9.37	5.76	6.93	11.15
Error d.f.		25	25	35	25	25	25	25	25
Significance		*	*	*	*	NS	*	NS	NS

+ Location not analysed thus mean values are unadjusted.

Cont'd. ...

Table 5.4.4. Cont'd. ...

Selection	IRAN			JORDAN				LEBANON	PAKISTAN	PORTUGAL
	Maragah	Oroumieh	Jubeiha	Marow	Mushagar	Raba'a	Rantha	Terbol	Faisalabad	Elvas
Local large	19	30	30	23	30	33	29	33	49	23
FLIP 84-144L	16	30	28	20	33	34	33	33	53	26
FLIP 84-156L	18	29	28	21	33	32	28	32	58	29
FLIP 85-7L	17	29	25	25	33	33	31	32	63	32
FLIP 86-13L	20	28	23	17	31	32	28	30	55	27
FLIP 87-4L	13	30	27	25	28	30	31	33	58	29
FLIP 87-6L	19	27	28	21	29	31	32	30	51	27
FLIP 87-11L	10	26	30	22	29	30	30	32	51	29
FLIP 87-15L	13	27	28	24	28	32	33	33	49	29
FLIP 87-20L	15	32	27	21	26	31	28	35	44	27
FLIP 88-1L	15	29	27	21	28	29	27	31	51	28
FLIP 88-2L	22	30	28	24	28	29	32	27	56	29
FLIP 88-3L	12	26	22	22	31	34	27	32	54	30
FLIP 88-4L	13	28	28	22	31	31	36	33	46	28
FLIP 88-5L	21	27	24	24	28	30	32	30	53	23
FLIP 88-6L	14	27	27	22	28	29	31	31	49	29
FLIP 88-7L	21	28	30	23	29	29	24	33	47	28
FLIP 88-8L	15	27	26	23	26	31	28	32	53	25
FLIP 88-9L	19	26	30	25	25	30	28	31	53	26
FLIP 88-10L	22	26	27	24	28	34	31	34	53	25
FLIP 88-11L	20	28	30	21	29	29	30	34	51	31
FLIP 88-12L	18	30	28	18	31	29	26	29	49	30
FLIP 88-13L	19	28	29	21	32	33	27	32	49	28
FLIP 88-14L	14	32	29	34	25	33	29	33	52	29
FLIP 88-32L	12	30	28	24	30	30	30	27	53	31
FLIP 89-1L	21	29	28	20	29	33	29	33	52	26
FLIP 89-2L	20	33	21	22	32	34	37	32	55	26
FLIP 89-3L	13	26	30	25	31	29	28	32	54	23
FLIP 89-4L	11	30	29	25	31	30	34	34	51	28
FLIP 89-5L	15	28	27	19	31	33	28	30	51	29
FLIP 89-6L	21	32	26	27	35	33	26	33	52	30
FLIP 89-7L	15	29	29	21	33	31	27	31	52	28
FLIP 89-8L	18	25	29	20	29	28	25	31	50	22
FLIP 89-9L	20	31	26	23	32	32	32	33	58	30
FLIP 89-10L	17	30	30	24	33	33	33	32	49	28
Local check	15	29	27	26	29	30	34	35	51	35
Location Mean	17	29	27	23	30	31	30	32	52	28
S.E. of Mean	2.29	1.59	2.57	1.61	1.64	1.63	2.71	1.35	1.43	2.04
L.S.D. at 5%	6.67	4.63	-	4.69	4.77	-	7.89	3.93	4.15	5.95
C.V. (%)	19.40	7.84	13.30	10.02	7.81	7.41	12.81	5.98	3.87	10.39
Error d.f.	25	25	35	25	25	25	25	25	25	25
Significance	*	*	NS	*	*	NS	*	*	*	*

Cont'd. ...

Table 5.4.4. Cont'd. ...

Selection	QATAR		SPAIN		SYRIA			TURKEY		Overall Mean
	Rawdat Harmah	El Encin	Aleppo	Gelline	Hoimo	Idleb	Tel Hadya	Diyarbakir		
Local large	69	34	26	26	27	35	21	26	30	
FLIP 84-144L	48	34	29	27	28	35	21	22	30	
FLIP 84-156L	50	33	29	27	33	34	22	23	31	
FLIP 85-7L	63	36	22	29	31	38	20	20	32	
FLIP 86-13L	52	38	26	27	29	37	20	21	30	
FLIP 87-4L	58	36	22	27	26	32	20	23	30	
FLIP 87-6L	46	34	25	27	30	33	22	21	29	
FLIP 87-11L	46	33	28	26	28	33	18	21	29	
FLIP 87-15L	54	32	26	27	27	32	18	22	30	
FLIP 87-20L	44	39	23	26	30	34	20	23	29	
FLIP 88-1L	51	32	28	27	26	31	20	23	29	
FLIP 88-2L	46	32	23	28	27	32	21	21	30	
FLIP 88-3L	48	32	27	27	28	37	19	19	29	
FLIP 88-4L	54	36	27	27	26	35	20	21	30	
FLIP 88-5L	48	33	27	26	29	34	20	20	30	
FLIP 88-6L	56	35	25	27	29	31	19	20	29	
FLIP 88-7L	51	36	23	27	24	33	19	19	29	
FLIP 88-8L	53	36	24	27	26	32	21	23	29	
FLIP 88-9L	53	38	27	27	31	35	22	21	30	
FLIP 88-10L	62	36	26	26	30	36	22	19	31	
FLIP 88-11L	58	36	26	27	29	33	19	22	30	
FLIP 88-12L	54	36	22	27	30	31	20	23	29	
FLIP 88-13L	52	33	25	29	30	34	20	21	30	
FLIP 88-14L	59	38	26	27	29	36	20	24	31	
FLIP 88-32L	52	32	25	27	27	35	19	22	29	
FLIP 89-1L	45	36	28	26	30	35	22	23	30	
FLIP 89-2L	47	36	25	27	29	37	20	23	30	
FLIP 89-3L	62	33	26	26	28	36	20	24	30	
FLIP 89-4L	55	35	27	26	26	35	19	24	30	
FLIP 89-5L	53	35	26	27	28	35	23	22	29	
FLIP 89-6L	58	37	24	29	29	37	21	22	31	
FLIP 89-7L	57	39	29	28	29	35	19	24	31	
FLIP 89-8L	60	30	23	26	24	32	21	22	29	
FLIP 89-9L	56	39	28	26	26	34	22	21	31	
FLIP 89-10L	48	35	28	27	31	39	20	25	31	
Local check	61	40	24	28	27	31	22	21		
Location Mean	54	35	25	27	28	34	20	22		
S.E. of Mean	3.76	1.68	2.20	0.60	1.20	1.38	1.22	1.80		
L.S.D. at 5%	10.94	4.89	6.30	1.76	3.50	4.03	-	-		
C.V. (%)	9.91	6.77	12.22	3.16	6.01	5.71	8.62	11.57		
Error d.f.	25	25	35	25	25	25	35	25		
Significance	*	*	*	*	*	*	NS	NS		

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

Table 5.4.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-L during 1988/89.

Selection	ALGERIA				CANADA		CHILE		ETHIOPIA		IRAN	
	Setif		Sidi Bel Abbes		Manitoba+		Chillan		Debre Zeit		Ghazvin	
	Y	R	y	R	Y	R	Y	R	Y	R	Y	R
Local large	1180	22	100	27	220	12	1839	1	1548	4	70	22
FLIP 84-144L	1655	3	160	2	445	6	1450	10	219	30	51	26
FLIP 84-156L	1420	7	122	15	331	9	1701	2	132	32	35	32
FLIP 85-7L	1230	17	160	1	-	-	1006	31	556	16	98	11
FLIP 86-13L	1150	23	103	26	449	5	1058	28	404	21	93	12
FLIP 87-4L	1500	5	92	32	285	10	790	36	284	25	43	30
FLIP 87-6L	1230	19	123	14	-	-	998	32	917	11	34	33
FLIP 87-11L	1350	12	132	10	344	8	1191	22	441	20	19	34
FLIP 87-15L	1000	29	100	28	-	-	1368	12	1291	6	276	3
FLIP 87-20L	1080	26	74	34	-	-	1050	29	1745	2	93	13
FLIP 88-1L	1085	25	113	19	-	-	1582	5	1707	3	77	19
FLIP 88-2L	1320	13	108	22	-	-	1247	20	825	12	57	23
FLIP 88-3L	925	33	72	36	-	-	1343	14	1001	10	45	29
FLIP 88-4L	1535	4	116	17	200	14	1264	19	387	23	146	7
FLIP 88-5L	1385	9	118	16	795	1	1124	26	331	24	128	8
FLIP 88-6L	1230	18	106	24	-	-	1505	9	1114	9	163	6
FLIP 88-7L	1080	27	114	18	-	-	1157	23	820	13	79	18
FLIP 88-8L	800	35	123	13	199	15	1570	6	1338	5	308	1
FLIP 88-9L	1225	20	99	30	-	-	1223	21	644	14	54	25
FLIP 88-10L	980	30	81	33	-	-	992	33	225	29	102	9
FLIP 88-11L	970	31	136	8	-	-	1012	30	607	15	101	10
FLIP 88-12L	2140	1	130	11	-	-	1693	3	1212	7	84	15
FLIP 88-13L	775	36	142	5	195	16	939	34	533	17	8	36
FLIP 88-14L	910	34	113	20	216	13	1390	11	-	35	50	27
FLIP 88-32L	1375	10	72	35	753	2	930	35	500	19	71	21
FLIP 89-1L	1305	14	158	3	570	4	1311	17	61	34	45	28
FLIP 89-2L	1495	6	140	7	-	-	1361	13	113	33	84	16
FLIP 89-3L	930	32	110	21	582	3	1317	16	279	27	80	17
FLIP 89-4L	1360	11	134	9	-	-	1116	27	283	26	38	31
FLIP 89-5L	1210	21	145	4	-	-	1512	8	501	18	172	5
FLIP 89-6L	1135	24	108	23	-	-	1147	24	402	22	74	20
FLIP 89-7L	1070	28	94	31	-	-	1143	25	255	28	90	14
FLIP 89-8L	1275	15	100	29	-	-	1266	18	1152	8	185	4
FLIP 89-9L	1275	16	126	12	-	-	1620	4	201	31	54	24
FLIP 89-10L	1400	8	141	6	280	11	1329	15	-	36	10	35
Local check	1680	2	103	25	400	7	1548	7	3508	1	281	2
Location Mean	1241		116		391		1280		706		94	
S.E. of Mean	185.21		13.89				179.08		372.24		51.76	
L.S.D. at 5%	531.72		40.46				521.64		1084.26		150.77	
C.V. (%)	21.11		16.96				19.78		74.52		77.51	
Error d.f.	35		25				25		25		25	
Significance	*		*				*		*		*	
Efficiency	-		111.37				100.93		107.20		117.31	
Test > L. Check	0		4				0		0		0	

Cont'd. ...

Table S.4.5. Cont'd. ...

Selection	IRAN						JORDAN					
	Karaj		Maragah		Oroumieh		Jubeiha		Marow		Mushagar	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local large	484	32	215	12	393	10	840	12	33	21	2018	2
FLIP 84-144L	564	30	49	36	738	2	961	6	-	32	1466	20
FLIP 84-156L	1173	13	148	28	357	13	879	10	-	35	1949	3
FLIP 85-7L	1826	2	258	3	233	26	619	22	-	30	1742	8
FLIP 86-13L	1074	16	237	5	382	11	702	17	16	26	1305	26
FLIP 87-4L	629	27	102	34	285	19	538	29	25	22	752	34
FLIP 87-6L	947	19	256	4	73	34	500	33	42	18	1720	10
FLIP 87-11L	1148	14	166	24	222	28	914	8	63	9	1558	17
FLIP 87-15L	1956	1	190	17	287	18	896	9	50	13	1713	11
FLIP 87-20L	1053	17	174	19	428	5	780	14	34	20	416	36
FLIP 88-1L	1630	7	97	35	57	36	642	21	130	1	1709	12
FLIP 88-2L	705	24	224	8	328	14	536	30	35	19	1399	23
FLIP 88-3L	563	31	221	9	86	33	1155	3	57	10	1425	22
FLIP 88-4L	1635	6	166	25	236	25	841	11	54	12	1622	14
FLIP 88-5L	847	21	298	2	400	9	646	20	-	28	1156	29
FLIP 88-6L	1818	3	172	20	199	30	757	16	92	4	1748	7
FLIP 88-7L	1669	4	136	30	163	32	1194	2	46	15	1720	9
FLIP 88-8L	1354	11	235	7	257	24	344	35	69	6	1313	25
FLIP 88-9L	1489	8	167	21	298	17	760	15	46	16	1488	19
FLIP 88-10L	697	25	336	1	312	15	618	23	4	27	791	33
FLIP 88-11L	1330	12	220	10	415	7	614	24	-	34	1121	30
FLIP 88-12L	816	23	216	11	307	16	319	36	17	24	1842	5
FLIP 88-13L	1029	18	198	15	263	21	610	25	91	5	1441	21
FLIP 88-14L	207	34	187	18	405	8	654	19	16	25	1368	24
FLIP 88-32L	1642	5	166	22	57	35	689	18	48	14	1079	32
FLIP 89-1L	607	29	197	16	427	6	986	4	-	36	2019	1
FLIP 89-2L	451	33	166	23	574	3	579	27	124	2	1765	6
FLIP 89-3L	882	20	120	33	211	29	535	31	54	11	1220	27
FLIP 89-4L	180	35	144	29	363	12	552	28	42	17	745	35
FLIP 89-5L	841	22	127	32	262	22	528	32	-	33	1566	16
FLIP 89-6L	674	26	236	6	257	23	582	26	67	7	1584	15
FLIP 89-7L	1076	15	127	31	172	31	974	5	102	3	1185	28
FLIP 89-8L	1408	9	199	14	267	20	784	13	-	31	1529	18
FLIP 89-9L	167	36	159	26	531	4	924	7	-	29	1942	4
FLIP 89-10L	626	28	158	27	225	27	1582	1	66	8	1694	13
Local check	1385	10	211	13	814	1	487	34	24	23	1086	31
Location Mean	1016		186		314		737		36		1450	
S.E. of Mean	280.95		58.14		140.14		209.74		22.73		278.81	
L.S.D. at 5%	818.35		-		408.20		610.93		66.22		812.12	
C.V. (%)	39.10		44.31		63.21		40.26		90.03		27.19	
Error d.f.	25		25		25		25		25		25	
Significance	*		NS		*		*		*		*	
Efficiency	155.14		111.33		157.14		116.64		237.17		101.56	
Test > L. Check	0		-		0		3		5		4	

Cont'd. ...

Table 5.4.5 Cont'd. ...

Selection	JORDAN				LEBANON		PAKISTAN		PORTUGAL		QATAR	
	Raba'a		Ramtha		Terbol		Faisalab		Elvas		Rawdat Harmah	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local large	2639	1	791	2	2085	1	229	36	1167	5	259	29
FLIP 84-144L	2280	5	425	35	1699	9	458	34	521	34	-	36
FLIP 84-156L	772	36	473	33	1448	18	458	32	750	30	153	33
FLIP 85-7L	1555	33	549	26	1003	34	583	26	854	25	390	21
FLIP 86-13L	2106	10	665	12	1332	25	625	25	875	23	354	26
FLIP 87-4L	1905	18	619	17	1558	15	750	16	1063	10	451	18
FLIP 87-6L	1510	34	415	36	1215	29	708	21	375	35	449	19
FLIP 87-11L	1762	26	626	15	1885	5	708	19	792	28	383	23
FLIP 87-15L	2441	2	855	1	1617	11	1125	5	1021	14	388	22
FLIP 87-20L	1603	32	572	21	1303	26	958	11	1667	1	1762	3
FLIP 88-1L	2179	8	778	4	1386	22	1333	3	1000	15	1507	4
FLIP 88-2L	1792	23	782	3	1140	32	1083	8	792	27	1094	6
FLIP 88-3L	1929	15	557	24	1799	6	1458	2	1021	13	1308	5
FLIP 88-4L	1661	31	556	25	1475	17	833	12	1292	2	357	25
FLIP 88-5L	1697	28	572	22	1143	31	542	29	771	29	460	17
FLIP 88-6L	2363	4	695	9	1723	8	1208	4	667	32	1018	7
FLIP 88-7L	2391	3	648	14	1942	3	1708	1	958	18	1900	2
FLIP 88-8L	2256	6	767	5	2003	2	1083	7	1104	9	1971	1
FLIP 88-9L	2196	7	708	8	1447	19	750	15	938	20	860	8
FLIP 88-10L	2006	11	668	11	1559	14	667	23	875	22	424	20
FLIP 88-11L	1773	24	524	30	1397	21	708	22	1188	4	496	14
FLIP 88-12L	1489	35	622	16	1275	27	1000	9	1229	3	641	10
FLIP 88-13L	2003	12	548	27	1658	10	458	33	1000	16	592	12
FLIP 88-14L	1676	30	453	34	1609	12	292	35	979	17	173	31
FLIP 88-32L	1837	21	534	29	882	36	1000	10	1167	6	780	9
FLIP 89-1L	1897	19	727	7	1921	4	750	18	938	19	93	34
FLIP 89-2L	1938	14	694	10	1607	13	708	20	1042	11	599	11
FLIP 89-3L	1684	29	597	19	1502	16	750	17	813	26	367	24
FLIP 89-4L	1817	22	547	28	1196	30	542	28	896	21	153	32
FLIP 89-5L	1767	25	569	23	1335	24	583	27	1104	8	308	28
FLIP 89-6L	1926	16	615	18	969	35	792	13	1042	12	215	30
FLIP 89-7L	1707	27	739	6	1421	20	458	31	1125	7	461	16
FLIP 89-8L	1877	20	589	20	1118	33	750	14	875	24	476	15
FLIP 89-9L	1952	13	524	31	1221	28	667	24	729	31	532	13
FLIP 89-10L	2166	9	501	32	1381	23	542	30	583	33	76	35
Local check	1911	17	650	13	1747	7	1083	6	313	36	336	27
Location Mean	1902		616		1472		788		931		604	
S.E. of Mean	312.23		68.37		193.59		108.02		119.26		336.72	
L.S.D. at 5%	-		199.14		563.91		310.12		342.38		980.80	
C.V. (%)	23.22		15.71		18.60		19.40		18.11		78.82	
Error d.f.	35		25		25		35		35		25	
Significance	NS		*		*		*		*		*	
Efficiency	-		108.11		100.05		-		-		102.65	
Test > L. Check	-		1		0		2		32		4	

Cont'd. ...

Table 5.4.5. Cont'd. ...

Selection	SPAIN				SYRIA							
	El Encin		Aleppo		Gelline		Heimo		Idleb		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local large	2476	3	587	7	164	14	831	22	1713	14	77	2
FLIP 84-144L	1342	35	416	27	71	32	849	19	1786	7	34	20
FLIP 84-156L	2032	14	482	17	89	30	1000	5	1666	18	33	26
FLIP 85-7L	1700	26	593	6	137	18	858	17	1942	3	40	18
FLIP 86-13L	1412	34	318	31	57	34	467	35	1504	21	42	15
FLIP 87-4L	2110	12	320	30	116	24	852	18	1180	36	36	19
FLIP 87-6L	1871	22	450	22	75	31	912	10	1263	31	34	22
FLIP 87-11L	2246	8	551	8	113	26	952	8	1715	13	48	12
FLIP 87-15L	1918	19	420	26	256	3	873	15	1456	27	64	4
FLIP 87-20L	2432	6	388	29	117	23	464	36	1239	33	26	30
FLIP 88-1L	3010	1	642	4	181	10	943	9	1322	30	61	8
FLIP 88-2L	1532	31	288	35	259	2	1131	2	1733	12	53	10
FLIP 88-3L	1659	28	461	19	109	28	969	6	1871	5	34	23
FLIP 88-4L	2459	5	296	33	174	12	638	33	1227	34	62	6
FLIP 88-5L	1853	23	459	21	137	17	702	30	1444	28	61	7
FLIP 88-6L	2246	9	544	11	253	4	880	14	1378	29	44	14
FLIP 88-7L	2097	13	509	14	125	22	726	26	1840	6	56	9
FLIP 88-8L	1822	24	420	25	192	9	816	23	1775	9	46	13
FLIP 88-9L	2297	7	459	20	226	6	831	21	1463	26	71	3
FLIP 88-10L	1535	30	547	10	172	13	782	24	1470	25	64	5
FLIP 88-11L	2469	4	471	18	243	5	721	27	1750	10	40	17
FLIP 88-12L	2180	10	310	32	320	1	1134	1	1784	8	50	11
FLIP 88-13L	1433	33	549	9	214	7	665	32	2080	1	141	1
FLIP 88-14L	1937	18	694	1	111	27	689	31	1682	15	24	33
FLIP 88-32L	1797	25	290	34	130	20	761	25	1260	32	33	27
FLIP 89-1L	2596	2	397	28	44	35	961	7	1482	24	24	34
FLIP 89-2L	1997	16	251	36	127	21	1098	3	1934	4	34	24
FLIP 89-3L	1696	27	645	3	179	11	576	34	1501	22	29	29
FLIP 89-4L	1878	20	485	16	114	25	898	12	1494	23	25	32
FLIP 89-5L	1536	29	438	23	145	16	1010	4	1740	11	42	16
FLIP 89-6L	2141	11	526	12	147	15	872	16	1680	16	34	21
FLIP 89-7L	1960	17	670	2	92	29	719	28	1662	19	33	25
FLIP 89-8L	1524	32	424	24	205	8	710	29	1208	35	17	36
FLIP 89-9L	2002	15	506	15	33	36	909	11	2045	2	23	35
FLIP 89-10L	1875	21	624	5	57	33	838	20	1676	17	25	31
Local check	1230	36	512	13	134	19	883	13	1629	20	29	28
Location Mean	1953		471		148		831		1600		44	
S.E. of Mean	292.02		76.62		41.03		107.76		191.83		18.16	
L.S.D. at 5%	850.60		223.17		119.51		309.37		558.76		-	
C.V. (%)	21.15		23.03		39.27		18.34		16.96		58.17	
Error d.f.	25		25		25		35		25		35	
Significance	*		*		*		*		*		NS	
Efficiency	116.05		165.11		101.31		-		113.25		-	
Test > L. Check	13		0		3		0		0		-	

Cont'd. ...

Table 5.4.5. Cont'd. ...

Selection	TUNISIA						TURKEY		Overall Mean (1)	
	Beja-1		Beja-2		El Kef		Diyarbakir			
	Y	R	Y	R	Y	R	Y	R	Y	R
Local large	609	31	272	36	1241	22	163	12	923	5
FLIP 84-144L	1012	6	923	9	1765	5	163	14	810	19
FLIP 84-156L	814	19	733	22	1645	7	200	6	795	21
FLIP 85-7L	1010	7	482	29	2005	3	117	28	829	17
FLIP 86-13L	742	24	560	28	1161	28	110	29	725	34
FLIP 87-4L	1105	2	1144	2	1369	19	127	24	758	29
FLIP 87-6L	649	29	692	27	1606	9	157	17	738	32
FLIP 87-11L	887	14	824	16	1318	21	210	5	852	11
FLIP 87-15L	872	16	754	20	1534	13	227	4	958	4
FLIP 87-20L	195	36	1118	4	1130	30	77	33	844	14
FLIP 88-1L	470	34	470	31	1483	15	193	8	987	1
FLIP 88-2L	406	35	751	21	2322	1	180	11	850	12
FLIP 88-3L	725	25	873	10	1137	29	67	35	877	9
FLIP 88-4L	754	22	867	12	1204	25	153	18	844	13
FLIP 88-5L	1012	5	800	17	1555	12	137	23	761	27
FLIP 88-6L	562	32	280	35	1011	34	193	9	918	6
FLIP 88-7L	684	27	791	19	896	36	127	25	982	2
FLIP 88-8L	709	26	730	24	1602	10	197	7	967	3
FLIP 88-9L	831	17	1075	5	1075	32	160	15	878	8
FLIP 88-10L	886	15	963	7	1748	6	187	10	757	30
FLIP 88-11L	804	20	860	13	1320	20	110	30	823	18
FLIP 88-12L	819	18	795	18	1192	26	57	36	910	7
FLIP 88-13L	676	28	424	33	1221	23	120	27	759	28
FLIP 88-14L	742	23	962	8	1176	27	123	26	716	35
FLIP 88-32L	799	21	365	34	1216	24	67	34	750	31
FLIP 89-1L	1088	3	731	23	1461	16	163	13	861	10
FLIP 89-2L	547	33	703	25	1561	11	233	2	838	16
FLIP 89-3L	1002	8	1161	1	1790	4	103	31	772	25
FLIP 89-4L	1272	1	1123	3	1642	8	143	21	736	33
FLIP 89-5L	636	30	840	15	1395	18	87	32	785	22
FLIP 89-6L	896	12	851	14	976	35	140	22	770	26
FLIP 89-7L	904	10	429	32	1503	14	147	20	778	24
FLIP 89-8L	902	11	867	11	2070	2	160	16	844	15
FLIP 89-9L	893	13	693	26	1057	33	147	19	805	20
FLIP 89-10L	966	9	470	30	1079	31	230	3	779	23
Local check	1016	4	1027	6	1421	17	250	1		
Location Mean	803		761		1413		151			
S.E. of Mean	146.31		221.30		197.20		32.13			
L.S.D. at 5%	426.16		644.60		574.41		92.23			
C.V. (%)	265.77		41.12		20.73		30.16			
Error d.f.	25		25		25		35			
Significance	*		*		*		*			
Efficiency	127.55		119.44		137.46		-			
Test > L. Check	0		0		3		-			

(1) Marow and Manitoba were excluded from the overall mean., + Location not analysed thus mean values are unadjusted.

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

Table 5.4.6. The five heaviest seed yielding entries at the individual locations in the LISN-L during 1988/89.

Rank	ALGERIA		CANADA	CHILE	ETHIOPIA	IRAN				JORDAN
	Setif	Sidi Bel Abbas	Manitoba	Chillan	Debre Zeit	Ghazvin	Karaj	Maraghah	Oroumieh	Jubeiha
1	FLIP 88- 12L	FLIP 85- 7L	FLIP 88- 5L	Local large	Local check	FLIP 88- 8L	FLIP 87- 15L	FLIP 88- 10L	Local check	FLIP 89- 10L
2	Local check	FLIP 84-144L	FLIP 88- 32L	FLIP 84-156L	FLIP 87- 20L	Local check	FLIP 85- 7L	FLIP 88- 5L	FLIP 84-144L	FLIP 88- 7L
3	FLIP 84-144L	FLIP 89- 1L	FLIP 89- 3L	FLIP 88- 12L	FLIP 88- 1L	FLIP 87- 15L	FLIP 88- 6L	FLIP 85- 7L	FLIP 89- 2L	FLIP 88- 8L
4	FLIP 88- 4L	FLIP 89- 5L	FLIP 89- 1L	FLIP 89- 9L	Local large	FLIP 89- 8L	FLIP 88- 7L	FLIP 87- 6L	FLIP 89- 9L	FLIP 88- 1L
5	FLIP 87- 4L	FLIP 88- 13L	FLIP 86- 13L	FLIP 88- 1L	FLIP 88- 8L	FLIP 89- 5L	FLIP 88- 39L	FLIP 86- 13L	FLIP 87- 20L	FLIP 89- 7L

Cont'd. ...

Rank	JORDAN				LEBANON	PAKISTAN	PORTUGAL	QATAR	SPAIN
	Marow	Mushagar	Raba'a	Ramtha	Terbol	Faisalabad	Elvas	Rawdat Harma	El Encin
1	FLIP 88- 1L	FLIP 89- 1L	Local large	FLIP 87- 15L	Local large	FLIP 88- 7L	FLIP 87- 20L	FLIP 88- 8L	FLIP 88- 1L
2	FLIP 89- 2L	Local large	FLIP 87- 15L	Local large	FLIP 88- 8L	FLIP 88- 3L	FLIP 88- 4L	FLIP 88- 7L	FLIP 89- 1L
3	FLIP 89- 7L	FLIP 84-156L	FLIP 88- 7L	FLIP 88- 2L	FLIP 88- 7L	FLIP 88- 1L	FLIP 88- 12L	FLIP 87- 20L	Local large
4	FLIP 88- 6L	FLIP 89- 9L	FLIP 88- 6L	FLIP 88- 1L	FLIP 89- 1L	FLIP 88- 6L	FLIP 88- 11L	FLIP 88- 1L	FLIP 88- 11L
5	FLIP 88- 13L	FLIP 88- 12L	FLIP 84-144L	FLIP 88- 8L	FLIP 87- 11L	FLIP 87- 15L	Local large	FLIP 88- 3L	FLIP 88- 4L

Cont'd. ...

Rank	SYRIA				TUNISIA			TURKEY	
	Aleppo	Gelline	Heimo	Idleb	Tel Hadya	Beja-1	Beja-2	El Kef	Diyarbakir
1	FLIP 88- 14L	FLIP 88- 12L	FLIP 88- 12L	FLIP 88- 13L	FLIP 88- 13L	FLIP 89- 4L	FLIP 89- 3L	FLIP 88- 2L	Local check
2	FLIP 89- 7L	FLIP 88- 2L	FLIP 88- 2L	FLIP 89- 9L	Local large	FLIP 87- 4L	FLIP 87- 4L	FLIP 89- 8L	FLIP 89- 2L
3	FLIP 89- 3L	FLIP 87- 15L	FLIP 89- 2L	FLIP 85- 7L	FLIP 88- 9L	FLIP 89- 1L	FLIP 89- 4L	FLIP 85- 7L	FLIP 89- 10L
4	FLIP 88- 1L	FLIP 88- 6L	FLIP 89- 5L	FLIP 89- 2L	FLIP 87- 15L	Local check	FLIP 87- 20L	FLIP 89- 3L	FLIP 87- 15L
5	FLIP 89- 10L	FLIP 88- 11L	FLIP 84-156L	FLIP 88- 3L	FLIP 88- 10L	FLIP 85- 5L	FLIP 88- 9L	FLIP 84-144L	FLIP 87- 11L

maturity ranged from 142 to 148 days (Table 5.4.3). The plant height data (5.4.4) revealed that the entries were tallest at Rawdat Harma in Qatar (54 cm). The entry means overall locations revealed that the entries FLIP 85-7L, FLIP84-156L, FLIP 88- 10L, FLIP 88-14L, FLIP 89-6L, FLIP 89-7L, FLIP 89- 9L and FLIP 89-10L were the tallest with plant height of 31 or 32 cm.

Adjusted seed yields of different entries at various locations are given in Table 5.4.5. The location mean was highest at El Encin in Spain (1953 kg/ha). The locations Sidi Bel Abbes (Algeria), Diyarbakir (Turkey), Ghazvin (Iran), Marow in Jordan, Tel Hadya and Gelline in Syria gave very poor yields (36 to 151 kg/ha). The ANOVA of the experimental design revealed that at Sidi Bel Abbes in Algeria; Jubeiha, Marow, Mushagar and Ramtha in Jordan; Faisalabad in Pakistan; Elvas in Portugal; Rawdat Harma in Qatar; El Encin in Spain; Gelline in Syria and El Kef in Tunisia 4, 3, 5, 4, 1, 2, 32, 4, 13, 3, and 3 test entries, respectively exceeded the local check by a significant margin. The five heaviest yielders across locations included FLIP 88-1L, FLIP 88-7L, FLIP 88-8L, FLIP 87-15L and Syrian Local Large and yielded 987, 982, 967, 958 and 923 kg/ha, respectively.

The five heaviest yielders at each location are given in Table 5.4.6. It was noticed that Syrian Local Large, FLIP 87-15L, FLIP 88-1L, and FLIP89-1L occurred most frequently among the top five heaviest yielders and were relatively more adaptable.

5.5. LENTIL INTERNATIONAL SCREENING NURSERY-SMALL SEED (LISN-S)

Material

The Lentil International Screening Nursery-Small Seed comprised 48 test entries and one local check which 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 48 test entries and one check was sown in a 7x7 simple lattice design in two replications. The suggested plot size was single row 4 m long accomodating 200 plants with between-row spacing of 25 cm.

Thirty sets of the nursery were supplied to different cooperators in 15 countries but the results were received from 23 locations in 12 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

Table 5.5.1. Agronomic data for different locations in the LISN-S during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
ALGERIA	Sidi Bel Abbas	01.12.1988	05.06.1989		46		-	-	Syrie 229
AUSTRIA	Grob-Enzersdorf	28.04.1989	09.11.1989	25	60		-	Tribunil	Lerka
ETHIOPIA	Debre Zeit	21.07.1989	05.11.1989	-			-	-	NEL -358
IRAN	Ghazvin	09.04.1989	27.06.1989		100		-	-	Ghazvin
IRAN	Karaj	04.04.1989	24.06.1989		70		-	Treflan & Methasystox	Ziba
IRAN	Maragheh	04.04.1989	07.07.1989	14	37		-	-	NA
JORDAN	Jubeiha	10.12.1988	NA	20	50		-	-	Jordan -1
JORDAN	Ramtha	01.11.1988	NA	20	50		-	-	Jordan -1
LEBANON	Terbol	24.11.1988	15.05.1989		50		-	Kerb & Bladex	NA
PAKISTAN	Faisalabad	21.11.1988	05.05.1989	20	60		1	-	Masoor
PORTUGAL	Elvas	13.12.1988	02.06.1989		60	60	-	-	L -188
QATAR	Rawdat Harmah	06.11.1988	02.05.1989	90	150		14	-	Unknown
SPAIN	El Encin	16.11.1988	20.06.1989	32	96		-	Gezagard	Angela
SYRIA	Aleppo	14.11.1988	03.05.1989		50		-	-	Hurani -1
SYRIA	Gelline	04.12.1988	08.05.1989	20	50		-	-	Hurani -1
SYRIA	Heimo	26.11.1988	29.05.1989		50		-	-	Hurani -1
SYRIA	Idleb	30.11.1988	09.05.1989	25	60		-	-	Idleb -1
SYRIA	Izra'a	05.01.1989	30.05.1989	-			-	-	-
SYRIA	Tel Hadya	29.11.1988	27.05.1989		50		-	Kerb, Bladex	ILL 4400
TUNISIA	Beja -1	23.11.1988	NA		NA		NA	NA	NA
TUNISIA	Beja -2	23.11.1988	NA		NA		NA	NA	NA
TUNISIA	El Kef	12.11.1988	NA		NA		NA	NA	NA
TURKEY	Diyarbakir	09.12.1988	01.06.1989	30	60		-	-	Firat 87

Table 5.5.2. Adjusted time to flowering (days) of entries at different locations in the LISN-S during 1988/89.

Selection	ILL	Origin	ALGERIA	AUSTRIA	ETHIOPIA	IRAN		JORDAN		LEBANON	
			Sidi Bel Abbes	Grob- Enzersdorf	Debre Zeit	Ghazvin	Karaj	Maragheh	Jubeiha	Ramtha	Terbol
Local small	4401	Syria	122	49	78	61	64	63	89	82	125
FLIP 87-32L	6222	ICARDA	118	47	80	57	63	61	84	83	124
FLIP 87-41L	6231	ICARDA	120	48	91	56	62	57	89	82	124
FLIP 87-43L	6233	ICARDA	121	50	74	56	55	63	89	83	123
FLIP 87-44L	6234	ICARDA	119	47	86	59	61	61	89	84	124
FLIP 87-45L	6235	ICARDA	119	48	88	60	59	59	87	85	124
FLIP 87-51L	6241	ICARDA	123	48	77	55	57	59	89	84	124
FLIP 88-15L	6439	ICARDA	130	48	78	59	66	60	89	83	127
FLIP 88-16L	6440	ICARDA	123	48	56	51	53	57	83	82	124
FLIP 88-17L	6441	ICARDA	123	50	59	53	54	59	88	83	127
FLIP 88-18L	6442	ICARDA	120	48	69	54	57	63	88	83	121
FLIP 88-19L	6443	ICARDA	121	48	62	53	55	64	85	83	125
FLIP 88-21L	6445	ICARDA	120	48	52	49	52	59	87	83	125
FLIP 88-24L	6448	ICARDA	123	48	88	61	63	64	90	83	125
FLIP 88-25L	6449	ICARDA	117	46	48	52	47	59	85	83	123
FLIP 88-27L	6451	ICARDA	119	49	72	56	62	57	83	84	123
FLIP 88-28L	6452	ICARDA	123	47	87	54	56	58	87	83	124
FLIP 88-29L	6453	ICARDA	121	47	66	55	57	56	83	84	121
FLIP 88-30L	6454	ICARDA	120	47	63	54	61	61	83	83	123
FLIP 88-31L	6455	ICARDA	121	48	69	58	60	58	90	83	124
FLIP 89-11L	6769	ICARDA	123	52	78	59	59	59	89	82	125
FLIP 89-12L	6770	ICARDA	123	48	81	58	63	58	89	83	125
FLIP 89-13L	6771	ICARDA	123	50	59	59	60	59	88	83	124
FLIP 89-14L	6772	ICARDA	122	48	91	57	63	63	89	84	124
FLIP 89-15L	6773	ICARDA	117	48	90	59	58	61	85	84	123
FLIP 89-16L	6774	ICARDA	121	47	65	52	55	58	86	82	123
FLIP 89-17L	6775	ICARDA	119	49	89	54	61	58	85	83	124
FLIP 89-18L	6776	ICARDA	117	50	89	58	61	60	89	83	124
FLIP 89-19L	6777	ICARDA	118	52	85	56	63	58	89	83	125

Cont'd. ...

Table 5.5.2. Cont'd. ...

Selection	ILL	origin	ALGERIA	AUSTRIA	ETHIOPIA	IRAN		JORDAN		LEBANON	
			Sidi Bel Abbes	Grob- Enzersdorf	Debre Zeit	Ghazvin	Karaj	Maragheh	Jubeiha	Ramtha	Terbol
FLIP 89-20L	6778	ICARDA	121	50	81	56	61	59	89	84	125
FLIP 89-21L	6779	ICARDA	123	48	65	52	57	63	85	84	123
FLIP 89-22L	6780	ICARDA	118	51	81	58	58	62	90	85	125
FLIP 89-23L	6781	ICARDA	122	49	77	62	57	59	86	84	121
FLIP 89-24L	6782	ICARDA	122	49	80	58	57	59	85	84	123
FLIP 89-25L	6783	ICARDA	118	48	81	57	55	61	84	84	124
FLIP 89-26L	6784	ICARDA	120	52	85	55	61	59	87	83	123
FLIP 89-27L	6785	ICARDA	121	48	84	53	60	58	88	83	125
FLIP 89-28L	6786	ICARDA	127	49	81	57	67	62	88	84	125
FLIP 89-29L	6787	ICARDA	119	48	85	59	61	60	84	83	124
FLIP 89-30L	6788	ICARDA	118	49	70	61	58	60	89	83	125
FLIP 89-31L	6789	ICARDA	124	51	88	56	61	64	89	83	125
FLIP 89-32L	6790	ICARDA	116	48	81	58	62	59	84	83	123
FLIP 89-33L	6791	ICARDA	117	48	88	56	60	58	86	83	125
FLIP 89-34L	6792	ICARDA	118	47	85	60	60	58	87	82	124
FLIP 89-35L	6793	ICARDA	120	51	79	60	67	63	91	84	125
FLIP 89-36L	6794	ICARDA	118	47	63	63	51	58	89	85	125
FLIP 89-37L	6795	ICARDA	121	53	88	57	63	60	89	84	125
FLIP 89-38L	6796	ICARDA	126	52	89	56	64	59	89	83	123
Local check	-	ICARDA	130	52	58	64	61	63	89	85	131
Location Mean			121	49	77	57	59	60	87	83	124
S.E. of Mean			2.64	0.88	3.39	2.02	2.59	1.66	1.44	0.67	0.56
L.S.D. at 5%			7.57	2.49	9.72	5.78	7.42	4.75	4.10	1.91	1.58
C.V. (%)			3.09	2.55	6.25	5.02	6.17	3.91	2.34	1.13	0.63
Error d.f.			36	48	36	36	36	36	48	36	48
Significance			*	*	*	*	*	*	*	*	*

Cont'd. ...

Table 5.5.2. Cont'd. ...

Selection	PAKISTAN	PORTUGAL	QATAR	SPAIN		SYRIA			TURKEY		Overall Mean	
	Faisalabad	Elvas	Rawdat Harma	El Encin	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya		Diyarbakir
Local small	110	110	112	152	131	120	135	125	96	122	129	104
FLIP 87-32L	111	107	108	152	131	119	134	124	92	122	127	102
FLIP 87-41L	111	107	107	149	133	120	135	125	90	124	128	103
FLIP 87-43L	111	108	107	153	128	119	135	125	87	119	126	102
FLIP 87-44L	111	107	108	148	130	118	135	126	93	126	126	103
FLIP 87-45L	110	109	111	152	126	119	135	124	92	119	127	103
FLIP 87-51L	111	107	109	153	129	118	135	125	93	126	127	102
FLIP 88-15L	110	114	113	145	132	121	134	126	99	125	129	104
FLIP 88-16L	107	107	116	147	127	117	135	122	92	121	127	100
FLIP 88-17L	109	110	111	156	134	120	136	125	94	127	128	102
FLIP 88-18L	110	106	115	150	125	118	134	124	95	123	126	101
FLIP 88-19L	107	110	109	152	133	121	135	124	96	124	128	102
FLIP 88-21L	111	108	112	156	131	119	134	123	94	123	127	101
FLIP 88-24L	112	107	111	152	130	119	136	125	98	123	125	104
FLIP 88-25L	104	107	101	147	124	112	133	120	86	117	124	97
FLIP 88-27L	108	107	109	151	125	120	134	122	89	120	126	101
FLIP 88-28L	106	107	112	150	129	118	135	125	93	122	127	102
FLIP 88-29L	106	105	114	151	123	118	134	120	88	124	126	100
FLIP 88-30L	107	107	104	147	129	114	135	121	92	121	127	100
FLIP 88-31L	111	107	112	157	133	120	135	126	99	119	127	103
FLIP 89-11L	112	108	114	162	134	120	136	127	90	126	128	104
FLIP 89-12L	109	110	108	159	134	120	136	126	91	124	129	104
FLIP 89-13L	109	104	112	151	131	119	135	124	93	121	129	102
FLIP 89-14L	111	107	113	151	128	119	135	126	97	126	126	104
FLIP 89-15L	108	107	107	152	128	119	135	125	93	125	127	103
FLIP 89-16L	107	107	107	146	126	117	135	122	89	119	125	99
FLIP 89-17L	111	107	110	147	128	119	135	124	93	124	126	102
FLIP 89-18L	110	107	114	154	133	118	135	125	94	125	127	104
FLIP 89-19L	110	107	115	155	128	119	135	125	94	124	126	103

Cont'd. ...

Table 5.5.2. Cont'd. ...

Selection	PAKISTAN	PORTUGAL	QATAR	SPAIN	SYRIA					TURKEY		Overall Mean
	Faisalabad	Elvas	Rawdat Harma	El Encin	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyar-bakir	
FLIP 89-20L	112	108	109	160	135	120	134	127	95	124	127	104
FLIP 89-21L	110	111	113	150	130	119	134	125	95	125	127	102
FLIP 89-22L	111	108	107	160	133	119	135	126	91	124	128	104
FLIP 89-23L	111	107	106	148	124	119	133	125	93	123	126	102
FLIP 89-24L	107	110	115	151	126	118	135	124	94	125	126	102
FLIP 89-25L	110	107	103	150	131	119	135	124	92	120	127	102
FLIP 89-26L	109	107	112	155	132	119	135	125	91	125	128	103
FLIP 89-27L	110	108	113	146	130	119	135	124	92	125	127	102
FLIP 89-28L	112	110	116	157	135	120	136	126	92	123	128	105
FLIP 89-29L	111	107	114	157	130	119	135	125	97	125	128	103
FLIP 89-30L	110	107	116	154	133	119	135	124	95	124	127	103
FLIP 89-31L	113	111	110	157	135	120	135	127	96	126	126	105
FLIP 89-32L	111	108	114	150	127	116	135	124	90	123	128	102
FLIP 89-33L	111	108	112	147	131	119	135	124	93	125	126	103
FLIP 89-34L	112	107	113	150	127	119	134	124	91	122	128	102
FLIP 89-35L	112	108	114	156	133	120	136	123	97	125	128	105
FLIP 89-36L	103	107	108	155	132	119	136	124	94	123	127	101
FLIP 89-37L	112	107	116	154	128	119	134	126	96	125	126	104
FLIP 89-38L	112	107	114	145	131	119	135	126	92	125	127	104
Local check	91	107	107	171	132	120	135	125	92	119	137	
Location Mean	109	108	111	152	130	119	135	124	93	123	127	
S.E. of Mean	0.76	1.22	3.24	1.05	1.28	0.71	0.53	0.75	2.06	1.50	0.57	
L.S.D. at 5%	2.17	3.49	-	3.00	3.67	2.03	1.53	2.14	5.91	4.30	1.62	
C.V. (%)	0.98	1.60	4.14	0.97	1.39	0.84	0.56	0.86	3.14	1.72	0.63	
Error d.f.	36	36	48	36	36	36	36	48	36	36	36	
Significance	*	*	NS	*	*	*	*	*	*	*	*	

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

Table 5.5.3. Adjusted time to maturity (days) of entries at different locations in the LISN-S during 1988/89.

Selection	ALGERIA		IRAN		LEBANON	PAKISTAN	PORTUGAL	QATAR	SPAIN
	Sidi Bel Abbes	Ghazvin	Karaj	Maragheh	Terbol	Faisalabad	Elvas	Rawdat Harmah	El Encin
Local small	176	83	90	82	155	159	153	161	205
FLIP 87-32L	177	83	90	87	153	161	153	157	205
FLIP 87-41L	173	85	90	83	154	160	153	153	202
FLIP 87-43L	177	77	88	87	154	162	151	157	208
FLIP 87-44L	178	83	88	85	153	160	151	156	201
FLIP 87-45L	174	84	89	83	154	160	153	160	199
FLIP 87-51L	173	85	88	84	155	160	153	156	205
FLIP 88-15L	165	83	90	81	157	160	153	161	201
FLIP 88-16L	176	79	88	81	153	158	153	161	199
FLIP 88-17L	172	81	88	83	156	158	153	162	207
FLIP 88-18L	176	84	89	87	156	158	153	162	198
FLIP 88-19L	177	84	89	83	157	154	153	164	207
FLIP 88-21L	173	73	89	83	157	160	153	164	210
FLIP 88-24L	177	83	89	85	153	162	151	163	205
FLIP 88-25L	171	76	88	81	153	159	153	152	208
FLIP 88-27L	177	85	90	85	153	159	150	156	203
FLIP 88-28L	176	81	87	87	157	155	153	165	205
FLIP 88-29L	174	82	89	83	157	156	153	162	207
FLIP 88-30L	177	82	90	87	160	156	153	158	209
FLIP 88-31L	173	81	89	83	159	163	153	164	210
FLIP 89-11L	176	83	89	84	155	161	153	160	203
FLIP 89-12L	177	83	90	84	154	159	153	150	205
FLIP 89-13L	172	83	90	81	153	159	151	163	203
FLIP 89-14L	175	82	86	86	154	163	150	163	202
FLIP 89-15L	169	85	88	86	154	158	150	160	200
FLIP 89-16L	172	83	87	81	159	156	153	155	208
FLIP 89-17L	175	81	90	84	154	162	151	165	199
FLIP 89-18L	174	82	87	88	154	158	151	159	208
FLIP 89-19L	173	84	90	89	154	158	153	161	206

Cont'd. ...

Table 5.5.3. Cont'd. ...

Selection	ALGERIA		IRAN		LEBANON	PAKISTAN	PORTUGAL	QATAR	SPAIN
	Sidi Bel Abbes	Ghazvin	Karaj	Maragheh	Terbol	Faisalabad	Elvas	Rawdat Harmah	El Encin
FLIP 89-20L	178	85	90	83	153	162	152	161	204
FLIP 89-21L	176	80	89	81	156	158	153	159	197
FLIP 89-22L	174	84	89	83	153	161	153	155	208
FLIP 89-23L	170	83	89	81	153	162	153	154	204
FLIP 89-24L	172	84	90	86	156	157	153	159	206
FLIP 89-25L	173	84	89	89	154	159	153	156	206
FLIP 89-26L	174	85	88	84	154	157	153	161	207
FLIP 89-27L	170	83	90	86	154	159	153	161	199
FLIP 89-28L	173	82	90	87	154	161	153	164	204
FLIP 89-29L	178	83	90	89	155	160	153	164	200
FLIP 89-30L	177	80	89	85	155	159	153	161	205
FLIP 89-31L	177	83	90	84	155	163	153	159	203
FLIP 89-32L	176	83	90	88	156	161	150	155	201
FLIP 89-33L	177	84	90	83	156	161	153	163	198
FLIP 89-34L	177	85	89	83	155	161	153	163	202
FLIP 89-35L	178	83	90	86	155	162	149	160	207
FLIP 89-36L	176	82	88	82	153	159	153	163	208
FLIP 89-37L	177	81	90	87	154	161	151	164	203
FLIP 89-38L	173	85	90	83	154	162	151	158	197
Local check	174	84	89	90	161	151	149	154	213
Location Mean	174	82	89	84	155	159	152	159	204
S.E. of Mean	2.58	1.98	0.91	1.75	1.00	0.98	1.10	4.23	1.98
L.S.D. at 5%	-	-	-	4.98	2.84	2.79	-	-	5.64
C.V. (%)	2.09	3.41	1.45	2.94	0.91	0.78	1.03	3.75	1.38
Error d.f.	48	48	48	48	48	48	36	48	48
Significance	NS	NS	NS	*	*	*	NS	NS	*

Cont'd. ...

Table 5.5.3. Cont'd. ...

Selection	SYRIA						TURKEY		Overall Mean
	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir		
Local small	162	146	165	151	134	153	169	146	
FLIP 87-32L	160	143	165	152	135	153	170	146	
FLIP 87-41L	160	143	165	152	133	156	169	145	
FLIP 87-43L	159	143	164	151	132	152	169	146	
FLIP 87-44L	159	143	167	152	133	156	169	146	
FLIP 87-45L	159	143	164	151	132	153	170	145	
FLIP 87-51L	161	144	167	152	136	159	170	147	
FLIP 88-15L	157	144	169	151	132	157	168	145	
FLIP 88-16L	164	141	163	151	135	158	170	145	
FLIP 88-17L	165	145	169	152	135	154	170	147	
FLIP 88-18L	160	144	163	152	137	153	170	146	
FLIP 88-19L	162	146	171	152	136	156	169	147	
FLIP 88-21L	161	144	163	152	136	155	170	146	
FLIP 88-24L	161	145	168	151	135	153	168	147	
FLIP 88-25L	156	143	163	151	133	152	170	144	
FLIP 88-27L	157	143	160	151	134	153	171	145	
FLIP 88-28L	162	142	164	152	133	156	170	146	
FLIP 88-29L	157	143	163	151	133	159	170	146	
FLIP 88-30L	162	145	168	153	136	159	170	148	
FLIP 88-31L	164	147	173	152	137	161	170	149	
FLIP 89-11L	164	143	169	152	134	158	170	147	
FLIP 89-12L	162	143	163	152	133	154	169	146	
FLIP 89-13L	163	143	164	151	134	152	169	146	
FLIP 89-14L	160	143	168	152	134	160	170	147	
FLIP 89-15L	160	143	170	152	136	154	170	146	
FLIP 89-16L	163	144	170	153	136	157	170	146	
FLIP 89-17L	159	143	170	152	133	152	170	146	
FLIP 89-18L	165	143	167	152	136	161	170	147	
FLIP 89-19L	162	144	168	152	136	153	170	147	

Cont'd. ...

Table 5.5.3. Cont'd. ...

Selection	SYRIA						TURKEY	Overall Mean
	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
FLIP 89-20L	165	144	167	152	131	155	170	147
FLIP 89-21L	162	145	164	152	136	162	169	146
FLIP 89-22L	164	143	166	152	133	152	169	146
FLIP 89-23L	161	144	170	151	133	160	170	146
FLIP 89-24L	161	144	164	151	135	162	170	147
FLIP 89-25L	166	144	167	152	134	155	169	147
FLIP 89-26L	160	143	168	152	134	157	170	147
FLIP 89-27L	161	143	171	152	135	157	170	146
FLIP 89-28L	161	143	163	151	135	153	170	146
FLIP 89-29L	162	144	168	152	136	155	170	147
FLIP 89-30L	161	143	163	151	135	157	169	146
FLIP 89-31L	160	143	167	151	136	155	170	147
FLIP 89-32L	162	143	163	152	136	156	170	146
FLIP 89-33L	163	143	169	151	134	157	170	147
FLIP 89-34L	161	143	169	151	134	152	169	147
FLIP 89-35L	162	144	170	152	134	159	170	147
FLIP 89-36L	159	144	165	151	134	153	170	146
FLIP 89-37L	158	142	164	151	134	152	170	146
FLIP 89-38L	161	143	169	152	134	156	170	146
Local check	165	146	171	151	136	161	171	
Location Mean	161	143	166	152	134	156	170	
S.E. of Mean	2.00	0.48	1.06	0.33	1.14	2.78	0.35	
L.S.D. at 5%	5.74	1.36	3.03	0.94	3.28	7.90	1.00	
C.V. (%)	1.76	0.47	0.90	0.30	1.20	2.53	0.29	
Error d.f.	36	48	36	36	36	48	36	
Significance	*	*	*	*	*	*	*	

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

Table 5.5.4. Adjusted plant height (cm) of entries at different locations in the LISN-S during 1988/89.

Selection	ALGERIA	AUSTRIA	ETHIOPIA	IRAN			JORDAN	LEBANON	PAKISTAN	
	Sidi-Bel Abbas	Grob-Enzersdorf	Debre Zeit	Ghazvin	Karaj	Maragheh	Jubeiha	Ramtha	Terbol	Faisalabad
Local small	28	28	41	18	24	16	27	27	32	51
FLIP 87-32L	25	31	44	17	27	15	28	29	33	50
FLIP 87-41L	22	26	44	24	25	15	32	30	29	51
FLIP 87-43L	20	28	43	24	30	14	31	32	33	54
FLIP 87-44L	20	22	42	23	27	13	27	33	34	53
FLIP 87-45L	23	24	44	22	28	10	35	30	31	53
FLIP 87-51L	23	29	42	20	25	11	27	32	31	56
FLIP 88-15L	15	20	38	22	21	11	27	32	32	57
FLIP 88-16L	20	24	47	22	28	10	31	29	32	54
FLIP 88-17L	23	22	45	19	27	15	28	27	30	53
FLIP 88-18L	25	31	47	24	25	15	28	28	32	51
FLIP 88-19L	25	28	47	20	30	13	27	30	32	54
FLIP 88-21L	25	28	43	22	26	14	31	36	31	55
FLIP 88-24L	20	20	35	21	22	12	31	32	30	52
FLIP 88-25L	20	23	46	23	26	14	30	26	32	52
FLIP 88-27L	24	30	41	25	26	16	26	31	32	55
FLIP 88-28L	23	30	46	21	27	16	31	22	34	51
FLIP 88-29L	19	22	44	19	28	13	33	30	32	51
FLIP 88-30L	21	30	47	22	29	18	26	29	34	49
FLIP 88-31L	20	28	41	23	26	16	29	31	34	52
FLIP 89-11L	23	33	41	19	26	15	33	30	29	53
FLIP 89-12L	25	23	42	22	27	16	30	29	33	50
FLIP 89-13L	23	25	46	20	24	15	28	26	30	53
FLIP 89-14L	23	25	43	24	27	14	31	29	31	54
FLIP 89-15L	23	28	45	22	30	15	31	26	35	53
FLIP 89-16L	23	27	48	21	29	13	31	31	32	51
FLIP 89-17L	26	30	44	23	26	16	30	29	32	51
FLIP 89-18L	24	24	45	22	31	21	26	30	32	51
FLIP 89-19L	25	34	40	23	30	19	28	36	28	50

Cont'd. ...

Table 5.5.4. Cont'd. ...

Selection	ALGERIA	AUSTRIA	ETHIOPIA	IRAN			JORDAN	LEBANON	PAKISTAN	
	Sidi- Bel Abbas	Grob- Enzersdorf	Debre Zeit	Ghazvin	Karaj	Maragheh	Jubeiha	Ramtha	Terbol	Faisalabad
FLIP 89-20L	27	24	41	23	29	17	30	30	30	49
FLIP 89-21L	23	29	47	20	22	11	27	26	32	52
FLIP 89-22L	23	30	44	24	28	15	31	33	32	49
FLIP 89-23L	25	18	42	22	29	13	31	32	31	53
FLIP 89-24L	22	24	47	23	29	10	28	30	31	57
FLIP 89-25L	23	27	45	21	32	18	27	29	34	57
FLIP 89-26L	24	30	46	27	29	17	30	34	34	53
FLIP 89-27L	20	25	46	19	30	19	27	31	32	50
FLIP 89-28L	25	28	40	21	24	17	31	35	31	53
FLIP 89-29L	23	34	42	21	29	22	28	31	31	54
FLIP 89-30L	25	31	48	20	31	14	30	34	33	55
FLIP 89-31L	20	27	44	20	31	13	30	35	32	51
FLIP 89-32L	23	32	46	19	30	15	30	31	32	51
FLIP 89-33L	20	24	47	23	27	17	31	37	30	51
FLIP 89-34L	20	32	43	24	27	11	29	29	31	50
FLIP 89-35L	25	27	43	20	23	11	28	28	29	49
FLIP 89-36L	25	25	46	19	24	12	32	32	32	53
FLIP 89-37L	27	26	41	24	26	16	27	29	31	54
FLIP 89-38L	24	25	46	26	27	17	28	30	31	54
Local check	23	42	45	16	29	12	29	35	42	50
Location Mean	23	27	44	22	27	15	29	30	32	52
S.E. of Mean	2.48	1.47	2.39	2.12	1.51	2.33	2.48	2.95	1.66	1.39
L.S.D. at 5%	-	4.21	6.86	6.09	4.32	6.68	-	-	4.77	3.95
C.V. (%)	15.44	7.65	7.72	13.87	7.83	22.59	11.95	13.66	7.37	3.77
Error d.f.	48	36	36	36	36	36	36	36	36	48
Significance	NS	*	*	*	*	*	NS	NS	*	*

Cont'd. ...

Table 5.5.4. Cont'd. ...

Selection	PORTUGAL QATAR		SPAIN	SYRIA					TURKEY		Overall Mean
	Elvas	Rawdat Harma	El Encin	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Local small	31	56	33	27	27	28	35	16	21	24	29
FLIP 87-32L	33	58	37	26	26	29	35	15	20	18	30
FLIP 87-41L	30	57	35	28	27	26	37	17	22	22	30
FLIP 87-43L	31	57	36	29	27	30	33	17	22	27	31
FLIP 87-44L	26	56	33	30	27	30	35	17	21	18	29
FLIP 87-45L	30	61	35	30	27	28	36	16	20	20	30
FLIP 87-51L	31	49	36	29	26	27	34	16	23	21	29
FLIP 88-15L	23	47	31	23	26	27	32	15	19	25	27
FLIP 88-16L	28	60	35	25	25	28	27	18	17	18	29
FLIP 88-17L	32	54	36	23	27	27	34	17	19	19	29
FLIP 88-18L	31	58	32	29	27	28	35	17	22	24	31
FLIP 88-19L	30	55	37	25	26	28	32	16	20	20	30
FLIP 88-21L	28	62	34	26	27	27	36	17	23	24	31
FLIP 88-24L	25	51	28	28	26	30	33	17	22	23	28
FLIP 88-25L	25	53	33	25	27	28	33	17	20	21	29
FLIP 88-27L	29	57	35	30	27	29	37	17	23	21	31
FLIP 88-28L	30	49	36	28	26	28	34	16	21	23	29
FLIP 88-29L	31	55	34	29	27	27	34	17	20	18	29
FLIP 88-30L	33	60	36	26	26	30	33	15	21	21	30
FLIP 88-31L	28	53	37	28	28	31	36	16	22	21	30
FLIP 89-11L	29	50	35	28	26	27	33	18	21	24	30
FLIP 89-12L	31	55	35	27	26	28	33	14	21	25	30
FLIP 89-13L	27	63	34	25	26	29	34	16	19	27	29
FLIP 89-14L	29	58	34	27	27	30	34	16	21	24	30
FLIP 89-15L	30	55	33	27	28	30	33	18	20	23	30
FLIP 89-16L	29	48	34	28	26	27	31	16	19	26	29
FLIP 89-17L	28	55	36	29	27	27	33	16	21	23	30
FLIP 89-18L	30	50	35	30	28	28	33	16	18	25	30
FLIP 89-19L	29	59	37	27	27	30	34	18	22	25	31

Cont'd. ...

Table 5.5.4. Cont'd. ...

Selection	PORTUGAL QATAR		SPAIN	SYRIA					TURKEY		Overall Mean
	Elvas	Rawdat Harma	El Encin	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyar-bakir	
FLIP 89-20L	27	53	35	24	28	28	34	15	21	18	29
FLIP 89-21L	31	45	36	24	27	28	34	15	19	25	28
FLIP 89-22L	30	48	33	30	26	27	34	17	21	24	30
FLIP 89-23L	30	51	36	23	26	27	33	15	18	22	29
FLIP 89-24L	30	59	36	26	27	29	33	16	21	25	30
FLIP 89-25L	27	53	36	28	26	30	34	15	21	21	30
FLIP 89-26L	26	53	36	29	27	28	36	17	21	26	31
FLIP 89-27L	29	57	37	29	27	29	34	17	21	18	30
FLIP 89-28L	31	58	35	29	25	27	35	15	22	23	30
FLIP 89-29L	28	62	33	28	28	29	35	17	24	22	31
FLIP 89-30L	34	64	36	25	28	30	35	17	20	26	32
FLIP 89-31L	31	56	35	26	26	28	35	15	21	20	30
FLIP 89-32L	32	55	36	27	27	28	36	17	19	23	30
FLIP 89-33L	29	62	36	28	27	31	34	16	21	23	31
FLIP 89-34L	27	58	34	25	27	29	33	17	22	22	29
FLIP 89-35L	31	53	33	27	26	27	34	16	20	23	29
FLIP 89-36L	33	48	33	31	27	28	34	16	21	19	30
FLIP 89-37L	31	65	36	29	27	28	36	16	22	23	31
FLIP 89-38L	30	62	35	27	27	30	31	16	20	24	30
Local check	31	43	40	28	28	28	37	16	20	22	
Location Mean	29	55	35	27	27	28	34	16	20	22	
S.E. of Mean	2.32	5.22	1.39	1.51	0.62	0.71	1.38	0.93	1.43	2.31	
L.S.D. at 5%	6.65	14.96	3.98	4.34	1.76	2.04	3.95	-	-	-	
C.V. (%)	11.12	13.37	5.62	7.86	3.25	3.54	5.73	8.10	9.90	14.63	
Error d.f.	36	36	36	36	36	36	36	36	48	36	
Significance	*	*	*	*	*	*	*	NS	NS	NS	

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

Table 5.5.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries for different locations in the LISN-S during 1988/89.

Selection	ETHIOPIA		IRAN				JORDAN				LEBANON			
	Debre Zeit		Ghazvin		Karaj		Maragheh		Jubeiha		Ramtha		Terbol	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local small	171	26	140	22	387	46	84	45	956	20	514	40	1167	42
FLIP 87-32L	244	22	60	46	899	15	89	43	1383	4	646	18	1694	16
FLIP 87-41L	69	38	112	37	460	39	79	46	709	34	496	41	1056	46
FLIP 87-43L	157	27	121	31	854	19	189	18	753	32	793	5	1833	6
FLIP 87-44L	-	-	107	38	571	33	166	29	1069	13	671	13	1722	15
FLIP 87-45L	-	-	113	34	767	21	128	39	1057	14	677	12	1639	19
FLIP 87-51L	573	15	427	1	1040	12	178	22	1003	16	821	1	1250	39
FLIP 88-15L	400	17	205	10	425	41	166	30	654	41	714	10	1111	44
FLIP 88-16L	1680	4	400	4	740	24	171	26	473	47	472	44	1111	43
FLIP 88-17L	821	10	87	42	1213	5	197	16	917	23	522	38	1222	41
FLIP 88-18L	952	9	161	16	423	42	176	23	1241	8	552	34	1722	14
FLIP 88-19L	961	8	154	20	249	48	172	25	410	49	559	32	1222	40
FLIP 88-21L	1074	7	201	11	1103	9	69	48	936	22	814	2	1389	33
FLIP 88-24L	301	21	154	19	892	16	121	40	794	30	495	42	889	48
FLIP 88-25L	1976	2	399	5	1589	3	238	8	581	43	608	24	889	49
FLIP 88-27L	334	19	133	26	791	20	224	12	832	29	656	15	1833	7
FLIP 88-28L	89	33	159	18	544	35	240	7	696	35	660	14	1389	34
FLIP 88-29L	648	12	87	44	624	30	101	41	686	36	804	3	1750	11
FLIP 88-30L	636	13	286	6	1329	4	367	2	887	25	495	43	1778	9
FLIP 88-31L	1096	6	407	2	419	43	234	10	662	40	535	37	1583	24
FLIP 89-11L	29	42	128	27	926	14	186	20	759	31	595	25	1361	36
FLIP 89-12L	76	36	119	32	764	22	330	4	481	46	421	45	1667	17
FLIP 89-13L	507	16	107	39	1145	7	172	24	1364	5	648	17	1056	45
FLIP 89-14L	118	29	134	24	395	45	3	49	997	18	579	30	1611	22
FLIP 89-15L	-	-	159	17	992	13	94	42	1114	12	620	22	1806	8
FLIP 89-16L	605	14	405	3	859	18	137	37	580	44	580	28	2194	1
FLIP 89-17L	106	30	212	8	748	23	200	15	1683	1	406	48	1611	23
FLIP 89-18L	85	34	114	33	487	37	356	3	964	19	682	11	1667	18
FLIP 89-19L	97	31	47	49	449	40	202	14	899	24	653	16	1389	32

Cont'd. ...

Table 5.5.5. Cont'd. ...

Selection	ETHIOPIA		IRAN						JORDAN				LEBANON	
	Debre Zeit		Ghazvin		Karaj		Maragheh		Jubeiha		Ramtha		Terbol	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 89-20L	90	32	240	7	732	25	144	36	1165	11	536	36	1333	37
FLIP 89-21L	671	11	60	47	1195	6	77	47	684	37	416	47	1278	38
FLIP 89-22L	152	28	113	36	606	31	244	6	1293	7	762	6	1417	31
FLIP 89-23L	15	43	125	29	1060	11	189	19	463	48	639	19	1417	30
FLIP 89-24L	215	24	174	15	1103	10	164	31	1321	6	742	7	1972	3
FLIP 89-25L	216	23	180	13	866	17	372	1	879	26	557	33	1750	13
FLIP 89-26L	-	-	73	45	689	28	238	9	1516	3	722	8	1889	5
FLIP 89-27L	40	39	100	40	335	47	262	5	1228	9	580	27	1500	27
FLIP 89-28L	75	37	113	35	91	49	190	17	742	33	566	31	1556	26
FLIP 89-29L	34	40	55	48	504	36	217	13	666	38	580	29	1944	4
FLIP 89-30L	1794	3	94	41	2148	1	147	35	999	17	715	9	1361	35
FLIP 89-31L	360	18	195	12	1106	8	168	28	1026	15	631	21	1611	21
FLIP 89-32L	308	20	206	9	712	27	170	27	665	39	518	39	1778	10
FLIP 89-33L	30	41	179	14	601	32	153	32	953	21	542	35	1556	25
FLIP 89-34L	83	35	145	21	665	29	134	38	1679	2	632	20	1750	12
FLIP 89-35L	213	25	140	23	567	34	87	44	842	28	315	49	944	47
FLIP 89-36L	1444	5	87	43	723	26	148	34	599	42	611	23	1472	28
FLIP 89-37L	3	44	127	28	474	38	225	11	1194	10	584	26	1444	29
FLIP 89-38L	-	-	133	25	397	44	180	21	524	45	794	4	1639	20
Local check	2593	1	121	30	1807	2	152	33	869	27	417	46	2028	2
Location Mean	445		163		785		178		915		603		1515	
S.E. of Mean	223.24		69.16		296.34		64.50		259.66		95.69		241.49	
L.S.D. at 5%	640.23		198.35		849.88		184.99		744.68		272.06		-	
C.V. (%)	70.91		59.94		53.39		51.18		40.12		22.45		22.54	
Error d.f.	36		36		36		36		36		48		48	
Significance	*		*		*		*		*		*		NS	
Efficiency	120.44		100.01		155.92		105.68		102.64		10.00		-	
Test > L. Check	0		5		0		3		2		0		0	

Cont'd. ...

Table 5.5.5. Cont'd. ...

Selection	PAKISTAN		PORTUGAL		QATAR		SPAIN		SYRIA					
	Faisalabad		Elvas		Rawdat Harmah		El Encin		Aleppo		Gelline		Heimo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local small	332	37	810	45	100	37	2688	14	72	40	232	38	822	2
FLIP 87-32L	288	48	1017	32	150	26	2714	12	44	47	228	39	556	30
FLIP 87-41L	332	38	1156	21	125	31	3144	4	90	24	346	7	561	29
FLIP 87-43L	204	49	1067	27	100	35	3390	2	63	45	303	15	548	31
FLIP 87-44L	374	30	1217	16	225	18	3220	3	139	3	272	27	593	24
FLIP 87-45L	373	32	963	36	75	44	2769	11	115	9	268	31	657	16
FLIP 87-51L	627	7	1338	10	100	36	3707	1	84	30	286	21	720	10
FLIP 88-15L	376	28	332	49	150	24	2681	15	103	13	200	46	692	12
FLIP 88-16L	461	20	1350	9	1375	1	2688	13	150	2	269	30	230	49
FLIP 88-17L	499	17	1129	22	500	7	2364	22	120	6	172	47	471	44
FLIP 88-18L	543	14	1258	13	250	16	2953	8	60	46	224	41	634	19
FLIP 88-19L	667	3	1016	33	575	5	1984	43	78	39	220	42	443	46
FLIP 88-21L	545	13	562	47	150	27	2399	20	83	32	214	43	538	34
FLIP 88-24L	417	25	825	42	100	38	2543	16	119	7	272	28	775	5
FLIP 88-25L	455	23	820	43	550	6	2060	41	151	1	380	5	745	6
FLIP 88-27L	667	4	1303	11	50	47	2283	24	101	15	258	34	605	23
FLIP 88-28L	333	36	883	40	125	30	3036	6	80	37	294	18	441	47
FLIP 88-29L	623	10	1580	2	250	17	2240	31	93	20	277	26	578	28
FLIP 88-30L	463	19	1281	12	975	2	1580	47	127	5	200	45	376	48
FLIP 88-31L	395	26	744	46	325	11	1067	49	101	16	159	48	632	20
FLIP 89-11L	376	29	1382	5	255	14	2307	23	96	17	306	14	515	38
FLIP 89-12L	373	31	1020	31	175	21	2473	17	65	43	340	9	660	15
FLIP 89-13L	538	16	906	39	75	41	1606	46	64	44	288	20	502	41
FLIP 89-14L	289	47	1163	20	150	23	2124	34	89	25	299	16	651	18
FLIP 89-15L	310	44	1054	29	125	33	3055	5	111	10	402	2	502	42
FLIP 89-16L	624	9	882	41	100	40	2459	19	82	35	291	19	788	4
FLIP 89-17L	313	43	1355	8	100	39	2466	18	102	14	226	40	540	33
FLIP 89-18L	315	41	1043	30	175	22	2384	21	95	19	296	17	545	32
FLIP 89-19L	563	12	1093	24	100	34	2153	33	87	27	254	35	707	11

Cont'd. ...

Table 5.5.5. Cont'd. ...

Selection	PAKISTAN		PORTUGAL		QATAR		SPAIN		SYRIA					
	Faisalabad		Elvas		Rawdat Harmah		El Encin		Aleppo		Gelline		Heimo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 89-20L	586	11	1225	14	125	28	2111	36	70	41	339	10	740	7
FLIP 89-21L	459	22	476	48	150	25	2120	35	79	38	283	23	580	27
FLIP 89-22L	333	35	1373	6	75	42	2068	39	84	31	283	22	513	39
FLIP 89-23L	626	8	816	44	175	20	2265	27	82	34	258	33	652	17
FLIP 89-24L	749	2	1360	7	250	15	2265	26	96	18	398	3	615	22
FLIP 89-25L	357	34	1581	1	625	4	2874	10	81	36	271	29	631	21
FLIP 89-26L	480	18	1173	17	75	43	2877	9	132	4	344	8	491	43
FLIP 89-27L	418	24	918	38	275	13	2062	40	108	11	233	37	529	35
FLIP 89-28L	394	27	1070	26	50	48	1512	48	117	8	263	32	458	45
FLIP 89-29L	666	5	992	34	75	45	2279	25	91	22	241	36	725	8
FLIP 89-30L	539	15	1095	23	975	3	1895	44	43	48	280	25	515	37
FLIP 89-31L	290	46	945	37	300	12	2242	30	67	42	210	44	721	9
FLIP 89-32L	459	21	1217	15	400	9	3028	7	43	49	351	6	792	3
FLIP 89-33L	318	39	987	35	225	19	2080	38	87	28	118	49	528	36
FLIP 89-34L	316	40	1496	4	125	29	2091	37	91	23	315	13	502	40
FLIP 89-35L	314	42	1066	28	450	8	1804	45	87	26	316	12	588	26
FLIP 89-36L	627	6	1172	18	350	10	2254	29	93	21	282	24	680	14
FLIP 89-37L	372	33	1168	19	75	46	2232	32	82	33	397	4	592	25
FLIP 89-38L	294	45	1498	3	125	32	2012	42	104	12	411	1	685	13
Local check	916	1	1074	25	50	49	2260	28	86	29	332	11	828	1
Location Mean	453		1087		254		2385		92		280		600	
S.E. of Mean	40.51		199.62		106.73		256.57		22.33		57.54		78.95	
L.S.D. at 5%	116.16		572.50		303.45		735.80		-		-		226.43	
C.V. (%)	12.65		25.98		59.38		15.21		34.50		29.11		18.611	
Error d.f.	36		36		48		36		48		36		36	
Significance	*		*		*		*		NS		NS		*	
Efficiency	100.31		120.55		-		100.64		-		109.84		100.67	
Test > L. Check	0		0		9		7		2		0		0	

Cont'd. ...

Table 5.5.5. Cont'd. ...

Selection	SYRIA				TUNISIA						TURKEY		(1) Overall Mean	
	Idleb		Tel Hadya		Beja-1		Beja-2		El Kef		Diyarbakir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local small	162	13	98	11	897	32	425	47	975	35	318	2	616	41
FLIP 87-32L	154	19	91	16	1292	1	825	23	1125	18	213	17	743	13
FLIP 87-41L	105	44	123	3	968	29	775	26	950	36	116	42	643	39
FLIP 87-43L	155	16	77	27	966	30	950	16	1375	5	172	29	769	7
FLIP 87-44L	147	25	115	6	1127	10	875	20	1050	25	99	44	758	10
FLIP 87-45L	141	26	110	8	1018	23	775	28	1000	32	184	25	707	24
FLIP 87-51L	148	24	107	9	1032	22	1125	8	1125	17	268	6	849	1
FLIP 88-15L	96	46	55	41	672	46	475	46	875	44	229	12	564	46
FLIP 88-16L	73	49	68	36	705	44	625	41	975	34	44	49	684	28
FLIP 88-17L	83	47	32	45	578	47	525	45	1000	28	66	48	648	37
FLIP 88-18L	151	20	26	46	880	35	725	32	825	45	82	46	714	21
FLIP 88-19L	96	45	35	44	402	48	350	49	775	46	80	47	525	48
FLIP 88-21L	224	1	0	49	975	28	650	38	1400	4	135	39	688	26
FLIP 88-24L	151	22	91	15	782	41	625	42	675	48	278	5	606	43
FLIP 88-25L	158	15	81	26	773	43	775	27	1400	3	173	28	708	23
FLIP 88-27L	197	5	90	20	1077	15	675	35	900	43	191	21	710	22
FLIP 88-28L	173	9	75	29	1177	5	1125	7	900	42	239	9	694	25
FLIP 88-29L	177	8	69	35	845	39	725	33	725	47	171	31	685	27
FLIP 88-30L	118	42	57	40	1262	4	1200	1	1300	6	201	19	790	5
FLIP 88-31L	193	6	62	39	398	49	1025	14	675	49	172	30	540	47
FLIP 89-11L	141	27	186	1	978	26	1150	5	1150	14	258	7	715	20
FLIP 89-12L	137	30	83	22	888	33	1000	15	950	38	146	37	667	32
FLIP 89-13L	80	48	92	13	690	45	800	25	1100	21	124	41	626	40
FLIP 89-14L	135	32	75	31	1102	12	825	24	900	41	168	32	645	38
FLIP 89-15L	155	17	90	19	1097	13	725	31	1125	16	183	26	757	11
FLIP 89-16L	162	12	72	33	875	36	750	30	1175	12	178	27	729	15
FLIP 89-17L	121	39	98	12	1057	19	675	37	1150	15	235	10	733	14
FLIP 89-18L	134	34	66	37	1060	18	675	36	925	40	143	38	670	31
FLIP 89-19L	155	18	114	7	870	37	1050	13	1025	27	107	43	656	33

Cont'd. ...

Table 5.5.5. Cont'd. ...

Selection	SYRIA				TUNISIA						TURKEY		Overall Mean (1)	
	Idleb		Tel Hadya		Beja-1		Beja-2		El Kef		Diyarbakir			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 89-20L	111	43	115	5	927	31	875	22	3300	2	148	35	817	3
FLIP 89-21L	151	21	43	42	865	38	875	21	1000	31	201	20	608	42
FLIP 89-22L	133	35	91	17	1075	16	1075	9	1300	7	311	3	725	17
FLIP 89-23L	119	40	81	25	780	42	925	17	950	39	158	34	650	36
FLIP 89-24L	148	23	62	38	1170	6	1175	3	1100	19	224	14	835	2
FLIP 89-25L	200	4	17	47	1138	9	600	43	1250	10	225	13	802	4
FLIP 89-26L	121	38	120	4	998	25	1050	12	1050	24	189	22	784	6
FLIP 89-27L	135	33	72	32	827	40	925	18	1250	9	92	45	654	34
FLIP 89-28L	133	36	82	23	886	34	1200	2	975	33	219	15	585	44
FLIP 89-29L	216	2	184	2	1075	17	1075	11	1275	8	230	11	717	19
FLIP 89-30L	170	10	42	43	1003	24	700	34	950	37	159	33	766	8
FLIP 89-31L	160	14	0	48	1150	7	1075	10	1000	29	204	18	728	16
FLIP 89-32L	205	3	81	24	1142	8	400	48	1175	13	184	24	747	12
FLIP 89-33L	168	11	76	28	1052	20	925	19	1075	23	218	16	654	35
FLIP 89-34L	192	7	92	14	1282	3	1150	6	1000	30	128	40	761	9
FLIP 89-35L	139	28	75	30	977	27	625	40	1038	26	187	23	583	45
FLIP 89-36L	125	37	70	34	1038	21	550	44	1200	11	147	36	675	30
FLIP 89-37L	136	31	88	21	1292	2	1175	4	1075	22	302	4	719	18
FLIP 89-38L	138	29	90	18	1122	11	775	29	1100	20	254	8	677	29
Local check	118	41	101	10	1080	14	650	39	4838	1	390	1		
Location Mean	146		80		966		831		1172		187			
S.E. of Mean	23.73		39.93		120.83		206.57		693.10		44.61			
L.S.D. at 5%	68.05		114.51		346.52		-		-		127.93			
C.V. (%)	23.05		70.67		17.69		35.17		83.64		33.80			
Error d.f.	36		36		36		48		48		36			
Significance	*		*		*		NS		NS		*			
Efficiency	101.61		179.10		134.08		-		-		105.21			
Test > L. Check	7		0		0		-		-		0			

(1) Debre Zeit and Tel Hadya were excluded from the overall mean. * = Significant at $p \leq 0.05$, NS = Not significant.

Table 5.5.6. The five heaviest seed yielding entries at the individual locations in the LISN-S during 1988/89.

Rank	<u>ETHIOPIA</u>	<u>IRAN</u>			<u>JORDAN</u>		<u>LEBANON</u>
	Debre Zeit	Ghazvin	Karaj	Maragheh	Jubeiha	Ramtha	Terbol
1	Local check	FLIP 87- 51L	FLIP 89- 30L	FLIP 89- 25L	FLIP 89- 17L	FLIP 87- 51L	FLIP 89- 16L
2	FLIP 88- 25L	FLIP 88- 31L	Local check	FLIP 88- 30L	FLIP 89- 34L	FLIP 88- 21L	Local check
3	FLIP 89- 30L	FLIP 89- 16L	FLIP 88- 25L	FLIP 89- 18L	FLIP 89- 26L	FLIP 88- 29L	FLIP 89- 24L
4	FLIP 88- 16L	FLIP 88- 16L	FLIP 88- 30L	FLIP 89- 12L	FLIP 87- 32L	FLIP 89- 38L	FLIP 89- 29L
5	FLIP 89- 36L	FLIP 88- 25L	FLIP 88- 17L	FLIP 89- 27L	FLIP 89- 13L	FLIP 87- 43L	FLIP 89- 26L
Cont'd. ...							
Rank	<u>PAKISTAN</u>	<u>PORTUGAL</u>	<u>OATAR</u>	<u>SPAIN</u>	<u>SYRIA</u>		
	Faisalabad	Elvas	Rawdat Harma	El Encin	Aleppo	Gelline	Heimo
1	Local check	FLIP 89- 25L	FLIP 88- 16L	FLIP 87- 51L	FLIP 88- 25L	FLIP 89- 38L	Local check
2	FLIP 89- 24L	FLIP 88- 29L	FLIP 88- 30L	FLIP 87- 43L	FLIP 88- 16L	FLIP 89- 15L	Local small
3	FLIP 88- 19L	FLIP 89- 38L	FLIP 89- 30L	FLIP 87- 44L	FLIP 87- 44L	FLIP 89- 24L	FLIP 89- 32L
4	FLIP 88- 27L	FLIP 89- 34L	FLIP 89- 25L	FLIP 87- 41L	FLIP 89- 26L	FLIP 89- 37L	FLIP 89- 16L
5	FLIP 89- 29L	FLIP 89- 11L	FLIP 88- 19L	FLIP 89- 15L	FLIP 88- 30L	FLIP 88- 25L	FLIP 88- 24L
Cont'd. ...							
Rank	<u>SYRIA</u>		<u>TUNISIA</u>		<u>TURKEY</u>		
	Idleb	Tel Hadya	Beja-1	Beja-2	El Kef	Diyarbakir	
1	FLIP 88- 21L	FLIP 89- 11L	FLIP 87- 32L	FLIP 88- 30L	Local check	Local check	
2	FLIP 89- 29L	FLIP 89- 29L	FLIP 89- 37L	FLIP 89- 28L	FLIP 89- 20L	Local small	
3	FLIP 89- 32L	FLIP 87- 41L	FLIP 89- 34L	FLIP 89- 24L	FLIP 88- 25L	FLIP 89- 22L	
4	FLIP 89- 25L	FLIP 89- 26L	FLIP 88- 30L	FLIP 89- 37L	FLIP 88- 21L	FLIP 89- 37L	
5	FLIP 88- 27L	FLIP 89- 20L	FLIP 88- 28L	FLIP 89- 11L	FLIP 87- 43L	FLIP 88- 24L	

was earliest at Grob-Enzersdorf in Austria (in 49 days), and latest at El Encin in Spain (in 152 days). The entries namely, FLIP88-25L, and FLIP89-16L were earliest to flower in 97 or 99 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 27 cm (for FLIP 88-15L) and 32 cm (for FLIP 89-30L).

The performance of entries (Table 5.5.5) at El Encin in Spain was the best with average seed yield of 2385 kg/ha. The seed yields were very poor at Aleppo, Idleb and Tel Hadya in Syria; Ghazvin and Maragheh in Iran; and Diyarbakir in Turkey. The ANOVA for the experiment revealed that at Ghazvin and Maragheh in Iran, Jubeiha in Jordan; Rawdat Harma in Qatar; El Encin in Spain; Aleppo and Idleb in Syria, 5,3,2,9,7,2, and 7 test entries, respectively, outyielded the respective local checks by significant margins. The entry means over all locations revealed that FLIP 87-51L was the top yielder with an average yield of 849 kg/ha and was followed by FLIP 89-24L, FLIP 89-20L, FLIP 89-25L and FLIP 88-30L with seed yield of 835, 817, 802, and 790 kg/ha, respectively.

The five heaviest seed yielding entries at different locations are given in Table 5.5.6. The entries FLIP88-25L and FLIP88-30L occurred most frequently among the top five heavy yielders.

5.6. LENTIL INTERNATIONAL SCREENING NURSERY - EARLY (LISN-E)

Material

The material for the Lentil International Screening Nursery - Early comprised of 48 test entries and one check which was to be added by the cooperator. Forty six entries originated from the hybridization and were the selections from the progenies grown at ICARDA.

Methods and Management

The material comprising 49 entries was suggested to be sown in a simple 7X7 lattice design with two replications. Each entry was sown in single row plots of 4 m length. The spacings between the rows were suggested to be 25 cm.

Sixty sets of screening nursery were supplied to cooperators in 27 countries and the data were received for 26 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 48 days for Debre Zeit in Ethiopia to 119 days for Larissa in Greece. At a large number of the locations the location mean for time to flowering

Table 5.6.1. Agronomic data for different locations in the LISN-E during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
ALGERIA	Khruob	27.12.1988	28.06.1989	17	66		-	Treflan	Syrie 229
AUSTRALIA	Turretfield	13.06.1989	05.01.1990		60		-	Treflan & Lexone, Lemat	ILL 5750
BANGLADESH	Mymensingh	19.11.1988	15.04.1989	-			-	-	Bm 681
BRAZIL	Maracaju	05.05.1989	15.09.1989	-			-	-	Local
BULGARIA	Toshevo	24.03.1989	NA	30	60		-	Aphalon	DF 669
BURMA	Gwegone	12.12.1988	08.04.1989	-			-	-	Tadjikskay 95
CHILE	Chillan	20.06.1989	05.12.1989	-			-	-	Khin Local
ETHIOPIA	Debre Zeit	24.07.1989	30.10.1989	-			-	Benlate & Bravo	Oraucana - Sina
GREECE	Larissa	07.12.1988	31.05.1989		60		-	Decamethzin	EL -142
INDIA	Delhi	12.11.1988	20.04.1989	20	40		2	Basalin & Metasystox	Arkadia
IRAN	Ghazzin	11.04.1989	28.06.1989		100		-	-	L -830
IRAN	Karaj	04.04.1989	24.06.1989		70		-	Treflan & Metasystox	Ghazvin Local
IRAN	Maragheh	04.04.1989	07.07.1989	14	37		-	-	Ghazvin Local
JORDAN	Jubeiha	10.12.1988	30.03.1989	20	50		-	-	NA
JORDAN	Ramtha	01.11.1988	NA	20	50		-	-	Jordan -1
MEXICO	Padilla Tam	21.11.1989	30.04.1990	30	40		6	Agresor	Jordan -1
MOROCCO	Marchouch	21.11.1988	19.06.1989	20	45		-	Cystoate	NA
MOROCCO	Sidi Laidi	17.11.1988	05.05.1989	-			-	Cystoate	Nylon
NEPAL	Khumaltar	08.11.1988	25.04.1989	20	40	20	-	-	U 49
PAKISTAN	Faisalabad	21.11.1988	07.05.1989	20	60		1	-	Simrik
PORTUGAL	Elvas	13.12.1988	02.06.1989		60	60	-	-	Masoor
SYRIA	Tel Hadya	29.11.1988	27.05.1989		50		-	Kerb, Bladex	L -188
TUNISIA	Beja -1	23.11.1988	NA	NA			NA	NA	ILL 4401
TUNISIA	Beja -2	23.11.1988	NA	NA			NA	NA	NA
TUNISIA	El Kef	12.11.1988	NA	NA			NA	NA	Ouslatia

NA = Not available

Table 5.6.2. Adjusted time to flowering (days) of entries at different locations in the LISN-E during 1988/89.

Selection	ILL	origin	ALGERIA	BANGLADESH	BRAZIL	BULGARIA	BURMA	CHILE	ETHIOPIA	GREECE	INDIA	IRAN
			Khroub+	Mymen- singh	Maracaju	Toshevo	Gweg- one	Chillan	Debre Zeit	Larissa	Delhi	Ghazvin
Precoz	4605	Argentina	98	90	58	66	65	108	50	121	74	50
L 5	5888	Bangladesh	96	76	76	65	58	111	36	117	79	47
FLIP 87-65L	6255	ICARDA	101	95	84	69	73	112	52	123	92	49
FLIP 87-66L	6256	ICARDA	103	104	87	65	65	111	49	122	95	47
FLIP 87-68L	6258	ICARDA	96	91	66	64	62	111	43	117	84	47
FLIP 87-72L	6262	ICARDA	99	102	79	64	56	111	47	120	79	51
FLIP 88-34L	6458	ICARDA	97	107	85	65	66	110	49	118	88	49
FLIP 88-35L	6459	ICARDA	96	93	80	64	65	110	41	117	86	47
FLIP 88-36L	6460	ICARDA	97	92	76	65	66	112	49	116	86	48
FLIP 88-37L	6461	ICARDA	88	92	75	64	60	112	48	117	85	47
FLIP 88-39L	6463	ICARDA	101	91	75	64	66	112	40	116	91	48
FLIP 88-40L	6464	ICARDA	93	88	54	66	63	108	52	121	75	50
FLIP 88-41L	6465	ICARDA	93	84	58	66	66	110	50	120	73	51
FLIP 88-42L	6466	ICARDA	97	87	36	66	57	108	45	121	73	50
FLIP 88-43L	6467	ICARDA	100	81	57	65	58	108	46	118	80	49
FLIP 88-44L	6468	ICARDA	98	107	80	64	77	111	42	120	92	48
FLIP 88-45L	6469	ICARDA	96	86	59	66	64	108	54	120	79	50
FLIP 88-46L	6470	ICARDA	97	83	57	70	59	110	51	121	78	50
FLIP 88-47L	6471	ICARDA	97	85	61	66	62	108	53	118	75	50
FLIP 88-48L	6472	ICARDA	100	85	57	66	64	110	53	119	75	51
FLIP 89-45L	6803	ICARDA	97	88	36	65	54	110	48	122	83	51
FLIP 89-46L	6804	ICARDA	96	89	66	66	66	108	56	120	79	50
FLIP 89-47L	6805	ICARDA	97	94	75	67	68	112	46	118	88	50
FLIP 89-48L	6806	ICARDA	99	87	57	66	70	108	51	120	78	49
FLIP 89-49L	6807	ICARDA	100	91	78	66	65	108	53	117	85	49
FLIP 89-50L	6808	ICARDA	101	117	86	65	74	112	59	122	99	49
FLIP 89-51L	6809	ICARDA	97	87	36	65	49	110	41	118	76	49

Cont'd. ...

Table 5.6.2. Cont'd. ...

Selection	ILL	origin	ALGERIA	BANGLADESH	BRAZIL	BULGARIA	BURMA	CHILE	ETHIOPIA	GREECE	INDIA	IRAN
			Khroub+	Mymen- singh	Maracaju	Toshevo	Gweg- one	Chillan	Debre Zeit	Larissa	Delhi	Ghazvin
FLIP 89-52L	6810	ICARDA	100	123	92	66	66	110	63	120	102	48
FLIP 89-53L	6811	ICARDA	105	93	97	65	68	112	49	120	92	47
FLIP 89-54L	6812	ICARDA	97	89	75	65	61	110	45	118	90	49
FLIP 89-55L	6813	ICARDA	97	92	77	64	65	112	47	118	78	47
FLIP 89-56L	6814	ICARDA	98	101	74	65	67	112	48	118	88	48
FLIP 89-57L	6815	ICARDA	97	92	78	65	73	112	50	118	89	50
FLIP 89-58L	6816	ICARDA	97	110	90	66	71	112	44	121	97	50
FLIP 89-59L	6817	ICARDA	97	87	65	65	66	112	49	117	87	49
FLIP 89-60L	6818	ICARDA	101	90	73	65	69	112	43	119	80	49
FLIP 89-61L	6819	ICARDA	97	104	89	65	73	112	58	122	99	50
FLIP 89-62L	6820	ICARDA	97	84	73	65	57	112	47	118	89	50
FLIP 89-63L	6821	ICARDA	97	65	36	66	53	108	43	118	70	48
FLIP 89-64L	6822	ICARDA	96	86	76	66	61	112	43	119	86	49
FLIP 89-65L	6823	ICARDA	97	94	77	64	69	112	49	118	94	49
FLIP 89-66L	6824	ICARDA	97	101	90	65	72	111	41	118	97	48
FLIP 89-67L	6825	ICARDA	98	93	76	65	71	111	52	121	89	49
FLIP 89-68L	6826	ICARDA	97	95	76	64	66	112	52	116	90	48
FLIP 89-69L	6827	ICARDA	103	97	81	65	74	112	49	121	91	49
FLIP 89-70L	6828	ICARDA	98	91	81	66	74	111	41	120	89	47
FLIP 89-71L	6829	ICARDA	98	93	92	66	75	111	43	121	83	47
FLIP 89-72L	6830	ICARDA	105	89	102	65	61	111	42	119	77	50
Local check			106	67	44	68	54	118	49	126	77	49
Location Mean			98	92	72	65	65	111	48	119	85	49
S.E. of Mean				3.05	0.29	0.76	2.20	0.79	1.44	0.52	2.78	1.06
L.S.D. at 5%				8.71	0.81	2.17	6.30	2.25	4.12	1.49	7.98	-
C.V. (%)				4.72	0.56	1.66	4.78	1.01	4.23	0.62	4.63	3.07
Error d.f.				48	48	48	36	48	36	36	36	36
Significance				*	*	*	*	*	*	*	*	NS

Cont'd. ...

Table 5.6.2. Cont'd. ...

Selection	ILL	IRAN		JORDAN		MEXICO	MOROCCO	NEPAL	PAKISTAN		PORTUGAL	SYRIA	Overall Mean
		Karaj	Maragheh	Jubeiha	Ramtha	Padilla Tam	March-ouch+	Khuma-ltar	-Faisalabad-NIAB	AARI	Elvas	Tel Hadya	
Precoz	4605	50	63	80	84	62	86	101	81	86	101	115	80
L 5	5888	45	60	80	84	62	86	86	79	87	107	113	79
FLIP 87-65L	6255	49	63	80	83	72	110	106	92	102	106	122	87
FLIP 87-66L	6256	53	63	80	83	81	110	117	102	100	107	123	89
FLIP 87-68L	6258	46	60	82	84	71	110	116	89	91	104	115	83
FLIP 87-72L	6262	49	66	81	84	84	110	116	89	91	104	120	86
FLIP 88-34L	6458	49	59	80	84	81	95	114	93	97	101	117	86
FLIP 88-35L	6459	46	58	80	84	71	95	97	85	94	101	114	82
FLIP 88-36L	6460	47	58	80	84	68	95	117	97	98	107	116	84
FLIP 88-37L	6461	52	60	80	84	68	95	117	85	96	105	118	83
FLIP 88-39L	6463	49	61	83	84	67	95	101	87	93	101	114	83
FLIP 88-40L	6464	51	62	80	84	57	86	91	81	87	101	113	79
FLIP 88-41L	6465	51	63	80	85	58	86	91	82	88	101	114	79
FLIP 88-42L	6466	52	62	80	84	49	86	101	81	93	101	116	78
FLIP 88-43L	5467	52	62	80	84	57	84	118	80	85	101	113	80
FLIP 88-44L	6468	47	63	80	84	72	95	117	91	97	104	115	86
FLIP 88-45L	6469	55	61	80	84	62	95	113	81	89	101	115	82
FLIP 88-46L	6470	50	63	80	83	59	86	96	78	86	101	114	80
FLIP 88-47L	6471	52	62	80	84	62	86	98	91	88	102	113	81
FLIP 88-48L	6472	51	60	81	83	57	95	106	82	86	101	115	81
FLIP 89-45L	6803	51	63	82	83	56	95	94	83	94	101	119	80
FLIP 89-46L	6804	53	63	80	84	64	95	96	78	88	101	116	82
FLIP 89-47L	6805	49	63	81	84	69	95	114	91	93	101	117	84
FLIP 89-48L	6806	51	64	80	84	58	95	114	83	86	101	117	82
FLIP 89-49L	6807	54	61	80	84	67	86	117	89	97	104	113	84
FLIP 89-50L	6808	48	62	81	84	60	110	125	109	102	107	122	90
FLIP 89-51L	6809	50	66	80	84	49	84	104	76	80	101	113	77

Cont'd. ...

Table 5.6.2. Cont'd. ...

Selection	ILL	IRAN		JORDAN		MEXICO	MOROCCO	NEPAL	PAKISTAN		PORTUGAL	SYRIA	Overall Mean
		Karaj	Maragheh	Jubeiha	Ramtha	Padilla Tam	March-ouch+	Khuma-ltar	-Faisalabad-NIAB	AARI	Elvas	Tel Hadya	
FLIP 89-52L	6810	54	63	80	83	64	110	126	102	105	107	116	90
FLIP 89-53L	6811	49	59	84	84	60	110	124	87	105	107	123	88
FLIP 89-54L	6812	53	61	80	84	76	95	117	90	94	106	115	84
FLIP 89-55L	6813	49	59	80	83	68	110	123	94	92	104	119	85
FLIP 89-56L	6814	50	62	80	84	66	110	118	91	98	106	116	86
FLIP 89-57L	6815	51	60	81	83	77	110	126	100	98	107	118	87
FLIP 89-58L	6816	49	62	81	84	60	110	125	101	105	107	119	89
FLIP 89-59L	6817	51	57	81	85	67	95	119	89	97	104	118	84
FLIP 89-60L	6818	48	61	80	84	72	86	117	91	92	105	114	83
FLIP 89-61L	6819	56	62	82	83	60	110	119	91	105	107	120	89
FLIP 89-62L	6820	50	61	80	84	72	110	118	92	97	107	117	85
FLIP 89-63L	6821	45	60	80	84	49	84	88	66	76	101	111	74
FLIP 89-64L	6822	52	63	82	85	72	95	123	91	99	108	115	85
FLIP 89-65L	6823	47	61	81	84	84	110	118	96	98	107	115	87
FLIP 89-66L	6824	48	61	81	84	72	110	121	92	101	101	118	87
FLIP 89-67L	6825	54	60	80	83	71	110	113	87	100	107	121	86
FLIP 89-68L	6826	55	59	80	83	77	110	121	99	98	105	117	87
FLIP 89-69L	6827	54	66	80	83	81	110	124	97	105	107	116	89
FLIP 89-70L	6828	47	60	81	84	81	110	115	86	96	104	120	86
FLIP 89-71L	6829	49	62	81	84	84	110	119	94	97	106	122	87
FLIP 89-72L	6830	47	59	80	83	62	86	117	81	91	107	124	84
Local check		50	70	85	83	84	110	112	91	96	107	120	
Location Mean		50	62	81	84	67	99	112	89	94	104	117	
S.E. of Mean		2.32	1.83	0.73	0.66	4.04		3.66	0.92	2.13	1.23	1.64	
L.S.D. at 5%		6.64	5.24	2.08	1.90	11.49		10.51	2.61	6.11	3.48	4.71	
C.V. (%)		6.53	4.20	1.27	1.12	8.51		4.63	1.46	3.20	1.67	1.99	
Error d.f.		36	36	36	36	48		36	48	36	48	36	
Significance		*	*	*	*	*		*	*	*	*	*	

* = Significant at $P \leq 0.05$, NS = Not significant, + Locations not analysed thus mean values are unadjusted.

Table 5.6.3. Adjusted time to maturity (days) of entries at different locations in the LISN-E during 1988/89.

Selection	ILL	ALGERIA	BANGLADESH	BRAZIL	BULGARIA	BURMA	CHILE	ETHIOPIA	GREECE	INDIA	IRAN
		Khroub+	Mymen- singh	Maracaju	Toshevo	Gweg- one	Chillan	Debre Zeit	Larissa	Delhi	Ghazvin
Precoz	4605	150	146	113	105	125	160	90	164	122	72
L 5	5888	150	135	114	104	118	159	87	161	129	67
FLIP 87-65L	6255	155	134	124	105	131	162	94	167	135	70
FLIP 87-66L	6256	156	149	131	104	-	161	96	166	135	69
FLIP 87-68L	6258	152	147	122	105	123	161	96	168	135	68
FLIP 87-72L	6262	149	147	129	104	116	162	92	167	127	71
FLIP 88-34L	6458	150	139	123	106	-	160	89	163	133	69
FLIP 88-35L	6459	153	147	124	104	126	159	90	169	134	68
FLIP 88-36L	6460	150	146	113	105	124	160	91	162	128	69
FLIP 88-37L	6461	149	139	116	104	120	159	95	162	131	68
FLIP 88-39L	6463	153	134	123	104	124	161	92	168	134	68
FLIP 88-40L	6464	151	140	113	105	121	162	94	166	119	70
FLIP 88-41L	6465	150	139	115	105	123	160	95	168	123	69
FLIP 88-42L	6466	151	140	113	105	117	160	91	167	123	69
FLIP 88-43L	6467	150	131	111	105	119	161	89	165	129	70
FLIP 88-44L	6468	155	147	126	105	133	159	88	168	134	68
FLIP 88-45L	6469	150	138	107	105	124	160	92	165	123	69
FLIP 88-46L	6470	151	137	111	108	120	161	91	166	121	71
FLIP 88-47L	6471	150	139	109	106	122	160	94	166	121	71
FLIP 88-48L	6472	150	143	110	104	121	159	90	165	118	71
FLIP 89-45L	6803	150	144	116	105	111	159	93	167	125	71
FLIP 89-46L	6804	157	144	122	105	125	160	99	167	124	70
FLIP 89-47L	6805	153	139	124	105	126	160	91	163	129	68
FLIP 89-48L	6806	150	139	115	104	130	160	92	166	119	70
FLIP 89-49L	6807	167	132	115	105	121	161	94	168	133	70
FLIP 89-50L	6808	151	146	127	104	130	159	91	167	138	69
FLIP 89-51L	6809	157	143	113	105	112	159	95	167	127	70

Cont'd. ...

Table 5.6.3. Cont'd. ...

Selection	ILL	ALGERIA	BANGLADESH	BRAZIL	BULGARIA	BURMA	CHILE	ETHIOPIA	GREECE	INDIA	IRAN
		Khroub+	Mymen- singh	Maracaju	Toshevo	Gweg- one	Chillan	Debre Zeit	Larissa	Delhi	Ghazvin
FLIP 89-52L	6810	152	149	129	105	131	160	95	166	136	69
FLIP 89-53L	6811	169	135	-	104	-	160	89	168	131	68
FLIP 89-54L	6812	170	139	129	104	119	160	96	163	135	68
FLIP 89-55L	6813	152	145	121	105	122	160	90	163	125	69
FLIP 89-56L	6814	150	145	126	104	125	160	88	162	132	69
FLIP 89-57L	6815	168	144	120	105	129	161	91	162	132	70
FLIP 89-58L	6816	151	143	129	104	-	160	95	167	138	69
FLIP 89-59L	6817	169	131	110	105	127	159	95	168	134	68
FLIP 89-60L	6818	158	133	115	104	124	160	87	165	123	69
FLIP 89-61L	6819	150	143	129	104	-	160	95	163	139	69
FLIP 89-62L	6820	170	147	129	105	117	159	95	168	135	69
FLIP 89-63L	6821	156	123	107	105	111	163	89	165	120	70
FLIP 89-64L	6822	150	133	115	105	125	162	95	164	134	70
FLIP 89-65L	6823	152	146	123	104	129	160	95	167	134	69
FLIP 89-66L	6824	154	145	129	104	-	162	94	167	135	69
FLIP 89-67L	6825	149	134	122	104	129	160	95	166	132	69
FLIP 89-68L	6826	168	148	122	104	124	159	94	165	134	68
FLIP 89-69L	6827	167	134	123	104	132	161	95	167	135	70
FLIP 89-70L	6828	150	131	126	104	129	159	91	165	132	67
FLIP 89-71L	6829	151	130	126	105	133	160	86	167	128	68
FLIP 89-72L	6830	167	139	112	104	121	159	90	161	123	70
Local check		167	114	-	109	114	166	92	171	127	80
Location Mean		155	139	120	105	123	160	92	165	129	69
S.E. of Mean			3.25	0.05	0.70	3.12	0.85	1.40	0.96	2.28	0.93
L.S.D. at 5%			9.32	0.13	-	8.91	2.43	3.98	2.74	6.48	2.66
C.V. (%)			3.29	0.05	0.95	3.59	0.75	2.15	0.82	2.50	1.89
Error d.f.			36	46	36	42	36	48	48	48	36
Significance			*	*	NS	*	*	*	*	*	*

Cont'd. ...

Table 5.6 - Cont'd. ...

Selection	ILL	IRAN		JORDAN		MOROCCO	NEPAL	PAKISTAN		PORTUGAL	SYRIA	Overall Mean
		Karaj	Maragheh	Jubeiha	March-ouch+	Sidi Laidi	Khuma-ltar	-Faisalabad- NIAB	AARI	Elvas	Tel Hadya	
Precoz	4605	80	80	101	160	152	163	137	141	149	152	131
L 5	5888	80	79	104	160	150	158	148	141	148	153	130
FLIP 87-65L	6255	80	87	104	158	158	163	143	147	148	155	133
FLIP 87-66L	6256	80	81	104	165	160	163	151	150	149	153	135
FLIP 87-68L	6258	80	82	102	165	162	163	144	146	149	155	134
FLIP 87-72L	6262	80	87	104	165	160	163	149	147	149	155	134
FLIP 88-34L	6458	80	81	104	156	158	160	146	145	149	149	131
FLIP 88-35L	6459	80	81	104	170	161	163	146	146	149	153	134
FLIP 88-36L	6460	80	83	101	190	161	157	141	141	149	149	133
FLIP 88-37L	6461	79	81	103	158	158	157	145	143	148	152	131
FLIP 88-39L	6463	80	85	104	160	158	159	147	140	149	153	132
FLIP 88-40L	6464	81	85	101	160	157	160	141	142	149	150	131
FLIP 88-41L	6465	81	86	103	160	155	160	142	142	150	152	131
FLIP 88-42L	6466	80	82	103	160	154	160	142	140	148	152	131
FLIP 88-43L	6467	81	84	101	158	152	164	137	142	148	151	130
FLIP 88-44L	6468	81	79	103	160	158	161	146	143	149	154	133
FLIP 88-45L	6469	80	83	101	160	158	160	132	141	148	151	130
FLIP 88-46L	6470	80	84	101	160	155	161	129	140	148	150	130
FLIP 88-47L	6471	80	85	101	160	155	161	132	141	149	149	130
FLIP 88-48L	6472	80	81	103	160	157	161	131	141	148	150	130
FLIP 89-45L	6803	81	88	101	165	157	165	143	142	148	153	133
FLIP 89-46L	6804	80	85	104	158	155	165	131	141	149	150	132
FLIP 89-47L	6805	80	80	104	160	158	160	149	142	148	153	132
FLIP 89-48L	6806	80	81	101	160	152	160	132	141	149	151	130
FLIP 89-49L	6807	80	85	103	160	158	160	149	142	148	153	133
FLIP 89-50L	6808	81	81	104	163	167	166	159	150	149	161	135
FLIP 89-51L	6809	81	87	103	156	157	160	131	142	148	154	132

Cont'd. ...

Table 5.6.3, Cont'd. ...

Selection	ILL	IRAN		JORDAN		MOROCCO	NEPAL	PAKISTAN		PORTUGAL	SYRIA	Overall Mean
		Karaj	Maragheh	Jubeiha	March-ouch+	Sidi Laidi	Khumaltar	-Faisalabad-	AARI	Elvas	Tel Hadya	
FLIP 89-52L	6810	80	87	101	165	162	161	153	151	149	152	135
FLIP 89-53L	6811	80	81	104	166	166	163	142	149	148	154	134
FLIP 89-54L	6812	80	85	104	158	151	158	150	142	148	156	133
FLIP 89-55L	6813	80	83	104	160	158	159	147	144	148	152	132
FLIP 89-56L	6814	80	81	104	158	159	157	143	142	148	150	131
FLIP 89-57L	6815	80	81	101	158	162	156	150	141	148	154	133
FLIP 89-58L	6816	80	86	104	160	167	163	152	145	149	154	134
FLIP 89-59L	6817	79	80	103	165	162	157	141	142	149	153	133
FLIP 89-60L	6818	80	85	-	160	158	162	144	142	148	153	131
FLIP 89-61L	6819	81	82	104	165	157	159	150	152	148	153	133
FLIP 89-62L	6820	80	82	101	160	155	159	145	144	149	156	134
FLIP 89-63L	6821	80	80	103	156	150	162	124	136	149	151	128
FLIP 89-64L	6822	80	82	101	168	152	161	144	143	148	153	132
FLIP 89-65L	6823	80	83	104	165	167	165	149	151	148	153	134
FLIP 89-66L	6824	80	82	104	170	166	162	150	146	150	153	135
FLIP 89-67L	6825	80	80	101	166	157	159	144	143	148	156	132
FLIP 89-68L	6826	80	80	102	158	166	162	151	145	148	155	134
FLIP 89-69L	6827	81	88	104	165	157	163	143	149	148	155	134
FLIP 89-70L	6828	79	79	104	160	162	158	139	141	144	153	130
FLIP 89-71L	6829	81	79	104	165	160	160	145	145	148	151	131
FLIP 89-72L	6830	79	81	101	168	157	160	133	142	144	154	131
Local check		81	93	-	168	162	160	151	142	149	157	
Location Mean		80	83	103	162	158	161	143	144	148	153	
S.E. of Mean		0.30	2.00	0.68		0.05	1.85	1.09	1.72	0.87	1.31	
L.S.D. at 5%		-	5.65	1.94		0.14	5.27	3.09	4.94	-	3.77	
C.V. (%)		0.52	3.36	0.94		0.04	1.63	1.07	1.70	0.83	1.22	
Error c.f.		36	36	46		36	48	48	36	36	36	
Significance		NS	*	*		*	*	*	*	NS	*	

Maraqu, Gwegone and Jubeiha were excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.
 + Locations not analysed thus mean values are unadjusted.

Table 5.6.4. Adjusted plant height (cm) of entries at different locations in the LISN-E during 1988/89.

Selection	ILL	ALGERIA	BANGLADESH	BRAZIL	BULGARIA	BURMA	CHILE	ETHIOPIA	GREECE	INDIA	IRAN	
		Khroub	Mymen-singh	Maracaju	Toshevo	Gweg-one	Chillan	Debre Zeit	Larissa	Delhi	Ghazvin	Karaj
Precoz	4605	30	34	36	28	28	24	37	30	35	17	28
L 5	5888	27	39	34	17	31	20	45	25	46	20	27
FLIP 87-65L	6255	26	33	34	22	30	29	36	33	37	19	26
FLIP 87-66L	6256	28	41	36	20	27	25	41	29	53	19	24
FLIP 87-68L	6258	31	38	37	21	26	28	45	28	35	21	27
FLIP 87-72L	6262	29	39	36	21	31	24	40	29	36	18	25
FLIP 88-34L	6458	26	39	40	22	31	22	42	26	39	20	28
FLIP 88-35L	6459	28	37	33	25	26	24	48	28	34	22	25
FLIP 88-36L	6460	25	39	36	19	31	27	40	27	33	18	26
FLIP 88-37L	6461	27	33	34	19	30	25	40	27	32	18	19
FLIP 88-39L	6463	26	36	39	23	32	20	42	29	41	18	24
FLIP 88-40L	6464	27	28	36	21	30	31	34	29	34	16	27
FLIP 88-41L	6465	28	36	32	24	29	28	37	32	39	19	26
FLIP 88-42L	6466	25	29	28	22	27	30	42	26	30	18	25
FLIP 88-43L	6467	32	35	39	30	30	27	40	38	44	20	26
FLIP 88-44L	6468	24	39	37	24	30	23	41	31	35	18	27
FLIP 88-45L	6469	29	34	33	24	29	28	39	31	38	17	27
FLIP 88-46L	6470	30	34	36	25	30	29	43	29	44	21	27
FLIP 88-47L	6471	31	25	33	24	30	25	39	30	30	19	26
FLIP 88-48L	6472	31	38	34	27	31	25	44	31	43	19	28
FLIP 89-45L	6803	31	39	36	21	31	30	39	31	36	16	30
FLIP 89-46L	6804	28	31	39	25	29	23	43	32	35	21	31
FLIP 89-47L	6805	26	33	39	26	28	25	40	25	44	19	26
FLIP 89-48L	6806	30	36	35	23	30	25	39	28	38	20	27
FLIP 89-49L	6807	29	34	39	25	30	27	38	26	38	19	23
FLIP 89-50L	6808	32	32	37	21	28	23	40	31	37	15	28
FLIP 89-51L	6809	31	33	34	26	29	28	41	35	39	18	27

Cont'd. ...

Table 5.6.4. Cont'd. ...

Selection	ILL	ALGERIA	BANGLADESH	BRAZIL	BULGARIA	BURMA	CHILE	ETHIOPIA	GREECE	INDIA	IRAN	
		Khroub	Mymen- singh	Maracaju	Toshevo	Gweg- one	Chillan	Debre Zeit	Larissa	Delhi	Ghazvin	Karaj
FLIP 89-52L	6810	23	38	29	21	25	22	37	30	30	17	22
FLIP 89-53L	6811	28	44	43	22	28	30	41	28	42	18	30
FLIP 89-54L	6812	29	34	29	21	30	28	38	27	34	19	24
FLIP 89-55L	6813	27	36	37	20	31	25	40	27	32	18	21
FLIP 89-56L	6814	24	32	36	22	30	22	38	25	40	21	20
FLIP 89-57L	6815	24	36	36	21	25	23	42	25	29	21	26
FLIP 89-58L	6816	27	32	36	19	21	23	39	29	40	20	23
FLIP 89-59L	6817	23	33	34	24	30	23	43	28	38	17	27
FLIP 89-60L	6818	22	35	32	20	27	21	44	28	35	22	26
FLIP 89-61L	6819	24	42	34	23	29	23	42	29	42	19	24
FLIP 89-62L	6820	28	38	42	19	28	28	39	36	39	19	28
FLIP 89-63L	6821	27	36	35	22	29	23	41	31	35	16	25
FLIP 89-64L	6822	29	45	37	24	26	28	39	32	39	17	24
FLIP 89-65L	6823	29	44	38	26	31	28	36	34	42	18	27
FLIP 89-66L	6824	25	41	38	25	26	17	41	26	37	20	27
FLIP 89-67L	6825	29	41	37	26	29	22	36	30	41	16	26
FLIP 89-68L	6826	29	38	38	22	29	25	41	27	35	20	25
FLIP 89-69L	6827	32	46	43	21	30	21	43	32	48	19	26
FLIP 89-70L	6828	26	42	42	26	32	23	42	27	38	19	26
FLIP 89-71L	6829	23	40	39	16	30	22	39	26	40	19	24
FLIP 89-72L	6830	29	34	42	25	31	24	39	27	52	19	28
Local check		34	35	44	33	29	40	36	36	37	16	32
Location Mean		27	36	36	23	29	25	40	29	38	18	26
S.E. of Mean		1.47	2.71	2.53	2.81	1.80	2.44	2.04	1.69	3.73	1.83	1.58
L.S.D. at 5%		4.17	7.71	7.27	-	-	6.93	5.86	4.84	10.69	-	4.50
C.V. (%)		7.57	10.59	9.82	17.52	8.79	13.80	7.17	8.12	13.83	14.11	8.73
Error d.f.		48	48	36	48	36	48	36	36	36	48	48
Significance		*	*	*	NS	NS	*	*	*	*	NS	0

Cont'd. ...

Table 5.6.4. Cont'd. ...

Selection	ILL	IRAN		JORDAN		MEXICO	MOROCCO	NEPAL	PAKISTAN		PORTUGAL	SYRIA	Overall Mean
		Maragheh	Jubeiha	Ramtha	Padilla Tam+	Sidi Laidi	Khuma-ltar	-Faisalabad-NIAB	AARI	Elvas	Tel Hadya		
Precoz	4605	8	24	32	-	29	25	42	37	24	16	28	
L 5	5888	9	23	32	22	27	22	44	40	23	18	28	
FLIP 87-65L	6255	11	23	30	-	28	25	46	40	25	19	28	
FLIP 87-66L	6256	9	28	25	29	30	24	47	39	23	21	29	
FLIP 87-68L	6258	9	26	32	18	28	24	40	35	25	19	29	
FLIP 87-72L	6262	17	26	24	25	30	21	37	37	23	18	28	
FLIP 88-34L	6458	10	25	29	40	28	23	41	34	23	13	28	
FLIP 88-35L	6459	10	27	24	23	27	20	39	35	24	16	28	
FLIP 88-36L	6460	9	23	28	-	30	24	39	35	23	16	27	
FLIP 88-37L	6461	11	24	32	-	27	23	37	33	23	14	26	
FLIP 88-39L	6463	9	26	30	29	31	22	41	38	24	16	28	
FLIP 88-40L	6464	13	24	34	-	27	31	40	37	25	19	28	
FLIP 88-41L	6465	13	28	30	-	30	31	41	35	26	20	29	
FLIP 88-42L	6466	10	31	27	-	28	28	38	36	23	20	27	
FLIP 88-43L	6467	9	29	30	20	26	30	42	46	27	17	31	
FLIP 88-44L	6468	9	27	32	22	31	27	36	37	26	17	28	
FLIP 88-45L	6469	15	27	24	19	29	28	34	37	24	20	28	
FLIP 88-46L	6470	10	28	33	-	26	32	32	38	21	20	29	
FLIP 88-47L	6471	15	22	34	-	27	28	37	48	23	19	28	
FLIP 88-48L	6472	14	22	32	-	26	31	37	35	22	18	29	
FLIP 89-45L	6803	18	22	32	-	29	31	41	38	22	20	30	
FLIP 89-46L	6804	16	24	36	-	27	32	37	35	22	20	29	
FLIP 89-47L	6805	7	27	30	21	28	27	36	31	22	15	28	
FLIP 89-48L	6806	17	26	30	15	26	30	37	41	24	18	29	
FLIP 89-49L	6807	9	22	33	25	31	32	32	39	26	15	28	
FLIP 89-50L	6808	12	25	31	-	30	30	39	35	24	22	29	
FLIP 89-51L	6809	13	27	32	13	28	31	41	35	22	21	29	

Cont'd. ...

Table 5.6.4. Cont'd. ...

Selection	ILL	IRAN	JORDAN		MEXICO	MOROCCO	NEPAL	PAKISTAN		PORTUGAL	SYRIA	Overall Mean
		Maragheh	Jubeiha	Ramtha	Padilla Tam+	Sidi Laidi	Khuma-ltar	-Faisalabad-	AARI	Elvas	Tel Hadya	
FLIP 89-52L	6810	10	24	26	-	30	25	42	37	21	16	26
FLIP 89-53L	6811	16	28	33	-	27	26	39	40	27	20	30
FLIP 89-54L	6812	7	19	31	28	28	28	40	45	23	18	27
FLIP 89-55L	6813	10	22	33	-	28	25	40	35	21	17	27
FLIP 89-56L	6814	7	27	31	-	27	25	36	37	22	14	27
FLIP 89-57L	6815	6	23	29	-	26	27	35	31	19	16	26
FLIP 89-58L	6816	10	21	30	19	29	27	39	34	22	18	27
FLIP 89-59L	6817	9	20	32	20	28	26	39	36	23	15	27
FLIP 89-60L	6818	9	23	31	20	29	26	41	30	21	17	27
FLIP 89-61L	6819	10	24	30	24	30	25	38	37	22	18	28
FLIP 89-62L	6820	8	27	31	19	29	30	46	47	23	19	30
FLIP 89-63L	6821	9	29	27	-	31	29	37	34	23	18	28
FLIP 89-64L	6822	9	31	30	26	26	32	45	46	25	18	30
FLIP 89-65L	6823	12	27	31	24	30	30	42	41	23	20	30
FLIP 89-66L	6824	7	24	29	27	28	27	44	37	24	13	28
FLIP 89-67L	6825	9	28	30	-	28	27	43	42	25	17	29
FLIP 89-68L	6826	8	28	29	14	27	28	46	36	23	19	29
FLIP 89-69L	6827	12	26	31	18	29	29	48	44	28	20	31
FLIP 89-70L	6828	7	25	31	19	29	27	40	37	22	16	29
FLIP 89-71L	6829	8	24	33	18	27	30	46	35	23	14	28
FLIP 89-72L	6830	15	24	31	19	30	31	41	38	23	18	30
Local check		20	31	32	-	26	34	49	38	25	17	
Location Mean		11	25	30	22	28	27	40	38	23	18	
S.E. of Mean		1.55	2.62	2.79		0.05	1.99	1.28	2.46	1.70	1.25	
L.S.D. at 5%		4.45	-	-		0.14	5.70	3.64	7.05	-	3.58	
C.V. (%)		20.38	14.64	13.07		0.24	10.22	4.53	9.23	10.28	10.02	
Error d.f.		36	36	48		36	36	48	36	36	36	
Significance		*	NS	NS		*	*	*	*	NS	*	

Padilla Tam was excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.

+ Locations not analysed 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 1988/89.

Selection	ILL	AUSTRALIA		BANGLADESH		BRAZIL		BURMA		CHILE		ETHIOPIA	
		Turretfiled		Mymensingh		Maracaju		Gwegone		Chillan		Debre Zeit	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Precoz	4605	1071	7	73	35	788	4	252	18	92	19	1621	13
L 5	5888	330	36	833	5	419	17	352	14	31	48	1270	27
FLIP 87-65L	6255	307	38	267	16	156	31	-	48	54	38	382	49
FLIP 87-66L	6256	244	41	500	7	13	47	28	36	53	42	1478	20
FLIP 87-68L	6258	845	14	67	37	369	20	259	16	160	3	2817	1
FLIP 87-72L	6262	345	35	73	34	194	28	-	41	69	30	1441	22
FLIP 88-34L	6458	154	45	467	9	681	7	-	46	77	26	1761	9
FLIP 88-35L	6459	553	27	300	14	175	30	770	1	63	33	1374	23
FLIP 88-36L	6460	685	22	100	29	125	36	433	8	85	25	2101	5
FLIP 88-37L	6461	935	10	80	33	263	24	419	9	60	34	1614	14
FLIP 88-39L	6463	463	34	140	26	513	14	109	25	92	22	2600	2
FLIP 88-40L	6464	790	15	73	36	575	12	258	17	114	13	861	40
FLIP 88-41L	6465	496	30	67	41	281	23	247	19	119	11	1520	19
FLIP 88-42L	6466	703	21	47	45	181	29	415	10	92	21	458	45
FLIP 88-43L	6467	139	47	133	27	1025	1	551	5	56	37	1132	31
FLIP 88-44L	6468	187	42	247	17	681	8	31	35	53	41	764	42
FLIP 88-45L	6469	733	19	167	25	838	2	462	7	151	4	1606	15
FLIP 88-46L	6470	1081	6	167	22	675	9	380	12	131	8	1948	7
FLIP 88-47L	6471	1241	2	100	32	794	3	318	15	145	5	1367	24
FLIP 88-48L	6472	1652	1	47	46	775	5	381	11	125	9	999	37
FLIP 89-45L	6803	993	9	67	38	306	21	167	22	117	12	1329	26
FLIP 89-46L	6804	858	12	67	40	300	22	81	31	138	7	1351	25
FLIP 89-47L	6805	741	18	200	19	225	25	-	40	106	15	1252	28
FLIP 89-48L	6806	1241	3	67	39	700	6	466	6	119	10	1203	29
FLIP 89-49L	6807	544	28	367	11	125	38	102	27	67	31	418	47
FLIP 89-50L	6808	876	11	167	23	106	40	-	42	140	6	454	46
FLIP 89-51L	6809	1140	5	33	47	488	15	131	24	185	2	2283	4

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	ILL	AUSTRALIA		BANGLADESH		BRAZIL		BURMA		CHILE		ETHIOPIA	
		Turretfiled		Mymensingh		Maracaju		Gwegone		Chillan		Debre Zeit	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 89-52L	6810	730	20	20	48	6	48	-	45	57	36	1002	36
FLIP 89-53L	6811	779	16	1033	2	88	41	8	38	102	17	528	44
FLIP 89-54L	6812	1000	8	113	28	131	35	200	21	58	35	1666	11
FLIP 89-55L	6813	644	23	53	43	206	27	36	33	75	28	762	43
FLIP 89-56L	6814	852	13	7	49	44	44	102	28	90	23	1018	35
FLIP 89-57L	6815	762	17	67	42	63	42	32	34	94	18	1094	33
FLIP 89-58L	6816	265	40	204	18	44	45	-	43	30	49	399	48
FLIP 89-59L	6817	13	48	300	13	563	13	356	13	54	39	2572	3
FLIP 89-60L	6818	311	37	367	10	481	16	156	23	38	47	894	39
FLIP 89-61L	6819	177	43	167	24	225	26	-	49	67	32	980	38
FLIP 89-62L	6820	582	25	173	21	150	34	97	29	85	24	1637	12
FLIP 89-63L	6821	278	39	100	31	400	18	627	3	76	27	1539	18
FLIP 89-64L	6822	508	29	300	15	125	37	85	30	74	29	1684	10
FLIP 89-65L	6823	475	32	333	12	50	43	560	4	104	16	788	41
FLIP 89-66L	6824	474	33	200	20	25	46	7	39	43	46	1115	32
FLIP 89-67L	6825	560	26	667	6	113	39	55	32	48	44	1552	17
FLIP 89-68L	6826	627	24	53	44	150	33	217	20	106	14	1555	16
FLIP 89-69L	6827	145	46	500	8	150	32	-	44	47	45	1144	30
FLIP 89-70L	6828	-	49	933	4	600	11	21	37	54	40	2033	6
FLIP 89-71L	6829	166	44	1000	3	381	19	-	47	92	20	1030	34
FLIP 89-72L	6830	489	31	100	30	600	10	107	26	49	43	1880	8
Local check		1141	4	1033	1	-	49	736	2	263	1	1475	21
Location Mean		619		258		334		198		90		1342	
S.E. of Mean		142.42		131.27		103.09		122.28		18.87		398.23	
L.S.D. at 5%		408.43		373.21		293.11		350.69		54.13		1142.08	
C.V. (%)		32.55		71.98		43.66		87.45		29.71		41.97	
Error d.f.		36		48		48		36		36		36	
Significance		*		*		*		*		*		*	
Efficiency		150.04		-		-		115.69		110.71		120.19	
Test > L. Check		1		-		22		-		-		1	

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	ILL	GREECE		INDIA		IRAN				JORDAN			
		Larissa		Delhi		Ghazvin		Karaj		Maragheh		Jubeiha	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Precoz	4605	1569	7	733	24	218	15	1615	17	88	42	860	18
L 5	5888	429	46	437	42	126	35	733	40	57	48	499	28
FLIP 87-65L	6255	1034	25	643	31	57	46	1047	30	89	41	659	24
FLIP 87-66L	6256	801	37	1063	10	79	41	880	34	109	30	612	25
FLIP 87-68L	6258	1217	15	334	44	451	1	1612	18	125	20	992	13
FLIP 87-72L	6262	1220	14	1176	9	351	2	1728	14	167	4	925	15
FLIP 88-34L	6458	986	27	1593	3	188	22	1384	22	99	35	418	31
FLIP 88-35L	6459	1437	8	758	23	256	7	1485	21	121	21	1636	5
FLIP 88-36L	6460	409	47	857	16	304	3	1661	16	85	44	144	49
FLIP 88-37L	6461	510	45	1362	7	206	17	681	44	150	10	1072	11
FLIP 88-39L	6463	1098	19	867	15	301	4	763	38	128	17	530	27
FLIP 88-40L	6464	1617	5	1526	4	269	6	1675	15	150	11	921	16
FLIP 88-41L	6465	1430	9	457	41	185	23	2761	1	153	7	1086	9
FLIP 88-42L	6466	1372	10	567	35	159	29	2137	7	102	31	1792	2
FLIP 88-43L	6467	1090	20	1983	1	12	49	1057	29	125	19	945	14
FLIP 88-44L	6468	1011	26	459	40	239	10	1908	9	59	47	297	40
FLIP 88-45L	6469	1588	6	527	37	279	5	2286	6	143	12	1258	7
FLIP 88-46L	6470	1072	23	842	17	172	26	2372	4	142	13	859	19
FLIP 88-47L	6471	1669	4	173	47	146	32	2552	2	135	16	871	17
FLIP 88-48L	6472	1283	13	643	32	216	16	2442	3	150	9	189	48
FLIP 89-45L	6803	1723	3	801	21	120	36	1868	10	216	2	1724	3
FLIP 89-46L	6804	1350	11	1310	8	91	40	1135	26	111	29	1077	10
FLIP 89-47L	6805	859	34	1489	5	237	11	1235	25	83	45	719	21
FLIP 89-48L	6806	1068	24	732	25	76	43	2084	8	126	18	1060	12
FLIP 89-49L	6807	557	44	702	27	54	47	571	47	116	27	206	47
FLIP 89-50L	6808	2058	1	183	46	222	13	1780	13	158	6	1831	1
FLIP 89-51L	6809	1302	12	1029	12	221	14	1107	27	93	37	1502	6

Cont'd.

Table 5.6.5. Cont'd. ...

Selection	ILL	GREECE		INDIA		IRAN				JORDAN			
		Larissa		Delhi		Ghazvin	Karaj		Maragheh		Jubeiha		
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 89-52L	6810	1168	17	518	38	53	48	697	42	117	26	582	26
FLIP 89-53L	6811	955	30	537	36	102	39	780	37	120	23	725	20
FLIP 89-54L	6812	671	40	587	34	157	30	633	45	101	33	1231	8
FLIP 89-55L	6813	747	39	707	26	164	28	962	33	174	3	260	42
FLIP 89-56L	6814	569	43	693	28	78	42	582	46	91	38	382	33
FLIP 89-57L	6815	380	48	651	30	73	44	717	41	102	32	312	35
FLIP 89-58L	6816	974	29	290	45	203	18	1382	23	61	46	451	30
FLIP 89-59L	6817	911	33	489	39	148	31	1527	19	164	5	207	46
FLIP 89-60L	6818	857	35	829	19	129	34	1503	20	112	28	484	29
FLIP 89-61L	6819	1089	22	634	33	129	33	983	32	94	36	285	41
FLIP 89-62L	6820	650	41	418	43	176	24	849	35	90	40	303	36
FLIP 89-63L	6821	1152	18	962	14	174	25	2356	5	121	22	391	32
FLIP 89-64L	6822	945	31	993	13	67	45	461	48	86	43	673	23
FLIP 89-65L	6823	1201	16	-	-	201	19	1250	24	118	25	716	22
FLIP 89-66L	6824	1089	21	1057	11	199	20	1850	11	138	15	211	45
FLIP 89-67L	6825	614	42	652	29	116	37	820	36	140	14	298	38
FLIP 89-68L	6826	296	49	-	-	235	12	452	49	100	34	254	43
FLIP 89-69L	6827	981	28	809	20	191	21	695	43	119	24	365	34
FLIP 89-70L	6828	855	36	839	18	243	9	1812	12	91	39	299	37
FLIP 89-71L	6829	923	32	781	22	169	27	1060	28	57	49	298	39
FLIP 89-72L	6830	771	38	1374	6	115	38	755	39	151	8	226	44
Local check		1964	2	1869	2	251	8	991	31	292	1	1715	4
Location Mean		1052		791		176		1340		121		721	
S.E. of Mean		155.09		305.61		86.56		420.26		37.88		356.33	
L.S.D. at 5%		444.79		876.46		-		1205.25		108.63		1013.10	
C.V. (%)		20.86		54.66		69.69		44.34		44.34		69.87	
Error d.f.		36		36		36		36		36		48	
Significance		*		*		NS		*		*		*	
Efficiency		142.24		143.64		105.36		124.21		120.53		-	
Test > L. Check		-		-		-		6		-		-	

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	ILL	JORDAN		MEXICO		MOROCCO				NEPAL		PAKISTAN	
		Ramtha		Padilla Tam+		Marchouch		Sidi Laidi		Khumaltar		Faisalabad (NIAB)	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Precoz	4605	495	23	-	-	918	26	596	15	475	46	912	49
L 5	5888	614	16	500	18	769	35	214	40	403	48	1900	11
FLIP 87-65L	6255	428	31	-	-	715	37	461	22	1178	19	1462	29
FLIP 87-66L	6256	401	37	500	18	855	29	459	24	1002	27	1766	19
FLIP 87-68L	6258	443	26	500	18	1000	19	404	29	1139	20	1009	47
FLIP 87-72L	6262	672	13	483	19	684	40	203	41	748	38	1880	12
FLIP 88-34L	6458	520	22	1004	7	949	25	726	7	1782	11	1647	21
FLIP 88-35L	6459	766	9	667	14	1493	4	427	26	1659	13	1939	9
FLIP 88-36L	6460	483	24	-	-	832	31	495	19	530	43	1395	32
FLIP 88-37L	6461	406	35	-	-	967	21	389	30	417	47	1961	8
FLIP 88-39L	6463	969	2	1108	5	750	36	765	5	477	45	2349	2
FLIP 88-40L	6464	829	7	-	-	1103	14	657	10	983	29	1786	18
FLIP 88-41L	6465	895	5	-	-	847	30	865	4	977	30	1421	31
FLIP 88-42L	6466	872	6	-	-	1003	18	383	31	360	49	1597	25
FLIP 88-43L	6467	693	11	1283	2	779	34	1034	2	721	40	1451	30
FLIP 88-44L	6468	334	41	-	-	615	43	228	35	722	39	1481	27
FLIP 88-45L	6469	756	10	783	12	655	42	630	12	711	41	1604	24
FLIP 88-46L	6470	532	18	-	-	979	20	628	13	925	33	1789	17
FLIP 88-47L	6471	664	14	-	-	1051	15	689	8	1047	25	1805	16
FLIP 88-48L	6472	636	15	-	-	901	28	1046	1	793	37	2049	4
FLIP 89-45L	6803	781	8	-	-	965	23	573	18	922	34	1824	15
FLIP 89-46L	6804	948	3	-	-	1416	5	495	20	1229	18	1832	14
FLIP 89-47L	6805	691	12	958	9	965	22	186	42	1320	17	1986	5
FLIP 89-48L	6806	910	4	508	17	1217	10	1016	3	861	36	1478	28
FLIP 89-49L	6807	330	43	813	11	343	48	179	43	1759	12	1327	35
FLIP 89-50L	6808	425	32	-	-	492	46	461	23	496	44	1554	26
FLIP 89-51L	6809	1064	1	416	21	1203	12	228	36	1008	26	1915	10

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	ILL	JORDAN		MEXICO		MOROCCO				NEPAL		PAKISTAN	
		Ramtha		Padilla Tam+		Marchouch		Sidi Laidi		Khumaltar		Faisalabad (NIAB)	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 89-52L	6810	411	33	-	-	817	33	219	38	941	32	1738	20
FLIP 89-53L	6811	525	20	-	-	1751	1	652	11	1060	24	1200	42
FLIP 89-54L	6812	408	34	-	-	438	47	406	28	1858	8	1204	41
FLIP 89-55L	6813	295	45	-	-	817	32	135	47	946	31	1241	39
FLIP 89-56L	6814	343	39	-	-	672	41	153	45	905	35	1239	40
FLIP 89-57L	6815	211	49	-	-	570	44	112	49	1506	14	986	48
FLIP 89-58L	6816	430	30	850	10	1036	16	171	44	1338	16	2140	3
FLIP 89-59L	6817	342	40	425	20	710	38	578	17	1834	9	1164	44
FLIP 89-60L	6818	524	21	1175	4	1581	3	371	32	2204	4	1362	33
FLIP 89-61L	6819	432	29	1225	3	1212	11	140	46	1134	21	2558	1
FLIP 89-62L	6820	331	42	275	24	686	39	580	16	2028	6	1608	23
FLIP 89-63L	6821	436	28	-	-	146	49	447	25	644	42	1361	34
FLIP 89-64L	6822	327	44	408	22	1723	2	268	34	2009	7	1246	38
FLIP 89-65L	6823	393	38	674	13	1120	13	597	14	2197	5	1873	13
FLIP 89-66L	6824	406	36	579	15	523	45	337	33	3612	2	1645	22
FLIP 89-67L	6825	534	17	-	-	1291	7	737	6	995	28	1149	45
FLIP 89-68L	6826	451	25	292	23	904	27	118	48	1785	10	1176	43
FLIP 89-69L	6827	526	19	985	8	1289	8	224	37	1091	23	1252	37
FLIP 89-70L	6828	268	48	1025	6	1252	9	677	9	3307	3	1970	6
FLIP 89-71L	6829	290	47	1433	1	1306	6	420	27	1381	15	1967	7
FLIP 89-72L	6830	292	46	525	16	957	24	482	21	1126	22	1104	46
Local check		439	27	-	-	1028	17	218	39	4067	1	1282	36
Location Mean		534		734		945		459		1278		1583	
S.E. of Mean		99.75				266.66		134.48		337.03		161.45	
L.S.D. at 5%		286.07				-		385.66		958.23		463.02	
C.V. (%)		26.41				39.92		41.46		37.31		14.42	
Error d.f.		36				48		36		48		36	
Significance		*				NS		*		*		*	
Efficiency		100.68				-		123.26		-		120.11	
Test > L. Check		10				-		13		-		19	

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	PAKISTAN			PORTUGAL		SYRIA		TUNISIA						(1) Overall Mean	
	Faisalabad (AARI)			Elvas		Tel Hadya		Beja-I		Beja-2		El Kef		Y	R
	ILL	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
Precoz	4605	1230	19	1718	6	480	10	972	21	1095	11	827	30	838	16
L 5	5888	1545	6	818	41	311	23	161	49	407	46	196	49	568	45
FLIP 87-65L	6255	1083	28	1037	29	235	30	437	48	564	41	728	37	592	42
FLIP 87-66L	6256	1061	31	1095	25	409	15	976	18	885	24	1256	4	727	27
FLIP 87-68L	6258	701	44	1540	10	494	8	1100	11	933	20	1236	7	863	14
FLIP 87-72L	6262	1204	20	682	45	487	9	770	33	955	17	1325	1	786	22
FLIP 88-34L	6458	1281	16	1192	22	430	13	908	24	930	21	817	32	863	13
FLIP 88-35L	6459	1706	3	1576	8	500	7	990	17	1039	14	1189	9	975	3
FLIP 88-36L	6460	736	41	576	48	307	25	893	29	1045	13	967	22	673	34
FLIP 88-37L	6461	945	38	566	49	190	35	530	46	969	16	774	35	684	32
FLIP 88-39L	6463	946	37	1032	30	407	16	1259	5	1233	4	1071	15	852	15
FLIP 88-40L	6464	1158	22	1499	11	741	2	1113	10	1117	8	869	29	928	10
FLIP 88-41L	6465	1118	26	1305	15	690	4	1056	13	1086	12	631	43	884	11
FLIP 88-42L	6466	1299	15	1008	32	469	11	905	26	827	26	1065	16	791	21
FLIP 88-43L	6467	1565	5	1197	21	437	12	901	27	801	29	730	36	819	18
FLIP 88-44L	6468	1141	23	828	40	384	17	908	25	739	32	487	47	626	40
FLIP 88-45L	6469	1679	4	1792	3	605	5	1207	7	1344	2	1185	10	988	2
FLIP 88-46L	6470	1251	17	1953	2	594	6	1211	6	939	19	895	25	962	4
FLIP 88-47L	6471	1379	10	1381	14	851	1	1492	1	1533	1	983	20	1003	1
FLIP 88-48L	6472	1040	32	1744	5	694	3	1206	8	1103	10	1099	14	947	7
FLIP 89-45L	6803	1096	27	1578	7	222	33	1316	4	1186	6	1138	11	948	6
FLIP 89-46L	6804	1360	12	1786	4	237	29	1358	3	1183	7	1052	17	940	9
FLIP 89-47L	6805	1165	21	1210	18	424	14	934	22	804	28	672	41	796	20
FLIP 89-48L	6806	1345	13	2035	1	314	22	1375	2	926	22	1135	12	958	5
FLIP 89-49L	6807	1036	33	913	36	35	49	665	42	650	36	824	31	536	46
FLIP 89-50L	6808	706	43	1019	31	345	19	1043	14	1111	9	1254	5	767	25
FLIP 89-51L	6809	1444	8	1419	13	292	27	900	28	988	15	949	23	945	8

Cont'd. ...

Table 5.6.5. Cont'd. ...

Selection	PAKISTAN			PORTUGAL		SYRIA		TUNISIA						(1) Overall Mean	
	ILL	Faisalabad (AARI)		Elvas		Tel Hadya		Beja-1		Beja-2		El Kef		Y	R
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
FLIP 89-52L	6810	1034	34	1297	16	232	31	999	16	814	27	999	19	657	36
FLIP 89-53L	6811	588	46	1440	12	362	18	1139	9	1260	3	1223	8	770	24
FLIP 89-54L	6812	1241	18	861	39	69	45	552	45	516	42	887	27	672	35
FLIP 89-55L	6813	1123	24	924	34	207	34	973	19	331	48	891	26	574	44
FLIP 89-56L	6814	514	49	924	35	334	20	727	36	237	49	870	28	515	47
FLIP 89-57L	6815	577	48	626	46	72	44	568	44	502	43	999	18	502	48
FLIP 89-58L	6816	972	36	1107	23	135	38	515	47	630	39	659	42	611	41
FLIP 89-59L	6817	1068	29	604	47	308	24	822	31	586	40	1296	3	739	26
FLIP 89-60L	6818	2868	1	1076	26	57	48	667	41	769	31	695	38	826	17
FLIP 89-61L	6819	725	42	1046	27	172	36	754	35	899	23	1316	2	692	31
FLIP 89-62L	6820	790	40	900	38	68	46	720	37	680	35	623	45	642	39
FLIP 89-63L	6821	1064	30	901	37	239	28	803	32	945	18	689	39	692	30
FLIP 89-64L	6822	823	39	1207	20	84	42	759	34	461	44	626	44	702	29
FLIP 89-65L	6823	988	35	1294	17	325	21	910	23	855	25	1240	6	774	23
FLIP 89-66L	6824	1424	9	1097	24	101	40	1084	12	650	37	539	46	810	19
FLIP 89-67L	6825	1118	25	1037	28	307	26	664	43	790	30	672	40	676	33
FLIP 89-68L	6826	650	45	1541	9	67	47	691	38	734	33	934	24	585	43
FLIP 89-69L	6827	1335	14	954	33	232	32	691	39	645	38	781	34	644	38
FLIP 89-70L	6828	1453	7	788	42	77	43	855	30	392	47	384	48	872	12
FLIP 89-71L	6829	1377	11	726	44	172	37	669	40	422	45	1131	13	719	28
FLIP 89-72L	6830	584	47	732	43	92	41	1019	15	711	34	810	33	655	37
Local check		1828	2	1210	19	109	39	972	20	1208	5	975	21		
Location Mean		1150		1159		314		901		845		910			
S.E. of Mean		335.88		191.83		16.40		166.86		149.00		119.33			
L.S.D. at 5%		963.26		550.15		-		478.53		427.32		342.24			
C.V. (%)		41.29		23.41		73.80		26.20		24.93		18.54			
Error d.f.		36		36		36		36		36		36			
Significance		*		*		NS		*		*		*			
Efficiency		109.75		105.01		101.44		141.39		159		186.93			
Test > L. Check		1		4		6		1		-		1			

(1) Gwelon and Padilla Tam were excluded from the overall mean., * = Significant at $P \leq 0.05$, NS = Not significant.
+ Location not analysed thus mean values are unadjusted.

Table 5.6.6. The five heaviest seed yielding entries at the individual locations in the LISN-E during 1988/89.

	<u>AUSTRALIA</u>	<u>BANGLADESH</u>	<u>BRAZIL</u>	<u>BURMA</u>	<u>CHILE</u>	<u>ETHIOPIA</u>	<u>GREECE</u>	<u>INDIA</u>
Rank	Turretfield	Mymensingh	Maracaju	Gwegone	Chillan	Debre Zeit	Larissa	New Delhi
1	FLIP 88- 48L	Local check	FLIP 88- 43L	FLIP 88- 35L	Local check	FLIP 87- 68L	FLIP 89- 50L	FLIP 88- 43L
2	FLIP 88- 47L	FLIP 89- 53L	FLIP 88- 45L	Local check	FLIP 89- 51L	FLIP 88- 39L	Local check	Local check
3	FLIP 89- 48L	FLIP 89- 71L	FLIP 88- 47L	FLIP 89- 63L	FLIP 87- 68L	FLIP 89- 59L	FLIP 89- 45L	FLIP 88- 34L
4	Local check	FLIP 89- 70L	Precoz	FLIP 89- 65L	FLIP 88- 45L	FLIP 89- 51L	FLIP 88- 47L	FLIP 88- 40L
5	FLIP 89- 51L FLIP 88- 46L Precoz	L5 FLIP 89- 67L	LIP 88- 48L	FLIP 88- 43L	FLIP 88- 47L	FLIP 88- 36L	FLIP 88- 40L	FLIP 89- 47L
Cont'd ...								
	<u>IRAN</u>		<u>JORDAN</u>		<u>MEXICO</u>	<u>MOROCCO</u>		
Rank	Ghazvin	Karaj	Maraghah	Hubeiha	Ramtha	Padilla Tam	Marchouch	Sidi Laidi
1	FLIP 87- 68L	FLIP 88- 41L	Local check	FLIP 89- 50L	FLIP 89- 51L	FLIP 89- 71L	FLIP 89- 53L	FLIP 88- 48L
2	FLIP 87- 72L	FLIP 88- 47L	FLIP 89- 45L	FLIP 88- 42L	FLIP 88- 39L	FLIP 88- 43L	FLIP 88- 64L	FLIP 88- 43L
3	FLIP 88- 36L	FLIP 88- 48L	FLIP 89- 55L	FLIP 89- 45L	FLIP 89- 46L	FLIP 89- 61L	FLIP 89- 60L	FLIP 89- 48L
4	FLIP 88- 39L	FLIP 88- 46L	FLIP 87- 72L	Local check	FLIP 89- 48L	FLIP 89- 60L	FLIP 88- 35L	FLIP 88- 41L
5	FLIP 88- 45L	FLIP 89- 63L	FLIP 89- 59L	FLIP 88- 35L	FLIP 88- 41L	FLIP 88- 39L	FLIP 89- 46L	FLIP 88- 39L
Cont'd. ...								
	<u>NEPAL</u>	<u>PAKISTAN</u>	<u>PORTUGAL</u>	<u>SYRIA</u>		<u>TUNISIA</u>		
Rank	Khumaltar	Faisalabad	AARI	Elvas	Tel Hadya	Beja-1	Beja-2	El Kef
1	Local check	FLIP 89- 61L	FLIP 89- 60L	FLIP 89- 48L	FLIP 88- 47L	FLIP 88- 47L	FLIP 88- 47L	FLIP 87- 72L
2	FLIP 89- 66L	FLIP 88- 39L	Local check	FLIP 88- 46L	FLIP 88- 40L	FLIP 89- 48L	FLIP 88- 45L	FLIP 89- 61L
3	FLIP 89- 70L	FLIP 89- 58L	FLIP 88- 35L	FLIP 88- 45L	FLIP 88- 48L	FLIP 89- 46L	FLIP 89- 53L	FLIP 89- 59L
4	FLIP 89- 60L	FLIP 88- 48L	FLIP 88- 45L	FLIP 98- 46L	FLIP 88- 41L	FLIP 89- 45L	FLIP 88- 39L	FLIP 87- 66L
5	FLIP 89- 65L	FLIP 89- 47L	FLIP 88- 43L	FLIP 88- 48L	FLIP 88- 45L	FLIP 88- 39L	Local check	FLIP 89- 50L

The brackets indicate entries having the same rank.

was almost same or earlier to that of the respective local check. This revealed that a large number of the test entries supplied in this trial were earlier in flowering. Among the entries FLIP 89-63L was the earliest in flowering (74 days) and was closely followed by FLIP 89-51L, FLIP 88-42L, FLIP 88-41L, FLIP 88-40L, L5, etc.

The location means for time to maturity (Table 5.6.3) ranged from 69 days at Ghazvin in Iran to 165 days at Larissa in Greece. The overall entry means revealed that the entry FLIP 89-63L was earliest in maturity (128 days) and was followed by L5, FLIP 88-43L, FLIP 88-45L, FLIP 88-46L, FLIP 88-47L, FLIP 88-48L, FLIP 89-48L, and FLIP 89-70L.

The plant height was tallest for FLIP 88-43L and FLIP 89-69L and was followed by FLIP 89-45L, FLIP 89-53L, FLIP 89-62L, FLIP 89-64L, FLIP 89-65L, and FLIP 89-72L (Table 5.6.4).

The location mean for seed yield (Table 5.6.5) was recorded as highest at Faisalabad in Pakistan (1583 Kg/ha) and was followed by Debre Zeit in Ethiopia (1342 kg/ha), Karadj in Iran (1340 kg/ha), and Khumaltar in Nepal (1278 kg/ha). Among the entries, FLIP88-47L gave the highest seed yield of 1003 kg/ha which was closely followed by FLIP 88-45L, FLIP 88-35L, FLIP 88-46L, and FLIP 89-48L with seed yields of 988, 975, 962, and 958 kg/ha, respectively. The ANOVA for the design revealed that at Turretfield in Australia, Maracajo in Brazil, Debre zeit in Ethiopia, Karaj in Iran, Ramtha in Jordan, Sidi Laidi in Morocco, Faisalabad-I (NIAB) and Faisalabad-II (AARI) in Pakistan, Elvas in Portugal, Tel Hadya in Syria, Beja-I and El-kef in Tunisia, 1, 22, 1, 6, 10, 13, 19, 1, 4, 6, 1, and 1 entries, respectively, outyielded the respective local check by a significant margin. The list of top five high yielding lines at each location is given in Table 5.6.6. The entry FLIP 88-39L and FLIP 88-39L occurred most frequently among the top five heaviest yielders and were closely followed by FLIP 84-45L and FLIP 88-43L.

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 35 test entries and a local check, the best local cultivar, which was to be added by the cooperator. Twenty seven of the entries supplied originated through the hybridization at ICARDA and were selected on the basis of their performance at ICARDA sites in Syria and Lebanon.

Methods and Management

The nursery was grown in a 6x6 lattice design with two replications. 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.

Table 5.7.1. Agronomic data for different locations in the LISN-T during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
ALGERIA	Beni Slimane	28.12.1988	07.06.1989	50	100	-	-	Treflan	Syrie 229
ALGERIA	Khroub	27.12.1988	28.06.1989	17	46	-	-	Treflan	Syrie 229
ALGERIA	S.B.A.(Tassala)	10.12.1988	05.06.1989	-	46	-	-	-	Syrie 229
ALGERIA	Setif	29.11.1988	12.07.1989	-	100	-	-	Treflan	Syrie 229
ALGERIA	Sidi Bel Abbes	01.12.1988	05.06.1989	-	46	-	-	Treflan	Syrie 229
AUSTRALIA	Clare	31.05.1989	04.01.1990	-	180	-	-	Lexone & Treflan	ILL 5750
AUSTRALIA	Mintaro	25.05.1989	05.01.1990	-	125	-	-	Lexone & Treflan	ILL 5750
BANGLADESH	Mymensingh	19.11.1988	25.04.1989	-	-	-	-	-	Bm 681
BULGARIA	Toshevo	19.10.1988	14.03.1989	30	60	-	-	-	Tadjikskaya 95
CANADA	Manitoba	17.05.1989	22.08.1989	10	37	-	-	Bentazon	Eston
CHILE	Chillan	20.06.1989	05.12.1989	-	90	-	-	-	Araucaua -INIA
ECUADOR	Ambata	NA	NA	18	46	-	-	Afalon	406
ETHIOPIA	Debre Zeit	21.07.1989	15.11.1989	-	-	-	-	-	NEL -358
GREECE	Larissa	06.12.1988	20.06.1989	-	60	-	-	Decamethzin	Samos
IRAN	Ghazvin	09.04.1989	28.06.1989	-	100	-	-	-	Ghazvin
IRAN	Karaj	04.04.1989	24.06.1989	-	70	-	-	Treflan & Metasystox	Ghazvin
IRAN	Maragheh	04.04.1989	07.07.1989	14	37	-	-	-	NA
IRAQ	Arbil	15.12.1988	21.05.1989	40	40	-	-	-	Arbil Local
IRAQ	Dohuk	NA	NA	NA	NA	NA	NA	NA	NA
ITALY	Caltagirone	06.12.1988	20.05.1989	18	20	-	-	-	Villalba
JORDAN	Jubeiha	10.12.1988	NA	20	50	-	-	-	Jordan -1
JORDAN	Marow	24.11.1988	20.05.1989	18	45	-	-	-	Jordan -1
JORDAN	Mushagar	23.11.1988	21.05.1989	-	-	-	-	Sumithion	Jordan -1
JORDAN	Ramtha	01.11.1988	NA	20	50	-	-	-	Jordan -1
LEBANON	Terbol	24.11.1988	20.05.1989	-	50	-	-	Kerb & Bladex	NA
PAKISTAN	Faisalabad	21.11.1988	07.05.1989	20	60	1	-	-	Masoor 85
PORTUGAL	Elvas	13.12.1988	02.06.1989	-	60	-	-	-	L -188
SPAIN	El Encin	16.11.1988	20.06.1989	32	96	-	-	Prometryne	Angela
SYRIA	Aleppo	14.11.1988	04.05.1989	-	50	-	-	-	Idleb -1
SYRIA	Gelline	04.12.1988	13.05.1989	20	50	-	-	-	Idleb -1
SYRIA	Heimo	26.11.1988	29.05.1989	-	50	-	-	-	Idleb -1
SYRIA	Idleb	30.11.1988	14.05.1989	-	60	-	-	-	Idleb -1
SYRIA	Izra'a	05.01.1989	10.06.1989	-	-	-	-	-	Idleb -1
SYRIA	Tel Hadya	29.11.1988	27.05.1989	-	50	-	-	Kerb, Bladex	ILL 4401
TUNISIA	Beja -1	23.11.1988	NA	NA	NA	NA	NA	NA	Ouslatia
TUNISIA	Beja -2	23.11.1988	NA	NA	NA	NA	NA	NA	Ouslatia
TUNISIA	El Kef	12.11.1988	NA	NA	NA	NA	NA	NA	Ouslatia
TURKEY	Diyarbakir	09.12.1988	01.06.1989	30	60	-	-	-	Firat -87

NA = Not available.

Table 5.7.2. Adjusted time to flowering (days) of entries at different locations in the LISN-T during 1988/89.

Selection	ALGERIA					AUSTRALIA	BULGARIA	CHILE	ETHIOPIA	GREECE	
	ILL	Beni Slimane	Khroub	Tassala	Setif	Sidi Bel Abbes	Mintaro+	Toshevo	Chillan	Debre Zeit	Larissa
-	468	113	106	124	127	125	148	75	121	88	126
-	1939	107	105	122	114	121	140	67	116	72	124
Local small	4401	107	108	122	117	123	140	69	118	78	125
Laird	4349	107	112	130	120	124	148	71	121	87	125
Idlib-1	5582	103	104	120	109	120	130	63	112	60	124
78S 26013	5588	103	108	120	118	124	133	67	119	85	125
78S 26052	5604	98	104	126	112	120	133	66	110	70	125
FLIP 84-51L	5722	98	106	118	109	103	136	66	112	51	126
FLIP 84-58L	5728	106	103	121	114	119	129	65	111	86	121
FLIP 84-59L	5729	108	107	128	122	124	141	66	119	82	126
FLIP 85-33L	5871	110	111	129	119	123	140	65	117	65	130
81S 15	5883	110	97	119	112	103	133	64	110	46	122
FLIP 86-16L	6002	98	96	119	114	103	133	66	112	45	121
FLIP 86-24L	6010	111	111	125	122	124	148	66	118	67	129
FLIP 86-33L	6019	102	104	116	111	123	133	66	112	57	123
FLIP 86-35L	6021	103	105	119	120	116	133	67	116	65	124
FLIP 86-38L	6024	98	95	130	110	103	129	65	111	48	118
FLIP 86-56L	6042	105	107	128	120	122	140	69	117	72	127
FLIP 87- 9L	6199	108	103	132	119	130	140	67	118	89	127
FLIP 87-21L	6211	98	97	117	114	110	130	64	112	54	122
FLIP 87-45L	6235	102	105	123	110	125	140	68	116	90	122
FLIP 87-49L	6239	107	107	128	114	120	133	68	115	84	124
FLIP 87-52L	6242	98	96	123	111	103	130	64	112	61	120
FLIP 87-59L	6249	98	102	128	109	120	130	66	112	78	124
FLIP 88- 8L	6432	105	104	115	107	122	133	66	112	60	123
FLIP 88-31L	6445	103	103	118	114	117	133	65	115	54	124
FLIP 88-50L	6474	101	102	115	106	103	133	65	112	60	123
FLIP 88-51L	6475	101	102	122	106	121	129	65	112	87	121
FLIP 89-30L	6788	103	103	119	120	110	140	67	112	69	125
FLIP 89-39L	6797	104	105	121	114	103	140	66	119	53	124
FLIP 89-40L	6798	106	103	126	119	124	136	71	119	84	128
FLIP 89-41L	6799	98	104	129	113	123	133	65	112	53	123
FLIP 89-42L	6800	98	104	127	113	122	130	65	112	50	122
FLIP 89-43L	6801	104	96	127	109	103	133	64	111	43	118
FLIP 89-44L	6802	102	98	119	121	103	133	64	112	67	123
Local check		102	107	126	110	114	133	68	117	54	130
Location Mean		103	104	123	115	116	135	66	114	67	124
S.E. of Mean		2.32		4.06	0.03	3.61		0.94	1.31	1.97	1.03
L.S.D. at 5%		6.65		-	0.09	10.36		2.73	3.75	5.73	3.01
C.V. (%)		3.17		4.67	0.04	4.39		2.00	1.61	4.16	1.18
Error d.f.		35		35	25	35		25	35	25	25
Significance		*		NS	*	*		*	*	*	*

Cont'd. ...

Table 5.7.2. Cont'd. ...

Selection	IRAN				IRAQ	ITALY	JORDAN			LEBANON	PAKISTAN	
	ILL	Ghazvin	Karaj	Maragheh	Arbil	Caltagirone	Jubeiha	Marow+	Mushagar	Ramtha	Terbol	Paisalabad
-	468	59	69	75	121	126	95	133	142	84	133	118
-	1939	58	60	65	118	120	89	134	136	83	126	113
Local small	4401	59	59	69	118	120	89	135	136	83	125	110
Laird	4349	60	62	75	120	122	94	132	139	83	133	109
Idlib-1	5582	56	57	65	114	113	86	133	132	82	123	101
78S 26013	5588	59	59	73	121	120	87	133	136	84	125	112
78S 26052	5604	57	60	62	122	116	87	133	134	82	126	109
FLIP 84-51L	5722	52	47	57	122	115	87	134	137	84	125	92
FLIP 84-58L	5728	61	60	67	116	113	82	131	131	83	123	109
FLIP 84-59L	5729	58	61	71	126	120	92	133	138	83	128	110
FLIP 85-33L	5871	57	57	65	123	120	91	134	139	82	128	109
81S 15	5883	55	50	59	122	118	83	128	134	83	124	92
FLIP 86-16L	6002	55	51	65	115	113	83	131	130	82	123	84
FLIP 86-24L	6010	60	61	68	127	120	90	133	141	83	130	107
FLIP 86-33L	6019	58	52	60	117	113	89	133	134	82	125	105
FLIP 86-35L	6021	57	60	66	118	120	87	134	135	84	126	111
FLIP 86-38L	6024	56	49	58	113	113	82	129	129	83	121	97
FLIP 86-56L	6042	60	59	70	124	120	90	132	137	83	125	110
FLIP 87- 9L	6199	61	58	73	120	120	91	134	138	84	127	117
FLIP 87-21L	6211	58	56	57	116	115	83	132	131	82	125	94
FLIP 87-45L	6235	59	61	68	120	120	89	131	137	82	124	111
FLIP 87-49L	6239	61	61	69	120	117	89	133	136	82	125	111
FLIP 87-52L	6242	56	55	62	118	113	82	131	133	83	123	102
FLIP 87-59L	6249	59	61	70	119	115	89	133	134	84	123	106
FLIP 88- 8L	6432	57	51	65	114	113	86	133	133	82	123	106
FLIP 88-31L	6445	56	58	64	115	115	89	133	134	82	125	101
FLIP 88-50L	6474	55	51	64	114	113	84	133	131	83	123	102
FLIP 88-51L	6475	56	63	65	118	115	83	130	133	84	121	111
FLIP 89-30L	6788	55	61	68	117	115	89	133	136	82	125	109
FLIP 89-39L	6797	53	50	59	123	120	90	133	138	85	125	104
FLIP 89-40L	6798	60	60	73	121	120	91	-	138	84	129	111
FLIP 89-41L	6799	52	53	63	117	113	85	130	131	82	123	107
FLIP 89-42L	6800	57	48	60	113	117	87	134	134	82	123	103
FLIP 89-43L	6801	54	52	59	121	113	84	133	129	83	121	115
FLIP 89-44L	6802	61	50	61	123	120	88	133	136	84	125	99
Local check		58	56	69	120	126	89	133	134	82	131	90
Location Mean		57	57	66	119	117	88	132	135	83	125	105
S.E. of Mean		2.22	2.06	2.07	2.03	1.05	1.35		0.80	0.76	0.45	0.87
L.S.D. at 5%		-	6.00	6.03	5.90	3.03	3.94		2.34	2.20	1.31	2.49
C.V. (%)		5.46	5.15	4.47	2.41	1.27	2.18		0.84	1.29	0.51	1.17
Error d.f.		25	25	25	25	35	25		25	25	25	35
Significance		NS	*	*	*	*	*		*	*	*	*

Cont'd. ...

Table 5.7.2. Cont'd. ...

Selection	PORTUGAL		SPAIN		SYRIA				TURKEY		(1)
	ILL	Elvas	El Encin	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	Overall Mean
-	468	106	157	134	125	137	128	103	135	128	115
-	1939	106	156	133	121	136	127	94	126	127	110
Local small	4401	107	152	134	121	135	126	93	124	128	110
Laird	4349	106	157	135	127	139	127	97	128	129	113
Idlib-1	5582	106	155	130	117	134	124	89	124	125	106
78S 26013	5588	106	152	135	120	136	127	96	126	127	110
78S 26052	5604	105	152	135	121	135	126	92	127	128	108
FLIP 84-51L	5722	105	151	128	118	136	126	93	124	127	105
FLIP 84-58L	5728	104	148	129	118	134	122	91	118	126	107
FLIP 84-59L	5729	106	156	135	121	138	129	100	133	125	112
FLIP 85-33L	5871	106	156	135	122	138	127	99	129	126	111
81S 15	5883	99	148	121	111	133	120	90	111	124	103
FLIP 86-16L	6002	99	150	126	111	134	120	95	117	126	103
FLIP 86-24L	6010	106	155	136	124	140	128	101	132	125	112
FLIP 86-33L	6019	106	153	127	118	135	124	91	121	124	106
FLIP 86-35L	6021	106	150	134	120	135	127	92	126	128	109
FLIP 86-38L	6024	101	149	121	112	133	120	93	116	124	103
FLIP 86-56L	6042	106	150	133	121	138	127	94	125	122	110
FLIP 87- 9L	6199	105	157	133	122	136	128	103	131	126	112
FLIP 87-21L	6211	99	151	121	113	134	121	92	118	126	104
FLIP 87-45L	6235	106	155	129	119	135	125	91	124	126	110
FLIP 87-49L	6239	106	157	135	120	135	127	96	123	128	110
FLIP 87-52L	6242	104	151	121	112	134	120	89	118	122	104
FLIP 87-59L	6249	105	151	128	118	133	124	97	121	126	108
FLIP 88- 8L	6432	105	151	127	118	134	124	95	124	125	106
FLIP 88-31L	6445	105	151	130	120	134	124	92	125	127	107
FLIP 88-50L	6474	106	148	127	115	133	123	89	121	125	104
FLIP 88-51L	6475	106	151	125	116	135	122	89	120	127	107
FLIP 89-30L	6788	105	154	132	120	135	126	96	125	127	108
FLIP 89-39L	6797	107	152	132	121	136	127	95	128	128	108
FLIP 89-40L	6798	107	158	134	121	138	127	99	131	128	112
FLIP 89-41L	6799	105	153	130	118	135	124	100	124	122	106
FLIP 89-42L	6800	105	153	132	119	136	124	102	125	137	107
FLIP 89-43L	6801	101	148	121	115	133	120	94	112	121	104
FLIP 89-44L	6802	105	152	128	119	134	123	91	124	126	107
Local check		106	169	131	118	134	123	96	126	128	
Location Mean		105	153	130	118	135	125	95	124	126	
S.E. of Mean		0.65	0.53	1.88	0.91	0.50	0.61	3.10	1.41	1.73	
L.S.D. at 5%		1.89	1.54	5.47	2.62	1.43	1.77	-	4.04	5.05	
C.V. (%)		0.87	0.49	2.04	1.09	0.52	0.69	4.64	1.61	1.94	
Error d.f.		25	25	25	35	35	25	25	35	25	
Significance		*	*	*	*	*	*	NS	*	*	

(1) Marow was excluded from the Overall mean., * = Significant at $P < 0.05$, NS = Not significant.

+ Locations not analysed thus mean values are unadjusted.

Table 5.7.3. Adjusted time to maturity (days) of entries at different locations in the LISN-T during 1988/89.

Selection	ILL	ALGERIA					AUSTRALIA		BULGARIA	CHILE
		Beni Slimane	Khroub+	Tassala	Setif	Sidi Bel Abbes	Clare	Mintaro	Toshevo	Chillan
-	468	142	164	-	183	180	201	200	108	163
-	1939	142	157	177	184	166	202	202	107	159
Local small	4401	142	157	167	183	170	202	199	106	159
Laird	4349	146	155	170	194	174	215	210	110	163
Idlib-1	5582	142	155	178	183	166	199	194	106	159
78S 26013	5588	142	169	171	200	170	201	188	107	158
78S 26052	5604	138	152	173	181	177	206	203	107	159
FLIP 84-51L	5722	138	161	-	184	165	200	200	106	160
FLIP 84-58L	5728	139	152	179	185	168	200	198	106	159
FLIP 84-59L	5729	142	159	180	179	168	202	200	106	159
FLIP 85-33L	5871	145	165	-	190	165	211	207	107	161
81S 15	5883	146	152	168	186	168	203	203	107	155
FLIP 86-16L	6002	138	154	172	187	170	210	203	108	163
FLIP 86-24L	6010	142	165	175	212	168	210	205	107	160
FLIP 86-33L	6019	142	158	177	180	168	203	200	105	160
FLIP 86-35L	6021	142	169	176	201	165	206	195	106	158
FLIP 86-38L	6024	138	149	168	201	163	198	189	106	159
FLIP 86-56L	6042	142	173	-	187	168	210	201	107	161
FLIP 87- 9L	6199	142	165	-	189	170	203	200	106	162
FLIP 87-21L	6211	138	152	171	201	168	211	204	106	159
FLIP 87-45L	6235	142	154	172	175	169	198	189	107	159
FLIP 87-49L	6239	142	162	179	169	168	197	194	106	160
FLIP 87-52L	6242	138	158	179	197	165	206	208	106	161
FLIP 87-59L	6249	138	154	173	179	165	203	196	106	159
FLIP 88- 8L	6432	142	149	174	169	167	199	198	105	160
FLIP 88-31L	6445	138	151	171	175	168	206	202	106	159
FLIP 88-50L	6474	139	149	177	176	173	199	199	107	159
FLIP 88-51L	6475	138	153	177	182	167	198	194	106	159
FLIP 89-30L	6788	138	156	171	169	165	198	201	107	159
FLIP 89-39L	6797	142	163	-	184	169	206	200	105	161
FLIP 89-40L	6798	138	163	181	203	165	202	200	108	161
FLIP 89-41L	6799	138	154	174	184	165	206	203	108	159
FLIP 89-42L	6800	142	151	168	179	167	210	198	106	159
FLIP 89-43L	6801	138	157	-	186	177	201	198	106	159
FLIP 89-44L	6802	142	155	170	204	168	199	194	106	159
Local check		138	153	179	204	176	200	198	108	161
Location Mean		141	157	174	187	169	203	199	106	160
S.E. of Mean		2.34		1.92	4.29	2.10	1.50	2.74	1.21	0.70
L.S.D. at 5%		-		5.57	12.31	6.04	4.36	7.87	-	2.05
C.V. (%)		2.36		1.56	3.25	1.77	1.04	1.95	1.61	0.62
Error d.f.		25		28	35	35	25	35	35	25
Significance		NS		*	*	*	*	*	NS	*

Cont'd. ...

Table 5.7.3. Cont'd. ...

Selection	ILL	IRAN				IRAQ	ITALY	JORDAN		LEBANON	PAKISTAN
		Larissa	Ghazvin	Karaj	Maragheh	Arbil	Caltagirone	Marow+	Mushagar	Terbol	Paisalabad
-	468	180	84	92	93	159	162	167	167	167	167
-	1939	169	83	90	89	150	155	166	162	161	164
Local small	4401	168	82	91	87	150	154	162	160	159	162
Laird	4349	188	90	91	93	159	162	-	168	171	165
Idlib-1	5582	168	81	89	87	149	154	162	162	154	154
78S 26013	5588	167	83	89	91	146	154	161	160	153	156
78S 26052	5604	170	83	91	88	157	157	166	158	161	155
FLIP 84-51L	5722	172	83	88	83	153	154	165	163	161	159
FLIP 84-58L	5728	168	88	90	92	147	154	-	160	153	160
FLIP 84-59L	5729	170	82	91	93	155	157	-	163	161	165
FLIP 85-33L	5871	179	83	90	85	159	158	161	163	163	165
81S 15	5883	169	82	88	84	144	155	159	155	153	156
FLIP 86-16L	6002	168	84	87	83	141	152	164	155	153	141
FLIP 86-24L	6010	174	84	91	91	158	155	-	162	160	149
FLIP 86-33L	6019	169	86	88	85	153	152	-	160	162	157
FLIP 86-35L	6021	169	83	90	89	150	154	163	161	160	149
FLIP 86-38L	6024	162	84	88	82	144	149	163	159	152	158
FLIP 86-56L	6042	178	85	90	92	158	156	165	164	163	164
FLIP 87- 9L	6199	174	83	90	92	153	158	168	164	163	165
FLIP 87-21L	6211	169	84	90	83	143	154	-	160	154	160
FLIP 87-45L	6235	167	85	91	89	151	154	164	161	152	166
FLIP 87-49L	6239	169	83	91	91	146	152	166	161	156	160
FLIP 87-52L	6242	169	84	89	89	146	154	-	158	153	162
FLIP 87-59L	6249	173	82	91	90	150	154	-	162	155	165
FLIP 88- 8L	6432	167	84	88	87	145	152	166	160	155	160
FLIP 88-31L	6445	168	84	91	88	146	154	164	162	158	162
FLIP 88-50L	6474	167	83	87	89	146	152	163	160	159	161
FLIP 88-51L	6475	166	80	91	91	153	152	163	161	151	164
FLIP 89-30L	6788	168	83	91	88	147	154	165	160	153	161
FLIP 89-39L	6797	179	84	89	86	156	156	-	163	157	161
FLIP 89-40L	6798	173	87	89	92	153	155	-	163	159	164
FLIP 89-41L	6799	168	85	89	83	144	149	162	155	152	165
FLIP 89-42L	6800	164	84	86	82	143	149	-	155	150	162
FLIP 89-43L	6801	165	83	85	82	144	154	161	158	151	158
FLIP 89-44L	6802	168	91	88	83	148	154	165	161	153	162
Local check		178	83	90	93	154	162	161	159	165	149
Location Mean		170	84	89	88	150	154	163	161	157	160
S.E. of Mean		1.24	1.74	1.05	0.99	1.86	1.10		1.34	1.10	0.90
L.S.D. at 5%		3.55	5.06	3.00	2.88	5.33	3.20		3.84	3.21	2.62
C.V. (%)		1.03	2.93	1.66	1.59	1.75	1.01		1.18	0.99	0.80
Error d.f.		35	25	35	25	35	25		35	25	25
Significance		*	*	*	*	*	*		*	*	*

Cont'd. ...

Table 5.7.3. Cont'd. ...

Selection	PORTUGAL		SPAIN		SYRIA				TURKEY		(1)
	ILL	Elvas	El Encin	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	Overall Mean
-	468	150	206	167	142	173	156	145	172	172	157
-	1939	150	205	162	142	167	151	137	156	171	153
Local small	4401	148	205	161	144	164	153	132	156	167	152
Laird	4349	150	209	169	152	174	158	141	171	171	160
Idlib-1	5582	150	206	162	143	166	157	129	159	170	152
78S 26013	5588	148	204	161	143	168	152	137	159	169	153
78S 26052	5604	150	200	161	143	167	151	133	159	171	153
FLIP 84-51L	5722	150	209	162	143	172	152	133	168	171	153
FLIP 84-58L	5728	147	202	163	143	166	153	133	160	171	152
FLIP 84-59L	5729	152	206	161	145	171	153	143	165	171	155
FLIP 85-33L	5871	150	205	163	149	172	154	144	165	171	156
81S 15	5883	146	204	157	143	158	151	131	150	169	151
FLIP 86-16L	6002	146	204	158	142	159	153	132	152	170	150
FLIP 86-24L	6010	148	204	164	146	171	151	143	168	169	156
FLIP 86-33L	6019	152	211	162	145	164	157	132	154	171	153
FLIP 86-35L	6021	148	199	164	145	164	153	132	160	171	153
FLIP 86-38L	6024	146	195	160	143	157	152	127	151	169	149
FLIP 86-56L	6042	150	207	165	146	164	152	139	159	171	156
FLIP 87- 9L	6199	150	209	162	149	170	151	145	168	171	156
FLIP 87-21L	6211	146	199	159	143	165	155	134	155	170	152
FLIP 87-45L	6235	147	203	160	144	164	158	130	157	170	152
FLIP 87-49L	6239	147	202	162	146	162	155	137	152	168	151
FLIP 87-52L	6242	149	210	163	143	167	153	129	157	172	153
FLIP 87-59L	6249	150	205	160	145	167	153	141	162	169	153
FLIP 88- 8L	6432	150	200	159	144	163	151	129	153	168	150
FLIP 88-31L	6445	149	201	163	143	165	154	134	158	171	152
FLIP 88-50L	6474	150	201	161	145	161	153	128	156	169	151
FLIP 88-51L	6475	147	199	162	145	163	153	129	156	170	151
FLIP 89-30L	6788	147	203	159	143	160	154	137	158	169	151
FLIP 89-39L	6797	150	210	163	145	173	154	134	170	171	155
FLIP 89-40L	6798	151	210	163	146	169	154	139	159	171	155
FLIP 89-41L	6799	147	203	160	142	165	156	136	158	169	152
FLIP 89-42L	6800	147	200	156	142	167	157	144	155	177	151
FLIP 89-43L	6801	150	210	157	143	160	153	135	150	170	151
FLIP 89-44L	6802	150	206	161	145	167	156	131	159	169	153
Local check		147	211	162	146	163	151	137	160	171	
Location Mean		149	205	161	144	166	153	135	159	170	
S.E. of Mean		1.47	2.02	1.72	1.23	1.45	1.22	3.81	2.06	0.66	
L.S.D. at 5%		-	5.89	4.95	3.58	4.23	3.50	11.11	5.99	1.90	
C.V. (%)		1.40	1.40	1.51	1.21	1.24	1.12	3.99	1.83	0.55	
Error d.f.		35	25	35	25	25	35	25	25	35	
Significance		NS	*	*	*	*	*	*	*	*	

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

+ Locations not analysed thus mean values are unadjusted.

Table 5.7.4. Adjusted plant height (cm) of entries at different locations in the LISN-T during 1988/89.

Selection	ALGERIA						BULGARIA	CHILE	ETHIOPIA	GREECE
	ILL	Beni Slimane	Khroub	Tassala	Setif	Sidi Bel Abbas	Toshevo	Chillan	Debre Zeit	Larissa
-	468	26	39	35	32	25	27	35	47	37
-	1939	27	32	30	29	23	30	30	47	37
Local small	4401	24	33	28	26	20	23	29	37	34
Laird	4349	37	45	28	40	25	28	39	49	46
Idlib-1	5582	27	34	28	25	10	22	28	43	36
78S 26013	5588	20	35	28	26	18	23	30	32	36
78S 26052	5604	27	32	35	27	23	22	30	52	37
FLIP 84-51L	5722	29	36	30	29	18	25	28	44	39
FLIP 84-58L	5728	24	34	28	27	18	26	26	43	36
FLIP 84-59L	5729	28	34	30	26	20	24	29	45	38
FLIP 85-33L	5871	24	36	30	30	15	29	34	49	38
81S 15	5883	26	34	28	30	23	30	26	42	35
FLIP 86-16L	6002	29	39	30	27	23	28	32	48	42
FLIP 86-24L	6010	26	35	30	26	21	24	30	48	36
FLIP 86-33L	6019	26	36	30	25	23	24	30	41	40
FLIP 86-35L	6021	27	32	33	30	23	23	32	51	37
FLIP 86-38L	6024	20	29	25	30	10	25	29	39	34
FLIP 86-56L	6042	26	36	33	30	20	23	28	42	35
FLIP 87- 9L	6199	26	31	30	25	20	23	27	40	37
FLIP 87-21L	6211	28	34	30	30	18	25	28	42	34
FLIP 87-45L	6235	26	35	28	23	15	27	30	46	35
FLIP 87-49L	6239	25	37	30	28	23	22	29	45	33
FLIP 87-52L	6242	26	34	30	27	13	24	29	46	36
FLIP 87-59L	6249	25	39	28	25	15	23	26	43	37
FLIP 88- 8L	6432	23	33	28	25	20	24	29	40	36
FLIP 88-31L	6445	25	34	25	30	24	24	25	44	37
FLIP 88-50L	6474	26	33	28	24	25	22	26	43	34
FLIP 88-51L	6475	25	35	28	25	18	20	26	44	36
FLIP 89-30L	6788	25	39	30	27	25	26	26	46	35
FLIP 89-39L	6797	24	35	28	27	18	24	29	43	38
FLIP 89-40L	6798	26	35	28	26	23	29	33	50	41
FLIP 89-41L	6799	27	28	25	22	18	26	25	41	33
FLIP 89-42L	6800	20	32	23	26	18	27	27	50	34
FLIP 89-43L	6801	19	31	23	21	15	22	23	38	30
FLIP 89-44L	6802	25	36	30	26	18	29	29	47	36
Local check		27	31	28	30	24	23	36	50	38
Location Mean		26	34	29	27	19	25	29	44	36
S.E. of Mean		2.27	1.61	2.11	1.01	3.71	3.02	2.40	2.93	1.66
L.S.D. at 5%		6.61	4.62	6.07	2.95	-	-	6.98	8.53	4.76
C.V. (%)		12.53	6.65	10.44	5.24	27.01	17.16	11.60	9.32	6.48
Error d.f.		25	35	35	25	35	25	25	25	35
Significance		*	*	*	*	NS	NS	*	*	*

Cont'd. ...

Table 5.7.4. Cont'd. ...

Selection	ILL	IRAN			IRAQ	ITALY		JORDAN			LEBANON	
		Ghazvin	Karaj	Maragheh	Arbil	Caltagirone	Jubeiha	Marow+	Mushagar	Rantha	Terbol	
-	468	22	32	23	25	36	32	19	34	32	37	
-	1939	25	35	22	27	31	31	25	20	31	32	
Local small	4401	27	24	15	20	26	28	26	27	26	36	
Laird	4349	26	44	23	24	36	30	-	39	28	40	
Idlib-1	5582	23	28	17	24	30	30	25	28	30	31	
78S 26013	5588	25	30	11	19	32	28	26	31	31	32	
78S 26052	5604	27	32	22	24	31	33	24	31	34	33	
FLIP 84-51L	5722	27	33	17	23	29	32	25	26	29	33	
FLIP 84-58L	5728	24	31	20	25	29	29	-	30	31	31	
FLIP 84-59L	5729	27	32	21	20	30	27	-	28	26	31	
FLIP 85-33L	5871	27	30	16	26	28	30	22	31	27	32	
81S 15	5883	27	30	19	15	25	29	21	31	32	32	
FLIP 86-16L	6002	25	37	22	23	30	29	23	28	34	32	
FLIP 86-24L	6010	24	33	14	21	29	24	-	30	30	32	
FLIP 86-33L	6019	25	29	18	20	30	29	-	26	31	32	
FLIP 86-35L	6021	22	34	14	22	31	31	24	31	33	33	
FLIP 86-38L	6024	27	26	14	17	30	29	17	29	30	30	
FLIP 86-56L	6042	25	37	15	20	28	28	22	30	28	32	
FLIP 87- 9L	6199	26	36	10	24	26	25	19	28	31	34	
FLIP 87-21L	6211	25	34	23	20	31	31	-	29	29	31	
FLIP 87-45L	6235	26	32	18	19	29	28	24	31	29	31	
FLIP 87-49L	6239	25	35	16	21	29	28	26	30	35	36	
FLIP 87-52L	6242	27	29	23	20	28	31	-	30	26	34	
FLIP 87-59L	6249	24	34	14	23	30	29	-	27	30	31	
FLIP 88- 8L	6432	25	29	18	23	30	27	19	29	31	34	
FLIP 88-31L	6445	25	29	18	24	30	32	18	28	29	30	
FLIP 88-50L	6474	24	32	15	22	31	28	24	30	28	32	
FLIP 88-51L	6475	23	33	20	20	27	27	29	30	30	30	
FLIP 89-30L	6788	25	32	18	24	31	30	24	30	34	33	
FLIP 89-39L	6797	28	34	14	22	27	28	-	31	31	29	
FLIP 89-40L	6798	26	34	20	21	28	28	-	27	28	34	
FLIP 89-41L	6799	27	34	18	19	25	33	19	27	25	28	
FLIP 89-42L	6800	25	28	10	14	25	28	-	23	29	31	
FLIP 89-43L	6801	23	23	10	14	24	29	16	20	26	28	
FLIP 89-44L	6802	29	36	19	20	30	30	25	27	31	32	
Local check		25	31	17	26	31	30	27	29	34	36	
Location Mean		25	32	17	21	29	29	23	29	30	32	
S.E. of Mean		1.77	2.44	2.30	1.45	1.07	2.18		2.12	2.52	2.33	
L.S.D. at 5%		5.09	7.12	6.71	4.22	3.11	-		6.19	-	4.50	
C.V. (%)		9.97	10.81	18.89	9.57	5.18	10.66		10.41	11.92	6.75	
Error d.f.		35	25	25	25	25	35		25	25	25	
Significance		*	*	*	*	*	NS		*	NS	*	

Cont'd. ...

Table 5.7.4 Cont'd. ...

Selection	PAKISTAN		PORTUGAL		SPAIN		SYRIA			TURKEY		(1)
	ILL	Faisalabad	Elvas	El Encin	Aleppo	Gelline	Heimo	Idleb	Tel Hadya	Diyarbakir	Overall Mean	
-	468	55	34	40	28	28	30	35	22	24	32	
-	1939	55	27	35	29	29	32	36	21	24	31	
Local small	4401	50	26	33	25	27	28	33	21	18	28	
Laird	4349	52	31	51	28	29	36	32	20	26	34	
Idlib-1	5582	46	27	35	24	28	28	31	17	22	28	
78s 26013	5588	51	25	30	26	27	29	33	22	27	28	
78s 26052	5604	54	28	34	28	28	29	38	20	25	31	
FLIP 84-51L	5722	56	29	37	27	29	31	32	24	25	30	
FLIP 84-58L	5728	48	19	34	28	28	30	34	20	20	28	
FLIP 84-59L	5729	50	26	35	27	28	30	33	19	23	29	
FLIP 85-33L	5871	53	30	38	23	26	30	36	21	25	30	
81s 15	5883	56	25	30	32	28	32	31	20	25	29	
FLIP 86-16L	6002	47	31	37	27	28	32	35	22	24	31	
FLIP 86-24L	6010	55	28	36	23	27	31	39	19	24	29	
FLIP 86-33L	6019	55	32	36	25	27	29	32	21	21	29	
FLIP 86-35L	6021	49	28	31	24	28	30	33	25	26	30	
FLIP 86-38L	6024	52	21	31	20	25	28	28	20	18	26	
FLIP 86-56L	6042	50	25	33	24	30	33	29	22	25	29	
FLIP 87- 9L	6199	57	30	38	22	26	34	32	20	23	29	
FLIP 87-21L	6211	47	24	40	23	28	28	29	22	19	29	
FLIP 87-45L	6235	54	25	32	19	25	27	34	19	20	28	
FLIP 87-49L	6239	54	27	32	25	29	30	32	23	21	30	
FLIP 87-52L	6242	47	28	40	26	28	30	32	20	21	29	
FLIP 87-59L	6249	51	30	35	24	27	15	32	22	20	28	
FLIP 88- 8L	6432	44	27	34	25	27	28	32	20	21	28	
FLIP 88-31L	6445	49	22	34	25	27	30	33	23	20	29	
FLIP 88-50L	6474	57	31	34	24	28	30	32	19	25	29	
FLIP 88-51L	6475	50	26	33	28	29	31	32	19	25	28	
FLIP 89-30L	6788	47	26	34	24	28	30	33	20	19	29	
FLIP 89-39L	6797	48	28	38	25	27	32	36	23	22	29	
FLIP 89-40L	6798	49	27	36	27	27	28	32	17	25	30	
FLIP 89-41L	6799	47	23	33	19	23	24	34	18	20	27	
FLIP 89-42L	6800	51	25	32	17	21	25	37	18	22	27	
FLIP 89-43L	6801	54	21	34	17	23	27	32	18	19	25	
FLIP 89-44L	6802	50	27	38	22	28	27	30	22	24	30	
Local check		51	23	40	24	27	28	30	22	27		
Location Mean		51	27	35	25	27	29	33	21	23		
S.E. of Mean		1.03	2.20	1.88	1.95	1.01	2.45	1.87	1.19	2.42		
L.S.D. at 5%		3.01	6.40	5.47	5.69	2.95	7.04	5.46	3.47	-		
C.V. (%)		2.86	11.60	7.52	11.28	5.28	11.99	8.07	8.17	15.09		
Error d.f.		25	25	25	25	25	35	25	25	25		
Significance		*	*	*	*	*	*	*	*	NS		

(1) Marow was excluded from the Overall mean., * = Significant at $P < 0.05$, NS = Not significant.

+ Locations not analysed thus mean values are unadjusted.

Table 5.7.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-T during 1988/89.

Selection	ALGERIA								AUSTRALIA				
	ILL	Beni Slimane		Tassala		Setif		Sidi Bel Abbes		Clare		Mintaro	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
-	468	1527	31	963	26	1860	1	235	2	984	22	1367	22
-	1939	1852	14	807	31	1220	9	128	13	1104	16	1443	18
Local small	4401	1493	32	854	29	1115	13	70	31	1310	14	1300	23
Laird	4349	780	36	515	35	1795	2	309	1	1159	15	1187	26
Idlib-1	5582	2316	4	849	30	1000	22	106	23	1665	6	1763	13
78S 26013	5588	1563	28	1108	20	1020	19	92	27	2292	1	2077	8
78S 26052	5604	1759	22	1560	2	990	24	171	3	1068	20	2123	7
FLIP 84-51L	5722	1819	16	1317	9	1405	4	110	21	1596	9	2253	5
FLIP 84-58L	5728	1798	19	1437	5	1030	18	112	20	1339	13	2523	2
FLIP 84-59L	5729	2322	3	1300	11	1010	21	132	12	1536	10	2520	3
FLIP 85-33L	5871	1761	21	1351	8	1015	20	162	4	650	30	840	31
81S 15	5883	1850	15	890	28	970	25	102	24	561	31	447	35
FLIP 86-16L	6002	2004	9	1188	17	1000	23	117	17	349	35	653	32
FLIP 86-24L	6010	1768	20	1067	22	1080	15	134	11	353	34	460	34
FLIP 86-33L	6019	1709	24	1403	6	1350	8	154	7	1406	11	1123	28
FLIP 86-35L	6021	1940	11	1449	4	1370	5	63	33	708	29	1420	19
FLIP 86-38L	6024	1558	29	787	32	700	31	76	30	982	23	1417	20
FLIP 86-56L	6042	1685	27	632	33	1775	3	127	14	480	32	1187	27
FLIP 87- 9L	6199	2051	7	1267	12	1205	10	140	9	931	24	1857	11
FLIP 87-21L	6211	1271	34	1236	15	800	28	106	22	127	36	127	36
FLIP 87-45L	6235	2172	6	1173	18	860	27	83	29	1992	2	2283	4
FLIP 87-49L	6239	1801	17	1632	1	650	34	158	6	1623	7	1373	21
FLIP 87-52L	6242	1530	30	1151	19	1365	6	118	16	886	26	893	30
FLIP 87-59L	6249	2195	5	977	25	680	32	84	28	1079	18	1607	15
FLIP 88- 8L	6432	1884	13	1377	7	910	26	142	8	1915	3	2750	1
FLIP 88-31L	6445	1746	23	1247	13	1110	14	101	25	810	27	1523	17
FLIP 88-50L	6474	2041	8	1516	3	1125	11	160	5	1388	12	1230	25
FLIP 88-51L	6475	2567	1	1303	10	1350	7	69	32	1901	4	2030	9
FLIP 89-30L	6788	1697	26	1009	24	705	29	118	15	1072	19	1623	14
FLIP 89-39L	6797	1085	35	934	27	1120	12	116	18	1710	5	2003	10
FLIP 89-40L	6798	1962	10	1087	21	1075	16	93	26	915	25	1527	16
FLIP 89-41L	6799	2334	2	1206	16	705	30	57	34	805	28	1087	29
FLIP 89-42L	6800	1700	25	438	36	615	36	51	35	469	33	577	33
FLIP 89-43L	6801	1368	33	577	34	625	35	44	36	1083	17	1270	24
FLIP 89-44L	6802	1921	12	1055	23	665	33	137	10	1604	8	2210	6
Local check		1799	18	1239	14	1075	17	114	19	984	21	1853	12
Location Mean		1795		1108		1065		119		1134		1498	
S.E. of Mean		247.71		145.90		201.28		14.45		201.03		324.42	
L.S.D. at 5%		721.54		418.87		577.83		42.08		586.36		931.36	
C.V. (%)		19.51		18.62		26.72		17.14		25.10		30.63	
Error d.f.		25		35		35		25		25		35	
Significance		*		*		*		*		*		*	
Efficiency		138.86		-		-		121.62		137.07		-	
Test > L. Check		1		-		3		6		9		-	

Table 5.7.5 Cont'd. ...

Selecton	ILL	CHILE		ETHIOPIA		GREECE		IRAN					
		Chillan		Debre Zeit		Larissa		Ghazvin		Karaj		Maragheh	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
-	468	1224	22	146	29	1275	34	150	16	372	32	47	34
-	1939	1747	5	387	24	1788	19	152	15	239	34	70	32
Local small	4401	489	35	732	20	1363	31	225	12	498	28	112	23
Laird	4349	1930	3	36	32	513	36	114	25	187	35	42	35
Idlib-1	5582	1242	21	738	19	2300	2	465	3	988	12	131	18
78S 26013	5588	1054	28	-	36	1763	21	-	36	468	30	85	27
78S 26052	5604	1215	23	563	21	2188	5	75	29	152	36	169	9
FLIP 84-51L	5722	2010	1	920	16	1838	17	113	26	1502	5	225	2
FLIP 84-58L	5728	1613	8	153	28	2450	1	102	27	281	33	74	30
FLIP 84-59L	5729	1525	12	80	31	2125	6	294	8	450	31	236	1
FLIP 85-33L	5871	1952	2	2074	5	2188	4	306	7	968	14	158	10
81S 15	5883	748	33	479	22	1350	32	214	13	1077	10	145	14
FLIP 86-16L	6002	1480	14	3251	3	1550	26	475	2	2206	2	133	17
FLIP 86-24L	6010	835	31	1120	11	1288	33	213	14	788	18	150	13
FLIP 86-33L	6019	1528	11	359	25	1700	23	124	23	1177	7	106	24
FLIP 86-35L	6021	1506	13	1132	10	2000	9	79	28	751	20	87	26
FLIP 86-38L	6024	1170	26	3269	1	1700	22	20	35	1141	8	203	5
FLIP 86-56L	6042	832	32	894	17	1425	30	401	6	479	29	127	20
FLIP 87- 9L	6199	1594	9	-	35	1813	18	131	20	679	22	-	36
FLIP 87-21L	6211	1345	17	1780	6	1925	14	134	19	4618	1	81	29
FLIP 87-45L	6235	1211	24	4	33	1950	13	54	33	853	16	131	19
FLIP 87-49L	6239	1618	7	242	27	1850	15	127	22	830	17	96	25
FLIP 87-52L	6242	1392	15	2709	4	1763	20	263	10	984	13	224	3
FLIP 87-59L	6249	1196	25	133	30	1600	25	62	31	670	23	136	16
FLIP 88- 8L	6432	1328	18	426	23	2225	3	450	4	1388	6	178	7
FLIP 88-31L	6445	1048	29	997	13	1463	28	59	32	506	27	157	11
FLIP 88-50L	6474	1350	16	823	18	2050	8	413	5	1692	3	173	8
FLIP 88-51L	6475	1628	6	-	34	2100	7	276	9	574	25	156	12
FLIP 89-30L	6788	1253	20	1009	12	1988	10	250	11	1081	9	84	28
FLIP 89-39L	6797	1327	19	1663	7	1838	16	70	30	1057	11	142	15
FLIP 89-40L	6798	1565	10	325	26	1638	24	139	17	783	19	71	31
FLIP 89-41L	6799	1115	27	935	15	1963	12	130	21	1593	4	180	6
FLIP 89-42L	6800	928	30	1310	9	1425	29	32	34	655	24	117	21
FLIP 89-43L	6801	591	34	1408	8	1175	35	118	24	869	15	54	33
FLIP 89-44L	6802	473	36	937	14	1488	27	138	18	739	21	219	4
Local check		1916	4	3256	2	1975	11	497	1	519	26	114	22
Location Mean		1305		920		1751		190		939		128	
S.E. of Mean		202.84		389.47		167.17		119.77		584.96		32.23	
L.S.D. at 5%		590.83		1134.46		479.91		-		1703.91		93.89	
C.V. (%)		21.98		59.85		13.50		89.24		88.07		35.57	
Error d.f.		25		25		35		25		25		25	
Significance		*		*		*		NS		*		*	
Efficiency		122.73		115.39		-		121.29		101.49		102.19	
Test > L. Check		-		-		-		-		1		4	

Cont'd. ...

Table 5.7.5 Cont'd. ...

Selection	ILL	IRAQ		ITALY		JORDAN				LEBANON			
		Arbil		Caltagirone		Jubeiha		Mushagar		Rantha		Terbol	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
-	468	393	11	1592	7	1185	14	1736	12	290	35	1441	22
-	1939	242	17	1647	6	1322	5	1935	9	864	2	1562	18
Local small	4401	407	9	1369	11	734	22	1546	17	520	18	1684	10
Laird	4349	197	24	858	31	401	32	1348	22	715	5	1412	26
Idlib-1	5582	663	4	1837	2	1104	16	1649	15	691	6	1681	11
78S 26013	5588	275	15	1003	24	614	28	1987	8	329	33	1747	8
78S 26052	5604	243	16	1582	8	361	34	2435	2	586	13	1658	13
FLIP 84-51L	5722	217	21	1186	17	1123	15	1607	16	603	11	1977	1
FLIP 84-58L	5728	849	1	1146	20	1196	13	2052	5	183	36	1959	2
FLIP 84-59L	5729	217	20	1667	5	1266	7	2834	1	432	24	1641	14
FLIP 85-33L	5871	184	26	943	26	1264	8	1439	19	473	21	1157	35
81S 15	5883	111	34	448	33	185	36	1225	25	398	28	1602	16
FLIP 86-16L	6002	365	12	875	29	1559	2	1128	27	771	3	1218	30
FLIP 86-24L	6010	176	27	1059	22	388	33	1234	24	629	9	1166	33
FLIP 86-33L	6019	151	30	1264	15	873	20	1031	32	568	16	961	36
FLIP 86-35L	6021	205	22	1786	4	1061	18	1997	7	748	4	1553	20
FLIP 86-38L	6024	717	2	929	27	935	19	1039	31	439	23	1416	25
FLIP 86-56L	6042	154	29	1169	19	305	35	1675	14	390	29	1229	29
FLIP 87- 9L	6199	23	36	1392	10	672	25	1341	23	358	31	1857	5
FLIP 87-21L	6211	320	13	966	25	1292	6	1068	30	658	8	1423	23
FLIP 87-45L	6235	151	31	1215	16	1396	3	2168	4	453	22	1671	12
FLIP 87-49L	6239	694	3	1274	14	1205	12	2206	3	389	30	1894	4
FLIP 87-52L	6242	315	14	1171	18	713	24	1122	28	610	10	1623	15
FLIP 87-59L	6249	405	10	1312	13	1231	10	698	34	405	27	1421	24
FLIP 88- 8L	6432	458	8	1845	1	1225	11	1739	11	477	20	1553	19
FLIP 88-31L	6445	223	19	1116	21	1355	4	1504	18	588	12	1602	17
FLIP 88-50L	6474	596	5	1822	3	2211	1	2015	6	569	14	1754	7
FLIP 88-51L	6475	159	28	1348	12	1236	9	1932	10	492	19	1720	9
FLIP 89-30L	6788	504	6	1486	9	1104	17	1359	21	996	1	1332	28
FLIP 89-39L	6797	193	25	1028	23	829	21	1687	13	569	15	1468	21
FLIP 89-40L	6798	197	23	806	32	566	29	1074	29	537	17	1776	6
FLIP 89-41L	6799	494	7	918	28	425	31	1016	33	678	7	1193	31
FLIP 89-42L	6800	131	33	433	34	655	26	191	36	339	32	1368	27
FLIP 89-43L	6801	151	32	46	36	639	27	569	35	429	25	1171	32
FLIP 89-44L	6802	49	35	864	30	718	23	1195	26	411	26	1163	34
Local check		237	18	246	35	483	30	1388	20	316	34	1896	3
Location Mean		307		1157		940		1505		525		1526	
S.E. of Mean		48.37		140.47		381.85		222.15		182.39		208.27	
L.S.D. at 5%		138.87		409.16		-		647.07		-		-	
C.V. (%)		22.26		17.17		57.47		20.88		49.15		19.30	
Error d.f.		35		25		25		25		35		25	
Significance		*		*		NS		*		NS		NS	
Efficiency		-		172.57		109.38		110.10		-		100.11	
Test > L. Check		11		32		-		5		-		-	

Cont'd. ...

Table 5.7.5 Cont'd. ...

Selection	ILL	PAKISTAN		PORTUGAL		SPAIN		SYRIA					
		Faisalabad		Elvas		El Encin		Aleppo		Gelline		Heimo	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
-	468	292	33	115	24	1982	10	299	32	7	35	520	25
-	1939	792	7	173	8	2241	2	676	3	253	17	733	9
Local small	4401	333	31	80	33	1363	30	480	17	220	20	682	14
Laird	4349	250	35	23	36	887	35	263	35	-	36	404	29
Idlib-1	5582	875	4	108	25	1773	17	433	21	420	2	953	1
78S 26013	5588	292	34	120	22	1553	24	536	14	286	14	662	17
78S 26052	5604	833	5	208	3	1320	31	612	6	456	1	784	7
FLIP 84-51L	5722	833	6	135	16	2122	5	577	9	217	22	666	16
FLIP 84-58L	5728	583	20	180	6	1147	33	695	2	384	5	809	6
FLIP 84-59L	5729	333	29	155	12	2103	7	558	11	306	9	830	4
FLIP 85-33L	5871	333	32	123	20	1959	11	470	19	199	25	590	22
81S 15	5883	458	26	100	28	1684	20	538	13	120	30	358	33
FLIP 86-16L	6002	458	24	208	2	1946	13	364	29	185	28	371	31
FLIP 86-24L	6010	792	8	120	21	2182	3	339	31	204	24	605	21
FLIP 86-33L	6019	333	30	90	29	1254	32	391	26	117	32	489	26
FLIP 86-35L	6021	667	15	230	1	1444	27	390	27	355	6	837	3
FLIP 86-38L	6024	542	22	173	9	1939	14	396	25	217	21	534	24
FLIP 86-56L	6042	375	28	60	35	1573	22	427	22	189	27	900	2
FLIP 87- 9L	6199	583	18	83	32	2111	6	370	28	52	34	760	8
FLIP 87-21L	6211	667	14	180	7	1834	16	271	34	134	29	335	34
FLIP 87-45L	6235	417	27	145	13	1595	21	612	5	306	10	620	19
FLIP 87-49L	6239	542	23	188	5	1555	23	561	10	419	3	815	5
FLIP 87-52L	6242	708	12	160	11	1542	25	581	8	261	16	720	11
FLIP 87-59L	6249	688	13	133	17	1436	28	342	30	309	8	323	35
FLIP 88- 8L	6432	750	9	118	23	2090	8	556	12	220	19	727	10
FLIP 88-31L	6445	583	19	85	30	1689	19	471	18	302	11	630	18
FLIP 88-50L	6474	917	3	125	18	2440	1	520	16	227	18	673	15
FLIP 88-51L	6475	708	11	163	10	1957	12	712	1	312	7	616	20
FLIP 89-30L	6788	625	16	145	14	1730	18	414	23	285	15	585	23
FLIP 89-39L	6797	458	25	108	26	1919	15	292	33	214	23	690	13
FLIP 89-40L	6798	208	36	140	15	2038	9	642	4	194	26	408	28
FLIP 89-41L	6799	1000	2	193	4	2179	4	439	20	300	12	372	30
FLIP 89-42L	6800	583	17	108	27	1001	34	207	36	119	31	192	36
FLIP 89-43L	6801	542	21	68	34	750	36	535	15	95	33	359	32
FLIP 89-44L	6802	708	10	123	19	1366	29	413	24	289	13	474	27
Local check		1250	1	85	31	1487	26	593	7	413	4	702	12
Location Mean		592		132		1700		472		238		604	
S.E. of Mean		56.01		19.81		245.70		84.77		40.84		130.96	
L.S.D. at 5%		159.45		56.86		715.67		246.91		118.97		381.47	
C.V. (%)		13.27		21.26		20.44		25.00		24.22		30.69	
Error d.f.		35		35		25		25		25		25	
Significance		*		*		*		*		*		*	
Efficiency		-		-		101.38		100.00		118.20		115	
Test > L. Check		-		14		2		-		-		-	

Cont'd. ...

Table 5.7.5. Cont'd. ...

Selection	SYRIA						TUNISIA				TURKEY		(1) Overall Mean		
	ILL	Idleb		Tel Hadya		Beja-1		Beja-2		El Kef		Diyarbakir		Y	R
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
-	468	1344	23	394	30	983	7	769	19	795	33	255	20	841	24
-	1939	1435	20	721	7	953	9	868	12	1100	25	373	3	981	11
Local small	4401	1239	28	584	17	464	33	599	30	1349	18	200	24	782	28
Laird	4349	441	36	214	35	254	36	324	36	366	36	301	9	593	33
Idlib-1	5582	1839	5	574	18	1009	5	891	11	1844	4	290	11	1085	4
78s 26013	5588	1478	17	761	3	1196	1	918	8	1073	27	270	17	918	15
78s 26052	5604	2264	1	688	10	997	6	1120	2	1323	20	285	13	1008	8
FLIP 84-51L	5722	1522	13	719	8	519	30	608	29	1526	6	214	23	1054	7
FLIP 84-58L	5728	1892	4	926	1	951	10	792	17	1904	3	371	4	1061	5
FLIP 84-59L	5729	1439	19	492	27	1035	3	1140	1	1436	11	361	5	1093	3
FLIP 85-33L	5871	1748	7	535	21	754	19	705	24	1346	19	350	6	894	16
81S 15	5883	1695	8	613	14	540	28	627	28	3228	1	280	15	778	29
FLIP 86-16L	6002	1605	10	519	24	487	31	542	33	1061	28	122	32	860	20
FLIP 86-24L	6010	1141	30	503	25	980	8	953	6	1297	22	270	18	765	30
FLIP 86-33L	6019	2009	3	591	16	522	29	862	13	1301	21	169	28	854	22
FLIP 86-35L	6021	1340	24	724	6	884	14	847	15	1465	10	259	19	971	12
FLIP 86-38L	6024	1393	21	536	20	471	32	735	22	1276	23	55	36	810	27
FLIP 86-56L	6042	612	35	669	11	336	35	643	27	705	34	324	8	720	32
FLIP 87- 9L	6199	1152	29	528	23	1178	2	1103	3	1471	9	289	12	931	13
FLIP 87-21L	6211	1492	14	559	19	677	24	648	26	1405	12	163	30	892	17
FLIP 87-45L	6235	1291	25	710	9	940	11	862	14	1397	13	326	7	1001	9
FLIP 87-49L	6239	1077	31	895	2	560	27	337	35	2010	2	278	16	988	10
FLIP 87-52L	6242	1464	18	459	28	818	16	1048	4	1350	17	197	25	877	19
FLIP 87-59L	6249	1359	22	607	15	1027	4	907	10	1606	5	87	35	848	23
FLIP 88- 8L	6432	2060	2	731	5	737	20	788	18	1508	8	292	10	1118	2
FLIP 88-31L	6445	1632	9	528	22	771	18	566	31	1354	16	165	29	860	21
FLIP 88-50L	6474	1482	15	734	4	920	13	750	20	1510	7	437	2	1132	1
FLIP 88-51L	6475	1806	6	639	12	796	17	917	9	935	30	250	21	1057	6
FLIP 89-30L	6788	1530	12	494	26	929	12	1024	5	1378	14	177	26	930	14
FLIP 89-39L	6797	1480	16	401	29	716	21	732	23	1375	15	174	27	887	18
FLIP 89-40L	6798	1544	11	321	31	688	23	743	21	805	32	227	22	820	26
FLIP 89-41L	6799	1290	26	274	32	703	22	685	25	831	31	112	34	837	25
FLIP 89-42L	6800	656	34	185	36	448	34	419	34	553	35	282	14	513	35
FLIP 89-43L	6801	985	32	252	33	607	25	563	32	992	29	119	33	574	34
FLIP 89-44L	6802	786	33	241	34	570	26	839	16	1079	26	142	31	761	31
Local check		1263	27	638	13	853	15	951	7	1187	24	730	1		
Location Mean		1411		554		758		773		1310		255			
S.E. of Mean		228.93		157.82		172.64		152.07		153.17		51.79			
L.S.D. at 5%		666.84		-		502.87		442.95		446.15		150.85			
C.V. (%)		22.95		40.25		32.23		27.82		16.54		28.67			
Error d.f.		25		25		25		25		25		25			
Significance		*		NS		*		*		*		*			
Efficiency		100.45		104.65		126.83		121.14		109		100.04			
Test > L. Check		3		-		-		-		4		-			

(1) Debre Zeit was excluded from the overall mean., * = Significant at $P < 0.05$, NS = Not significant.

Table 5.7.6. The five heaviest seed yielding entries at the individual locations in the LISN-T during 1988/89.

Rank	ALGERIA				AUSTRALIA		CHILE	ETHIOPIA
	Beni Slimane	Tessla	Setif	Sidi Bel Abbas	Clare	Hintaro	Chillan	Debre Zeit
1	FLIP 88- 51L	FLIP 87- 49L	ILL 468	Laird	78S 26013	FLIP 88- 8L	FLIP 84- 51L	FLIP 86- 38L
2	FLIP 89- 41L	78S 26052	Laird	ILL 468	FLIP 87- 45L	FLIP 84- 58L	FLIP 85- 33L	Local check
3	FLIP 84- 59L	FLIP 88- 50L	FLIP 86- 56L	78S 26052	FLIP 88- 8L	FLIP 84- 59L	Laird	FLIP 86- 16L
4	Idleb-1	FLIP 86- 35L	FLIP 84- 51L	FLIP 85- 33L	FLIP 88- 51L	FLIP 87- 45L	Local check	FLIP 87- 52L
5	FLIP 87- 59L	FLIP 84- 58L	FLIP 86- 35L	FLIP 88- 50L	FLIP 89- 39L	FLIP 84- 51L	ILL 1939	FLIP 85- 33L

Cont'd. ...

Rank	GREECE	IRAN			IRAQ	ITALY	JORDAN	
	Larissa	Ghazvin	Karaj	Maraghah	Arbil	Caltagirone	Jubeiha	Mushagar
1	FLIP 84- 58L	Local check	FLIP 87- 21L	FLIP 84- 59L	FLIP 84- 58L	FLIP 88- 8L	FLIP 88- 50L	FLIP 84- 59L
2	Idleb-1	FLIP 86- 16L	FLIP 86- 16L	FLIP 84- 51L	FLIP 86- 38L	Idleb-1	FLIP 86- 16L	78S 26052
3	FLIP 88- 8L	Idleb-1	FLIP 88- 50L	FLIP 87- 52L	FLIP 87- 49L	FLIP 88- 50L	FLIP 87- 45L	FLIP 87- 49L
4	FLIP 85- 33L	FLIP 88- 8L	FLIP 89- 41L	FLIP 89- 44L	Idleb-1	FLIP 86- 35L	FLIP 88- 31L	FLIP 87- 45L
5	78S 26052 FLIP 84- 59L	FLIP 88- 50L	FLIP 84- 51L	FLIP 86- 38L	FLIP 88- 50L	FLIP 84- 59L	ILL 1939	FLIP 84- 58L

Cont'd. ...

Rank	JORDAN	LEBANON	PAKISTAN	PORTUGAL	SPAIN	SYRIA	
	Ramtha	Terbol	Faisalabad	Elvas	El Encin	Aleppo	Gelline
1	FLIP 89- 30L	FLIP 84- 51L	Local check	FLIP 86- 35L	FLIP 88- 50L	FLIP 88- 51L	78S 26052
2	ILL 1939	FLIP 84- 58L	FLIP 89- 41L	FLIP 86- 16L	ILL 1939	FLIP 84- 58L	Idleb-1
3	FLIP 86- 16L	Local check	FLIP 88- 50L	78S 26052	FLIP 86- 24L	ILL 1939	FLIP 87- 49L
4	FLIP 86- 35L	FLIP 87- 49L	Idleb-1	FLIP 89- 41L	FLIP 89- 41L	FLIP 89- 40L	Local check
5	Laird	FLIP 87- 9L	Laird FLIP 84- 51L	FLIP 87- 49L FLIP 84- 58L	FLIP 84- 51L	FLIP 87- 45L	FLIP 84- 58L

Cont'd. ...

Rank	SYRIA			TUNISIA		TURKEY
	Heimo	Idleb	Tel Hadya	Beja-1	Beja-2	El Kef Diyarbakir
1	Idleb-1	78S 26052	FLIP 84- 58L	78S 26013	FLIP 84- 59L	81S 15 Local check
2	FLIP 86- 56L	FLIP 88- 8L	FLIP 87- 49L	FLIP 87- 9L	78S 26052	FLIP 87- 49L FLIP 88- 50L
3	FLIP 86- 35L	FLIP 86- 33L	78S 26013	FLIP 84- 59L	FLIP 87- 9L	FLIP 84- 58L ILL 1939
4	FLIP 84- 59L	FLIP 84- 58L	FLIP 88- 50L	FLIP 87- 59L	FLIP 87- 52L	Idleb-1 FLIP 84- 58L
5	FLIP 87- 49L	Idleb-1	FLIP 88- 8L	Idleb-1	FLIP 89- 30L	FLIP 87- 59L FLIP 84- 59L

The brackets indicate entries having the same rank.

Fifty two sets of nursery were distributed to cooperators in 27 countries and data were returned from 38 locations in 20 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 57 to 153 days for time to flowering (Table 5.7.2), 84 to 205 days for time to maturity (Table 5.7.3), and 17 to 51 cm for plant height (Table 5.7.4). The entries 81S 15, FLIP 86-16L, FLIP 86-38L, FLIP 87-21L, FLIP 87-52L, FLIP 88-50L and FLIP 89-43L took less time to flower. The entries ILL 4349, ILL 468, ILL 1939, 78S 26052 and FLIP 86-16L were among the tallest (31-34 cm). At most locations some of the test entries were taller than the respective local checks.

The seed yields based on the design are given in Table 5.7.5. The highest mean yield was recorded at Beni Slimane in Algeria (1795 kg/ha) and was followed by Larissa in Greece (1751 kg/ha) and El Encin in Spain (1700 kg/ha). The LSD estimates revealed that at 13 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 84-58L, and was followed by Idleb 1, FLIP 88-50L, 78S 26052, FLIP 84-59L, etc.

5.8. LENTIL INTERNATIONAL F₃ NURSERY (LIF₃N)

Material

The material for the Lentil International F₃ Nursery comprised of 29 F₃ populations (test entries) and two checks. The test entries and one check ILL 4605 were supplied and a local check was to be added by the cooperator. These F₃ 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 augmented block design was suggested. The suggested plot size was 8 rows 4 m long, spaced 25cm apart, accomodating 800 seeds/plot.

Fifteen sets of LIF₃N were sent to cooperators in 12 countries. The list of entries supplied to cooperators is given in Table 5.8.1. The cooperators were requested to practice individual plant selections under their local conditions. Cooperators in Debre Zeit made certain individual plant selections (Table 5.8.1)

Table 5.8.1. Number of plants selected by cooperators in the LIF3N during 1988/89.

Cross No. (X87S)	Pedigree	ETHIOPIA
		Debre Zeit
77	ILL5562 X ILL3613	12
81	ILL5782 X ILL3613	3
97	ILL2578 X ILL5584	-
111	ILL4605 X ILL5527	13
112	ILL4605 X ILL5562	8
113	ILL4605 X ILL5584	-
119	ILL5486 X ILL5527	10
120	ILL5486 X ILL5562	-
121	ILL5486 X ILL5584	5
122	ILL5486 X ILL5748	6
127	ILL5888 X ILL5527	-
128	ILL5888 X ILL5562	5
129	ILL5888 X ILL5584	5
130	ILL5888 X ILL5748	5
131	ILL5888 X ILL5782	14
175	ILL5562 X ILL2500	12
273	ILL5748 X ILL5610	-
281	ILL5823 X ILL2126	-
303	ILL5486 X ILL5588	-
304	ILL5486 X ILL5720	6
306	ILL5486 X ILL5858	-
325	ILL5604 X ILL6015	-
337	ILL5883 X ILL5572	-
339	ILL5883 X ILL5588	-
344	ILL6024 X ILL1880	-
345	ILL6024 X ILL4399	-
346	ILL6024 X ILL5572	-
348	ILL6024 X ILL5588	4
352	ILL6024 X ILL6015	-
Precoz(ILL 4605)		-
Local check		-

5.9. LENTIL INTERNATIONAL F₃ NURSERY - EARLY (LIF₃N-E)

Material

The material for the Lentil International F₃ Nursery-Early comprised of 30 F₃ populations and two checks. The F₃ populations were supplied and one check ILL 4400 were supplied and a 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 augmented block design was suggested. The suggested plot size was 8 rows, each 4 m long accomodating 800 seeds per plot. The between row spacing was suggested to be 25 cm.

Twenty seven sets of trial were distributed to cooperators in 17 countries. The list of entries supplied to cooperators and the individual plant selections reported by the cooperators are given in Table 5.9.1.

5.10. LENTIL INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (LIABN)

Material

The LIABN included 25 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 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

Table 5.9.1. Number of plants selected by cooperators in the LIF3N-E during 1988/89.

Cross No. (X87S)	Pedigree	BANGLADESH	ETHIOPIA	INDIA	MEXICO
		Mymensingh	Debre Zeit	Delhi	Padilla Tam
29	ILL5888 X ILL 358	-	-	-	-
31	ILL5888 X ILL2501	-	8	-	2
33	ILL5888 X ILL2573	2	-	-	3
34	ILL5888 X ILL2578	-	6	-	-
40	ILL5888 X ILL3516	1	-	-	-
47	ILL5888 X ILL5782	-	3	-	1
48	ILL2527 X ILL3586	-	1	-	3
53	ILL2580 X ILL3613	-	-	-	2
55	ILL2580 X ILL5888	5	-	-	-
58	ILL2581 X ILL4375	-	-	-	4
60	ILL2582 X ILL3586	-	-	-	3
65	ILL3527 X ILL3613	-	-	-	2
70	ILL3529 X ILL4375	-	7	-	4
71	ILL3529 X ILL5888	-	-	50	-
76	ILL5562 X ILL3586	-	-	-	1
77	ILL5562 X ILL3613	-	-	-	1
78	ILL5562 X ILL4375	-	4	20	-
79	ILL5562 X ILL5888	-	12	-	-
81	ILL5782 X ILL3613	-	6	-	-
83	ILL5782 X ILL5888	-	4	50	-
85	ILL1861 X ILL3629	-	-	-	-
90	ILL1861 X ILL5748	-	12	20	-
92	ILL2578 X ILL2527	2	-	-	2
93	ILL2578 X ILL3629	-	3	-	-
100	ILL3492 X ILL2527	-	-	-	5
106	ILL3492 X ILL5748	-	8	50	-
110	ILL4605 X ILL4403	-	1	50	-
118	ILL5486 X ILL4403	-	20	-	-
135	ILL 784 X ILL2500	-	-	-	-
197	ILL2573 X ILL5722	-	-	-	-
ILL 4400		-	-	-	-
Local check		-	-	-	-

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.

Twenty one sets of LIABN were distributed to cooperators in 13 countries, and the data were, however, received for 6 sets. Except at Erzurum in Turkey and Lincoln in Newzealand, there was no disease infestation.

Results and Discussion

Twenty entries at Erzurum in Turkey and 22 entries at Lincoln in Newzealand exhibited rating between 2 and 4 (Table 5.10.1.). Eighteen entries, however, showed tolerant or resistant reaction across locations.

Table 5.10.1. Reaction of lentil entries to *Ascochyta* blight in LIABN during 1988/89.

Entry Name	<u>ALGERIA</u>	<u>BULGARIA</u>	<u>PAKISTAN</u>	<u>NEWZEALAND</u>	<u>SYRIA</u>	<u>TURKEY</u>
	Guelma	Toshevo	Faisal- abad (AARI)	Lincoln	Tel- Hadya	Erzurum
ILL 358	1	1	n	3	n	3
ILL 2439	1	1	o	3	o	4
S 30116	1	1		5		7
LG 14	1	1	s	1	s	4
UJL-81129	1	1	c	3	c	5
Lenka	1	1	o	3	o	5
78S 26013	1	1	r	3	r	4
78S 26033	1	1	e	3	e	4
78S 26038	1	1		3		3
78S 26052	1	1		1		4
FLIP 84- 43L	1	1		5		3
FLIP 84- 44L	1	1		3		3
FLIP 84- 55L	1	1		3		3
FLIP 84- 60L	1	1		3		4
FLIP 84- 80L	1	1		3		4
FLIP 84- 81L	1	1		3		3
FLIP 84- 85L	1	1		3		4
FLIP 84- 96L	1	1		3		3
FLIP 85- 33L	1	1		1		3
FLIP 86- 12L	1	1		5		2
FLIP 86- 16L	1	1		3		2
FLIP 86- 38L	1	1		1		4
FLIP 86- 39L	1	1		1		5
FLIP 87- 68L	1	1		1		3
FLIP 87- 70L	1	1		3		5
Local susceptible check	1	1		3		3
Pant L 538	1	1		7		5

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.

A 1-9 scale was recommended for scoring the cold severity at different stages of cold occurrence. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Seventeen sets of LICIN were distributed to cooperators in 12 countries, however, results were received for 6 sets from five countries.

Results and Discussion

Out of six locations returning the data, the cold effect was noticed only at Erzurum in Turkey (Table 5.11.1).

The entries, ILL 857, ILL 465, ILL 780, ILL 983 and Local check showed rating of 2 or 3 and were resistant. All other entries were, however, rated at 4 or 5.

Table 5.11.1. Reaction of lentil entries in LICIN in Turkey-Erzurum to cold during 1988/89.

<u>Entry Name</u>	<u>Score</u>	<u>Entry Name</u>	<u>Score</u>
ILL 52	4	ILL 759	4
ILL 298	5	ILL 780	3
ILL 312	4	ILL 857	2
ILL 323	4	ILL 983	3
ILL 465	3	ILL 1878	4
ILL 468	5	ILL 1918	5
ILL 590	4	ILL 4400	5
ILL 632	4	Local check	3
ILL 662	5	ILL 4605 (Susceptible check repeated after every two rows)	5

6. PEA INTERNATIONAL ADAPTATION TRIAL (PIAT)

Introduction

This was the second year of adaptation trial on peas. The main objective of distribution of this trial was to collect the elite materials developed in various countries and study their adaptation in international testing environments. 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, respectively.

Thirty sets of trial were distributed to cooperators in 20 countries and the results were returned from 12 sets covering 10 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 Span to 114 days for Local Sel. 1690. The location means for time to flowering varied from 59 days at Shambat in Sudan to 141 days at Chengdu in China. The entries Petit Provincale and Kelvedon Wonder matured earliest in 144 days.

The plant height data revealed that the entry ILP 974 was the tallest (100 cm) and entries Progress No. 9 and Petit Provincale were among the shortest (37-39 cm).

The mean seed yield at different locations (Table 6.5) revealed that highest seed yield per hectare was obtained at Douyet in Morocco (3468 kg/ha) and was followed by Athlassa in Cyprus (2517 kg/ha) and Shambat in Sudan (2494 kg/ha). The seed yields at Diyarbakir in Turkey (99 kg/ha) was very low. The ANOVA of the seed yield revealed that 2, 1, 13, 2, 12, 7, 7, 19, and 5 entries, respectively, at Tessala (Algeria), Chengdu (China), Athalassa (Cyprus), Jubeiha (Jordan), Terbol (Lebanon), Douyet (Morocco), Shambat (Sudan), Tel Hadya (Syria), and Diyarbakir (Turkey), outyielded the respective check by a significant margin. The five heaviest yielders at different locations are given in Table 6.6. Few entries, Local Selection 1690, Frisson,

Table 6.1. Agronomic data for different locations in the PIAT during 1988/89.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irrigation	Insecticide/Fungicide/Herbicide	Local Check
				N	P	K			
Algeria	Sidi Bel Abbas	03.12.88	10.06.89	46			-	-	SBA 184
Algeria	Tessala	13.12.88	30.05.89	46			-	-	SBA 184
Chile	Temuco	08.09.89	20.01.90	92			-	Trifluraline, Linuron, Endosulfan, Pirimicarb	Finale
China	Chengdu	30.10.89	03.05.90	40	50		-	Dimethoate	Twanjewan No.2
Cyprus	Athalassa	25.11.88	04.05.89	48	60		-	-	Lythrodorda
Jordan	Jubeiha	10.12.88		20	50		-	-	L. Market
Lebanon	Terbol	28.11.88	05.89		50		-	Kerb, Igran	NA
Morocco	Douyet	01.12.88	-	-			-	-	P 190 Lincoln
Morocco	Sidi Laidi	14.12.88	10.05.89	-			-	-	Zerka
Sudan	Shambat	07.12.88	25.03.89	-			10	Pyrethroid, Antracole	-
Syria	Tel Hadya	27.11.88	20.05.89		50		-	Primor, Bravo	ACC 213
Turkey	Diyarbakir	10.12.88	10.08.89	-			-	-	-

NA = Not available.

Table 6.2. Time to flowering (days) of entries at different locations in the PIAT during 1988/89.

Entry Name	Origin	ALGERIA		CHILE	CHINA	CYPRUS	JORDAN
		Sidi Bel Abbes	Tessala	Temuco	Chengdu	Athalassa	Jubeiha
Petit Provincale	U.K.	98	100	76	128	79	114
Sudan Local	Sudan	115	108	75	141	103	122
JI 1194	U.K.	102	98	75	137	103	115
Local Sel 1690	Syria	123	118	77	147	111	127
Frisson	France	110	101	80	144	105	114
Consort	U.K.	111	95	76	136	106	115
SV 51741	Sweden	114	104	75	143	108	120
Span	U.K.	90	80	76	128	83	117
Scout	U.K.	101	92	76	133	96	115
Puget	U.K.	113	111	70	143	110	123
Kelvedon Wonder	U.K.	92	92	80	126	81	117
The Lincoln	U.K.	114	105	78	140	108	122
Progress No. 9	U.K.	99	84	70	130	86	117
Ballet	U.K.	110	95	78	143	109	117
Dryden	U.K.	109	102	75	145	108	119
Brandon	U.K.	113	96	75	143	113	120
ILP 974	Unknown	104	105	90	150	112	115
ILP 845	Unknown	117	115	90	157	116	121
Century	U.K.	119	118	75	150	117	125
MG 100452	Greece	115	108	88	134	111	115
MG 102583	Turkey	116	106	73	150	106	120
Wirrega	Australia	117	109	92	163	109	119
Echo	U.K.	108	89	75	140	103	115
Local Check	-	121	120	76	142	107	114
Location Mean		110	102	78	141	104	118
S.E. of Mean		3.38	4.01	4.58	3.10	2.07	1.03
L.S.D. at 5%		9.61	11.42	13.04	8.82	5.89	2.92
C.V. (%)		5.33	6.80	10.19	3.79	3.45	1.51
Error d.f.		46	46	46	46	46	46
Significance		*	*	*	*	*	*

Cont'd. ...

Table 6.2. Cont'd. ...

Entry name	LEBANON	MOROCCO		SUDAN	SYRIA	Overall Mean
	Terbol	Douyet +	Sidi Laidi	Shambat	Tel Hadya	
Petit Provincale	110	73	84	38	109	92
Sudan Local	128	93	102	62	120	106
JI 1194	124	90	102	51	117	101
Local Sel 1690	135	95	105	81	131	114
Frisson	123	89	100	59	115	104
Consort	125	89	101	52	116	102
SV 51741	128	95	98	66	121	107
Span	111	73	84	51	112	91
Scout	119	80	89	48	115	97
Puget	133	97	101	66	130	109
Kelvedon Wonder	117	73	86	39	112	92
The Lincoln	127	95	103	62	120	107
Progress No. 9	112	77	86	38	109	92
Ballet	126	93	96	62	118	104
Dryden	130	89	100	58	121	105
Brandon	127	89	96	54	120	104
ILP 974	125	83	89	54	121	104
ILP 845	135	95	105	81	123	114
Century	135	97	105	76	129	113
MG 100452	126	89	101	54	119	106
MG 102583	129	99	103	70	123	109
Wirrega	127	99	105	70	125	112
Echo	124	89	100	54	116	101
Local Check	134	90	102	-	126	
Location Mean	125	89	98	59	120	
S.E. of Mean	0.48		0.10	3.25	0.81	
L.S.D. at 5%	1.35		0.23	9.26	2.31	
C.V.(%)	0.66		0.14	9.61	1.18	
Error d.f.	46		23	44	46	
Significance	*		*	*	*	

* = Significant at $P \leq 0.05.$, + Non-replicated

Table 6.3. Time to maturity (days) of entries at different locations in the PIAT during 1988/89.

Entry Name	ALGERIA		CHILE	CHINA	LEBANON	MOROCCO		SUDAN	SYRIA	(1) Overall Mean
	Sidi Bel Abbes	Tessala	Temuco	Chengdu	Terbol	Douyet+	Sidi Laidi	Shambat	Tel Hadya	
Petit Provincale	158	138	128	189	160	160	133	99	146	144
Sudan Local	161	146	129	198	165	168	142	117	150	152
JI 1194	167	153	128	188	160	165	142	121	151	151
Local Sel 1690	161	151	141	199	164	170	145	122	155	156
Frisson	166	151	129	198	160	165	140	113	148	150
Consort	163	150	129	192	165	165	141	95	149	148
SV 51741	163	148	132	194	160	170	139	112	150	151
Span	157	140	128	191	162	160	133	116	148	147
Scout	170	145	126	197	161	162	135	116	149	149
Puget	155	142	130	193	165	170	141	111	152	151
Kelvedon Wonder	-	142	128	186	161	160	134	95	148	144
The Lincoln	161	148	131	197	164	170	143	111	149	152
Progress No. 9	168	151	127	193	164	160	134	95	148	146
Ballet	166	152	131	194	163	168	138	117	149	151
Dryden	161	147	129	191	165	165	140	121	150	151
Brandon	166	150	129	197	165	165	138	122	150	152
ILP 974	168	149	136	199	163	165	135	122	150	152
ILP 845	171	156	139	200	167	170	145	114	153	156
Century	160	144	141	198	165	170	145	118	155	154
MG 100452	165	144	136	197	165	165	141	116	150	152
MG 102583	168	153	132	198	164	175	142	117	152	154
Wirrega	165	151	134	198	162	175	145	117	149	154
Echo	158	144	128	198	160	165	140	103	148	148
Local Check	173	159	128	193	171	165	141	-	156	
Location Mean	164	148	131	195	163	166	140	113	150	
S.E. of Mean	4.21	3.80	2.17	1.99	0.66		0.38	1.81	0.91	
L.S.D. at 5%	-	10.83	6.17	5.68	1.89		1.08	5.16	2.58	
C.V. (%)	4.45	4.45	2.86	1.77	0.70		0.47	2.78	1.04	
Error d.f.	44	46	46	46	46		46	44	46	
Significance	NS	*	*	*	*		*	*	*	

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

Table 6.4. Plant height (cm) of entries at different locations in the PIAT during 1988/89.

Entry Name	ALGERIA		CHILE	CHINA	CYPRUS	JORDAN	LEBANON	SUDAN	SYRIA	(1)
	Sidi Bel Abbes	Tessala	Temuco	Chengdu	Athalassa	Jubeiha	Terbol	Shambat	Tel Hadya	Overall Mean
Petit Provincale	29	20	40	61	45	47	31	42	24	39
Sudan Local	33	33	35	75	48	48	30	48	24	43
JI 1194	30	27	52	99	75	35	43	64	32	53
Local Sel 1690	68	80	83	200	110	49	73	63	35	87
Frisson	30	43	52	103	53	46	36	73	29	54
Consort	30	38	55	72	63	51	40	72	34	53
SV 51741	28	42	47	69	55	41	32	52	27	46
Span	34	23	28	87	48	38	34	48	23	41
Scout	42	23	48	113	63	45	33	41	30	50
Puget	30	30	36	77	60	50	33	45	27	45
Kelvedon Wonder	-	20	32	262	48	48	32	49	27	65
The Lincoln	38	42	48	96	63	41	35	38	31	49
Progress No. 9	27	30	25	68	38	40	29	46	23	37
Ballet	30	42	58	65	53	40	38	49	33	47
Dryden	43	47	59	86	80	38	42	67	40	57
Brandon	32	38	55	97	70	33	39	65	31	54
ILP 974	48	88	78	271	113	43	79	79	52	100
ILP 845	58	77	78	217	110	45	66	71	43	88
Century	65	70	82	221	103	44	63	54	44	85
MG 100452	50	62	62	231	108	32	72	55	42	83
MG 102583	42	32	45	93	95	41	36	40	31	52
Wirrega	57	63	80	203	88	39	60	37	42	76
Echo	28	40	55	87	58	46	38	44	35	50
Local Check	75	68	43	211	60	48	37	-	31	
Location Mean	41	45	53	132	71	43	44	54	33	
S.E. of Mean	6.61	1.41	4.15	42.75	4.15	7.53	2.77	9.47	1.86	
L.S.D. at 5%	18.84	4.01	11.80	121.69	9.91	-	7.87	-	5.28	
C.V. (%)	27.75	5.43	13.50	56.18	8.28	30.46	10.95	30.34	9.76	
Error d.f.	44	46	46	46	23	46	46	44	46	
Significance	*	*	*	*	*	NS	*	NS	*	

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

Table 6.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the PIAT during 1988/89.

Entry Name	ALGERIA		CHILE		CHINA		CYPRUS		JORDAN		LEBANON	
	Tessala		Temuco		Chengdu		Athalassa		Jubeiha		Terbol	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Petit Provincale	277	21	1792	15	1248	12	2213	19	645	8	1175	21
Sudan Local	790	3	1942	13	1092	18	2421	15	507	13	1889	11
JI 1194	325	19	2029	11	1561	5	2216	18	403	18	1476	14
Local Sel 1690	898	1	2922	4	1217	13	3282	4	839	3	2833	1
Frisson	445	11	3104	3	1717	3	2742	9	834	4	2016	7
Consort	378	15	2386	7	1726	2	3000	6	535	11	1484	13
SV 51741	506	9	1546	16	1280	8	2917	7	612	10	1992	8
Span	289	20	615	23	1217	14	1141	24	175	24	849	23
Scout	220	22	2483	6	1092	17	1756	21	235	22	1198	20
Puget	372	16	760	20	1061	19	2325	17	367	19	1254	18
Kelvedon Wonder	-	-	843	19	1280	10	1289	23	204	23	762	24
The Lincoln	193	23	534	24	1124	16	2372	16	295	21	1357	15
Progress No. 9	386	14	639	22	1217	15	1302	22	442	17	1119	22
Ballet	517	8	1924	14	1561	6	2819	8	630	9	1762	12
Dryden	728	4	1521	17	1436	7	2444	14	453	16	1278	17
Brandon	354	17	2151	10	1273	11	3241	5	722	6	1306	16
ILP 974	487	10	1491	18	981	21	2694	10	1029	1	2183	6
ILP 845	866	2	3575	2	687	24	3293	3	521	12	2556	2
Century	548	6	2228	9	843	22	2675	11	746	5	1913	10
MG 100452	539	7	680	21	1623	4	3506	1	494	14	2222	5
MG 102583	433	12	1952	12	1280	9	3481	2	650	7	2373	3
Wirrega	695	5	2356	8	780	23	2649	12	935	2	2270	4
Echo	330	18	2834	5	1998	1	2571	13	348	20	1913	9
Local Check	416	13	3689	1	1030	20	2058	20	459	15	1206	19
Location Mean	478		1916		1263		2517		545		1683	
S.E. of Mean	140.63		422.21		246.60		167.72		150.27		165.27	
L.S.D. at 5%	400.81		1201.84		-		477.42		427.75		470.45	
C.V. (%)	50.96		38.16		33.81		11.54		47.77		17.01	
Error d.f.	44		46		46		46		46		46	
Significance	*		*		NS		*		*		*	
Test > L. Check	2		-		1		13		2		12	

Table 6.5. Cont'd. ...

Entry Name	MOROCCO				SUDAN		SYRIA		TURKEY		(1) Overall Mean	
	Douyet		Sidi Laidi		Shambat		Tel Hadya		Diyarbakir		Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Petit Provincale	476	24	507	14	4192	1	520	17	61	19	1283	17
Sudan Local	3175	16	909	2	4183	2	676	8	56	20	1685	10
JI 1194	3175	15	453	16	3440	6	493	19	68	18	1531	16
Local Sel 1690	4286	9	414	18	1989	15	535	13	146	2	1846	6
Frisson	4762	7	656	9	3443	5	783	3	121	8	2018	1
Consort	4392	8	671	8	4022	3	922	1	137	4	1927	3
SV 51741	6032	2	636	10	3286	7	659	11	125	7	1908	4
Span	847	22	286	22	833	23	339	23	49	21	635	23
Scout	2063	19	343	20	2407	10	530	14	89	14	1220	18
Puget	1852	20	453	17	1944	17	374	22	80	16	1047	20
Kelvedon Wonder	899	21	174	24	2405	11	498	18	23	23	838	21
The Lincoln	2540	18	318	21	1649	19	528	15	99	12	1082	19
Progress No. 9	688	23	201	23	1654	18	461	20	37	22	776	22
Ballet	6243	1	563	12	2487	9	746	6	70	17	1881	5
Dryden	3386	14	497	15	3886	4	663	10	115	10	1568	14
Brandon	3598	13	407	19	2310	12	767	5	90	13	1586	13
ILP 974	5026	5	804	3	1971	16	583	12	136	5	1690	9
ILP 845	5079	4	557	13	2932	8	422	21	112	11	1973	2
Century	5450	3	582	11	1486	20	524	16	129	6	1657	11
MG 100452	4921	6	916	1	2051	14	731	7	117	9	1726	8
MG 102583	3651	12	708	6	1260	21	865	2	142	3	1636	12
Wirrega	3757	11	742	5	1240	22	670	9	182	1	1558	15
Echo	3757	10	706	7	2298	13	776	4	83	15	1728	7
Local Check	3175	17	770	4	-	-	276	24	-	-		
Location Mean	3468		553		2494		598		99			
S.E. of Mean	533.22		89.82		345.59		72.97		18.36			
L.S.D. at 5%	1517.83		255.68		985.01		207.72		52.32			
C.V. (%)	26.63		28.13		24.00		21.15		32.26			
Error d.f.	46		46		44		46		44			
Significance	*		*		*		*		*			
Test > L. Check	7		0		-		-		5			

(1) Tessala was excluded from the overall mean., * = Significant 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 1988/89.

	<u>ALGERIA</u>	<u>CHILE</u>	<u>CHINA</u>	<u>CYPRUS</u>	<u>JORDAN</u>	<u>LEBANON</u>
Rank	Tessala	Temuco	Chengdu	Athalassa	Jubeiha	Terbol
1	Local Sel 1690	Local check	Echo	MG 100452	ILP 974	Local Sel 1690
2	ILP 845	ILP 845	Consort	MG 102583	Wirrega	ILP 845
3	Sudan Local	Frisson	Frisson	ILP 845	Local Sel 1690	MG 102583
4	Dryden	Local Sel 1690	MG 100452	Local Sel 1690	Frisson	Wirrega
5	Wirrega	Echo	[JI 1194 Ballet	Brandon	Century	MG 100452

Cont'd. ...

	<u>MOROCCO</u>	<u>SUDAN</u>	<u>SYRIA</u>	<u>TURKEY</u>	
Rank	Douyet	Sidi Laidi	Shambat	Tel Hadya	Diyarbakir
1	Ballet	MG 100452	Petit Provincale	Consort	Wirrega
2	SV 51741	Sudan Local	Sudan Local	MG 102583	Local Sel 1690
3	Century	ILP 974	Consort	Frisson	MG 102583
4	ILP 845	Local check	Dryden	Echo	Consort
5	ILP 974	Wirrega	Frisson	Brandon	ILP 974

The bracket indicates entries having the same rank.

ILP 845 and Wirrega 2 occurred most frequently among the top five heaviest yielders and were comparatively more stable.

On the basis of average over two years for the common entries (Table 6.7), Consort ranked number 1 and was followed by Ballet, MG 100452, Echo, and Sudan Local with seed yields of 1773, 1646, 1626, 1577, and 1563 kg/ha, respectively.

Table 6.7. The mean seed yield (Y=kg/ha) and rank(R) of the common entries in PIAT during 1987/88 and 1988/89.

Entry Name	1987/88		1988/89		Mean	
	Y	R	Y	R	Y	R
Petit Provincale	1285	7	1283	7	1284	7
Sudan Local	1440	3	1685	5	1563	5
Consort	1618	1	1927	1	1773	1
Span	768	11	635	11	702	11
Scout	1278	8	1220	8	1249	8
The Lincoln	1273	9	1082	9	1178	9
Progress No. 9	1245	10	776	10	1011	10
Ballet	1410	5	1881	2	1646	2
Brandon	1326	6	1586	6	1456	6
MG 100452	1526	2	1726	4	1626	3
Echo	1426	4	1728	3	1577	4

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

Seventeen trials were sent to cooperators in 7 countries and three of the cooperators reported the results. Out of the three locations reporting the results, ANOVA for seed yield was significant only for Setif in Algeria (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 treatment in CIPRT at different locations during 1988/89.

Treatment	ALGERIA		ETHIOPIA				ITALY				Overall Mean	
	Setif		Debre Zeit				Caltagirone					
	Y	R	Y	R	N/W	R	Y	R	N/W	R	Y	R
T1- Farm Fertility	1800	4	2889	1	200	2	916	1	43	2	1869	2
T2- Farm Fertility + Nitrogen at 100 kg/ha	2080	2	2659	4	148	4	835	3	14	4	1858	3
T3- Farm Fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha	1823	3	2834	2	188	3	888	2	43	1	1848	4
T4- Farm Fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha + Nitrogen at 100 kg/ha	2107	1	2716	3	282	1	793	4	19	3	1872	1
Location Mean	1952		2775		204		858		30			
S.E. Of Mean	75.97		215.043		42.92		76.14		8.45			
L.S.D. at 5%	243.02		-		-		-		-			
C.V. (%)	7.78		15.50		42.05		17.75		56.66			
Error d.f.	9		9		9		9		9			
Significance	*		NS		NS		NS		NS			

Table 7.1.2. Seed yield (Y=kg/ha) and rank (R) for various treatments in FBIPRT at Holetta in Ethiopia during 1988/89.

Treatment	Y	R
T1 Farm Fertility	1181	4
T2 Farm Fertility + Nitrogen at 100 kg/ha	1717	2
T3 Farm Fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha	1476	3
T4 Farm Fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha + Nitrogen at 100 kg/ha	1755	1
Location Mean	1532	
S.E. Of Mean	181.04	
L.S.D. at 5%	-	
C.V. (%)	23.63	
Error d.f.	9	
Significance	NS	

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

7.1.2. FABA BEAN INTERNATIONAL FERTILITY-RHIZOBIUM EVALUATION TRIAL (FBIFRT)

Results and Discussion

Fifteen trials were sent to different cooperators in four countries but the results were received from only one location, Holleta in Ethiopia (Table 7.1.2). The ANOVA revealed that the mean squares due to treatments were not significant for seed yield. The perusal of values, however, revealed that the treatments with nitrogen gave much higher yields as compared to farm fertility and farm fertility with phosphate and potash.

7.1.3. LENTIL INTERNATIONAL FERTILITY- RHIZOBIUM EVALUATION TRIAL (LIFRT)

Results and Discussion

Sixteen trials were sent to cooperators in 13 countries and the results were received from three locations. The ANOVA for seed yield revealed that differences between treatments were non-significant at all the locations (Table 7.1.3).

7.2. INTERNATIONAL RHIZOBIUM INOCULATION RESPONSE TRIAL (IRT)

Introduction

The Inoculation Response Trial was planned to be conducted where a need to inoculate exists. 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 7.1.3. Seed yield (Y=kg/ha) and rank (R) and nodule weight (N/W=g/plot) for different fertilizer-cum-inoculation treatments in LIPRT at different locations during 1988/89.

Treatment	ALGERIA - Setif			
	Y	R	N/W	R
T1- Farm fertility	1303	2	9	1
T2- Farm fertility + Nitrogen at 100 kg/ha	1350	1	8	3
T3- Farm fertility + Phosphate at 80 kg/ha + Potash at 60 kg/ha	1270	4	8	2
T4- Farm Fertility + Potash at 60 kg/ha + Phosphate at 80 kg/ha + Nitrogen at 100 kg/ha	1275	3	7	4
Location Mean	1299		8	
S.E. Of Mean	63.90		1.04	
L.S.D. at 5%	-		-	
C.V. (%)	9.84		25.00	
Error d.f.	9		9.00	
Significance	NS		NS	

Cont'd. ...

Table 7.1.3. Cont'd. ...

Treatment	BULGARIA -Toshevo		ETHIOPIA - Debre Zeit				Overall Mean	
	Y	R	Y	R	N/W	R	Y	R
T1	1712	1	1876	3	16	2	1630	3
T2	1649	3	1782	4	15	3	1594	4
T3	1632	4	2257	1	17	1	1720	1
T4	1671	2	2124	2	12	4	1690	2
Location Mean	1666		2010		15			
S.E. Of Mean	101.29		133.31		2.07			
L.S.D. at 5%	-		-		-			
C.V. (%)	12.16		13.27		27.58			
Error d.f.	9		9		9			
Significance	NS		NS		NS			

NS = Not significant

Crop	Strain 1 (No.)	Strain 2 (No.)	Strain 3 (No.)
Chickpea	31	39	44
Lentil	735	719	758
Faba bean	420	414	481

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 0.5 m at either end of row as borders.

7.2.1. CHICKPEA INTERNATIONAL RHIZOBIUM INOCULATION RESPONSE TRIAL (CIRT)

Results and Discussion

Twenty one trials were sent to cooperators in 11 countries. The results from four locations reporting yield data (Table 7.2.1) revealed that for seed yield the treatment differences were significant at Setif in Algeria and Sevilla in Spain.

At Setif in Algeria, the treatment T5, and T4 gave significantly higher yield than T2 and T1 indicating that strain nos.2 and 3 were more effective than the natural rhizobium and basic doses of fertilizers.

At Sevilla in Spain none of the strains exhibited superior performance than the local but on the contrary strain no.3 gave significantly lower yield as compared to all other treatments.

7.2.2. FABA BEAN INTERNATIONAL RHIZOBIUM INOCULATION RESPONSE TRIAL (FBIRT)

Results and discussion

The trial was sent to 10 cooperators in 4 countries but the results were received from only one location, Holleta in Ethiopia. The ANOVA for seed yield revealed significant differences among treatment means but yields were lower when inoculated with any of the three strains (Table 7.2.2).

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 1988/89.

Treatment	ALGERIA - Setif			
	Y	R	N/W	R
T1- 120 kg N/ha + 80 kg P2O5/ha + 60 kg K2O/ha	1781	3	0	4
T2- 80 kg P2O5/ha + 60 kg K2O/ha	1646	5	0	5
T3- Same as at No. 2 +Inoculation of seed with Chickpea Rhizobium Strain No. 31	1768	4	1245	2
T4- Same as at No. 2 +Inoculation of seed with Chickpea Rhizobium Strain No. 39	1929	2	1225	3
T5- Same as at No. 2 +Inoculation of seed with Chickpea Rhizobium Strain No. 44	2032	1	1344	1
Location Mean	1831		763	
S.E. Of Mean	45.27		55.62	
L.S.D. at 5%	127.85		157.08	
C.V. (%)	4.28		12.63	
Error d.f.	8		8	
Significance	*		*	

Cont'd. ...

Table 7.2.1. Cont'd. ...

Treatment	ETHIOPIA - Debre Zeit				ITALY - Caltagirone				SPAIN - Sevilla				Overall Mean	
	Y	R	N/W	R	Y	R	N/W	R	Y	R	N/W	R	Y	R
T1	2448	3	210	5	1020	3	23	5	2437	3	292	4	1921	4
T2	2489	2	312	3	1078	1	45	4	2524	2	471	2	1934	3
T3	2551	1	299	4	1041	2	91	1	2534	1	315	3	1973	1
T4	2442	4	331	2	1001	4	81	2	2389	4	508	1	1940	2
T5	2235	5	401	1	830	5	61	3	1925	5	292	5	1756	5
Location Mean	2433		310		994		60		2362		375			
S.E. Of Mean	142.19		50.28		77.90		13.66		97.87		83.29			
L.S.D. at 5%	-		-		-		42.10		301.59		-			
C.V. (%)	11.69		32.42		15.67		45.47		8.29		44.37			
Error d.f.	12		12		12		12		12		12			
Significance	NS		NS		NS		*		*		NS			

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

Table 7.2.2. Seed yield (Y=kg/ha) and rank (R) for various treatments in FBIRT at Holetta in Ethiopia during 1988/89.

Treatment	Y	R
T1- 120 kg N/ha + 80 kg P2O5/ha + 60 kg K2O/ha	2347	1
T2- 80 kg P2O5/ha + 60 kg K2O/ha	2074	2
T3- Same as at No. 2 +Inoculation of seed with Faba Bean Rhizobium Strain No. 420	1488	4
T4- Same as at No. 2 +Inoculation of seed with Faba Bean Rhizobium Strain No. 414	1457	5
T5- Same as at No. 2 +Inoculation of seed with Faba Bean Rhizobium Strain No. 481	1659	3
Location Mean	1805	
S.E. Of Mean	158.58	
L.S.D. at 5%	488.68	
C.V. (%)	17.57	
Error d.f.	12	
Significance	*	

* = Significant at $P \leq 0.05$.

7.2.3. LENTIL INTERNATIONAL RHIZOBIUM INOCULATION RESPONSE TRIAL (LIRT)

Results and Discussion

Seventeen trials were sent to cooperators in 11 countries. Out of 4 locations reporting the results, only at Pant Nagar in India the differences between treatments were significant for seed yield (Table 7.2.3) and Strain No. 735 gave significantly higher yield than the Treatment T₂ 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 CONTROL TRIAL (CWCT)

Results and Discussion

Nineteen trials were distributed to cooperators in 11 countries and the results were received from 6 locations in 6 countries (Table 7.3.1).

Morocco: At Douyet, three weedicide treatments, T9 (Igran + Kerb), T10 (Bladex + Kerb), and T11 (Maloran + Kerb) gave significantly higher yields over the weedy check.

Portugal: At Elvas five weedicide treatments, T4 (Topogard), T5 (Igran), T6 (Bladex), T9 (Igran + Kerb) and T12 (Tribunil + Kerb) gave significantly higher yield than the weedy check. The weed weight was lowest in the treatment T9 (Igran + Kerb).

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 1988/89.

Treatment	ALGERIA - Setif			
	Y	R	N/W	R
T1- 120 kg N/ha + 80 kg P2O5/ha + 60 kg K2O/ha	1623	2	5	5
T2- 80 kg P2O5/ha + 60 kg K2O/ha	1478	5	11	3
T3- Same as at No. 2 +Inoculation of seed with Lentil Rhizobium Strain No. 735	1545	3	10	4
T4- Same as at No. 2 +Inoculation of seed with Lentil Rhizobium Strain No. 719	1525	4	11	2
T5- Same as at No. 2 +Inoculation of seed with Lentil Rhizobium Strain No. 758	1660	1	14	1
Location Mean	1566		10	
S.E. Of Mean	70.98		1.24	
L.S.D. at 5%	-		3.81	
C.V. (%)	9.07		24.11	
Error d.f.	12		12	
Significance	NS		*	

Cont'd. ...

Table 7.2.3. Cont'd. ...

Treatment	BULGARIA				ETHIOPIA				INDIA		Overall Mean	
	Toshevo				Dobre Zeit				Pantnagar			
	Y	R	N/W	R	Y	R	N/W	R	Y	R	Y	R
T1	1694	5	1.00	4	3172	4	29	1	1168	4	1914	4
T2	1809	3	0.94	5	3025	5	16	4	1112	5	1856	5
T3	1770	4	1.38	3	3318	2	15	5	1821	1	2114	1
T4	1830	1	1.50	2	3374	1	20	3	1543	2	2068	2
T5	1826	2	1.88	1	3209	3	29	2	1271	3	1991	3
Location Mean	1786		1.34		3220		22		1383			
S.E. Of Mean	99.34		0.16		88.86		6.19		155.14			
L.S.D. at 5%	-		0.51		-		-		478.08			
C.V. (%)	11.13		24.49		5.52		56.78		22.43			
Error d.f.	12		12		12		12		12			
Significance	NS		*		NS		NS		*			

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

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 1988/89.

Treatment	MOROCCO		PORTUGAL				
	Douyet		Elvas				
	Y	R	Y	R	W	R	S
T1- Weed Check	950	12	393	12	3858	2	1
T2- Weed free by repeated hand weeding	2483	1	1061	1	1428	11	1
T3- Hand weeding twice (30-40 & 70-80 days after emergence)	2181	2	928	2	1608	9	1
T4- Pre-emergence application of terbuthylazine+terbutryne (Topogard) at 0.75 kg a.i./ha	984	11	789	6	2267	5	2
T5- Pre-emergence application of terbutryne (Igran) at 3.0 kg a.i./ha	1565	6	838	4	1675	7	2
T6- Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha	1440	9	831	5	3083	4	2
T7- Pre-emergence application of pyridate (Lentagran) at 1.0 kg a.i./ha	1374	10	652	9	3117	3	2
T8- Post-emergence application of dinoseb acetate (Aretit) at 1.0 kg a.i./ha plus 0.5 kg a.i./ha fluazifop butyl (Fusilade)	1554	7	570	11	4675	1	7
T9- Same as No. 5 above plus 0.5 kg a.i./ha of pronamide (Kerb)	1848	3	843	3	1233	12	2
T10- Same as No. 6 above plus pronamide as in No. 9	1576	5	646	10	1733	6	2
T11- Pre-emergence application of chlorbromuron (Maloran) plus pronamide as in No. 9	1654	4	676	8	1658	8	2
T12- Pre-emergence application of methabenzthiazuron (Tribunil) at 3 kg/ha plus pronamide as in No. 9	1486	8	757	7	1542	10	2
Location Mean	1591		749		2323		
S.E. of Mean	215.22		116.03		525.67		
L.S.D. at 5%	619.33		333.90		1512.70		
C.V. (%)	27.05		31.00		45.25		
Error d.f.	33		33		33		
Significance	*		*		*		

Table 7.3.1. Cont'd. ...

Treatment	SPAIN						LEBANON					
	Badajoz			Cordoba			Terbol					
	Y	R	W	R	S	Y	R	Y	R	W	R	S
T1	686	7	375	3	1	1087	12	1383	12	374	1	1
T2	730	4	0	12	1	2935	1	2086	1	0	12	1
T3	770	1	14	11	1	2583	2	2083	2	13	11	1
T4	766	2	325	4	1	1790	8	1895	5	195	5	1
T5	552	12	575	1	2	2243	4	1985	3	48	7	1
T6	620	10	388	2	3	1733	9	1833	6	361	2	1
T7	643	8	325	6	1	1465	10	1605	10	338	3	1
T8	696	5	188	9	2	1337	11	1473	11	298	4	4
T9	599	11	325	5	2	2095	7	1903	4	18	9	1
T10	625	9	175	10	2	2283	3	1758	8	34	8	1
T11	743	3	250	8	1	2228	5	1730	9	15	10	1
T12	686	6	263	7	1	2210	6	1828	7	109	6	1
Location Mean	676		267			1999		1797		150		
S.E. of Mean	61.24		68.06			159.56		103.89		87.25		
L.S.D. at 5%	-		195.84			459.15		298.97		251.07		
C.V. (%)	18.12		51.02			15.96		11.57		116.33		
Error d.f.	33		33			33		33		33		
Significance	NS		*			*		*		*		

Cont'd. ...

Table 7.3.1. Cont'd. ...

Treatment	TURKEY - Diyarbakir					Overall Mean	
	Y	R	W	R	S	Y	R
T1	602	10	1173	1	5	850	12
T2	500	11	278	7	6	1632	1
T3	1068	2	123	10	3	1602	2
T4	1068	1	247	8	5	1215	8
T5	457	12	556	4	5	1273	7
T6	796	8	586	3	5	1209	9
T7	926	6	185	9	8	1111	10
T8	985	3	463	6	5	1102	11
T9	799	7	926	2	5	1348	3
T10	963	4	62	11	5	1308	5
T11	941	5	494	5	5	1329	4
T12	762	9	62	12	7	1288	6
Location Mean	822		430				
S.E. of Mean	108.83		189.90				
L.S.D. at 5%	276.43		482.37				
C.V. (%)	22.92		76.58				
Error d.f.	22		22				
Significance	*		*				

Spain: At Badajoz, none of the herbicide treatments gave significantly higher yield than the weedy check.

At cordoba, seven weedicide treatments, T10 (Bladex + Kerb), T5 (Igran), T11 (Maloran + Kerb), T12 (Tribunil + Bladex), T9 (Igran + Kerb), T4 (Topogard), and T6 (Bladex) in order of their merit gave significantly higher yield than the weedy check (T1).

Lebanon: At Terbol, seven of the weedicide treatments T5 (Igran), T9 (Igran + Kerb), T4 (Topogard), T6 (Bladex), T12 (Tribunil + Kerb), T10 (Bladex + Kerb), and T11 (Maloran + Kerb) gave significantly higher yield than the respective weedy check. Weeds were less with the treatments, T11 (Maloran + Kerb), T9 (Igran + Kerb), T10 (Bladex + Kerb) and T5 (Igran).

Turkey: At Diyarbakir, five treatments, T4 (Topogard), T8 (Aretit + Fusilade), T10 (Bladex + Kerb), T11 (Maloran + Kerb), and T7 (Lentagran) in order of their merit gave significantly higher yield than the respective weedy check. The weeds were lowest with T12 (Tribunil + Bladex) and were followed by T10 (Bladex + Kerb), T5 (Igran), T7 (Lentagran), T4 (Topogard) etc.

The seed yield across locations for the weedy check and weed free check revealed that weeds caused a heavy loss (47.4%) in seed yield in chickpea. Further, pre-emergence application of Igran or Maloran with Kerb was most effective.

7.3.2. FAB A BEAN INTERNATIONAL WEED CONTROL TRIAL (FEWCI)

Results and Discussion

Sixteen trials were supplied to cooperators in 9 countries and the results were received for 5 trials from 5 countries (Table 7.3.2) and are presented below:

Chile: At Chillan, treatment T9 (Igran + Kerb) gave significantly higher yield than the weedy check.

Morocco: At Douyet, the weed free check gave the lowest yield and highest weed weight whereas weedy check gave the highest seed yield and very low weed weight. So the results were not discussed.

Lebanon: At Terbol, three treatments T12 (Tribunil + Kerb), T5 (Igran), and T8 (Aretit) gave significantly higher yield than the respective weedy checks. There were no weeds with the treatments T9 (Igran + Kerb), T11 (Maloran + Kerb), and T12 (Tribunil + Kerb).

Portugal: At Elvas, 4 weedicide treatments, T12 (Tribunil + Kerb), T5 (Igran), T11 (Maloran + Kerb), and T9 (Igran + Kerb) gave significantly superior yields when compared to respective weedy check. Weeds were

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 1988/89.

Treatment	CHILE			MOROCCO				
	Chillan			Douyet				
	Y	R	S	Y	R	W	R	S
T1- Weed Check	703	11	1	3688	1	1168	10	2
T2- Weed free by repeated hand weeding	1034	3	1	513	11	2352	1	1
T3- Hand weeding twice (30-40 & 70-80 days after emergence)	1482	1	1	257	12	1458	4	1
T4- Pre-emergence application of terbutylazine Terbutryne (Topogard) at 0.75 kg a.i./ha	838	8	2	2467	4	1557	3	1
T5- Pre-emergence application of terbutryne (Igran) at 2.5 kg a.i./ha	912	4	1	1974	5	1415	6	1
T6- Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha	596	12	2	1729	7	1427	5	1
T7- Post-emergence application of oxadiazon (Ronstar) at 1.07 kg a.i./ha	851	7	3	1822	6	1023	12	1
T8- Post-emergence application of dinoseb acetate (Aretit) at 1.0 kg a.i./ha plus 0.5 kg a.i./ha fluazifop butyl (Fusilade)	766	10	1	2571	2	1033	11	1
T9- Same as No. 5 above plus 0.5 kg a.i./ha of pronamide (Kerb)	1053	2	2	1685	8	1358	8	2
T10- Same as No. 6 above plus pronamide as in No. 9	878	5	2	2531	3	1586	2	2
T11- Pre-emergence application of chlorbromuron (Maloran) plus pronamide as in No. 9	836	9	2	1495	10	1337	9	1
T12- Pre-emergence application of methabenzthiazuron (Tribunil) at 3.0 kg a.i./ha plus pronamide as in No. 9	860	6	2	1613	9	1372	7	1
Location Mean	901			1862		1424		
S.E. of Mean	114.46			371.99		157.76		
L.S.D. at 5%	329.36			1070.44		453.98		
C.V. (%)	25.42			39.95		22.16		
Error d.f.	33			33		33		
Significance	*			*		*		

Table 7.3.2. Cont'd. ...

Treatment	LEBANON					PORTUGAL					SPAIN		Overall Mean	
	Terbol					Elvas					Cordoba		Y	R
	Y	R	W	R	S	Y	R	W	R	S	Y	R		
T1	1509	11	525	3	1	1538	11	3717	4	1	3047	12	1593	12
T2	1984	5	0	8	1	3923	1	3674	5	1	4550	6	2769	1
T3	2083	4	0	10	1	2114	8	3835	3	1	4628	2	2353	4
T4	1926	6	301	4	1	2454	6	1463	9	1	4611	3	2277	7
T5	2238	2	46	7	1	3319	3	1283	10	1	4542	7	2485	3
T6	1660	9	850	2	1	1867	10	2895	6	1	4531	8	2016	9
T7	1060	12	1836	1	5	114	12	6860	1	9	3894	10	1388	11
T8	2183	3	130	5	1	2059	9	4176	2	3	3292	11	1866	10
T9	1720	8	0	9	1	2844	5	923	11	1	4628	1	2321	5
T10	1593	10	76	6	1	2286	7	1586	7	1	4572	5	2183	8
T11	1764	7	0	11	1	3052	4	789	12	1	4417	9	2281	6
T12	2438	1	0	12	1	3481	2	1526	8	1	4594	4	2549	2
Location Mean	1846		314			2421		2727			4275			
S.E. of Mean	223.72		434.38			436.19		703.52			259.52			
L.S.D. at 5%	643.77		-			1107.97		1787.03			746.79			
C.V. (%)	24.23		276.98			31.21		44.68			12.14			
Error d.f.	33		33			22		22			33			
Significance	*		NS			*		*			*			

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

minimum with T11 (Maloran + Kerb) and T9 (Igran + Kerb).

Spain: At Cordoba, all the weedicide treatments gave significantly superior yields when compared to the weedy check. The treatments T9 (Igran + Kerb), T4 (Topogard), T12 (Tribunil + Kerb), T10 (Bladex + Kerb), T5 (Igran), T6 (Bladex), and T11 (Maloran + Kerb) in order of their merit gave significantly higher yield than the weedy check.

The comparison of weedy check (T1) and weed free check (T2) across locations showed that weeds caused heavy losses (42.5%) in seed yield (Table 7.3.2). Across the locations, the treatment T12 (Tribunil + Kerb) gave the highest yields and was followed by T5 (Igran).

7.3.3. LENTIL INTERNATIONAL WEED CONTROL TRIAL (LWCT)

Results and Discussion

Twenty three sets of trial were distributed to cooperators in 14 countries and the results were received for 5 sets.

The comparison of weedy check (Treatment T₁) and weed free check (Treatment T₂) across locations showed that weeds caused heavy losses (27.1 percent) in seed yield (Table 7.3.3). The ANOVA revealed that the differences between treatment means were significant only at Setif in Algeria. At Setif all the treatments gave significantly higher yield as compared to the weedy check. The treatments in order of superiority included, T₇ (Gesagard), T₁₁ (Maloran + Kerb), T₈ (Fusilade), T₆ (Bladex), T₁₂ (Gesagard + Kerb), T₁₀ (Bladex + Kerb), T₄ (Tribunil), T₅ (Maloran), and 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:

- T₁ Control - No application of glyphosate.
- T₂ At the beginning of flowering, apply glyphosate at 0.08 kg ai/ha once.

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 1988/89.

Treatment	ALGERIA - Setif					CHILE - Chillan				
	Y	R	W	R	S	Y	R	W	R	S
T1- Weed Check	368	12	2873	1	1	1071	6	2452	6	1
T2- Weed free by repeated hand weeding	935	1	310	10	1	1011	9	933	12	1
T3- Hand weeding twice (30-40 & 70-80 days after emergence)	889	3	321	9	1	1210	1	1159	11	1
T4- Pre-emergence application of methabenzthiazuron (Tribunil) at 2 kg a.i./ha	669	9	1194	3	1	1046	7	2536	5	2
T5- Pre-emergence application of chlorbromuron (Maloran) at 1.5 kg a.i./ha	645	10	1166	4	1	1086	5	2667	2	2
T6- Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha	821	6	403	8	1	987	11	2099	9	2
T7- Pre-emergence application of prometryne (Gesagard) at 1.5 kg a.i./ha	921	2	281	11	1	921	12	1817	10	2
T8- Pre-emergence application of dinoseb acetate (Aretit) at 1.0 kg a.i./ha plus 0.5 kg a.i./ha fluazifop butyl (Fusilade)	848	5	231	12	1	1040	8	2556	4	2
T9- Same as No. 4 above plus 0.5 kg a.i./ha of pronamide (Kerb)	633	11	1308	2	1	1181	2	2258	7	2
T10- Same as No. 6 above plus pronamide as in No. 9	681	8	1090	5	1	990	10	2603	3	2
T11- Same as No. 5 above plus pronamide as in No. 9	865	4	1006	6	1	1123	4	2183	8	1
T12- Same as No. 7 above plus pronamide as in No. 9	691	7	891	7	1	1144	3	2845	1	2
Location Mean	747		923			1068		2176		
S.E. of Mean	70.80		383.57			78.06		473.33		
L.S.D. at 5%	203.74		1103.77			-		-		
C.V. (%)	18.95		83.13			14.62		37.68		
Error d.f.	33		33			33		22		
Significance	*		*			NS		NS		

395

Cont'd. ...

Table 7.3.3. Cont'd. ...

Treatment	LEBANON					MOROCCO			TURKEY					Overall Mean	
	Terbol					Douyet			Diyarbakir					Y	R
	Y	R	W	R	S	Y	R	S	Y	R	W	R	S		
T1	810	1	698	1	1	1050	12	-	188	5	648	3	-	870	12
T2	666	9	0	10	1	1675	2	-	219	2	525	5	-	1193	1
T3	688	8	0	11	1	1515	6	-	198	3	401	8	5	1163	4
T4	583	11	53	6	1	1538	5	-	176	6	833	2	7	1075	8
T5	755	4	186	3	1	1238	11	-	111	11	895	1	7	992	11
T6	723	6	103	5	1	1650	3	1	114	10	309	9	7	1166	3
T7	658	10	15	8	1	1575	4	3	130	9	309	10	7	1130	6
T8	800	2	146	4	4	1488	7	-	256	1	247	11	7	1133	5
T9	713	7	15	9	1	1715	1	1	191	4	525	4	7	1191	2
T10	775	3	294	2	1	1313	10	1	142	8	463	6	5	1014	10
T11	743	5	44	7	1	1325	9	-	154	7	463	7	5	1076	7
T12	576	12	0	12	1	1350	8	2	99	12	247	12	8	1022	9
Location Mean	707		129			1453			165		489				
S.E. of Mean	68.97		83.29			169.67			33.97		249.78				
L.S.D. at 5%	-		239.42			-			-		-				
C.V. (%)	19.50		128.62			23.36			35.69		88.53				
Error d.f.	33		33			33			22		22				
Significance	NS		*			NS			NS		NS				

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

- T₃ Fifteen days after flowering apply glyphosate at 0.08 kg ai/ha thrice at 15 days interval.
- T₄ Fifteen days after flowering began, apply imazaquine at 0.015 kg ai/ha once.
- T₅ Fifteen days after flowering began, apply imazaquine at 0.015 kg ai/ha thrice at 15 days interval.

The trial was designed as randomized complete block with four replications. The suggested plot size was 8 rows, 5 m long spaced 45 cm apart (=18.0 m²). At harvesting, net area harvested was suggested to be 6 rows 4 m long spaced 45 cm apart (=10.8 m²).

Results and Discussion

Five sets of trial were sent to cooperators in four countries but the results were received back from three locations (Table 7.4.1) and presented below:

Italy: At Catagrione, none of the treatments significantly excelled the control plot in seed yield. The data on Orobanche number and weight was not reported.

Spain: At Cordoba none of the treatments significantly excelled the control plot in seed yield. The data on Orobanche number and weight was not reported.

Morocco: At Douyet, the treatment T₃ (Glyphosate application thrice at 15 days interval at a stage 15 days after flowering began) completely controlled the Orobanche and gave the highest seed yield.

Table 7.4.1. Seed yield (Y=kg/ha) and rank (R), 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 1988/89.

Treatment	ITALY - Caitagirone					
	HT	R	NPSY	R	NPTY	R
T1- Control, no application of herbicide	53	2	2532	4	2271	2
T2- Fifteen days after flowering began, apply glyphosate at 0.08 kg a.i./ha once	54	1	2695	1	2061	4
T3- Fifteen days after flowering began, apply glyphosate at 0.08 kg a.i./ha thrice at 15 days interval	52	4	1779	5	2303	1
T4- Fifteen days after flowering began, apply imazaquin at 0.015 kg a.i./ha once	53	3	2552	3	1806	5
T5- Fifteen days after flowering began, apply imazaquin at 0.015 kg a.i./ha thrice at 15 days interval	52	5	2570	2	2190	3
Location Mean	53		2425		2126	
S.E. Of Mean	1.10		298.76		249.84	
L.S.D. at 5%	-		-		-	
C.V. (%)	4.17		24.64		23.50	
Error d.f.	12		12		12	
Significance	NS		NS		NS	

Cont'd. ...

Table 7.4.1. Cont'd. ...

Treatment	MOROCCO - Douyot						SPAIN - Cordoba				Overall Mean	
	NOS	R	WOS	R	NPSY	R	HT	R	NPSY	R	NPSY	R
T1	162	1	115	1	44	5	73	1	3567	4	2048	4
T2	86	3	33	3	95	4	67	4	4042	3	2277	3
T3	0	5	0	5	206	1	67	5	2674	5	1553	5
T4	107	2	65	2	114	3	72	2	4255	2	2307	2
T5	18	4	17	4	118	2	69	3	4259	1	2316	1
Location Mean	74		46		115		69		3759			
S.E. Of Mean	22.11		20.40		24.30		3.35		461.14			
L.S.D. at 5%	68.13		62.85		74.89		-		-			
C.V. (%)	59.43		89.06		42.17		9.66		24.53			
Error d.f.	12		12		12		12		12			
Significance	*		*		*		NS		NS			

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

8. ACKNOWLEDGEMENT

Our thanks are due to all donors of ICARDA, for making this cooperative research effort possible. We are grateful to the cooperators from different national programs for conducting the experiments and returning the data books.

APPENDIX I

Distribution of International Trials and Nurseries

COUNTRY	CITY - SP	CITY - WM	CITY - WSTR	CITY - TL	CITY - TE	CITY - TDS	CISN - SW	CISN - SP	CISN - E	CIFA - 4N	CIFA - 8N	CIFW - 4N	CIFL - 4N	CIFL - 8N	CIFL - 12N	FBIY - TL	FBIY - TS	FBIY - TD	FBIY - SL	FBIY - SD	FBIY - 4N	FBIY - 4B	FBIY - 4D	FBIY - 4N	FBIY - 4B	FBIY - 4D	FBIY - 4N	FBIY - 4B	FBIY - 4D
AFGHANISTAN	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALGERIA	1	5	0	6	6	0	1	1	0	0	1	3	1	2	2	2	1	1	0	0	1	0	0	0	0	0	0	0	0
ARGENTINA	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUSTRALIA	1	1	1	1	1	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AUSTRIA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BANGLADESH	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
BELIZE	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BOLIVIA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
BRAZIL	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BULGARIA	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BURMA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CANADA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
CHILE	2	2	0	4	0	0	0	4	5	0	2	0	0	0	2	1	0	1	3	3	2	0	0	0	0	0	0	0	0
CHINA	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0
COLOMBIA	1	0	0	2	2	0	0	0	1	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
COSTA RICA	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CYPRUS	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
CZECHOSLOVAKIA	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ECUADOR	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	3	2	1	2	1	1	1	0	2	3	0	0
EGYPT	0	0	2	1	2	0	0	1	0	0	1	0	1	0	1	2	3	2	1	1	1	1	1	1	1	0	1	1	0
ETHIOPIA	0	0	1	0	0	3	0	0	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0
FRANCE	1	1	0	1	0	0	0	2	1	0	1	1	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
GERMANY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREECE	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
GUATEMALA	0	0	2	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HUNGARY	2	0	0	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0
INDIA	1	1	2	1	1	0	0	1	1	0	1	3	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
IRAN	1	0	0	0	1	0	0	2	1	0	0	0	0	0	3	0	0	0	0	0	1	2	1	0	0	0	0	0	0
IRAQ	0	1	1	0	1	0	0	1	1	0	0	0	0	0	0	1	1	2	0	1	3	0	0	0	0	0	0	0	0
ITALY	0	3	0	2	2	0	0	1	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	0	2	2	0	0

Cont'd. ...

APPENDIX I (Contd.)

COUNTRY	C I Y T - S P	C I Y T - W - M R	C I Y T - W - S T R	C I Y T - L	C I Y T - T	C I Y T - E	C I Y T - D S	C I S N - W	C I S N - S P	C I S N - E	C I F 4 N	C I A B N	C I F W N	C I L M N	C I C T N	F B I Y T - L	F B I Y T - S	F B I Y T - D	F B I S N - L	F B I S N - S	F B I S N - D	F B I F 4 N - A	F B I F 4 N - B	F B I F 4 N - D	F B I A B N	F B I C S N	F B I R N
JORDAN	3	5	0	3	6	0	0	2	2	0	1	2	0	0	0	1	1	0	2	2	2	0	0	1	0	0	0
KENYA	0	0	2	1	0	0	0	2	1	0	0	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
KUWAIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LIBYA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MALAWI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAURITIUS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEXICO	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOROCCO	0	1	0	2	2	0	3	1	1	0	0	0	1	1	0	2	2	3	3	3	3	4	1	1	1	1	1
NEPAL	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NETHERLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
NEWZEALAND	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PAKISTAN	0	0	0	0	0	1	0	0	0	1	1	10	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
PERU	0	0	2	3	0	0	0	2	0	0	0	0	0	2	1	0	0	0	0	0	1	0	0	0	1	0	0
POLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0
PORTUGAL	0	1	0	1	1	0	0	2	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	1	0	0	0
QATAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAUDI ARABIA	6	1	5	7	5	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0
SPAIN	2	4	0	5	3	0	0	3	1	0	1	1	1	0	0	1	2	1	0	1	0	0	0	0	0	0	0
SRI LANKA	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUDAN	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYRIA	5	9	0	6	4	0	0	7	4	0	0	3	0	0	0	4	3	2	4	0	2	0	0	0	0	1	1
THAILAND	0	0	3	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
TUNISIA	4	4	4	4	4	0	1	9	9	0	1	6	1	0	0	2	2	2	4	4	2	1	1	1	1	1	1
TURKEY	5	6	0	7	6	0	0	5	5	0	4	5	0	1	5	2	0	1	2	0	1	1	1	0	1	0	0
U.A.E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
U.K.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U.S.A.	1	0	0	1	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VENEZUELA	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YEMEN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZAIRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ICARDA-LEBANON	1	1	0	2	2	0	1	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	0	0	0	0	0
ICARDA-SYRIA	2	2	2	4	4	2	1	2	2	1	1	1	0	2	2	1	2	2	1	1	1	0	0	0	0	0	0
TOTAL	45	51	32	75	60	13	7	56	46	12	20	48	5	8	32	25	25	25	30	30	30	5	10	12	8	8	8

Cont'd. ...

APPENDIX I (Contd.)

COUNTRY	L I Y T L	L I Y T S	L I Y T E	L I S N L	L I S N S	L I S N E	L I S N T	L I F 3 N	L I F 3 N E	L I A B N	L I C T N	P E A S	C I F R T	F B I F R T	L I F R T	C I R T	F B I R T	L I R T	C W C T	F B W C T	L W C T	F B O C C T	T O T A L
AFGHANISTAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
ALGERIA	5	3	0	3	1	1	5	1	0	1	1	4	4	1	3	4	0	3	1	0	0	1	80
ARGENTINA	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6
AUSTRALIA	4	3	0	2	2	2	3	1	1	2	1	0	0	0	1	0	0	1	0	0	1	0	34
AUSTRIA	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
BANGLADESH	0	0	1	1	0	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9
BELIZE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
BOLIVIA	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
BRAZIL	0	0	1	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8
BULGARIA	0	0	0	1	0	1	1	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	13
BURMA	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
CANADA	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7
CHILE	3	0	0	4	0	1	2	0	0	1	0	1	0	0	0	0	0	0	1	1	1	0	47
CHINA	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	11
COLOMBIA	2	0	0	2	0	2	1	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	22
COSTA RICA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CYPRUS	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7
CZECHOSLOVAKIA	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	0	1	1	0	0	1	0	11
ECUADOR	1	0	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	1	1	0	10
EGYPT	5	6	2	2	2	6	1	1	3	0	1	0	0	0	2	2	0	2	1	0	1	1	64
ETHIOPIA	0	0	2	1	1	1	1	1	1	0	1	1	3	2	1	1	4	1	1	3	1	0	40
FRANCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
GERMANY	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
GREECE	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
GUATEMALA	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
HUNGARY	2	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
INDIA	0	0	1	0	0	2	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	25
IRAN	2	0	0	4	4	4	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	35
IRAQ	1	0	1	0	0	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	19
ITALY	0	1	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	1	28

Cont'd. ...

APPENDIX I (Contd.)

COUNTRY	L I Y T L	L I Y T S	L I Y T E	L I S N L	L I S N S	L I S N E	L I S N T	L I F 3 N E	L I A B N	L I C T N	P E A S	C I F R T	F B I F R T	L I F R T	C I R T	F B I R T	L I R T	C W C T	F B W C T	L W C T	F B O C C T	T O T A L	
JORDAN	5	3	0	6	3	3	5	1	2	0	0	2	3	0	1	3	0	1	0	1	0	71	
KENYA	0	0	0	1	0	1	0	0	3	0	0	0	1	1	0	0	0	0	0	0	0	21	
KUWAIT	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
LIBYA	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	0	0	4	
MALAWI	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
MAURITIUS	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
MEXICO	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	
MOROCCO	1	1	0	0	0	2	0	0	1	0	0	2	0	0	0	1	0	0	1	2	2	45	
NEPAL	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
NETHERLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
NEWZEALAND	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	8	
PAKISTAN	0	0	9	2	2	9	2	0	3	8	2	0	1	0	2	1	0	1	4	0	3	73	
PERU	3	0	2	2	0	2	1	0	0	0	2	1	0	2	0	0	0	0	2	0	0	29	
POLAND	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
PORTUGAL	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	18	
QATAR	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
SAUDI ARABIA	3	1	0	0	0	1	0	0	0	0	0	4	4	6	4	4	4	4	4	0	0	64	
SPAIN	1	1	0	1	1	0	1	0	0	0	0	0	0	0	2	0	0	2	1	0	1	35	
SRI LANKA	0	0	4	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	12	
SUDAN	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	
SYRIA	4	4	0	5	5	0	5	2	0	0	0	2	0	0	0	0	0	0	0	0	0	76	
THAILAND	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
TUNISIA	2	2	0	3	3	3	3	2	1	0	0	2	0	0	0	0	0	0	0	0	0	89	
TURKEY	4	1	1	3	1	0	3	1	0	1	3	1	0	0	0	0	0	2	0	4	0	94	
U.A.E.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
U.K.	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5	
U.S.A.	0	0	0	2	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	11	
VENEZUELA	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	
YEMEN	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	
ZAIRE	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
ICARDA-LEBANON	1	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	1	1	1	0	25	
ICARDA-SYRIA	2	2	1	1	1	1	1	1	1	1	2	0	0	0	0	0	0	0	0	0	0	50	
TOTAL	60	35	35	52	30	60	52	15	27	20	17	30	17	15	16	21	10	17	19	16	23	5	1321

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-

APPENDIX IV

Geographical Details for the Locations

COUNTRY	LOCATION	LATITUDE	LONGITUDE	ALTITUDE (m)	RAINFALL (mm)
ALGERIA	Beni-Slimane	36.14 N	03.18 E	550	329
ALGERIA	Dahmouni (Tiaret)	34.36 N	12.00 E	980	326
ALGERIA	Guelma	36.29 N	07.29 E	300	373
ALGERIA	Khroube	36.16 N	06.42 E	640	348
ALGERIA	Oued Smar	36.43 N	30.80 E	24	191
ALGERIA	Setif	36.09 N	05.21 E	1023	NA
ALGERIA	Sidi Bel Abbes	35.11 N	00.38 W	486	226
AUSTRALIA	Clare	33.85 S	138.05 E	420	538
AUSTRALIA	Mintaro	33.09 S	138.05 E	430	525
AUSTRALIA	Turretfield	34.31 S	138.05 E	115	523
AUSTRIA	Grob-Enzersdorf	48.12 N	16.34 E	153	370
BANGLADESH	Mymensingh	24.70 N	90.00 E	18	-
BOLIVIA	Pairumani	-	-	-	-
BRAZIL	Maracaju	21.30 S	55.00 W	400	765
BRAZIL	Passo Fundo	28.00 S	25.25 W	709	1373
BRAZIL	Santa Maria	29.42 S	53.42 W	95	773
BULGARIA	Toshevo	43.40 N	28.02 E	236	545
CANADA	La Pocatiere	47.21 N	70.02 W	30	344
CANADA	Manitoba	49.56 N	98.17 W	258	243
CANADA	Saskatchewan	51.00 N	107.00 W	300	141
CHILE	Chillan	36.26 S	72.06 W	220	689
CHILE	Hidango	34.07 S	71.44 W	304	440
CHILE	Temuco	38.41 S	72.25 W	200	320
CHILE	Valdivia	39.45 S	73.14 W	12	813
CHINA	Chengdu	30.60 N	104.00 E	600	191
COSTA RICA	Garakito	09.55 N	84.31 W	224	99
CYPRUS	Athalassa	35.08 N	33.24 E	142	301
CYPRUS	Dromolaxia	34.52 N	33.36 E	25	285
ECUADOR	Ambato	01.18 S	78.39 W	NA	NA
ECUADOR	Quito	00.14 S	78.30 W	NA	NA
ECUADOR	Santa Catalina	00.22 S	78.33 W	3050	-
ETHIOPIA	Debre Zeit	08.50 N	38.58 E	1900	942
ETHIOPIA	Holetta	09.30 N	38.31 E	2390	1179
FRANCE	Montboucher	44.33 N	04.45 E	130	394
GREECE	Larissa	39.07 N	22.05 E	70	588
INDIA	Delhi	28.08 N	77.12 E	229	38
INDIA	Pantnagar	29.00 N	79.30 E	243	85
IRAN	Ghazvin	36.26 N	49.30 E	1330	204
IRAN	Ahvas	31.20 N	48.40 E	18	125

Cont'd. ...

Appendix IV Cont'd. ...

COUNTRY	LOCATION	LATITUDE	LONGITUDE	ALTITUDE (m)	RAINFALL (mm)
IRAN	Gorgan	36.53 N	54.21 E	15	451
IRAN	Karaj	35.48 N	54.02 E	1321	190
IRAN	Maragheh	37.15 N	46.35 E	1650	38
IRAN	Oroumieh	37.55 N	45.01 E	1325	169
IRAN	Zanjan	-	-	-	-
IRAQ	Al Rasheediah	36.23 N	43.05 E	242	234
IRAQ	Arbil (Enkawa)	36.11 N	44.00 E	420	291
IRAQ	Atshana	35.28 N	44.24 E	33	NA
IRAQ	Bakrajo(Sulaimaniya)	35.33 N	42.27 E	700	NA
IRAQ	Dohuk	33.19 N	47.18 E	480	316
IRAQ	Mahit (Mosul)	36.43 N	43.09 E	226	419
IRAQ	Rabiah	36.23 N	43.50 E	242	218
ITALY	Caltagirone	37.10 N	-	500	184
ITALY	Papiano	42.57 N	12.22 E	164	420
ITALY	Tarquinia	46.90 N	13.08 E	80	196
JORDAN	Jordan Valley	32.12 N	35.37 E	-224	204
JORDAN	Jubeiha	32.01 N	35.52 E	980	530
JORDAN	Marow (Irbid)	32.33 N	35.51 E	580	287
JORDAN	Mushagar	31.42 N	35.48 E	785	NA
JORDAN	Rabba	31.16 N	35.40 E	920	413
JORDAN	Ramtha	32.34 N	36.01 E	520	148
LEBANON	Terbol	33.49 N	35.59 E	890	344
MALAWI	Bvumbwe	15.55 S	35.04 E	1146	1322
MEXICO	Padilla Tam	24.03 N	97.48 E	153	84
MOROCCO	Allal Tazi	-	-	-	479
MOROCCO	Dar Bouazza	33.31 N	07.47 W	15	333
MOROCCO	Douyet	34.02 N	05.00 W	416	466
MOROCCO	ENA-Meknes	34.00 N	-	700	425
MOROCCO	Jema'a Shain	-	-	170	434
MOROCCO	Marchouch	33.33 N	06.42 W	430	376
MOROCCO	Sidi Laidi (Domaine)	-	-	230	361
MOROCCO	Zememra	25.15 N	12.35 W	450	409
MYANMAR	Gwegone	22.23 N	95.96 E	355	5
MYANMAR	Kyehmon	22.20 N	95.15 E	330	5
NEPAL	Khumaltar	27.40 N	85.20 E	1350	417
NEPAL	Rampur Chitawan	27.40 N	80.19 E	228	127
NEW ZEALAND	Lincoln	43.38 S	-	30	472
PAKISTAN	Faisalabad (AARI)	31.25 N	73.25 E	182	80
PAKISTAN	Faisalabad (NIAB)	31.26 N	73.06 E	184	-
POLAND	Pulawy	51.25 N	21.58 E	142	374

Cont'd. ...

Appendix IV Cont'd. ...

COUNTRY	LOCATION	LATITUDE	LONGITUDE	ALTITUDE (m)	RAINFALL (mm)
POLAND	Radzikow	52.13 N	20.38 E	90	294
POLAND	Strzelce	52.19 N	19.24 E	130	215
PORTUGAL	Elvas	38.53 N	07.09 E	208	461
PORTUGAL	Oeiras	38.41 N	09.19 W	50	319
QUATAR	Rawdat Harma	25.48 N	51.18 E	50	13
SAUDI ARABIA	Al Aziziah	27.31 N	42.00 E	1000	58
SPAIN	Badajoz	38.49 N	06.39 W	237	208
SPAIN	Cordoba	37.46 N	04.31 W	280	417
SPAIN	Madrid (El Encin)	40.31 N	03.17 W	610	417
SPAIN	Sevilla	37.30 N	05.57 W	20	402
SUDAN	Hudeiba	17.34 N	33.56 E	351	NA
SUDAN	Shambat	15.40 N	32.32 E	376	-
SYRIA	Al Ghab	35.30 N	36.20 E	170	416
SYRIA	Aleppo	36.01 N	36.56 E	284	234
SYRIA	Breda	35.56 N	37.10 E	300	195
SYRIA	Deir-Ez-Zor	32.50 N	36.00 E	NA	47
SYRIA	Gelline	32.80 N	35.60 E	421	238
SYRIA	Hama	35.08 N	36.45 E	316	239
SYRIA	Heimo	37.30 N	41.13 E	425	247
SYRIA	Homs	34.45 N	36.43 E	485	255
SYRIA	Idleb	36.56 N	36.39 E	446	247
SYRIA	Izra'a	32.51 N	36.15 E	575	205
SYRIA	Jableh	35.40 N	35.40 E	7	634
SYRIA	Jindiress	36.24 N	36.44 E	210	350
SYRIA	Tartus	35.40 N	35.40 E	7	455
SYRIA	Tel Hadya	36.01 N	36.56 E	284	234
TUNISIA	Beja-1	36.52 N	09.13 E	NA	NA
TUNISIA	Beja-2	36.52 N	09.13 E	NA	NA
TUNISIA	El Kef	36.10 N	08.40 E	NA	NA
TUNISIA	Oued Meliz	37.55 N	09.00 E	NA	NA
TURKEY	Adana	37.23 N	35.05 E	35	493
TURKEY	Amasya	40.75 N	36.50 E	650	182
TURKEY	Diyarbakir	37.55 N	40.12 E	660	346
TURKEY	Erzurum	39.55 N	41.16 E	1950	300
TURKEY	Izmir (Menemen)	38.05 N	27.34 E	10	337
TURKEY	Samsun	40.58 N	36.20 E	10	613
U.K.	Cambridgeshire	52.10 N	00.05 E	15	NA

NA = Not available.

APPENDIX V

Meteorological Details for the Locations

