

FOOD LEGUME NURSERIES

1982-1983



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FOOD LEGUME NURSERIES 1982/83

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

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PREFACE

A number of trials and nurseries were supplied by the Food Legume Improvement Program (FLIP) of ICARDA to cooperating scientists within and outside the ICARDA region for 1982/83 growing season. Many of these trials and nurseries were also grown at different ICARDA sites in Syria and Lebanon. This report summarises the data returned by the cooperating scientists and those obtained at ICARDA sites from these trials and nurseries. The results received from cooperators till December, 1984 have been included.

The report has been prepared by Dr R.S. Malhotra, International Trials Officer of the Food Legume Improvement Program, with assistance from the program scientists. Mr Khaled El-Bizri, Director Computer Center provided invaluable assistance in computerization of field book enabling speedy analysis of data. The assistance of Mr Fawzi Merjaneh and Mr Roger Azzo in the statistical analysis and the secretarial assistance of Ms Nawal Saroukhan in the preparation of the manuscript is sincerely acknowledged.

It is hoped that the results and discussion contained in this report will be of interest and use to the cooperating scientists. Any comments or suggestions on the report would be most welcomed.

Mohan C. Saxena
Leader,
Food Legume Improvement Program
ICARDA, P.O.Box 5466
Aleppo - Syria

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1. INTRODUCTION

The international cooperative program on food legume improvement is co-ordinated by the International Center for Agricultural Research in the Dry Areas (ICARDA). The main objective of the program is to provide a mechanism for the multi-location testing of genetic material of kabuli chickpeas, faba beans and lentils originating from national and international programs.

The testing aims at evaluating genotypic performance for both seed yield and reaction to biotypes of locally occurring pests and diseases. It is hoped that through such testing, firstly, it will prove possible to identify both superior genotypes which are adapted to specific environments, and genotypes which have a wide adaptation. Secondly, that the performance data from a number of widely differing environments will 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.

This report summarises the data received from various international yield trials, screening nurseries, disease and pest nurseries and agronomy trials conducted by the cooperating scientists and ICARDA during 1982/83.

2. ICARDA INTERNATIONAL TRIALS AND NURSERIES FOR THE 1982/83 SEASON

2.1. DESCRIPTION

The following gives a brief account of the trials and nurseries that were distributed by ICARDA, for the three food legumes, faba bean, lentil and kabuli chickpea, during 1982/83.

2.1.1. Adaptation Trials (AT)

The environmental conditions vary greatly both within and between the countries in which the three food legume species are grown. This diversity may hinder the improvement of the crop species by the inability to conduct sufficient breeder's trials in all the relevant countries. However, it may be possible to meaningfully group the different legume growing areas into a few agro-ecological zones. The identification of such zones is of major importance in breeding for wider adaptability, and would also allow ICARDA to serve the national programs better through the development and distribution of locally adapted materials.

Insufficient information is available on the relationship

between key agro-ecological variables and legume crop performance to be able to confidently predict such zones. In the absence of this information, it was felt that the best way to characterise the different environments is through the study of a uniform set of diverse genotypes grown in the main legume production areas over several years. This idea was first discussed at the 1978 regional food legume workshop and the first adaptation trials were distributed for 1978/79 season. The adaptation trials for lentils and faba beans were discontinued after conducting for 4 years, however, for chickpeas, 1982/83 season was the fifth year. Entries in the trial during 1982/83 season were same as in the previous season.

2.1.2. 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 the different countries.

The IYTs are replicated trials which test advanced materials that have previously shown above average performance. These trials permit an assessment of yield performance (G) across a range of environments (E) and provide an estimate of the relative size of G x E interactions in that growing season. They also allow 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- and small-seeded trials of lentils, faba beans and kabuli chickpeas during 1982/83.

2.1.3. 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 a basis on which genotypes can be advanced to the IYTs and provide national programs with the opportunity to practice selection in a greater range of material than provided in the IYTs. Like IYTs, the ISNs were also separated in large and small-seeded sets for faba beans and lentils.

2.1.4. International F_3 Trials (IF₃T)

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 bulk trials 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 trials 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 the different countries.

The F_3 Ts for lentils and kabuli chickpeas in 1982/83 season were developed separately for different major environmental conditions. Thus two trials each in lentil and chickpeas were distributed.

2.1.5. International Disease and Pest Nurseries (I-N)

The development of cultivars resistant to pathogens and pests 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 legume diseases and pests in the different areas. The International Disease and Pest Nurseries were formulated to rectify this situation. The aim of these nurseries is to test a relatively large number of genotypes, in replicated or unreplicated design, in a range of locations covering a number of countries. The nursery results thus furnish information on the incidence and severity of the disease/pest in differing geographic areas, and provide a means for the identification of resistant genotypes. These together should greatly assist the plant breeder in developing genotype that combines a heavy seed yield with a stable parasite resistance. The disease nursery available for distribution in the 1982/83 season was a Chickpea International Ascochyta Blight (CIABN). In addition, three other disease nurseries namely Faba Bean International Ascochyta Blight Nursery, Faba Bean International Rust Nursery, and Faba Bean International Chocolate Spot Nursery were distributed on a limited scale. The limited supply was due to shortage of seed of the genotypes included in these nurseries. A Faba Bean International Orobanche Nursery (FBION) and a Lentil International Orobanche Nursery (LION) were also distributed.

2.1.6. 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. During 1982/83 three trials were distributed. These included, Weed Control Trial (WCT), Fertility-cum-Inoculation Trial (FIT) and Date of Planting-cum-Plant Population Trial (DPPT). In addition, another trial namely Chickpea Iron Efficiency Trial, was also made available for the first time for the areas where the chickpea crop

shows iron deficiency.

2.2. DISTRIBUTION AND LIST OF COOPERATORS

In Table 2.2.1. is given a list of the trials and nurseries distributed from ICARDA to the different countries; in Table 2.2.2. a list of the cooperators, and in Table 2.2.3. details on some of the locations at which the trials were conducted. Weather conditions during the cropping season for some of the locations are given in Fig. 1. In total, 969 sets of trials were distributed to the cooperators. Data were returned on 537 of the trials and nurseries, representing 55 per cent of the number distributed.

2.3. DESIGN, ANALYSIS AND MANAGEMENT

2.3.1. Design and Analysis

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

Only the data on seed yield 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 (CP) given in the different tables were calculated using an error mean square (EMS) from the relevant analysis of variance. The EMS was also used to calculate the appropriate least significant difference (LSD), which was used to test whether a genotype's performance differed significantly from that of the control/local check. The LSD is not appropriate for testing differences between any pair of genotypes in a trial.

2.3.2. Management

For all except the agronomic trials it was emphasised 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 trial or nursery, observations were requested on plant stand (1-5; rating 1 = perfect), time to 50% flowering (days), plant height (cm) and 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

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

Table 2.2.1. Distribution of FLIP international trials and nurseries to the cooperators during 1982/83.

COUNTRY	C A T	C I Y T	C I Y T W	C I Y T L	C I S N	C I F 3 T A	C I F 3 T B	C I A B N	C D P P T	C F I T	C I E T	C W C T	F B I Y T L	F B I Y T S	F B I S N L	F B I S N S	F B I F 3 T	F B I F 3 T E	F D I O N	F B I A B N	F B I R N	F B I C S N	F B D P P T	F B F I T	F B W C T	L I Y T L	L I Y T S	L I S N L	L I S N S	L I S N E	L I S N T	L I F 3 T E	L I F 3 T N	L D P P T	L F I T	L W C T		
ALGERIA	2	4	3	3	1	2	-	3	1	2	2	4	1	-	1	1	1	-	1	1	1	1	1	2	2	4	1	3	1	2	3	2	-	-	1	2	3	
AFGHANISTAN	-	2	1	-	2	-	-	-	3	3	3	3	-	1	1	1	2	-	-	-	-	-	-	3	1	3	-	2	2	2	2	-	-	-	1	1	3	
ARGENTINA	1	2	1	2	1	-	-	-	1	1	-	1	1	1	1	1	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	1	1	1	
AUSTRALIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BANGLADESH	4	2	-	1	2	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	2	-	1	-	-	1	-		
BULGARIA	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BRAZIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BURMA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CANADA	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CHILE	2	1	1	4	2	1	-	-	-	-	-	-	1	1	2	-	1	1	-	-	-	-	-	-	-	-	3	-	2	-	1	-	1	-	-	-	-	
CHINA	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
COSTA RICA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CYPRUS	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CZECHOSLOVAKIA	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1	1	-	1	1	2	1	1	1	
EGYPT	2	2	2	2	2	-	2	1	-	2	1	2	2	2	2	2	2	3	2	-	1	1	-	2	5	2	2	2	2	2	2	2	1	1	2	2	2	2
ETHIOPIA	-	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	
FRANCE	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
GREECE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
WEST GERMANY	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HUNGARY	-	1	-	1	1	1	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
INDIA	1	2	2	1	2	-	1	2	2	2	-	1	1	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
IRAN	1	1	2	1	1	-	-	1	-	1	-	1	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ITALY	1	2	2	2	2	3	-	1	-	-	-	-	1	1	1	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
JORDAN	-	1	4	1	1	-	-	2	-	-	-	2	-	-	1	1	-	-	-	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-	-	-	2	
KENYA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LEBANON	-	1	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	
LIBYA	2	2	-	1	-	-	-	-	-	1	-	1	1	2	-	-	-	-	-	-	-	-	-	-	1	-	2	1	-	-	-	-	-	-	-	-	1	
MAURITIUS	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	
MALAWI	1	-	-	1	1	-	-	-	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MEXICO	2	1	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MOROCCO	1	2	6	2	-	1	-	3	-	-	-	2	1	1	1	1	-	1	1	-	-	-	-	2	2	2	2	3	1	2	1	2	1	-	2	-	-	
NEPAL	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
NIGERIA	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
OMAN	2	3	2	3	-	-	-	-	-	2	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PAKISTAN	4	1	9	1	6	-	4	11	1	5	1	8	2	1	2	1	-	-	-	-	-	-	-	-	-	-	-	8	1	5	10	1	2	3	-	2	5	
PERU	1	-	1	2	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	
POLAND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PORTUGAL	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHILIPPINES	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
QATAR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SAUDI ARABIA	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SPAIN	1	2	1	3	1	3	-	1	-	1	-	-	2	3	2	2	-	-	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-
SOMALIA	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SUDAN	-	2	2	-	-	-	-	-	1	1	-	1	1	2	-	-	-	1	1	1	-	-	-	1	3	2	-	2	-	2	4	-	-	-	-	-	-	
SYRIA	-	-	7	4	-	-	-	-	3	1	1	-	1	-	2	1	-	-	-	-	-	-	-	2	1	1	1	1	3	3	-	3	1	-	2	1	1	
TUNISIA	4	4	4	3	4	2	2	4	4	3	-	6	3	3	3	4	3	3	1	1	1	1	3	4	6	3	4	1	3	3	-	1	3	3	6	-	-	
TURKEY	-	1	1	-	1	1	-	1	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	2	2	1	1	-	2	1	-	1	-	-	
THAILAND	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
USA	4	3	2	4	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	
UK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
YEMEN A.R.	-	-	-	-	-	-	-	-	-	-	-	-	-																									

Table 2.2.2. List of cooperators for FLIP 1982/83 international nurseries.

ALGERIA

Dr L. Hachemi
IDGC
Rue Pasteur
B.P. 16
Al-Harrach
Algiers

AFGHANISTAN

Mr Mohd. Shafi Zaffar
President of Agricultural Research
Research Department
Ministry of Agri. & Irrigation
Kabul

ARGENTINA

Ing. Agr. Julio E. Luna
Jefe Agencia de Ext.
Rural Metan-Alem - 10
4440 Metan-Pcia de Salta

AUSTRALIA

Dr E.J. Knight
Agricultural Research Institute
Wagga Wagga
New South Wales - 2650

BANGLADESH

Dr S.Hussain Khan
Head of Plant Breeding Division
BARI, P.O.Box Chandana
Joydebpur - Dacca

Dr Kaul
Pulse Coordinator
BARI, P.O. Chandana
Joydebpur - Dacca

Dr M.A.Q. Shaikh
Head of Plant Genetics Division
Institute of Nuclear Agriculture
P.O.Box 4
Mymensingh

BULGARIA

Mr M.I. Mihov
Institute for Wheat and Sunflower
Near General Toshevo - 9520

BRAZIL

Mr Dulce Warwick
Plant Introduction
Parque Rural, C.P. 10.2372
CEP 70.000
Brasilia, DF

BURMA

Dr V. Santhanam
Team Leader
Crop Development Project
c/o UNDP P.O.Box 650
Rangoon

CANADA

Dr G. Rowland
Crop Development Center
University of Saskatchewan
Saskatoon S7N 0W0

Dr A.E. Slinkard
Crop Science Department
University of Saskatchewan
Saskatoon S7N 0W0

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

CHILE

Mr Oscar Paredes Carcamo
Estacion Experimental
Quilamapu (INIA)
Casilla 426
Chillan

Dr R.M. Vial
Director
Estacion Experimental
Sociedad Nacional de Agricultura
Tenderini 187
Casilla 40 - D
Santiago 1

Dr J.Aechlimann
Production Manager
ANASAC, Agrícola Nacional
S.A.C.e.l.
Almirante Pastine 300
Providencia, Santiago

Dr A. Krarup H.
Faculty of Agriculture
University Austral
Casilla 567, Valdivia

CHINA

Ms Lang Li Jiuan
Researcher of Faba Bean Breeding
Crop Research Institute
Zhejiang Academy of Agri. & Sci.
Hongzhu

Mr Zheng Zhuo-jie
Germplasm Resource Institute
The Chinese Academy of Agri. Sci.
Beijing

COSTA RICA

Ing. Agr. Mrs M. Alvarez Fernandez
Escuela de Ciencias Agrarias
Universidad Nacional
Apdo 86 Heredia

CYPRUS

Dr A. Hadjichristodoulou
Agricultural Research Institute
Ministry of Agri. & Natural Res.
Nicosia

CZECHOSLOVAKIA

Ing. J. Herceg
Jednotne rol'nicke druzstvo
920 55 Bojnicky

Ing. Teodor Sinsky
Vyskumny ustav rastlinnej výroby
Bratislavská cesta 122
921 68 Piestany

EGYPT

Dr A. Nassib
Head, Grain Legume
Section & Deputy Director
Field Crops Research Institute
Agricultural Research Center
Giza

ETHIOPIA

Mr Geletu Bejiga
Pulse Section
Addis Ababa University
P.O.Box 32
Debre Zeit

FRANCE

Dr J. Wery
Chaire de Phytotechnic
Ecole Nationale Supérieure Agro-
nomique, 34060 Montpellier Cedex

GREECE

Dr E. Stylopoulous
Director, Institute for Fodder
Crop, Larissa

W. GERMANY

Dr E. Kittlitz
Universitat Hohenheim
(720), Landessaatzuchtanstalt
D-7000 Stuttgart 70
Garbenstr. 9

Mr F. Weigand
c/o Dr H. Weltzien
Institut fur Pflanzen Krankheiten
Nussallee - 9
53 Bonn 1

HUNGARY

Dr L. Holly
Deputy Director
Research Centre for Agrobotany
I.P.P.Q.
H-2766 Tapioszele

INDIA

Dr B. Sharma
Senior Scientist
Division of Genetics
I.A.R.I.
New Delhi - 110 012

Dr A.S. Tiwari
Senior Scientist
Oilseeds & Pulses Project
Agricultural Research Institute
and College
Gwalior - 474 002 (M.P.)

Dr P.N. Bahl
Division of Genetics
I.A.R.I.
New Delhi - 12

Dr K.Sen Gupta
Pulses and Oilseed Res. Station
Berhampur - 742101
District Murshidabad
West Bengal

Dr B.S. Dahiya
Gram Breeder
Department of Plant Breeding
Haryana Agricultural University
Hissar, 125004

Dr C. Saraf
Agronomist
Division of Agronomy
I.A.R.I.
New Delhi - 12

IRAN

Dr A. Sarafi
Director of Pulse Project
Agronomy Department
College of Agriculture
University of Tehran
Karaj

Dr E. Bigdeli
Director General
Seed & Plant Improvement Institute
Ministry of Agric. & Rural Dev.
Shahindasht Road, Karaj
Tehran

ITALY

Dr F. Bonciarelli
Istituto di Agron. Generale
Coltivazioni Erbacee
Universita degli Studi di Perugia
Borgo XX Giugno, 74
06100 Perugia

Prof. L.M. Monti
Cattedra di Miglioramento Genetico
Facolta de Agraria
Istituto di Agronomia
Via dell'Universita
100-80055 Portici (Na)
Napoli

Dr A. Filipetti
Universita di Bari
Istituto di Miglioramento
Genetico delle Plante Agrarie
Via Amendola, 165
70126, Bari

Dr L. Rossi
Centro di Studi
Nucleari della Cabaccia
S. Maria di Galeria
00060 Rome

JORDAN

Dr Nasri Haddad
Faculty of Agriculture
University of Jordan
Amman

KENYA

Dr Abdul Shakoor
Dryland Farming Research &
Development Project
P.O.Box 340
Machakos

LEBANON

Dr M. Solh
College of Agriculture
A.U.B.
Beirut

LIBYA

Dr F.M. Choudhry
Kufra Production Project
P.O.Box 6324
Bengazi

Dr Abu Baker Maddur
The Director General
Agricultural Research Center
P.O.Box 2480
Tripoli

MAURITIUS

Mr A.L. Owadally
Ministry of Agriculture
Natural Resources & Environment
Division of Agronomy
Reduit

MALAWI

Mr C.S.M. Chanika
Food Legume Agronomist
Officer-in-Charge
Chitedze Agri. Res. Station
P.O.Box 158
Lilongwe

MEXICO

Ing. Roza M. Gomez Garza
Mejorador de Garbanzo
INIA, CIAPAN
Apartado Postal 356
800 00 Culiacan
Sinalva

Ing. A. Echegaray
Hidalgo I.O.
Ameca, Jal. 46600
Apdo Postal 10

MOROCCO

Dr L.Faraj
Directeur INRA
B.P. 415
Rabat

Mr A.A. El-Hassani
Pathologist
Laboratoire de Phytopathologie
Phytiatrie
INRA
B.P. 415
Rabat

Mr A. Bamouh
Institut Agronomique et Veterinaire
Hassan II, Department d'Agronomie
B.P. 704
Agbal, Rabat

NEPAL

Mr R.K. Neupane
Asstt Agronomist
Khumaltar, Lalitpur
P.O.Box 1336
Kathmandu

Mrs J. Ranjit
Khumaltar, Lalitpur
P.O.Box 1336
Kathmandu

NIGERIA

Dr L.K.Fussell
Millet Agronomist
ICRISAT - Centre Sahelien
B.P. 12404, Niamey

OMAN

Dr A.M. Mjeni
Head of Agriculture Research
Ministry of Agri. & Fisheries
P.O.Box 467
Muscat

PAKISTAN

Mr B.A. Malik
Pulse Coordinator
PARC, Nacional Agri. Res. Centre
P.O. National Health Laboratories
Islamabad

Mr M. Siddiq
Director General
Agricultural Research Institute
Tarnab, Peshawar
N.W.F.P.

Dr M. Tufail
Director Pulses
Ayub Agricultural Res. Institute
Faisalabad

Mr P. Whitemann
PAK 80/009
c/o FAO Office
P.O.Box 1476
Islamabad

Mr J. Lockman
Agricultural Project
Technical Services Association
23-2 Race Course Road
Lahore 3

PERU

Dr A. Cerrate V.
Grain Legume Leader
Universidad Nacional Agraria
La Molina, Apartado 456
Lima

Ing. F. Mayta
Prof. Univ. Nacional Agraria
Apartado 456
La Molina
Lima

POLAND

Dr J. Bochniarz
I.U.N.G. (Institute of Soil Sci. &
Cultivation of Plants)
24 - 100 Pulawy

PORTUGAL

Dr S. Bock
c/o Dr H. Seidel
Direccao Regional de Agricultura do
Algarve, Projecto de Horticultura
Apartado 282
Patac'ao, 8000 Faro

PHILIPPINES

Mr C. Ancheta
Bureau of Plant Industry
Bagnio Experiment Station
P.O. Bagnio City

QATAR

Dr O.H. Khalil
Field Crops Expert
Ministry of Industry & Agri.
Dept. of Agric. & Water Res.
P.O.Box 1967
Doha

SAUDI ARABIA

Dr Zeid I. Jowairah
Director General of Research
Ministry of Agriculture and Water
Riyadh

SPAIN

Dr Juan Fernandez Perez
Semillas Pacifico S.A.
Prada de San Roque
Apartado 11, Arahal
Sevilla

Mr J.R. Abad
Productora Andaluza de Semillas
S.A., Carretera N-IV Madnd-Cadiz
Km. 573, Apartado Correos 42
Los Palacios
Sevilla

Dr T. Moreno (Mrs.)
Instituto Nacional de Investi-
gaciones Agrarias,
Finca "ALAMEDA DEL OBISPO"
Apartado 240
Cordoba 14071

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

SOMALIA

Project Director
Bay Region
Agricultural Development Project
P.O.Box 2971
Magadisho

SUDAN

Dr Salih H. Salih
Hudeiba Research Station
P.O.Box 31
Ed-Damer

Dr Sami O. Freiguon
University of Gezira
Faculty of Agricultural Science
P.O.Box 20
Wad Medani

SYRIA

Dr L.R. Moursi
Director
Plant Studies Division
ACSAD
P.O.Box 2440
Damascus

Mr K. El-Arab
Head, Field Crops Dept.
Agricultural and Scientific Res.
Douma - Damascus

THAILAND

Dr Soontorn Duangploy
Leader, Legume Breeding Project
Kasetsart University
College of Agriculture
Department of Agronomy
Bangken, Bagkok - 9

TUNISIA

Mr Habib Halila
INRAT
2080 Ariana
Tunis

Mr Ali Haddad
Office des Cereales
Service Rotation
Direction Technique

TURKEY

Dr A. Ceylan
EGE University
Ziraat Facultesi
Tarla Bitkileri Yestirme Ve Islahi
Bolumu, Bornova

Prof. Didar Eser
Department of Field Crops
Faculty of Agriculture
University of Ankara
Ankara

UK

Dr D. Bond
Plant Breeding Institute
Maris Lane
Trumpington Road
Cambridge CB2 2LQ

USA

Dr F. Muehlbauer
Research Geneticist
Grass and Legume Breeding &
Production, Johnson Hall
Rm 215, Washington State University
Pullman, W.A. 99164

Dr Arvid Boe
Dept. of Crop Science
South Dakota State University
Brookings
South Dakota 57007

Dr K. Foster
Department of Agronomy & Range Sci.
University of California
San Francisco
California 95616

YEMEN A.R.

Dr Ali E. Kambal
Maize, Millet & Sorghum Expert
Ministry of Agric./UNDP
(INTBAFRAD & FAO)
Agricultural Research Service
P.O.Box 5788
Taiz

WEST INDIES

Dr L. Singh
Head of Unit
Caribbean Agri. Res. and
Development Institute
P.O.Box 766
Friars Hill
St. John's Antigua

shattering), time to maturity (days), branching (1-5; 1 = very few branches) and virus (1-5; 1 = free of virus).

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

Table 2.2.3. Latitude, longitude, altitude and rainfall for some of the international nursery locations for 1982/83 season.

COUNTRY	LOCATION	LATITUDE	LONGITUDE	ALTITUDE (m)	RAINFALL (mm)
ALGERIA	Setif	36° 09' N	5° 21' E	1000	228
ALGERIA	Sidi Bel Abbes	35° 11' W	0° 38' W	469	283
AFGHANISTAN	Darulaman	34° 27' N	69° 08' E	1825	76
ARGENTINA	Catamarca	28° 29' S	65° 44' W	524	565
ARGENTINA	Mendoza	33° 44' S	69° 07' W	940	363
ARGENTINA	San Pedro	33° 41' S	59° 41' W	28	688
AUSTRALIA	Wagga Wagga	35° 00' S	147° 00' E	190	353
BANGLADESH	Mymensingh	24° 46' N	90° 24' E	20	225
BULGARIA	Toshevo	43° 40' N	28° 02' E	236	356
BRAZIL	Santa Maria	29° 41' S	3° 34' W	95	646
CANADA	Saskatoon	52° 10' N	106° 41' W	500	305
CHILE	Graneros	34° 00' N	70° 00' E	479	189
CHINA	Zhejiang	30° 18' N	120° 10' E	4.6	638
CYPRUS	Laxia	35° 04' N	33° 20' E	150	191
EGYPT	Giza	30° 45' N	31° 00' E	25	
EGYPT	Sakha	30° 45' N	31° 00' E	6	116
EGYPT	Sids	31° 00' N	23° 30' E	30	
ETHIOPIA	Debre Zeit	8° 50' N	38° 58' E	1900	303
FRANCE	Montpellier	43° 37' N	1° 33' E	49	517
GREECE	Larissa	39° 70' N	22° 05' E	70	327
WEST GERMANY	Bonn	50° 44' N	7° 06' E	60	417
WEST GERMANY	Stuttgart	49° 00' N	9° 00' E	420	716
HUNGARY	Tapioszele	47° 22' N	19° 53' E	110	105
INDIA	New Delhi	28° 00' N	77° 00' E	227	72
IRAN	Karaj	48° 35' N	51° 00' E	1321	281
ITALY	Perugia	42° 59' N	12° 35' W	250	604
JORDAN	Marow	32° 33' N	35° 51' E	580	533
JORDAN	Ramtha	32° 34' N	36° 01' E	520	257

COUNTRY	LOCATION	LATITUDE	LONGITUDE	ALTITUDE (m)	RAINFALL (mm)
LEBANON	Terbol	33° 49, N	35° 59, E	890	
LIBYA	El-Marj	32° 28, N	20° 11, E	310	324
LIBYA	Kufra	25° 00, N	23° 00, E	415	
MEXICO	Mexico	29° 36, N	107° 27, W	37	200
MOROCCO	Marchouch	33° 33, N	6° 42, W	450	345
NEPAL	Kathmandu	27° 40, N	85° 20, E	1360	209
OMAN	Muscat	23° 37, N	38° 38, E		
PAKISTAN	Dokri	37° 50, N	68° 10, E		112
PAKISTAN	Faisalabad	31° 26, N	73° 60, E	605	186
PAKISTAN	Islamabad	33° 39, N	73° 50, E	683	
PAKISTAN	Lahore	31° 19, N	74° 05, E	225	227
PERU	La Molina	10° 20, S	77° 10, W	3000	510
PERU	San Lorenzo	11° 45, S	75° 30, W	3400	677
POLAND	Pulawy	51° 25, N	21° 58, E	142	293
PORTUGAL	Pataca'o	37° 01, N	7° 53, W	36	141
QATAR	Rawdat Harma	25° 48, N	51° 18, E	50	194
SAUDI ARABIA	Riyadh	24° 42, N	46° 44, E	620	
SPAIN	Cordoba	37° 51, N	4° 51, W	110	291
SPAIN	Sevilla	37° 09, N	5° 54, W	7	252
SUDAN	Hudeiba	17° 34, N	33° 56, E	351	28
SYRIA	Heimo	37° 3, N	41° 9, E	451	339
SYRIA	Homs	34° 45, N	36° 43, E	485	482
SYRIA	Izra'a	32° 50, N	36° 15, E	575	396
SYRIA	Lattakia	35° 40, N	35° 40, E	7	647
SYRIA	Tel Hadya	36° 40, N	37° 20, E	392	324
TUNISIA	Tunis	36° 50, N	10° 13, E	165	535
TURKEY	Ankara	39° 55, N	32° 40, E	902	342
TURKEY	Izmir	38° 35, N	27° 04, E	10	
USA	Highmore	44° 00, N	99° 00, W	583	358
USA	Pullman	46° 00, N	118° 00, W	650	594
YEMEN A.R.	Sana'a	14° 42, N	44° 20, E	2315	242

3. CHICKPEA INTERNATIONAL TRIALS AND NURSERIES

Twelve Chickpea international trials and nurseries were available to the cooperators in the 1982/83 season. These mainly included breeding nurseries and trials, disease nursery and agronomic trials.

3.1. CHICKPEA ADAPTATION TRIAL (CAT)

Material

The Chickpea Adaptation Trial comprised 16 entries, 9 kabuli and 7 desi types. Most of these entries are the land races and are widely grown in different countries of the region. These land races have been chosen with the idea that these may be diverse and may help in classification of the countries into agro-ecological zones.

Methods and Management

The material was suggested to be sown in a randomised complete block design with four replications. The recommended plot size was four rows, each 4 m long with inter- and intra row spacings of 30 cm and 10 cm, respectively.

Forty nine sets of the trial were sent to different cooperators in 29 countries. The results were, however, received for 31 sets and were analysed. The agronomic data provided by the cooperators are presented in Table 3.1.1.

Results and Discussion

The data on time to flowering are given in Table 3.1.2. The average values over all the locations ranged from 63 to 85 days. The entries namely ICC 4948 and ICC 10136 (from India), ILC 1934 (from Iran), ILC 3256 (from Cyprus), ILC 1922 (from Morocco) and ILC 1932 (from Jordan), were, in general, late in flowering. However, ICC 5810 from India was the earliest to flower (in 63 days). The other entries which took comparatively less time to flower were ICC 4918, ICC 11529, and ILC 519, ICC 5003, ICC 11524 and were from India or Egypt. In general, the lines originating in the Mediterranean region were late in flowering.

The average time to maturity (Table 3.1.3) overall the locations ranged from 120 days for ICC 5810 (India) to 132 days for ILC 1934 (Iran). The line ICC 10136 which took maximum time to flower was not the latest in maturity. In general, the lines from India were early in maturity. The location mean data further revealed that at Karak in Pakistan and Tel Hadya winter in Syria, the entries took maximum time to mature (177 days) and the other late maturing locations included, Faridkot, Pantnagar and Ludhiana in northern India. However, Karaj in Iran and Tel Hadya (spring) in Syria were the early maturing locations taking 70 and 89 days, respectively.

Table 3.1.1. Agronomic data for different locations in the CAT during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide/ Fungicide/ Herbicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Setif	1.5.1983	146	20				
BANGLADESH	Jamalpur	22.11.1982	119				2	
IRAN	Karaj	12.4.1983	73	100			6	Metasystox
ITALY	Sicilia	12.2.1983	-					
LEBANON	Terbol	1.4.1983	104				2	
MEXICO	Santo Domingo	14.12.1982	129	90			2	Orthene, Parathion, Lannate
PERU	La Molina	22.12.1982	-				3	Sevin
SAUDI ARABIA	Al-Gassim	28.11.1982	142	167	167		12	
SPAIN	Sevilla	25.3.1983	107	24	50			
SYRIA	Tel Hadya -W	11.12.1982	181		50			
SYRIA	Tel Hadya -S	7.3.1983	90		50			
USA	Pullman	20.4.1983	163					Imidan, Cygon

Table 3.1.2. Time to flowering (days) of entries at different locations in the CAT during 1982/83.

ENTRY	ORIGIN	ALGERIA	BANGLADESH		COSTA RICA	INDIA								
		Setif	Jamalpur	Mymensingh	Heridia	Anand	Faridkot	Faizabad	Gwalior	HAU-Hissar	Junagarh	Kanpur	Ludhiana	Pantnagar
ICC 5810	India	89	57	52	59	45	50	91	54	100	40	81	88	75
ICC 4918	India	95	88	86	65	56	71	95	57	101	47	79	87	74
ICC 11524	ICRISAT	95	53	85	64	65	106	93	62	106	56	75	95	89
ICC 11529	ICRISAT	93	53	88	63	57	75	93	59	105	47	76	91	75
ICC 5003	India	96	54	88	61	63	98	98	69	108	54	76	96	91
ICC 4948	India	99	70	88	66	78	103	98	79	109	71	77	102	93
ICC 10136	India	97	79	88	68	78	106	98	76	110	72	77	101	94
ILC 1919	India	91	56	83	65	71	95	92	64	104	58	89	92	90
ILC 3256	Cyprus	93	79	89	66	80	105	96	78	111	60	89	92	95
ILC 519	Egypt	92	51	85	65	60	88	91	61	106	51	80	93	93
ILC 482	Turkey	89	60	83	65	74	71	93	64	107	68	87	103	93
ILC 1934	Iran	100	60	88	67	77	104	96	78	110	67	86	102	92
ILC 1932	Jordan	94	68	88	64	79	101	94	74	111	60	87	105	93
ILC 1922	Morocco	92	68	86	65	84	107	97	81	109	68	90	106	94
ILC 1929	Syria	96	54	88	64	72	80	96	66	109	59	89	93	94
ILC 1931	Turkey	92	81	86	63	77	92	93	64	109	59	85	87	90
Location mean		94	64	85	64	70	91	95	68	107	59	83	96	89

Cont'd. ...

Table 3.1.2. Cont'd. ...

ENTRY	ORIGIN	INDIA					IRAN	ITALY	LEBANON	MEXICO	PAKISTAN	SAUDI ARABIA	SPAIN	SYRIA		THAILAND	USA	MEAN
		Patancheru	Rahuri	Raipur	Ranchi	Sriganganagar	Karak	Sicilia	Terbol	Santo Domingo	Karak	Al-Gassim	Sevilla	TH-Winter	TH-Spring	Suwan	Pullman	
ICC 5810	India	30	42	57	47	72	33	82	51	49	61	93	51	129	52	40	66	63
ICC 4918	India	46	49	71	73	80	35	79	60	70	98	97	60	134	61	56	68	74
ICC 11524	ICRISAT	55	64	78	88	90	37	81	59	63	104	97	61	131	61	60	67	77
ICC 11529	ICRISAT	41	46	77	72	75	36	80	58	57	102	91	55	134	57	45	67	71
ICC 5003	India	54	54	80	90	103	35	82	55	57	113	90	56	132	54	45	65	76
ICC 4948	India	65	72	86	96	103	40	84	62	75	120	109	65	134	63	68	67	84
ICC 10136	India	60	71	87	91	104	40	87	62	77	117	112	65	138	61	69	68	85
ILC 1919	India	58	68	82	92	84	36	86	60	66	108	116	59	130	59	62	64	79
ILC 3256	Cyprus	62	72	81	95	104	36	80	61	67	114	114	63	134	59	73	67	83
ILC 519	Egypt	47	56	80	71	84	35	81	60	57	106	99	58	134	57	56	65	75
ILC 482	Turkey	69	70	84	91	102	35	78	60	61	105	96	60	131	56	67	65	79
ILC 1934	Iran	69	69	84	99	98	39	82	62	73	125	111	64	135	60	70	68	84
ILC 1932	Jordan	62	71	78	91	105	37	79	59	69	111	101	60	132	57	70	65	82
ILC 1922	Morocco	66	70	84	95	103	37	82	61	67	110	101	62	131	58	68	66	83
ILC 1929	Syria	59	62	78	96	97	35	79	60	60	113	100	62	134	56	69	66	79
ILC 1931	Turkey	58	64	74	87	95	37	79	59	59	109	98	61	130	58	63	66	78
Location mean		56	62	79	86	94	36	81	59	64	107	102	60	133	58	61	66	

Table 3.1.3. Time to maturity (days) of entries at different locations in the CAT during 1982/83.

ENTRY	ALGERIA	BANGLADESH		COSTA RICA	INDIA									
	Setif	Jamalpur	Mymensingh	Heridia	Anand	Faridkot	Gwalior	Junagarh	Ludhiana	Pantnagar	Patancheru	Rahuri	Raipur	Ranchi
ICC 5810	134	119	135	97	98	162	137	90	152	158	82	114	98	137
ICC 4918	143	119	135	113	104	162	140	102	153	160	96	118	119	137
ICC 11524	136	119	134	114	112	159	139	108	152	158	113	125	120	137
ICC 11529	137	115	136	111	103	162	138	104	151	159	93	122	115	137
ICC 5003	137	119	136	103	107	162	138	108	154	158	100	120	118	138
ICC 4948	122	119	135	118	114	162	138	117	156	158	119	133	130	139
ICC 10136	139	119	136	94	109	165	140	114	155	162	113	129	125	139
ILC 1919	137	119	138	119	111	164	137	114	155	159	109	132	125	138
ILC 3256	137	119	137	124	116	163	146	117	152	158	118	134	130	139
ILC 519	139	115	137	122	114	161	139	113	153	162	112	123	130	137
ILC 482	139	119	137	116	116	165	140	115	151	164	117	126	130	138
ILC 1934	141	119	138	126	117	163	141	118	155	161	122	127	130	139
ILC 1932	139	119	137	120	115	162	143	116	152	160	119	125	131	138
ILC 1922	142	119	137	122	115	162	141	116	153	162	120	130	130	139
ILC 1929	125	118	135	122	114	158	144	115	154	159	115	126	130	139
ILC 1931	146	119	137	120	117	164	142	112	156	161	116	127	126	137
Location mean	137	118	136	115	111	162	140	111	153	160	110	126	124	138

Cont'd. ...

Table 3.1.3. Cont'd. ...

ENTRY	IRAN	LEBANON	MEXICO	PAKISTAN	SAUDI ARABIA	SPAIN	SYRIA		THAILAND	USA	MEAN
	Karaj	Terbol	Santo Domingo	Karak	Al-Gassim	Sevilla	TH-Winter	TH-Spring	Suwan	Pullman	
ICC 5810	66	99	116	157	138	90	176	88	91	140	120
ICC 4918	70	100	114	179	141	100	178	90	109	136	126
ICC 11524	69	99	115	176	139	100	176	88	110	136	126
ICC 11529	70	99	114	176	140	100	177	90	111	143	125
ICC 5003	66	99	114	177	141	102	175	89	105	141	125
ICC 4948	73	101	116	178	141	105	176	90	113	137	129
ICC 10136	69	101	116	179	142	100	180	90	114	134	128
ILC 1919	69	100	114	175	140	91	176	89	110	141	128
ILC 3256	69	100	116	180	141	101	178	90	118	138	130
ILC 519	70	98	118	179	141	103	177	89	116	137	129
ILC 482	73	100	118	177	140	103	176	90	113	137	129
ILC 1934	73	104	129	181	141	107	181	89	117	139	132
ILC 1932	71	99	118	180	141	101	177	89	113	163	130
ILC 1922	71	101	118	178	141	102	178	89	113	138	130
ILC 1929	69	100	116	178	142	102	178	90	113	140	128
ILC 1931	71	98	116	178	142	106	177	90	110	138	129
Location mean	70	100	117	177	141	101	177	89	111	140	

The data on plant height (Table 3.1.4) revealed that plant height was least at Setif in Algeria (19 cm) and was followed by that of Karaj in Iran (23 cm), Tel Hadya - spring in Syria (24 cm), Pullman in USA (25 cm) and Anand in India (26 cm). At other locations like Mymensingh in Bangladesh, HAU Hissar and Faridkot in India, the plant heights were more. Further, it is evident that in general, the plant height was less in Indian types as compared to Mediterranean types. The entry ILC 519 from Egypt was the tallest on the basis of average over locations.

The location means for seed yield (Table 3.1.5) revealed that the highest yield was recorded at HAU Hissar in India (3289 kg/ha), and the other high yielding locations included Tel Hadya (winter sowing) in Syria (2627 kg/ha); Santo Domingo in Mexico (2283 kg/ha); Gwalior (2029 kg/ha), Kanpur (1878 kg/ha) and Pantnagar (1838 kg/ha) in India; Terbol in Lebanon (1814 kg/ha) and Pullman in USA (1760 kg/ha). However, Ranchi in India (279 kg/ha), Suwan in Thailand (285 kg/ha); Karak in Pakistan (318 kg/ha); Mymensingh in Bangladesh (405 kg/ha), and Setif in Algeria (480 kg/ha) were the poor yielding locations.

It is also evident that overall mean yield of desi lines is much higher (1385 kg/ha) than the kabuli lines (1144 kg/ha). The possible reason for the high yields of these lines could be that the locations reporting the CAT results were probably more from India where desi types have been developed and are more adapted. The perusal of Table 3.1.6 revealed that ICC 5003 appeared more frequently among the five heaviest yielders and was followed by ICC 10136, ICC 11524, ICC 4948 and ILC 1919, and were more adaptable than others. The correlations between seed yield (Table 3.1.7) for different locations revealed that Tel Hadya-spring was negatively correlated with most of the locations namely HAU Hissar, Junagarh, Kanpur, Patancheru, Rahuri, Ranchi and Raipur in India; Santo Domingo in Mexico; and Suwan in Thailand. The correlations of Tel Hadya spring with Setif in Algeria, Karaj in Iran, Sicilia in Italy and Tel Hadya-winter were, however, significant and positive. The correlations, in general, therefore, revealed that the performance of most of the materials in Indian environments were just the reverse of those at Tel Hadya during spring and at some other Middle East environments.

3.2. CHICKPEA INTERNATIONAL YIELD TRIAL (CIYT)

Material

The Chickpea International Yield Trial (CIYT) comprised 23 test entries and one check to be supplied by the cooperator. Among these 11 entries were taken from the germplasm maintained at ICARDA and 12 entries from the advanced breeding lines developed at ICARDA. All these lines were tested for their superior performance at least once either in local, regional or international trials. Cooperators were

Table 3.1.4. Plant height (cm) of entries at different locations in the CAT during 1982/83.

ENTRY	ALGERIA	BANGLADESH		COSTA RICA	INDIA									
	Setif	Jamalpur	Mymensingh	Heridia	Anand	Faridkot	Faizabad	Gwalior	HAU-Hissar	Junagarh	Ludhiana	Pantnagar	Patancheru	Rahuri
ICC 5810	26	30	108	35	19	63	37	50	72	38	50	62	26	29
ICC 4918	15	34	76	34	29	53	31	38	67	32	37	59	25	22
ICC 11524	19	32	71	31	24	58	37	38	87	46	45	50	30	24
ICC 11529	23	29	85	35	24	63	39	44	58	41	43	64	28	29
ICC 5003	13	35	73	32	27	63	36	43	68	42	44	54	33	29
ICC 4948	22	47	70	34	29	63	38	38	75	51	45	53	33	30
ICC 10136	14	34	63	32	25	56	31	38	69	49	37	49	30	26
ILC 1919	16	34	82	32	22	64	35	35	95	49	43	52	33	25
ILC 3256	17	31	94	40	25	68	35	43	69	55	50	61	34	36
ILC 519	19	29	89	43	27	76	43	54	80	55	47	64	39	32
ILC 482	23	28	93	39	29	68	41	44	65	61	46	55	38	39
ILC 1934	22	32	94	46	25	60	38	39	54	59	47	57	40	30
ILC 1932	17	33	89	38	28	59	44	40	72	50	49	71	33	32
ILC 1922	18	32	88	42	26	63	45	43	87	54	54	76	36	35
ILC 1929	14	30	92	38	23	68	43	44	54	52	47	66	33	31
ILC 1931	20	29	91	44	25	69	33	45	71	54	45	58	39	34
Location mean 19		32	85	37	26	64	38	42	71	49	46	59	33	30

Cont'd. ...

Table 3.1.4. Cont'd. ...

ENTRY	INDIA		IRAN	ITALY	LEBANON	MEXICO	PAKISTAN	SAUDI ARABIA	SPAIN	SYRIA		THAILAND	USA	MEAN
	Raipur	Ranchi	Karaj	Sicilia	Terbol	Santo Domingo	Karak	Al-Gassim	Sevilla	TH-Winter	TH-Spring	Suwan	Pullman	
ICC 5810	50	75	24	33	39	50	62	56	31	31	25	24	22	43
ICC 4918	40	47	29	23	31	46	41	34	28	34	24	35	25	37
ICC 11524	42	45	15	25	30	39	38	36	25	32	21	35	21	37
ICC 11529	48	48	27	28	29	44	39	40	29	37	25	35	27	39
ICC 5003	46	48	18	27	29	40	38	38	26	33	18	27	22	37
ICC 4948	46	47	24	26	30	44	34	35	27	29	21	36	24	39
ICC 10136	42	45	17	22	28	37	29	29	25	24	19	31	21	34
ILC 1919	42	43	26	22	31	46	40	41	25	35	22	46	22	39
ILC 3256	54	52	19	29	33	55	46	49	31	37	26	35	22	42
ILC 519	55	51	25	34	37	57	46	52	33	42	28	47	29	46
ILC 482	57	54	25	32	33	53	49	43	32	38	25	37	29	44
ILC 1934	51	63	25	33	37	66	55	50	36	41	28	40	37	45
ILC 1932	56	51	19	28	33	52	46	45	28	38	24	35	24	42
ILC 1922	51	56	23	30	35	55	47	50	32	40	28	38	27	45
ILC 1929	51	49	23	30	33	51	46	48	29	35	25	34	24	41
ILC 1931	50	54	27	29	33	60	49	48	30	41	24	37	29	43
Location mean	49	52	23	28	33	50	44	43	29	35	24	36	25	

Table 3.1.5. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the CAT during 1982/83.

ENTRY	ALGERIA		BANGLADESH				COSTA RICA				INDIA																			
	Self		Jamalpur		Hymensingh		Heridia		Anand		Faridkot		Faizabad		Gwalior		HAU-Hissar		Junagarh		Kanpur		Ludhiana		Pantnagar		Patancheru		Rahuri	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ICC 5810	346	16	696	6	209	14	1125	16	1088	12	650	5	370	16	1208	16	1095	14	1562	13	1945	6	119	16	873	16	821	4	1625	2
ICC 4918	427	11	849	2	416	9	1290	10	1088	12	608	10	1016	9	1917	11	2905	9	2973	2	1783	11	405	11	2500	3	1047	2	1565	4
ICC 11524	451	8	667	9	522	6	1450	6	2014	4	335	13	1794	2	2560	1	5714	2	2928	3	1875	10	720	6	2599	2	488	8	1214	6
ICC 11529	578	3	678	8	159	16	1624	3	1620	6	650	5	968	10	2423	3	4071	6	2222	7	2037	5	539	7	1726	9	857	3	1973	1
ICC 5003	391	14	741	3	780	1	1496	4	2083	1	650	5	1500	4	2494	2	4619	5	2703	4	2135	4	1089	1	2817	1	1119	1	1593	3
ICC 4948	411	12	616	14	580	3	1267	11	2037	3	328	14	1603	3	2351	6	5619	3	3018	1	2523	1	881	5	2381	5	571	7	1173	7
ICC 10136	349	15	689	7	567	4	1473	5	2083	1	1310	2	1889	1	2369	5	6333	1	2402	5	2246	3	1071	3	2440	4	738	5	1458	5
ILC 1919	435	10	643	10	523	5	1229	13	1481	7	619	9	1333	5	2423	3	5071	4	2282	6	2292	2	1089	1	1786	8	631	6	1088	9
ILC 3256	453	7	642	11	228	13	1209	14	1296	8	675	4	762	12	1595	14	1071	15	1697	12	1482	15	369	13	1349	13	298	14	744	14
ILC 519	406	13	638	13	444	7	1744	1	625	15	238	16	443	15	1685	13	1702	12	2042	9	1621	13	393	12	1567	11	393	11	679	15
ILC 482	445	9	584	16	639	2	1705	2	1157	10	1730	1	794	11	1851	12	2643	10	1231	16	1945	6	464	9	2044	6	200	15	667	16
ILC 1934	604	2	697	5	167	15	1359	9	602	16	278	15	1095	8	2190	7	1929	11	1441	15	1597	14	955	4	1825	7	143	16	1095	8
ILC 1932	555	4	727	4	276	11	1258	12	1829	5	386	12	1206	7	2048	8	3524	8	1479	14	1922	9	357	14	1607	10	440	9	833	12
ILC 1922	544	6	867	1	428	8	1418	7	1181	9	650	5	1254	6	1923	10	3905	7	2207	8	1713	12	476	8	1488	12	428	10	1077	10
ILC 1929	549	5	639	12	309	10	1140	15	1134	11	441	11	762	12	1946	9	1000	16	2012	10	1945	6	440	10	1091	15	309	13	796	13
ILC 1931	737	1	605	15	228	12	1411	8	97	14	854	3	651	14	1488	15	1417	13	1824	11	995	16	244	15	1310	14	345	12	960	11
Location mean	480		686		405		1387		1393		650		1090		2029		3289		2127		1878		601		1838		552		1159	
C.V.%	21.9		16.8		32.7		29.8		42.9		53.3		30.7		13.8		39.2		21.7		35.5		36.5		32.1		36.2		5.7	
S.E.	52.7		66.5		76.4		206.8		298.6		200.0		192.9		139.9		644.9		266.7		1333.8		109.7		295.2		99.9		33.1	
L.S.D. 5%	150		189		217		589		850		569		549		398		1836		759		3799		312		841		284		94	

Cont'd. ...

Cont'd. ...

Table 3.1.5. Cont'd. ...

ENTRY	INDIA						IRAN		ITALY		LEBANON		MEXICO		PAKISTAN		SAUDI ARABIA		SPAIN		SYRIA				THAILAND		USA		MEAN	
	Raipur		Ranchi		Sriganaganagar		Kara		Sicilia		Terbol		Santo Domingo		Karak		Al-Gassim		Sevilla		TH-Winter		TH-Spring		Suwan		Pullman			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ICC 5810	1325	9	280	6	579	16	714	15	1260	3	1758	11	3232	2	250	11	657	8	477	16	1773	16	505	16	209	9	954	16	955	16
ICC 4918	1381	7	226	8	1389	9	934	9	899	11	1984	2	3065	3	214	13	1011	3	868	9	2708	9	924	11	345	7	2023	5	1337	7
ICC 11524	1685	1	464	2	1690	7	1124	3	907	10	1768	10	2935	5	537	1	626	11	569	13	2361	12	674	13	501	3	1657	12	1477	3
ICC 11529	1321	10	333	5	1412	8	1181	2	1057	8	1726	13	3012	4	328	8	657	8	1313	3	2355	13	1023	10	112	15	1387	5	1357	6
ICC 5003	1530	3	351	4	1759	5	757	14	1157	6	2038	1	2628	7	396	3	698	6	1361	6	3154	2	871	12	352	5	1777	9	1553	1
ICC 4948	1452	6	405	3	2523	2	836	13	657	16	1775	9	2661	6	182	14	667	7	1055	6	1861	15	554	15	668	1	2130	1	1475	4
ICC 10136	1637	2	1012	1	2639	1	426	16	773	14	1755	12	2405	8	365	5	730	5	943	7	1896	14	651	14	515	2	1480	14	1539	2
ILC 1919	1482	4	232	7	1829	4	941	7	723	15	1801	8	3429	1	328	8	1345	1	593	12	2655	10	1073	8	397	4	2071	3	1442	5
ILC 3256	688	15	107	16	1134	12	877	10	1159	5	1881	5	1321	15	266	10	459	14	1434	1	3168	1	1293	3	182	10	1693	11	1018	14
ILC 519	804	13	131	12	625	15	845	12	878	13	1681	14	1710	12	245	12	886	4	685	11	2595	11	1073	8	349	6	1701	10	994	15
ILC 482	649	16	196	10	2060	3	859	11	895	12	1669	16	1917	11	401	2	334	16	512	15	3085	4	1162	5	159	13	1949	6	1171	10
ILC 1934	1345	8	131	12	1713	6	1080	4	1052	9	1858	6	679	16	177	15	365	15	904	8	2712	8	1138	7	78	16	1932	7	1074	12
ILC 1932	1482	4	107	16	995	13	1205	1	1601	1	1839	7	2155	9	339	7	605	12	1233	4	2792	6	1390	1	214	8	1780	8	1248	8
ILC 1922	821	12	149	11	1343	10	1001	5	1118	7	1674	15	2119	10	360	6	584	13	755	10	2779	7	1156	6	170	12	2026	4	1228	9
ILC 1929	1089	11	125	14	926	14	939	8	1470	2	1923	3	1607	14	302	9	646	10	565	14	3104	3	1257	4	124	14	1624	13	1042	13
ILC 1931	690	14	214	9	1343	10	946	6	1197	4	1900	4	1655	13	391	4	1157	2	1132	5	3039	5	1315	2	178	11	2102	2	1079	11
Location mean	1211		279		1497		917		1050		1814		2283		318		714		900		2627		1004		285		1768		1249	
C.V. %	10.7		24.9		19.0		55.5		13.3		16.7		24.9		47.8		39.6		59.3		11.2		17.6		80.0		19.8			
S.E.	64.9		34.7		142.3		254.1		120.0		151.5		284.9		75.9		141.4		266.7		147.5		88.0		113.7		174.6			
L.S.D. 5%	185		99		405		723		342		432		810		216		402		759		420		250		323		497			

Table 3.1.6. The five heaviest seed yielding entries at the individual locations in CAT during 1982/83.

RANK	ALGERIA Setif	BANGLADESH		COSTA RICA Heredia	I N D I A					
		Jamalpur	Mymensing		Anand	Faridkot	Faizabad	Gwalior	Han-Hissar	Junagadh
1	ILC 1931	ILC 1922	ICC 5003	ILC 519	ICC 5003 (1)	ILC 482	ICC 10136	ICC 11524	ICC 10136	ICC 4948
2	ILC 1934	ICC 4918	ILC 482	ILC 482	ICC 10136	ICC 10136	ICC 11524	ICC 5003	ICC 11524	ICC 4918
3	ICC 11529	ICC 5003	ICC 4948	ICC 11529	ICC 4948	ILC 1931	ICC 4948	ICC 11529	ICC 4948	ICC 11524
4	ILC 1932	ILC 1932	ICC 10136	ICC 5003	ICC 11524	ILC 3256	ICC 5003	ILC 1919	ILC 1919	ICC 5003
5	ILC 1929	ILC 1934	ILC 1919	ICC 10136	ILC 1932	ICC 5810	ILC 1919	ICC 10136	ICC 5003	ICC 10136
						ICC 11529				
						ICC 5003				
						ILC 1922				

RANK	Kanpur	I N D I A				Raipur	Ranchi	Sriganganagar	IRAN Karaj	ITALY Sicilia
		Ludhiana	Pantnagar	Patancheru	Rohuri					
1	ICC 4948	ICC 5003	ICC 5003	ICC 5003	ICC 11529	ICC 11524	ICC 10136	ICC 10136	ILC 1932	ILC 1932
2	ILC 1919	ILC 1919	ICC 11524	ICC 4918	ICC 5810	ICC 10136	ICC 11524	ICC 4948	ICC 11529	ILC 1929
3	ICC 10136	ICC 10136	ICC 4918	ICC 11529	ICC 5003	ICC 5003	ICC 4948	ILC 482	ICC 11524	ICC 5810
4	ICC 5003	ILC 1934	ICC 10136	ICC 5810	ICC 4918	ILC 1919	ICC 5003	ILC 1919	ILC 1934	ILC 1931
5	ICC 11529	ICC 4948	ICC 4948	ICC 10136	ICC 10136	ILC 1932	ICC 11529	ICC 5003	ILC 1922	ILC 3256

RANK	LEBANON Terbol	MEXICO Santo Domingo	PAKISTAN Karak	SAUDI ARABIA Al-Gassim	SPAIN Sevilla	SYRIA		THAILAND Suwan	USA Pullman
						TH-Winter	TH-Spring		
1	ICC 5003	ILC 1919	ICC 11524	ILC 1919	ILC 3256	ILC 3256	ILC 1932	ICC 4948	ICC 4948
2	ICC 4918	ICC 5810	ILC 482	ILC 1931	ICC 5003	ICC 5003	ILC 1931	ICC 10136	ILC 1931
3	ILC 1929	ICC 4918	ICC 5003	ICC 4918	ICC 11529	ILC 1929	ILC 3256	ICC 11524	ILC 1919
4	ILC 1931	ICC 11529	ILC 1931	ILC 519	ILC 1932	ILC 482	ILC 1929	ILC 1919	ILC 1922
5	ILC 3256	ICC 11524	ICC 10136	ICC 10136	ILC 1931	ILC 1931	ILC 482	ICC 5003	ICC 4918

(1) The brackets indicate entries with the same rank.

Table 3.1.7. Correlation (df = 14) among different locations for the seed yield of entries in the CAT during 1982/83.

COUNTRY	LOCATION	BANGLADESH		COSTA RICA		INDIA									
		Jamalpur	Mymensingh	Heridia	Anand	Faridkot	Faisalabad	Gwalior	HAU-Hissar	Junagarh	Kanpur	Ludhiana	Pantnagar	Patancheru	Rahuri
ALGERIA	Setif	-0.07	-0.57 [*]	0.01	-0.34	-0.14	-0.23	-0.12	-0.34	-0.34	-0.63 ^{**}	-0.28	-0.38	-0.47	-0.21
BANGLADESH	Jamalpur		0.01	-0.14	0.01	-0.19	0.20	0.07	0.14	0.34	-0.01	-0.02	0.18	0.46	0.40
BANGLADESH	Mymensingh			0.33	0.52 [*]	0.32	0.56 [*]	0.48	0.62 [*]	0.50 [*]	0.54 [*]	0.57 [*]	0.73 ^{**}	0.30	-0.01
COSTA RICA	Heridia				-0.05	0.34	0.01	0.20	0.19	-0.01	-0.09	0.10	0.34	-0.04	-0.01
INDIA	Anand					0.09	0.79 ^{**}	0.67 ^{**}	0.81 ^{**}	0.54 [*]	0.66 ^{**}	0.50 [*]	0.60 [*]	0.46	0.37
INDIA	Faridkot						0.01	-0.12	0.08	-0.29	0.04	0.01	0.12	-0.01	-0.01
INDIA	Faisalabad							0.85 ^{**}	0.92 ^{**}	0.62 [*]	0.56 [*]	0.78 ^{**}	0.77 ^{**}	0.26	0.27
INDIA	Gwalior								0.83 ^{**}	0.57 [*]	0.61 [*]	0.83 ^{**}	0.74 ^{**}	0.27	0.33
INDIA	HAU-Hissar									0.65 ^{**}	0.68 ^{**}	0.72 ^{**}	0.75 ^{**}	0.40	0.39
INDIA	Junagarh										0.43	0.44	0.68 ^{**}	0.61 [*]	0.46
INDIA	Kanpur											0.58 [*]	0.45	0.44	0.36
INDIA	Ludhiana												0.68 ^{**}	0.22	0.23
INDIA	Pantnagar													0.44	0.33
INDIA	Patancheru														0.83 ^{**}
INDIA	Rahuri														
INDIA	Raipur														
INDIA	Ranchi														
INDIA	Sriganganagar														
IRAN	Karaj														
ITALY	Sicilia														
LEBANON	Terbol														
MEXICO	Santo Domingo														
PAKISTAN	Karak														
SAUDI ARABIA	Al Gassim														
SPAIN	Sevilla														
SYRIA	Tel Hadya winter														
SYRIA	Tel Hadya spring														
THAILAND	Suwan														

* $P \leq 0.05$, ** $P \leq 0.01$

Cont'd Table 3.1.7.

COUNTRY	LOCATION	INDIA			IRAN	ITALY	LEBANON	MEXICO	PAKISTAN	SAUDI ARABIA	SPAIN	SYRIA		THAILAND	USA
		Raipur	Ranchi	Sriganganagar	Karaj	Sicilia	Terbol	Santo Domingo	Karak	Al Gassim	Sevilla	TH-Winter	TH-Spring	Suwan	Pullman
ALGERIA	Setif	-0.36	-0.44	-0.20	0.64 ^{**}	0.44	0.13	-0.48	0.09	0.05	0.26	0.46	0.68 ^{**}	-0.59 [*]	0.35
BANGLADESH	Jamalur	0.23	-0.04	-0.15	0.11	0.16	0.20	0.22	-0.08	0.01	0.08	0.01	-0.05	-0.08	0.04
BANGLADESH	Mymensing	0.24	0.41	0.58 [*]	-0.45	-0.51 [*]	0.01	0.32	0.36	0.09	-0.15	0.01	-0.37	0.65 ^{**}	0.31
COSTA RICA	Heredia	-0.25	0.16	0.19	-0.01	-0.35	-0.44	-0.10	0.33	-0.12	0.02	0.10	0.05	0.01	0.08
INDIA	Anand	0.65 ^{**}	0.63 ^{**}	0.56 [*]	-0.15	-0.15	0.09	0.52 [*]	0.45	-0.02	0.33	-0.31	-0.44	0.62 [*]	-0.08
INDIA	Faridkot	-0.29	0.36	0.42	-0.47	-0.19	-0.23	0.03	0.35	-0.13	-0.10	0.10	0.01	-0.10	-0.02
INDIA	Faisalabad	0.69 ^{**}	0.66 ^{**}	0.77 ^{**}	-0.09	-0.40	0.05	0.30	0.36	-0.01	0.16	-0.28	-0.39	0.65 ^{**}	0.25
INDIA	Gwalior	0.68 ^{**}	0.45	0.66 ^{**}	0.15	-0.39	0.06	0.30	0.30	0.01	0.17	-0.13	-0.24	0.47	0.23
INDIA	HAW-Hissar	0.68 ^{**}	0.69 ^{**}	0.75 ^{**}	-0.13	-0.55 [*]	-0.17	0.55 [*]	0.38	0.14	0.08	-0.44	-0.50 [*]	0.72 ^{**}	0.17
INDIA	Junagarh	0.53 [*]	0.45	0.39	-0.12	-0.50 [*]	0.23	0.56 [*]	0.10	0.37	0.08	-0.31	-0.56 [*]	0.75 ^{**}	0.20
INDIA	Kanpur	0.65 ^{**}	0.47	0.52 [*]	-0.27	-0.38	-0.15	0.58 [*]	-0.05	-0.04	-0.13	-0.50 [*]	-0.58 [*]	0.58 [*]	-0.13
INDIA	Ludhiana	0.59 [*]	0.52 [*]	0.76 ^{**}	-0.24	-0.54 [*]	0.13	0.14	0.08	0.08	0.11	-0.15	-0.32	0.51 [*]	0.27
INDIA	Pantnagar	0.55 [*]	0.53 [*]	0.71 ^{**}	-0.16	-0.56 [*]	0.20	0.31	0.26	0.01	0.17	-0.12	-0.43	0.65 ^{**}	0.32
INDIA	Patancheru	0.56 [*]	0.40	0.10	-0.28	-0.16	0.34	0.76 ^{**}	0.01	0.36	0.22	-0.33	-0.55 [*]	0.36	-0.26
INDIA	Rohuri	0.60 [*]	0.47	0.18	-0.11	-0.16	0.16	0.64 ^{**}	-0.01	0.13	0.21	-0.50 [*]	-0.60 [*]	0.16	-0.42
INDIA	Raipur		0.55 [*]	0.37	-0.03	-0.17	0.22	0.56 [*]	0.08	0.13	0.03	-0.54 [*]	-0.59 [*]	0.54 [*]	-0.21
INDIA	Ranchi			0.66 ^{**}	-0.62 [*]	-0.47	-0.13	0.36 [*]	0.29	0.06	0.03	-0.61 [*]	-0.66 ^{**}	0.62 [*]	-0.27
INDIA	Sriganganagar				-0.33	-0.66 ^{**}	-0.07	0.14	0.16	-0.05	0.10	-0.26	-0.37	0.57 [*]	0.39
IRAN	Karaj					0.35	0.01	-0.09	0.10	-0.09	0.12	0.32	0.50 [*]	0.41	0.24
ITALY	Sicilia						0.34	-0.31	0.08	-0.26	0.21	0.42	0.52 [*]	-0.66 ^{**}	-0.30
LEBANON	Terbol							-0.07	-0.11	0.22	0.43	0.44	0.15	-0.05	0.18
MEXICO	Santo Domingo								0.22	0.46	-0.18	-0.51 [*]	-0.60 [*]	-0.49	-0.23
PAKISTAN	Karak									0.02	-0.10	0.20	0.03	-0.07	-0.05
SAUDI ARABIA	Al Gassim										-0.08	-0.05	-0.01	0.31	0.26
SPAIN	Sevilla											0.22	0.25	0.06	0.11
SYRIA	Tel Hadya winter												0.82 ^{**}	-0.55 [*]	0.44
SYRIA	Tel Hadya spring													-0.68 ^{**}	0.39
THAILAND	Suwan														0.16

free to use these entries in their breeding programs or for release as cultivars.

Methods and Management

The trial design was randomised complete block with four replications. The suggested plot size was 4 rows with row to row and within row spacing of 0.30 m and 0.10 m respectively.

Forty six sets of the trial were sent to cooperators in 25 countries but the results were received from 25 trials. The results for Islamabad and Somalia were not analysable and the other 23 trials were analysed and are reported. The agronomic information received from the cooperators is given in Table 3.2.1.

Results and Discussion

The data on time to flowering (days), time to maturity (days) and plant height (cm) are given in Tables 3.2.2, 3.2.3, and 3.2.4 respectively. Flowering was earliest (36 days) at Karaj in Iran and was followed by Highmore (47 days) and Pullman (56 days) in USA. Setif in Algeria (108 days) and Kufra in Libya (105 days) were the locations where the entries took maximum time to flower. The entry means across locations for time to flowering ranged from 68 days for ILC 66 and FLIP 81-46 to 75 days for ILC 237, ILC 263, ILC 464, and ILC 480; and for time to maturity from 123 days for ILC 66 to 129 days for ILC 464. The data on plant height revealed that the entries were tallest at Shandweel (50 cm) in Egypt and were followed by Mallawi (48 cm) in Egypt and Debre Zeit (46 cm) in Ethiopia, and were shortest at Khansa (19 cm) and Setif (20 cm) in Algeria, Karaj (23 cm) in Iran and Ankara (23 cm) in Turkey. Averaged over locations the plant height varied from 30 to 40 cm and ILC 237 was the tallest. The seed yield and the rank of different entries at each location and the 100-seed weight at Tel Hadya are given in Table 3.2.5. The ANOVA of the yield data revealed that the differences among the entries were significant at all the locations except at Karaj (Iran), Capalbio (Italy) and Terbol (Lebanon). The coefficient of variation for the design varied from 10.7 per cent at Tel Hadya in Syria to 97.8 per cent at Ankara in Turkey. The LSD for different locations revealed that all the 23 entries excelled the local check by a significant margin at Setif in Algeria. Similarly 20, 18, 15, 12, 1, 10, 5, 3, 2, 1, and 1 entry excelled the local check respectively at Marchouch in Morocco, Guelino in Algeria, Caltagirone in Italy, Beja and Mateur in Tunisia, Kufra in Libya, Highmore in USA, Shandweel in Egypt, Khansa in Algeria, Hudeiba in Sudan and Tel Hadya in Syria. The entry mean ranged from 210 kg/ha at Hudeiba in Sudan to 2464 kg/ha at Mallawi in Egypt. The highest yield of 1396 kg/ha was recorded for FLIP 81-65 which was followed by ILC 480 (1386 kg/ha), FLIP 81-54 (1367 kg/ha), FLIP 81-52 (1365 kg/ha) and ILC 237 (1358 kg/ha). The lowest yield of 1030 kg/ha was obtained from ILC 464. Among the five highest yielding lines overall locations,

Table 3.2.1. Agronomic data for different locations in the CIYT during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide/ Fungicide/ Herbicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Guelino	14. 3.1983	113					
ALGERIA	Khansa	24. 1.1983	142	50				
ALGERIA	Setif	1. 4.1983	161		100			
BANGLADESH	Jamalpur	19.11.1982	134				2	
EGYPT	Mallawi	14.12.1982	150	15	30		4	
EGYPT	Shandweel	1.12.1982	159	40	70		1	
ETHIOPIA	Debre Zeit	6. 9.1983	155					
IRAN	Karaj	16. 4.1983	74	18	46		6	Metasystox
ITALY	Caltagirone	14. 2.1983	140	40	100			
ITALY	Capalbio	23. 3.1983	112	40	100			
LEBANON	Terbol	1. 4.1983	108		50		2	
LIBYA	Kufra	25.11.1982	175				*	
MOROCCO	Marchouch	9. 3.1983	131		30	15		
OMAN	Muscat	25.11.1983	145					
PAKISTAN	Islamabad	9.11.1982	-	20	50			
SUDAN	Hudeiba	20.11.1982	117	43			9	
SYRIA	Tel Hadya	7. 3.1983	91		50			Bravo 500
TURKEY	Ankara	22. 3.1983	121	20	60			
USA	Highmore	22. 4.1983	116					
USA	Pullman	20. 4.1983	132					Imidan, Cygon

* 458 mm of irrigation was provided.

Table 3.2.2. Time to flowering (days) of entries at different locations in the CIYT during 1982/83.

ENTRY NAME		ORIGIN	ALGERIA			BANGLADESH		EGYPT		ETHIOPIA	IRAN	ITALY	LEBANON	LIBYA	SUDAN	SYRIA	TURKEY		USA		MEAN
			Khansa	Setif	Guelino	Jamalpur	Mallawi	Shandweel	Debre Zeit	Karaj	Caltagirone	Terbol	Kufra	Hudeiba	Tel Hadya	Ankara	Highmore	Pullman			
ILC	4	Jordan	81	109	63	79	85	83	61	36	77	61	108	80	61	64	45	56		72	
ILC	35	Syria	86	106	62	79	88	90	61	37	76	58	105	81	56	64	46	57		72	
ILC	66	Iraq	81	103	56	71	84	79	55	34	74	56	102	69	55	64	42	55		68	
ILC	237	Spain	86	104	64	90	88	92	66	38	77	62	110	83	60	68	48	56		75	
ILC	263	Turkey	86	111	58	91	89	91	69	37	77	61	112	85	60	68	49	57		75	
ILC	295	Iran	81	107	63	70	86	80	61	36	77	60	102	80	58	68	44	57		71	
ILC	464	Turkey	86	110	64	87	87	88	71	39	77	62	113	84	59	68	48	58		75	
ILC	480	Turkey	86	105	63	89	88	88	72	39	79	62	111	87	60	69	49	58		75	
ILC	493	Turkey	86	105	62	76	86	84	61	35	76	59	103	72	58	69	46	55		71	
ILC	610	Tunisia	81	110	63	82	87	88	64	38	77	60	109	83	60	69	49	57		74	
ILC	1929	Syria	81	104	62	76	87	82	59	35	76	59	108	72	58	68	48	55		71	
FLIP 80-1		ICARDA/ICRISAT	86	107	62	84	87	87	63	39	75	62	97	66	61	68	48	55		72	
FLIP 80-2		ICARDA	81	102	56	79	87	85	62	34	76	59	102	81	59	67	48	54		71	
FLIP 80-5		ICARDA	81	112	59	75	86	82	55	35	77	60	103	68	59	65	48	56		70	
FLIP 81-31		ICARDA	86	110	63	86	89	87	63	37	80	61	109	86	61	67	48	55		74	
FLIP 81-32		ICARDA	86	117	58	84	87	85	61	36	78	62	106	86	61	66	46	55		73	
FLIP 81-40		ICARDA	81	106	58	85	86	81	59	33	76	59	102	67	58	66	45	55		70	
FLIP 81-45		ICARDA	81	112	62	79	87	88	62	37	78	60	110	72	59	68	48	57		73	
FLIP 81-46		ICARDA	78	104	56	71	85	79	56	34	75	58	99	63	55	65	49	55		68	
FLIP 81-52		ICARDA	81	103	61	77	77	80	59	34	75	59	102	74	58	67	45	55		69	
FLIP 81-54		ICARDA	81	108	59	74	86	90	62	34	76	59	106	73	58	66	46	56		71	
FLIP 81-63		ICARDA	78	105	61	71	87	82	55	35	75	59	99	71	57	66	45	54		69	
FLIP 81-65		ICARDA/ICRISAT	81	111	61	79	86	82	62	33	76	59	102	72	58	66	48	55		71	
Local check		-	86	117	64	82	84	80	46	39	77	62	111	62	57	68	46	55			
Location mean			83	108	61	80	86	85	61	36	77	60	105	76	59	67	47	56			

Table 3.2.3. Time to maturity (days) of entries at different locations in the CIYT during 1982/83.

ENTRY NAME		ALGERIA			BANGLADESH	EGYPT		ETHIOPIA	IRAN	LEBANON	LIBYA	SUDAN	SYRIA	TURKEY	USA	MEAN
		Khansa	Setif	Guelino	Jamalpur	Mallawi	Shandweel	Debre Zeit	Karaj	Terbol	Kufra	Hudeiba	Tel Hadya	Ankara	Pullman	
ILC 4		144	157	112	125	139	157	141	72	97	173	113	88	115	132	126
ILC 35		144	148	111	125	138	157	140	73	96	172	111	87	115	130	125
ILC 66		144	146	105	124	140	155	133	72	93	172	110	87	116	123	123
ILC 237		144	146	113	128	142	159	148	73	101	171	108	89	119	126	126
ILC 263		144	147	107	134	142	158	145	72	97	172	113	88	119	128	126
ILC 295		144	157	112	121	144	153	139	71	97	169	111	88	118	131	125
ILC 464		144	152	114	134	146	157	150	73	107	174	114	89	118	132	129
ILC 480		144	151	112	134	147	157	148	73	101	173	114	89	119	129	128
ILC 493		144	147	111	125	148	155	142	71	97	171	113	88	118	126	125
ILC 610		144	154	112	126	146	158	145	72	98	172	112	88	119	131	127
ILC 1929		144	146	111	121	144	156	140	72	96	173	111	88	117	131	125
FLIP 80-1		144	153	111	122	143	157	134	72	97	171	109	88	116	132	125
FLIP 80-2		144	145	105	125	144	156	140	74	96	171	111	87	118	128	125
FLIP 80-5		144	157	108	121	142	155	130	70	97	170	109	88	116	132	124
FLIP 81-31		144	148	112	126	138	156	144	73	96	171	113	87	117	132	126
FLIP 81-32		144	160	107	121	139	156	139	71	96	171	111	86	116	127	125
FLIP 81-40		144	146	107	121	138	155	140	72	98	174	111	88	116	127	124
FLIP 81-45		144	154	111	126	142	157	143	74	98	174	113	88	117	132	127
FLIP 81-46		144	147	105	121	142	155	131	72	96	173	110	88	116	129	124
FLIP 81-52		144	152	110	126	143	154	140	72	97	170	111	88	117	128	125
FLIP 81-54		144	155	108	121	144	158	135	72	96	172	112	87	117	128	125
FLIP 81-63		144	146	110	120	145	156	135	72	97	173	109	87	116	132	124
FLIP 81-65		144	148	110	122	145	155	132	72	97	171	110	87	116	132	124
Local check		144	161	114	123	143	154	115	73	97	173	110	87	118	132	
Location mean		144	151	110	125	143	156	139	72	97	172	111	88	117	130	

Table 3.2.4. Plant height (cm) of entries at different locations in the CIYT during 1982/83.

ENTRY NAME		ALGERIA		BANGLADESH	EGYPT		ETHIOPIA	IRAN	ITALY	LEBANON	LIBYA	SUDAN	SYRIA	TURKEY	USA		MEAN
		Khansa	Setif	Jamalpur	Mallawi	Shandweel	Debre Zeit	Karaj	Caltagirone	Terbol	Kufra	Hudeiba	Tel Hadya	Ankara	Highmore	Pullman	
ILC	4	15	20	35	42	53	45	23	29	38	38	41	27	20	43	26	33
ILC	35	18	20	40	45	48	47	20	30	34	37	41	27	22	45	29	34
ILC	66	18	22	40	49	56	50	20	29	35	40	47	27	23	39	24	35
ILC	237	25	25	42	52	55	63	28	31	36	56	43	32	27	48	39	40
ILC	263	15	23	43	52	54	53	24	29	35	41	39	28	23	36	25	35
ILC	295	25	25	43	47	53	51	27	29	34	46	37	28	25	45	32	36
ILC	464	25	22	42	54	51	54	27	32	40	55	42	29	27	45	35	39
ILC	480	25	19	44	53	46	58	24	30	36	47	46	31	26	44	30	37
ILC	493	18	20	35	51	50	52	26	29	36	49	42	27	25	50	26	36
ILC	610	18	18	39	59	56	52	22	28	34	48	37	28	23	44	27	36
ILC	1929	18	20	39	51	45	51	26	26	33	38	37	28	22	40	25	33
FLIP	80-1	25	20	36	47	51	41	19	26	34	49	37	27	23	47	31	34
FLIP	80-2	20	20	34	48	54	47	24	29	35	43	41	27	25	41	29	34
FLIP	80-5	18	25	37	42	45	41	26	30	36	47	43	28	27	46	27	35
FLIP	81-31	18	20	35	41	50	44	26	27	30	38	37	24	20	39	19	31
FLIP	81-32	15	20	39	37	48	41	20	25	33	45	36	26	21	49	23	32
FLIP	81-40	10	18	36	43	50	37	20	25	31	39	34	26	20	40	26	30
FLIP	81-45	18	22	40	43	49	44	23	28	33	40	39	27	22	31	25	32
FLIP	81-46	18	15	37	48	54	40	18	26	34	46	39	26	22	39	29	33
FLIP	81-52	20	22	35	51	46	45	22	29	33	42	39	27	25	44	26	34
FLIP	81-54	20	20	35	50	49	43	23	27	43	42	38	27	23	39	24	34
FLIP	81-63	10	15	35	46	51	39	22	24	33	40	40	25	20	39	25	31
FLIP	81-65	25	15	35	44	50	42	21	28	34	47	38	27	21	41	23	33
Local check		18	25	24	51	46	31	22	32	33	50	33	28	25	45	36	
Location mean		19	20	38	48	50	46	23	28	35	44	39	27	23	42	28	

Table 3.2.5. Seed yield (Y= kg/ha) and rank (R) of entries at different locations in the CIYT during 1982/83.

ENTRY NAME	ALGERIA						BANGLADESH		EGYPT				ETHIOPIA		IRAN		ITALY				LEBANON	
	Khansa		Setif		Guelino		Jamalpur		Mallawi		Shandweel		Debre Zeit		Karaj		Caltagirone		Capalbio		Terbol	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 4	719 ⁽¹⁾	1	445	23	1976	22	875	9	938	22	1389	2	1473	13	841	23	1118	18	1146	4	1994	2
ILC 35	679	2	505	17	2431	8	914	5	2569	11	951	18	1350	15	1225	13	1109	20	813	21	1670	12
ILC 66	310	23	464	22	2893	1	900	7	2479	13	1181	7	1790	5	1286	10	1116	19	1008	13	1798	5
ILC 237	429	15	607	6	2048	21	913	6	2396	17	910	20	734	23	1159	19	1220	9	833	20	1631	14
ILC 263	560	6	583	10	2167	19	603	22	3194	5	993	16	1251	16	927	21	1364	3	917	16	1564	17
ILC 295	440	14	581	11	2429	9	945	4	3264	4	954	17	1979	2	1374	5	1372	2	859	18	1792	6
ILC 464	500	10	469	21	1381	24	589	23	1715	21	1188	6	371	24	853	22	1188	13	857	19	1611	16
ILC 480	571	5	609	5	2417	10	664	20	3097	6	1354	3	997	18	1295	9	1171	15	1112	6	1814	4
ILC 493	608	4	565	12	2488	7	830	11	3000	7	1444	1	920	21	1445	4	1031	21	1083	9	1484	21
ILC 610	429	15	523	15	2345	13	697	17	3465	2	882	21	889	22	1222	14	1124	17	1042	10	1502	20
ILC 1929	465	12	497	19	2393	11	885	8	3299	3	1153	8	1559	10	1366	6	1221	8	1211	2	1551	18
FLIP 80-1	405	19	510	16	2298	17	815	12	2458	14	1313	4	1403	14	1521	3	985	23	893	17	1767	8
FLIP 80-2	544	8	688	2	2310	15	694	18	2549	12	875	22	1510	12	1644	2	1139	16	969	15	1767	8
FLIP 80-5	333	22	714	1	2654	6	734	15	2278	19	840	23	1600	8	821	24	1237	6	651	24	1635	13
FLIP 81-31	619	3	547	13	2381	12	863	10	819	23	1028	12	1243	17	932	20	1343	4	732	23	1446	24
FLIP 81-32	345	21	586	9	2274	18	1038	1	750	24	1026	14	945	20	1280	11	1229	7	768	22	1478	22
FLIP 81-40	370	20	604	7	2345	13	953	3	2458	14	819	24	1525	11	1344	7	1195	11	1099	8	1468	23
FLIP 81-45	548	7	641	3	2310	15	645	21	3472	1	1243	5	964	19	1173	18	1406	1	1021	12	1912	3
FLIP 81-46	452	13	497	19	2667	5	684	19	1868	20	917	19	1673	6	1296	8	1003	22	974	14	1629	15
FLIP 81-52	428	18	615	4	2798	3	585	24	2847	8	1008	15	1622	7	1203	16	1180	14	1138	5	1542	19
FLIP 81-54	536	9	594	8	2810	2	747	13	2764	9	1118	9	1856	4	1181	17	1191	12	1031	11	1686	10
FLIP 81-63	488	11	547	13	2155	20	746	14	2299	18	1028	12	1577	9	1234	12	1198	10	1214	1	1776	7
FLIP 81-65	240	24	503	18	2702	4	728	16	2451	16	1104	10	2041	1	1761	1	1271	5	1169	3	2082	1
Local check	429	15	247	24	1655	23	985	2	2708	10	1035	11	1929	3	1218	15	912	24	1104	7	1681	11
Location mean	477		548		2347		793		2464		1073		1383		1233		1180		985		1678	
C.V. %	37.2		25.0		15.8		14.7		22.5		20.4		31.9		39.1		14.3		31.6		18.6	
L.S.D. 5%	250		193		523		192		781		309		622		NS		238		NS		NS	
S.E.	88		68		185		67		277		109		220		240		84		155		156	
No. of entries significantly exceeding the local check	2		23		18		0		0		3		0		-		15		-		-	

Cont'd./...

Table 3.2.5. Cont'd.

ENTRY NAME	LIBYA		MOROCCO		OMAN		SPAIN		SUDAN		SYRIA		TUNISIA				TURKEY			
	Kufra		Marchouch		Muscat		Sevilla		Hudeiba		Tel Hadya		Beja		El-Kef		Mateur		Ankara	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 4	1905	16	1667	7	797	9	1036	13	396	3	1808	12	1006	6	1438	12	1638	4	226	10
ILC 35	1786	18	1380	16	401	21	859	19	214	10	2161	1	738	10	1438	12	1531	9	166	13
ILC 66	2143	12	1797	2	706	14	1328	4	247	9	1751	15	31	23	1456	8	1431	17	61	21
ILC 237	3393	1	708	24	1490	1	859	19	60	23	1713	19	1450	3	1575	3	1756	1	800	1
ILC 263	2024	15	1411	15	547	18	1133	9	63	21	1740	17	394	18	1263	20	1400	21	311	5
ILC 295	2738	7	1568	10	383	22	1016	14	95	20	1674	22	731	11	1206	22	1463	14	409	3
ILC 464	1190	23	995	22	932	5	1016	14	48	24	1770	14	350	19	1613	2	1506	11	285	7
ILC 480	2798	6	1104	21	912	6	1427	2	164	14	1800	13	588	14	1331	16	1588	7	302	6
ILC 493	2143	12	1641	8	760	10	684	22	360	4	1751	15	1138	5	1481	7	1431	17	134	14
ILC 610	2143	12	1281	20	891	8	1114	10	63	21	1694	20	606	13	1219	21	1519	10	210	11
ILC 1929	1429	21	1328	18	943	4	1055	12	214	10	1876	8	881	9	1325	17	1425	19	80	18
FLIP 80-1	3333	2	1552	11	897	7	547	24	253	7	1517	24	106	21	1456	8	1484	12	92	16
FLIP 80-2	2262	11	1703	5	995	3	586	23	185	12	1832	10	485	16	888	24	1544	8	74	19
FLIP 80-5	2619	9	1307	19	1193	2	859	19	449	2	1606	23	168	20	1619	1	1263	24	285	7
FLIP 81-31	1190	23	1505	12	714	13	1075	11	131	16	2017	4	988	7	1088	23	1600	5	33	23
FLIP 81-32	1786	18	1609	9	-	-	1406	3	113	19	1994	6	538	15	1338	15	1450	15	51	22
FLIP 81-40	1786	18	1714	4	672	16	1211	7	128	17	1811	11	931	8	1444	10	1444	16	113	15
FLIP 81-45	2738	7	1359	17	604	17	977	17	253	7	1967	7	94	22	1268	19	1420	20	208	12
FLIP 81-46	2857	5	1755	3	760	10	1153	8	598	1	1686	21	25	24	1281	18	1713	2	282	9
FLIP 81-52	3333	2	1500	13	307	23	1016	14	259	6	1733	18	1194	4	1488	6	1600	5	321	4
FLIP 81-54	2500	10	1807	1	677	15	880	18	158	15	2033	3	1656	1	1369	14	1479	13	67	20
FLIP 81-63	1905	16	1479	14	432	20	1328	4	122	18	2036	2	700	12	1444	10	1669	3	0	24
FLIP 81-65	2976	4	1672	6	516	19	1328	4	173	13	2017	4	1619	2	1519	5	1344	23	82	17
Local check	1429	21	911	23	719	12	1523	1	307	5	1839	9	419	17	1556	4	1388	22	617	2
Location mean	2267		1448		750		1059		210		1826		701		1380		1503		217	
C.V.%	27.8		15.8		-		16.1		66.2		10.7		26.5		24.5		16.5		97.8	
L.S.D. 5%	888		323		-		240		197		277		261		477		350		299	
S.E.	315		114		-		85		69		98		92		169		124		106	
No. of entries significantly exceeding the local check	10		20		-		0		1		1		12		0		1		0	

Cont'd. ...

Table 3.2.5. Cont'd.

ENTRY NAME	USA				100-seed (2). weight (g)	MEAN	
	Highmore		Pullman			Y	R
	Y	R	Y	R			
ILC 4	757	20	1260	22	31.7	1167	19
ILC 35	921	18	1505	19	41.0	1188	17
ILC 66	1344	15	1948	7	26.8	1281	10
ILC 237	2200	4	2340	2	33.2	1358	5
ILC 263	688	22	1445	20	32.9	1154	20
ILC 295	2088	7	1649	14	30.9	1348	6
ILC 464	1735	9	1523	18	44.9	1030	23
ILC 480	2454	1	2318	3	30.4	1386	2
ILC 493	2163	5	1846	8	28.4	1323	8
ILC 610	1744	8	1641	15	28.0	1228	14
ILC 1929	1207	17	1586	17	36.1	1259	12
FLIP 80-1	2332	3	1747	12	29.8	1291	9
FLIP 80-2	2090	6	1837	9	23.2	1268	11
FLIP 80-5	1442	13	982	24	27.3	1186	18
FLIP 81-31	356	24	1082	23	28.6	1032	22
FLIP 81-32	1268	16	1631	16	34.5	1132	21
FLIP 81-40	797	19	1792	10	30.3	1218	16
FLIP 81-45	750	21	1672	13	34.3	1245	13
FLIP 81-46	2399	2	2454	1	27.4	1331	7
FLIP 81-52	1417	14	2270	4	30.2	1365	4
FLIP 81-54	1533	10	1770	11	33.7	1367	3
FLIP 81-63	633	23	2105	5	30.9	1222	15
FLIP 81-65	1444	12	1363	21	31.3	1396	1
Local check	1494	11	2081	6			
Location mean	1469		1744				
C.V.%	31.6		26.6				
L.S.D. 5%	655		653				
S.E.	232		231				

No. of entries 5 0
significantly
exceeding the local check

- (1) Seed yield values underlined, significantly exceeded the local check
(2) 100 seed weight at Tel Hadya (Syria).

100-seed weight was highest for FLIP 81-54. The five highest yielding entries at each location are given in Table 3.2.6. It is evident that the entry FLIP 81-65 though ranking 15 across locations was among first five at 11 of the 23 locations. The other entries which need more consideration were ILC 237, ILC 295, FLIP 81-52, ILC 4, ILC 480, FLIP 81-46 etc. Whereas on individual location basis, the entries mentioned in Table 3.2.6 as the top five high yielding lines need special consideration by the national programs. It is worth mentioning that at some locations, a few entries excelled the local check by a margin of about 100% for example, at Setif and Guelino (Algeria), Kufra (Libya), Marchouch (Morocco), Muscat (Oman), Hudeiba (Sudan) and Beja (Tunisia). These entries giving much higher performance when compared with the national checks in different countries need special attention of the national scientists for their multilocation testing in their countries for confirmation of their superiority and future use.

The results of three years for the common entries are given in Table 3.2.7. It is evident that the entry ILC 295 was the best on the basis of average over three years and was followed by ILC 237, ILC 493, and ILC 480 etc. These entries may be used extensively in breeding programs.

The correlations between the location means for seed yield (Table 3.2.8) exhibited that Tel Hadya in Syria was negatively correlated with Kufra (Libya), Highmore (USA), Ankara (Turkey) and Muscat (Oman) whereas with other locations it had non-significant correlations.

3.3. CHICKPEA INTERNATIONAL YIELD TRIAL-WINTER (CIYT-W)

Material

The material for the Chickpea International Yield Trial-Winter comprised of 11 test entries, and one local check to be supplied by the cooperator. The test entries were resistant to Ascochyta blight and were selected from the local and regional yield trials based on their superior yield performance. Out of 11 entries, six were developed at ICARDA through hybridization program and others were from germplasm maintained at ICARDA. The cooperators were free to use these entries in their breeding programs or for release as commercial cultivars.

Methods and Management

The trial design was a randomised complete block with four replications. The suggested plot size was four rows 4 m long with an inter- and intra row spacing of 30- and 10 cm respectively. Sixty six sets of trials were distributed to 39 cooperators in 25 countries. Results were returned from 44 sets covering 19 countries. The germination at Lanolina in Peru was very poor and no yield observations were recorded. Rhizoctonia root rot was the main cause of poor

Table 3.2.6. The five heaviest seed yielding entries at the individual locations in the CIYT during 1982/83.

RANK	ALGERIA			BANGLADESH	EGYPT		ETHIOPIA	IRAN	ITALY	
	Khansa	Setif	Guelino	Jamalpur	Mallawi	Shandweel	Debre Zeit	Karaj	Caltagirone	Capalbio
1	ILC 4	FLIP 80-5	ILC 66	FLIP 81-32	FLIP 81-45	ILC 493	FLIP 81-65	FLIP 81-65	FLIP 81-45	FLIP 81-63
2	ILC 35	FLIP 80-2	FLIP 81-54	Local check	ILC 610	ILC 4	ILC 295	FLIP 80-2	ILC 295	ILC 1929
3	FLIP 81-31	FLIP 81-45	FLIP 81-52	FLIP 81-40	ILC 1929	ILC 480	Local check	FLIP 80-1	ILC 263	FLIP 81-65
4	ILC 493	FLIP 81-52	FLIP 81-65	ILC 295	ILC 295	FLIP 80-1	FLIP 81-54	ILC 493	FLIP 81-31	ILC 4
5	ILC 480	ILC 480	FLIP 81-46	ILC 35	LC 263	FLIP 81-45	ILC 66	ILC 295	FLIP 81-65	FLIP 81-52

Cont'd.

RANK	LEBANON	LIBYA	MOROCCO	OMAN	SPAIN	SUDAN	SYRIA	TUNISIA		TURKEY	USA	
	Terbol	Kufra	Marchouch	Muscat	Sevilla	Hudeiba	Tel Hadya	Beja	El-Kef	Mateur	Ankara	Highmore Pullman
1	FLIP 81-65	ILC 237	FLIP 81-54	ILC 237	Local check	FLIP 81-46	ILC 35	FLIP 81-54	FLIP 80-5	ILC 237	ILC 237	ILC 480 FLIP 81-46
2	ILC 4	FLIP 80-1	ILC 66	FLIP 80-5	ILC 480	FLIP 80-5	FLIP 81-63	FLIP 81-65	ILC 464	FLIP 81-46	Local check	FLIP 81-46 ILC 237
3	FLIP 81-45	FLIP 81-52	FLIP 81-46	FLIP 80-2	FLIP 81-32	ILC 4	FLIP 81-54	ILC 237	ILC 237	FLIP 81-63	ILC 295	FLIP 80-1 ILC 480
4	ILC 480	FLIP 81-65	FLIP 81-40	ILC 1929	ILC 66	ILC 493	FLIP 81-31	FLIP 81-52	Local check	ILC 4	FLIP 81-52	ILC 237 FLIP 81-52
5	ILC 66	FLIP 81-46	FLIP 80-2	ILC 464	FLIP 81-63	Local check	FLIP 81-65	ILC 493	FLIP 81-65	FLIP 81-31	ILC 263	ILC 493 FLIP 81-63
					FLIP 81-65					FLIP 81-52		

(1) The brackets indicate entries having the same rank.

Table 3.2.7. The mean yield (Y = kg/ha) and rank (R) of the common entries in the CIYT during 1980-83.

ENTRY	<u>1980/81</u>		<u>1981/82</u>		<u>1982/83</u>		<u>AVERAGE 1[*]</u>		<u>AVERAGE 2[*]</u>	
	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 4	1142	5	1196	11	1167	10	1182	11	1168	8
ILC 237	1219	1	1397	2	1358	2	1378	2	1325	2
ILC 263	1153	4	1266	9	1154	11	1210	10	1191	7
ILC 295	1179	2	1508	1	1348	3	1428	1	1345	1
ILC 480	1120	8	1306	5	1386	1	1346	3	1271	4
ILC 493	1179	2	1344	4	1323	4	1334	4	1282	3
ILC 610	1128	7	1267	8	1228	8	1248	8	1208	6
ILC 1929	1139	6	1281	6	1259	7	1270	7	1226	5
ILC 35	-		1239	10	1188	9	1214	9	-	-
ILC 66	-		1276	7	1281	5	1279	6	-	-
ILC 464	-		1130	12	1030	12	1080	12	-	-
FLIP 80-2	-		1384	3	1268	3	1326	5	-	-

1^{*} Average over 1981-83

2^{*} Average over 1980-83

Table 3.2.8. Correlation (df = 21) among different locations for the seed yield of entries in the CIYT during 1982/83.

COUNTRY	LOCATION	ALGERIA		BANGLADESH	EGYPT		ETHIOPIA	IRAN	ITALY		LEBANON	LIBYA
		Setif	Guelino	Jamalpur	Mallawi	Shandweel	Debre Zeit	Karaj	Caltagirone	Capalbio	Terbol	Kufra
ALGERIA	Khansa	-0.10	-0.34	-0.10	-0.07	0.35	-0.30	-0.37	-0.04	0.03	-0.02	-0.34
ALGERIA	Setif		0.20	-0.18	0.26	-0.39	-0.01	0.02	0.36	-0.27	-0.17	0.33
ALGERIA	Guelino			0.07	0.27	-0.13	0.69**	0.39	-0.11	0.14	0.05	0.41
BANGLADESH	Jamalpur				-0.34	-0.06	0.14	0.16	-0.05	-0.21	-0.14	-0.23
EGYPT	Mallawi					-0.01	0.10	0.34	0.12	0.36	0.07	0.36
EGYPT	Shandweel						-0.20	0.03	-0.23	0.36	0.36	-0.01
ETHIOPIA	Debre Zeit							0.36	0.02	0.26	0.37	0.25
IRAN	Karaj								-0.27	0.39	0.25	0.36
ITALY	Caltagirone									-0.18	0.07	-0.13
ITALY	Capalbio										0.32	0.06
LEBANON	Terbol											0.37
LIBYA	Kufra											
MOROCCO	Marchouch											
OMAN	Muscat											
SPAIN	Sevilla											
SUDAN	Hudeiba											
SYRIA	Tel Hadya											
TUNISIA	Beja											
TUNISIA	El-Kof											
TUNISIA	Hateur											
TURKEY	Ankara											
USA	Highmore											

* $P \leq 0.05$

** $P \leq 0.01$

(1) df=20

Cont'd Table 3.2.8.

[illegible]

germination. The seed yield at Sakha in Egypt was reported to be spoiled by unknown factors. 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, and plant height across locations are listed in Tables 3.3.2, 3.3.3, and 3.3.4, respectively. Time to flowering ranged from 116 days for ILC 482 and ILC 484 to 128 days for ILC 3279. The variation in time to maturity was small and ranged from 173 days for ILC 482 to 179 days for ILC 195, ILC 3279 and FLIP 81-41W. Further the entries flowered earliest at Bonn in W.Germany (54 days) and latest at Perugia in Italy (189 days). Perugia in Italy was also the location where the entries matured latest (254 days). The plant height data revealed that height was least at Breda in Syria (24 cm) and was followed by Karaj in Iran (26 cm), Setif in Algeria (29 cm), and was maximum at Peshawar in Pakistan (121 cm). The plant height data at Peshawar further revealed that chickpea plants attained height upto 1.55 m which is probably the tallest record in all the countries. The average height of different entries across locations revealed that the two genotypes ILC 3279 and ILC 202 were the tallest with 65 and 64 cm height respectively.

The mean yields at different locations (Table 3.3.5) revealed that Sidi Kacem (3245 kg/ha) in Morocco, Perugia (3510 kg/ha) in Italy, and Al-Ghab (4062 kg/ha) in Syria were the high yielding locations. At some of the locations including M'shagar in Jordan, Douyet-2 and Marchouch in Morocco, Islamabad and Peshawar in Pakistan, the CVs were very high. The ANOVA for seed yield revealed that there were significant differences among treatments at Setif (Algeria); Karaj (Iran); Perugia (Italy); Marow (Jordan); Mexico (Mexico); Dokri, Faisalabad-2, Islamabad, Lahore and Peshawar (Pakistan); Patacao (Portugal); Breda, Hama, Homs, Izra'a, Jableh, Jinderis, Lattakia and Tel Hadya in Syria; Pullman in USA; and Bonn in W.Germany. It was interesting to note that at 16 locations, some of the entries exceeded the local check by a significant margin. On the basis of average yield over locations, FLIP 81-41W (1756 kg/ha) ranked number one and was followed by FLIP 81-57W, (1752 kg/ha), ILC 482 (1743 kg/ha), FLIP 81-59W (1687 kg/ha), ILC 484 (1657 kg/ha) etc. The range in 100-seed weight in the trial was 22.3 to 33.4g. The Ascochyta blight ratings at Tel Hadya revealed that all the test entries in this trial were resistant.

The five best entries in all the locations are given in Table 3.3.6. Among these FLIP 81-57W ranked among the first five at 13 locations which was followed by FLIP 81-56W and ILC 482 (both ranking among first five at 12 locations) and FLIP 81-41W, ILC 195, and ILC 484. These lines seem to be more adaptable as compared to other lines.

The mean yields and ranks of common entries in CIYT-W during 1980-83 are given in Table 3.3.7. It is apparant that ILC 484, ILC 195

Table 3.3.1. Agronomic data for different locations in the CIYT-W during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide/ Fungicide/ Herbicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Setif	1.4.1983	159		100			
CYPRUS	Laxia	10.12.1982	192	55	55			
EGYPT	Giza			40	70		6	
IRAN	Karaj	5.3.1983	116				6	Diazinon
ITALY	Capalbio	16.3.1983	119	40	100			
ITALY	Perugia	29.10.1982	264					
JORDAN	Marow	3.11.1982	206	15	40			
JORDAN	M'shagar	12.12.1982						
LEBANON	Terbol	8.11.1982	218		50			
MEXICO	Mexico	14.12.1982	127	46	46		3	
MOROCCO	Douyet 1	13.12.1982	152	30	40	60		Dithane M 45
MOROCCO	Douyet 2	24.2.1983	136	30	40	60		Dithane M 45
MOROCCO	Marchouch	1.12.1982	145	30	40	60		
MOROCCO	Sidi Kacem	21.11.1982	129	30	40	60		Dithane M 45
MOROCCO	Sidi Kacem-sp	24.1.1983	140	30	40	60		Mancozebe, Endosulfan
MOROCCO	Tassaout	1.12.1982	211	30	40	60		
OMAN	Muscat	16.11.1982	135					
PAKISTAN	Dokri	4.11.1982	170	20	50			
PAKISTAN	Faisalabad 1	27.10.1982	185	25	50			
PAKISTAN	Faisalabad 2	1.11.1982	183	25	60		1	Endrin
PAKISTAN	Islamabad	9.11.1982	200	20	50			
PAKISTAN	Lahore	23.10.1982	189	20	50		1	Malathion
PAKISTAN	Peshawar	6.11.1982	217					

Table 3.3.1. Cont'd.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide/ Fungicide/ Herbicide
				N	P ₂ O ₅	K ₂ O		
PERU	La-Molina	22.12.1982					3	Aldrex
PORTUGAL	Patacão	26.10.1982	223				5	Basudin
SPAIN	Sevilla	19.11.1982	213	40	75	75	2	Benomilo
SYRIA	Al-Ghab	12.12.1982	190	30	50			
SYRIA	Breda	8.12.1982	180					
SYRIA	Gelline	15.12.1982						
SYRIA	Hama		191					
SYRIA	Heimo	17.11.1982	208					
SYRIA	Homs	27.11.1982	202	26	69	50		
SYRIA	Izra'a	15.12.1982	182					
SYRIA	Jinderis	9.12.1982	186					
SYRIA	Lattakia	15.11.1982						
SYRIA	Tel Hadya	14.11.1982	183		50			Bravo 500
SYRIA	Tel Hadya-Sp.	7.3.1983	104		50			Bravo 500
USA	Pullman	20.4.1983	134					Emidan, Cygon
W.GERMANY	Bonn	6.5.1983	117					Aresin

Table 3.3.2. Time to flowering (days) of entries at different locations in the CIYT-W during 1982/83.

ENTRY NAME	ORIGIN	ALGERIA	CYPRUS	IRAN	ITALY	JORDAN		LEBANON	MEXICO	MOROCCO					PAKISTAN					
		Setif	Laxia	Karaj	Perugia	Marou	M'shagar	Terbol	Mexico	Douyet 1	Douyet 2	Harchouch	Sidi Kacem	Sidi Kacem sp.	Dokri	Faisalabad 1	Faisalabad 2	Islamabad	Lahore	Peshawar
ILC 195	USSR	116	129	80	187	172	144	169	69	110	80	100	121	86	99	126	121	138	125	152
ILC 202	USSR	119	132	80	194	173	144	173	68	110	80	92	103	74	100	126	129	141	130	153
ILC 482	Turkey	106	116	72	187	170	142	164	64	110	80	92	105	74	85	106	106	128	101	137
ILC 484	Turkey	107	116	70	182	158	142	162	62	110	80	100	117	81	81	107	106	129	80	137
ILC 3279	USSR	118	131	79	194	172	145	173	69	110	80	100	122	89	95	129	128	146	130	154
FLIP 81-26W	ICARDA	109	119	71	187	158	143	165	64	110	80	100	113	81	91	112	120	134	102	139
FLIP 81-34W	ICARDA	112	120	72	191	165	144	170	66	110	80	100	113	78	87	122	127	134	108	150
FLIP 81-41W	ICARDA	111	120	76	187	165	143	164	65	110	80	100	115	79	90	113	124	133	109	140
FLIP 81-56W	ICARDA	107	128	78	189	170	143	169	64	110	80	100	113	81	84	117	124	131	114	149
FLIP 81-57W	ICARDA	112	125	77	191	165	143	166	65	110	80	100	103	74	90	119	126	136	120	149
FLIP 81-59W	ICARDA	112	128	78	192	167	144	167	64	110	80	100	117	89	81	117	120	132	117	150
Local check	-	121	118	79	190	168	143	166	43	110	80	100	110	81	82	114	118	137	100	137
Location mean		113	124	76	189	167	143	167	64	110	80	99	113	81	81	117	121	135	111	146

Cont'd. ...

Table 3.3.2. Cont'd.

ENTRY NAME	ORIGIN	PORTUGAL	SPAIN	SYRIA											USA	W. GERMANY	MEAN*
		Pataclao	Sevilla	Al-Ghab	Breda	Gelline	Hama	Heimo	Homs	Izra'a	Jinderis	Lattakia	Tel Hadya	Tel Hadya sp.	Pullman	Bonn	
ILC 195	USSR	114	127	137	142	133	150	161	145	138	146	150	143	63	62	57	126
ILC 202	USSR	117	129	138	143	136	152	165	145	136	147	156	144	63	63	53	127
ILC 482	Turkey	68	120	130	131	128	143	155	141	129	135	131	135	57	56	50	116
ILC 484	Turkey	68	120	128	132	129	144	154	141	129	135	133	135	56	56	54	116
ILC 3279	USSR	117	129	139	145	137	150	158	145	139	147	155	146	63	64	58	128
FLIP 81-26W	ICARDA	71	123	130	139	128	147	156	141	131	140	138	136	58	56	50	119
FLIP 81-34W	ICARDA	91	126	135	138	131	148	162	144	137	142	154	139	61	54	53	123
FLIP 81-41W	ICARDA	79	123	130	139	129	146	156	141	132	141	140	136	59	56	53	120
FLIP 81-56W	ICARDA	117	124	133	140	130	148	161	144	134	141	143	140	59	58	58	123
FLIP 81-57W	ICARDA	117	125	133	139	130	148	161	143	136	141	146	138	61	58	57	123
FLIP 81-59W	ICARDA	114	125	133	140	130	148	161	143	136	142	149	139	61	57	57	124
Local check	-	90	125	-	139	134	148	155	141	132	141	145	-	57	54	50	
Location mean		97	125	133	139	131	148	159	143	134	142	145	139	60	58	54	

* It excludes Morocco - Sidi Kacem (spring) and Syria - Tel Hadya (spring) locations.

Table 3.3.3. Time to maturity (days) of entries at different locations in the CIYT-W during 1982/83.

ENTRY NAME	ALGERIA	IRAN	ITALY	JORDAN	LEBANON	MEXICO	MOROCCO					PAKISTAN		
	Setif	Karaj	Perugia	Harow	Terbol	Mexico	Douyet 1	Douyet 2	Marchouch	Sidi Kacem	Sidi Kacem sp.	Dokri	Faisalabad1	Faisalabad2
ILC 195	154	112	256	206	216	126	152	136	145	190	124	165	182	180
ILC 202	155	113	250	205	218	127	152	136	145	186	134	152	182	183
ILC 482	152	111	250	204	213	123	152	136	145	184	135	142	177	168
ILC 484	149	110	250	204	213	123	152	136	145	188	138	150	180	178
ILC 3279	156	116	256	206	218	127	152	136	145	190	138	170	185	175
FLIP 81-26W	151	111	250	203	215	123	152	136	145	181	137	149	179	183
FLIP 81-34W	151	109	256	205	214	125	152	136	145	181	129	165	182	183
FLIP 81-41W	159	112	256	205	214	126	152	136	145	185	132	157	183	182
FLIP 81-56W	146	112	252	205	213	124	152	136	145	184	133	149	183	182
FLIP 81-57W	152	113	252	203	213	123	152	136	135	186	126	144	180	173
FLIP 81-59W	152	111	250	203	215	123	152	136	145	190	131	154	180	181
Local check	153	114	264	204	215	120	152	136	145	181	140	162	180	182
Location mean	153	112	254	204	215	124	152	136	144	186	133	155	181	179

Cont'd. ...

Table 3.3.3. Cont'd.

ENTRY NAME	PAKISTAN			SPAIN		SYRIA								USA	MEAN [*]
	Islamabad	Lahore	Peshawar	Sevilla	Al-Ghab	Breda	Hama	Helmo	Homs	Izra'a	Jinderis	Tel Hadya	Tel Hadya sp.	Pullman	
ILC 195	198	188	212	194	184	179	188	201	202	180	184	182	103	131	179
ILC 202	197	189	216	193	190	178	189	208	194	182	186	182	103	128	178
ILC 482	-	184	206	189	181	174	186	201	187	177	181	180	95	128	173
ILC 484	-	181	205	190	181	175	185	201	188	179	180	180	95	129	174
ILC 3279	197	189	217	193	189	180	189	207	194	180	186	183	04	130	179
FLIP 81-26W	-	182	211	190	181	174	186	206	184	178	182	177	96	126	174
FLIP 81-34W	197	185	216	191	181	178	186	207	189	178	184	177	96	123	177
FLIP 81-41W	200	187	215	194	188	178	191	207	191	181	184	180	99	134	179
FLIP 81-56W	-	185	208	192	185	178	188	207	190	179	183	179	95	129	175
FLIP 81-57W	198	186	211	192	180	176	188	207	192	179	183	179	95	130	176
FLIP 81-59W	198	186	207	190	179	177	186	206	195	179	183	177	96	130	176
Local check	-	181	205	213	-	176	185	200	195	181	183	-	96	132	
Location mean		185	211	193	184	177	187	205	192	179	183	180	98	129	

* It excludes Morocco - Sidi Kasem (spring) and Syria - Tel Hadya (spring) locations.

Table 3.3.4. Plant height (cm) of entries at different locations in the CIYT-W during 1982/83.

ENTRY NAME	ALGERIA	CYPRUS	IRAN	ITALY	JORDAN		LEBANON	PAKISTAN				PORTUGAL	SPAIN
	Setif	Laxia	Karaj	Perugia	Marow	M'shagar	Terbol	Dokri	Faisalabad	Lahore	Peshawar	Patacão	Sevilla
ILC 195	30	47	30	37	49	28	49	96	86	73	132	55	60
ILC 202	42	49	37	54	68	30	56	101	91	96	155	80	70
ILC 482	20	38	21	35	44	28	40	92	81	76	99	50	49
ILC 484	28	38	22	40	50	29	39	71	73	71	90	55	48
ILC 3279	42	50	39	54	73	29	54	117	92	99	144	85	72
FLIP 81-26W	25	39	22	43	50	29	43	82	79	75	120	55	55
FLIP 81-34W	30	40	24	38	53	31	41	88	78	78	123	60	59
FLIP 81-41W	25	38	23	38	55	29	41	81	81	80	120	55	54
FLIP 81-56W	25	39	24	37	46	31	39	77	77	66	122	50	53
FLIP 81-57W	25	37	23	36	50	29	35	67	75	72	125	55	51
FLIP 81-59W	23	38	25	34	53	32	38	75	71	81	113	60	50
Local check	28	39	25	34	51	30	38	68	70	73	104	45	65
Location mean	29	41	26	40	54	30	43	85	80	78	121	59	57

Cont'd. ...

Table 3.3.4. Cont'd.

ENTRY NAME	SYRIA												USA	W. GERMANY	MEAN*
	Al-Ghab	Breda	Gelline	Hama	Heimo	Homs	Izra'a	Jableh	Jinderis	Lattakia	Tel Hadya	Tel Hadya sp.	Pullman	Bonn	
ILC 195	63	27	55	59	44	40	52	59	36	49	42	33	47	44	53
ILC 202	76	33	62	64	52	57	58	68	45	61	49	37	52	53	64
ILC 482	58	22	54	51	39	36	46	61	32	42	37	26	26	29	46
ILC 484	54	21	42	48	40	36	45	61	30	39	36	25	33	33	45
ILC 3279	80	32	64	65	55	54	59	71	46	62	51	39	50	51	65
FLIP 81-26W	59	22	50	51	46	36	45	60	33	38	38	26	33	39	49
FLIP 81-34W	60	22	54	54	44	42	53	61	36	48	45	29	39	43	52
FLIP 81-41W	56	21	55	49	41	38	48	60	32	45	36	27	43	40	49
FLIP 81-56W	55	23	48	49	38	34	43	55	29	38	39	26	35	36	46
FLIP 81-57W	54	21	49	48	35	32	43	55	29	36	33	25	30	34	45
FLIP 81-59W	56	21	46	51	36	34	46	55	31	42	38	26	36	39	47
Local check	-	20	53	50	39	36	43	29	28	-	-	24	34	40	
Location mean	61	24	53	53	42	40	48	58	34	45	40	29	38	40	

* It excludes Syria - Tel Hadya (spring) location.

Table 3.3.5. Seed yield (Y= kg/ha) and rank (R) of entries at different locations in the CIYT-W during 1982/83.

ENTRY NAME	ALGERIA		CYPRUS		EGYPT		IRAN		ITALY				JORDAN				LEBANON		MEXICO		MOROCCO			
	Setif		Laxia		Giza		Karaj		Capalbio		Perugia		Marow		M'shagar		Terbol		Mexico		Douyet 1		Douyet 2	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 195	393	10	1038	3	1424	4	497	7	1531	5	2760	12	926	9	149	12	2657	3	2109	4	1738	5	166	5
ILC 202	471 ⁽¹⁾	7	724	12	1389	5	369	9	1299	11	3945	2	834	11	286	10	2570	6	1716	11	1531	9	172	4
ILC 482	521	4	1292	1	1354	8	358	10	1305	10	3703	6	1279	4	431	3	2749	2	2521	2	1844	2	141	7
ILC 484	591	2	939	8	1354	8	273	11	1500	6	3888	3	1065	7	325	9	2636	4	2406	3	1813	3	113	9
ILC 3279	419	8	952	7	1285	11	547	5	1456	7	3735	5	1046	8	208	11	2238	12	1936	9	1656	6	156	6
FLIP 81-26W	380	11	1038	3	1389	5	242	12	1688	1	3378	8	1189	5	383	5	2476	9	2083	5	1375	12	113	9
FLIP 81-34W	500	5	938	9	1319	10	522	6	1633	3	3445	7	1358	3	351	8	2337	11	1680	12	1625	8	103	11
FLIP 81-41W	492	6	890	10	1285	11	471	8	1333	9	3298	9	1649	1	506	2	2504	8	1995	7	1969	1	359	1
FLIP 81-56W	578	3	1168	2	1389	5	566	3	1536	4	3825	4	869	10	375	7	2762	1	1901	10	1656	6	63	12
FLIP 81-57W	615	1	978	5	1458	2	815	1	1646	2	4273	1	1144	6	586	1	2609	5	2007	6	1813	3	328	3
FLIP 81-59W	396	9	855	11	1458	2	551	4	1174	12	2935	10	1457	2	382	6	2414	10	1943	8	1531	9	128	8
Local check	299	12	965	6	1493	1	685	2	1344	8	2935	10	451	12	417	4	2526	7	2776	1	1500	11	359	1
Location mean	471		981		1383		491		1454		3510		1106		367		2540		2089		1671		183	
C.V.%	21.5		23.4		19.4		39.0		20.9		14.7		38.0		53.9		12.7		15.5		17.5		119.4	
L.S.D. 5%	146		NS		NS		275		NS		739		603		NS		NS		465		NS		NS	
S.E.	50.8		114.8		134.0		95.9		152.5		257.3		210.0		98.9		161.9		161.9		146.4		109.5	
No. of entries significantly exceeding local check	7		—		—		0		—		6		7		—		—		0		—		—	

Cont'd. ...

Table 3.3-5. Cont'd.

ENTRY NAME	MOROCCO						OMAN		PAKISTAN										PORTUGAL			
	Marchouch		Sidi Kacem		Sidi Kacem sp.		Muscat		Dokri		Faisalabad 1		Faisalabad 2		Islamabad		Lahore		Peshawar		Pataclao	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 195	16	4	2685	10	3019	6	495	4	1769	6	1524	7	689	5	<u>530</u>	2	489	7	<u>648</u>	1	<u>2760</u>	2
ILC 202	13	6	3440	5	2467	11	417	10	1053	11	1727	4	430	9	<u>683</u>	1	474	9	190	6	2068	9
ILC 482	31	1	4006	2	2988	7	688	2	2380	1	1685	5	374	10	0	9	<u>644</u>	4	52	12	<u>2307</u>	6
ILC 484	18	3	4107	1	3386	3	359	11	1579	8	1810	3	833	2	78	8	389	10	130	7	<u>2380</u>	5
ILC 3279	5	12	3214	7	2367	12	297	12	911	12	1400	10	180	12	<u>379</u>	5	489	7	89	9	1953	10
FLIP 81-26W	13	6	3571	4	3517	1	427	9	1263	9	1649	6	623	7	0	9	<u>730</u>	3	58	11	<u>2604</u>	4
FLIP 81-34W	16	4	2607	12	2793	8	839	1	1733	7	1459	9	735	3	<u>367</u>	6	314	11	116	8	<u>2151</u>	8
FLIP 81-41W	23	2	2845	9	3298	4	604	3	1824	5	2054	1	671	6	<u>461</u>	3	<u>831</u>	2	60	10	1724	11
FLIP 81-56W	8	9	3643	3	3202	5	458	8	2142	2	1507	8	732	4	0	9	<u>567</u>	6	487	2	<u>2766</u>	1
FLIP 81-57W	8	9	3238	6	2781	9	490	5	1954	4	1376	11	305	11	329	7	<u>872</u>	1	370	3	<u>2646</u>	3
FLIP 81-59W	10	8	2964	8	3419	2	479	6	1244	10	1191	12	542	8	<u>409</u>	4	<u>642</u>	5	217	5	<u>2260</u>	7
Local check	8	9	2619	11	2745	10	464	7	2086	3	1834	2	2494	1	0	9	286	12	344	4	1354	12
Location mean	14		3245		2998		501		1662		1601		717		270		561		230		2248	
C.V.%	97.1		24.1		20.8		-		28.8		24.7		39.6		72.7		32.8		58.7		22.1	
L.S.D. 5%	NS		NS		NS		NS		691		NS		410		332		264		195		717	
S.E.	6.9		391.3		311.8		-		239.4		193.6		142.0		113.4		92.0		67.5		248.4	
No. of entries significantly exceeding local check	-		-		-		-		0		-		0		6		6		1		8	

Cont'd. ...

Table 3.3-5. Cont'd.

ENTRY NAME	SPAIN				SYRIA																			
	Sevilla		Al-Ghab		Breda		Gelline		Hama		Heimo		Homs		Izra'a		Jableh		Jinderis		Lattakia			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
ILC 195	2500	2	3677	10	177	10	2792	6	<u>3149</u>	1	-	-	1851	11	1488	8	<u>1648</u>	7	1104	9	<u>1885</u>	2		
ILC 202	2376	5	4379	3	168	11	2641	9	<u>2714</u>	10	981	10	<u>3016</u>	2	1102	12	<u>1589</u>	10	895	12	<u>1474</u>	10		
ILC 482	2076	10	4123	4	<u>342</u>	1	3161	2	<u>2964</u>	7	1856	2	<u>3140</u>	1	<u>2213</u>	1	<u>1788</u>	3	<u>1963</u>	1	<u>1650</u>	8		
ILC 484	2419	3	3594	11	293	2	2521	10	<u>2982</u>	6	1657	3	<u>2747</u>	6	1800	4	<u>2080</u>	1	1440	3	<u>1700</u>	6		
ILC 3279	2380	4	3892	8	125	12	2193	11	<u>3048</u>	5	1605	4	<u>2757</u>	5	1131	11	<u>1598</u>	9	1161	8	<u>1537</u>	9		
FLIP 81-26W	2121	9	3951	6	257	4	3010	4	<u>2744</u>	9	1214	9	<u>2746</u>	7	1471	9	<u>1199</u>	11	971	11	<u>1446</u>	11		
FLIP 81-34W	2035	12	3773	9	207	7	2786	7	<u>2685</u>	11	1436	6	2352	9	1551	7	<u>1733</u>	5	1094	10	<u>1826</u>	3		
FLIP 81-41W	2154	8	4915	1	237	6	3349	1	<u>3119</u>	2	1901	1	<u>2653</u>	8	<u>2106</u>	2	<u>1664</u>	6	1425	4	<u>2023</u>	1		
FLIP 81-56W	2701	1	4421	2	275	3	3094	3	<u>3071</u>	3	1556	5	<u>2802</u>	3	1690	5	<u>1614</u>	8	1289	7	<u>1685</u>	7		
FLIP 81-57W	2336	7	4005	5	200	8	2813	5	<u>3065</u>	4	1427	8	<u>2788</u>	4	1937	3	<u>1829</u>	2	1393	5	<u>1727</u>	4		
FLIP 81-59W	2339	6	3951	6	198	9	2677	8	<u>2804</u>	8	1431	7	1974	10	1365	10	<u>1768</u>	4	1312	6	<u>1721</u>	5		
Local check	2047	11	-	-	248	5	1802	12	810	12	-	-	1788	12	1557	6	455	12	1461	2	17	12		
Location mean	2290		4062		227.2		2737		2763		1506		2551		1618		1580		1292		1558			
C.V.%	14.6		19.0		26.6		21.6		12.6		22.6		19.6		21.7		28.9		21.3		33.1			
L.S.D. 5%	NS		NS		87		NS		499		NS		717		503		659		398		745			
S.E.	167.0		385.8		30.2		295.0		174.2		170.5		249.5		175.5		228.1		137.7		258.1			
No. of entries significantly exceeding local check	-		-		1		-		11		-		8		2		11		1		11			

Cont'd. ...

Table 3.3.5. Cont'd.

ENTRY NAME	SYRIA				TUNISIA				USA		W. GERMANY		100-seed weight (g) ⁽²⁾	Ascochyta blight rating ⁽³⁾	MEAN	
	Tel Hadya		Tel Hadya sp		Beja		El-Kef		Pullman		Bonn				Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R				
ILC 195	<u>1544</u>	11	1277	9	1965	5	2133	4	1295	9	<u>2879</u>	6	25.1	3	1574	7
ILC 202	<u>1576</u>	9	977	12	1725	10	2110	5	1255	10	<u>3433</u>	1	27.6	2	1517	10
ILC 482	<u>1561</u>	10	1774	2	1850	8	2506	1	1482	8	2608	8	29.7	4	1743	3
ILC 484	<u>1602</u>	8	1532	4	2215	2	2199	3	1101	11	2418	10	33.4	4	1657	5
ILC 3279	<u>1786</u>	5	1001	11	1735	9	1995	8	698	12	2411	11	27.2	2	1449	11
FLIP 81-26W	<u>2026</u>	3	1361	8	1993	4	1968	10	1730	5	<u>2863</u>	7	22.3	2	1582	6
FLIP 81-34W	<u>1749</u>	6	1362	7	1673	12	1990	9	1869	4	<u>3114</u>	5	24.9	2	1554	8
FLIP 81-41W	<u>2087</u>	2	1589	3	2253	1	2048	6	2291	1	<u>3288</u>	2	24.9	2	1756	1
FLIP 81-56W	<u>2140</u>	1	1481	6	2203	3	2365	2	2287	2	<u>3224</u>	3	28.0	2	1752	2
FLIP 81-57W	<u>1954</u>	4	1517	5	1855	7	1910	11	1527	7	2548	9	28.5	3	1687	4
FLIP 81-59W	<u>1676</u>	7	1204	10	1915	6	2018	7	1551	6	<u>3138</u>	4	28.5	2	1541	9
Local check	0	12	1964	1	1713	11	1563	12	1904	3	2171	12	0	9		
Location mean	1642		1420		1924		2067		1583		2841					
C.V.%	15.2		15.0		20.3		20.1		29.0		13.6					
L.S.D. 5%	360		307		NS		NS		658		560					
S.E.	124.6		106.3		195.0		207.8		229.2		193.9					
No. of entries significantly exceeding local check	11		0		-		-		0		7					

(1) Seed yield values underlined, significantly exceeded the local check

(2) 100 seed weight at Tel Hadya (Syria)

(3) Ascochyta blight rating at Tel Hadya (Syria).

Table 3.3.6. The five heaviest seed yielding entries at the individual locations in the CIYT-W during 1982/83.

RANK	ALGERIA	CYPRUS	EGYPT	IRAN	ITALY		JORDAN		LEBANON	MEXICO
	Setif	Laxia	Giza	Karaj	Capalbio	Perugia	Marow	M'shagar	Terbol	Mexico
1	FLIP 81-57W	ILC 482	Local check	FLIP 81-57W	FLIP 81-26W	FLIP 81-57W	FLIP 81-41W	FLIP 81-57W	FLIP 81-56W	Local check
2	ILC 484	FLIP 81-56W	FLIP 81-57W	Local check	FLIP 81-57W	ILC 202	FLIP 81-59W	FLIP 81-41W	ILC 482	ILC 482
3	FLIP 81-56W	ILC 195	FLIP 81-59W	FLIP 81-56W	FLIP 81-34W	ILC 484	FLIP 81-34W	ILC 482	ILC 195	ILC 484
4	ILC 482	FLIP 81-26W	ILC 195	FLIP 81-59W	FLIP 81-56W	FLIP 81-56W	ILC 482	Local check	ILC 484	ILC 195
5	FLIP 81-34W	FLIP 81-57W	ILC 202	ILC 3279	ILC 195	ILC 3279	FLIP 81-26W	FLIP 81-26W	FLIP 81-57W	FLIP 81-26W
			FLIP 81-26W							
			FLIP 81-56W							

Cont'd. ...

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RANK	MOROCCO					PAKISTAN					
	Douyet 1	Douyet 2	Marchouch	Sidi Kacem	Sidi Kacem-Sp	Dokri	Faisalabad 1	Faisalabad 2	Islamabad	Lahore	Peshawar
1	FLIP 81-41W	FLIP 81-41W	ILC 482	ILC 484	FLIP 81-26W	ILC 482	FLIP 81-41W	Local check	ILC 202	FLIP 81-57W	ILC 195
2	ILC 482	Local check	FLIP 81-41W	ILC 482	FLIP 81-59W	FLIP 81-56W	Local check	ILC 484	ILC 195	FLIP 81-41W	FLIP 81-56W
3	ILC 484	FLIP 81-57W	ILC 484	FLIP 81-56W	ILC 484	Local check	ILC 484	FLIP 81-34W	FLIP 81-41W	FLIP 81-26W	FLIP 81-57W
4	FLIP 81-57W	ILC 202	ILC 195	FLIP 81-26W	FLIP 81-41W	FLIP 81-57W	ILC 202	FLIP 81-56W	FLIP 81-59W	ILC 482	Local check
5	ILC 195	ILC 195	FLIP 81-34W	ILC 202	FLIP 81-56W	FLIP 81-41W	ILC 482	ILC 195	ILC 3279	FLIP 81-59W	FLIP 81-59W

Cont'd. ...

Table 3.3.6. Cont'd. ...

RANK	PORTUGAL	SPAIN	SYRIA						
	Patac'ao	Sevilla	Al-Ghab	Breda	Gelline	Hama	Heimo	Homs	Izra'a
1	FLIP 81-56W	FLIP 81-56W	FLIP 81-41W	ILC 482	FLIP 81-41W	ILC 195	FLIP 81-41W	ILC 482	ILC 482
2	ILC 195	ILC 195	FLIP 81-56W	ILC 484	ILC 482	FLIP 81-41W	ILC 482	ILC 202	FLIP 81-41W
3	FLIP 81-57W	ILC 484	ILC 202	FLIP 81-56W	FLIP 81-56W	FLIP 81-56W	ILC 484	FLIP 81-56W	FLIP 81-57W
4	FLIP 81-26W	ILC 3279	ILC 482	FLIP 81-26W	FLIP 81-26W	FLIP 81-57W	ILC 3279	FLIP 81-57W	ILC 484
5	ILC 484	ILC 202	FLIP 81-57W	Local check	FLIP 81-57W	ILC 3279	FLIP 81-56W	ILC 3279	FLIP 81-56W

Cont'd. ...

RANK	SYRIA					TUNISIA		USA	W. GERMANY
	Jableh	Jinderis	Lattakia	Tel Hadya	Tel Hadya-Sp	Beja	E1-Kef	Pullman	Bonn
1	ILC 484	ILC 482	FLIP 81-41W	FLIP 81-56W	Local check	FLIP 81-41W	ILC 482	FLIP 81-41W	ILC 202
2	FLIP 81-57W	Local check	ILC 195	FLIP 81-41W	ILC 482	ILC 484	FLIP 81-56W	FLIP 81-56W	FLIP 81-41W
3	ILC 482	ILC 484	FLIP 81-34W	FLIP 81-26W	FLIP 81-41W	FLIP 81-56W	ILC 484	Local check	FLIP 81-56W
4	FLIP 81-59W	FLIP 81-41W	FLIP 81-57W	FLIP 81-57W	ILC 484	FLIP 81-26W	ILC 195	FLIP 81-34W	FLIP 81-59W
5	FLIP 81-34W	FLIP 81-57W	FLIP 81-59W	ILC 3279	FLIP 81-57W	ILC 195	ILC 202	FLIP 81-26W	FLIP 81-34W

(1) The brackets indicate entries having the same rank.

Table 3.3.7. The mean yield (Y = kg/ha) and rank (R)
of the common entries in the CIYT-W
during 1980-1983.

ENTRY		<u>1980/81</u>		<u>1981/82</u>		<u>1982/83</u>	
		Y	R	Y	R	Y	R
ILC	195	1855	3	1372	1	1739	3
ILC	202	1646	5	1148	5	1667	4
ILC	482	2124	2	1165	4	1910	1
ILC	484	2147	1	1342	2	1820	2
ILC	3279	1726	4	1252	3	1597	5

and ILC 482 were the top three lines in seed yield.

The correlations between seed yields of different locations (Table 3.3.8) revealed that the performance at Tel Hadya (Winter sowing) in Syria is not related with any other location except that of Pullman in USA. However, the performance during spring season at Tel Hadya in Syria is positively related with Mexico (Mexico); Dokri (Pakistan); Breda, Izra'a, and Jinderis in Syria. Similar was the case of Jinderis location in Syria with others.

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

Material

The Chickpea International Yield Trial-Large Seed comprised of 19 test entries and one check entry to be supplied by cooperator. The test entries originated from five countries and were selected on the basis of their superior performance either in regional or local trials. Cooperators were free to use these entries in their breeding programs or for release as cultivars.

Methods and Management

The trial design was a randomised complete block with four replications. The suggested plot size was 4 rows, 4 meter long with inter- and intra row spacings of 30- and 10 cm respectively.

Forty-seven sets were sent to 33 cooperators in 26 countries. The results were, however, received from 34 cooperators, out of which 30 were worth analysis and are reported. The agronomic information received from the cooperators is given in Table 3.4.1.

Results and Discussion

The data on time to flowering, time to maturity and plant height are given in Tables 3.4.2, 3.4.3, and 3.4.4, respectively. In Karaj in Iran the entries flowered at the earliest in 37 days. At the locations including Setif in Algeria, Laxia in Cyprus and Zawia in Libya the mean time taken to flower was more than 100 days and these were late. The range in time to flowering for different entries was, however, from 66 days for ILC 2587 to 71 days for ILC 112 and ILC 620. Mean time to maturity at Karaj in Iran (78 days) was least and it varied upto 157 days for Khansa (Algeria) and Shandweel (Egypt). The range in mean time to maturity at different locations varied from 116 to 122 days. The plant height was least at Khansa in Algeria (21 cm) and maximum at Shandweel (58 cm) in Egypt. Averaged over the locations the plant height was least for ILC 35 (33 cm) and maximum for ILC 254 (42 cm).

The seed yield and rank of entries at different locations and 100-seed weight at Tel Hadya are given in Table 3.4.5. The ANOVA revealed that the differences among entries were significant for all

Table 3.3.8 Correlation (df = 9) among different locations for the seed yield of entries in the CIYT-W during 1982/83.

COUNTRY	LOCATION	CYPRUS	EGYPT	IRAN	ITALY	JORDAN		LEBANON	MEXICO	MOROCCO				
		Laxia	Giza	Karaj	Perugia	Harow	Il'shagar	Terbol	Mexico	Douyet 1	Douyet 2	Marchouch	Sidi Kacem	Sidi Kacem-sp
ALGERIA	Setif	0.22	0.12	0.30	0.75 ^{**}	-0.11	0.55	0.51	0.20	0.56	0.19	0.11	0.43	-0.05
CYPRUS	Laxia		-0.01	-0.04	0.04	-0.07	0.12	0.53	0.60 [*]	0.23	-0.28	0.37	0.40	0.23
EGYPT	Giza			0.31	-0.08	-0.27	0.13	0.39	0.04	-0.31	-0.05	-0.30	0.01	0.23
IRAN	Karaj				0.18	0.04	0.33	-0.10	-0.39	0.25	0.43	-0.49	-0.48	-0.36
ITALY	Perugia					-0.35	0.40	0.21	0.03	0.16	0.14	-0.17	0.57	-0.41
JORDAN	Harow						0.54	-0.35	0.07	0.29	0.41	0.41	-0.34	0.40
JORDAN	Il'shagar							0.20	0.10	0.34	0.55	0.20	0.13	0.29
LEBANON	Terbol								0.51	0.35	-0.03	0.40	0.52	0.29
MEXICO	Mexico									0.44	-0.33	0.60 [*]	0.64 [*]	0.41
MOROCCO	Douyet 1										0.59	0.51	0.03	-0.02
MOROCCO	Douyet 2											0.13	-0.32	-0.13
MOROCCO	Marchouch												0.23	0.26
MOROCCO	Sidi Kacem													0.18
MOROCCO	Sidi Kacem-sp													
OMAN	Muscat													
PAKISTAN	Dokri													
PAKISTAN	Faisalabad 1													
PAKISTAN	Faisalabad 2													
PAKISTAN	Islamabad													
PAKISTAN	Lahore													
PAKISTAN	Peshawar													
PORTUGAL	Pataca'o													
SPAIN	Sevilla													
SYRIA	Al-Ghab													
SYRIA	Breda													
SYRIA	Gelline													
SYRIA	Hama													
SYRIA	Heimo ¹													
SYRIA	Homs													
SYRIA	Izra'a													
SYRIA	Jableh													
SYRIA	Lattakia													
SYRIA	Tel Hadya													
SYRIA	Tel Hadya-sp													
TUNISIA	Beja													
TUNISIA	El Kef													
USA	Pullman													

¹ df = 8 for Heimo (Syria)

* P ≤ 0.05

** P ≤ 0.01

Cont'd Table 3.3.0.

COUNTRY	LOCATION	OMAN	PAKISTAN						PORTUGAL	SPAIN	SYRIA			
		Muscat	Dokri	Faisalabad ¹	Faisalabad ²	Islamabad	Lahore	Peshawar	Patac'ao	Sevilla	Al-Ghab	Breda	Gelline	Hama
ALGERIA	Setif	0.13	0.59	0.19	0.11	-0.33	0.07	0.08	0.16	0.19	0.14	0.45	0.18	0.28
CYPRUS	Laxia	0.25	0.73 ^{**}	-0.03	0.01	-0.76 ^{**}	0.14	0.16	0.50	-0.01	-0.09	0.66 [*]	0.44	0.37
EGYPT	Giza	-0.18	0.08	-0.53	-0.02	0.04	0.27	0.59	0.70 [*]	0.36	-0.26	-0.33	0.01	-0.07
IRAN	Karaj	0.10	0.20	-0.57	-0.37	0.30	0.31	0.47	0.14	0.27	0.07	-0.44	-0.08	0.37
ITALY	Perugia	-0.20	0.12	0.11	-0.37	-0.24	0.08	-0.19	0.01	0.10	0.12	0.15	-0.15	0.01
JORDAN	Marow	0.53	0.14	0.16	0.09	0.01	0.41	-0.54	-0.52	-0.69 [*]	0.28	0.19	0.41	-0.09
JORDAN	M'shagar	0.33	0.47	0.15	-0.09	-0.28	0.74 ^{**}	-0.27	-0.05	-0.36	0.46	0.42	0.58	0.04
LEBANON	Terbol	0.03	0.72 [*]	0.30	0.27	-0.37	0.18	0.46	0.57	0.37	0.17	0.65 [*]	0.52	0.37
MEXICO	Mexico	-0.09	0.43	0.30	0.04	-0.59	0.17	-0.13	0.23	-0.09	-0.24	0.69 [*]	0.18	0.39
MOROCCO	Douyet 1	0.25	0.61 [*]	0.45	0.03	0.01	0.23	0.05	-0.22	-0.02	0.27	0.29	0.30	0.72 [*]
MOROCCO	Douyet 2	0.07	0.12	0.33	-0.30	0.43	0.68 [*]	-0.05	-0.35	-0.21	0.49	-0.21	0.28	0.42
MOROCCO	Marchouch	0.57	0.54	0.63 [*]	0.23	-0.20	0.05	-0.34	-0.23	-0.55	0.19	0.66 [*]	0.57	0.04
MOROCCO	Sidi Kacem	-0.36	0.18	0.28	-0.05	-0.69 [*]	0.01	-0.26	0.22	0.14	-0.05	0.67 [*]	0.01	0.01
MOROCCO	Sidi Kacem-sp	0.04	0.26	0.21	0.67 [*]	-0.51	0.30	-0.02	0.30	-0.04 [*]	0.03	0.60 [*]	0.51	0.03
OMAN	Muscat		0.57	0.08	0.24	-0.01	-0.05	-0.15	-0.15	-0.63 [*]	0.13	0.30	0.54 [*]	-0.24
PAKISTAN	Dokri			0.19	0.25	-0.45	0.25	0.28	0.37	-0.04	0.19	0.69 [*]	0.70 [*]	0.43
PAKISTAN	Faisalabad 1				0.34	-0.06	0.11	-0.35	-0.37	-0.24	0.50	0.42	0.47	0.17
PAKISTAN	Faisalabad 2					-0.21	-0.31	0.19	0.23	0.11	-0.06	0.40	0.34	-0.06
PAKISTAN	Islamabad						-0.11	0.18	-0.44	0.04	0.15	-0.79 ^{**}	-0.30	-0.06
PAKISTAN	Lahore							-0.04	0.05	-0.16	0.53	0.15	0.55	0.32
PAKISTAN	Peshawar								0.70 [*]	0.73 ^{**}	-0.16	-0.22	0.01	0.46
PORTUGAL	Patac'ao									0.46	-0.43	0.25	0.10	0.17
SPRAIN	Sevilla										-0.03	-0.20	-0.28 [*]	0.47
SYRIA	Al-Ghab											0.11	0.63 [*]	0.17
SYRIA	Breda												0.62 [*]	0.05
SYRIA	Gelline													0.15
SYRIA	Hama													
SYRIA	Heimo (1)													
SYRIA	Homs													
SYRIA	Izra'a													
SYRIA	Jableh													
SYRIA	Lattakia													
SYRIA	Tel Hadya													
SYRIA	Tel Hadya sp													
TUNISIA	Beja													
TUNISIA	El-Kef													
USA	Pullman													

Cont'd Table 3.3.8.

COUNTRY	LOCATION	SYRIA								TUNISIA		USA	W.GERMANY
		Heimo ¹	Homs	Izra'a	Jableh	Jinderis	Lattakia	Tel Hadya	TelHadya sp.	Beja	El-Kef	Pullman	Bonn
ALGERIA	Setif	0.31	0.50	0.59	0.63 [*]	0.47	0.18	0.20	0.57	0.28	0.31 [*]	0.22	-0.20
CYPRUS	Laxia	0.51	0.22	0.56	-0.04	0.61 [*]	0.01	0.13	0.66 [*]	0.20	0.67 [*]	0.20	-0.38
EGYPT	Giza	-0.49	0.33	-0.09	0.03	-0.09	-0.14	-0.13	-0.05	-0.04	-0.08	0.01	0.07
IRAN	Karaj	0.06	-0.24	0.06	0.22	0.04	0.34	0.29	-0.05	-0.21	-0.33	0.12	-0.03
ITALY	Perugia	-0.13	0.81 ^{**}	0.17	0.25	0.17	-0.41	0.18	0.14	-0.11	0.10	-0.14	-0.30
JORDAN	Marow	0.51	-0.19	0.46	0.09	0.37	0.52	0.22	0.39	0.13	-0.24	0.41	0.12
JORDAN	M' shagar	0.29	0.36	0.69 [*]	0.15	0.47	0.21	0.53	0.63 [*]	0.23	-0.08	0.56	0.04
LEBANON	Terbol	0.18	0.27	0.55	0.24	0.45	0.10	-0.04	0.59	0.47	0.73 ^{**}	0.28	0.03
MEXICO	Mexico	0.57	0.23	0.60 [*]	0.35	0.74 ^{**}	0.01	-0.28	0.65 [*]	0.39	0.56	-0.22	-0.64 [*]
MOROCCO	Douyet 1	0.81 ^{**}	0.14	0.75 ^{**}	0.64 [*]	0.68 [*]	0.69 [*]	0.01	0.62 [*]	0.37	0.30	0.12	-0.26
MOROCCO	Douyet 2	0.25	0.08	0.40	0.12	0.17	0.46	0.27	0.20	0.12	-0.39	0.15	0.01
MOROCCO	Marchouch	0.53	0.21	0.68 [*]	0.24	0.63 [*]	0.35	-0.31	0.66 [*]	0.19	0.55	0.20	0.01
MOROCCO	Sidi Kacem	0.10	0.72 [*]	0.27	0.18	0.43	-0.55	-0.08	0.35	0.28	0.60 [*]	-0.20	-0.41
MOROCCO	Sidi Kacem-sp	0.24	-0.26	0.40	-0.03	0.22	0.25	0.29	0.51	0.74 ^{**}	0.13	0.50	0.10
OMAN	Muscat	0.26	-0.11	0.47	0.12	0.30	0.51	-0.03	0.48	-0.22	0.15	0.53	0.30
PAKISTAN	Dokri	0.57	0.15	-0.86 ^{**}	0.33	0.70 [*]	0.50	0.17	0.87 ^{**}	0.34	0.60 [*]	0.54	-0.05
PAKISTAN	Faisalabad 1	0.31	0.44	0.44	-0.01	0.17	0.21	0.12	0.39	0.51	0.27	0.25	0.16
PAKISTAN	Faisalabad 2	0.09	-0.36	-0.19	0.12	-0.12	0.43	0.10	0.31	0.61 [*]	0.15	0.50	0.34
PAKISTAN	Islamabad	-0.36	-0.38	0.47	0.02	-0.48	0.24	-0.31	-0.63 [*]	-0.40	-0.48	-0.22	0.42
PAKISTAN	Lahore	0.19	0.18	-0.48	-0.24	0.30	0.12	0.56	0.38	0.30	-0.17	0.38	0.01
PAKISTAN	Peshawar	-0.21	-0.48	0.10	0.06	-0.19	0.27	-0.02	-0.09	0.15	0.09	0.08	0.12
PORTUGAL	Patac 'ao	-0.25	-0.18	0.07	-0.08	-0.04	-0.15	0.07	0.21	0.17	0.20	0.08	-0.20
SPAIN	Sevilla	-0.13	-0.14	-0.29	0.14	-0.20	-0.06	0.07	-0.27	0.34	0.20	-0.11	0.03
SYRIA	Al-Ghab	0.20	0.38	0.29	-0.25	0.12	0.21	0.54	0.17	0.33	0.14 [*]	0.62 [*]	0.61 [*]
SYRIA	Breda	0.47	0.40	0.75 ^{**}	0.22	0.68 [*]	0.05	-0.09	0.85 ^{**}	0.51	0.70 [*]	0.41	-0.13
SYRIA	Gelline	0.34	0.15	0.70 [*]	-0.21	0.38	0.41	0.47	0.71 [*]	0.47	0.36	0.85 ^{**}	0.43
SYRIA	Hama	0.72 [*]	-0.05	0.44	0.27	0.41	0.49	0.21	0.34	0.52	0.23	0.01	-0.35
SYRIA	Heimo ¹		0.06	0.73 [*]	0.44	0.80 ^{**}	0.64 [*]	0.12	0.68 [*]	0.47	0.42	0.19	-0.38
SYRIA	Homs			0.28	-0.04	0.30	-0.50	0.20	0.26	-0.01	0.37	-0.02	-0.17
SYRIA	Izra'a				0.39	0.82 ^{**}	0.52	0.24	0.97 ^{**}	0.48	0.42	0.48	-0.20
SYRIA	Jableh					0.55	0.41	-0.42	0.34	0.13	0.25	-0.21	-0.33
SYRIA	Jinderis						0.29	-0.01	0.79 ^{**}	0.26	0.62 [*]	0.10	-0.40
SYRIA	Lattakia							0.11	0.43	0.39	-0.02	0.46	0.19
SYRIA	Tel Hadya								0.24	0.45	-0.23	0.68 [*]	0.21
SYRIA	Tel Hadya-sp									0.51	0.48	0.50	-0.22
TUNISIA	Beja										0.28	0.47	0.07
TUNISIA	El Kef											0.12	-0.02
USA	Pullman												0.63 [*]

Table 3.4.1. Agronomic data for different locations in the CIYT-L during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide/ Fungicide/ Herbicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Setif	1.5.1983	164		100			
ALGERIA	Khansa	24.1.1983	157	50	190			
BULGARIA	Toshevo	26.3.1983	124	30	60			
CANADA	Saskatoon	28.5.1983	151					
CHILE	Graneros	3.12.1982	138				4	
CYPRUS	Laxia	10.12.1982	192	55	55			
EGYPT	Shandweel	2.12.1982	158	40	70		4	
IRAN	Karaj	17.4.1983	82	18	46			Metasystox
ITALY	Apollinare	23.3.1983	124		100			
ITALY	Bari	9.3.1983	113		100			
JORDAN	Marow	14.3.1983	105					
LEBANON	Terbol	1.4.1983	108		50		2	
LIBYA	Zawia	1.12.1982	198	50	150		60	
MEXICO	Mexico	30.11.1982	145	46	46		3	
MOROCCO	Karia	15.3.1983	92	10	20	10		
MOROCCO	Marchouch	9.3.1983		7	5			
OMAN	Muscat	17.11.1982	130					
PAKISTAN	Islamabad	10.11.1982		20	50			

Cont'd. ...

Table 3.4.1. Cont'd.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide/ Fungicide/ Herbicide
				N	P ₂ O ₅	K ₂ O		
PERU	Santiago	6.5.1983	132				2	Endrin, Unifol
SPAIN	Sevilla	24.3.1983	115	24	50			
SYRIA	Al-Ghab	10.3.1983	120	30	50			
SYRIA	Gelline	22.3.1983	116					
SYRIA	Heimo	10.3.1983	111					
SYRIA	Izra'a	23.3.1983	112					
SYRIA	Jinderis	28.2.1983	130					
SYRIA	Tel Hadya	8.3.1983	92		50			Bravo 500
USA	Highmore	22.4.1983	116					
USA	Pullman	20.4.1983	132					Imidan, Cygon
USA	Rapid City	30.4.1983	110					

Table 3.4.2. Time to flowering (days) of entries at different locations in the CIYT-L during 1982/83.

ENTRY NAME	ORIGIN	ALGERIA		BULGARIA	CHILE	CYPRUS	EGYPT	IRAN	ITALY		JORDAN	LEBANON	LIBYA	MEXICO	MOROCCO	PERU
		Setif	Khansa	Toshevo	Graneros	Laxia	Shandweel	Karaj	Apollinare	Bari	Marow	Terbol	Zawia	Mexico	Karia	Santiago
ILC 35	Syria	109	85	66	42	116	93	37	60	67	57	60	116	65	54	62
ILC 76	Spain	105	90	68	45	120	92	38	63	68	61	63	123	71	54	59
ILC 83	Spain	104	85	67	47	118	92	37	62	68	63	62	126	63	56	69
ILC 112	Spain	112	88	68	51	119	93	37	66	68	64	64	131	76	56	71
ILC 116	Spain	106	85	66	47	118	92	37	62	68	62	61	123	63	54	53
ILC 132	Spain	104	85	67	47	118	93	38	62	68	63	62	123	63	56	66
ILC 134	Spain	106	85	66	47	118	90	36	62	68	64	62	121	63	56	66
ILC 135	Spain	102	85	68	43	119	89	38	66	68	62	62	119	67	56	52
ILC 136	Spain	105	85	66	42	118	91	38	63	66	59	61	120	70	54	60
ILC 165	Tunisia	104	88	67	42	117	91	37	62	68	58	61	116	66	52	62
ILC 171	Tunisia	110	80	67	47	117	94	38	64	68	63	64	120	73	52	66
ILC 254	Turkey	107	85	68	51	118	93	37	63	68	62	63	118	79	54	77
ILC 451	Turkey	112	80	66	47	116	93	37	62	67	60	61	120	66	52	57
ILC 464	Turkey	108	88	67	51	119	93	37	64	68	64	63	125	71	52	60
ILC 496	Turkey	112	88	67	51	119	92	35	63	68	61	64	131	74	54	63
ILC 613	Tunisia	104	80	67	51	118	93	36	63	67	61	61	124	72	52	62
ILC 620	Morocco	108	88	68	51	118	92	38	67	69	63	62	135	78	52	68
ILC 629	Tunisia	112	85	67	51	120	93	38	64	68	61	63	136	73	54	70
ILC 2587	Turkey	108	80	66	47	115	88	36	62	66	61	59	118	61	54	50
Local check	-	119	80	70	42	117	83	39	66	67	59	60	117	43	52	52
Location mean		108	85	67	47	118	92	37	63	68	61	62	123	68	54	62

Cont'd. ...

Table 3.4.2. Cont'd.

ENTRY NAME	ORIGIN.	SPAIN	SYRIA						USA			MEAN
		Sevilla 1	Al-Ghab	Gelline	Heimo	Izra'a	Jinderis	Tel Hadya	Highmore	Pullman	Rapid City	
ILC 35	Syria	62	54	61	62	59	68	55	53	56	49	67
ILC 76	Spain	64	57	65	64	59	71	57	51	57	49	69
ILC 83	Spain	64	55	65	62	61	70	55	50	60	50	68
ILC 112	Spain	64	59	66	65	63	70	59	53	61	50	71
ILC 116	Spain	63	56	65	61	61	70	57	53	60	54	68
ILC 132	Spain	64	58	65	63	62	70	56	50	61	54	69
ILC 134	Spain	64	56	65	64	63	70	57	50	60	51	68
ILC 135	Spain	64	56	64	78	60	70	57	53	61	49	68
ILC 136	Spain	64	56	63	63	63	69	56	51	60	54	68
ILC 165	Tunisia	62	55	64	62	61	70	55	54	60	51	67
ILC 171	Tunisia	64	59	66	64	63	72	59	54	58	53	69
ILC 254	Turkey	64	59	67	62	65	72	60	53	61	51	70
ILC 451	Turkey	63	57	64	63	62	71	60	50	54	53	68
ILC 464	Turkey	64	59	65	64	64	70	58	51	61	53	70
ILC 496	Turkey	64	57	67	63	65	70	59	54	61	49	70
ILC 613	Tunisia	64	57	64	60	62	70	56	53	61	49	68
ILC 620	Morocco	64	61	64	62	62	72	60	53	61	53	71
ILC 629	Tunisia	64	61	65	61	64	71	59	51	61	50	70
ILC 2587	Turkey	62	54	64	61	61	69	56	53	56	50	66
Local check	-	64	55	63	60	58	69	56	53	55	53	
Location mean		64	57	65	63	62	70	57	52	59	51	

Table 3.4.3. Time to maturity (days) of entries at different locations in the CIYT-L during 1982/83.

ENTRY NAME	ALGERIA		BULGARIA	CHILE	EGYPT	IRAN	ITALY	LEBANON	MEXICO	MOROCCO	PERU	SPAIN	SYRIA					USA	MEAN
	Setif	Khansa	Toshevo	Graneros	Shandweel	Karaj	Apollinare	Terbol	Mexico	Karia	Santiago	Sevilla 1	Al-Ghab	Gelline	Heimo	Izra'a	Tel Hadya	Pullman	
ILC 35	145	157	115	130	157	77	116	99	142	90	124	109	103	95	109	106	88	129	116
ILC 76	159	157	123	130	157	77	121	105	144	90	123	115	117	100	107	103	90	132	119
ILC 83	151	157	121	130	157	78	122	102	143	92	123	113	113	102	109	105	89	132	119
ILC 112	164	157	120	130	157	78	122	107	145	92	129	114	119	116	110	107	91	132	122
ILC 116	153	157	117	133	158	75	121	102	143	90	130	113	113	99	109	105	89	132	119
ILC 132	151	157	119	133	158	77	122	104	144	92	127	115	113	100	111	105	89	131	119
ILC 134	148	157	118	133	157	77	122	103	144	92	129	114	116	99	107	105	90	132	119
ILC 135	148	157	122	133	155	76	122	104	145	92	121	115	112	105	108	112	88	131	119
ILC 136	149	157	116	133	156	77	122	104	144	90	122	115	118	112	107	107	92	132	120
ILC 165	151	157	117	138	157	77	122	102	143	88	124	111	116	100	109	107	90	132	119
ILC 171	153	157	118	138	158	80	122	104	144	88	126	112	119	108	110	103	91	132	120
ILC 254	151	157	120	138	158	82	124	104	145	90	134	113	117	113	111	109	91	132	122
ILC 451	146	157	116	128	158	76	116	98	143	88	118	111	119	97	111	101	88	131	117
ILC 464	151	157	118	133	157	77	122	107	143	88	122	113	120	104	110	107	90	131	119
ILC 496	147	157	119	133	157	79	121	108	144	90	123	114	120	116	111	108	91	-	120
ILC 613	149	157	119	133	158	79	122	104	144	88	123	114	118	101	111	105	91	132	119
ILC 620	148	157	119	133	157	79	121	105	143	88	129	113	120	100	111	106	92	132	120
ILC 629	161	157	119	138	157	78	120	104	143	90	132	110	118	99	111	104	90	132	120
ILC 2587	147	157	116	138	155	77	116	101	143	90	110	112	118	99	111	103	88	128	117
Local check	158	157	124	138	155	79	123	98	139	88	112	111	112	96	94	101	87	131	
Location mean	152	157	119	134	157	78	121	103	143	90	124	113	116	103	109	105	90	131	

Table 3.4.4. Plant height (cm) of entries at different locations in the CIYT-L during 1982/83.

ENTRY NAME	ALGERIA		BULGARIA	CHILE	CYPRUS	EGYPT	IRAN	ITALY	JORDAN	LEBANON	LIBYA
	Setif	Khansa	Toshevo	Graneros	Laxia	Shandweel	Karaj	Apollinare	Marow	Terbol	Zawia
ILC 35	18	15	27	45	34	53	23	46	30	34	38
ILC 76	28	18	46	51	32	59	31	51	36	38	45
ILC 83	32	25	44	50	40	62	27	50	33	39	45
ILC 112	20	25	46	55	37	66	27	52	36	40	45
ILC 116	24	25	42	56	38	59	26	48	37	40	46
ILC 132	26	25	41	49	38	59	29	48	35	43	46
ILC 134	26	18	43	51	39	58	29	48	38	41	48
ILC 135	28	18	44	58	40	56	30	50	43	38	49
ILC 136	25	18	43	58	37	56	31	50	35	39	44
ILC 165	25	20	38	55	38	51	28	49	30	36	41
ILC 171	25	18	42	60	36	61	26	48	42	39	46
ILC 254	25	18	45	60	40	63	30	53	37	39	49
ILC 451	22	18	34	50	34	58	27	48	33	36	46
ILC 464	20	25	44	50	35	59	29	50	40	39	46
ILC 496	24	18	43	54	37	58	29	50	40	40	43
ILC 613	25	25	42	55	40	55	25	49	38	40	44
ILC 620	26	28	43	59	38	63	30	53	38	41	44
ILC 629	26	15	42	55	39	60	34	49	37	37	45
ILC 2587	20	18	35	53	34	59	32	49	33	35	39
Local check	20	-	56	41	35	51	29	48	30	33	35
Location mean	24	21	42	53	37	58	29	49	36	38	44

Cont'd. ...

Table 3.4.4. Cont'd.

ENTRY NAME	PERU	SPAIN	SYRIA						USA			MEAN
	Santiago	Sevilla 1	Al-Ghab	Gelline	Heimo	Izra'a	Jinderis	Tel Hadya	Highmore	Pullman	Rapid City	
ILC 35	45	35	44	32	32	31	26	27	37	32	28	33
ILC 76	49	44	45	43	35	30	32	30	49	42	40	40
ILC 83	65	42	45	38	34	34	29	28	49	44	39	41
ILC 112	45	43	51	42	35	35	28	31	51	40	40	40
ILC 116	67	41	49	36	34	34	29	31	51	39	35	40
LC 132	47	42	50	43	36	33	31	31	47	45	39	40
ILC 134	58	44	45	38	37	34	30	31	46	41	36	40
ILC 135	54	42	49	38	37	31	32	31	47	47	32	41
ILC 136	56	45	48	37	37	34	31	30	47	46	41	40
ILC 165	56	40	45	33	34	26	26	27	47	34	35	37
ILC 171	63	41	54	39	35	32	30	31	47	42	32	40
ILC 254	55	42	55	41	35	34	32	31	55	41	35	42
ILC 451	60	40	45	39	34	32	28	30	42	40	28	37
ILC 464	35	40	48	38	36	30	28	30	47	43	38	38
ILC 496	60	43	49	36	39	34	29	31	49	41	31	40
ILC 613	59	42	48	40	35	33	30	31	45	44	28	40
ILC 620	52	43	51	40	35	35	32	31	44	39	34	41
ILC 629	59	42	48	41	35	33	31	38	45	39	36	40
ILC 2587	52	40	44	33	35	31	26	28	45	32	33	37
Local check	51	40	40	32	36	27	24	27	49	35	33	
Location mean	54	42	48	38	35	32	29	30	47	40	35	

Table 3.4.5. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the CIYT-L during 1982/83.

ENTRY NAME	ALGERIA				BULGARIA		CANADA		CHILE		CYPRUS		EGYPT		IRAN		ITALY				JORDAN	
	Setif		Khansa		Toshevo		Saskatoon		Graneros		Laxia		Shandweel		Karaj		Apollinare		Bari		Marow	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 35	<u>586</u> ⁽¹⁾	7	297	17	232	13	263	20	1688	7	1033	1	205	20	582	20	<u>4480</u>	1	1417	19	4379	2
ILC 76	<u>578</u>	8	262	18	202	16	<u>872</u>	1	559	20	585	15	424	13	742	16	3580	19	1571	9	2635	13
ILC 83	<u>513</u>	13	357	12	274	12	490	16	1641	9	747	8	438	11	666	18	3795	14	1619	7	1622	20
ILC 112	<u>430</u>	18	<u>571</u>	2	292	9	<u>722</u>	10	753	16	710	10	<u>510</u>	9	1116	10	<u>3890</u>	12	1435	18	3386	5
ILC 116	<u>620</u>	4	<u>452</u>	5	155	19	<u>797</u>	5	1497	10	769	7	434	12	634	19	<u>3895</u>	11	1458	15	2971	8
ILC 132	<u>531</u>	11	393	10	208	15	<u>787</u>	6	675	17	552	19	<u>535</u>	8	930	13	3678	17	1464	14	2438	15
ILC 134	<u>523</u>	12	310	16	286	11	<u>833</u>	4	663	18	692	13	<u>549</u>	4	814	14	<u>3873</u>	13	1446	17	3639	4
ILC 135	<u>500</u>	15	393	10	155	20	<u>841</u>	3	828	14	809	4	<u>587</u>	2	774	15	3783	15	1643	5	1968	19
ILC 136	<u>557</u>	10	<u>452</u>	5	321	6	<u>768</u>	8	2091	4	699	11	<u>545</u>	5	731	17	3700	16	1536	10	1981	18
ILC 165	<u>672</u>	2	<u>512</u>	3	440	2	300	19	2359	3	978	2	372	15	1042	11	<u>4243</u>	4	1702	3	2601	14
ILC 171	<u>440</u>	17	345	13	429	3	<u>708</u>	11	1713	6	560	18	<u>542</u>	6	1397	7	<u>3988</u>	5	1607	8	2939	9
ILC 254	<u>695</u>	1	190	19	196	17	<u>780</u>	7	1434	11	787	5	<u>622</u>	1	1437	6	<u>4295</u>	3	1536	11	2693	11
ILC 451	<u>604</u>	5	<u>464</u>	4	310	7	493	15	644	19	505	20	441	10	1854	3	<u>3950</u>	6	1417	20	4777	1
ILC 464	<u>573</u>	9	<u>429</u>	7	196	18	<u>864</u>	2	913	13	598	14	<u>542</u>	7	1666	4	<u>4410</u>	2	1506	13	2072	17
ILC 496	<u>417</u>	19	345	13	298	8	<u>607</u>	13	797	15	954	3	396	14	1340	9	<u>3918</u>	9	1512	12	3240	7
ILC 613	<u>484</u>	16	<u>630</u>	1	333	5	<u>736</u>	9	1188	12	714	9	368	16	1029	12	<u>3935</u>	7	1637	6	2683	12
ILC 620	<u>604</u>	6	<u>429</u>	7	232	14	554	14	1644	8	698	12	330	18	1373	8	3630	18	1750	2	2804	10
ILC 629	<u>503</u>	14	345	13	339	4	<u>684</u>	12	2406	2	583	16	<u>566</u>	3	2052	1	<u>3915</u>	10	1768	1	3270	6
ILC 2587	<u>659</u>	3	<u>400</u>	9	292	10	389	17	2016	5	780	6	365	17	1784	2	<u>3928</u>	8	1458	16	2241	16
Local check	214	20	167	20	1274	1	328	18	2559	1	576	17	306	19	1641	5	3265	20	1661	4	3706	3
Location mean	535		388		323		641		1403		717		454		1180		3907		1557		2902	
C.V.%	21.9		41.5		50.1		29.9		40.3		48.2		22.1		29.2		10.4		11.6		45.1	
L.S.D. 5%	167		228		229		272		802		NS		142		488		574		255		NS	
S.E.	58.8		80.3		81.0		95.9		282.8		172.7		50.1		172.3		202.7		90.1		654.9	
No. of entries significantly exceeding the local check	19		9		0		13		0		-		9		0		13		0		-	

Cont'd. ...

Table 3.4.5. Cont'd.

ENTRY NAME	LEBANON		LIBYA		MEXICO		MOROCCO		OMAN		PERU		SPAIN				SYRIA					
	Terbol		Zawia		Mexico		Karia		Muscat		Santiago		Sevilla 1		Sevilla 2		Al-Ghab		Gelline		Heimo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 35	1805	12	1601	4	1872	18	365	16	701	5	2653	9	969	3	547	8	4094	16	1548	9	1202	13
ILC 76	1614	19	2119	1	2250	8	625	1	313	18	1699	19	564	20	586	6	3380	20	1619	4	1140	16
ILC 83	2037	3	1839	2	2083	13	521	9	305	19	2436	12	842	8	547	8	4276	14	1583	6	1333	7
ILC 112	1643	18	685	20	2010	16	521	9	237	20	1905	15	650	17	586	6	3737	19	1560	8	1085	18
ILC 116	1909	9	1565	6	2307	7	469	12	537	14	1774	18	694	14	547	8	4082	17	1161	20	1346	6
ILC 132	1679	17	1505	9	2380	3	573	5	406	17	2293	13	607	18	781	3	4290	13	1280	16	1257	11
ILC 134	1960	8	1601	5	2360	4	573	5	675	7	2953	5	795	12	742	4	4671	8	1446	12	1283	9
ILC 135	2024	5	1613	3	2164	9	573	5	583	13	1656	20	654	16	723	5	3790	18	1298	14	1035	19
ILC 136	1696	15	1565	7	1801	20	625	1	802	3	2262	14	894	5	820	2	4403	12	1286	15	950	20
ILC 165	1727	14	1387	11	2312	6	625	1	844	2	3028	4	800	11	-	-	4784	6	1208	18	1374	3
ILC 171	1996	6	1518	8	2157	10	625	1	651	8	2805	6	924	4	-	-	5188	3	1643	3	1282	10
ILC 254	1690	16	1405	10	2146	11	417	13	492	16	1861	16	667	15	-	-	5111	4	1167	19	1351	5
ILC 451	2034	4	1214	12	2087	12	521	8	497	15	2704	8	985	2	547	8	4617	9	1917	1	1173	14
ILC 464	1591	20	821	18	2078	14	521	9	680	6	2614	10	824	9	391	16	4802	5	1268	17	1123	17
ILC 496	1862	10	970	16	1898	17	365	16	589	12	1814	17	715	13	430	14	4772	7	1321	13	1223	12
ILC 613	1989	7	696	19	2474	2	417	14	609	11	3174	3	858	7	547	8	4617	9	1565	7	1433	2
ILC 620	1817	11	1119	14	2346	5	417	14	651	8	2445	11	812	10	430	14	5468	2	1619	4	1158	15
ILC 629	2071	1	869	17	2028	15	365	16	714	4	2780	7	890	6	469	13	5534	1	1655	2	1285	8
ILC 2587	1749	13	1131	13	1867	19	260	20	870	1	4032	1	1059	1	391	16	4266	15	1506	11	1358	4
Local check	2059	2	1107	15	3169	1	365	16	651	8	3755	2	591	19	898	1	4564	11	1530	10	1488	1
Location mean	1847		1317		2189		487		590		2532		790		587		4522		1459		1244	
C.V.%	20.9		34.9		13.8		25.0		-		17.9		21.6		-		13.3		30.8		24.3	
L.S.D. 5%	NS		652		427		173		-		642		241		NS		849		NS		NS	
S.E.	193.1		230.0		150.8		61.0		-		226.5		85.2		-		299.7		224.9		151.1	
No. of entries significantly exceeding the local check	-		2		0		7		-		0		8		-		2		-		-	

Cont'd. ...

Table 3.4.5. Cont'd.

ENTRY NAME	SYRIA						TUNISIA				USA						100 seed ⁽²⁾ weight (g)	MEAN	
	Izra'a		Jinderis		Tel Hadya		Beja		El-Kef		Highmore		Pullman		Rapid City			Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R			
ILC 35	1361	11	1163	6	1527	19	406	9	1138	8	1149	18	1496	16	1963	16	41.0	1424	13
ILC 76	1320	15	1014	15	1557	18	288	17	1106	10	2346	7	1827	9	2764	2	43.5	1338	18
ILC 83	1487	6	1002	16	1615	15	500	5	1044	16	2413	5	<u>2331</u>	2	<u>2813</u>	1	43.2	1439	10
ILC 112	1493	5	1171	5	1804	2	325	14	1363	1	1672	16	1414	19	2453	10	49.9	1338	18
ILC 116	1210	18	971	18	1699	8	413	8	1163	5	2836	1	1678	12	2469	9	41.2	1417	14
ILC 132	1263	17	980	17	1680	9	388	11	950	19	2413	6	<u>2255</u>	3	2711	4	44.6	1396	15
ILC 134	1138	19	957	19	1658	11	481	7	1075	14	2756	2	2101	4	2582	6	43.2	1515	4
ILC 135	1348	12	1026	14	1642	12	356	13	838	20	2468	4	<u>2530</u>	1	2353	14	44.4	1365	16
ILC 136	1414	9	1087	9	1604	16	<u>1000</u>	1	1194	3	2033	13	2033	7	2393	11	48.8	1441	9
ILC 165	1130	20	1032	12	1790	3	606	4	1050	15	2165	10	2042	6	1681	18	44.1	1545	2
ILC 171	1573	2	1140	7	1718	7	494	6	1000	18	1185	17	2004	8	2368	13	32.5	1550	1
ILC 254	1463	7	1061	11	1586	17	131	20	1363	1	2276	8	1672	13	2490	8	45.6	1483	7
ILC 451	1408	10	1101	8	1773	5	650	3	1088	13	2069	12	1497	15	2614	5	38.6	1532	3
ILC 464	1549	4	1257	2	1639	13	313	15	1125	9	2092	11	1716	11	2728	3	45.2	1430	12
ILC 496	1288	16	1176	4	1630	14	181	18	1038	17	2540	3	1339	20	1603	20	46.9	1353	17
ILC 613	1429	8	1080	10	1508	20	386	12	1100	12	1836	15	2052	5	2578	7	43.8	1470	8
ILC 620	<u>1626</u>	1	1208	3	1875	1	313	15	1163	5	1976	14	1780	10	2389	12	45.0	1489	6
ILC 629	1569	3	1271	1	1783	4	156	19	1163	5	1094	20	1630	14	1608	19	44.2	1512	5
ILC 2587	1326	14	860	20	1675	10	694	2	1106	10	1149	19	1440	18	1868	17	39.2	1431	11
Local check	1342	13	1030	13	1748	6	394	10	1194	3	2207	9	1474	17	2186	15	36.0		
Location mean	1387		1079		1676		424		1113		2034		1816		2331				
C.V.%	13.9		16.8		15.9		53.3		19.2		27.9		26.1		18.2				
L.S.D. 5%	273		NS		NS		320		NS		807		672		602				
S.E.	96.4		90.4		133.5		113.0		106.7		285.0		237.0		212.4				
No. of entries significantly exceeding the local check	1		-		-		1		-		0		3		1				

(1) Seed yield values underlined, significantly exceeded the local check.

(2) 100-seed weight at Tel Hadya (Syria).

the locations except at Laxia in Cyprus; Marow in Jordan; Terbol in Lebanon; Sevilla-2 in Spain; Gelline, Heimo, Jinderis and Tel Hadya in Syria; and El-Kef in Tunisia. Among the locations where the results were significant, 19, 9, 13, 9, 13, 2, 7, 8, 2, 1, 1, 3, and 1 entries exceeded the respective local checks at Setif and Khansa (Algeria), Saskatoon (Canada), Shandweel (Egypt), Apollinare (Italy), Zawia (Libya), Karia (Morocco), Sevilla-1 (Spain), Al-Ghab and Izra'a (Syria), Beja (Tunisia), Pullman and Rapid City (USA). The top five entries on the basis of average over locations included ILC 171 (1550 kg/ha), ILC 165 (1545 kg/ha), ILC 451 (1532 kg/ha), ILC 134 (1515 kg/ha), and ILC 629 (1512 kg/ha). The highest 100-seed weight was recorded for ILC 112 (49.9 gm) which was followed by ILC 136 (48.8 gm), ILC 496 (46.9 gm), ILC 254 (45.6 gm) and ILC 464 (45.2 gm). The five top yielding entries at each location are given in Table 3.4.6. A few entries namely ILC 171, ILC 629 and ILC 451 which ranked among top five on the basis of overall mean over locations and also appeared among the top five at least at ten locations were the most adaptable and need special consideration.

It is worthwhile to mention that at some locations, namely Setif and Khansa (Algeria), Saskatoon (Canada), Shandweel (Egypt), Zawia (Libya), Sevilla-1 (Spain), Beja (Tunisia), Pullman (USA), some of the entries excelled the local check by a margin of about 100% or more. The results pertaining to the entries which were common during the last 3 years are presented in Table 3.4.7. It is pertinent from this table that the entries ILC 165 and ILC 451, which gave relatively consistent ranking and were among the top four in different years, were stable and should be used extensively in breeding program.

The correlations between yields of entries at different locations (Table 3.4.8.) revealed that none of the environments was related with Tel Hadya, Syria.

3.5. CHICKPEA INTERNATIONAL SCREENING NURSERY (CISN)

Material

The Chickpea International Screening Nursery comprised of 68 test entries, originating from the materials developed through hybridization at ICARDA. The nursery also included three checks namely ILC 480, ILC 1929 and one local check to be supplied by the cooperator. All these entries were homozygous and had shown superior performance in ICARDA's local or regional trials. Cooperators were free to use any of these materials for their use in breeding programs.

Methods and Management

The entries were planted in single row non-replicated plots of 4 m length. The three checks were repeatedly grown in a block of 20

Table 3.4.6. The five heaviest seed yielding entries at the individual locations in the CIYT-L during 1982/83.

RANK	ALGERIA		BULGARIA	CANADA	CHILE	CYPRUS	EGYPT	IRAN	ITALY		JORDAN	LEBANON	LIBYA	MEXICO
	Setif	Khansa	Toshevo	Saskatoon	Graneros	Laxia	Shandweel	Karaj	Apollinare	Bari	Marow	Terbol	Zawia	Mexico
1	ILC 254	ILC 613	Local check	ILC 76	Local check	ILC 35	ILC 254	ILC 629	ILC 35	ILC 629	ILC 451	ILC 629	ILC 76	Local check
2	ILC 165	ILC 112	ILC 165	ILC 464	ILC 629	ILC 165	ILC 135	ILC 2587	ILC 464	ILC 620	ILC 35	Local check	ILC 83	ILC 613
3	ILC 2587	ILC 165	ILC 171	ILC 135	ILC 165	ILC 496	ILC 629	ILC 451	ILC 254	ILC 165	Local check	ILC 83	ILC 135	ILC 132
4	ILC 116	ILC 451	ILC 629	ILC 134	ILC 136	ILC 135	ILC 134	ILC 464	ILC 165	Local check	ILC 134	ILC 451	ILC 35	ILC 134
5	ILC 451	ILC 116 ⁽¹⁾	ILC 613	ILC 116	ILC 2587	ILC 254	ILC 136	Local check	ILC 171	ILC 135	ILC 112	ILC 135	ILC 134	ILC 620
		ILC 136												

Cont's. ...

RANK	MOROCCO		OMAN		PERU		SPAIN		SYRIA					TUNISIA		USA			
	Karia		Muscat		Santiago		Sevilla 1	Sevilla 2	Al-Ghab	Gelline	Heimo	Izra'a	Jinderis	Tel Hadya	Beja	El-Kef	Highmore	Pullman	Rapid City
1	ILC 76		ILC 2587		ILC 2587		ILC 2587	Local check	ILC 629	ILC 451	Local check	ILC 620	ILC 629	ILC 620	ILC 136	ILC 112	ILC 116	ILC 135	ILC 83
2	ILC 136		ILC 165		Local check		ILC 451	ILC 136	ILC 620	ILC 629	ILC 613	ILC 171	ILC 464	ILC 112	Local check	ILC 254	ILC 134	ILC 83	ILC 76
3	ILC 165		ILC 136		ILC 613		ILC 35	ILC 132	ILC 171	ILC 171	ILC 165	ILC 629	ILC 620	ILC 165	ILC 451	Local check	ILC 496	ILC 132	ILC 464
4	ILC 171		ILC 629		ILC 165		ILC 171	ILC 134	ILC 254	ILC 76	ILC 2587	ILC 464	ILC 496	ILC 629	ILC 165	ILC 136	ILC 135	ILC 134	ILC 132
5	ILC 132		ILC 35		ILC 134		ILC 136	ILC 135	ILC 464	ILC 620	ILC 254	ILC 112	ILC 112	ILC 451	ILC 83	ILC 116	ILC 83	ILC 613	ILC 451
	ILC 134															ILC 620			
	ILC 135															ILC 629			

(1) The brackets indicate entries having the same rank.

Table 3.4.7. The mean yield (Y = kg/ha) and rank (R) of the common entries in the CIYT-L during 1980-83..

ENTRY		1980/81		1981/82		1982/83		AVERAGE 1 [*]		AVERAGE 2 [*]	
		Y	R	Y	R	Y	R	Y	R	Y	R
ILC	35	967	9	1334	7	1424	12	1379	9	1242	7
ILC	83	1007	5	1274	16	1439	9	1357	14	1249	8
ILC	134	976	8	1340	6	1515	4	1428	4	1277	6
ILC	135	1006	6	1245	17	1365	15	1305	17	1205	10
ILC	136	960	10	1296	13	1441	8	1369	11	1232	9
ILC	165	1099	2	1362	4	1545	2	1454	2	1335	1
ILC	171	981	7	1380	2	1550	1	1465	1	1304	4
ILC	451	1068	3	1373	3	1532	3	1453	3	1324	2
ILC	464	1187	1	1316	11	1430	11	1373	10	1311	3
ILC	496	929	11	1301	12	1353	16	1327	15	1194	11
ILC	620	1018	4	1352	5	1489	6	1421	6	1286	5
ILC	112	-		1275	15	1338	17	1307	16	-	-
ILC	116	-		1427	1	1417	13	1422	5	-	-
ILC	132	-		1333	8	1396	14	1365	12	-	-
ILC	613	-		1327	10	1470	7	1399	8	-	-
ILC	629	-		1330	9	1512	5	1421	6	-	-
ILC	2587	-		1285	14	1431	10	1358	13	-	-

1^{*} Average over 1981-83

2^{*} Average over 1980-83

Table 3.4.8. Correlation (df =17) among different locations for the seed yield of entries in the CIYT-L during 1982/83.

COUNTRY	LOCATION	ALGERIA	BULGARIA	CANADA	CHILE	CYPRUS	EGYPT	IRAN	ITALY		JORDAN	LEBANON	LIBYA	MEXICO	MOROCCO	OMAN
		Khansa	Toshevo	Saskatoon	Graneros	Laxia	Shandweel	Karaj	Apollinare	Bari	Marow	Terbol	Zawia	Mexico	Karia	Muscat
ALGERIA	Setif	-0.20	-0.21	-0.31	0.33	0.17	-0.19	0.08	0.31	-0.05	-0.04	-0.34	0.25	0.08	-0.14	0.32
ALGERIA	Khansa		0.31	-0.09	0.03	-0.05	-0.20	0.01	-0.11	0.07	-0.04	0.04	-0.56 [*]	0.21	0.08	0.07
BULGARIA	Toshevo			-0.42	0.47 [*]	0.01	-0.10	0.29	0.10	0.30	0.15	0.24	-0.25	-0.08	0.14	0.38
CANADA	Saskatoon				-0.51 [*]	-0.54 [*]	0.73 ^{**}	-0.11	-0.36	-0.03	-0.30	-0.11	0.04	0.32	0.39	-0.35
CHILE	Graneros					0.29	-0.19	0.17	0.22	0.49 [*]	-0.21	0.12	-0.04	-0.27	-0.25	0.62 ^{**}
CYPRUS	Laxia						-0.51 [*]	-0.37	0.43	-0.02	0.02	-0.08	0.04	-0.25	-0.33	0.31
EGYPT	Shandweel							0.19	-0.16	0.05	-0.31	0.02	0.01	0.06	0.41	-0.19
IRAN	Karaj								0.20	0.17	0.20	0.09	-0.63 ^{**}	-0.21	-0.43	0.27
ITALY	Apollinare									-0.21	0.27	-0.15	-0.25	-0.23	-0.26	0.34
ITALY	Bari										-0.39	0.29	-0.08	0.29	0.05	0.21
JORDAN	Marow											0.23	-0.16	-0.07	-0.21	-0.03
LEBANON	Terbol												0.01	0.14	0.13	0.07
LIBYA	Zawia													0.09	0.48 [*]	-0.18
MEXICO	Mexico														0.32	-0.21
MOROCCO	Karia															-0.25
OMAN	Muscat															
PERU	Santiago															
SPAIN	Sevilla 1															
SPAIN	Sevilla 2															
SYRIA	Al-Ghab															
SYRIA	Gelline															
SYRIA	Heimo															
SYRIA	Izra'a															
SYRIA	Jinderis															
SYRIA	Tel Hadya															
TUNISIA	Beja															
TUNISIA	El-Kef															
USA	Higmore															
USA	Pullman															

* $P \leq 0.05$, ** $P \leq 0.01$, (1) $df = 14$

Cont'd Table 3.4.8.

COUNTRY	LOCATION	PERU	SPAIN		SYRIA					TUNISIA			USA		
		Santiago	Sevilla 1	Sevilla 2 ⁽¹⁾	Al-Ghab	Gelline	Heimo	Izra'a	Jinderis	Tel Hadya	Beja	El-Kef	Highmore	Pullman	Rapid City
ALGERIA	Setif	0.21	0.15	-0.19	0.06	-0.26	0.23	-0.23	-0.35	0.03	0.21	0.26	0.07	-0.13	-0.01
ALGERIA	Khansa	0.24	0.14	-0.02	-0.09	0.08	-0.01	0.02	0.08	0.29	0.33	0.01	-0.07	0.04	0.03
BULGARIA	Toshevo	0.55 [*]	0.50 [*]	-0.09	0.42	0.32	0.27	0.04	0.14	0.28	0.37	-0.03	-0.45	-0.04	-0.43
CANADA	Saskatoon	-0.51 [*]	-0.61 ^{**}	0.43	-0.13	-0.27	-0.29	0.09	0.03	-0.19	-0.28	0.02	0.44	0.30	0.54 [*]
CHILE	Graneros	0.44	0.53 [*]	-0.24	0.44	-0.08	0.28	0.17	0.08	0.20	0.31	0.17	-0.52 [*]	-0.04	-0.56 [*]
CYPRUS	Laxia	-0.03	0.03	-0.15	-0.13	-0.43	0.17	-0.40	-0.09	-0.24	-0.03	0.02	0.04	-0.14	-0.57 [*]
EGYPT	Shandweel	-0.31	-0.36	0.47	0.14	-0.27	-0.23	0.15	0.02	0.08	-0.11	0.03	0.24	0.34	0.30
IRAN	Karaj	0.40	0.41	-0.61 [*]	0.62 ^{**}	0.34	0.13	0.46 [*]	0.39	0.45	-0.18	0.18	-0.47 [*]	-0.49 [*]	-0.33
ITALY	Apollinare	0.24	0.32	-0.40	0.23	-0.23	0.26	0.01	0.29	-0.19	-0.15	0.24	-0.29	-0.33	-0.28
ITALY	Bari	0.05	-0.02	-0.18	0.49 [*]	0.07	0.13	0.37	0.31	0.28	-0.21	-0.18	-0.15	0.37	-0.25
JORDAN	Marow	0.07	0.25	-0.11	0.10	0.49 [*]	0.04	-0.10	0.27	0.19	-0.12	0.21	-0.21	-0.57 [*]	-0.20
LEBANON	Terbol	0.17	0.35	-0.01	0.28	0.42	0.29	0.09	0.01	0.09	-0.01	-0.41	-0.05	0.25	-0.12
LIBYA	Zawia	-0.29	-0.23	0.50 [*]	-0.42	-0.10	-0.09	-0.37	-0.53 [*]	-0.32	0.24	-0.33	0.36	0.47 [*]	0.31
MEXICO	Mexico	-0.30	-0.42	0.19	0.09	-0.08	0.42	-0.22	-0.23	0.11	-0.26	-0.23	0.44	0.48 [*]	0.42
MOROCCO	Karia	-0.33	-0.38	0.74 ^{**}	-0.25	-0.11	-0.37	-0.19	-0.11	0.05	0.32	-0.28	0.40	0.61 ^{**}	0.48 [*]
OMAN	Muscat	0.62 ^{**}	0.63 ^{**}	-0.17	0.46 [*]	-0.19	0.11	-0.13	0.03	0.06	0.40	-0.15	-0.36	-0.07	-0.60 ^{**}
PERU	Santiago		0.79 ^{**}	-0.31	0.34	0.31	0.47 [*]	-0.01	-0.18	0.09	0.41	-0.10	-0.55 [*]	-0.08	-0.27
SPAIN	Sevilla 1			-0.36	0.38	0.46 [*]	0.17	0.24	0.09	0.07	0.52 [*]	-0.01	-0.65 ^{**}	-0.25	-0.32
SPAIN	Sevilla 2				-0.39	-0.28	-0.36	-0.45	-0.37	-0.22	0.41	-0.27	0.40	0.64 ^{**}	0.39
SYRIA	Al-Ghab					0.08	0.31	0.42	0.48 [*]	0.39	-0.17	0.12	-0.26	-0.12	-0.32
SYRIA	Gelline						-0.04	0.44	0.23	0.22	0.06	-0.01	-0.49 [*]	-0.22	0.09
SYRIA	Heimo							-0.23	-0.34	-0.07	-0.20	-0.01	-0.05	-0.03	-0.17
SYRIA	Izra'a								0.67 ^{**}	0.20	-0.22	0.30	-0.52 [*]	-0.14	0.15
SYRIA	Jinderis									0.25	-0.40	0.27	-0.36	-0.34	-0.21
SYRIA	Tel Hadya										0.01	0.10	-0.13	-0.18	-0.23
TUNISIA	Beja											-0.14	-0.08	0.20	0.06
TUNISIA	El-Kef												-0.20	-0.61 ^{**}	0.02
USA	Highmore													0.37	0.43
USA	Pullman														0.41

*P ≤ 0.05, **P ≤ 0.01, (1)df = 14

entries. The suggested spacings between and within rows were 30- and 10 cm respectively.

Thirty-nine sets of nursery were distributed to cooperators in 21 countries and the results were received from 23 locations in 14 countries. However, only 21 sets were worth analysis and are presented. The agronomic details received from the cooperators are given in Table 3.5.1.

Results and Discussion

The data on mean time to flowering and time to maturity are given in Tables 3.5.2, and 3.5.3. The flowering was earliest at Karaj in Iran (37 days) which was followed by Highmore (52 days) and Brookings (53 days) in USA, and was latest at Bahawalpur (118 days) in Pakistan. The locations which were late flowering included Faisalabad (110-111 days) in Pakistan and Shandweel (100) in Egypt. The mean time to flowering at different locations ranged from 67 to 80 days and time to maturity ranged from 120 to 126 days. The earlier flowering entries included FLIP 81-38, FLIP 81-53, FLIP 81-64, FLIP 81-95, FLIP 81-97, FLIP 81-198 etc. FLIP 81-253 was the earliest in maturity (120 days) and was closely followed by FLIP 81-64, FLIP 81-229, FLIP 81-251, FLIP 81-254, and ILC 1929.

The data on plant height (Table 3.5.4) revealed that Karaj (Iran), Ankara (Turkey) and Sevilla (Spain) were the locations where the entries possessed shorter height (23-24 cm) and Shandweel (Egypt) and Dokri (Pakistan) where they possessed maximum height (62 cm). Among the entries, FLIP 81-64 (33 cm) had the least plant height and FLIP 81-293 (45 cm) had the maximum.

The adjusted mean seed yields of entries in CISON are presented in Table 3.5.5. Highest yield of 2484 kg/ha was recorded at Marow in Jordan and the other high yielding locations included Terbol (Lebanon), Debre Zeit (Ethiopia), Beja (Tunisia) and Montpellier (France). The CV was high at some of locations including Shandweel (Egypt), Bahawalpur & Dokri in Pakistan, Toshevo (Bulgaria), Marow (Jordan) and Brookings (USA). The best five high yielding entries averaged over all locations locations included FLIP 81-230 (1323 kg /ha), FLIP 81-225 (1281 kg/ha), FLIP 81-95 (1275 kg/ha), FLIP 81-208 (1274 kg/ha) and FLIP 81-37 (1274 kg/ha). It is apparent from this table that at locations namely Montpellier (France), Marow (Jordan), Terbol (Lebanon), Sevilla (Spain), Beja-1 (Tunisia), Brookings and Highmore (USA), 1, 1, 1, 20, 2, 9, and 3 entries respectively exceeded the local check in seed yield by a significant margin. The five heaviest seed yielding entries at different locations are presented in Table 3.5.6 and need special attention. The correlations between seed yields at different locations are given in Table 3.5.7. It was observed that the seed yields at Tel Hadya were related to those at Jamalpur in Bangladesh, Faisalabad-1 in Pakistan and Beja-1 in Tunisia. The correlations between different variables (Table 3.5.8) revealed that time to flowering, time to

Table 3.5.1. Agronomic data for different locations in the CISN during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide / Fungicide / Herbicide
				N	P ₂ O ₅	K ₂ O		
BANGLADESH	Jamalpur	22.11.1982	132				2	
BULGARIA	Toshevo	25.3.1983	130	30	60			
EGYPT	Shandweel	3.12.1982	160	40	70			
ETHIOPIA	Debre Zeit	6.9.1983	148					
FRANCE	Montpellier	16.3.1983	126		100			Benomyl
IRAN	Karaj	12.4.1983	65	18	46		6	Metasystox, treflan
JORDAN	Marow	14.3.1983	110					
LEBANON	Terbol	2.4.1983	101		50		2	
PAKISTAN	Bahawalpur	25.10.1982	182	18	46		3	Thiodan
PAKISTAN	Dokri	12.11.1982	159	20	50			
PAKISTAN	Faisalabad-1	1.11.1982	182	25	57			
PAKISTAN	Faisalabad-2	27.10.1982	185	25	50			
PAKISTAN	Peshawar	3.11.1982	214					
SPAIN	Sevilla	25.3.1983	102	24	50			
SYRIA	Tel Hadya	8.3.1983	90		50			Bravo 500
TURKEY	Ankara	22.3.1983	112	20	60			
USA	Brookings	10.5.1983	128					Benlate
USA	Highmore	22.4.1983	110					Dithane M 45

Table 3.5.2. Time to flowering (days) of entries at different locations in the CISM during 1982/83.

ENTRY NAME	PEDIGREE	ORIGIN	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON
			Jamapur	Toshevo	Shandweel	Debre Zeit	Montpellier	Karaj	Marow	Terbol
FLIP 81-33	NEC 1605 x Ceylon 2	ICARDA/ICRISAT	89	67	103	62	76	41	59	60
FLIP 81-34	NEC 1540 x E 100	ICARDA/ICRISAT	86	67	96	60	76	33	59	60
FLIP 81-35	NEC 1540 x E 100	ICARDA/ICRISAT	86	67	98	58	74	36	60	60
FLIP 81-36	NEC 1646 x P 4307	ICARDA/ICRISAT	81	70	95	58	76	37	60	62
FLIP 81-37	NEC 1487 x P 4307	ICARDA/ICRISAT	81	70	99	64	76	37	60	62
FLIP 81-38	NEC 14 x NEC 1218	ICARDA/ICRISAT	60	62	97	56	76	37	58	60
FLIP 81-39	NEC 14 x NEC 1415	ICARDA/ICRISAT	83	67	95	70	76	46	60	64
FLIP 81-41	NEC 14 x NEC 132	ICARDA/ICRISAT	62	62	94	59	72	35	57	60
FLIP 81-42	NEC 14 x NEC 139	ICARDA/ICRISAT	92	67	104	70	76	47	57	62
FLIP 81-43	NEC 30 x NEC 139	ICARDA/ICRISAT	91	67	104	68	76	40	58	62
FLIP 81-44	IC 75 1269-12	ICARDA/ICRISAT	93	70	96	70	76	43	57	66
FLIP 81-47	NEC 10 x P 4307	ICARDA/ICRISAT	60	67	95	56	76	33	58	62
FLIP 81-48	NEC 2398 x P 4307	ICARDA/ICRISAT	62	67	95	57	76	33	58	66
FLIP 81-49	NEC 1614 x NEC 316	ICARDA/ICRISAT	91	64	94	64	76	33	61	62
FLIP 81-50	NEC 1605 x L 534	ICARDA/ICRISAT	91	70	93	59	76	40	61	62
FLIP 81-51	NEC 2614 x NEC 317	ICARDA/ICRISAT	73	62	96	58	76	35	62	62
FLIP 81-53	NEC 1540 x P 4307	ICARDA/ICRISAT	59	67	95	51	76	33	63	60
FLIP 81-55	NEC 1605 x CP 66	ICARDA/ICRISAT	76	67	100	70	76	37	61	60
FLIP 81-56	NEC 1487 x P 4307	ICARDA/ICRISAT	72	62	100	57	76	33	-	60
FLIP 81-57	NEC 293 x NEC 139	ICARDA/ICRISAT	93	67	101	69	76	39	59	62
FLIP 81-58	NEC 1646 x L2	ICARDA/ICRISAT	83	67	101	63	76	37	62	62
FLIP 81-59	NEC 1487 x P 4307	ICARDA/ICRISAT	77	67	100	60	76	33	61	62
FLIP 81-60	NEC 293 x NEC 139	ICARDA/ICRISAT	93	64	104	83	76	40	58	64
FLIP 81-61	NEC 2614 x NEC 317	ICARDA/ICRISAT	86	70	99	80	76	37	58	62
FLIP 81-62	(NEC 143x L 550) x (V 4 x P 472)	ICARDA/ICRISAT	89	70	104	64	76	37	61	62

Cont'd. ...

Table 3.5.2. Cont'd.

ENTRY NAME	PEDIGREE	ORIGIN	PAKISTAN				SPAIN	SYRIA	TURKEY	USA		MEAN
			Bahawalpur	Dokri	Faisalabad-1	Faisalabad-2	Sevilla	Tel Hadya	Ankara	Brookings	Highmore	
FLIP 81-33	NEC 1605 x Ceylon 2	ICARDA/ICRISAT	120	94	108	119	64	61	63	55	50	76
FLIP 81-34	NEC 1540 x E 100	ICARDA/ICRISAT	120	90	106	106	62	59	62	55	50	73
FLIP 81-35	NEC 1540 x E 100	ICARDA/ICRISAT	120	90	106	109	58	59	62	60	50	74
FLIP 81-36	NEC 1646 x P 4307	ICARDA/ICRISAT	120	90	107	107	56	59	63	50	55	73
FLIP 81-37	NEC 1487 x P 4307	ICARDA/ICRISAT	120	88	114	124	62	61	61	55	55	76
FLIP 81-38	NEC 14 x NEC 1218	ICARDA/ICRISAT	72	88	104	92	56	59	61	55	50	67
FLIP 81-39	NEC 14 x NEC 1415	ICARDA/ICRISAT	120	93	113	115	64	62	63	50	50	76
FLIP 81-41	NEC 14 x NEC 132	ICARDA/ICRISAT	120	90	107	92	54	61	63	50	50	70
FLIP 81-42	NEC 14 x NEC 139	ICARDA/ICRISAT	127	96	118	125	64	61	63	55	-	80
FLIP 81-43	NEC 30 x NEC 139	ICARDA/ICRISAT	127	93	114	122	66	62	63	55	55	78
FLIP 81-44	IC 75 1269-12	ICARDA/ICRISAT	120	94	114	127	70	61	63	60	55	79
FLIP 81-47	NEC 10 x P 4307	ICARDA/ICRISAT	120	88	106	89	58	59	63	50	55	70
FLIP 81-48	NEC 2398 x P 4307	ICARDA/ICRISAT	120	90	112	110	64	60	63	50	55	73
FLIP 81-49	NEC 1614 x NEC 316	ICARDA/ICRISAT	120	92	114	124	64	61	63	50	50	75
FLIP 81-50	NEC 1605 x L 534	ICARDA/ICRISAT	120	90	118	114	66	61	63	55	50	76
FLIP 81-51	NEC 2614 x NEC 317	ICARDA/ICRISAT	120	94	112	92	62	59	63	55	55	73
FLIP 81-53	NEC 1540 x P 4307	ICARDA/ICRISAT	68	90	104	92	58	58	63	55	50	67
FLIP 81-55	NEC 1605 x CP 66	ICARDA/ICRISAT	120	90	107	119	64	59	63	55	50	75
FLIP 81-56	NEC 1487 x P 4307	ICARDA/ICRISAT	112	94	104	92	58	60	63	50	55	72
FLIP 81-57	NEC 293 x NEC 139	ICARDA/ICRISAT	120	98	122	122	66	61	63	55	55	78
FLIP 81-58	NEC 1646 x L 2	ICARDA/ICRISAT	107	94	114	113	64	61	63	55	50	75
FLIP 81-59	NEC 1487 x P 4307	ICARDA/ICRISAT	107	90	104	92	58	61	61	50	50	71
FLIP 81-60	NEC 293 x NEC 139	ICARDA/ICRISAT	120	96	114	116	68	61	63	50	50	78
FLIP 81-61	NEC 2614 x NEC 317	ICARDA/ICRISAT	120	95	119	120	66	61	63	-	55	79
FLIP 81-62	(NEC 143 x L 550) x (V 4 x P 472)	ICARDA/ICRISAT	120	94	113	127	62	61	63	50	50	77

Table 3.5.2. Time to flowering (days) of entries at different locations in the CISH during 1982/83.

ENTRY NAME	PEDIGREE	ORIGIN	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON	PAKISTAN
			Jamalpur	Toshevo	Shandweel	Debre Zeit	Montpellier	Karaj	Harow	Terbol	Bahawalpur
FLIP 81-64	NEC 14 x NEC 132	ICARDA/ICRISAT	60	64	95	58	76	37	58	62	72
FLIP 81-14W	ILC 1929 x ILC 200	ICARDA/ICRISAT	86	67	95	59	76	35	59	62	112
FLIP 81-23W	ILC 630 x ILC 200	ICARDA/ICRISAT	91	62	103	70	76	37	58	64	112
FLIP 81-27W	ILC 262 x ILC 183	ICARDA/ICRISAT	87	70	110	72	76	40	60	66	120
FLIP 81-63W	ILC 51 x ILC 200	ICARDA/ICRISAT	91	67	110	83	79	37	60	64	120
FLIP 81-67	ILC 1920 x ILC 195	ICARDA/ICRISAT	86	74	104	80	77	37	62	62	120
FLIP 81-75	ILC 202 x ILC 893	ICARDA/ICRISAT	83	70	102	70	76	37	56	64	120
FLIP 81-93	ILC 625 x 74TA 1629	ICARDA/ICRISAT	94	67	91	56	71	35	58	62	120
FLIP 81-95	ILC 625 x 74TA 1629	ICARDA/ICRISAT	72	67	91	57	68	37	61	62	72
FLIP 81-96	ILC 625 x 74TA 1629	ICARDA/ICRISAT	70	70	92	59	68	37	60	62	107
FLIP 81-97	ILC 896 x 74TA 2162	ICARDA/ICRISAT	61	-	88	60	72	37	60	64	112
FLIP 81-119	7347-6-4-B BH x ICC3	ICARDA/ICRISAT	78	67	94	70	73	37	61	64	112
FLIP 81-130	X75TA 53 x 74TA 3278	ICARDA/ICRISAT	73	67	95	50	72	35	62	60	112
FLIP 81-131	X75TA 53 x 74TA 3278	ICARDA/ICRISAT	77	67	95	60	72	33	63	60	112
FLIP 81-146	X75TA 16991 x 74TA 3278	ICARDA/ICRISAT	83	67	113	72	76	49	56	64	133
FLIP 81-149	X75TA 169 x 74TA 2972	ICARDA/ICRISAT	83	67	99	62	74	33	62	64	133
FLIP 81-156	X75TA 33 x (74TA 3278) (75TA 16988)	ICARDA/ICRISAT	71	67	102	70	74	37	62	64	133
FLIP 81-158	X75TA 33 x (74TA 3278)	ICARDA/ICRISAT	83	67	110	69	76	43	62	66	133
FLIP 81-166	X75TA 33 x (74TA 3278)	ICARDA/ICRISAT	89	67	113	72	76	37	60	62	133
FLIP 81-176	ILC 896 x 74TA 2162	ICARDA/ICRISAT	86	67	108	62	76	43	64	64	133
FLIP 81-177	ILC 896 x 74TA 2162	ICARDA/ICRISAT	77	70	110	70	76	43	60	62	133
FLIP 81-178	ILC 23 x 74TA 1629	ICARDA/ICRISAT	73	62	98	56	72	33	60	60	120
FLIP 81-179	NEC 2380 x (NEC 1540 x P 4307)	ICARDA/ICRISAT	77	67	103	70	76	35	58	60	120
FLIP 81-180	GL 629 x B-110	ICARDA/ICRISAT	74	67	99	60	74	35	59	60	120
FLIP 81-181	NEC 2332 x (NEC 1646 x L 2)	ICARDA/ICRISAT	73	67	108	69	74	37	57	62	120

Cont'd. ...

Table 3.5.2. Cont'd.

ENTRY NAME	PEDIGREE	ORIGIN	PAKISTAN			SPAIN	SYRIA	TURKEY	USA		MEAN
			Dokri	Faisalabad-1	Faisalabad-2	Sevilla	Tel Hadya	Ankara	Brookings	Highmore	
FLIP 81-64	NEC 14 x NEC 132	ICARDA/ICRISAT	86	107	92	54	59	62	50	50	67
FLIP 81-14W	ILC 1929 x ILC 200	ICARDA/ICRISAT	94	112	122	62	60	62	50	50	74
FLIP 81-23W	ILC 630 x ILC 200	ICARDA/ICRISAT	94	115	120	63	61	62	-	50	77
FLIP 81-27W	ILC 262 x ILC 183	ICARDA/ICRISAT	96	122	120	66	62	63	50	55	79
FLIP 81-63W	ILC 51 x ILC 200	ICARDA/ICRISAT	92	122	126	66	61	63	60	55	80
FLIP 81-67	ILC 1920 x ILC 195	ICARDA/ICRISAT	98	115	124	70	61	63	50	50	78
FLIP 81-75	ILC 202 x ILC 893	ICARDA/ICRISAT	96	115	123	66	61	63	50	50	77
FLIP 81-93	ILC 625 x 74TA 1629	ICARDA/ICRISAT	74	112	90	60	58	63	50	50	71
FLIP 81-95	ILC 625 x 74TA 1629	ICARDA/ICRISAT	70	112	89	62	57	63	55	55	68
FLIP 81-96	ILC 625 x 74TA 1629	ICARDA/ICRISAT	70	104	92	56	59	62	50	-	70
FLIP 81-97	ILC 896 x 74TA 2162	ICARDA/ICRISAT	69	104	92	62	57	62	50	50	69
FLIP 81-119	7347-6-4-B BH x ICC3	ICARDA/ICRISAT	90	104	92	64	56	62	60	50	73
FLIP 81-130	X75TA 53 x 74TA 3278	ICARDA/ICRISAT	88	104	92	62	57	62	55	50	70
FLIP 81-131	X75TA 53 x 74TA 3278	ICARDA/ICRISAT	70	104	90	62	56	62	50	50	70
FLIP 81-146	X75TA 16991 x 74TA 3278	ICARDA/ICRISAT	95	119	127	66	61	63	55	50	79
FLIP 81-149	X75TA 169 x 74TA 2972	ICARDA/ICRISAT	88	118	126	62	59	63	50	50	76
FLIP 81-156	X75TA 33 x (74TA 3278) (75TA 16988)	ICARDA/ICRISAT	88	114	123	64	61	63	50	50	76
FLIP 81-158	X75TA 33 x (74TA 3278)	ICARDA/ICRISAT	94	114	120	62	61	63	50	55	78
FLIP 81-166	X75TA 33 x (74TA 3278)	ICARDA/ICRISAT	96	121	118	64	60	63	50	50	78
FLIP 81-176	ILC 896 x 74TA 2162	ICARDA/ICRISAT	87	115	125	60	59	63	50	50	77
FLIP 81-177	ILC 896 x 74TA 2162	ICARDA/ICRISAT	94	115	123	64	58	63	50	50	78
FLIP 81-178	ILC 23 x 74TA 1629	ICARDA/ICRISAT	74	115	126	50	58	63	55	55	72
FLIP 81-179	NEC 2380 x (NEC 1540 x P 4307)	ICARDA/ICRISAT	90	116	128	59	58	63	55	50	76
FLIP 81-180	GL 629 x B-110	ICARDA/ICRISAT	75	115	122	59	57	61	50	60	73
FLIP 81-181	NEC 2332 x (NEC 1646 x L 2)	ICARDA/ICRISAT	88	114	93	68	59	63	-	50	75

Table 3.5.2. Time to flowering (days) of entries at different locations in the CISH during 1982/83.

ENTRY NAME	PEDIGREE	ORIGIN	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON	PAKISTAN
			Jamalpur	Toshevo	Shandweel	Debre Zeit	Montpellier	Karaj	Marow	Terbol	Bahawalpur
FLIP 81-183	ILC 896 x 74TA 2162	ICARDA/ICRISAT	60	63	108	50	74	33	60	60	133
FLIP 81-187	ILC 193 x ILC 19	ICARDA/ICRISAT	89	67	98	59	74	33	61	64	133
FLIP 81-198	NEC 2380 x (NEC 1540 x P 4307)	ICARDA/ICRISAT	58	67	90	50	76	33	57	62	120
FLIP 81-204	P 9800 x JH 842	ICARDA/ICRISAT	78	67	114	56	76	35	55	66	133
FLIP 81-208	7347-6-4-B-BH x ICC 3	ICARDA/ICRISAT	74	64	98	57	72	37	56	62	120
FLIP 81-218	X75TA 44 x 74TA 22	ICARDA/ICRISAT	-	67	103	46	72	33	57	62	120
FLIP 81-225	X75TA 55 x NEC 108	ICARDA/ICRISAT	70	67	98	58	74	35	58	62	120
FLIP 81-229	X74TA 3272 x 74TA 2972	ICARDA/ICRISAT	69	67	103	68	76	37	59	62	133
FLIP 81-230	X74TA 3272 x 74TA 2972	ICARDA/ICRISAT	77	67	110	69	76	37	56	62	133
FLIP 81-251	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	99	62	103	58	74	37	56	60	120
FLIP 81-252	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	60	62	99	50	74	37	55	60	133
FLIP 81-253	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	60	62	108	50	74	37	57	60	120
FLIP 81-254	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	61	62	99	56	74	33	56	60	120
FLIP 81-269	ILC 72 x ILC 1922	ICARDA/ICRISAT	61	67	110	62	76	37	57	62	133
FLIP 81-293	ILC 191 x ILC 496	ICARDA/ICRISAT	89	67	104	72	76	46	54	66	133
FLIP 81-343	ILC 72 x ILC 897	ICARDA/ICRISAT	87	67	100	64	74	43	61	62	133
FLIP 81-391	NEC 1540 x H 223	ICARDA/ICRISAT	76	67	95	57	76	37	55	60	133
FLIP 81-392	NEC 14 x NEC 139	ICARDA/ICRISAT	74	62	97	57	72	33	57	58	133
FLIP 81-395	IC 751819-1P-5P	ICARDA/ICRISAT	77	67	100	60	76	37	60	62	120
ILC 480		TURKEY	87	65	103	67	75	39	60	65	120
ILC 1929		SYRIA	69	66	98	59	74	36	60	62	120
Local check			75	72	99	48	76	43	61	61	72
Location mean			78	66	100	63	75	37	59	62	118

Cont'd. ...

Table 3.5.2. Cont'd.

ENTRY NAME	PEDIGREE	ORIGIN	PAKISTAN			SPAIN	SYRIA	TURKEY	USA		MEAN
			Dokri	Faisalabad-1	Faisalabad-2	Sevilla	Tel Hadya	Ankara	Brookings	Highmore	
FLIP 81-183	ILC 896 x 74TA 2162	ICARDA/ICRISAT	88	104	92	62	58	63	55	50	71
FLIP 81-187	ILC 193 x ILC 19	ICARDA/ICRISAT	90	113	107	62	59	63	50	55	75
FLIP 81-198	NEC 2380 x (NEC 1540 x P 4307)	ICARDA/ICRISAT	71	104	92	64	56	63	55	50	69
FLIP 81-204	P 9800 x JM 842	ICARDA/ICRISAT	88	104	110	64	63	63	55	55	75
FLIP 81-208	7347-6-4-B-BH x ICC 3	ICARDA/ICRISAT	71	104	92	64	59	63	50	50	70
FLIP 81-218	X75TA 44 x 74TA 22	ICARDA/ICRISAT	94	108	107	64	58	63	50	50	72
FLIP 81-225	X75TA 55 x NEC 108	ICARDA/ICRISAT	74	108	109	60	61	63	55	55	72
FLIP 81-229	X74TA 3272 x 74TA 2972	ICARDA/ICRISAT	87	118	123	64	60	63	50	50	76
FLIP 81-230	X74TA 3272 x 74TA 2972	ICARDA/ICRISAT	88	115	120	64	61	63	50	50	76
FLIP 81-251	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	90	107	93	64	57	63	55	60	74
FLIP 81-252	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	87	104	107	62	58	63	55	60	72
FLIP 81-253	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	74	104	92	62	56	63	50	55	70
FLIP 81-254	X75TA 16029 x GIZA 1	ICARDA/ICRISAT	88	104	107	59	59	63	50	50	71
FLIP 81-269	ILC 72 x ILC 1922	ICARDA/ICRISAT	90	118	116	64	61	63	55	50	75
FLIP 81-293	ILC 191 x ILC 496	ICARDA/ICRISAT	93	115	119	66	63	63	55	50	78
FLIP 81-343	ILC 72 x ILC 897	ICARDA/ICRISAT	94	115	118	66	61	63	55	55	78
FLIP 81-391	NEC 1540 x H 223	ICARDA/ICRISAT	88	108	92	60	60	63	50	55	72
FLIP 81-392	NEC 14 x NEC 139	ICARDA/ICRISAT	90	115	113	60	55	63	50	50	73
FLIP 81-395	IC 751819-1P-5P	ICARDA/ICRISAT	90	119	92	64	56	63	55	55	74
ILC 480		TURKEY	94	110	108	67	60	63	53	50	76
ILC 1929		SYRIA	90	113	123	58	59	63	52	52	74
Local check			94	112	115	63	61	63	53	51	72
Location mean			88	111	110	62	59	63	53	52	

Table 3.5.3. Time to maturity (days) of entries at different locations in the CISH during 1982/83.

ENTRY NAME	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	IRAN	JORDAN	LEBANON	PAKISTAN			SPAIN	SYRIA	TURKEY	MEAN
	Jamalpur	Toshevo	Shandweel	Debre Zeit	Karaj	Marow	Terbol	Dokri	Faisalabad-1	Faisalabad-2	Sevilla	Tel Hadya	Ankara	
FLIP 81-33	132	117	158	140	64	105	97	132	176	173	94	86	112	122
FLIP 81-34	130	117	154	145	64	105	99	140	178	171	98	86	111	123
FLIP 81-35	121	117	154	138	64	105	99	135	172	183	94	86	111	121
FLIP 81-36	121	120	154	140	64	105	101	142	178	170	96	86	112	122
FLIP 81-37	120	120	159	138	64	105	101	144	182	175	98	88	110	123
FLIP 81-38	121	112	156	140	64	105	97	137	178	180	96	88	110	122
FLIP 81-39	121	117	157	142	64	105	99	137	175	179	96	86	112	122
FLIP 81-41	120	112	154	136	64	105	99	138	178	181	96	86	112	122
FLIP 81-42	132	117	158	148	64	105	99	140	180	171	98	86	112	124
FLIP 81-43	130	117	156	136	64	105	99	132	181	171	98	90	112	122
FLIP 81-44	131	120	158	138	64	105	103	139	182	172	104	88	112	124
FLIP 81-47	121	117	154	130	64	106	101	143	181	166	98	86	112	121
FLIP 81-48	120	117	156	132	64	110	99	144	178	165	96	86	112	121
FLIP 81-49	132	114	154	130	64	110	99	131	181	178	96	86	112	122
FLIP 81-50	121	120	157	130	64	110	101	132	180	173	98	86	112	122
FLIP 81-51	120	112	155	138	64	110	99	129	177	171	98	88	112	121
FLIP 81-53	121	117	154	138	64	110	97	138	180	179	98	88	112	123
FLIP 81-55	120	117	157	135	65	110	101	143	176	172	100	88	112	123
FLIP 81-56	121	112	157	128	64	-	97	137	174	170	96	87	112	121
FLIP 81-57	132	117	154	133	64	110	97	145	175	183	96	89	112	124
FLIP 81-58	120	117	156	128	64	-	101	138	177	183	94	88	112	123
FLIP 81-59	120	117	156	129	64	-	97	135	175	165	94	88	110	121
FLIP 81-60	132	114	157	146	64	-	97	139	176	170	100	88	112	125
FLIP 81-61	130	127	157	133	64	-	101	144	175	179	98	86	112	126
FLIP 81-62	122	125	159	135	64	-	97	141	171	173	96	86	112	123

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Cont'd. ...

Table 3.5.3. Time to maturity (days) of entries at different locations in the CIMN during 1982/83.

ENTRY NAME	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	IRAN	JORDAN	LEBANON	PAKISTAN			SPAIN	SYRIA	TURKEY	MEAN
	Jamalpur	Toshevo	Shandweel	Debre Zeit	Karaj	Marow	Terbol	Dokri	Faisalabad-1	Faisalabad-2	Sevilla	Tel Hadya	Ankara	
FLIP 81-64	120	109	154	126	65	-	99	138	171	175	94	88	111	121
FLIP 81-14W	132	125	155	137	65	-	99	136	176	170	98	88	111	124
FLIP 81-23W	132	122	155	138	65	-	101	137	181	176	98	87	111	125
FLIP 81-27W	130	130	156	145	65	-	101	132	182	173	100	86	112	126
FLIP 81-63W	131	130	159	147	64	-	101	138	180	171	96	86	112	126
FLIP 81-67	130	130	155	140	64	-	99	140	181	175	104	86	112	126
FLIP 81-75	130	130	155	130	64	-	101	137	178	175	102	86	112	125
FLIP 81-93	120	117	154	124	64	-	97	139	179	177	100	86	112	122
FLIP 81-95	120	117	155	125	64	-	97	144	181	167	100	86	112	122
FLIP 81-96	120	117	157	136	64	-	97	134	183	168	98	88	111	123
FLIP 81-97	120	-	157	137	64	-	99	134	181	169	96	88	111	123
FLIP 81-119	120	119	157	143	64	-	101	136	181	175	98	86	111	124
FLIP 81-130	121	117	158	140	64	-	99	138	181	176	98	86	111	124
FLIP 81-131	121	117	154	140	64	-	97	133	181	183	98	86	111	124
FLIP 81-146	120	112	155	140	64	-	99	137	180	180	96	86	112	123
FLIP 81-149	121	113	159	140	64	-	101	138	182	171	100	86	112	124
FLIP 81-156	120	117	159	136	64	-	101	134	181	182	96	88	112	124
FLIP 81-158	120	117	158	138	64	-	101	143	182	185	98	86	112	125
FLIP 81-166	132	117	156	130	64	-	97	138	176	182	96	86	112	124
FLIP 81-176	120	117	158	145	64	-	101	145	180	180	96	90	112	126
FLIP 81-177	119	117	158	140	64	-	101	140	181	179	94	89	112	125
FLIP 81-178	120	117	159	136	64	-	97	144	181	175	94	88	112	124
FLIP 81-179	120	117	159	130	64	-	99	131	182	176	96	88	112	123
FLIP 81-180	120	117	157	-	64	-	101	132	179	180	98	88	110	122
FLIP 81-181	119	117	156	136	64	-	101	142	181	178	94	90	112	124

Cont'd. ...

Table 3.5.3. Time to maturity (days) of entries at different locations in the CIsN during 1982/83.

ENTRY NAME	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	IRAN	JORDAN	LEBANON	PAKISTAN			SPAIN	SYRIA	TURKEY	MEAN
	Jamalpur	Toshevo	Shandweel	Debre Zeit	Karaj	Marow	Terbol	Dokri	Faisalabad-1	Faisalabad-2	Sevilla	Tel Hadya	Ankara	
FLIP 81-183	120	117	156	124	64	-	99	137	178	171	94	89	112	122
FLIP 81-187	118	125	158	133	64	-	101	133	176	174	94	88	112	123
FLIP 81-198	118	112	158	128	64	-	101	135	180	179	98	86	112	123
FLIP 81-204	120	112	158	128	64	-	101	141	181	182	98	86	112	124
FLIP 81-208	120	122	158	125	65	-	99	134	175	170	96	86	112	122
FLIP 81-218	119	112	159	126	65	-	101	138	177	173	94	86	112	122
FLIP 81-225	120	112	157	130	64	-	97	140	179	173	96	86	112	122
FLIP 81-229	119	112	157	126	64	-	97	138	177	171	96	86	112	121
FLIP 81-230	120	112	160	130	64	-	97	139	175	173	96	86	112	122
FLIP 81-251	120	112	158	130	64	-	97	136	173	169	98	86	112	121
FLIP 81-252	122	112	154	126	64	-	97	134	172	175	102	86	112	121
FLIP 81-253	122	112	156	124	64	-	97	134	171	165	98	86	112	120
FLIP 81-254	122	112	156	130	64	-	97	139	173	168	94	86	112	121
FLIP 81-269	130	112	157	124	64	-	101	134	182	183	96	88	112	124
FLIP 81-293	132	124	154	126	64	-	101	110	182	176	98	88	112	122
FLIP 81-343	132	127	159	139	64	-	97	150	181	173	96	86	112	126
FLIP 81-391	120	112	160	140	64	-	97	159	180	175	94	86	112	125
FLIP 81-392	130	112	158	134	64	-	97	150	180	179	94	86	112	125
FLIP 81-395	128	112	159	134	64	-	101	134	181	182	96	86	112	124
ILC 480	131	116	157	138	64	108	100	138	180	170	97	87	112	123
ILC 1929	120	116	157	133	64	105	100	135	174	172	97	87	112	121
Local check	120	127	155	125	64	105	99	136	177	181	101	86	112	
Location mean	124	117	157	134	64	107	99	138	178	175	97	87	112	

Table 3.5.4. Plant height (cm) of entries at different locations in the CISM during 1982/83.

ENTRY NAME	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON	PAKISTAN		SPAIN	SYRIA	TURKEY	USA		MEAN
	Jamalpur	Toshevo	Shandweel	Debra Zeit	Montpellier	Karaj	Marow	Terbol	Dokri	Faisalabad-2	Sevilla	Tel Hadya	Ankara	Brookings	Higmore	
FLIP 81-33	32	22	70	39	35	28	30	30	65	72	26	27	18	25	45	38
FLIP 81-34	32	27	75	43	36	26	33	34	49	55	22	27	24	40	50	38
FLIP 81-35	34	35	70	44	35	29	31	33	37	57	26	29	23	50	40	38
FLIP 81-36	32	35	63	47	40	25	27	33	47	54	30	28	25	30	45	37
FLIP 81-37	32	35	65	43	38	27	27	32	61	68	20	27	25	45	45	39
FLIP 81-38	30	25	62	39	35	24	30	35	53	63	24	22	22	50	35	37
FLIP 81-39	35	33	60	50	39	25	34	30	54	75	24	25	22	30	30	38
FLIP 81-41	34	22	70	-	34	23	34	33	56	78	30	23	18	30	35	37
FLIP 81-42	33	35	72	40	35	26	34	34	53	41	24	25	22	50	-	37
FLIP 81-43	35	40	75	42	38	28	30	35	55	53	20	28	26	45	50	40
FLIP 81-44	35	40	65	55	38	28	30	35	51	38	20	33	25	55	50	40
FLIP 81-47	33	32	67	46	36	18	31	30	59	50	22	27	22	25	45	36
FLIP 81-48	38	29	58	39	35	21	34	36	48	50	22	23	25	40	40	36
FLIP 81-49	33	35	56	43	35	21	28	35	57	47	22	23	24	40	35	36
FLIP 81-50	33	39	60	45	42	23	32	34	69	64	20	28	28	45	35	40
FLIP 81-51	32	25	60	49	40	19	35	32	48	60	26	25	22	35	35	36
FLIP 81-53	38	35	63	40	29	19	25	35	54	55	26	25	22	45	30	36
FLIP 81-55	33	23	50	41	32	21	22	30	63	50	36	27	24	50	30	35
FLIP 81-56	35	25	52	38	36	20	25	33	68	48	28	23	19	35	35	35
FLIP 81-57	46	35	55	72	50	26	19	35	72	74	25	36	21	45	40	43
FLIP 81-58	40	40	56	61	40	24	35	34	65	75	28	27	26	45	40	42
FLIP 81-59	33	30	60	39	36	21	25	33	47	55	20	26	23	10	35	34
FLIP 81-60	54	37	52	42	48	28	20	45	67	73	24	30	25	40	40	42
FLIP 81-61	38	40	55	54	40	22	30	33	51	76	26	26	19	-	35	39
FLIP 81-62	32	41	57	47	35	27	29	38	65	84	28	25	20	40	45	41

Table 3.5.4. Plant height (cm) of entries at different locations in the CISN during 1982/83.

ENTRY NAME	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON	PAKISTAN		SPAIN	SYRIA	TURKEY	USA		MEAN
	Jamalpur	Toshevo	Shandweel	Debre Zelt	Montpellier	Karaj	Marow	Terbol	Dokri	Faisalabad-2	Sevilla	Tel Hadya	Ankara	Brookings	Highmore	
FLIP 81-64	30	25	61	41	30	16	28	30	53	73	18	21	20	20	30	33
FLIP 81-14W	38	40	65	46	37	18	29	35	48	62	26	27	22	40	35	38
FLIP 81-23W	36	40	59	54	37	22	36	36	51	62	26	26	22	-	30	38
FLIP 81-27W	38	45	70	55	40	26	32	33	66	53	20	27	26	30	50	41
FLIP 81-63W	43	50	72	61	45	27	33	45	68	71	20	26	25	50	25	44
FLIP 81-67	45	42	75	55	34	27	31	40	62	77	26	28	25	40	50	44
FLIP 81-75	47	38	61	53	42	21	31	45	57	67	26	26	24	40	30	41
FLIP 81-93	37	33	65	43	30	19	26	32	61	45	20	26	22	35	35	35
FLIP 81-95	37	30	69	41	33	18	32	32	50	61	22	24	23	45	45	37
FLIP 81-96	34	35	52	40	33	22	25	32	65	44	22	26	21	35	-	35
FLIP 81-97	35	-	57	41	32	21	32	34	74	21	22	26	21	35	35	35
FLIP 81-119	40	38	59	54	37	24	32	32	74	40	22	27	21	45	35	39
FLIP 81-130	37	37	54	53	34	20	27	35	55	40	22	27	21	40	40	36
FLIP 81-131	35	30	60	52	34	19	31	34	65	43	20	24	21	45	40	37
FLIP 81-146	43	32	63	49	40	21	25	38	69	73	20	26	24	35	40	40
FLIP 81-149	38	35	58	51	35	25	20	38	71	37	20	28	24	30	45	37
FLIP 81-156	37	32	48	43	39	23	35	37	75	72	20	26	21	25	40	38
FLIP 81-158	35	29	46	51	38	26	32	38	75	42	22	31	23	30	25	36
FLIP 81-166	38	28	55	48	40	24	33	32	64	37	26	28	22	30	45	37
FLIP 81-176	34	35	54	53	39	23	36	45	71	70	30	27	22	35	35	41
FLIP 81-177	33	32	52	58	41	25	28	36	65	57	28	23	25	35	40	39
FLIP 81-178	37	30	59	42	40	19	30	32	75	61	26	25	25	50	35	39
FLIP 81-179	34	33	49	48	36	24	38	40	59	50	24	26	24	35	40	37
FLIP 81-180	33	24	52	-	38	16	38	37	64	73	24	25	22	40	35	37
FLIP 81-181	37	35	60	57	43	25	30	38	68	61	20	27	26	-	40	41

Table 3.5.4. Plant height (cm) of entries at different locations in the CISE during 1982/83.

ENTRY NAME	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON	PAKISTAN		SPAIN	SYRIA	TURKEY	USA		MEAN
	Jamalpur	Toshevo	Shandweel	Debre Zeit	Montpellier	Karaj	Marow	Terbol	Dokri	Faisalabad-2	Sevilla	Tel Hadya	Ankara	Brookings	Highmore	
FLIP 81-183	41	37	64	49	43	22	30	38	64	50	22	29	25	35	40	39
FLIP 81-187	38	42	67	50	38	20	31	35	68	65	22	28	25	35	35	40
FLIP 81-198	33	27	65	59	19	18	24	37	62	73	22	25	22	35	40	37
FLIP 81-204	41	25	65	52	39	19	30	36	66	62	24	25	22	50	35	39
FLIP 81-208	38	36	58	63	38	22	29	38	68	46	22	27	24	45	45	40
FLIP 81-218	34	24	55	53	36	22	33	35	59	50	20	26	23	45	35	37
FLIP 81-225	32	28	57	50	40	24	27	35	72	68	24	25	26	45	25	39
FLIP 81-229	32	23	63	51	38	23	27	34	79	40	30	26	23	50	35	38
FLIP 81-230	31	25	67	48	40	24	33	33	70	70	22	28	23	40	35	39
FLIP 81-251	30	27	62	36	37	22	35	30	71	70	22	26	21	35	40	38
FLIP 81-252	34	25	65	40	35	19	36	32	69	61	20	26	21	60	45	39
FLIP 81-253	32	25	69	40	39	21	30	34	65	62	20	25	21	45	40	38
FLIP 81-254	35	27	70	39	38	21	27	34	64	48	18	26	21	35	40	36
FLIP 81-269	37	33	68	-	42	20	40	36	64	57	20	32	23	25	40	38
FLIP 81-293	34	38	69	55	47	26	33	40	69	70	26	34	24	60	44	45
FLIP 81-343	39	35	72	51	47	19	33	35	69	70	28	31	25	55	30	43
FLIP 81-391	36	26	65	49	41	23	38	36	62	50	28	26	23	55	40	40
FLIP 81-392	33	25	69	43	34	20	34	34	50	43	28	27	20	40	36	36
FLIP 81-395	37	26	66	53	37	25	30	37	59	81	24	26	20	35	37	40
ILC 480	37	33	64	57	37	22	32	36	63	67	22	27	23	44	34	40
ILC 1929	33	31	63	43	39	21	30	34	60	56	25	27	22	33	33	37
Local check	25	43	64	38	37	27	34	34	58	64	26	27	23	41	45	39
Location mean	36	32	62	48	37	23	30	35	62	59	24	27	23	40	38	

Table 3.5.5. Adjusted seed yield (Y = kg/ha) and rank (R) of entries at different locations in the CISA during 1982/83.

ENTRY NAME	BANGLADESH		BULGARIA		EGYPT		ETHIOPIA		FRANCE		IRAN		JORDAN		LEBANON		PAKISTAN								SPAIN	
	Jamalpur		Toshevo		Shandweel		Debre Zeit		Montpellier		Karaj		Marow		Terbol		Bahawalpur		Dokri		Faisalabad-1		Faisalabad-2		Sevilla	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 81-33	437	53	244	34	0	-	1332	45	1518	46	1231	33	2153	45	1641	44	0	-	656	30	513	70	142	66	260	11
FLIP 81-34	395	60	213	35	0	-	1340	44	1654	34	1917	3	2030	48	1737	37	967	16	528	43	872	57	253	54	165	31
FLIP 81-35	621	37	-	-	787	5	1849	28	1448	50	1317	28	2764	21	1546	54	1800	4	433	53	976	50	653	7	245	13
FLIP 81-36	687	24	562	20	0	-	2457	16	1666	27	1900	5	2864	15	1387	62	133	56	488	45	1009	47	730	5	575	2
FLIP 81-37	649	32	689	17	731	6	2057	23	1807	19	2402	1	6319	1	1673	41	1383	8	488	45	926	54	98	68	410	3
FLIP 81-38	763	14	181	40	0	-	2257	18	1509	47	1054	51	2830	18	1673	41	0	-	1183	3	838	62	219	61	360	4
FLIP 81-39	835	7	911	11	65	51	2699	12	1947	11	1008	54	2119	47	1673	41	717	33	894	15	938	52	222	60	330	7
FLIP 81-41	806	10	752	15	0	-	2907	6	1703	24	1557	11	2364	35	1895	26	0	-	661	29	551	68	447	28	265	10
FLIP 81-42	414	58	1070	5	0	-	1199	49	-	-	1677	8	2919	11	1387	63	300	52	883	17	942	51	98	68	205	19
FLIP 81-43	502	49	435	23	0	-	2849	8	1760	20	2082	2	-	-	1736	38	0	-	833	19	1288	32	476	23	145	37
FLIP 81-44	680	26	435	24	0	-	2857	7	1906	12	0	-	2353	36	1768	32	1967	2	567	40	1197	37	269	52	45	65
FLIP 81-47	795	11	1260	2	93	50	1124	53	2415	1	1842	6	3986	7	1800	30	550	44	639	32	984	48	101	67	125	43
FLIP 81-48	697	21	498	21	0	-	3140	2	1377	52	1162	39	4719	3	2054	12	0	-	450	51	1442	21	28	71	130	41
FLIP 81-49	430	54	149	44	398	34	3115	3	2165	3	1711	7	2530	27	1610	47	1967	2	917	14	1801	13	298	49	170	26
FLIP 81-50	421	56	1260	3	0	-	3082	4	2151	4	951	58	1919	51	2017	16	1133	12	972	9	930	53	92	70	120	46
FLIP 81-51	767	13	435	25	65	51	2715	11	1666	28	974	56	2519	30	1794	31	467	47	806	20	592	66	0	-	245	14
FLIP 81-53	811	9	879	12	-	-	2474	15	1886	15	585	64	4019	6	2022	15	717	34	600	35	1442	22	358	41	190	21
FLIP 81-55	445	52	-	-	425	28	1229	48	2079	6	1160	40	-	-	1162	72	0	-	954	10	1110	41	268	53	289	9
FLIP 81-56	423	55	283	28	731	6	2304	17	1631	38	1012	53	2382	34	1193	70	397	49	654	31	1094	42	370	40	339	6
FLIP 81-57	95	72	-	-	425	29	1679	36	1966	9	-	-	-	-	1765	33	0	-	720	25	860	60	437	32	224	16
FLIP 81-58	496	50	251	32	454	25	1154	50	1366	54	960	57	2915	12	1606	48	0	-	709	26	590	67	319	45	69	57
FLIP 81-59	529	47	0	-	537	18	1746	33	1644	36	555	66	2582	26	2177	6	981	15	670	28	906	56	446	29	64	58
FLIP 81-60	223	67	410	26	593	14	871	59	1620	39	1475	14	1882	53	1638	45	481	45	270	63	1256	33	348	44	0	-
FLIP 81-61	343	63	854	13	1120	1	1813	31	2296	2	1412	21	2449	33	2082	9	0	-	1448	1	1044	44	560	17	139	38
FLIP 81-62	489	51	29	56	343	36	1938	26	1614	40	1383	23	1115	64	1860	27	564	42	943	12	652	64	519	18	204	20
FLIP 81-64	370	62	61	55	537	18	1721	34	1954	10	1338	26	1726	57	2050	13	0	-	498	44	135	72	402	36	134	39
FLIP 81-14W	197	69	1267	1	370	35	546	66	1736	22	429	69	2249	40	1352	66	0	-	576	39	2169	2	195	63	134	39
FLIP 81-23W	134	71	981	6	620	9	1313	47	1659	33	1200	38	1582	59	2050	13	647	38	476	48	1490	18	179	64	79	56
FLIP 81-27W	213	68	950	9	426	27	846	60	1641	37	1235	32	1915	52	1341	68	64	58	487	47	1831	10	275	51	4	70
FLIP 81-63W	185	70	981	7	731	6	246	70	1860	17	1126	42	2715	22	1574	50	64	58	270	64	1194	38	157	65	0	-
FLIP 81-67	324	64	981	8	620	10	1654	38	1247	64	915	60	1271	60	1711	39	64	58	415	56	1815	12	243	57	44	66
FLIP 81-75	235	66	728	16	954	2	2038	24	1852	18	446	68	2915	13	1934	23	0	-	404	57	1360	28	440	31	159	34
FLIP 81-93	727	17	759	14	-	-	2254	19	1664	29	1543	12	982	65	1987	22	564	42	893	16	1531	17	240	58	259	12
FLIP 81-95	866	6	251	33	898	3	2604	13	1664	29	1349	25	2860	16	1574	51	356	51	204	68	1477	19	383	39	124	44

Cont'd. ...

Table 3.5.5. Cont'd.

ENTRY NAME	SYRIA		TUNISIA								TURKEY		USA				100-seed weight (g)	MEAN	
	Tel Hadya		Beja-1		Beja-2		El-Kef-1		El-Kef-2		Ankara		Brookings		Highmore			Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R			
FLIP 81-33	1713	1	550	60	1350	57	-	-	950	43	185	37	250	62	-	-	37.6	796	71
FLIP 81-34	1459	4	350	66	900	61	1425	28	700	58	-	-	1189	27	971	43	27.1	953	56
FLIP 81-35	1180	21	375	65	650	64	1350	37	1300	19	270	21	1139	29	1138	35	26.0	1092	27
FLIP 81-36	1364	6	350	66	500	66	1400	30	1000	35	298	6	1200	26	999	41	29.7	1027	38
FLIP 81-37	805	60	150	70	400	70	1475	21	1000	35	282	19	1333	23	1677	11	25.3	1274	4
FLIP 81-38	964	49	400	63	450	69	1425	28	725	57	149	42	1750	7	1438	20	19.9	960	54
FLIP 81-39	761	62	300	68	550	65	1275	46	650	61	68	55	861	39	1544	16	20.5	970	49
FLIP 81-41	1021	35	400	63	250	71	975	67	900	48	66	56	189	64	1105	37	29.9	896	66
FLIP 81-42	983	42	550	61	500	66	1275	46	1800	1	270	22	1516	14	-	-	30.7	947	58
FLIP 81-43	735	63	150	70	250	71	3350	1	650	61	334	10	1778	6	1955	6	29	1065	34
FLIP 81-44	1015	36	750	59	1550	53	1300	42	650	61	221	29	2061	3	894	48	33.1	1071	31
FLIP 81-47	1142	25	500	62	700	63	1500	17	1600	8	338	9	1172	28	888	49	27.2	1122	23
FLIP 81-48	608	70	300	68	500	66	1150	60	650	61	201	32	1583	10	321	68	22.0	1000	44
FLIP 81-49	697	65	1550	30	1100	59	1275	46	1575	11	197	34	1289	25	777	54	24.0	1225	9
FLIP 81-50	951	50	1050	52	1500	54	1200	54	1475	14	165	39	2561	1	1132	36	32.1	1194	12
FLIP 81-51	1085	28	1075	51	1200	58	1400	30	1050	30	120	49	550	57	721	58	22.4	964	52
FLIP 81-53	710	64	1300	41	2100	18	1300	42	1650	4	141	45	756	44	1094	38	23.1	1252	7
FLIP 81-55	1326	9	1600	26	2200	11	1650	6	1175	25	249	28	293	61	808	52	35.8	970	50
FLIP 81-56	926	51	1050	52	1600	47	1200	54	1450	16	297	17	992	35	1403	21	21.8	1035	36
FLIP 81-57	1034	34	1700	21	2000	24	1450	22	1275	20	176	38	987	36	1636	13	31.0	1024	39
FLIP 81-58	647	68	975	55	2050	19	1300	42	1475	14	124	47	1137	30	1231	30	30.4	944	59
FLIP 81-59	983	42	1300	41	1950	28	1350	37	1000	37	216	30	754	45	1297	27	21.6	1033	37
FLIP 81-60	570	72	1050	52	1850	35	1575	13	1000	37	261	25	581	56	558	67	26.1	882	68
FLIP 81-61	1294	11	1350	39	2400	2	1450	22	1650	4	200	33	-	-	1514	17	22.5	1271	6
FLIP 81-62	983	42	1200	47	1950	28	1200	54	900	48	257	26	104	65	675	59	29.7	901	65
FLIP 81-64	996	38	2025	7	2200	11	1500	17	950	44	157	40	37	66	742	56	31.2	930	62
FLIP 81-14W	602	71	1350	39	1500	54	1450	22	950	44	264	23	1403	17	292	69	22.6	906	64
FLIP 81-23W	837	58	1650	22	1600	47	1350	37	600	67	281	20	-	-	814	51	22.4	977	48
FLIP 81-27W	983	42	1500	32	1800	39	1375	35	850	54	313	13	1543	11	564	65	20.2	960	55
FLIP 81-63W	996	38	1400	37	2200	11	1650	6	950	44	305	15	1926	4	969	44	21.2	1024	40
FLIP 81-67	697	66	950	56	1100	59	700	69	1000	37	321	12	1870	5	742	57	25.0	890	67
FLIP 81-75	888	53	1375	38	1600	47	975	67	1250	21	309	14	1393	18	1147	34	29.7	1067	33
FLIP 81-93	1434	5	2450	1	2250	5	1625	10	400	70	216	31	1093	33	1813	8	29.4	1234	8
FLIP 81-95	1561	2	1950	9	2350	3	1375	35	1700	3	157	41	1487	16	1592	14	30.0	1275	3

Table 3.5.5. Adjusted seed yield (Y = kg/ha) and rank (R) of entries at different locations in the CIsN during 1982/83.

ENTRY NAME	BANGLADESH		BULGARIA		EGYPT		ETHIOPIA		FRANCE		IRAN		JORDAN		LEBANON		PAKISTAN							
	Jamalpur		Toshevo		Shandweel		Debre Zeit		Montpellier		Karaj		Marow		Terbol		Bahawalpur		Dokri		Faisalabad-1		Faisalabad-2	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 81-96	894	4	0	-	852	4	1321	46	1377	53	1418	20	798	66	1572	52	961	17	619	33	1408	25	239	59
FLIP 81-97	904	3	-	-	519	20	762	63	1274	62	503	67	1164	62	1191	71	919	23	1135	5	1387	27	216	62
FLIP 81-119	769	12	121	47	157	39	1079	55	1317	55	1086	48	1198	61	1414	59	961	18	1091	7	2003	4	496	21
FLIP 81-130	759	15	26	57	324	37	3238	1	1254	63	1223	35	2331	37	1763	34	1169	9	580	38	1699	14	429	34
FLIP 81-131	694	22	0	-	157	40	2579	14	1486	48	1080	50	3031	9	1445	57	794	30	1380	2	1399	26	508	19
FLIP 81-146	694	22	26	57	602	11	763	62	708	70	823	61	1864	54	1488	55	961	19	924	13	1874	6	566	16
FLIP 81-149	573	43	0	-	130	44	1021	56	1083	66	989	55	1998	49	1382	64	961	19	590	36	870	58	569	15
FLIP 81-156	955	2	26	57	157	40	2121	22	1161	65	1092	46	4864	2	2080	10	1169	10	724	23	1016	46	934	2
FLIP 81-158	883	5	26	57	102	48	1638	39	971	68	1035	52	2264	39	1636	46	961	19	330	60	1412	24	575	14
FLIP 81-166	418	57	89	51	130	45	2138	20	1420	51	1223	35	2464	32	1318	69	794	30	141	69	1228	36	451	27
FLIP 81-176	660	29	89	51	102	48	613	64	1528	45	795	62	464	67	1414	59	1169	10	724	24	983	49	674	6
FLIP 81-177	628	35	89	51	157	40	588	65	1062	67	949	59	1131	63	1921	24	836	28	391	58	1033	45	743	4
FLIP 81-178	824	8	279	29	130	45	379	67	1594	41	583	65	1764	56	1445	57	794	30	619	34	1437	23	445	30
FLIP 81-179	621	38	152	43	130	45	2038	25	702	71	669	63	4531	5	1821	28	961	19	746	22	508	71	245	56
FLIP 81-180	745	16	121	48	407	30	1838	30	1278	61	412	70	4598	4	2413	3	836	29	235	65	603	65	629	8
FLIP 81-181	722	18	89	51	-	-	2138	21	1298	58	1229	34	2664	24	1921	25	1086	14	230	67	1470	20	426	35
FLIP 81-183	635	34	438	22	-	-	1704	35	1282	60	1098	43	-	-	1350	67	878	27	235	66	920	55	496	21
FLIP 81-187	529	48	597	18	-	-	1846	29	865	69	1223	35	2331	38	1382	65	1586	5	852	18	849	61	505	20
FLIP 81-198	583	42	177	41	491	22	1110	54	1477	49	1260	31	3434	8	2100	7	300	52	467	50	1944	5	884	3
FLIP 81-204	988	1	177	41	407	30	1660	37	1643	35	1094	44	3001	10	2005	17	133	56	1133	6	1860	8	602	11
FLIP 81-208	661	28	590	19	574	16	3076	5	1890	14	1294	29	2834	17	2386	4	883	24	589	37	1865	7	319	46
FLIP 81-218	614	39	114	49	602	11	1593	40	1681	26	1465	16	2790	20	2094	8	633	39	322	61	1360	29	605	10
FLIP 81-225	684	25	114	49	407	30	1851	27	1588	42	1917	4	2523	28	2005	17	717	35	1172	4	2027	3	452	26
FLIP 81-229	550	46	146	45	491	22	943	58	1288	59	1362	24	2679	23	2005	17	1467	7	472	49	1352	30	316	47
FLIP 81-230	560	44	146	46	407	30	2810	9	1903	13	1477	13	2190	44	3071	1	1550	6	544	42	1319	31	465	24
FLIP 81-251	554	45	209	36	-	-	1010	57	1311	56	1265	30	2145	46	2627	2	883	25	944	11	1090	43	249	55
FLIP 81-252	652	31	272	31	-	-	1401	42	1570	43	1460	17	2245	41	2005	17	467	48	672	27	1240	34	287	50
FLIP 81-253	667	27	209	37	-	-	368	68	1662	32	1397	22	1768	55	2068	11	1133	13	761	21	1115	40	309	48
FLIP 81-254	646	33	209	37	-	-	285	69	1532	44	1448	18	2879	14	2259	5	633	40	33	71	869	59	354	42
FLIP 81-269	607	40	209	37	435	26	1376	43	1863	16	1094	45	2801	19	1750	36	717	36	294	62	1860	9	611	9
FLIP 81-293	628	36	-	-	491	22	176	72	2119	5	1088	47	2234	42	1592	49	383	50	422	54	2694	1	386	38
FLIP 81-343	274	65	1098	4	519	21	226	71	1973	8	1139	41	1612	58	1751	35	300	52	439	52	1240	35	351	43
FLIP 81-391	715	19	-	-	-	-	1585	41	1974	7	1420	19	2479	31	1560	53	633	41	416	55	1560	16	579	12
FLIP 81-392	657	30	-	-	602	11	1135	52	1737	21	1082	49	2634	25	2005	17	883	25	39	70	694	63	430	33

Cont'd. ...

Table 3.5.5. Cont'd.

ENTRY NAME	SPAIN		SYRIA		TUNISIA								TURKEY		USA				100-seed weight (g)	MEAN	
	Sevilla		Tel Hadya		Beja-1		Beja-2		El-Kef-1		El-Kef-2		Ankara		Brookings		Highmore			Y	R
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R			
FLIP 81-96	167	28	1159	24	1900	13	1850	35	1350	37	-	-	368	5	372	60	-	-	29.7	980	47
FLIP 81-97	167	28	1197	17	1825	19	2050	19	1800	3	1225	22	416	2	1389	19	2047	3	32.0	1105	26
FLIP 81-119	92	52	765	61	1150	48	1850	35	1150	60	1000	35	263	24	928	37	2147	2	28.1	1002	43
FLIP 81-130	122	45	1349	7	1900	14	2200	11	1200	54	650	61	351	7	1356	21	1792	9	29.8	1225	10
FLIP 81-131	97	50	1070	30	1650	22	2000	24	1450	22	850	54	388	4	1133	31	1492	18	28.7	1175	17
FLIP 81-146	32	68	663	67	1300	41	1900	32	1100	65	1000	35	356	6	1372	20	641	62	26.6	936	61
FLIP 81-149	92	53	1165	22	1600	26	1900	32	1250	49	1050	30	283	18	672	49	1269	29	33.3	926	63
FLIP 81-156	47	62	987	41	1300	41	2050	19	1750	5	575	68	106	51	727	47	1331	25	30.0	1199	11
FLIP 81-158	27	69	1229	15	1875	15	1950	28	1600	11	1175	25	-	-	650	50	581	63	33.9	1046	35
FLIP 81-166	107	48	1286	12	875	57	2250	5	1025	66	1450	16	-	-	1339	22	1225	31	27.9	1069	32
FLIP 81-176	352	5	981	46	1650	22	1800	39	1400	30	1150	27	93	53	239	63	1553	15	39.7	878	69
FLIP 81-177	97	51	1013	37	1125	49	1700	43	1400	30	1525	12	-	-	1533	13	1325	26	42.2	962	53
FLIP 81-178	207	18	1044	32	1500	32	2000	24	1200	54	1050	30	-	-	422	58	1342	24	39.1	953	56
FLIP 81-179	167	30	1038	33	1450	35	2250	5	1150	60	1400	18	144	44	1666	8	2219	1	38.6	1172	18
FLIP 81-180	47	63	1241	14	1800	20	2200	11	1650	6	1600	8	123	48	0	-	564	66	44.6	1111	24
FLIP 81-181	42	67	822	59	1625	25	2200	11	1550	14	1200	23	113	50	-	-	1642	12	39.0	1182	15
FLIP 81-183	47	63	886	54	1600	26	1600	47	1250	49	1650	4	348	8	6	67	1958	4	23.9	967	51
FLIP 81-187	112	47	975	48	1950	9	1750	41	1250	49	1050	30	509	1	911	38	1958	4	27.4	1152	20
FLIP 81-198	154	35	1072	29	1850	16	1650	45	1450	22	1750	2	21	59	1107	32	1745	10	26.0	1192	13
FLIP 81-204	49	61	926	52	755	58	900	61	550	71	1500	13	0	-	780	42	1012	40	29.7	1009	42
FLIP 81-208	84	54	977	47	2075	5	2250	5	1600	11	675	60	25	58	1541	12	568	64	27.7	1274	4
FLIP 81-218	214	17	1269	13	2000	8	2200	11	1450	22	1100	28	146	43	719	48	673	60	32.8	1126	22
FLIP 81-225	644	1	1186	18	1450	35	2250	5	1800	3	1600	8	323	11	-	-	901	47	37.4	1281	2
FLIP 81-229	294	8	843	57	1850	16	1850	35	1650	6	1650	4	82	54	2252	2	1389	22	37.6	1187	14
FLIP 81-230	164	32	1186	18	1275	45	1750	41	1200	54	900	48	-	-	1652	9	1890	7	31.1	1323	1
FLIP 81-251	149	36	1339	8	2100	4	1950	28	1500	17	875	52	-	-	780	43	1295	28	30.9	1172	19
FLIP 81-252	184	22	1205	16	1850	16	2050	19	1525	16	900	48	-	-	841	40	879	50	31.3	1142	21
FLIP 81-253	129	42	996	40	2275	2	2300	4	1325	41	700	58	-	-	613	51	773	55	30.0	1083	29
FLIP 81-254	184	22	1161	23	2075	5	2450	1	1400	30	850	54	-	-	596	54	1189	33	30.7	1108	25
FLIP 81-269	164	33	647	68	-	-	2000	24	1550	14	1050	30	255	27	1057	34	1379	23	27.9	1086	28
FLIP 81-293	99	49	1059	31	1525	31	2050	19	700	70	1000	35	57	57	1496	15	1468	19	29.3	1083	29
FLIP 81-343	169	27	875	55	1950	9	1400	56	1250	49	875	52	138	46	1307	24	806	53	28.1	938	60
FLIP 81-391	174	24	1510	3	1925	12	2250	5	1250	49	650	61	97	52	613	52	1068	39	34.7	1182	15
FLIP 81-392	174	25	1186	18	2125	3	1900	32	1300	42	85	71	0	-	596	55	1195	32	30.7	1023	41

Table 3.5.5. Adjusted seed yield (Y = kg/ha) and rank (R) of entries at different locations in the CISA during 1982/83.

ENTRY NAME	BANGLADESH		BULGARIA		EGYPT		ETHIOPIA		FRANCE		IRAN		JORDAN		LEBANON		PAKISTAN							
	Jamalpur		Toshevo		Shandweel		Debre Zeit		Montpellier		Karaj		Marow		Terbol		Bahawalpur		Dokri		Faisalabad-1		Faisalabad-2	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 81-395	390	61	-	-	296	38	818	61	1664	31	1328	27	-	-	1465	56	175	55	11	72	1123	39	579	13
Check means																								
1. ILC 480	412	59	275	30	542	17	1150	51	1729	23	1471	15	1969	50	1403	61	656	37	564	41	1824	11	400	37
2. ILC 1929	607	41	296	27	583	15	1765	32	1689	25	1600	10	2233	43	1674	40	473	46	389	59	551	69	465	25
3. Local check	711	20	944	10	153	43	2723	10	1306	57	1673	9	2522	29	1821	28	3521	1	997	8	1648	15	3025	1
Location mean	585		408		371		1670		1596		1207		2484		1765		703		622		1238		432	
C.V. %	21.0		57.9		76.4		29.8		20.9		19.2		50.5		19.8		60.3		51.4		30.9		23.6	
L.S.D. (5%) for:																								
1. Check means	209		507		563		972		570		525		1960		560		1618		578		717		531	
2. Adjusted varieties in the same block	419		1014		1126		1944		1140		1051		3921		1120		3237		1156		1435		1062	
3. Adjusted varieties in different blocks	484		1170		1301		2245		1316		1214		4527		1293		3737		1335		1657		1226	
4. Adjusted variety vs check mean	382		925		1028		1774		1040		960		3579		1022		2954		1055		1310		969	
No. of entries significantly exceeding local check.	0		0		0		0		1		0		1		1		0		0		0		0	

Cont'd. ...

Table 3.5.5. Cont'd.

ENTRY NAME	SPAIN		SYRIA		TUNISIA								TURKEY		USA				100-seed	
	Sevilla		Tel Hadya		Beja-1		Beja-2		El-Kef-1		El-Kef-2		Ankara		Brookings		Highmore		weight	MEAN
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	(g)	Y R
FLIP 81-395	84	55	850	56	1125	50	1600	47	1150	60	550	69	-	-	730	46	973	42	25.9	828 70
Check means																				
1. ILC 480	59	60	1121	26	1269	46	1650	45	1106	64	1181	24	194	35	801	41	964	46	30.1	988 45
2. ILC 1929	226	15	1110	27	1575	29	1700	43	1492	20	1072	29	193	36	400	59	657	61	33.5	988 45
3. Local check	61	59	1310	10	1456	34	1563	52	1894	2	950	43	401	3	610	53	965	45	32.9	- -
Location mean	163		1037		1346		1670		1379		1076		216		1030		1179			
C.V.%	35.9		16.42		15.2		17.5		36.3		28.7		31.5		51.9		38.3			
L.S.D. (5%) for:																				
1. Check means	71		335		376		497		940		530		143		542		571			
2. Adjusted varieties in the same block	143		671		753		994		1880		1061		286		1085		1142			
3. Adjusted varieties in different blocks	165		774		869		1147		2170		1225		330		1253		1319			
4. Adjusted variety vs check mean	131		612		687		907		1716		968		261		990		1043			
No. of entries significantly exceeding the local check	20		0		2		0		0		0		0		9		3			
100-seed weight for Tel Hadya (Syria).																				

Table 3.5.6 . The five heaviest seed yielding entries at the individual locations in the CISH during 1982/83.

RANK	BANGLADESH	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON	PAKISTAN		
	Jamalpur	Toshevo	Shandweel	Debre Zeit	Montpellier	Karaj	Marow	Terbol	Bahawalpur	Dokri	Faisalabad-1
1	FLIP 81-204	FLIP 81-14W	FLIP 81-61	FLIP 81-130	FLIP 81-47	FLIP 81-37	FLIP 81-37	FLIP 81-230	Local check	FLIP 81-61	FLIP 81-293
2	FLIP 81-156	FLIP 81-47	FLIP 81-75	FLIP 81-48	FLIP 81-61	FLIP 81-43	FLIP 81-156	FLIP 81-251	FLIP 81-44 ⁽¹⁾	FLIP 81-131	FLIP 81-14W
3	FLIP 81-97	FLIP 81-50	FLIP 81-95	FLIP 81-49	FLIP 81-49	FLIP 81-34	FLIP 81-48	FLIP 81-180	FLIP 81-49	FLIP 81-38	FLIP 81-225
4	FLIP 81-96	FLIP 81-343	FLIP 81-96	FLIP 81-50	FLIP 81-50	FLIP 81-225	FLIP 81-180	FLIP 81-208	FLIP 81-35	FLIP 81-225	FLIP 81-119
5	FLIP 81-158	FLIP 81-42	FLIP 81-35	FLIP 81-208	FLIP 81-293	FLIP 81-36	FLIP 81-179	FLIP 81-254	FLIP 81-187	FLIP 81-97	FLIP 81-198

Cont'd. ...

RANK	PAKISTAN	SPAIN	SYRIA	TUNISIA				TURKEY	USA	
	Faisalabad-2	Sevilla	Tel Hadya	Beja-1	Beja-2	El-Kef-1	El-Kef-2	Ankara	Brookings	Highmore
1	Local check	FLIP 81-225	FLIP 81-33	FLIP 81-93	FLIP 81-254	FLIP 81-43	FLIP 81-42	FLIP 81-187	FLIP 81-50	FLIP 81-179
2	FLIP 81-156	FLIP 81-36	FLIP 81-95	FLIP 81-253	FLIP 81-61	Local check	FLIP 81-198	FLIP 81-97	FLIP 81-229	FLIP 81-119
3	FLIP 81-198	FLIP 81-37	FLIP 81-391	FLIP 81-392	FLIP 81-95	FLIP 81-97	FLIP 81-95	Local check	FLIP 81-44	FLIP 81-97
4	FLIP 81-177	FLIP 81-38	FLIP 81-34	FLIP 81-251	FLIP 81-253	FLIP 81-225	FLIP 81-53	FLIP 81-131	FLIP 81-63W	FLIP 81-183
5	FLIP 81-36	FLIP 81-176	FLIP 81-93	FLIP 81-208	FLIP 81-93	FLIP 81-156	FLIP 81-61	FLIP 81-96	FLIP 81-67	FLIP 81-187
				FLIP 81-254	FLIP 81-166		FLIP 81-183			
					FLIP 81-179		FLIP 81-229			
					FLIP 81-208					
					FLIP 81-225					

(1) The brackets indicate entries having the same rank.

Table 3.5.7. Correlation (df = 38) among different locations for the seed yield of entries in the CISM during 1982/83.

COUNTRY	LOCATION	BULGARIA	EGYPT	ETHIOPIA	FRANCE	IRAN	JORDAN	LEBANON	PAKISTAN				SPAIN	SYRIA	TUNISIA				TURKEY	USA	
		Toshevo	Shandweel	Debre Zeit	Montpellier	Karaj	Marow	Terbol	Bahawalpur	Dokri	Faisalabad-1	Faisalabad-2	Sevilla	Tel Hadya	Beja-1	Beja-2	El-Kef-1	El-Kef-2	Ankara	Brookings	Highmore
BANGLADESH	Jamalpur	-0.39**	-0.45**	0.45**	-0.22	0.10	0.35*	0.24	0.24	0.37*	-0.13	0.27	0.22	0.37*	-0.25	0.22	-0.04	-0.03	-0.36*	-0.21	0.36*
BULGARIA	Toshevo		-0.02	-0.10	0.55**	0.06	-0.01	-0.10	-0.32*	-0.22	0.12	-0.56**	0.01	-0.23	-0.33*	-0.43**	-0.07	-0.07	0.13	0.41**	-0.31*
EGYPT	Shandweel			-0.31	0.04	0.11	0.01	0.02	-0.17	-0.50**	0.25	0.06	-0.22	-0.03	0.43**	0.40**	0.01	0.29	0.14	0.02	-0.12
ETHIOPIA	Debre Zeit				0.15	0.06	0.26	0.29	0.23	0.23	-0.16	-0.18	0.24	0.23	-0.25	-0.27	-0.13	-0.18	-0.12	0.10	0.09
FRANCE	Montpellier					0.29	-0.10	0.07	-0.05	-0.07	-0.05	-0.36*	0.14	0.04	-0.14	-0.32*	0.13	0.06	-0.06	0.04	-0.29
IRAN	Karaj						0.21	-0.10	-0.04	-0.10	-0.04	-0.03	0.39**	0.14	-0.18	-0.34*	0.17	0.08	0.04	-0.13	0.01
JORDAN	Marow							0.37*	0.09	-0.15	-0.15	-0.08	0.09	0.09	-0.25	-0.19	0.27	0.12	-0.09	0.12	0.14
LEBANON	Terbol								0.08	-0.17	-0.20	0.10	-0.19	0.10	0.19	0.11	0.14	0.06	-0.54**	-0.08	-0.15
PAKISTAN	Bahawalpur									0.19	0.06	0.06	-0.01	0.03	0.15	0.18	0.21	0.04	-0.01	0.15	0.28
PAKISTAN	Dokri										0.04	0.01	0.08	-0.21	-0.26	-0.21	-0.29	-0.13	-0.01	0.01	0.31*
PAKISTAN	Faisalabad-1											0.08	-0.33*	-0.22	0.17	0.05	-0.25	0.01	0.17	0.39**	-0.08
PAKISTAN	Faisalabad-2												0.01	0.33*	0.35*	0.31	0.06	0.08	-0.18	-0.47**	0.19
SPAIN	Sevilla													0.17	-0.35*	-0.52**	0.09	0.10	-0.12	-0.08	0.26
SYRIA	Tel Hadya														0.31*	0.25	0.19	0.16	-0.04	-0.17	0.22
TUNISIA	Beja-1															0.83**	0.30*	0.21	-0.11	-0.10	-0.01
TUNISIA	Beja-2																0.32*	0.12	0.05	-0.08	0.08
TUNISIA	El-Kef-1																	-0.06	-0.06	-0.07	-0.07
TUNISIA	El-Kef-2																		-0.21	0.03	0.18
TURKEY	Ankara																			0.19	-0.08
USA	Brookings																				0.12

* $P \leq 0.05$, ** $P \leq 0.01$

Table 3.5.8. Correlation (df. = 69) among three agronomic characters and seed yield for entries in the CISON during 1982/83.

TRAIT	Time to maturity	Plant height	Seed yield
Time to flowering	0.53**	0.61**	-0.25*
Time to maturity		0.47**	-0.22
Plant height			-0.15

* $P \leq 0.05$

** $P \leq 0.01$

maturity and plant height were positively associated with each other. However, seed yield exhibited no association with time to maturity and plant height; and negative association with time to flowering.

3.6. CHICKPEA INTERNATIONAL F_3 TRIAL-A (CIF₃T-A)

Material

The material for the Chickpea International F_3 Trial-A comprised of 14 F_3 populations derived from 14 crosses and two checks. One of the checks, ILC 482 was supplied by ICARDA and the other was to be added by the cooperator. The material was assumed to provide a wide range of variation within which the cooperators were free to practice their own selection.

Methods and Management

The trial design was a randomised complete block with three replications. The suggested plot size was four rows, each 4 m long with inter- and intra row spacings of 0.30 - and 0.10 m, respectively.

Twenty sets of trial were distributed to the cooperators in 12 countries. The results were, however, received for 14 trials from 9 countries and are reported. The agronomic details provided by cooperators are given in Table 3.6.1.

Results and Discussion

The data on time to flowering, time to maturity and plant height are given in Tables 3.6.2, 3.6.3 and 3.6.4 respectively. The cross means over locations for time to flowering, time to maturity and plant height ranged from 79 to 81 days, 140 to 143 days, and 47 to 55 cm respectively.

The seed yield of the crosses in F_3 alongwith checks are given in Table 3.6.5. Marchouch (Morocco), Brookings (USA), Tel Hadya (Syria), El-Kef (Tunisia), and Bari (Italy) were the high yielding locations with location mean of 2680, 2442, 2079, 1971, and 1835 kg/ha respectively. Except at Mexico where the local check ranked first, at all other places the ranking of the local check was atleast 12th. The LSD estimates at different locations revealed that 2, 9, 2, 4, 15, 13, 15, and 14 entries exceeded the local check by a significant margin at Toshevo (Bulgaria), Bari and Capalbio (Italy), Sevilla-1 (Spain), Tel Hadya (Syria), El-Kef (Tunisia), and Brookings and Highmore (USA). The Ascochyta blight disease rating at Tel Hadya further revealed that the populations from these crosses were resistant.

Table 3.6.1. Agronomic data for different locations in the CIF₃T-A during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide / Fungicide/ Herbicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Setif	1.4.1983	163		100			Treflan
ALGERIA	Sidi Bel Abbas	25.1.1983	143	15	70			
BULGARIA	Toshevo	26.3.1983	135	30	60			
ITALY	Bari	9.3.1983	113		100			
ITALY	Capalbio	13.1.1983	183	40	100			
MEXICO	Mexico	14.12.1982	127				2	Orthene, Lannate, Parathion
MOROCCO	Marchouch	25.11.1982	212		30	15		
SPAIN	Sevilla 1	23.3.1983	120	24	50			
SYRIA	Tel Hadya	14.11.1982	183		50			Bravo 500
USA	Brookings	10.5.1983	128					Benlate, Dithane M45
USA	Highmore	22.4.1983	116					

Table 3.6.2. Time to flowering (days) of entries at different locations in the CIF₃T-A during 1982/83.

CROSS NO. X81 TH	PEDIGREE	ALGERIA		BULGARIA	ITALY	MEXICO	SPAIN	SYRIA	USA		MEAN
		Setif	Sidi Bel Abbas	Toshevo	Bari	Mexico	Sevilla 1	Tel Hadya	Brookings	Highmore	
53	ILC 1920 x ILC 2506	110	88	67	67	75	67	138	53	48	79
56	ILC 1920 x ILC 3279	110	88	69	68	76	67	141	50	48	80
84	ILC 191 x ILC 262	116	88	72	68	78	69	143	53	47	82
85	ILC 191 x ILC 237	110	88	68	68	78	70	138	55	50	81
101	ILC 72 x ILC 191	114	88	73	71	83	73	144	52	50	83
104	ILC 72 x ILC 482	107	85	68	68	75	67	140	55	47	79
105	ILC 72 x ILC 484	110	85	67	68	76	67	137	55	50	79
111	ILC 191 x ILC 202	116	90	71	70	81	71	144	53	50	83
112	ILC 191 x ILC 482	108	88	68	68	76	69	140	52	47	80
113	ILC 191 x ILC 484	110	88	68	68	76	69	137	50	45	79
120	ILC 200 x ILC 484	107	88	66	68	76	67	134	53	48	79
125	ILC 202 x ILC 482	112	85	67	68	75	67	138	52	48	79
126	ILC 202 x ILC 484	110	85	66	67	76	68	137	52	48	79
146	ILC 72 x ILC 73	111	88	69	69	79	69	142	50	48	81
ILC 482	Acc. No. 26780-68	108	85	66	65	74	62	136	53	47	77
Local check		117	88	72	68	42	62	-	52	45	
Location mean		111	87	69	68	75	68	139	53	48	

Table 3.6.3. Time to maturity (days) of entries at different locations in the CIF₃T-A during 1982/83.

CROSS NO. X 81 TH	PEDIGREE	ALGERIA		BULGARIA	MEXICO	SPAIN	SYRIA	MEAN
		Setif	Sidi Bel Abbes	Toshevo	Mexico	Sevilla 1	Tel Hadya	
53	ILC 1920 x ILC 2506	151	143	134	123	110	180	140
56	ILC 1920 x ILC 3279	162	143	134	122	111	182	142
84	ILC 191 x ILC 262	146	143	135	125	115	181	141
85	ILC 191 x ILC 237	156	143	133	124	114	179	142
101	ILC 72 x ILC 191	150	143	135	127	120	182	143
104	ILC 72 x ILC 482	161	143	134	122	113	181	142
105	ILC 72 x ILC 484	150	143	133	124	114	181	141
111	ILC 191 x ILC 202	139	143	135	123	119	181	140
112	ILC 191 x ILC 482	153	143	135	123	112	179	141
113	ILC 191 x ILC 484	163	143	134	117	112	179	141
120	ILC 200 x ILC 484	155	143	135	124	109	178	141
125	ILC 202 x ILC 482	143	143	135	124	113	181	140
126	ILC 202 x ILC 484	152	143	133	124	112	179	141
146	ILC 72 x ILC 73	135	143	135	125	118	183	140
ILC 482	Acc.No. 26780-68	150	143	131	122	97	179	137
Local check		150	143	133	112	103	-	
Location mean		151	143	134	123	112	180	

Table 3.6.4. Plant height (cm) of entries at different locations in the CIF₃T-A during 1982/83.

CROSS NO. X 81 TH	PEDIGREE	ALGERIA		BULGARIA	MEXICO	SPAIN	SYRIA	USA		MEAN
		Setif	Sidi Bel Abbas	Toshevo	Mexico	Sevilla 1	Tel Hadya	Brookings	Hightmore	
53	ILC 1920 x ILC 2506	37	24	45	61	45	42	58	49	45
56	ILC 1920 x ILC 3279	28	27	50	82	50	51	62	50	50
84	ILC 191 x ILC 262	44	24	45	84	53	51	81	54	55
85	ILC 191 x ILC 237	40	25	48	80	45	46	65	48	50
101	ILC 72 x ILC 191	43	25	55	92	55	54	80	55	57
104	ILC 72 x ILC 482	35	27	52	82	52	47	70	49	52
105	ILC 72 x ILC 484	34	25	50	89	51	49	72	54	53
111	ILC 191 x ILC 202	37	27	51	96	50	49	62	57	54
112	ILC 191 x ILC 482	38	25	48	78	46	44	63	48	49
113	ILC 191 x ILC 484	30	23	42	76	45	40	62	44	51
120	ILC 200 x ILC 484	30	23	40	77	46	43	68	48	47
125	ILC 202 x ILC 482	40	25	51	82	48	51	70	55	53
126	ILC 202 x ILC 484	40	23	43	72	48	50	68	50	49
146	ILC 72 x ILC 73	40	26	54	88	53	49	70	49	54
ILC 482	Acc.No. 26780-68	20	18	36	62	39	35	45	37	37
Local check		30	18	47	55	45	-	45	35	
Location mean		35	25	47	79	48	47	65	49	

Table 3.6.5. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the CIF₃T-A during 1982/83.

CROSS NO. X 81 TH	PEDIGREE	ALGERIA				BULGARIA		ITALY				MEXICO		MOROCCO		SPAIN			
		Setif		Sidi Bel Abbas		Toshevo		Bari		Capalbio		Mexico		Marchouch		Sevilla 1		Sevilla 2	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
53	ILC 1920 x ILC 2506	545	3	476	5	<u>1579</u>	2	1698	10	1448	13	1389	5	2546	11	723	8	<u>781</u>	7
56	ILC 1920 x ILC 3279	479	8	381	6	1365	9	<u>1786</u>	9	1608	5	1238	6	<u>2981</u>	2	744	5	<u>781</u>	7
84	ILC 191 x ILC 262	380	15	381	6	1286	12	<u>1810</u>	7	1542	8	738	16	<u>2981</u>	2	623	14	547	14
85	ILC 191 x ILC 237	503	6	571	2	1317	11	<u>1984</u>	5	1611	4	1151	9	2648	8	714	10	<u>730</u>	11
101	ILC 72 x ILC 191	385	14	-	-	1484	6	<u>2278</u>	1	<u>1701</u>	2	841	13	2417	14	485	15	417	16
104	ILC 72 x ILC 482	392	13	571	2	1500	5	<u>2262</u>	2	1462	12	1159	8	2648	8	716	9	<u>886</u>	4
105	ILC 72 x ILC 484	545	3	95	13	<u>1810</u> (1)	1	<u>2198</u>	4	1663	3	762	15	2519	12	733	7	<u>808</u>	6
111	ILC 191 x ILC 202	396	12	524	4	1563	3	<u>2238</u>	3	<u>1847</u>	1	1730	3	2269	16	448	16	<u>781</u>	7
112	ILC 191 x ILC 482	490	7	238	12	1008	15	<u>1857</u>	6	1542	8	1238	6	2889	5	<u>803</u>	3	573	13
113	ILC 191 x ILC 484	462	10	95	13	1508	4	1635	12	1580	6	1397	4	2620	10	704	11	<u>677</u>	12
120	ILC 200 x ILC 484	444	11	286	11	1397	8	1595	14	1524	10	1143	10	<u>2981</u>	2	740	6	<u>911</u>	3
125	ILC 202 x ILC 482	583	1	666	1	1333	10	<u>1802</u>	8	1576	7	984	12	2861	6	<u>811</u>	2	<u>833</u>	5
126	ILC 202 x ILC 484	465	9	381	6	1444	7	1651	11	1375	16	1044	11	<u>2991</u>	1	<u>797</u>	4	<u>1172</u>	1
146	ILC 72 x ILC 73	576	2	333	9	1011	14	1611	13	1396	15	825	14	2454	13	694	12	<u>1067</u>	2
ILC 482	Acc.No. 26780-68	517	5	333	9	762	16	1452	16	1507	11	1754	2	2750	7	<u>874</u>	1	<u>781</u>	7
Local check		347	16	95	13	1135	13	1508	15	1444	14	3127	1	2324	15	630	13	469	15
Location mean		469		362		1344		1835		1552		1282		2680		702		763	
C.V.%		26.7		-		19.6		8.5		9.3		31.9		14.0		10.8		-	
L.S.D. 5%		NS		-		440		260		242		682		NS		126		NS	
S.E.		72.4		-		152.5		90.1		83.8		236.4		216.8		43.8		62.4	
No. of entries significantly exceeding the local check		-		-		2		9		2		0		-		4		-	

Cont'd. ...

Table 3.6.5. Cont'd.

CROSS NO. X 81 TH	PEDIGREE	SYRIA		TUNISIA				USA				100 seed weight (gr) ⁽²⁾	Ascochyta blight ⁽³⁾	MEAN	
		Tel Hadya		Beja		El-Kef		Brookings		Highmore				Y	R
		Y	R	Y	R	Y	R	Y	R	Y	R				
53	ILC 1920 x ILC 2506	<u>1910</u>	11	763	5	1729	15	<u>2239</u>	12	<u>1276</u>	9	24.7	2	1364	12
56	ILC 1920 x ILC 3279	<u>2003</u>	9	938	1	<u>2038</u>	6	<u>2833</u>	5	<u>1333</u>	5	25.9	3	1465	3
84	ILC 191 x ILC 262	<u>1884</u>	12	338	15	1807	14	<u>2548</u>	10	<u>1167</u>	13	28.6	3	1288	14
85	ILC 191 x ILC 237	<u>1859</u>	14	520	11	<u>1888</u>	12	<u>3167</u>	2	<u>1281</u>	8	29.3	3	1424	7
101	ILC 72 x ILC 191	<u>2263</u>	3	338	15	<u>1867</u>	13	<u>3061</u>	4	<u>1372</u>	3	24.8	2	1455	5
104	ILC 72 x ILC 482	<u>2611</u>	1	525	10	<u>1957</u>	10	<u>2650</u>	7	<u>1230</u>	10	28.6	3	1469	2
105	ILC 72 x ILC 484	<u>2198</u>	4	438	14	<u>2302</u>	1	<u>2393</u>	11	<u>1357</u>	4	31.0	3	1416	8
111	ILC 191 x ILC 202	<u>1987</u>	10	850	3	<u>1959</u>	9	<u>3267</u>	1	<u>1302</u>	6	24.5	2	1512	1
112	ILC 191 x ILC 482	<u>2090</u>	8	788	4	<u>1990</u>	7	<u>2700</u>	6	<u>1459</u>	2	26.7	3	1405	9
113	ILC 191 x ILC 484	<u>1883</u>	13	650	7	<u>2082</u>	5	<u>2633</u>	9	<u>1213</u>	11	28.4	3	1367	11
120	ILC 200 x ILC 484	<u>2105</u>	7	938	1	<u>1975</u>	8	<u>2089</u>	13	<u>1461</u>	1	25.9	2	1400	10
125	ILC 202 x ILC 482	<u>2352</u>	2	453	13	<u>2107</u>	4	<u>2643</u>	8	<u>1111</u>	14	27.7	3	1437	6
126	ILC 202 x ILC 484	<u>2170</u>	5	763	5	<u>1929</u>	11	<u>3078</u>	3	<u>1209</u>	12	28.2	3	1462	4
146	ILC 72 x ILC 73	<u>2159</u>	6	538	9	<u>2250</u>	3	<u>1883</u>	14	961	15	35.1	3	1269	15
ILC 482	Acc.No. 26780-68	<u>1716</u>	15	650	7	<u>2261</u>	2	<u>1576</u>	15	<u>1298</u>	7	28.5	3	1302	13
Local check		0	16	475	12	1392	16	306	16	719	16	0	9		
Location mean		2079		632		1971		2442		1234					
C.V. %		13.0		47.7		14.0		20.1		14.1					
L.S.D. 5%		451		652		460		817		290					
S.E.		156.1		213.3		159.1		283.2		100.6					
No. of entries significantly exceeding the local check		15		0		13		15		14					

(1) Seed yield values underlined, significantly exceeded the local check

(2) 100 seed weight at Tel Hadya (Syria)

(3) Ascochyta blight rating at Tel Hadya (Syria).

3.7. CHICKPEA INTERNATIONAL F_3 TRIAL-B (CIF₃T-B)

Material

The material for the Chickpea International F_3 Trial - B comprised of 14 F_3 populations which were derived from different crosses, and two checks. One of the checks, ILC 482 was supplied by ICARDA and the other was to be added by the cooperator. The material was assumed to provide a wide range of variation within which the cooperators were free to practice their own selection.

Methods and Management

The trial design was a randomised complete block with three replications. The suggested plot size was four rows four meter long with an inter- and intra row spacings of 30 - and 10 cm respectively. Out of a total of 11 trials sent to cooperators in 6 countries, the results of 9 trials were received back and are reported. The agronomic details supplied by the cooperators are given in Table 3.7.1.

Results and Discussion

Local check supplied by ICARDA (ILC 482) was earliest at almost all the locations (Table 3.7.2) except at Bahawalpur (Pakistan) where one of the population was about 11 days earlier than the local check. On average over locations, the cross no. X81TH 117 was the earliest and was followed by X81TH 29. These two crosses were also earliest in maturity (Table 3.7.3). In plant height (Table 3.7.4) the cross X81TH 108 was the tallest with 81 cm plant height.

The mean performance of the cross populations alongwith seed yield is given in Table 3.7.5. The ANOVA of the yield data showed that the differences between the entries in the trial were significant at Shandweel (Egypt), Islamabad (Pakistan), Beja and El-Kef (Tunisia) and 4, 5, 1 and 13 entries respectively exceeded the local checks at these locations. On the basis of average over all locations cross Nos. X81TH 117, X81TH 48, X81TH 55 and X81TH 203 were the top yielders. All the crosses in the trial were resistant to Ascochyta blight and the cross X81TH 203 also possessed large seed (36.2 g/100 seed weight).

3.8. CHICKPEA INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (CIABN)

Material

The Chickpea International Ascochyta Blight Nursery included 51 entries both from kabuli and desi types. This year eight new lines, developed through hybridization, combining resistance in kabuli background and better quality were added. The lines included in CIABN originated from Afghanistan, India, Iran, Morocco, Spain, Turkey, the USSR, ICARDA (Syria), and ICRISAT (India).

The susceptible check was the Syrian Local land race (ILC 1929).

Table 3.7.1. Agronomic data for different locations in the CIF₃T-B during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide / Fungicide
				N	P ₂ O ₅	K ₂ O		
EGYPT	Shandweel	2.12.1982	161	35	71			
EGYPT	Sids	11.11.1982	184	35	71		4	
PAKISTAN	Bahawalpur	2.11.1982	177	18	46		3	Thiodan
PAKISTAN	Dokri	11.11.1982	121	20	50			
PAKISTAN	Islamabad	9.11.1982	234	20	50			
PAKISTAN	Karak	1.11.1982	188					
SYRIA	Tel Hadya	14.11.1982	173		50			Bravo 500

Table 3.7.2. Time to flowering (days) of entries at different locations in the CIF₃T-B during 1982/83.

CROSS NO. X 81 TH	PEDIGREE	EGYPT		PAKISTAN				SYRIA		MEAN
		Shandweel	Sids	Bahawalpur	Dokri	Islamabad	Karak	Tel Hadya		
29	ILC 610 x ILC 202	94	141	105	95	133	120	110	114	
41	ILC 1920 x ILC 72	96	141	112	96	138	128	108	117	
48	ILC 1920 x ILC 201	97	141	112	92	134	123	108	115	
49	ILC 1920 x ILC 202	96	141	112	95	137	130	110	117	
55	ILC 1920 x ILC 2956	98	142	112	94	138	124	105	116	
108	ILC 72 x ILC 262	97	142	105	98	139	133	115	118	
109	ILC 72 x ILC 493	98	140	112	95	137	125	108	116	
116	ILC 191 x ILC 262	97	143	94	102	138	135	118	118	
117	ILC 191 x ILC 493	97	140	105	96	132	121	103	113	
123	ILC 200 x ILC 262	100	140	112	97	138	130	115	119	
130	ILC 202 x ILC 493	93	141	112	94	137	122	108	115	
171	ILC 92 x ILC 191	99	141	112	95	136	128	113	118	
190	ILC 272 x ILC 191	99	144	112	96	135	129	118	119	
203	ILC 3279 x ILC 3355	98	141	112	97	138	124	113	118	
ILC 482	Acc.No. 26780-68	89	136	112	91	125	108	88	107	
Local check		84	-	105	97	-	115	88		
Location mean		96	141	109	97	136	125	108		

Table 3.7.3. Time to maturity (days) of entries at different locations in the CIF₃T-B during 1982/83.

CROSS NO.		EGYPT		PAKISTAN			SYRIA	MEAN
X 81 TH	PEDIGREE	Shandweel	Sids	Dokri	Islamabad	Karak	Tel Hadya	
29	ILC 610 x ILC 202	160	183	115	197	185	170	168
41	ILC 1920 x ILC 72	160	182	121	197	186	168	169
48	ILC 1920 x ILC 201	160	183	121	197	185	173	170
49	ILC 1920 x ILC 202	159	182	120	197	186	168	169
55	ILC 1920 x ILC 2956	160	181	117	197	186	170	169
108	ILC 72 x ILC 262	160	184	119	197	188	170	170
109	ILC 72 x ILC 493	160	182	120	197	187	170	169
116	ILC 191 x ILC 262	160	183	114	197	187	170	169
117	ILC 191 x ILC 493	160	181	117	197	186	170	169
123	ILC 200 x ILC 262	159	179	117	197	187	170	168
130	ILC 202 x ILC 493	161	183	115	197	186	168	168
171	ILC 92 x ILC 191	161	181	118	197	187	170	169
190	ILC 272 x ILC 191	160	182	120	197	187	168	169
203	ILC 3279 x ILC 3355	160	182	120	197	187	173	170
ILC 482	Acc.No. 26780-68	160	178	112	234	182	165	172
Local check		157	-	114	197	179	165	
Location mean		160	182	118	199	186	169	

Table 3.7.4. Plant height (cm) of entries at different locations in the CIF_3T-B during 1982/83.

CROSS NO X 81 TH	PEDIGREE	EGYPT		PAKISTAN		SYRIA		MEAN
		Shandweel	Sids	Dokri	Karak	Tel Hadya		
29	ILC 610 x ILC 202	77	69	76	71	70	73	
41	ILC 1920 x ILC 72	60	69	71	64	75	68	
48	ILC 1920 x ILC 201	75	69	81	69	98	78	
49	ILC 1920 x ILC 202	68	68	72	67	83	72	
55	ILC 1920 x ILC 2956	77	66	75	68	100	77	
108	ILC 72 x ILC 262	78	77	93	71	85	81	
109	ILC 72 x ILC 493	85	68	64	70	78	73	
116	ILC 191 x ILC 262	62	68	78	68	93	74	
117	ILC 191 x ILC 493	57	65	75	71	83	70	
123	ILC 200 x ILC 262	60	69	71	62	73	67	
130	ILC 202 x ILC 493	65	69	89	71	90	77	
171	ILC 92 x ILC 191	62	68	79	67	70	69	
190	ILC 272 x ILC 191	63	65	72	69	75	69	
203	ILC 3279 x ILC 3355	65	75	80	72	98	78	
ILC 482	Acc.No. 26780-68	52	53	66	48	53	54	
Local check		53	-	55	41	68		
Location mean		66	68	75	66	81		

Table 3.7.5. Seed yield (Y= kg/ha) and rank (R) of entries at different locations in the CIF₃T-B during 1982/83.

CROSS NO. X 81 TH	PEDIGREE	EGYPT				PAKISTAN								SYRIA		TUNISIA				100 seed weight (gr)	Ascochyta blight ⁽³⁾	MEAN ⁽⁴⁾	
		Shandweel		Sids		Bahawalpur		Dokri		Islamabad		Karak		Tel Hadya		Beja		El-Kef				Y	R
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R				
29	ILC 610 x ILC 202	583	16	<u>1319</u>	1	1625	13	463	12	128	12	602	5	1500	14	1550	3	<u>1859</u>	9	26.9	3	1188	13
41	ILC 1920 x ILC 72	759	10	<u>1243</u>	3	1917	7	467	11	148	10	657	4	1726	11	1013	11	<u>1921</u>	7	26.1	3	1213	9
48	ILC 1920 x ILC 201	713	18	<u>1143</u>	10	2292	4	509	9	150	8	509	10	2631	5	<u>1763</u>	1	1454	15	25.0	2	1377	3
49	ILC 1920 x ILC 202	<u>1102</u> ⁽¹⁾	1	<u>1159</u>	9	2389	3	481	10	<u>174</u>	5	551	8	2250	7	638	14	<u>1917</u>	8	25.3	3	1311	6
55	ILC 1920 x ILC 2956	843	5	<u>984</u>	13	1778	10	963	2	149	11	519	9	3131	1	950	12	<u>1837</u>	12	27.6	3	1376	4
108	ILC 72 x ILC 262	694	14	<u>1124</u>	11	1597	14	448	14	40	16	556	7	1107	16	950	12	<u>2104</u>	4	31.1	3	1073	15
109	ILC 72 x ILC 493	<u>935</u>	4	<u>1188</u>	6	1347	16	553	7	151	7	565	6	1952	9	1168	7	<u>1840</u>	11	26.8	3	1194	12
116	ILC 191 x ILC 262	741	11	<u>1222</u>	4	1569	15	598	6	<u>234</u>	3	352	15	1619	12	1113	9	<u>1946</u>	6	24.4	3	1145	14
117	ILC 191 x ILC 493	704	13	<u>1167</u>	7	1639	12	1131	1	126	14	759	2	2679	4	-	-	<u>1850</u>	10	27.7	3	1418	2
123	ILC 200 x ILC 262	<u>991</u>	3	<u>1271</u>	2	2611	1	392	16	<u>235</u>	2	435	13	1381	15	1288	4	<u>1796</u>	13	24.9	3	1271	7
130	ILC 202 x ILC 493	<u>1046</u>	2	<u>1161</u>	8	1889	8	715	5	127	13	426	14	1583	13	575	15	<u>2242</u>	1	27.8	3	1205	10
171	ILC 92 x ILC 191	833	6	<u>1053</u>	12	1722	11	542	8	<u>253</u>	1	316	16	2036	8	1563	2	1563	14	24.5	2	1204	11
190	ILC 272 x ILC 191	787	9	<u>940</u>	15	2222	6	452	13	151	9	684	3	1869	10	1075	10	<u>2025</u>	5	31.4	3	1257	8
203	ILC 3279 x ILC 3355	796	7	<u>1217</u>	5	1875	9	413	15	156	6	440	12	2464	6	1200	5	<u>2111</u>	3	36.2	3	1315	5
ILC 482	Acc.No. 26780-68	796	7	<u>950</u>	14	2250	5	800	4	<u>208</u>	4	475	11	3024	2	1150	8	<u>2129</u>	2	28.7	3	1447	1
Local check		694	14	-	-	2403	2	906	3	99	15	917	1	2738	3	1175	6	1246	16	0	9		
Location mean		814		1143		1945		614		155		548		2106		1145		1896					
C.V.%		15.3		13.9		26.2		45.7		23.2		37.0		48.1		23.3		14.9					
L.S.D. 5%		208		NS		NS		NS		60		NS		NS		575		472					
S.E.		72.1		91.6		294.2		162.4		20.8		117.2		586.1		188.3		162.8					
No. of entries significantly exceeding the local check		4		-		-		-		5		-		-		1		13					

(1) Seed yield values underlined, significantly exceeded the local check

(2) 100 seed weight at Tel Hadya (Syria)

(3) Ascochyta blight rating at Tel Hadya (Syria)

(4) It excludes Islamabad (Pakistan)

Methods and Management

The suggested experimental design was randomised complete block design 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 is 1= highly resistant; 3= resistant; 5= tolerant; 7= susceptible; and 9= highly susceptible.

Forty one sets of blight nursery were distributed to cooperators in 16 countries and the results were received for 20 sets from 10 countries. Among the reported results, at three locations namely Beja, El-Kef and Moghrane in Tunisia there was no disease infestation and thus the results are not included.

Results and Discussion

The performance of the entries in each location is presented in Table 3.8.1 and discussed as under:

Egypt: The nursery was sown at Giza. Two entries namely, ICC 4107 (from Iran) and ICC 4935 (from India) showed resistant reaction and 16 other entries showed tolerant reaction. All other entries exhibited susceptible or highly susceptible reaction.

Greece: The nursery was sown at Larissa. Most of the lines were susceptible or highly susceptible at this location. Only four lines namely, ILC 82, ILC 183, ILC 201 and ILC 2506 showed resistant reaction. In addition, 7 entries showed tolerant reaction and the remaining susceptible or highly susceptible.

Pakistan: The nursery was conducted at three locations namely Faisalabad, Lahore and Tarnab.

The disease pressure was high at Faisalabad as compared to other locations. At Faisalabad, none of the entries exhibited resistant reaction, however, a few namely ILC 72, ILC 195, ILC 196, ILC 202, ILC 2380, ILC 2506, ILC 2956, ILC 3279, ILC 3346, ICC 6306 and ILC 1929 were tolerant. The other lines were susceptible or highly susceptible.

Table 3.8.1. Reaction of chickpea entries to Ascochyta blight in CIABN, during 1982/83.

ENTRY	ORIGIN	EGYPT	GREECE	PAKISTAN			SYRIA			MEAN
		Giza	Larrisa	Faisal- abad	Lahore	Tarnab	Jableh	Lattakia	Tel Hadya	
ILC 72	Spain	7	7	5	4	4	3	2	2	4
ILC 182	USSR	5	3	8	4	5	5	4	2	5
ILC 183	USSR	5	4	7	5	5	6	4	2	5
ILC 187	USSR	7	5	7	4	5	4	3	2	5
ILC 191	USSR	7	9	7	3	5	5	4	2	5
ILC 195	USSR	7	9	5	3	5	5	4	3	5
ILC 196	USSR	5	9	5	4	5	4	4	3	5
ILC 200	USSR	5	7	7	5	4	4	3	2	5
ILC 201	USSR	5	4	7	4	4	4	4	2	4
ILC 202	USSR	7	9	5	4	4	3	3	2	5
ILC 215	USSR	9	9	7	7	9	8	6	7	8
ILC 249	USSR	7	9	9	6	9	7	7	7	8
ILC 482	Turkey	9	9	7	6	9	6	7	2	7
ILC 484	Turkey	9	9	7	5	8	7	6	3	7
ILC2380	USSR	5	5	5	2	4	5	3	2	4
ILC2506	USSR	7	2	5	4	5	5	3	2	4
ILC2956	USSR	7	6	5	3	5	3	2	3	4
ILC3274	Unknown	7	8	7	3	6	4	3	3	5
ILC3279	USSR	5	8	5	4	4	4	4	2	5
ILC3346	USSR	7	8	5	5	4	3	3	2	5
ILC3400	ICARDA	7	6	9	5	8	7	7	3	7
FLIP81-41W	ICARDA	9	6	7	5	4	6	4	2	5
FLIP81-56W	ICARDA	7	8	7	4	6	5	7	2	6
FLIP81-59W	ICARDA	7	8	7	5	5	6	7	2	6
FLIP81-67	ICARDA	7	6	7	4	7	6	6	2	6
FLIP81-75	ICARDA	5	9	7	4	5	6	6	2	6
FLIP31-269	ICARDA	7	5	7	2	8	8	7	2	6
FLIP81-293	ICARDA	9	6	7	6	6	6	7	2	6
FLIP81-343	ICARDA	5	8	7	4	5	6	6	2	5
ICC 641	India	9	7	9	3	5	7	7	2	6
ICC2160	ICRISAT	9	5	9	3	4	7	6	2	6
ICC3932	Iran	7	6	9	3	5	7	5	2	6
ICC3996	Iran	7	7	9	3	5	7	4	2	6
ICC4107	Iran	3	5	9	3	5	7	7	2	5
ICC4472	Iran	9	9	9	2	4	7	7	2	6
ICC4475	Iran	5	8	9	2	5	6	4	2	5
ICC4935	India	3	8	9	4	8	6	7	3	6
ICC5127	Unknown	9	6	9	3	5	6	5	3	6
ICC6262	USSR	5	5	9	3	3	4	4	2	4
ICC6304	USSR	5	7	7	4	5	4	4	2	5
ICC6306	USSR	5	8	5	4	5	5	4	3	5
ICC6945	Iran	5	7	9	2	4	6	4	2	5
ICC6981	Iran	9	9	9	6	5	6	5	2	6
ICC6988	Iran	7	8	9	4	5	7	4	2	6
ICC6989	Iran	7	6	9	3	7	6	4	2	6
NEC 138-2	USSR	7	9	7	3	4	6	3	3	5
GG 688	India	7	6	7	4	6	6	5	2	5
Pch 15	Morocco	5	6	7	4	5	5	3	3	5
Pch 128	Morocco	5	5	9	3	3	4	3	2	4
ILC1929	Syria	9	7	5	2	5	9	0	0	5

* From Tunisia the data is not given as there was no infection during the season but results were reported from 3 locations.

At Lahore most of the lines showed resistant reaction except ILC 215, ILC 249, ILC 482, FLIP 81-293 and ICC 6981 which showed susceptible reaction and ILC 183, ILC 484, ILC 3346, ILC 3400, FLIP 81-41W, FLIP 81-59W which showed tolerant reaction.

At Tarnab a few lines namely ILC 72, ILC 200, ILC 201, ILC 202, ILC 2380, ILC 3279, ILC 3346, FLIP 81-41W, ICC 2160, ICC 4472, ICC 6262, ICC 6945, NEC 138-2 and Ph 128 were resistant in reaction. In addition a large number of lines were tolerant with ranking 5.

On the basis of average over locations, only a few lines namely ILC 195, ILC 196, ILC 202, ILC 2380, ILC 2506, ILC 2956, ILC 3279, ILC 3346, ICC 6306 and ILC 1929 were either tolerant or resistant in reaction.

Syria: This nursery was sown at three sites namely Jableh, Lattakia and Tel Hadya.

At Jableh, 13 lines namely ILC 72, -187, -196, -200, -201, -202, -2956, -3274, -3279, -3346, ICC 6262, ICC 6304, and Ph 128 were resistant; and ILC 182, -191, -195, -2380, -2506, FLIP 81-56W, ICC 6306, and Pch 15 were tolerant in reaction. All other lines were susceptible.

At Lattakia, a coastal site in Syria, lines namely ILC 72, -182, -183, -187, -191, -195, -196, -200, -201, -202, -2380, -2506, -2956, -3274, -3279, -3346, FLIP 81-41W, ICC 4475, -6262, -6304, -6306, -6945, -6988, -6989, NEC 138-2, Pch 15, Pch 128, ILC 1929, were resistant; ICC 3932, -5127, -6981 and GG 688 were tolerant; and others were susceptible.

At Tel Hadya, the main ICARDA research site in Syria, all the lines showed resistant reaction against ascochyta blight except a few lines namely ILC 215, ILC 249, and ILC 1929 which were susceptible.

On the basis of data across environments in Syria, a few lines namely ILC 72, ILC 187, ILC 196, ILC 200, ILC 201, ILC 202, ILC 2956, ILC 3274, ILC 3279, ILC 3346, ICC 6262, ICC 6304, Pch 128 maintained resistant reaction whereas for other lines at one or more locations the reaction was either tolerant or susceptible.

The data from 8 different locations in 4 different countries revealed that none of the lines was resistant across locations. The lines ILC 182, -196, -201, -2380, -2506, -3279, ICC 6262, -6306, Pch 128 showed resistant to moderately resistant reaction at least in 7 out of 8 locations.

The isolate at Faisalabad in Pakistan was the most virulent and was followed by that of Larissa in Greece and Giza in Egypt.

4. FABA BEAN INTERNATIONAL TRIALS AND NURSERIES

Introduction

Thirteen sets of trials and nurseries were available to cooperators. These included Yield Trials, Screening Nurseries, F₃ Trials, Disease and Pest Nurseries and Agronomy trials. The cooperators were free to use these materials in their breeding programs or for release as cultivars. The results reported by the cooperators are presented in the following pages.

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

Material

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

Methods and Management

The trial design was a randomised complete block with 4 replications. The suggested plot size was 4 rows, each 4 m long, with inter row spacing of 0.50 m accomodating 135 seeds per plot. Twenty six sets of the trial were distributed to 21 cooperators in 17 countries. The results were returned from 22 cooperators from 14 countries. The details received from the cooperators for different locations are given in Table 4.1.1.

Results and Discussion

The data on time to flowering (Table 4.1.2) revealed that at San Lorenzo (57 days) in Peru and Sakha (66 days) and Sids (75 days) in Egypt the entries took comparatively less time to flower and at Zhejian in China (144 days) and at Perugia in Italy (164 days) took comparatively more time. On average over the locations, the entry 80S 44539 was the earliest (flowering in 101 days), and 76TA 56809, (ILB 1817) X77TA 82 (80S 44371), and X77Sd 70 (80S 46341) flowered in 106 days and were late. The mean time to maturity over locations in entries ranged from 184 days to 190 days (Table 4.1.3). The data on plant height (Table 4.1.4) showed that mean plant height at different locations varied from 139 cm (at Granerous in Chile) to 39 cm (at San Lorenzo in Peru). The entry range across the locations, however, varied from 78 cm for ILB 285 (78S 49476) to 88 cm for ILB 1799 (39 MB). The correlations between different agronomic characters (Table 4.1.5) revealed that time to maturity is negatively correlated with seed yield. All other correlations were not significant.

The seed yield and rank of different entries at different locations is given in Table 4.1.6. The location mean of entries varied from 56 kg/ha at San Lorenzo in Peru to 6664 kg/ha at Hama in Syria.

Table 4.1.1. Agronomic data for different locations in the FBIYT-L during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer kg/ha			Irrigation	Insecticide or Fungicide
				N	P ₂ O ₅	K ₂ O		
ARGENTINA	Salta	18- 7-1983	140				5	
CHILE	Graneros	18- 4-1983	242					
CHINA	Zhejiang	30-10-1982	211	18.3	67.5			
EGYPT	Sakha	18-11-1982	180	35	71		2	Lemorange, Stomp
EGYPT	Sids	21-11-1982	165	37.5	75		5	Igran
ITALY	Perugia	28-10-1982	240		100			
LEBANON	Terbol	14-11-1982	221		50		1	Igran
LIBYA	El-Marj	11-12-1982	152	18	46			
MOROCCO	Douyet	17-12-1982	154	30	60	80		Dithane M45
OMAN	Muscat	16-12-1982		100	50	50		
PAKISTAN	Peshawar	27-11-1982	180					
PERU	San Lorenzo	18-11-1982						
SPAIN	Cordoba	7-12-1982	205				3	
SPAIN	Sevilla	23-11-1982	188	245	75	75	15	
SYRIA	Hama	30-11-1982	185		80		2	
SYRIA	TH-Irrigated	14-11-1982	197		50			Benlate, Calixin M, Actellic
SYRIA	TH-Rainfed	7-12-1982	168		50			Benlate, Calixin M, Actellic

Table 4.1.2. Time to flowering (days) of entries at different locations in the FBIYT-L during 1982/83.

ENTRY NAME		CHILE	CHINA	EGYPT		ITALY	LEBANON	LIBYA	MOROCCO	PAKISTAN	PERU	SPAIN	SYRIA		MEAN	
ILB or CROSS No.	PEDIGREE	Graneros	Zhejiang	Sakha	Sids	Perugia	Terbol	El-Marj	Douyet	Peshawar	San Lorenzo	Sevilla	Hama	TH-Irrigated TH-Rainfed		
1814	Syrian local large	117	147	70	79	164	140	90	80	87	58	93	117	132	92	105
1269	New Mamouth	116	146	65	74	164	140	91	94	87	58	92	116	131	93	105
1266	Aquadulce	117	145	70	75	164	140	88	80	87	58	95	117	132	93	104
29	75TA 26062	115	142	68	73	163	141	85	88	86	55	92	115	130	92	103
17	78S 49044	116	143	68	75	163	140	88	88	87	53	95	116	131	92	104
32	74TA 91	117	145	72	75	163	140	88	94	86	55	94	116	129	91	105
1817	78S 49896	117	144	60	78	163	141	87	94	87	60	93	115	132	93	105
24	74TA 63	117	145	65	73	163	140	87	88	86	60	97	116	130	93	104
1817	76TA 56809	117	147	75	80	164	140	87	88	87	58	95	117	130	93	106
263	77TA 88311	117	146	70	78	164	141	89	80	87	58	93	116	133	93	105
1933	Sevilla Giant	118	147	70	75	164	140	89	80	87	55	94	117	132	93	104
268	78S 48426	116	146	60	74	163	140	89	80	88	58	94	116	130	93	103
10	78S 49907	116	144	68	75	164	140	87	94	86	58	92	116	132	93	105
37	74TA 109	117	145	68	75	164	140	89	94	87	58	90	116	130	93	105
285	78S 48476	115	136	60	71	163	140	85	88	87	55	93	114	127	91	105
1799	39MB	117	142	65	70	162	140	87	94	86	50	90	115	128	91	102
34	78S 49841	117	144	65	75	164	140	89	74	86	55	92	117	132	92	103
444	79S 97513	117	146	72	80	164	140	88	88	87	55	92	117	132	93	105
1813	Syrian local large	117	147	60	75	164	141	90	94	86	58	95	117	131	93	105
x77TA88	80S 44539 long pod	112	134	60	69	163	140	88	88	88	53	90	115	128	91	101
x77TA82	80S 44371	116	146	75	75	163	140	88	94	86	60	94	116	132	92	106
x77Sd70	80S 46341	118	147	65	78	164	140	88	94	87	65	94	117	133	93	106
x77TA64	80S 44027	116	143	65	76	164	140	87	88	87	55	92	116	132	91	104
-	Local check	126	148	50	64	164	140	85	94	86	70	94	116	133	92	
LOCATION MEAN		117	144	66	75	164	140	88	88	87	57	93	116	131	92	

Table 4.1.3. Time to maturity (days) of entries at different locations in the FBIYT-L during 1982/83.

ENTRY NAME		CHILE	CHINA	EGYPT		ITALY	LEBANON	LIBYA	MOROCCO	PAKISTAN	SPAIN	SYRIA			MEAN
ILB or CROSS No.	PEDIGREE	Graneros	Zhejiang	Sakha	Sids	Perugia	Terbol	El-Marj	Douyet	Peshawar	Sevilla	Hama	TH-Irrigated	TH-Rainfed	
1814	Syrian local large	216	211	180	165	240	221	151	154	166	187	184	196	167	188
1269	New Mamouth	209	207	180	163	232	217	146	154	166	185	183	188	165	184
1266	Aquadulce	207	209	180	163	233	220	146	154	166	185	183	190	165	185
29	75TA 26062	205	208	180	160	232	217	146	154	166	187	183	193	166	184
17	78S 49044	214	208	180	163	233	217	147	154	166	186	182	191	167	185
32	74TA 91	217	209	180	161	234	217	144	154	167	184	183	194	167	185
1817	78S 49896	212	207	180	163	231	218	148	154	166	187	184	190	167	185
24	74TA 63	213	210	180	161	231	217	147	154	166	184	184	195	166	185
1817	76TA 56809	211	211	180	164	233	220	150	154	166	188	184	194	167	186
263	77TA 88311	215	210	180	165	233	218	149	154	166	186	184	193	167	186
1933	Sevilla Giant	204	210	180	164	234	221	147	154	166	187	183	189	167	185
268	78S 48426	242	210	180	165	231	220	147	154	166	185	183	190	167	188
10	78S 49907	212	209	180	163	232	219	148	154	167	187	184	194	167	186
37	74TA 109	215	209	180	161	233	218	144	154	167	187	185	193	168	186
285	78TA 48476	202	209	180	161	231	219	146	154	167	186	182	193	166	184
1799	39MB	213	210	180	160	232	216	149	154	166	185	181	189	166	185
34	78S 49841	208	211	180	165	234	219	149	154	166	185	185	196	168	186
444	79S 97513	213	210	180	164	234	218	148	154	166	183	183	193	166	186
1813	Syrian local large	213	209	180	163	232	221	146	154	167	185	185	194	167	186
X77TA 88	80S 44539 long pod	214	207	180	161	232	220	145	154	167	186	182	192	166	185
X77TA 82	80S 44371	213	210	180	163	231	219	152	154	167	186	183	196	168	186
X77Sd 70	80S 46341	249	211	180	164	233	221	151	154	166	186	185	197	168	190
X77TA 64	80S 44027	214	211	180	163	233	219	151	154	167	185	183	195	167	186
-	Local check	213	210	170	160	232	217	142	154	180	183	182	196	167	
LOCATION MEAN		214	209	180	163	233	219	147	154	167	186	183	193	167	

Table 4.1.4. Plant height (cm) of entries at different locations in the FBIYT-L during 1982/83.

ENTRY NAME		CHILE	CHINA	EGYPT	ITALY	LEBANON	LIBYA	PAKISTAN	PERU	SPAIN	SYRIA		MEAN	
TLB or CROSS No.	PEDIGREE	Graneros	Zhejiang	Sids	Perugia	Torbol	El-Marj	Peshawar	San Lorenzo	Sevilla	Hama	TH-Irrigated	TH-Rainfed	
1814	Syrian local large	143	102	118	111	65	53	86	33	70	94	80	53	84
1269	New Mamouth	135	99	105	107	60	48	86	45	72	86	72	48	80
1266	Aquadulce	140	95	98	109	63	45	88	40	68	86	72	50	80
29	75TA 26062	148	103	113	109	64	54	70	40	75	89	79	53	83
17	78S 49044	140	100	105	112	66	54	80	48	74	88	74	54	83
32	74TA 91	143	96	116	110	66	53	85	35	74	89	83	50	81
1817	78S 49896	140	98	115	105	66	51	84	40	71	78	75	53	80
24	74TA 63	140	99	104	108	61	52	85	30	66	95	72	50	82
1817	76TA 56809	130	101	116	105	66	52	83	38	64	93	84	53	83
263	77TA 88311	138	108	124	109	59	52	77	43	68	90	74	50	79
1933	Sevilla Giant	135	95	104	108	58	50	79	35	70	86	75	49	83
268	78S 48426	135	101	109	106	69	52	93	40	67	99	76	53	82
10	78S 49907	135	100	111	105	61	52	89	40	69	93	84	48	81
37	74TA 109	133	100	113	106	64	54	81	45	67	88	71	51	83
285	78S 49476	138	103	118	107	60	53	87	38	73	89	79	53	78
1799	39MB	140	100	110	105	56	50	66	35	63	85	78	51	88
34	78S 49841	153	103	118	115	71	54	90	33	74	96	91	55	85
444	79S 97513	143	109	115	109	70	55	77	40	66	95	85	53	81
1813	Syrian local large	133	97	109	105	65	49	81	42	74	95	74	50	83
X77TA 88	80S 44539	138	102	113	109	63	54	80	43	76	88	83	51	84
X77TA 82	80S 44371	153	108	113	106	68	56	67	38	72	88	82	54	84
X77Sd 70	80S 46341	145	99	116	104	68	53	78	45	69	94	84	53	84
X77TA 64	80S 44027	130	105	109	107	68	54	86	35	69	100	80	49	83
-	Local check	125	127	93	104	64	48	123	43	61	89	83	53	
LOCATION MEAN		139	102	111	108	64	52	83	39	70	91	79	52	

Table 4.1.5. Correlation (df = 21) among three agronomic characters and seed yield of entries in the FBIYT-L during 1982/83.

CHARACTERS	Time to maturity	Plant height	Seed yield
Time to flowering	0.40	- 0.01	0.02
Time to maturity		0.38	- 0.57**
Plant height			- 0.30

** P $\leq$ 0.01

Table 4.1.6. . Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the FBIYT-L during 1982/83.

ENTRY NAME		ARGENTINA		CHILE		CHINA		EGYPT				ITALY		LEBANON		LIBYA		MOROCCO		PAKISTAN		PERU	
ILB or CROSS No.	PEDIGREE	Salta		Graneros		Zhejiang		Sakha		Sids		Perugia		Terbol		El-Marj		Douyet		Peshawar		San Lorenzo	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
1814	Syrian local large	1593	23	2913	5	279	23	4271	8	3167	21	5204 ⁽¹⁾	6	3205	8	1817	2	1297	22	1031	5	8	23
1269	New Mamouth	1620	21	2850	8	538	19	4986	2	3896	16	5980	1	2825	19	1734	12	1500	14	725	12	122	3
1266	Aquadulce	1821	15	3200	1	1221	3	4764	4	3514	19	5043	12	2953	16	1386	22	1453	16	769	9	26	18
29	75TA 26062	2142	5	2913	5	963	13	3882	18	4049	12	5238	4	3231	7	1753	9	1625	7	434	18	49	10
17	78S 49044	2013	9	2625	15	608	18	4194	12	4042	11	5375	3	3259	5	1933	1	1656	6	809	8	61	6
32	74TA 91	1834	14	2631	14	1114	6	3979	16	4493	9	5115	11	3354	2	1745	10	1453	16	750	10	77	4
1817	78S 49896	2049	8	2400	29	1005	9	3889	17	5153	4	4123	23	3132	12	1311	24	1469	15	719	13	55	8
24	74TA 63	1723	18	3013	4	1305	1	3667	22	3944	13	5140	9	2806	20	1649	14	1953	1	922	6	65	5
1817	76TA 56809	1651	19	2625	15	1257	2	4229	9	4667	6	5020	13	2950	17	1780	7	1609	9	406	19	28	15
263	77TA 88311	1633	20	3100	3	895	16	4958	3	5375	3	5200	7	3388	1	1844	4	1384	20	1247	2	41	12
1933	Sevilla Giant	1477	24	2188	24	1118	5	4326	7	2910	23	5213	5	2916	18	1487	20	1328	21	1400	1	25	19
268	78S 48426	1620	21	2244	23	381	21	3772	18	3795	17	4440	22	3011	14	1536	17	1625	7	1216	3	28	15
10	78S 49907	1741	16	2888	7	1050	7	4208	11	3931	15	4853	18	3172	10	1756	8	1609	10	1041	4	20	20
37	74TA 109	1924	11	2638	12	808	17	4528	5	5451	2	5193	8	3175	9	1809	6	1578	12	831	7	55	8
285	78S 48476	1848	13	2550	18	934	14	3285	23	4326	10	4508	21	2972	15	1334	23	1688	5	744	11	8	23
1799	39MB	2071	7	2388	21	442	20	4139	14	3660	18	4945	16	3305	4	1819	5	1891	2	625	14	12	21
34	78S 49841	2080	6	2538	19	1132	4	3750	21	3458	20	4858	17	2179	24	1564	16	1563	13	544	16	28	15
444	79S 97513	1919	12	2638	12	976	11	4229	9	4535	8	4948	15	2603	21	1615	15	1406	19	619	15	45	11
1813	Syr. Local L. Long pod	1991	10	2738	10	922	15	4194	12	2663	24	4625	20	3156	11	1517	19	1594	11	394	20	33	14
X77TA88	80S 44539	2196	3	2613	17	304	22	5146	1	5486	1	4800	19	3121	13	1685	13	1797	4	381	22	212	2
X77TA82	80S 44371	1727	17	2763	9	1010	8	3215	24	5052	5	5138	10	3249	6	1743	11	1422	18	391	21	10	22
X77Sd76	80S 46341	2169	4	2738	10	975	12	3792	20	3139	22	5018	14	2595	22	1387	21	1828	3	356	23	41	12
X77TA64	80S 44027	2580	1	2375	22	240	24	4049	15	3944	13	5688	2	3551	3	1870	3	1266	23	506	17	57	7
-	Local check	2343	2	3150	2	981	10	4333	6	4660	7	3988	24	2451	23	1536	17	1250	24	44	24	248	1
LOCATION MEAN		2000		2696		852		4162		4138		4985		3023		1653		1551		704		56	
C.V. %		20.0		13.6		52.8		17.6		33.6		9.9		22.1		19.1		21.9		71.4		146.2	
L.S.D. 5%		NS		518		NS		1032		NS		696		NS		NS		NS		NS		NS	
S.E.		-		183.5		260.1		366.0		695.0		246.5		334.5		158.0		170.0		251.5		58.0	
No. of entries significantly exceeding the local check		-		0		-		0		-		19		-		-		-		-		-	

Continued Table 4.1.6.

ENTRY NAME		SPAIN				SYRIA								TUNISIA								(2)	
ILB or CROSS No.	PEDIGREE	Cordoba		Sevilla		Hama		Lattakia		TH-Irrigated		TH-Rainfed		Beja		El-Kef		Mateur		Hoghrane		MEAN	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
1814	Syrian local large	3025	19	3523	12	6808	9	638	23	3824	4	1565	1	1681	21	3050	4	1538	23	657	19	2557	18
1269	New Mamouth	3576	10	4308	1	7167	1	729	21	3250	23	1278	18	2434	2	2969	8	2494	5	763	8	2781	4
1266	Aquadulce	4045	4	3657	8	6587	15	823	14	3321	20	1185	20	2356	3	2581	22	1531	24	-	-	2748	6
29	75TA 26062	4045	4	3568	10	7044	5	971	6	3722	6	1395	8	2203	7	2744	18	2400	11	-	-	2859	1
17	78S 49044	3768	7	3895	3	6925	7	1348	3	3330	18	1432	4	1868	16	2700	19	2450	8	838	3	2753	5
32	74TA 91	3699	8	4158	2	6983	6	881	10	3914	2	1389	9	2109	9	3013	5	2663	2	807	5	2804	2
1817	78S 49896	3154	18	3497	14	6604	14	867	11	3219	24	1185	20	1940	14	2838	14	2388	13	888	2	2592	17
24	74TA 63	3637	9	3874	4	7146	2	786	17	3494	13	1117	23	2303	4	3000	6	2588	3	663	17	2737	9
1817	76TA 56809	3355	14	3377	19	6634	13	914	8	3778	5	1404	5	1984	10	2696	20	2788	1	-	-	2896	3
263	77TA 88311	2313	24	3283	22	6754	12	938	7	3491	14	1519	2	1450	23	2756	16	2494	5	750	12	2739	7
1933	Sevilla Giant	4096	3	3576	9	6567	16	619	24	3349	17	1006	24	1940	14	3000	6	1625	22	713	16	2543	19
268	78S 48426	3232	16	3368	20	6825	8	838	12	3287	21	1401	6	1825	18	3163	2	2150	18	786	6	2531	20
10	78S 49907	3413	12	3288	21	7050	4	833	13	4080	1	1299	14	2171	8	2944	10	2369	14	750	12	2722	10
37	74TA 109	2594	23	3463	17	7083	3	762	19	3583	10	1302	13	1975	12	2931	11	2405	10	744	14	2739	7
285	78S 48476	3292	15	3720	6	6417	19	1524	2	3651	9	1398	7	2468	1	2550	23	2451	7	763	8	2621	14
1799	38MB	4429	1	3169	23	6263	21	1224	4	3889	3	1207	19	2243	5	3319	1	2575	4	782	7	2719	11
34	78S 49841	3366	13	3053	24	6804	10	819	15	3330	18	1330	12	1721	20	2963	9	2450	8	650	20	2508	21
444	79S 97513	3536	11	3488	16	6779	11	814	16	3670	8	1435	3	1981	11	2888	12	2194	15	825	4	2655	13
1813	Syr. local l.l.pod	2893	20	3690	7	6521	17	900	9	3559	11	1333	11	1734	19	2644	21	1869	20	757	11	2485	23
X77TA88	80S 44539	2766	22	3532	11	5938	24	741	20	3275	22	1296	15	2218	6	2756	16	2400	11	719	15	2659	12
X77TA82	80S 44371	3433	2	3491	15	5988	23	686	22	3475	15	1296	15	1393	24	2788	15	2181	16	763	8	2605	15
X77Sd70	80S 46341	3817	6	3428	18	6229	22	781	18	3519	12	1340	10	1490	22	2869	13	1938	19	600	21	2500	22
X77TA64	80S 44027	2846	21	3499	13	6475	18	1176	5	3435	16	1170	22	1834	17	2525	24	2163	17	907	1	2605	15
-	Local check	3176	17	3846	5	6354	20	1781	1	3691	7	1290	17	1966	13	3150	3	1700	21	663	17	-	-
LOCATION MEAN		3433		3571		6664		932		3547		1316		1992		2868		2242		752		-	-
C.V. %		34.3		17.5		8.8		50.4		10.5		18.9		27.7		13.8		21.3		-		-	-
L.S.D. 5%		NS		NS		NS		NS		NS		NS		NS		NS		NS		-		-	-
S.E.		589.5		441.2		293.0		272.1		186.5		125.0		275.9		198.0		337.8		-		-	-
No. of entries significantly exceeding the local check		-		-		-		-		-		-		-		-		-		-		-	-

(1) Seed yield values underlined, significantly exceeded the local check.

(2) It excludes PERU (San Lorenzo) location.

The entry means, however, varied from 2485 kg/ha for Syrian Local Large (long pod) to 2896 kg/ha for ILB 1817 (76TA 56809). The coefficient of variation for the experiment was highest for San Lorenzo in Peru (146.2%) and was followed by Peshawar in Pakistan (71.4%), Zhejiang in China (52.8%), and Lattakia in Syria (50.4%). The ANOVA of the experimental design revealed that the mean squares due to entries were significant only at Graneros (Chile), Sakha (Egypt) and Perugia (Italy). At all other locations the differences between entries were not significant. Further the LSD estimates at the significant locations revealed that only at Perugia in Italy 19 entries exceeded the local check by a significant margin. At this location the check was ranked 24th.

The five heaviest seed yielding entries at the individual locations are listed in Table 4.1.7. It was revealed from this table that ILB 1719 (39 MB), ILB 263 (77TA 88311), ILB 24 (74TA 63), ILB 32 (74TA 91), and ILB 1269 (New Mammoth) are comparatively more adaptable as they occurred among the top five in 9, 8, 7, 7 and 7 locations respectively.

The perusal of Table 4.1.8 revealed that ILB 24 (74TA 63) was the top yielder (on the basis of 3 years), and was followed by ILB 1799 (39 MB), ILB 1814 (Syrian Local Large) and ILB 1269 (New Mammoth). However, on the basis of 1981/82 and 1982/83 where some more new lines were tested, ILB 24 (74TA 63), ILB 17 (78S 49044) and ILB 1269 (New Mammoth) were the high ranking and were followed by ILB 1817 (76TA 56809).

The correlations between seed yields of different locations (Table 4.1.9) revealed that Tel Hadya in Syria had no significant association with any other location.

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

Material

The Faba Bean International Yield Trial - Small Seed comprised of 23 test entries and one local check to be supplied by the cooperator. One entry, namely Reina Blanca which is high yielding and large seeded was also included in this trial for comparisons. These entries were selected on the basis of their performance either in the International Screening Nursery Small Seed in 1981/82 or FBIYT-S conducted during 1981/82.

Methods and Management

The material was suggested to be sown in a randomised complete block design with 4 replications. The suggested plot size was 4 rows 4 m long with inter row spacings of 50 cm accommodating 150 seeds per plot. Thirty sets of trial were distributed to 23 cooperators in 21 countries. Results were reported from 24 trials covering 17 countries.

Table 4.1.7. The five heaviest seed yielding entries at the individual locations in the FBIYT-L during 1982/83.

RANK	A R G E N T I N A		C H I L E		C H I N A		E G Y P T				I T A L Y	
	Salta		Graneros		Zhejiang		Sakha		Sids		Perugia	
	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.
1	80S 44027	X77TA 64	Aquadulce	1266	74TA 63	24	80S 44539	X77TA88	80S 44539	X77TA88	New Mamouth	1269
2	Local check	-	Local check	-	76TA 56809	1817	New Mamouth	1269	74TA 109	37	80S 44027	X77TA64
3	80S 44539	X77TA 88	77TA 88311	263	Aquadulce	1266	77 TA 88311	263	77TA 88311	263	78S 49044	17
4	80S 46341	X77Sd 70	74TA 63	24	78S 49841	34	Aquadulce	1266	78S 49896	1817	75TA 26062	29
5	75TA 26062	29	Syrian Local large 75TA 26062	1814 ⁽¹⁾]	Sevilla Giant	1933	75 TA 109	27	80S 44371	X77TA82	Sevilla Giant	1933

RANK	S P A I N				S Y R I A							
	Cordoba		Sevilla		Hama		Lattakia		TH-Irrigated		TH-Rainfed	
	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.
1	39MB	1799	New Mamouth	1269	New Mamouth	1269	Local check	-	78S 49907	10	Syrian local large	1814
2	80S 44371	X77TA82	74TA 91	32	74TA 63	24	78S 48476	285	74TA 91	32	77TA 88311	263
3	Sevilla Giant	1933	78S 49044	17	74TA 109	37	78S 49044	17	39MB	1799	79S 97513	444
4	Aquadulce	1266	74TA 63	24	78S 49907	10	39 MB	1799	Syrian local large	1814	78S 49044	17
5	75TA 26062	29	Local check	-	75TA 26062	29	80S 44027	X77TA64	76TA 56809	1817	76TA 56809	1817

(1) The brackets indicate entries having the same rank.

Cont'd. ...

Table 4.1.7. The five heaviest seed yielding entries at the individual locations in the FBIYT-L during 1982/83.

RANK	L E B A N O N		L I B Y A		M O R O C C O		P A K I S T A N		P E R U	
	Terbol		El-Marj		Douyet		Peshawar		San Lorenzo	
	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.
1	77TA 88311	263	78S 49044	17	74TA 63	24	Sevilla Giant	1933	Local check	-
2	74TA 91	32	Syrian local	1814	39MB	1799	77TA 88311	263	80S 44539	X77TA 88
3	80S 44027	X77TA64	80S 44027	X77TA64	80S 46341	X77Sd70	78S 48426	268	New Mamouth	1269
4	39 MB	1799	77TA 88311	263	80S 44539	X77TA88	78S 49907	10	74TA 91	32
5	78S 49044	17	39MB	1799	78S 48476	285	Syrian local large	1814	74TA 63	23

RANK	T U N I S I A							
	Beja		El-Kef		Mateur		Moghrane	
	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.
1	78S 48476	285	39MB	1799	76TA 56809	1817	80S 44027	X77TA64
2	New Mamouth	1269	78S 48426	268	74TA 91	32	78S 49896	1817
3	Aquadulce	1266	Local check	-	74TA 63	24	78S 49044	17
4	74TA 63	24	Syrian local	1814	39MB	1799	79S 97513	444
5	39MB	1799	74TA 91	32	New Mamouth	1269	74TA 91	32
					77TA 88311	263		

Table 4.1.8. The mean yield (Y = kg/ha) and rank (R) of the common entries in the FBIYT-L during 1980-83.

ENTRY NAME	PEDIGREE	<u>1980/81</u>		<u>1981/82</u>		<u>1982/83</u>		<u>AVERAGE 1</u> [*]		<u>AVERAGE 2</u> [*]	
		Y	R	Y	R	Y	R	Y	R	Y	R
ILB 24	74TA 63	2639	1	2238	1	2737	4	2488	1	2538	1
ILB 1269	New Mamouth	1781	4	2143	3	2781	2	2462	3	2235	4
ILB 1799	39 MB	2354	2	2100	4	2719	6	2410	5	2391	2
ILB 1814	Syr.L.L.	2179	3	1998	8	2557	7	2278	7	2245	3
ILB 10	78S 49907	-		2066	5	2722	5	2394	6	-	
ILB 17	78S 49044	-		2209	2	2753	3	2481	2	-	
ILB 34	78S 49841	-		2045	7	2508	8	2277	8	-	
ILB 1817	76TA 56809	-		2055	6	2796	1	2426	4	-	

1^{*} Average over 1981-83

2^{*} Average over 1980-83

Table 4.1.9. Correlation (df = 21) among different locations for the seed yield of entries in the FBIYT-L during 1982/83.

COUNTRY	LOCATION	CHILE	CHINA	EGYPT		ITALY	LEBANON	LIBYA	MOROCCO	PAKISTAN	PERU	SPAIN		SYRIA				TUNISIA			
		Graneros	Zhejiang	Sakha	Sids	Perugia	Terbol	El-Marj	Douyet	Peshawar	San Lorenzo	Cordoba	Sevilla	Hama	Lattakia	TH-Irr.	TH-Rain.	Beja	El-Kef	Mateur	Moghrane (1)
ARGENTINA	Salta	-0.13	-0.30	-0.10	0.06	-0.01	0.12	0.02	0.17	-0.65 ⁿⁿ	0.27	-0.10	-0.18	-0.32	0.40	-0.10	-0.12	-0.02	-0.35	0.12	0.30
CHILE	Graneros		0.19	0.43 ^a	0.01	0.38	0.04	0.34	-0.06	-0.04	0.14	0.01	0.08	0.33	-0.54 ⁿⁿ	0.07	0.13	-0.16	0.01	-0.13	-0.29
CHINA	Zhejiang			-0.29	-0.01	-0.21	-0.41	-0.41	0.07	-0.02	-0.32	0.30	0.02	0.19	-0.19	0.13	-0.21	0.05	-0.16	0.11	-0.25
EGYPT	Sakha				0.16	0.34	0.14	0.27	-0.16	0.20	0.56 ⁿⁿ	-0.38	0.12	0.12	-0.30	-0.19	0.03	0.18	-0.02	-0.09	0.02
EGYPT	Sids					-0.09	0.29	0.23	-0.02	-0.10	0.40	-0.36	-0.04	-0.08	0.06	-0.06	0.19	0.02	-0.17	0.57 ⁿⁿ	0.36
ITALY	Perugia						0.15	0.63 ⁿⁿ	-0.26	0.01	0.20	0.13	0.41	0.23	-0.09	-0.01	-0.05	0.04	-0.05	0.10	-0.03
LEBANON	Terbol							0.51 ^a	-0.23	0.11	0.04	-0.17	0.13	-0.09	0.30	0.26	0.08	-0.04	-0.17	0.06	0.55 ^a
LIBYA	El-Marj								-0.13	0.04	0.13	-0.13	0.02	0.26	0.09	0.36	0.33	-0.14	0.15	0.33	0.16
MOROCCO	Douyet									-0.27	0.21	0.21	-0.04	-0.10	0.26	0.09	-0.11	0.34	0.23	0.42 ^a	-0.37
PAKISTAN	Peshawar										-0.24	-0.14	0.01	0.44 ^a	-0.15	-0.03	-0.06	0.02	0.38	-0.21	-0.04
PERU	San Lorenzo											-0.18	0.39	-0.07	-0.17	-0.35	-0.10	0.30	-0.09	0.28	0.05
SPAIN	Cordoba												0.14	-0.13	-0.01	0.12	-0.35	0.21	0.26	-0.10	-0.08
SPAIN	Sevilla													0.34	0.02	-0.14	-0.07	0.43 ^a	-0.14	0.07	0.17
SYRIA	Hama														-0.08	0.17	0.15	0.28	0.23	0.23	0.03
SYRIA	Lattakia															0.16	0.17	0.24	-0.32	0.41	0.45 ^a
SYRIA	TH-Irrigated																0.33	0.11	0.23	0.19	-0.09
SYRIA	TH-Rainfed																	-0.32	-0.07	0.14	-0.08
TUNISIA	Beja																		0.02	0.27	0.16
TUNISIA	El-Kef																			0.09	-0.30
TUNISIA	Mateur																				0.28

^a P ≤ 0.05

ⁿⁿ P ≤ 0.01

(1)df = 18

Agronomic data received from the cooperators are presented in Table 4.2.1.

Results and Discussion

Flowering (Table 4.2.2) was earliest in Darulaman, in Afghanistan (50 days) and was followed by Saskatoon in Canada, and Patac'ao in Portugal (52 days); Tapioszele in Hungary and Stuttgart in West Germany (54 days); Hudeiba in Sudan (56 days); and Ankara in Turkey (58 days). Perugia in Italy was the latest flowering location (163 days) which was followed by Zhejiang in China (144 days), Terbol in Lebanon (140 days) and Tel Hadya-Irrigated in Syria (131 days). Overall locations the entry Giza 4 was the earliest to flower in 83 days whereas X77Sd 11 (80S 45676) was the latest (92 days). At Saskatoon in Canada the entries matured earliest (Table 4.2.3) in 88 days and the other early maturing locations included Ankara in Turkey (103 days), Darulaman in Afghanistan (113 days), Tapioszele in Hungary (115 days) etc. However, Perugia in Italy was the latest maturing location (232 days) and was followed by Terbol in Lebanon (219 days), Zhejiang in China (212 days), Tel Hadya-Irrigated in Syria (195 days) etc. Among the entry means overall locations, however, there was difference of only 2 days in time to maturity. Plant height varied from 36 cm at Hudeiba in Sudan to 128 cm at Sids in Egypt (Table 4.2.4). Overall locations, the entry means for plant height ranged from 70 cm for Renia Blanka to 81 cm for 80S 45676. The tallest plant height was recorded for 80S 45676 at Sids in Egypt. The correlations between the agronomic variables (Table 4.2.5) exhibited that time to maturity had significant and positive association with plant height whereas all other associations were not significant.

The mean yield and rank of entries at different locations are given in Table 4.2.6. The mean yield at Sids in Egypt was the highest (5733 kg/ha) and was followed by Sevilla in Spain (4557 kg/ha), Gorgan in Iran (4480 kg/ha), Perugia in Italy (4239 kg/ha), Terbol in Lebanon (3873 kg/ha). The lowest yields were, however, reported from Muscat in Oman (606 kg/ha), Sidi Kacem in Morocco (648 kg/ha) and Moghrane in Tunisia (924 kg/ha). The coefficient of variation for trial at different locations ranged from 7.1 to 39.7 per cent. The ANOVA for the design revealed that the differences between the entries were significant at all the locations except at Sids in Egypt; Terbol in Lebanon; Muscat in Oman; Cordoba in Spain; Lattakia in Syria, and El-Kef, Mateur and Moghrane in Tunisia. The LSD estimates at different locations revealed that 2, 8, 11, 20, 1, 10, 5, 17, 23, 7 and 21 entries exceeded the respective local checks at Darulaman (Afghanistan), Saskatoon (Canada), Gorgan (Iran), Perugia (Italy), El-Marj (Libya), Patac'ao (Portugal), Sevilla (Spain), Tel Hadya-Irrigated and Tel Hadya-Rainfed (Syria), Beja (Tunisia) and Ankara (Turkey), respectively. On the basis of average over locations, the five heaviest yielding entries included Renia Blanca, 78S 49395,

Table 4.2.1. Agronomic data for different locations in the FBIYT-S during 1982/83.

COUNTRY	LOCATION	Planting Date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide or fungicide
				N	P ₂ O ₅	K ₂ O		
AFGHANISTAN	Darulaman	21.4.1983	118	30	60		7	Metasystox
CANADA	Saskatoon	17.5.1983	93					Sencon
CHINA	Zhejiang	30.10.1982	214	18	67			
EGYPT	Gemmi za	25.11.1982	138	35	71		3	
EGYPT	Sids	21.11.1982	165	37	75		5	Igran
HUNGARY	Tapioszele	11.4.1982	117	88	75			
IRAN	Gorgan	19.12.1982	169				2	
ITALY	Perugia	28.10.1982	234		100			
LEBANON	Terbol	14.11.1982	223		50		1	Igran
LIBYA	El-Marj	11.12.1982	153	18	46			
MOROCCO	Sidi Kacem	20.11.1982	177	30	60	80		Di thane M45, Meta-systox
OMAN	Muscat	23.12.1982	108	80	40	40		
PORTUGAL	Patac 'ao	26.10.1982	220				5	Basudin, Malathion, Di thane M45
SPAIN	Cordoba	7.12.1982	203				3	
SUDAN	Hudeiba	18.11.1982	112				10	
SYRIA	TH-Irrigated	15.11.1982	196		50			Benlate, Calixin M, Actellic
SYRIA	TH-Rainfed	7.12.1982	169		50			Benlate, Calixin M, Actellic, Fusilade, Basudin
TURKEY	Ankara	22.3.1983	104	20	60			
W. GERMANY	Stuttgart	21.4.1983			92	158		Areti t, Metasystox

Table 4.2.2 . Time to flowering (days) of entries at different locations in the FBIYT-S during 1982/83.

ENTRY		AFGHANISTAN	CANADA	CHINA	EGYPT		HUNGARY	IRAN	ITALY	LEBANON	LIBYA	MOROCCO	PORTUGAL	SUDAN	SYRIA		TURKEY	W. GERMANY	MEAN
ILB/ Cross No.	PEDIGREE	Darulaman	Saskatoon	Zhejiang	Gemiza	Sids	Tapiozele	Gorgan	Perugia	Terbol	El-Marj	Sidi Kacem	Patae'ao	Hudeiba	TH-Irrigated	TH-Rainfed	Ankara	Stuttgart	
1812	Syr. Local Medium	50	51	144	75	76	50	102	163	140	86	90	52	55	129	113	57	53	87
1217	Renia Blanca	54	54	145	78	78	51	99	162	140	87	94	60	77	132	114	57	56	90
1820	Giza 4	47	48	136	64	65	51	99	162	140	80	82	39	52	128	113	57	53	83
9	74TA 22	51	50	144	77	78	52	102	163	140	89	82	55	55	132	112	57	55	88
31	74TA 87	48	49	142	75	75	54	102	162	140	84	90	52	54	129	113	57	53	87
31	74TA 85	52	51	144	74	75	54	99	163	140	87	82	52	55	131	114	56	54	87
49	74TA 133	49	51	145	51	76	52	99	163	140	85	90	53	55	129	113	56	54	86
285	77TA 88118	48	51	142	72	71	53	99	162	140	85	90	51	54	130	114	56	53	87
287	77Ms 88323	51	52	144	78	74	53	102	163	140	85	82	54	55	131	113	56	54	87
X75TA 146	79S 78978	51	53	144	73	71	51	99	163	140	81	87	48	54	128	113	56	54	86
905	78S 35513	51	56	146	79	75	51	99	163	141	88	90	57	56	133	114	58	55	89
1816	78S 48561	50	55	144	77	75	53	102	162	140	87	90	54	55	132	114	58	55	88
407	78S 49395	49	50	143	76	78	54	99	163	140	86	90	58	55	131	114	56	54	88
269	74TA 367	48	50	144	74	75	54	102	164	140	85	90	51	53	131	113	58	53	87
336	78S 48437	49	50	144	73	73	55	102	162	141	87	87	51	54	129	114	58	53	87
269	78S 48821	49	51	144	72	74	55	102	163	141	84	82	49	55	128	113	57	55	87
320	78S 48434	55	52	148	80	78	56	99	163	142	90	94	59	56	133	116	57	56	90
277	-	46	49	144	68	70	57	99	163	140	84	82	45	52	128	114	57	52	85
339	78S 48504	50	51	143	74	76	56	99	163	140	84	90	53	55	132	116	59	54	88
360	74TA 498	49	51	143	72	71	56	99	162	140	85	90	48	54	132	114	59	54	87
X775d 48	80S 45779	52	51	146	79	80	56	99	165	141	89	90	53	56	133	114	59	55	89
X775d 11	80S 45676	53	55	148	81	80	53	102	166	142	92	98	61	76	132	114	59	57	92
5	74TA 12	49	49	140	74	71	56	102	162	140	87	90	50	54	128	114	58	54	87
-	Local check	60	56	146	61	61	56	99	163	140	74	98	47	47	133	114	64	52	
Location mean		50	52	144	73	74	54	100	163	140	85	89	52	56	131	114	58	54	

Table 4.2.3. Time to maturity (days) of entries at different locations in the FBIYT-5 during 1982/83.

ENTRY		AFGHANISTAN	CANADA	CHINA	EGYPT		HUNGARY	IRAN	ITALY	LEBANON	LIBYA	MOROCCO	SYRIA		TURKEY	MEAN
ILB/ Cross No.	PEDIGREE	Darulaman	Saskatoon	Zhejiang	Gemmlza	Sids	Taploszele	Gorgan	Perugia	Terbol	El-Marj	Sidi Kacem	TH Irrigated	TH Rainfed	Ankara	
1812	Syr. local Medium	115	89	211	132	164	116	166	234	219	147	177	195	167	103	160
1217	Renia Blanca	118	88	210	132	164	116	166	233	217	150	177	187	166	102	159
1820	Giza 4	110	87	213	134	161	114	169	232	220	152	177	195	167	103	160
9	74TA 22	117	89	213	135	164	114	169	234	217	151	177	192	168	103	160
31	74TA 87	113	87	214	132	160	115	166	232	218	150	177	194	167	103	159
31	74TA 85	115	87	212	135	161	115	169	231	219	150	177	196	167	103	160
49	74TA 133	115	88	211	129	164	117	169	232	217	150	177	195	166	102	159
285	77TA 88118	113	87	212	131	160	114	166	231	220	148	177	196	169	103	159
287	77Ms 88323	113	87	213	138	160	115	166	233	217	151	171	195	167	103	159
X75TA 146	79S 78978	109	88	214	133	160	116	166	232	219	149	171	196	168	102	159
905	78S 35513	113	89	212	136	163	114	168	231	223	149	171	195	168	103	160
1816	78S 48561	115	89	211	132	161	114	166	232	217	148	171	195	167	103	159
407	78S 49395	113	88	207	134	164	113	169	231	217	150	171	195	167	103	159
269	74TA 367	112	88	213	134	165	114	169	230	219	152	171	195	168	102	159
336	78S 48437	113	87	212	136	160	115	169	231	220	151	171	194	167	103	159
269	78S 48821	114	87	212	131	160	116	167	231	220	150	171	194	167	102	159
320	78S 43434	111	88	212	136	163	116	169	233	221	150	177	194	168	103	160
277	-	111	88	213	134	160	114	169	233	219	151	177	194	167	101	159
339	78S 48504	112	88	211	136	164	116	169	232	219	151	177	195	169	102	160
360	74TA 498	112	87	212	132	163	114	169	232	222	148	177	195	167	103	160
X77Sd 48	80S 45779	111	88	213	133	165	116	166	232	219	153	177	196	169	104	160
X77Sd 11	80S 45676	116	89	213	136	165	114	166	232	220	153	177	196	169	104	161
5	74TA 12	114	88	213	134	161	117	166	232	219	151	177	195	168	102	160
-	Local check	106	93	204	128	156	114	166	233	216	146	177	195	169	104	
Location mean		113	88	212	133	162	115	168	232	219	150	175	195	168	103	

Table 4.2.4. Plant height (cm) of entries at different locations in the FBIYT-S during 1982/83.

ENTRY		AFGHANISTAN	CANADA	CHINA	EGYPT		HUNGARY	IRAN	ITALY	LEBANON	LIBYA	PORTUGAL	SUDAN	SYRIA		TURKEY	W. GERMANY	MEAN
ILB/ Cross No.	PEDIGREE	Darulaman	Saskatoon	Zhejiang	Gemmiza	Sids	Tapioszele	Gorgan	Perugia	Terbol	El-Marj	Patac'ao	Hudeiba	TH Irrigated	TH Rainfed	Ankara	Stuttgart	
1812	Syr. local Medium	65	58	104	94	136	65	90	107	65	52	110	32	65	53	56	75	77
1217	Renia Blanca	62	53	86	84	119	65	82	100	63	46	113	24	59	45	54	70	70
1820	Giza 4	69	56	103	108	128	65	85	95	69	54	120	44	78	51	57	80	79
9	74TA 22	70	58	99	95	124	65	76	106	66	52	109	32	74	51	56	75	76
31	74TA 87	68	57	97	91	135	64	72	108	65	51	120	33	76	54	57	75	76
31	74TA 85	71	57	99	88	128	66	77	106	68	52	121	33	70	51	54	70	76
49	74TA 133	63	57	96	99	133	67	65	108	68	50	114	30	71	55	55	75	76
285	77TA 88118	62	56	96	91	131	64	80	101	60	52	105	32	72	53	54	70	74
287	77Ms 88323	71	51	98	91	126	65	86	98	66	53	113	32	73	51	55	75	75
X75TA 146	79S 78978	57	54	93	75	116	67	78	96	55	47	116	41	70	50	55	75	72
905	78S 35513	76	56	109	90	128	66	84	107	65	51	113	35	71	50	57	80	77
1816	78S 48561	66	56	100	86	136	64	80	106	65	51	119	39	79	53	59	85	78
407	78S 49395	57	57	105	85	134	65	85	109	66	52	118	34	76	50	59	70	76
269	74TA 367	68	54	107	91	141	64	95	105	71	55	116	41	77	51	58	80	80
336	78S 48437	69	57	96	100	126	65	85	103	60	58	115	34	75	53	57	80	77
269	78S 48821	70	55	90	80	121	67	75	96	58	48	105	38	64	49	53	75	72
320	78S 48434	58	54	103	98	119	67	80	106	63	54	111	37	79	50	60	70	76
277	-	75	54	108	98	111	68	90	108	59	48	114	36	78	54	59	70	77
339	78S 48504	72	57	104	105	124	67	75	106	65	57	114	42	70	51	59	75	78
360	74TA 498	54	55	99	95	124	66	82	108	68	50	116	36	72	51	56	80	76
X77Sd 48	80S 45779	66	57	99	103	144	70	90	104	73	55	114	37	83	54	58	80	80
X77Sd 11	80S 45676	67	59	106	104	148	68	82	110	75	59	109	31	85	53	61	80	81
5	74TA 12	64	56	98	91	118	68	77	101	68	49	115	31	72	50	55	75	74
-	Local check	58	62	117	90	118	66	80	100	63	43	101	67	67	46	61	80	
Location mean		66	56	101	93	128	66	81	104	65	52	113	36	73	51	57	76	

Table 4.2.5 Correlation (df = 21) among three agronomic characters and seed yield of entries in the FBIYT-S during 1982/83.

Characters	Time to maturity	Plant height	Seed yield
Time to flowering	0.39	0.08	-0.13
Time to maturity		0.48*	-0.30
Plant height			-0.24

* $P \leq 0.05$

Table 4.2.6. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the FBIYT-S during 1982/83.

ENTRY		AFGHANISTAN		CANADA		CHINA		EGYPT				HUNGARY		IRAN		ITALY		LEBANON		LIBYA		MOROCCO		OMAN	
ILB/	PEDIGREE	Darulaman		Saskatoon		Zhejiang		Gemmlza		Sids		Tapioszele		Gorgan		Perugia		Terbol		El-Marj		Sidi Kacem		Muscat	
Cross No.		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
1812	Syr. Local Med.	1193	12	1407	19	1308	9	2135	22	5639	14	2308	3	4479	12	4628	5	3786	12	1703	6	644	12	541	15
1217	Renia Blanca	924	22	1609	10	1462	4	3292	4	6507	1	2308	3	4826	7	5083	1	3320	20	2161	1	559	21	875	1
1820	Giza 4	1573	7	1558	13	1159	14	4823	1	5931	9	2350	2	4632	10	3803	20	4410	4	1416	23	445	24	750	4
9	74TA 22	1288	10	1531	14	1361	6	2646	14	5778	12	1267	24	4056	19	4695	3	3256	22	1833	3	681	8	459	19
31	74TA 87	1239	11	1742	2	1135	16	3073	8	4378	24	1433	11	3813	23	4160	16	2779	24	1602	10	766	2	583	11
31	74TA 85	1980(1)	1	1610	9	1472	3	2271	19	4715	23	1383	16	3715	24	4388	10	3269	21	1664	8	688	9	750	4
49	74TA 133	1707	3	1710	3	820	24	2771	10	6073	7	1292	23	4792	8	4765	2	3872	10	1587	13	738	5	683	7
285	77TA 88118	845	23	1463	18	1072	19	2615	15	5833	11	1483	8	3938	22	4273	14	3365	19	1725	5	763	3	333	23
287	77Ms 88323	1675	4	1115	24	1230	11	2354	18	5538	19	1358	18	5063	2	4448	8	3584	15	1599	12	456	23	858	2
X75TA 146	79S 78978	1621	5	1276	21	1177	12	2375	17	5708	13	1383	16	4285	16	3845	19	3835	11	1431	22	591	17	500	17
905	78S 35513	1591	6	1604	12	1099	18	3281	5	6500	2	1400	14	5028	3	3653	22	4191	6	1520	16	691	7	583	11
1816	78S 48561	1043	18	1185	23	985	20	3125	7	5538	19	1392	15	4910	5	4480	7	4291	5	1797	4	650	11	833	3
407	78S 49395	1098	15	1522	15	1286	10	2656	13	5639	14	1733	7	5021	4	4630	4	4148	7	1454	19	666	10	625	10
269	74TA 367	1332	9	1609	10	1351	7	2688	11	5597	18	1750	6	5215	1	3978	18	3893	9	1603	9	475	22	583	11
336	78S 48437	1107	14	1696	4	915	22	3760	2	5931	9	1842	5	4451	13	4310	12	3154	23	1899	2	580	18	459	19
269	78S 48821	927	21	1237	22	1129	17	1479	24	5615	17	1333	19	4514	11	4375	11	6217	1	1453	20	644	12	459	19
320	78S 48434	719	24	1791	1	1333	8	2885	9	4931	22	1450	10	3979	21	4418	9	4571	3	1438	21	638	14	525	16
277	-	1043	18	1614	7	1157	15	2667	12	5618	16	1300	22	4236	17	4598	6	3463	16	1558	15	578	19	583	11
339	78S 48504	1558	8	1623	5	1177	12	3271	6	6059	8	1408	13	4854	6	4240	15	3627	14	1601	11	605	16	500	17
360	74TA 498	1083	16	1621	6	1394	5	2156	21	6375	3	1458	9	4375	15	4290	13	3909	8	1698	7	578	19	750	4
X775d 48	80S 45779	1834	2	1466	17	824	23	2042	23	6215	4	1308	21	4722	9	3768	21	3386	18	1487	18	756	4	666	8
X775d 11	80S 45676	997	20	1613	8	974	21	2542	16	5125	21	1433	11	4438	14	4073	17	3421	17	1204	24	694	6	375	22
5	74TA 12	1045	17	1509	16	1604	1	2198	20	6215	4	1325	20	4132	18	3630	23	5530	2	1510	17	613	15	666	8
-	Local check	1176	13	1364	20	1505	2	3646	3	6139	6	2433	1	4042	20	3220	24	3687	13	1573	14	1066	1	-	-
Location mean		1274		1520		1205		2781		5733		1589		4480		4239		3873		1605		648		606	
C.V.%		32.4		11.5		20.2		30.4		17.0		7.4		7.1		9.2		39.7		17.4		29.7		-	
L.S.D. 5%		583		247		344		1193		NS		166		447		550		NS		394		271		NS	
S.E.		206.5		87.5		122.0		423.5		486.0		59.0		158.5		195.0		769.0		139.5		96.0		-	
No. of entries significantly exceeding the local check		2		8		0		0		-		0		11		20		-		1		0		-	

Cont'd. ...

Table 4.2.6. Cont'd. ...

ENTRY		PORTUGAL		SPAIN				SYRIA				TUNISIA				TURKEY		W. GERMANY		MEAN							
ILB/	PEDIGREE	Patac'ao		Cordoba		Sevilla		Latakia		TH-Irrigated		TH-Rainfed		Beja		El-Kef		Mateur		Moghrahe		Ankara		Stuttgart			
Cross No.		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
1812	Syr. Local Med.	2914	15	3560	6	4954	6	1519	4	3077	14	1460	5	-	-	2328	6	2763	2	1063	6	1344	19	3307	5	2524	5
1217	Renia Blanca	4157	1	3371	8	5438	3	1095	19	2682	21	1142	22	2269	3	2509	1	2700	3	1200	1	1167	23	3049	17	2654	1
1820	Giza 4	3150	9	3243	12	3656	23	1224	15	2503	23	1170	19	2144	6	2400	4	1931	19	988	9	1533	5	3119	10	2496	6
9	74TA 22	3186	6	2987	22	5329	5	1452	6	3247	8	1586	1	-	-	2062	19	2669	4	925	11	1639	3	3093	15	2479	8
31	74TA 87	2536	22	3565	5	4781	13	1152	18	3444	3	1312	13	-	-	2474	2	1850	20	-	-	1522	6	3129	9	2385	14
31	74TA 85	2679	19	2993	21	4906	9	1265	11	3346	4	1151	21	1675	15	2193	12	2256	12	1025	7	1356	18	3117	12	2328	20
49	74TA-133	3179	7	3643	3	5391	4	1090	20	3682	1	1515	4	1944	11	2200	11	2363	8	625	20	1489	8	3096	14	2543	4
285	77TA 88118	3179	7	3344	11	3954	17	1548	3	2617	22	1253	16	-	-	2018	21	2375	7	-	-	1272	21	2907	19	2372	15
287	77Ms 88323	2900	16	3426	7	3829	20	1257	12	2846	18	1154	20	1560	17	2168	15	2275	10	725	17	1483	9	2259	24	2298	21
X75TA 146	79S 78978	3850	2	3127	19	3375	24	1567	2	2747	20	1333	12	2800	1	2228	8	2038	17	1000	8	1606	4	3101	13	2367	17
905	78S 35513	3000	13	3192	15	5458	2	905	22	3083	13	1420	8	1888	12	1981	23	2241	13	800	15	1394	15	3376	4	2495	7
1816	78S 48561	2757	18	3364	9	4954	6	2033	1	3546	2	1373	10	2244	4	2412	3	2788	1	1100	5	1289	20	3183	7	2553	3
407	78S 49395	3243	5	3232	13	5641	1	1367	8	3287	6	1290	14	2325	2	2400	4	1094	24	-	-	1461	10	3136	8	2563	2
269	74TA 367	3043	12	3868	1	4798	12	965	21	3228	9	1281	15	1960	10	2293	7	1687	22	1113	4	1456	11	3379	3	2464	9
336	78S 48437	3143	10	3623	4	3813	21	1295	10	2901	17	1392	9	1788	13	2118	17	2388	6	888	13	1389	16	3521	2	2432	11
269	78S 48821	3521	3	3357	10	3781	22	1376	7	2765	19	1225	18	-	-	2205	10	2269	11	638	19	1189	22	2275	23	2347	19
320	78S 48434	3100	11	3158	17	4813	11	1233	14	3272	7	1340	11	1675	15	2003	22	2225	14	675	18	1395	14	3068	16	2360	18
277	-	2421	23	3163	16	3860	19	1224	15	3117	11	1565	2	-	-	2168	15	2306	9	-	-	1378	17	2572	22	2372	15
339	78S 48504	3371	4	3011	20	4125	16	1224	15	2926	16	1228	17	1994	9	2043	20	2106	15	738	16	1650	2	3119	10	2419	12
360	74TA 498	2836	17	3136	18	4298	15	1248	13	3049	15	1457	6	2016	8	2225	9	1994	18	900	12	1517	7	3226	6	2400	13
X77Sd 48	80S 45779	2643	20	2960	23	4548	14	1481	5	3086	12	1083	23	1725	14	2080	18	1525	23	1138	3	1445	12	2886	20	2295	22
X77Sd 11	80S 45676	2607	21	2799	24	4829	10	738	24	3219	10	1457	6	2156	5	2178	13	1844	21	825	14	1445	12	2823	21	2242	23
5	74TA 12	2921	14	3690	2	4923	8	748	23	3321	5	1519	3	2138	7	2175	14	2106	15	963	10	1661	1	2982	18	2464	9
-	Local check	2400	24	3228	14	3906	18	1314	9	2281	24	707	24	1494	18	1862	24	2631	5	1150	2	972	24	3765	1		
Location mean		3031		3293		4557		1263		3053		1309		1988		2197		2205		924		1419		3062			
C.V.%		17.2		17.6		-		34.7		14.0		12.2		20.5		12.2		18.7		-		11.1		9.2			
L.S.D. 5%		736		NS		1120		NS		603		225		579		NS		NS		NS		222		397			
S.E.		261.0		290.0		-		253.8		213.9		79.9		204.0		134.0		292.1		-		78.8		141.0			
No. of entries significantly exceeding the local check		10		-		5		-		17		23		7		-		-		-		21		0			

(1) Seed yield values underlined, significantly exceeded the local check.

78S 48561, 74TA 133, and Syrian Local Medium with average yields of 2654, 2563, 2553, 2543 and 2524 kg/ha respectively. The perusal of five heaviest seed yielding entries at the individual locations (Table 4.2.7) revealed that Renia Blanca appeared among the top five at 13 locations and was followed by 74TA 133, 74TA 12, Syrian Local Medium, 74TA 22, 78S 49395, 78S 48437 etc. at 7, 7, 6, 6, 6, and 6 locations, respectively. These lines appear to be relatively more adaptable as compared to other lines. The overall mean yield and rank of common entries during 1980-83 (Table 4.2.8) revealed that 74TA 22 (ILB 9) and 74TA 133(ILB 49) were the best entries.

The correlations between different locations for seed yield of entries (Table 4.2.9) revealed that seed yields at Sidi Kacem (Morocco), Sevilla (Spain) and Tel Hadya-Rainfed (Syria) had positive and significant resemblance with the seed yields at Tel Hadya-Irrigated (Syria).

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

Material

The Faba Bean International Screening Nursery Large Seed comprised of 30 entries, originating from five countries, and three checks two of them were provided (Syrian Local Large and Reina Blanca) and the third was to be supplied by the cooperator. The entries in this nursery were selected on the basis of their performance either in local trials or from the last year's international screening nursery.

Methods and Management

The test entries and the 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. The whole experimental unit was divided into three blocks each comprising ten test entries and three checks repeated in each block. The augmented design was followed for analysis. Thirty-two sets of the nursery were distributed to cooperators in 21 countries. The results were, however, received for 27 sets and are reported. The agronomic details for the locations reporting the data are presented in Table 4.3.1.

Results and Discussion

The data pertaining to time to flowering, time to maturity and plant height are given in Tables 4.3.2, 4.3.3, and 4.3.4 respectively. Overall location mean for entries ranged from 87 to 92 days for time to flowering, 165 to 169 days for time to maturity and 67 to 80 cm for plant height. The overall mean of entries at locations, however, ranged from 49 to 162 days for time to flowering, 102 to 234 days for time to maturity, and 40 to 128 cm for plant height. The correlations between different agronomic variables (Table 4.3.5) revealed that time

Table 4.2.7. The five heaviest seed yielding entries at the individual locations in the FBIYT-5 during 1982/83.

RANK	AFGHANISTAN		CANADA		CHINA		EGYPT				HUNGARY	
	Darulaman		Saskatoon		Zhejiang		Gemiza		Sids		Tapioszele	
	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.
1	74TA 85	31	78S 48434	320	74TA 12	5	Giza 4	1820	Renia Blanca	1217	Local check	-
2	74TA 133	49	74TA 87	31	Local check	-	78S 48437	336	78S 35513	905	Giza 4	1820
3	77Ms 88323	287	74TA 133	49	74TA 85	31	Local check	-	74TA 498	360	Syr. Local Med.	1812
4	79S 78978	X75TA 146	78S 48437	336	Renia Blanca	1217	Renia Blanca	1217	80S 45779	X77Sd 48 ⁽¹⁾	Renia Blanca	1217
5	80S 45779	X77Sd 48	78S 48504	339	74TA 498	360	78S 35513	905	74TA 12	5	78S 48437	336

Cont'd. ...

RANK	IRAN		ITALY		LEBANON		LIBYA		MOROCCO		OMAN	
	Gorgan		Perugia		Terbol		El-Marj		Sidi Kacem		Muscat	
	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.
1	74TA 367	269	Renia Blanca	1217	78S 48821	269	Renia Blanca	1217	Local check	-	Renia Blanca	1217
2	77Ms 88323	287	74TA 133	49	74TA 12	5	78S 48437	336	74TA 87	31	77Ms 88323	287
3	78S 35513	905	74TA 22	9	78S 48434	320	74TA 22	9	77TA 88118	285	78S 48561	1816
4	78S 49395	407	78S 49395	407	Giza 4	1820	78S 48561	1816	80S 45779	X77Sd 48	Giza 4	1820
5	78S 48561	1816	Syr. Local Med.	1812	78S 48561	1816	77TA 88118	285	74TA 133	49	74TA 85	31
											74TA 498	360

Cont'd. ...

Table 4.2.7 . Cont'd. ...

RANK	PORTUGAL		SPAIN				SYRIA					
	Patac'ao		Cordoba		Sevilla		Lattakia		TH-Irrigated		TH-Rainfed	
	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.
1	Renia Blanca	1217	74TA 367	269	78S 49395	407	78S 48561	1816	74TA 133	49	74TA 22	9
2	79S 78978	X75TA 146	74TA 12	5	78S 35513	905	79S 78978	X75TA 146	78S 48561	1816	-	277
3	78S 48821	269	74TA 133	49	Renia Blanca	1217	77TA 88118	285	74TA 87	31	74TA 12	5
4	78S 48504	339	78S 48437	336	74TA 133	49	Syr.Local Med.	1812	74TA 85	31	74TA 133	49
5	78S 49395	407	74TA 87	31	74TA 22	9	80S 45779	X77Sd 48	74TA 12	5	Syr.Local Med.	1812

Cont'd. ...

RANK	TUNISIA								TURKEY		W.GERMANY	
	Beja		El-Kef		Mateur		Moghrane		Ankara		Stuttgart	
	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.	PEDIGREE	ILB/ Cross No.
1	79S 78978	X75TA 146	Renia Blanca	1217	78S 48561	1816	Renia Blanca	1217	74TA 12	5	Local check	-
2	78S 49395	407	74TA 87	31	Syr.Local Med.	1812	Local check	-	78S 49504	339	78S 48437	336
3	Renia Blanca	1217	78S 48561	1816	Renia Blanca	1217	80S 45779	X77Sd 48	74TA 22	9	74TA 367	269
4	78S 48561	1816	Giza 4	1820	74TA 22	9	74TA 367	269	79S 78978	X75TA 146	78S 35513	905
5	80S 45676	X77Sd 11	78S 49395	407	Local check	-	78S 48561	1816	Giza 4	1820	Syr.Local Med.	1812

(1) The brackets indicate entries having the same rank.

Table 4.2.8. The mean yield (Y = kg/ha) and rank (R) of the common entries in the FBIYT-S during 1980-83.

ENTRY NAME	PEDIGREE		1980/81		1981/82		1982/83		AVERAGE 1 [*]		AVERAGE 2 [*]	
			Y	R	Y	R	Y	R	Y	R	Y	R
ILB 9	74TA 22		2841	1	3720	1	2479	5	3100	2	3013	1
ILB 30	74TA 85		2693	5	3560	5	2328	10	2944	5	2860	5
ILB 31	74TA 87		2822	2	3580	4	2385	7	2983	3	2929	3
ILB 49	74TA 133		2810	3	3660	2	2543	2	3102	1	3004	2
ILB 269	78S 48821		2586	6	3310	6	2464	6	2887	7	2787	6
ILB 287	77Ms 88323		2752	4	3620	3	2298	11	2959	4	2890	4
ILB 1812	Syr.L.Med.		2505	7	3280	7	2524	3	2902	6	2770	7
ILB 277	-	-			2539	10	2372	8	2456	11	-	-
ILB 285	77TA 88118	-			2994	9	2372	8	2683	9	-	-
ILB 407	78S 49395	-			2526	11	2563	1	2545	10	-	-
ILB 1820	Giza 4	-			3098	8	2496	4	2797	8	-	-

1^{*} Average over 1981-83

2^{*} Average over 1980-83

Table 4.2.9. Correlation (df = 21) among different locations for the seed yield of entries in the FBIYT-S during 1982/83.

COUNTRY	LOCATION	CANADA	CHINA	EGYPT		HUNGARY	IRAN	ITALY	LEBANON	LIBYA	MOROCCO	OMAN
		Saskatoon	Zhejiang	Gemmiza	Sids	Taploszele	Gorgan	Perugia	Terbol	El-Marj	Sidi Kacem	Muscat
AFGHANISTAN	Darulaman	-0.10	-0.18	0.17	0.05	-0.15	0.19	-0.29	-0.27	-0.15	-0.03	0.31
CANADA	Saskatoon		0.05	0.02	-0.09	0.11	-0.28	0.03	-0.32	0.03	0.21	-0.19
CHINA	Zhejiang			-0.20	-0.04	0.20	-0.24	0.10	0.20	0.21	-0.36	0.25
EGYPT	Gemmiza				-0.08	0.33	0.25	0.05	-0.13	-0.08	-0.25	0.11
EGYPT	Sids					0.18	0.50*	-0.09	0.19	0.29	-0.21	0.18
HUNGARY	Taploszele						0.24	0.19	-0.08	0.33	-0.44*	0.20
IRAN	Gorgan							0.01	0.14	0.01	-0.41	0.35
ITALY	Perugia								-0.24	0.57**	0.04	0.18
LEBANON	Terbol									-0.36	-0.18	0.02
LIBYA	El-Marj										-0.08	0.31
MOROCCO	Sidi Kacem											-0.39
OMAN	Muscat											
PORTUGAL	Patac'ao											
SPAIN	Cordoba											
SPAIN	Sevilla											
SYRIA	Lattakia											
SYRIA	TH-Irrigated											
SYRIA	TH-Rainfed											
TUNISIA	Beja ⁽¹⁾											
TUNISIA	El-Kef											
TUNISIA	Mateur											
TUNISIA	Hoghrane											
TURKEY	Ankara											

* $P \leq 0.05$

** $P \leq 0.01$

1, df = 14

Cont'd Table 4.2.9.

COUNTRY	LOCATION	PORTUGAL	SPAIN		SYRIA			TUNISIA				TURKEY	W.GERMANY
		Patac'ao	Cordoba	Sevilla	Lattakia	TH-Irrigated	TH-Rainfed	Beja ⁽¹⁾	El-Kef	Mateur	Hoghrane	Ankara	Stuttgart
AFGHANISTAN	Darulaman	-0.12	-0.16	-0.05	-0.01	0.07	-0.32	-0.18	-0.11	-0.18	-0.02	0.38	0.07
CANADA	Saskatoon	-0.14	-0.01	0.33	-0.54 ^{**}	0.28	0.23	-0.25	-0.11	-0.19	-0.25	0.16	0.50 [*]
CHINA	Zhejiang	0.19	0.09	0.20	-0.24	-0.05	0.03	0.06	0.18	0.07	0.22	0.14	0.05
EGYPT	Gemmiza	0.20	-0.09	-0.13	0.15	-0.30	-0.32	0.20	0.32	-0.11	0.20	-0.20	-0.01
EGYPT	Sids	0.42 [*]	0.06	0.03	-0.08	-0.36	0.07	0.22	-0.17	0.11	0.15	0.04	0.14
HUNGARY	Tapioszele	0.35	0.28	0.05	-0.01	-0.44 ^{**}	-0.25	0.19	0.55 ^{**}	0.10	0.41	-0.28	0.37
IRAN	Gorgan	0.23	0.22	0.16	-0.04	-0.07	-0.21	-0.01	0.18	-0.18	0.05	-0.08	0.04
ITALY	Perugia	0.24	0.05	0.30	0.29	0.14	0.10	-0.13	0.28	0.45 [*]	-0.10	-0.43 [*]	-0.13
LEBANON	Terbol	0.21	0.19	-0.08	-0.07	-0.06	-0.05	0.18	-0.04	-0.03	-0.11	-0.09	-0.29
LIBYA	El-Marj	0.33	0.30	0.20	0.29	-0.10	-0.04	-0.03	0.23	0.61 ^{**}	0.39	-0.34	0.29
MOROCCO	Sidi Kacem	-0.24	-0.24	0.41	0.13	0.45 [*]	0.17	-0.10	-0.24	-0.02	-0.14	-0.11	0.08
OMAN	Muscat	-0.01	0.16	0.21	0.07	0.12	-0.31	-0.11	0.51 [*]	0.08	0.35	-0.08	-0.04
PORTUGAL	Patac'ao		0.09	-0.05	0.08	-0.51 [*]	-0.26	0.55 [*]	0.14	0.18	0.15	-0.14	0.06
SPAIN	Cordoba			0.06	-0.11	0.14	0.10	-0.04	0.34	0.14	0.06	-0.10	0.20
SPAIN	Sevilla				-0.22	0.64 ^{**}	0.24	-0.18	0.17	0.09	0.04	-0.07	0.37
SYRIA	Lattakia					-0.08	-0.17	0.16	0.12	0.30	0.29	-0.25	-0.06
SYRIA	TH-Irrigated						0.46 [*]	-0.23	0.06	-0.06	-0.22	0.19	0.24
SYRIA	TH-Rainfed							0.24	-0.19	0.28	-0.43	0.30	0.21
TUNISIA	Beja ⁽¹⁾								0.50 [*]	0.09	0.36	0.17	0.20
TUNISIA	El-Kef									-0.07	0.63 ^{**}	-0.19	0.11
TUNISIA	Mateur										-0.06	-0.35	-0.01
TUNISIA	Hoghrane											-0.37	0.20
TURKEY	Ankara												0.19

* $P \leq 0.05$, ** $P \leq 0.01$
1, df = 14

Table 4.3.1. Agronomic data for different locations in the FBISN-L during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide or Fungicide
				N	P ₂ O ₅	K ₂ O		
AFGHANISTAN	Darulaman	21- 4-1983	112	30	60	-	7	Metasystox
ALGERIA	Guelino	9-12-1982	181	-	-	-	-	Triflen
CHILE	Graneros	30- 6-1983	170	48	110	-	-	Captan
CHINA	Zhejiang	30-10-1982	214	18	67	-	-	-
EGYPT	Sakha	8-11-1982	180	35	71	-	2	Linuron
EGYPT	Sids	22-11-1982	165	37	75	-	5	Igran
HUNGARY	Tapioszele	11- 4-1983	118	-	-	-	-	Methylparathion
IRAN	Gorgan	19-12-1982	171	-	-	-	2	-
ITALY	Perugia	28-10-1982	236	-	100	-	-	-
LEBANON	Terbol	14-11-1982	222	-	50	-	1	Igran
MOROCCO	Marchouch	25-11-1982	190	-	30	15	-	-
PAKISTAN	Islamabad	24-11-1982	182	20	50	-	-	-
PERU	La Molina	11-11-1982	-	-	-	-	-	-
PERU	S. Lorenzo	18-11-1982	-	-	-	-	-	-
QATAR	Rawdat Harma	1-12-1982	150	60	150	-	35	-
SPAIN	Cordoba	7-12-1982	179	-	-	-	3	-
SPAIN	Sevilla	20-11-1982	193	-	-	-	1	-
SYRIA	Izra'a	14-12-1982	147	30	50	-	-	-
SYRIA	Homs		171	-	-	-	-	-
SYRIA	TH-Irrigated	14-11-1982	193	-	-	-	-	-
SYRIA	TH-Rainfed	7-12-1982	168	-	-	-	-	-
TURKEY	Ankara	22- 3-1983	104	20	60	-	-	Basudin
WEST GERMANY	Stuttgart	20- 4-1983	118	-	92	158	-	Aretit, Metasystox

Table 4.3.2. Time to flowering (days) of entries at different locations in the FBISN-L during 1982/83.

ENTRY NAME		ORIGIN	AFGHANISTAN	ALGERIA	CHILE	CHINA	EGYPT		HUNGARY	IRAN	ITALY	LEBANON	PAKISTAN
ILB/Cross No.	Pedigree		Darulaman	Guelino	Graneros	Zhejiang	Sakha	Sids	Tapioszele	Gorgan	Perugia	Terbol	Islamabad
ILB 263	77TA 88311	Spain	52	98	95	146	75	80	53	107	161	140	82
X75TA 43	78S 33120	-	53	95	90	146	70	70	54	102	162	140	82
ILB 268	78S 48426	Spain	50	96	90	142	72	75	52	102	162	140	83
ILB 37	74TA 109	Iraq	49	96	90	145	70	75	54	107	163	140	83
ILB 41	76TA 56297	Iraq	49	96	95	146	75	75	55	107	162	140	83
ILB 1799	79 MB	Syria	47	94	85	141	65	70	54	107	162	140	80
ILB 34	78S 49841	Iraq	48	93	95	146	75	75	52	107	162	142	82
ILB 444	78S 97513	Iraq	49	93	95	146	75	80	52	107	161	142	80
ILB 1805	5 MCI	Syria	45	92	90	141	75	75	54	102	161	140	82
X77TA 64	80S 44027	-	46	94	90	141	70	75	54	107	163	140	83
X75TA 116	79S 79180	-	50	90	90	146	72	75	54	107	162	142	84
ILB 1814	79S 546	Syria	50	89	95	147	75	80	55	102	163	142	84
ILB 1814	79S 653	Syria	50	91	95	143	70	75	56	107	162	140	80
X77TA 88	80S 44539	-	47	87	90	137	65	65	57	107	161	140	83
X77TA 31	80S 43587	-	45	88	90	137	60	65	52	107	161	140	85
ILB 1814	79S 4	Syria	52	90	95	145	75	75	53	107	162	142	86
X77TA 82	80S 44371	-	50	86	95	143	75	75	54	102	161	140	87
ILB 4	-	Jordan	50	89	90	146	75	75	55	107	163	142	85
X77Sd 70	80S 46341	-	50	85	95	143	75	75	56	107	163	140	85
X77TA 3	80S 43051	-	49	88	90	143	75	70	53	102	161	140	83
X77TA 89	80S 44552	-	49	86	95	145	72	70	53	107	162	140	85
X77TA 72	80S 44178	-	48	84	90	139	65	75	51	107	163	140	85
X79S 12	80S 80002	-	49	84	90	139	62	70	52	102	163	140	85
X79L 153	80S 81054	-	53	85	95	143	75	80	52	107	163	140	81
X79S 160	80S 80128	-	49	85	90	139	60	70	54	107	163	140	79
X79S 171	80S 80135	-	45	86	90	144	65	70	53	107	162	140	79
X79S 72	80S 80028	-	48	84	95	145	75	80	56	107	163	140	84
X79S 155	80S 80123	-	47	83	90	143	72	75	56	107	162	140	85
X79S 70	80S 80026	-	50	84	95	145	75	80	57	107	162	140	87
X79S 103	80S 80064	-	50	84	95	141	75	75	54	107	163	140	86
Syr. Loc. Large means (ILB 1814)													
		Syria	49	91	93	144	73	77	51	107	162	140	84
Reina Blanca means (ILB 1270)													
		UK	51	91	95	145	78	77	51	107	163	141	83
Local check means													
		-	47	85	95	147	50	60	51	107	163	141	85
Location mean													
			49	89	92	143	71	74	54	106	162	140	83

(Cont'd.) Table 4.3.2. Time to flowering (days) of entries at different locations in the FBISN-L during 1982/83.

ENTRY NAME		ORIGIN	PERU		QATAR	SPAIN	SYRIA			TURKEY	W. GERMANY	MEAN
ILB/Cross No.	Pedigree		La Molina	San Lorenzo			Izra'a	TH-Irrigated	TH-Rainfed			
ILB 263	77TA 88311	Spain	70	60	71	93	101	129	112	57	56	92
X75TA 43	78S 33120	-	60	60	65	93	100	133	110	57	56	90
ILB 268	78S 48426	Spain	60	60	65	93	100	129	112	57	57	90
ILB 37	74TA 109	Iraq	60	60	68	93	101	133	112	56	56	91
ILB 41	76TA 56297	Iraq	60	55	72	93	100	129	112	56	55	91
ILB 1799	79 MB	Syria	70	55	53	93	100	127	110	56	55	88
ILB 34	78S 49841	Iraq	-	60	65	93	101	129	112	57	57	92
ILB 444	78S 97513	Iraq	70	60	63	93	101	133	112	57	56	91
ILB 1805	5 MCI	Syria	70	55	63	93	-	129	110	57	54	89
X77TA 64	80S 44027	-	80	55	65	93	100	133	110	57	54	91
X75TA 116	79S 79180	-	70	60	69	93	102	129	112	56	55	91
ILB 1814	79S 546	Syria	60	65	65	93	100	133	110	56	55	91
ILB 1814	79S 653	Syria	70	60	71	93	-	133	114	56	56	91
X77TA 88	80S 44539	-	70	55	54	93	101	127	110	56	54	88
X77TA 31	80S 43587	-	70	55	56	93	-	129	112	56	56	87
ILB 1814	79S 4	Syria	70	60	68	93	100	133	112	56	56	92
X77TA 82	80S 44371	-	70	60	70	93	101	129	112	56	56	91
ILB 4	-	Jordan	60	55	60	93	101	133	112	56	56	90
X77Sd 70	80S 46341	-	70	65	72	93	100	129	112	56	56	91
X77TA 3	80S 43051	-	60	60	71	93	100	129	112	56	56	90
X77TA 89	80S 44552	-	70	55	65	93	100	133	114	57	55	90
X77TA 72	80S 44178	-	70	55	59	93	101	133	112	59	56	89
X79S 12	80S 80002	-	70	55	59	93	102	129	110	56	55	88
X79L 153	80S 81054	-	70	60	69	93	-	133	110	56	55	91
X79S 160	80S 80128	-	80	55	57	93	102	133	112	56	56	89
X79S 171	80S 80135	-	60	55	56	93	102	133	112	59	53	88
X79S 72	80S 80028	-	70	55	65	93	101	133	112	56	54	91
X79S 155	80S 80123	-	70	55	74	93	101	129	112	57	54	90
X79S 70	80S 80026	-	-	55	74	93	101	129	112	57	54	90
X79S 103	80S 80064	-	50	60	74	93	100	133	112	57	55	90
Syr. Loc. Large means (ILB 1814)		Syria	67	58	69	93	101	130	111	60	55	91
Reina Blanca means (ILB 1270)		UK	70	65	71	93	101	132	113	58	57	92
Local check means		-	70	67	72	93	100	133	113	61	53	
Location mean			67	58	66	93	101	131	112	57	55	

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Table 4.3.3. Time to maturity (days) of entries at different locations in the FBISN-L during 1982/83.

ENTRY NAME		AFGHANISTAN	ALGERIA	CHILE	CHINA	EGYPT		HUNGARY	IRAN	ITALY
ILB Cross No.	Pedigree	Darulaman	Guelino	Graneros	Zhejiang	Sakha	Sids	Taposzele	Gorgan	Perugia
ILB 263	77TA 88311	111	180	170	214	180	160	110	171	236
X75TA 43	78S 33120	108	179	165	214	180	165	113	171	234
ILB 268	78S 48426	106	179	165	212	180	160	112	171	236
ILB 37	74TA 109	103	179	165	212	180	160	111	171	232
ILB 41	76TA 56297	105	179	170	213	180	160	112	171	236
ILB 1799	79 MB	105	181	160	210	180	160	110	171	234
ILB 34	78S 49841	101	181	170	211	180	160	109	171	236
ILB 444	78S 97513	101	181	170	213	180	160	108	171	236
ILB 1805	5 MC1	103	177	165	213	180	160	108	171	232
X77TA 64	80S 44027	100	181	165	209	180	160	110	171	232
X75TA 116	79S 79180	106	176	165	212	180	165	111	171	232
ILB 1814	79S 546	107	175	170	214	180	160	112	171	236
ILB 1814	79S 653	106	177	170	213	180	155	111	171	236
X77TA 88	80S 44539	100	173	165	211	180	160	112	171	232
X77TA 31	80S 43587	95	174	165	213	180	160	113	171	236
ILB 1814	79S 4	101	176	170	211	180	160	112	171	232
X77TA 82	80S 44371	103	172	170	211	180	160	111	171	236
ILB 4	-	112	175	165	210	180	160	112	171	232
X77Sd 70	80S 46341	112	171	170	213	180	160	110	171	232
X77TA 3	80S 43051	110	174	165	214	180	160	112	171	234
X77TA 89	80S 44552	105	172	170	213	180	165	112	171	232
X77TA 72	80S 44178	107	170	165	210	180	160	114	171	232
X79S 12	80S 80002	107	170	165	213	180	160	112	171	232
X79L 153	80S 81054	106	171	170	210	180	160	113	171	234
X79S 160	80S 80128	105	171	165	211	180	160	115	171	234
X79S 171	80S 80135	107	172	165	211	180	165	116	171	236
X79S 72	80S 80028	105	170	170	213	180	160	116	171	234
X79S 155	80S 80123	106	169	165	214	180	160	111	171	232
X79S 70	80S 80026	107	170	170	214	180	160	118	171	232
X79S 103	80S 80064	106	170	170	212	180	165	114	171	232
Syr. Loc. Large means (ILB 1814)		103	175	168	213	180	163	114	171	234
Reina Blanca means (ILB 1270)		99	176	170	212	180	163	110	171	233
Local check means		105	171	170	208	180	165	110	171	235
Location mean		105	175	167	212	180	161	112	171	234

(Cont'd.) Table 4.3.3. Time to maturity (days) of entries at different locations in the FBISN-L during 1982/83.

ENTRY NAME		LEBANON	QATAR	SPAIN	SYRIA				TURKEY	MEAN
ILB/Cross No.	Pedigree	Terbol	Rawdat Harma	Sevilla	Homs	Izra'a	TH-Irrigated	TH-Rainfed	Ankara	
ILB 263	77TA 88311	216	149	185	160	138	191	166	104	167
X75TA 43	78S 33120	218	149	186	168	140	192	165	104	168
ILB 268	78S 48426	220	143	185	161	141	187	165	104	166
ILB 37	74TA 109	222	143	185	168	142	192	168	101	167
ILB 41	76TA 56297	218	149	193	161	144	192	168	104	168
ILB 1799	79 MB	220	145	187	159	144	187	167	101	166
ILB 34	78S 49841	220	151	187	162	145	193	168	106	168
ILB 444	78S 97513	220	151	184	159	146	193	165	106	167
ILB 1805	5 HCl	216	146	185	160	-	188	165	101	167
X77TA 64	80S 44027	222	146	184	160	147	188	165	104	166
X75TA 116	79S 79180	224	144	185	159	144	193	165	104	167
ILB 1814	79S 546	218	151	187	158	145	193	166	104	167
ILB 1814	79S 653	218	151	185	171	-	193	166	104	169
X77TA 88	80S 44539	216	143	185	171	147	188	165	101	166
X77TA 31	80S 43587	218	143	187	168	-	193	165	101	168
ILB 1814	79S 4	218	149	185	158	145	193	165	101	166
X77TA 82	80S 44371	218	149	185	160	145	192	167	101	167
ILB 4	-	218	145	184	158	144	193	166	101	166
X77Sd 70	80S 46341	220	145	179	168	143	193	166	101	167
X77TA 3	80S 43051	220	149	187	169	143	193	166	101	168
X77TA 89	80S 44552	220	145	183	161	142	193	168	101	167
X77TA 72	80S 44178	218	145	184	159	144	193	166	101	166
X79S 12	80S 80002	216	145	190	162	145	193	166	101	166
X79L 153	80S 81054	218	145	168	159	-	188	165	101	166
X79S 160	80S 80128	218	145	181	160	144	192	166	101	166
X79S 171	80S 80135	218	145	181	160	144	193	166	101	167
X79S 72	80S 80028	220	147	169	158	144	193	166	101	166
X79S 155	80S 80123	220	147	184	159	142	192	168	104	166
X79S 70	80S 80026	220	143	169	158	142	188	167	104	165
X79S 103	80S 80064	218	143	169	158	144	189	165	101	165
Syr. Loc. Large means (ILB 1814)		222	150	190	159	140	191	167	103	167
Reina Blanca means (ILB 1270)		218	143	183	159	143	187	165	102	166
Local check means		219	148	185	162	145	193	167	104	
Location mean		219	146	183	162	144	191	166	102	

Table 4.3.4. Plant height (cm) of entries at different locations in the FBISN-L during 1982/83.

ENTRY NAME		AFGHANISTAN	ALGERIA	CHILE	CHINA	EGYPT	HUNGARY	IRAN	ITALY	LEBANON	PERU	
ILB/Cross No.	Pedigree	Darulaman	Guel'ao	Graneros	Zhejiang	Sids	Tapioszele	Gorgan	Perugia	Terbol	La Molina	San Lorenzo
ILB 263	77TA 88311	63	60	122	110	120	60	80	110	60	50	40
X75TA 43	78S 33120	60	60	125	110	135	55	93	118	60	50	45
ILB 268	78S 48426	60	60	128	98	140	62	90	115	50	45	40
ILB 37	74TA 109	58	65	115	104	115	68	90	110	55	50	35
ILB 41	76TA 56297	88	55	135	91	125	67	90	120	60	45	40
ILB 1799	79 MB	50	68	130	95	120	65	75	118	60	45	40
ILB 34	78S 49841	59	68	140	114	119	68	95	112	65	-	45
ILB 444	78S 97513	60	70	130	99	100	67	92	118	65	40	45
ILB 1805	5 MCI	62	65	135	112	120	64	85	110	60	30	45
X77TA 64	80S 44027	60	65	140	99	105	62	92	110	60	40	45
X75TA 116	79S 79180	63	70	125	101	145	68	95	115	60	50	45
ILB 1814	79S 546	69	70	125	104	105	67	95	110	62	50	40
ILB 1814	79S 653	70	65	130	102	145	64	95	117	65	30	35
X77TA 88	80S 44539	61	65	125	112	130	65	85	120	70	40	40
X77TA 31	80S 43587	50	60	120	104	125	64	85	110	60	25	40
ILB 1814	79S 4	47	60	130	97	145	64	95	112	70	40	35
X77TA 82	80S 44371	53	70	120	102	110	63	100	112	72	40	35
ILB 4	-	74	70	115	91	135	62	85	110	60	50	35
X77Sd 70	80S 46341	80	70	115	99	130	64	80	110	80	50	30
X77TA 3	80S 43051	91	60	125	99	140	62	80	110	70	40	35
X77TA 89	80S 44552	85	68	115	104	125	64	100	110	75	40	35
X77TA 72	80S 44178	80	60	110	96	125	68	95	105	60	40	50
X79S 12	80S 80002	82	55	110	102	125	67	85	105	58	45	40
X79L 153	80S 81054	76	55	110	85	135	68	90	95	60	45	40
X79S 160	80S 80128	83	60	110	98	125	67	85	100	60	40	50
X79S 171	80S 80135	89	55	120	113	135	64	95	105	55	40	45
X79S 72	80S 80028	89	70	120	91	125	63	85	115	60	35	40
X79S 155	80S 80123	84	70	100	109	155	64	80	115	55	40	40
X79S 70	80S 80026	87	65	110	106	145	66	80	115	60	50	40
X79S 103	80S 80064	85	75	110	97	135	67	75	115	55	40	45
Syr. Loc. Large means (ILB 1814)		70	63	125	111	117	68	83	113	63	47	32
Reina Blanca means (ILB 1270)		65	60	112	85	125	71	82	103	47	40	38
Local check means		65	65	120	127	132	66	82	114	57	43	43
Location mean		70	64	121	102	128	65	88	111	61	41	40

(Cont'd.) Table 4.3.4. Plant height (cm) of entries at different locations in the FBISN-L during 1982/83.

ENTRY NAME		QATAR	SPAIN	SYRIA				TURKEY	W.GERMANY	MEAN
ILB/Cross No.	Pedigree	Rawdat Harma	Sevilla	Homs	Izra'a	TH-Irrigated	TH-Rainfed	Ankara	Stuttgart	
ILB 263	77TA 88311	120	82	50	45	60	45	57	70	74
X75TA 43	78S 33120	115	78	45	51	56	50	51	70	75
ILB 268	78S 48426	110	80	48	58	70	45	52	70	75
ILB 37	74TA 109	90	68	48	60	54	45	52	60	71
ILB 41	76TA 56297	100	80	42	45	57	50	52	65	74
ILB 1799	79 MB	105	75	50	51	56	45	58	70	72
ILB 34	78S 49841	110	80	40	60	76	50	59	75	80
ILB 444	78S 97513	115	80	43	50	68	50	55	70	75
ILB 1805	5 MCI	100	80	40	-	58	40	53	65	74
X77TA 64	80S 44027	105	77	38	50	70	45	53	60	72
X75TA 116	79S 79180	95	80	45	52	76	50	45	60	76
ILB 1814	79S 546	95	75	55	60	70	50	49	70	75
ILB 1814	79S 653	95	75	52	-	78	45	54	65	77
X77TA 88	80S 44539	115	72	60	55	76	55	59	70	78
X77TA 31	80S 43587	90	75	60	-	72	50	57	70	73
ILB 1814	79S 4	85	75	60	41	77	50	49	70	74
X77TA 82	80S 44371	90	80	58	43	74	55	51	70	74
ILB 4	-	80	80	56	48	76	50	45	70	73
X77Sd 70	80S 46341	90	77	55	50	80	55	53	65	75
X77TA 3	80S 43051	80	75	55	51	66	50	53	70	74
X77TA 89	80S 44552	95	74	40	50	80	50	57	60	75
X77TA 72	80S 44178	100	75	45	47	77	50	45	60	73
X79S 12	80S 80002	100	78	40	48	72	55	55	55	72
X79L 153	80S 81054	90	75	40	-	64	40	55	50	71
X79S 160	80S 80128	100	75	40	44	79	45	57	65	73
X79S 171	80S 80135	100	74	38	50	74	45	56	65	75
X79S 72	80S 80028	90	76	48	51	62	40	56	70	73
X79S 155	80S 80123	90	75	48	48	70	45	57	70	74
X79S 70	80S 80026	100	78	50	45	60	40	45	70	74
X79S 103	70S 80064	100	76	50	60	71	45	56	70	75
Syr. Loc. Large means (ILB 1814)		102	79	53	51	67	52	53	73	75
Reina Blanca means (ILB 1270)		80	72	38	50	62	42	47	60	67
Local check means		100	75	51	70	69	47	58	72	
Location mean		98	77	48	51	69	48	53	67	

Table 4.3.5. Correlation (df=30) among three agronomic characters and seed yield of entries in the FBISN-L during 1982/83.

Characters	Time to maturity	Plant height	Seed yield
Time to flowering	-0.46**	0.10	0.42*
Time to maturity		0.38*	-0.20
Plant height			-0.17

* $P \leq 0.05$

** $P \leq 0.01$

to flowering was significantly and positively correlated with seed yield whereas it had significant but negative correlation with time to maturity. The time to maturity also possessed significant and positive correlation with plant height.

The adjusted yield performance and ranking of different entries in the nursery at each location are given in Table 4.3.6. The coefficient of variation for the experiment at different locations varied from 0.9 to 69.9 per cent. The locations showing more than 30 per cent coefficient of variation included Darulaman in Afghanistan, La Molina and San Lorenzo in Peru and Homs, Izra'a and Lattakia in Syria. The ANOVA for the augmented design revealed that 1, 12, 2, 4, 3, 4, 2, 1, 3, 2 and 2 entries exceeded the local check by a significant margin at Graneros in Chile, Zhejiang in China, Sids in Egypt, Terbol in Lebanon, Islamabad in Pakistan, Rawdat Harma in Qatar, Izra'a, Tel Hadya-Irrigated and Tel Hadya-Rainfed in Syria, Mateur in Tunisia, and Ankara in Turkey. The five heaviest yielders across the locations included 80S 44539 (3770 kg/ha), 80S 44371 (3767 kg/ha), 80S 81054 (3728 kg/ha), 79S 4 (3681 kg/ha), and 80S 46341 (3599 kg/ha) respectively. The five heaviest seed yielding entries at individual locations are given in Table 4.3.7. Except at few locations namely Guelino (Algeria), Tapioszele (Hungary), Marchouch (Morocco), San Lorenzo (Peru), Beja (Tunisia), Stuttgart (W.Germany) where the local check ranked 1, 1, 3, 3, 2, and 4 respectively. The top five were the ICARDA supplied materials. The correlations among different locations for seed yield (Table 4.3.8) exhibited that performance at Syria (Tel Hadya-Irrigated) didnot show any association with that of any other location. However, the performance at Tel Hadya-Rainfed in Syria was associated with that of at Marchouch in Morocco and Sakha in Egypt.

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

Material

The Faba Bean International Screening Nursery - Small Seed comprised of 47 test entries originating from 8 countries and three checks two of them namely Syrian Local Small (ILB 1811) and Syrian Local Medium (ILB 1812) were supplied and the third was to be supplied by the cooperator. The entries in this trial were chosen from the local trials, regional trials and international screening nurseries from 1981/82 on the basis of their superior performance.

Methods and Management

The test entries and the 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 five blocks. Thirty sets of the nursery were distributed to the cooperators in 19 countries and the

Table 4.3.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-L during 1982/83

ENTRY	PEDIGREE	AFGHANISTAN		ALGERIA		CHILE		CHINA		EGYPT		HUNGARY		IRAN		ITALY		LEBANON		MOROCCO		PAKISTAN		PERU						
		Darulaman		Guelino		Graneros		Zhejiang		Sakha		Sids		Tapioszele		Gorgan		Perugia		Terbol		Marchouch		Islamabad		La Molina		San Lorenzo		
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	
ILB 263	77TA 88311	1737	9	5123	29	5962	21	1826	6	9949	4	13947	3	1415	17	6764	7	4631	12	3828	15	1652	10	1371	32	92	13	36	29	
X75TA 43	78S 33120	1450	14	6123	22	2432	33	1055	23	7671	23	10947	13	1281	21	6486	10	4871	6	3310	24	2002	2	1875	27	142	2	69	22	
ILB 268	78S 48426	1130	21	7456	9	5422	24	1720	8	6227	32	12363	9	1148	28	5653	27	4971	3	3532	21	1427	16	2292	20	139	3	69	22	
ILB 37	74TA 109	1383	16	8789	3	5092	26	1070	21	8171	15	10113	19	1815	7	6542	8	4481	19	3532	21	1902	4	2487	17	209	1	69	22	
ILB 41	76TA 56297	1117	22	3123	32	5092	26	1055	24	8171	15	7586	32	1681	10	6375	12	4931	4	1399	32	1702	9	2554	14	42	33	63	25	
ILB 1799	79 MB	1597	11	9789	2	6202	16	1493	12	8616	12	11030	12	2081	4	6098	16	5251	1	1791	31	1652	10	2250	23	92	13	83	18	
ILB 34	78S 49841	1450	15	8789	3	6762	11	-	-	7171	28	8308	24	1748	9	7375	3	4841	8	2717	28	2027	1	2812	9	59	28	83	18	
ILB 444	78S 97513	2217	4	8456	6	6012	20	1035	25	10671	3	10808	14	1415	17	6986	5	4061	24	3532	21	1827	7	2008	25	109	9	183	9	
ILB 1805	5 MCI	1850	7	8789	3	5712	23	1287	16	9005	10	7641	30	1148	28	7931	1	5101	2	1236	33	1877	6	2254	22	59	28	383	2	
X77TA 64	80S 44027	2517	2	7123	12	4862	30	883	28	11394	1	8308	24	1348	20	7486	2	3331	30	3787	17	1902	4	2629	13	59	28	650	1	
X77TA 116	79S 79180	1934	6	5774	23	7459	6	1572	10	8912	11	10447	17	2259	3	5819	24	4191	21	6692	3	777	31	3250	4	83	19	139	11	
ILB 1814	79S 546	1168	19	5774	24	7679	4	942	27	7079	29	8558	23	1993	6	6431	11	3891	28	5358	8	927	30	3892	2	116	6	-	-	
ILB 1814	79S 653	1208	18	5441	26	7789	2	1355	15	6745	31	8058	28	1526	14	5042	32	4541	16	3692	18	1027	29	4517	1	83	19	105	13	
X77TA 88	80S 44539	1668	10	6774	15	7709	3	1169	19	8356	14	13475	5	1259	22	6542	9	3921	26	5403	7	1652	10	2908	7	116	7	205	7	
X77TA 31	80S 43587	668	32	4774	31	6269	14	-	-	7356	27	11697	10	1193	25	5986	19	3271	31	3536	20	1052	26	2487	18	66	27	159	10	
ILB 1814	79S 4	541	33	5774	25	8609 ⁽²⁾	1	-	-	7800	22	13836	4	1459	16	5986	19	3911	27	4247	14	1302	20	2654	12	100	10	125	12	
X77TA 82	80S 44371	801	25	8441	7	6669	12	1149	20	9245	8	16724	2	1593	12	5986	19	4681	11	2988	26	1827	7	2967	5	116	7	79	20	
ILB 4		1361	17	5441	27	6109	18	-	-	7801	21	12558	8	1793	8	5764	25	4691	10	2358	30	1127	24	2946	6	133	4	105	13	
X77Sd 70	80S 46341	1974	5	-	-	7229	7	1068	22	8134	17	17475	1	1659	11	5986	19	4561	14	5025	10	1502	14	2892	8	100	10	92	15	
X77TA 3	80S 43051	2528	1	5440	28	7649	5	675	29	6134	33	13169	7	1526	14	5097	31	3471	29	2914	27	1452	15	3787	3	73	22	92	15	
X77TA 89	80S 44552	757	29	6774	16	6209	15	1606	9	7819	20	7410	33	1593	12	6338	13	3961	25	3828	16	1560	13	1808	29	72	23	52	27	
X77TA 72	80S 44178	1523	12	5107	30	5049	29	1954	3	6764	30	8215	26	1193	25	5838	23	4861	7	4569	12	1210	22	1650	30	75	21	39	28	
X79S 12	80S 80002	2290	3	6441	21	5059	28	1923	4	7875	19	10743	15	1259	22	5560	28	4131	23	5680	5	1335	17	1833	28	89	16	239	5	
X79L 153	80S 81054	723	30	6507	19	5839	22	1868	5	7653	24	10549	16	1393	19	6116	14	4511	17	9828	2	1335	18	1917	26	72	23	192	8	
X79S 160	80S 80128	1757	8	6774	17	5129	25	2382	1	7375	26	11299	11	1059	31	5504	29	2471	33	10272	1	1160	23	2308	19	89	16	32	30	
X79S 171	80S 80135	790	27	6574	18	6909	9	1757	7	8097	18	7826	29	1059	31	6116	14	4331	20	6606	4	1035	28	1183	33	99	12	12	31	
X79S 72	80S 80028	957	23	7107	13	6089	19	1187	18	8542	13	8215	27	993	33	3560	33	4591	13	4420	13	1110	25	2808	10	89	16	0	32	
X79S 155	80S 80123	790	28	6507	20	6859	10	1272	17	11153	2	7632	31	1126	30	7227	4	2911	32	5259	9	-	-	2775	11	55	31	85	17	
X79S 70	80S 80026	690	31	7441	10	4079	31	2115	2	9542	6	10354	18	1259	22	6060	18	4551	15	5494	6	1310	19	2517	16	72	23	79	20	
X79S 103	80S 80064	797	26	7774	8	2989	32	1480	13	9764	5	9826	20	1193	25	5671	26	4141	22	3161	25	760	32	1379	31	55	31	212	6	
Check means for																														
Syr.L.L.	1814	920	24	7000	14	7100	8	1565	11	7611	25	9514	21	2067	5	6097	17	4873	5	3687	19	1263	21	2543	15	123	5	53	26	
Reina Blanca	1270	1145	20	7433	11	6137	17	1393	14	9097	9	13264	6	2333	2	5361	30	4725	9	4620	11	1050	27	2275	21	68	26	247	4	
Local Check		1498	13	10555	1	6380	13	981	26	9250	7	9229	22	2511	1	6833	6	4485	18	2688	29	1994	3	2119	24	92	13	262	3	
Location mean		1362		6850		6077		1408		8338		10640		1527		6140		4307		4272		1429		2483		92		134		
C.V.%		32.68		16		7.8		12.11		10.8		14.8		0.9		12.9		7.2		27.5		15.8		16.3		40.3		69.9		
L.S.D. at 5% for																														
Check means		672		2311		1157		275		1611		2733		50		1402		584		1742		394		856		66		297		
Adj. var. in the same																														
Block		1343		4623		2004		550		3222		5467		87		2805		1169		3483		788		1483		131		515		
Adj. var. in different																														
Blocks		1551		5338		2314		636		3720		6312		101		3238		1350		4022		910		1712		152		594		
Adj. var.v.s.check means		1226		4220		1890		502		2941		4990		82		2560		1067		3180		720		1398		120		485		
No. of entries significantly exceeding the local check		0		0		1		12		0		2		0		0		0		4		0		3		0		0		

1) It excludes PERU (La Molina, San Lorenzo) locations.

2) Seed yield underlined, significantly exceeded the local check.

Cont'd. Table 4.3.6.

ENTRY	PEDIGREE	S Y R I A																												TUNISIA				TURKEY		W.GERMANY		MEAN ⁽¹⁾
		QATAR		SPAIN				Homs		Izra'a		Lattakia		Tel Hadya		Beja		El-Kef		Mateur		Ankara	Stuttgart															
		Rawdat Harma		Cordoba		Sevilla		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R													
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R													
ILB 263	77TA 88311	2100	26	2238	29	4851	10	1530	13	457	15	1420	13	2568	21	1432	9	900	31	1050	33	1350	23	3245	5	3944	5	3412	15									
X75TA 43	78S 33120	1643	31	3588	19	5417	3	520	28	367	19	706	28	1975	29	1432	9	1100	22	1375	31	1550	19	2355	20	2358	23	2956	30									
ILB 268	78S 48426	2271	22	5088	3	4844	11	840	27	1092	6	609	31	2568	21	951	24	1025	28	1150	32	1675	17	3601	2	2055	29	3244	24									
ILB 37	74TA 109	2614	15	4438	9	3764	30	330	31	1212	5	963	19	1938	30	1173	18	1175	17	2400	21	1650	18	3689	1	6166	1	3476	9									
ILB 41	76TA 56297	1529	33	3938	12	5804	2	480	29	602	14	735	26	2494	25	1247	14	813	33	1950	27	1050	28	2355	21	3267	10	2842	32									
ILB 1799	79 MB	3129	8	3888	15	4077	25	990	25	287	25	1763	7	2383	27	1099	21	1250	15	3200	4	650	32	2889	11	3308	9	3471	10									
ILB 34	78S 49841	1643	32	3188	22	4191	23	65	33	332	21	735	26	2605	20	1543	7	1012	29	2400	21	1550	19	3245	6	5187	2	3404	16									
ILB 444	78S 97513	2500	18	3188	23	4284	19	860	26	192	28	906	21	3383	9	1284	13	1150	18	3000	7	1225	25	2539	17	3813	6	3494	8									
ILB 1805	5 MC1	1986	27	4738	5	3917	26	380	30	-	-	677	30	1864	31	1432	9	1263	14	2725	17	2100	10	2001	24	4510	3	3393	19									
X77TA 64	80S 44027	1929	29	2538	27	3891	27	280	32	1062	7	277	33	2494	25	1765	1	1325	12	2300	23	1950	12	2001	24	3358	8	3230	25									
X75TA 116	79S 79180	2386	19	4271	10	4171	24	1497	15	678	13	853	23	2753	17	864	27	1425	3	2450	19	775	30	1270	32	2436	20	3397	18									
ILB 1814	79S 546	3700	5	5071	4	3684	31	1832	5	278	26	910	20	3457	6	938	25	925	30	1900	28	1275	24	-	-	2274	26	3331	21									
ILB 1814	79S 653	4043	2	3521	20	4424	18	1687	8	-	-	1064	17	3790	3	1642	4	1150	18	2425	20	1125	27	1803	26	2203	28	3326	22									
X77TA 88	80S 44539	4100	1	5221	2	5297	4	1507	14	368	18	1756	8	3086	14	1716	2	1150	18	3400	1	850	29	2247	22	2708	16	3770	1									
X77TA 31	80S 43587	3471	7	5371	1	4211	22	1057	24	-	-	2338	3	1642	33	827	28	1350	10	1900	28	1875	14	2158	23	2779	15	3359	20									
ILB 1814	79S 4	2843	10	1571	31	4537	17	2647	1	2168	2	2567	1	3123	12	938	25	1250	15	2525	18	-	-	1714	27	2658	17	3681	4									
X77TA 82	80S 44371	4043	2	1671	30	5244	6	1647	10	298	24	2378	2	3123	12	1679	3	1375	7	3250	3	1850	15	1714	27	2829	14	3767	2									
ILB 4	-	3986	4	1221	32	4724	12	2217	3	1308	3	1510	11	3346	10	1012	23	1375	7	2875	12	2650	4	2603	15	2052	30	3451	11									
X77Sd 70	80S 46341	3643	6	2421	28	5184	7	1347	18	328	22	1796	6	2679	18	827	28	1075	24	2800	14	2300	9	1536	31	2931	13	3599	5									
X77TA 3	80S 43051	2386	20	921	33	4877	9	1682	9	2263	1	1081	16	2568	21	716	31	1125	21	2125	26	775	30	2691	14	2506	19	3182	26									
X77TA 89	80S 44552	1662	30	2888	26	2497	33	2535	2	417	17	967	18	2790	16	593	33	900	31	1550	30	2550	5	2988	8	1405	33	2936	31									
X77TA 72	80S 44178	3090	9	4638	7	3111	32	1625	11	427	16	1613	10	2901	15	630	32	1050	26	2250	24	1400	22	2365	18	2436	20	3019	29									
X79S 12	80S 80002	2748	11	3138	24	4677	14	1155	23	1272	4	1881	5	3420	7	1519	8	1350	10	2750	15	2700	3	2898	10	2304	24	3438	13									
X79L 153	80S 81054	2633	14	3638	18	4904	8	1835	4	-	-	1716	9	2679	18	1556	6	1412	4	2950	10	2550	5	2721	12	2648	18	3728	3									
X79S 160	80S 80128	2119	25	4688	6	4677	14	1175	22	787	11	2013	4	2235	28	1222	15	1050	26	3000	7	2500	7	3077	7	2052	30	3523	6									
X79S 171	80S 80135	2748	11	4188	11	3871	28	1185	21	322	23	1441	12	3827	2	1148	19	1400	5	2750	15	2050	11	2544	16	3173	11	3317	23									
X79S 72	80S 80028	1948	28	3138	25	4637	16	1800	6	182	29	870	22	4160	1	1290	12	1100	22	2850	13	1950	12	3344	3	2416	22	3171	27									
X79S 155	80S 80123	2690	13	3788	16	4697	13	1425	17	682	12	796	24	3420	7	1222	15	1400	5	3000	7	1150	26	2988	9	1840	32	3442	12									
X79S 70	80S 80026	2176	24	3938	13	4257	21	1325	19	872	9	756	25	3679	4	1222	15	1062	25	3350	2	2950	2	2365	19	2264	27	3425	14									
X79S 103	80S 80064	2348	21	3688	17	3824	29	1565	12	862	10	687	29	2531	24	1074	22	1375	7	3100	7	3400	1	2721	13	2294	25	3136	28									
Check means for																																						
Syr.L.L.	1814	2200	23	3375	21	5288	5	1764	7	349	20	1362	14	3506	5	1605	5	1281	13	2213	25	1469	21	3289	4	3045	12	3399	17									
Reina Blanca	1270	2529	17	3938	13	5918	1	1298	20	256	27	524	32	1839	32	753	30	1578	1	2938	11	2325	8	1541	30	3434	7	3508	7									
Local Check		2600	16	4550	8	4265	20	1444	16	1035	8	1244	15	3173	11	1123	20	1450	2	3056	6	1694	16	1645	29	4111	4	-										
Location mean		2650		3566		4485		1319		716		1240		2848		1227		1201		2514		1779		2504		2932												
C.V.%		16.8		28.3		14.1		44.5		62.8		60.6		9.2		12.7		16.2		29.6		21.5		27.5		21.3												
L.S.D. at 5% for																																						
Check means		713		1941		1258		1157		594		1433		594		334		401		1400		681		1028		1303												
Adj. var. in the same Block		1426		3882		2517		2314		1188		2482		1028		579		134		2800		1361		2055		2606												
Adj. var. in different Blocks		1646		4483		2906		2673		1372		2866		1187		668		927		3234		1572		2373		3009												
Adj. var. vs check means		1301		3544		2297		2113		1085		2340		969		545		733		2556		1243		1876		2379												
No. of entries significantly exceeding the local check		4		0		0		0		2		0		1		3		0		0		2		2		0												

Table 4.3.7. The five heaviest seed yielding entries at the individual locations in the FBISN-L during 1982/83.

RANK	AFGHANISTAN		ALGERIA		CHILE		CHINA		EGYPT				HUNGARY	
	Darulaman		Guelino		Graneros		Zhejiang		Sakha		Sids		Tapioszele	
	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.
1	80S43051	X77TA 3	Local check	-	79S 4	1814	80S80128	X79S 160	80S44027	X77TA 64	80S46341	X77Sd 70	Local Check	-
2	80S44027	X77TA 64	79 MB	1799	79S 653	1814	80S80026	X79S 70	80S80123	X79S 155	80S44371	X77TA 82	Reina Blanca	ILB 1270
3	80S80002	X79S 12	74TA 109	37	80S44539	X77TA 88	80S44178	77TA 72	78S97513	444	77TA88311	263	79S7918 ^a	X75TA116
4	78S97513	444	78S49841	34	79S 546	1814	80S80002	X79S 12	77TA88311	263	79S 4	1814	79 MB	1799
5	80S46341	X77sd 70	5 MCI	1805	80S43051	X77TA 3	80S81054	X79L 153	80S80064	X79S 103	80S44539	X77TA 88	Syr.L.L.	1814

RANK	IRAN		ITALY		LEBANON		MOROCCO		PAKISTAN		PERU			
	Gorgan		Perugia		Terbol		Marchouch		Islamabad		La Molina		San Lorenzo	
	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.	Pedigree	ILB/ Cross No.
1	5 MCI	1805	79 MB	1799	80S80128	X79S 160	78S49841	34	79S653	1814	74TA109	37	80S44027	X77TA 64
2	80S44027	X77TA 64	5 MCI	1805	80S81054	X79L 153	78S33120	X75TA 43	79S 546	1814	78S33120	X75TA 43	5 MCI	1805
3	78S49841	34	78S48426	268	79S79180	X75TA 116	Local Check	-	80S43051	X77TA 3	78S48426	268	Local Check	-
4	80S80123	X79S 155	76TA56297	41	80S80135	X79S 171	74TA 109	37	79S79180	X75TA 116	ILB 4	4	Reina Blanca	1270
5	78S97513	444	Syr.L.L.	1814	80S80002	X79S 12	80S44027	X77TA 64	80S44371	X77TA 82	Syr.L.L.	1814	80S80002	X79S 12

1) The brackets indicate entries having the same rank.

Cont'd. Table 4.3.7.

RANK	QATAR		SPAIN				SYRIA							
	Rawdat Harma		Cordoba		Sevilla		Homs		Izra'a		Lattakia		Tel Hadya (Irrig.)	
	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.
1	80S44539	X77TA 88	80S43587	X77TA 31	Reina Blanca	ILB1270	79S 4	1814	80S43051	X77TA 3	79S 4	1814	80S80028	X79S 72
2	79S 653	1814	80S44539	X77TA 88	76TA 56297	41	80S44552	77TA 89	79S 4	1814	80S44371	X77TA 82	80S80135	X79S 171
3	80S44371	X77TA 82	78S48426	268	78S33120	X75TA 43	ILB 4	4	ILB 4	4	80S43587	X77TA 31	79S 653	1814
4	ILB 4	4	79S 546	1814	80S44539	X77TA 88	80S81054	X79L 153	80S80002	X79S 12	80S80128	X79S 160	80S80026	X79S 70
5	79S 546	1814	5 MCI	1805	Syr.L.L.	ILB 1814	79S546	1814	74TA 109	37	80S80002	X79S 12	Syr.L.L.	1814

Cont'd. ...

RANK	SYRIA		TUNISIA				TURKEY		W.GERMANY	
	Tel Hadya (Rain.)		Beja		El-Kef		Ankara		Stuttgart	
	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.	Pedigree	ILB / Cross No.
1	80S44027	X77TA 64	Reina Blanca	1270	80S44539	X77TA 88	80S80064	X79S 103	74TA 109	37
2	80S44539	X77TA 88	Local Check	-	80S80026	X79S 70	80S80026	X79S 70	78S48426	268
3	80S44371	X77TA 82	79S79180	X75TA 116	80S44371	X77TA 82	80S80002	X79S 12	80S80028	X79S72
4	79S 653	1814	80S81054	X79L 153	79 MB	1799	ILB 4	4	Syr.L.L.	1814
5	Syr.L.L.	1814	80S80135	X79S 171	80S80064	X79S 103	80S44552	77TA 89	77TA88311	263
			80S80123	X79S 155						

Table 4.3.8. Correlation (df=20) among different locations for the seed yield of entries in the FBISN-L during 1982/83.

COUNTRY	LOCATION	ALGERIA	CHILE	CHINA	EGYPT		HUNGARY	IRAN	ITALY	LEBANON	MOROCCO	PAKISTAN	ITALY	
		Guelino	Graneros	Zhejiang	Sakha	Sids	Tapioszele	Gorgan	Perugia	Terbol	Marchouch	Islamabad	La Molina	San Lorenzo
AFGHANISTAN	Darulaman	-0.14	0.15	-0.26	0.10	0.15	0.02	0.23	-0.48 [†]	0.10	0.26	0.28	-0.06 [†]	0.50 [†]
ALGERIA	Guelino		-0.12	-0.04	0.29	0.24	0.14	0.03	0.06	-0.06	0.12	-0.01 [†]	0.43 [†]	0.14
CHILE	Graneros			-0.15	-0.15	0.25	0.37	-0.14	-0.09	0.10 ^{††}	-0.12 [†]	0.47 [†]	0.01	-0.13
CHINA	Zhejiang				-0.18	-0.10	-0.22	-0.14 [†]	-0.06	0.64 ^{††}	-0.50 [†]	-0.48 [†]	-0.13	-0.33 ^{††}
EGYPT	Sakha					0.02	0.10	0.44 [†]	-0.08	-0.10	0.15	-0.14	-0.23	0.58 ^{††}
EGYPT	Sids						0.16	-0.01	0.01	-0.03	0.20	0.31	0.25	-0.03
HUNGARY	Tapioszele							0.13	0.31	-0.28	-0.02 ^{††}	0.33	0.04	0.07
IRAN	Gorgan								-0.04	-0.19 ^{††}	0.60 ^{††}	-0.25	0.15	0.41
ITALY	Perugia									-0.61 ^{††}	0.10 [†]	-0.19	0.21	-0.35
LEBANON	Terbol										-0.49 [†]	-0.07	-0.03	-0.06
MOROCCO	Marchouch											0.10	0.41	0.17
PAKISTAN	Islamabad												0.03	0.11
PERU	La Molina													-0.27
PERU	San Lorenzo													
QATAR	Rawdat Harma													
SPAIN	Cordoba													
SPAIN	Sevilla													
SYRIA	Homs													
SYRIA	Izra'a													
SYRIA	Lattakia													
SYRIA	Tel Hadya (Irrigated)													
SYRIA	Tel Hadya (Rainfed)													
TUNISIA	Beja													
TUNISIA	El-Kef													
TUNISIA	Mateur													
TURKEY	Ankara													

Cont'd. Table 4.3.8.

COUNTRY	LOCATION	QATAR		SPAIN		SYRIA				TUNISIA			TURKEY	W. GERMANY	
		Rawdat Harma		Cordoba	Sevilla	Homs	Izra'a	Lattakia	TH(Irrig.)	TH(Rain.)	Beja	El-Kef	Mateur	Ankara	Stuttgart
AFGHANISTAN	Darulaman	0.03		-0.25	0.03	-0.32	0.47 [*]	0.02	-0.22	0.12	0.05 ^{**}	-0.07 [*]	-0.41	-0.12	0.14
ALGERIA	Guelino	0.38 [*]		0.06	-0.21	-0.07	-0.15	0.11	0.02	0.14	0.44 ^{**}	0.49 [*]	0.20 ^{**}	0.16	0.25
CHILE	Graneros	0.43 [*]		-0.16 [*]	0.09	0.43 [*]	-0.04	0.35	0.30	-0.07	0.17	0.14	-0.54 ^{**}	-0.12	0.06
CHINA	Zhejiang	-0.02		0.43	-0.25	0.27	-0.16	0.35	0.18	-0.18 [*]	-0.09	0.06	0.45 [*]	0.19	-0.35
EGYPT	Sakha	-0.01 ^{**}		-0.21	-0.06 [*]	-0.21	-0.32	-0.24	0.08	0.44 [*]	0.28	0.32	0.18	-0.36	0.32
EGYPT	Sids	0.55 ^{**}		-0.26	0.53 [*]	0.08	0.10	0.39	-0.23	0.22	0.21	0.13	-0.18	-0.19	0.08
HUNGARY	Tapioszele	0.05		-0.07	0.20	0.02 [*]	-0.11	-0.10	-0.38	-0.20	0.36	0.02	-0.37	-0.34	0.34
IRAN	Gorgan	0.03		0.03	-0.14	-0.44 [*]	-0.09	-0.08	-0.29	0.33	-0.10	-0.20	-0.18	-0.17	0.38
ITALY	Perugia	0.09		0.14	0.19	-0.06	0.41	-0.09	0.07	-0.06	-0.02	-0.20	-0.24	0.05	0.19
LEBANON	Terbol	0.05		0.38	-0.11	0.15 [*]	-0.01	0.28	0.16	-0.01 [*]	0.17	0.28	0.32	-0.08	-0.27
MOROCCO	Marchouch	0.04		-0.27	0.13	-0.47 [*]	0.01	0.04	-0.26	0.44 [*]	-0.38	-0.26	-0.36 [*]	0.12	0.40
PAKISTAN	Islamabad	0.15		-0.24	0.34	0.02	0.39	-0.03	-0.01	0.07	0.07	0.19	-0.45 [*]	-0.25 [*]	-0.01 [*]
PERU	La Molina	0.24		0.24	0.06	-0.30	-0.01	0.15	-0.13	0.23	0.01	-0.14	-0.21	0.43 [*]	0.51 [*]
PERU	San Lorenzo	0.01		-0.15	0.02	-0.37	0.21	-0.36 ^{**}	-0.19	0.34	0.42	0.16 ^{**}	0.13	-0.40	0.09
QATAR	Rawdat Harma			0.11	0.06	0.15	-0.14	0.67 ^{**}	0.16	0.21	0.40	0.57 ^{**}	-0.22	-0.26	0.12
SPAIN	Cordoba				-0.06	-0.25	-0.29	-0.05	-0.10	-0.13	-0.03	0.14	0.03	0.08	0.01
SPAIN	Sevilla					-0.25	-0.06	0.04	-0.13	0.41	0.10	0.02	-0.24	-0.19	0.08 [*]
SYRIA	Homs						J. 16	0.31	0.40	-0.34	-0.03	0.07	0.17	0.01	-0.53 [*]
SYRIA	Izra'a							-0.16	-0.23	-0.18	-0.05	-0.17	0.04	0.19	0.01
SYRIA	Lattakia								0.22	0.25	0.04	0.34	-0.12	0.07	-0.07
SYRIA	Tel Hadya (Irrigated)									0.25	0.03	0.32	0.13	0.09	-0.26
SYRIA	Tel Hadya (Rainfed)										0.10	0.20 [*]	-0.02	0.01 [*]	0.22
TUNISIA	Beja											0.52 [*]	0.18	-0.48 [*]	0.12
TUNISIA	El-Kef												0.21	-0.33	0.03
TUNISIA	Mateur													0.11	-0.29
TURKEY	Ankara														0.16

results were received from 23 locations. 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 80S 50106 flowered earliest in 92 days whereas a number of entries namely 80S 43064, 80S 44812, 80S 44815, 80S 45089 and 80S 45676 flowered latest in 97 days (Table 4.4.2). The data on time to maturity (Table 4.4.3) revealed that the entry 80S 45579 matured earliest in 159 days and 78S 49264 was the latest maturing in 168 days. The location means, however, revealed that the entries flowered earliest in 49 days at Darulaman in Afghanistan and was followed by Tapioszele (Hungary), Stuttgart (W.Germany), Ankara (Turkey), etc. and latest in 175 days at Coulominers (France) which was followed by Perugia (Italy), Terbol (Lebanon), Tel Hadya-Irrigated (Syria), etc. For plant height (Table 4.4.4), the entry 80S 46593 was the shortest (71 cm) and the entries 80S 45727 and 80S 43383, were the tallest (83 cm). The plant height of the entries was least at Nicosia in Cyprus (36 cm) and maximum at Sids in Egypt (122 cm). The correlations between different agronomic characters (Table 4.4.5) revealed that plant height is positively associated with yield and is an important character. The adjusted seed yield for the entries in different locations based on augmented design is presented in Table 4.4.6. The coefficient of variation of the experiment at different locations varied from 5.4 to 59.4%. Except for Denbi Shoa in Ethiopia, Terbol in Lebanon and Lattakia in Syria where CVs were 42.3, 41.6 and 59.4% respectively, the CVs were moderate to low. The location means revealed that the adjusted seed yields were highest at Sids (8169 kg/ha) and Gemmiza (5796 kg/ha) in Egypt and were followed by Gorgan in Iran (4827 kg/ha), Perugia in Italy (4269 kg/ha) and Terbol in Lebanon (4024 kg/ha). However, the poor yielding locations included Denbi Shoa in Ethiopia (287 kg/ha), Beja (1141 kg/ha) and Mateur (1194 kg/ha) in Tunisia, Lattakia (1184 kg/ha) in Syria, etc. The LSD estimates at different locations revealed that 6, 1, 5, 46, 6, 11, 28, 4 and 4 entries exceeded the respective local checks by a significant margin at Darulaman (Afghanistan), Sids (Egypt), Perugia (Italy), Rawdat Harma (Qatar), Izra'a, Tel Hadya-Irrigated and Tel Hadya-Rainfed (Syria), and El-Kef and Mateur in Tunisia, respectively. The five heaviest yielders at each location are presented in Table 4.4.7. It is apparent that except at four locations namely Nicosia in Cyprus, Denbi Shoa in Ethiopia, Coulommiers in France, and Tapioszele in Hungary where the local check ranked first, at all other locations the five heaviest yielders were from the materials supplied from ICARDA. The correlations between seed yield of entries at different locations (Table 4.4.8) revealed that Tel Hadya-Irrigated and Rainfed (Syria), the main sites at ICARDA, had positive association only with Perugia (Italy) and Radwat Harma (Qatar) respectively. This showed that the performance at other locations has,

Table 4.4.1. Agronomic data for different locations in the FBISN-S during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide or Fungicide
				N	P ₂ O ₅	K ₂ O		
CYPRUS	Nicosia	6.12.1982	165	21	48		2	Treflan, Lannate
EGYPT	Gemmiza	26.11.1982	165	35	71		3	
EGYPT	Sids	22.11.1982	161	37	75		5	Igran
ETHIOPIA	Denbi Shoa	28. 6.1983	121					
FRANCE	Coulommiers	2.11.1982	253		12			Chandor, Serk
HUNGARY	Tapioszele	11. 4.1983	114	88	75			Methylparathion
IRAN	Gorgan	19.12.1982	171				2	
ITALY	Perugia	28.10.1982	233		100			
LEBANON	Terbol	14.11.1982	220		50		1	Igran
MOROCCO	Rabat	22.11.1982	171	30	60	80	4	Decis
PAKISTAN	Islamabad	24.11.1982	187	20	50			
QATAR	Rawdat Harma	1.12.1982	147	60	150		35	
SPAIN	Cordoba	7.12.1982	197				3	
SYRIA	Izra'a	14.12.1982	139	30	50			
SYRIA	TH-Irrigated	15.11.1982	194		50			
SYRIA	TH-Rainfed	7.12.1982	167		50			
TURKEY	Ankara	22. 3.1983	102	20	60			Basudin
W. GERMANY	Stuttgart	21. 4.1983	117		92	158		Aretit, Metasystox

Table 4.4.2. Time to flowering (days) of entries at different locations in the FBISN-S during 1982/83

ENTRY NAME		ORIGIN	AFGHANISTAN	CYPRUS	EGYPT		ETHIOPIA	FRANCE	HUNGARY	IRAN	ITALY	LEBANON	PAKISTAN	QATAR	SYRIA			TURKEY	W. GERMANY	MEAN
ILB or CROSS No.	PEDIGREE		Darulaman	Nicosia	Gemiza	Sids	Denbi Shoa	Coulommiers	Tapioszele	Gorgan	Perugia	Terbol	Islamabad	Rawdat Harna	Izra'a	Tel Hadya Irrigated	Tel Hadya Rainfed	Ankara	Stuttgart	
ILB 22	78S 49264	Syria	45	104	74	75	63	169	52	102	159	140	83	61	101	133	112	57	54	93
ILB 905	78S 35513	Egypt	50	103	78	80	67	171	51	107	160	140	82	71	100	133	112	57	56	95
ILB 1816	78S 48561	Lebanon	48	102	74	70	63	171	54	102	160	140	83	62	101	133	112	57	56	93
ILB 269	74TA 367	Spain	46	100	73	70	63	171	55	107	163	142	85	62	99	133	110	57	55	94
ILB 336	78S 48437	Sweden	43	102	73	70	67	173	54	107	165	142	83	61	100	129	112	57	55	94
ILB 33	74TA 95	Iraq	46	103	74	70	63	173	52	107	161	140	86	65	101	133	112	57	55	94
ILB 360	74TA 498	Egypt	46	100	73	70	67	175	54	107	161	140	86	66	100	133	112	59	54	94
ILB 356	77Ms 88165	Egypt	50	103	67	80	67	171	53	107	163	140	83	64	100	133	112	59	55	95
ILB 287	77Ms 88323	Lebanon	52	102	78	70	72	171	52	107	165	140	85	69	100	133	112	59	56	95
ILB 328	77TA 88138	China	45	102	74	75	63	176	52	102	163	140	85	57	101	133	112	57	56	94
ILB 1105	79S 97330	Turkey	47	104	74	75	63	174	52	102	163	140	86	72	101	129	110	59	55	94
X75TA 150	80S 50088	Turkey	48	100	75	75	67	171	54	98	163	140	81	70	100	133	112	59	56	94
X75TA 193	80S 50106	Turkey	46	100	72	75	63	171	55	98	163	140	81	59	100	129	110	57	53	92
X75TA 3	80S 43064	Turkey	53	107	76	80	67	178	53	107	163	140	84	74	101	133	114	59	57	97
X75TA 9	80S 43209	Turkey	55	106	83	80	67	176	52	98	163	142	84	71	101	133	112	57	57	96
X75TA 10	80S 43238	Turkey	45	99	72	65	63	171	54	98	161	140	87	58	101	127	110	57	54	92
X75TA 16	80S 43341	Turkey	48	100	77	75	67	174	56	102	163	140	81	68	100	133	112	59	55	95
X75TA 19	80S 43383	Turkey	50	104	80	80	63	178	57	98	165	140	83	74	100	133	114	60	55	96
X75TA 33	80S 43651	Turkey	45	100	72	70	62	171	56	98	163	142	82	58	101	133	112	57	54	93
X75TA 42	80S 43773	Turkey	46	100	74	70	63	177	55	107	161	140	84	69	101	133	112	57	54	94
X77TA 60	80S 42971	Turkey	52	102	-	70	67	171	53	107	163	142	85	71	100	133	112	59	56	96
X77TA 60	80S 43977	Turkey	51	102	78	75	69	173	54	98	163	142	87	75	99	133	112	59	55	96
X77TA 66	80S 44031	Turkey	50	102	77	75	66	171	53	107	165	142	81	69	101	133	112	59	55	95
X77TA 66	80S 44045	Turkey	50	103	80	80	72	172	51	107	162	140	79	71	100	133	112	59	55	96
X77TA 66	80S 44056	Turkey	63	102	78	80	67	173	54	98	161	140	83	75	101	133	114	59	55	96

Cont'd Table 4.4.2.

ENTRY NAME ILB or CROSS No.	ORIGIN PEDIGREE	AFGHANISTAN	CYPRUS	EGYPT		ETHIOPIA	FRANCE	HUNGARY	IRAN	ITALY	LEBANON	PAKISTAN	QATAR	SYRIA			TURKEY	W. GERMANY	MEAN
		Darulaman	Nicosia	Gemmiza	Sids	Denbi Shoa	Coulommiers	Tapioszele	Gorgan	Perugia	Terbol	Islamabad	Rawdat Harma	Izra'a	Tel Hadya Irrigated	Tel Hadya Rainfed	Ankara	Stuttgart	
X77TA 70	80S 44150 Turkey	49	99	71	65	63	176	54	98	163	140	82	56	101	129	112	60	55	93
X77TA 72	80S 44203 Turkey	54	106	76	75	67	175	54	107	162	140	85	63	99	133	112	57	55	95
X77TA 81	80S 44358 Turkey	47	100	76	80	62	177	54	102	162	140	81	64	99	133	112	57	55	94
X77TA 82	80S 44367 Turkey	50	103	72	70	63	177	54	102	163	140	85	64	101	133	112	57	55	94
X77TA 83	80S 44384 Turkey	49	103	75	80	64	177	53	102	165	140	86	76	101	133	112	57	55	94
X77TA 86	80S 44474 Turkey	46	100	73	70	64	176	56	107	163	140	87	62	101	133	112	57	55	96
X77TA 88	80S 44545 Turkey	47	101	71	70	62	174	52	107	163	140	87	58	99	133	112	60	54	94
X77TA 101	80S 44812 Turkey	55	104	80	80	67	178	52	107	165	142	88	71	99	133	112	61	53	94
X77TA 101	80S 44815 Turkey	51	106	83	80	67	178	54	107	163	142	83	75	100	133	112	61	56	97
X77TA 117	80S 45050 Turkey	49	103	79	75	65	178	53	107	163	142	86	63	100	133	114	61	57	97
X77TA 119	80S 45089 Turkey	55	106	72	80	67	178	54	102	165	140	86	75	100	133	112	61	55	96
X77TA 148	80S 45579 Turkey	50	102	77	80	67	181	54	107	165	140	86	75	100	133	112	61	57	97
X77Sd 11	80S 45676 Turkey	52	105	83	80	67	178	54	102	167	144	83	74	99	133	114	61	57	94
X77Sd 13	80S 45727 Turkey	48	101	76	75	67	178	55	107	162	140	85	62	100	133	112	61	55	97
X77Sd 14	80S 45777 Turkey	50	101	76	80	67	178	56	102	163	140	85	70	101	133	112	57	55	95
X77Sd 48	80S 45779 Turkey	50	103	77	70	67	181	50	102	167	142	85	72	101	133	112	61	55	96
X77TA 48	80S 43856 Turkey	50	102	78	80	67	174	52	107	162	140	86	71	100	133	112	61	55	96
X77TA 48	80S 43859 Turkey	52	104	81	80	67	177	54	102	163	140	80	69	100	133	110	61	55	96
X77TA 118	80S 45057 Turkey	48	104	75	75	64	174	54	102	162	142	-	71	100	133	112	61	55	96
X77Sd 60	80S 46121 Turkey	48	100	72	70	63	176	55	107	162	142	-	57	100	133	112	59	53	96
X77Sd 92	80S 46593 Turkey	48	103	74	75	67	176	55	107	162	140	-	59	100	133	110	59	55	94
Syr. Loc. Small means (ILB 1811)	Syria	45	100	72	70	63	175	52	106	163	140	83	58	100	130	112	58	55	93
Syr. Loc. Mod. means (ILB 1812)	Syria	46	102	73	75	66	174	51	105	161	140	85	62	101	132	112	59	55	94
Local check means		57	92	65	62	62	188	52	107	164	140	85	77	100	132	112	64	58	
Location mean		49	102	75	75	65	175	54	104	163	141	84	67	100	132	112	59	55	

Table 4.4.3. Time to maturity (days) of entries at different locations in the FBISN-S during 1982/83

ENTRY NAME			AFGHANISTAN	EGYPT	ETHIOPIA	FRANCE	HUNGARY	IRAN	ITALY	LEBANON	QATAR	SYRIA			TURKEY	MEAN
ILB or CROSS No.	PEDIGREE		Darulaman	Gemmiza Sids	Denbi Shoa	Coulom-miers	Tapios-zele	Gorgan	Perugia	Terbol	Rawdat Harna	Izra'a Tel Irrigated	Hadya Tel Rainfed	Ankara		
ILB 22	78S 49264	-		165 155	123	254	114	171	232	216	149	142	194	168	101	168
ILB 905	78S 35513	115		164 160	122	255	112	171	232	218	149	141	194	168	101	164
ILB 1816	78S 48561	110		167 160	122	252	114	171	232	218	145	140	191	165	101	163
ILB 269	74TA 367	113		168 160	123	255	115	171	234	218	149	138	191	165	101	164
ILB 336	78S 48437	109		165 160	123	252	114	171	234	218	145	138	192	165	101	163
ILB 33	74TA 95	115		163 160	118	252	112	171	232	218	149	139	192	165	101	163
ILB 360	74TA 498	108		164 160	120	251	114	171	236	218	145	140	191	165	104	163
ILB 356	77Ms 88165	116		164 160	123	253	113	171	232	216	145	141	194	165	104	164
ILB 287	77Ms 88323	112		165 155	122	251	112	171	232	220	145	140	195	166	104	164
ILB 328	77TA 88138	109		165 160	122	251	112	171	232	218	145	137	194	167	101	163
ILB 1105	79S 97330	107		165 160	122	254	112	171	234	218	149	138	195	166	101	164
X75TA 150	80S 50088	107		165 160	121	253	114	171	234	218	145	138	195	165	101	163
X75TA 193	80S 50106	111		165 160	120	254	115	171	236	216	149	139	195	165	101	164
X75TA 3	80S 43064	113		165 165	121	252	113	171	236	218	148	140	194	168	104	165
X75TA 9	80S 43209	112		168 165	121	252	112	171	232	222	148	140	194	167	104	165
X75TA 10	80S 43238	109		165 165	122	255	114	171	232	222	148	140	195	166	101	165
X75TA 16	80S 43341	108		165 165	123	255	116	171	232	222	149	140	195	168	104	165
X75TA 19	80S 43383	115		168 165	122	255	117	171	232	220	149	139	195	169	104	166
X75TA 33	80S 43651	114		162 160	122	252	116	171	234	224	145	139	194	166	101	164
X75TA 42	80S 43773	109		158 160	121	252	115	171	232	218	145	140	192	167	101	163
X77TA 60	80S 43971	111	-	165	122	252	113	171	232	222	151	141	195	168	101	165
X77TA 60	80S 43977	110		167 160	123	251	114	171	232	222	151	141	195	169	101	165
X77TA 66	80S 44031	108		162 160	122	251	113	171	232	224	145	139	195	167	101	164
X77TA 66	80S 44045	107		167 165	123	251	112	171	234	222	145	140	195	168	101	164
X77TA 66	80S 44056	106		166 160	121	252	114	171	232	222	145	139	195	169	101	164
X77TA 70	80S 44150	107		163 155	122	254	114	171	232	222	145	139	191	169	101	163
X77TA 72	80S 44203	108		166 160	123	252	114	171	236	218	145	141	194	168	104	164
X77TA 81	80S 44358	109		162 160	121	255	115	171	232	216	145	140	194	169	101	164
X77TA 82	80S 44367	107		164 160	121	252	114	171	232	222	145	140	194	169	101	164
X77TA 83	80S 44384	109		165 165	120	251	114	171	232	222	145	137	192	168	101	164
X77TA 86	80S 44474	108		162 160	121	251	116	171	234	222	149	136	191	165	101	163
X77TA 88	80S 44545	108		166 160	122	252	112	171	232	220	149	138	195	169	104	164
X77TA 101	80S 44812	109		168 160	123	251	112	171	232	222	149	138	194	169	104	164
X77TA 101	80S 44815	107		170 165	123	252	114	171	236	222	151	138	194	169	104	165
X77TA 117	80S 45050	107		168 160	122	252	113	171	232	222	151	139	194	169	104	165
X77TA 119	80S 45089	105		164 155	122	254	114	171	232	220	151	139	194	169	104	164
X77TA 148	80S 45579	103		166 155	121	252	114	171	232	-	149	141	194	168	104	159
X77Sd 11	80S 45676	103		170 160	120	252	114	171	234	216	149	141	195	169	104	164
X77Sd 13	80S 45727	103		165 165	120	254	115	171	234	222	149	139	195	167	104	165
X77Sd 14	80S 45777	103		164 160	121	254	115	171	232	220	149	139	194	167	104	164
X77Sd 48	80S 45779	102		165 165	123	252	110	171	232	216	149	140	194	168	101	163
X77TA 48	80S 43856	107		166 165	123	252	112	171	234	222	149	140	194	168	101	165
X77TA 48	80S 43859	108		168 160	122	254	114	171	234	222	151	140	194	169	101	165
X77TA 118	80S 45057	107		165 160	110	253	114	171	232	224	149	139	194	168	101	163
X77Sd 60	80S 46121	106		162 165	114	252	115	171	232	224	145	139	194	167	101	163
X77Sd 92	80S 46593	95		160 165	118	252	115	171	232	216	145	139	194	166	101	162
Syr. Loc. Small means (ILB 1811)			105	162 163	122	254	112	171	232	221	144	139	190	167	101	163
Syr. Loc. Med. means (ILD 1812)			110	164 162	121	252	111	171	234	218	148	138	193	167	102	164
Local check means			103	157 159	121	258	111	171	234	218	148	140	191	167	104	
Location mean			108	165 161	121	253	114	171	233	220	147	139	194	167	102	

Table 4.4.4. Plant height (cm) of entries at different locations in the FBISN-S during 1982/83.

ENTRY NAME	AFGHANISTAN	CYPRUS	EGYPT		ETHIOPIA	FRANCE	HUNGARY	IRAN	ITALY	LEBANON	QATAR	SYRIA		TURKEY	W.GERMANY	MEAN
			Darulaman	Nicosia								Izra'a	Tel Hadya Irrigated			
ILB or CROSS No.	PEDIGREE				Gemmiza Sids	Denbi Shoa	Coulom- miers	Tapios- zele	Gorgan	Perugia	Terbol	Rawdat Harma	Tel Hadya Rainfed	Ankara	Stuttgart	
ILB 22	78S 49264	70	35	80	115	100	80	72	85	100	48	100	60	70	50	73
ILB 905	78S 35513	72	40	90	125	110	110	72	83	105	60	110	50	79	55	81
ILB 1816	78S 48561	80	35	115	130	100	90	69	80	105	50	110	65	79	50	81
ILB 269	75TA 367	67	40	110	135	105	85	68	80	98	55	90	50	74	60	78
ILB 336	78S 48437	76	35	115	125	125	75	66	60	100	60	90	65	75	55	78
ILB 33	74TA 95	61	35	110	115	70	95	69	60	100	60	95	45	76	60	73
ILB 360	74TA 498	72	45	120	130	95	95	68	55	100	55	100	45	70	55	76
ILB 356	77Ms 88165	65	35	110	145	105	90	72	70	95	60	105	50	80	55	78
ILB 287	77Ms 88323	71	35	100	125	90	105	72	65	95	60	110	42	75	50	76
ILB 328	77TA 88138	69	35	95	135	105	95	70	50	105	50	95	50	71	55	74
ILB 1105	79S 97330	79	35	120	115	120	90	69	85	120	60	110	40	85	50	82
X75TA 150	80S 50088	62	35	120	145	110	95	69	100	116	60	105	48	75	50	82
X75TA 193	80S 50106	72	35	110	125	120	75	69	85	105	65	110	50	76	55	80
X75TA 3	80S 43064	74	35	120	125	130	90	69	100	110	60	130	60	90	60	87
X75TA 9	80S 43209	80	35	95	145	65	95	66	75	110	60	110	65	70	50	78
X75TA 10	80S 43238	62	30	95	135	110	100	68	100	105	70	105	60	71	50	81
X75TA 16	80S 43341	79	30	105	125	105	95	68	100	115	70	115	50	73	55	82
X75TA 19	80S 43383	81	40	100	115	100	95	70	95	105	70	130	55	80	60	83
X74TA 33	80S 43651	77	35	100	115	90	90	70	85	110	75	125	50	80	55	80
X75TA 42	80S 43773	70	30	85	105	95	75	70	80	100	70	110	60	76	55	75
X77TA 60	80S 43971	67	35	-	80	100	95	65	85	110	60	105	65	80	50	75
X77TA 60	80S 43977	71	35	75	125	120	95	64	90	108	60	115	45	69	50	77
X77TA 66	80S 44031	69	30	70	115	115	90	64	75	98	55	110	65	70	50	74
X77TA 66	80S 44045	70	35	85	95	115	95	66	70	96	55	105	64	80	50	74
X77TA 66	80S 44056	71	30	95	125	135	70	64	70	96	70	115	40	71	50	76
X77TA 70	80S 44150	81	35	90	135	145	70	65	80	92	65	110	60	74	55	80
X77TA 72	80S 44203	70	35	95	135	140	60	61	75	110	50	90	50	76	50	77
X77TA 81	80S 44358	62	35	75	135	115	55	66	60	110	58	100	48	80	50	72
X77TA 82	80S 44367	54	40	85	130	125	65	67	80	110	60	110	45	66	50	76
X77TA 83	80S 44384	66	35	95	130	120	65	65	70	105	55	110	40	74	50	75
X77TA 86	80S 44474	53	40	85	140	110	90	68	75	105	50	110	55	80	55	78
X77TA 88	80S 44545	60	45	95	115	115	85	64	82	120	65	115	50	72	55	79
X77TA 101	80S 44812	60	35	90	110	100	65	62	80	115	78	135	50	80	55	78
X77TA 101	80S 44815	65	40	85	130	105	70	68	85	120	80	115	60	75	45	80
X77TA 117	80S 45050	45	35	110	105	115	75	69	70	110	75	110	50	89	50	76
X77TA 119	80S 45089	60	40	95	135	135	65	68	65	112	50	130	48	81	50	79
X77TA 148	80S 45579	60	35	100	140	125	55	68	85	116	-	120	50	90	50	82
X77Sd 11	80S 45676	60	40	110	135	115	60	66	80	114	50	120	50	84	55	80
X77Sd 13	80S 45727	65	40	105	135	120	60	66	90	110	85	135	45	90	45	83
X77Sd 14	80S 45777	80	35	115	125	110	65	67	80	100	70	130	45	85	45	80
X77Sd 48	80S 45779	65	30	100	95	115	40	66	78	95	50	120	48	88	50	73
X77TA 48	80S 43856	85	30	100	110	115	65	64	75	95	55	120	48	89	55	78
X77TA 48	80S 43859	77	35	90	120	120	60	68	91	100	58	120	50	80	50	78
X77TA 118	80S 45057	63	30	80	85	125	70	68	70	105	65	120	58	73	45	74
X77Sd 60	80S 46121	57	35	95	85	120	60	66	75	105	45	105	45	86	50	81
X77Sd 92	80S 46593	66	40	80	100	105	55	65	70	102	53	110	48	66	50	71
Syr.Loc.small means (ILB1811)			60	33	87	120	73	70	80	102	59	96	54	74	48	74
Syr.Loc.Med.means (ILB 1812)			67	36	82	119	75	63	75	104	58	105	50	69	49	74
Local check means			63	39	76	116	108	70	73	108	62	126	53	69	50	105
Location mean			68	36	97	122	79	67	78	106	61	112	52	77	55	69

Table 4.4.5. Correlations among different agronomic characters across locations in the FBISN-S during 1982/83

Characters	Time to maturity	Plant height	Seed yield
Time to flowering	0.22	0.04	-0.03
Time to maturity		0.08	0.04
Plant height			0.41 **

df = 46

** $P \leq 0.01$

Table 4.4.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-S during 1982/83

ENTRY NAME			AFGHANISTAN		CYPRUS		EGYPT		ETHIOPIA		FRANCE		HUNGARY		IRAN		ITALY		LEBANON		MOROCCO		PAKISTAN			
ILB or CROSS No.	PEDIGREE		Darulaman		Nicosia		Gemiza		Sids Denbi Shoa		Coulommiers		Tapioszele		Gorgân		Perugia		Terbol		Rabat		Islamabad			
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
ILB 22	78S	49264	1114	37	1537	20	4806	37	7596	33	0	-	1993	34	1818	5	4667	28	4197	23	3466	26	3067	10	2339	32
ILB 905	78S	35513	1901	7	1603	14	5806	14	9124	15	0	-	3093	16	1684	9	5222	23	3807	32	4577	13	1067	49	2580	29
ILB 1816	78S	48561	1227	32	1170	33	3389	46	8763	21	529	7	2540	24	1818	6	5667	12	5057	12	4355	14	2067	35	3347	10
ILB 269	74TA	367	907	44	1016	38	5556	24	9680	9	0	-	2040	32	1684	10	4333	33	3507	39	3614	24	3067	10	3372	9
ILB 336	78S	48437	1814	10	870	43	6722	13	5624	44	339	16	2540	24	1484	17	1556	49	3587	38	3332	29	2067	36	2864	20
ILB 33	74TA	95	574	49	1004	40	7556	7	8207	25	0	-	3193	13	1284	34	4389	32	3297	43	3169	33	2567	25	3114	16
ILB 360	77TA	498	1947	4	1157	34	6889	11	7846	32	429	11	3640	5	1351	28	2833	46	2697	48	3392	28	2567	25	3655	6
ILB 356	77Ms	88165	1501	18	804	45	4972	33	7152	37	0	-	3293	9	1484	18	3389	42	2797	46	3799	23	3067	10	4330	1
ILB 287	77Ms	88323	1261	29	1124	36	5306	29	8096	28	319	17	4193	4	1418	24	2444	48	4987	13	4088	16	2067	36	3214	14
ILB 328	77TA	88138	1147	35	650	47	5639	22	8430	23	429	12	3140	14	1284	34	2556	47	3867	29	2206	45	4067	1	4180	2
ILB 1105	79S	97330	1896	8	1361	26	8806	4	8624	22	0	-	3326	8	1351	28	5389	19	5784	4	3920	20	2067	36	1859	41
X75TA 150	80S	50088	1356	25	1668	9	8722	5	7124	38	356	14	2526	26	1151	45	5500	17	5274	8	2142	46	3067	10	3184	15
X75TA 193	80S	50106	1562	15	1455	22	7222	8	9624	11	366	13	180	49	1151	45	6945	2	5944	2	2809	39	3067	10	2297	35
X75TA 3	80S	43064	2196	1	1348	27	5222	30	8096	29	0	-	2226	28	1284	34	5833	10	5944	2	3327	30	2067	36	2751	24
X75TA 9	80S	43209	1142	36	895	42	8972	1	9763	7	0	-	3226	12	1151	45	5389	20	4524	20	3179	32	2567	25	2893	19
X75TA 10	80S	43238	1422	22	1635	13	3972	44	8846	20	166	25	2926	19	1284	34	5500	17	6394	1	1994	48	3567	3	2114	36
X75TA 16	80S	43341	2056	3	1948	5	4556	39	7485	35	0	-	2426	27	1218	43	4722	27	4624	17	2957	38	2567	25	2701	25
X75TA 19	80S	43383	1376	24	2081	4	6056	17	6680	43	0	-	2226	28	1284	34	5000	24	4104	25	4031	17	3567	4	3643	7
X75TA 33	80S	43651	1929	6	1188	31	7639	6	10652	3	346	15	526	47	1284	34	6945	2	4734	16	3535	25	3567	25	3626	8
X75TA 42	80S	43773	1576	14	1468	21	-	-	8069	30	26	36	380	48	1351	28	5722	11	5704	5	3957	19	3567	5	3997	4
X77TA 60	80S	43971	1316	26	1386	24	6861	12	4263	48	94	31	3257	10	1440	21	4204	36	5287	7	2350	44	2400	30	1726	43
X77TA 60	80S	43977	1936	5	1552	19	2861	48	4346	47	307	18	5511	2	1307	31	5315	22	4177	24	4972	10	2900	17	2522	30
X77TA 66	80S	44031	716	48	999	41	5528	25	4985	46	194	24	2211	30	1373	26	3593	41	4287	22	4750	11	1900	44	1472	45
X77TA 66	80S	44045	1536	17	1012	39	6944	10	3846	49	94	32	2757	20	1240	40	2870	45	3727	34	7194	4	2900	17	3018	17
X77TA 66	80S	44056	1243	31	1666	10	8861	3	9013	18	294	19	2957	18	1440	21	2981	44	3787	33	8305	1	2400	31	2318	33
X77TA 70	80S	44150	1836	9	1666	10	8861	3	5402	45	1064	2	2657	22	1573	14	4870	25	3987	27	5861	8	2900	17	2109	37
X77TA 72	80S	44203	976	41	1379	25	4194	42	9819	6	494	8	1257	42	1240	40	3926	40	3457	40	3046	34	2400	31	2759	23
X77TA 81	80S	44358	836	46	1599	15	4944	34	6791	42	94	32	1511	40	1307	31	3093	43	4597	18	3416	27	3900	2	2664	27
X77TA 82	80S	44367	1076	38	1186	32	4944	35	6846	41	244	22	1811	37	1240	40	4593	29	3717	35	4009	18	2900	17	3226	13
X77TA 83	80S	44384	1289	27	1559	16	6444	16	7013	39	144	29	1811	37	1307	31	4148	37	2707	47	2439	43	2900	17	1697	44
X77TA 86	80S	44474	1462	20	1646	12	4444	41	9920	5	443	10	2704	21	1884	4	4870	25	4547	19	2787	40	3400	7	2682	26
X77TA 88	80S	44545	2142 ⁽¹⁾	2	866	44	3361	47	8920	19	243	23	3104	15	1484	18	5537	16	4027	26	3268	31	2900	17	1994	39

... 2/ cont'd

Table 4.4.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-S during 1982/83 (cont'd)

ENTRY NAME			AFGHANISTAN		CYPRUS		EGYPT				ETHIOPIA		FRANCE		HUNGARY		IRAN		ITALY		LEBANON		MOROCCO		PAKISTAN	
ILB or CROSS No.	PEDIGREE		Darulaman		Nicosia		Gemmiza		Sids		Denbi Shoa		Coulommiers		Tapioszele		Gorgan		Perugia		Terbol •		Rabat		Islamabad	
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
X77TA 101	80S	44812	896	45	1212	30	4528	40	8254	24	63	35	3457	7	1418	24	5981	6	3447	41	2676	42	3400	7	1982	40
X77TA 101	80S	44815	982	40	1266	28	4694	38	9726	8	-	-	3257	10	1484	18	6259	5	5227	10	8009	2	1900	45	1773	42
X77TA 117	80S	45050	1182	34	612	49	5361	28	9365	13	93	34	1704	39	1551	16	5981	6	4337	21	6676	5	2900	17	-	-
X77TA 119	80S	45089	949	42	639	48	5194	31	9365	13	103	30	1104	45	1618	11	4593	29	3657	37	2972	37	2400	31	3719	5
X77TA 148	80S	45579	1382	23	1099	37	6028	18	8115	27	293	20	1457	41	1618	11	6370	4	3987	28	-	-	3400	7	2298	34
X77Sd 11	80S	45676	1442	21	746	46	5611	23	9643	10	283	21	1857	35	1751	7	5648	13	3687	36	4676	12	1900	46	4144	3
X77Sd 13	80S	45727	1742	11	1452	23	5111	32	6893	40	153	28	2004	33	1751	7	7648	1	5247	9	7231	3	2400	31	2798	21
X77Sd 14	80S	45777	1556	16	1132	35	5778	20	10448	4	163	26	1257	42	1618	11	4315	34	3447	42	5898	7	1900	46	2453	31
X77Sd 48	80S	45779	1259	30	1770	7	3667	45	12457	1	578	6	1120	44	1173	44	4593	29	3164	45	2097	47	3067	10	2023	38
X77TA 48	80S	43856	1599	13	2257	2	5417	27	9124	16	-	-	3073	17	1107	48	5926	9	5214	11	3819	22	2067	36	2623	28
X77TA 48	80S	43859	919	43	1710	8	8917	2	9457	12	-	-	3573	6	1040	49	5981	6	2674	49	6597	6	3567	6	3328	11
X77TA 118	80S	45057	805	47	1557	17	4167	43	7430	36	788	4	4926	3	1373	26	4148	37	4754	15	3041	35	1567	48	-	-
X77Sd 60	80S	46121	1472	19	2184	3	6583	15	10680	2	788	4	1826	36	1440	21	5370	21	5324	6	2685	41	2067	36	-	-
X77Sd 92	80S	46593	1665	12	1557	17	5500	26	9124	17	478	9	2073	31	1572	14	4315	35	3824	31	5374	9	2067	36	-	-
Check means																										
Syr.L.Med.	1812		1205	33	1833	6	5717	21	8206	26	154	27	2591	23	2280	2	5622	15	4962	14	3870	21	2700	24	2779	22
Syr.L.Small	1811		1280	28	1232	29	4917	36	7511	34	980	3	1007	46	2280	2	4122	39	3252	44	3001	36	2000	43	3328	12
Local check			1063	39	2665	1	7200	9	7850	31	1269	1	5881	1	2560	1	5644	14	3828	30	4267	15	3000	16	2980	18
Location mean			1381		1376		5796		8169		287		2517		1475		4827		4269		4024		2662		2811	
C.V.%			24.9		20.3		15.5		18.6		42.3		21.8		5.4		14.0		14.4		41.6		15.0		27.1	
L.S.D. (5%)																										
Check means			430		567		1350		2141		494		1009		186		1052		846		2257		565		1199	
Adjus.var. in the same block			961		1268		3019		4787		1105		2256		415		2353		1891		5046		1263		2681	
Adjus.var. in dif. block			1109		1464		3486		5527		1276		2605		480		2716		2183		5827		1458		3096	
Adjus.var. vs check mean			859		1134		2700		4282		988		2018		372		2104		1691		4513		1130		2398	
No. of entries significantly exceeding the local check			6		0		0		1		0		0		0		0		5		0		0		0	

(1) Seed yield underlined, significantly exceeding the local check.

Table 4.4.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-S during 1982/83 (cont'd)

ENTRY NAME				QATAR		SPAIN		SYRIA						TUNISIA				TURKEY		W.GERMANY		MEAN					
ILB or CROSS	No.	PEDIGREE		Rawdat Harma		Cordoba		Izra'a	Lattakia	Tel Hadya Irrigated	Tel Hadya Rainfed			Beja	El-Kef	Mateur			Ankara		Stuttgart						
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R						
ILB	22	78S	49264	<u>2286</u>	39	2600	43	1814	45	1683	9	<u>4427</u>	2	<u>1935</u>	4	1650	4	2300	22	1425	14	1921	42	2106	40	2641	33
ILB	905	78S	35513	<u>2457</u>	35	2993	39	2179	33	1408	16	<u>3686</u>	18	<u>1305</u>	30	1050	31	2050	35	1100	27	2187	32	2258	36	2745	25
ILB	1816	78S	48561	<u>1143</u>	47	3957	7	2019	37	1054	27	<u>3575</u>	21	<u>1416</u>	23	1668	3	2100	34	1525	5	2187	32	3126	12	2911	20
ILB	269	74TA	367	<u>914</u>	48	3457	22	2244	29	1237	19	<u>3982</u>	11	<u>1601</u>	15	1350	8	2200	29	1175	22	2275	30	1884	43	2562	40
ILB	336	78S	48437	<u>2686</u>	31	1171	47	1094	49	1523	12	<u>3242</u>	29	<u>1194</u>	37	1300	15	2150	31	1150	24	2987	10	2318	33	2280	47
ILB	33	74TA	95	<u>2171</u>	42	3421	27	1964	40	780	39	<u>3798</u>	15	<u>1639</u>	12	1450	6	2450	15	1300	19	2009	39	2591	29	2656	29
ILB	360	77TA	498	<u>3314</u>	14	2421	46	1904	42	1854	4	<u>2316</u>	47	<u>1305</u>	30	1250	20	1850	47	1100	27	2454	24	1783	45	2636	34
ILB	356	79Ms	88165	<u>2114</u>	44	3743	12	1634	46	723	41	<u>2649</u>	43	<u>1342</u>	26	1425	7	<u>3725</u>	1	825	44	2809	13	2803	25	2709	28
ILB	287	79Ms	88323	<u>2286</u>	40	2886	41	2114	34	991	32	<u>4553</u>	5	<u>1009</u>	46	1350	8	2150	31	900	41	1742	44	1813	44	2599	37
ILB	328	77TA	88138	<u>2343</u>	38	2529	45	2024	36	437	47	<u>3093</u>	35	<u>1083</u>	42	1350	8	2050	35	850	42	2631	18	2288	34	2519	43
ILB	1105	79S	97330	<u>3981</u>	7	3457	23	<u>3434</u>	4	784	38	<u>3575</u>	21	<u>1330</u>	28	1100	28	2400	18	1400	16	1949	40	4133	1	2990	14
X75TA	150	80S	50088	<u>3295</u>	15	-	-	<u>3414</u>	5	709	42	<u>3983</u>	10	<u>1293</u>	33	1050	31	2500	13	1475	10	2126	36	2780	26	2945	18
X75TA	193	80S	50106	<u>2952</u>	25	3529	20	2894	13	1001	31	<u>4427</u>	2	<u>1515</u>	21	1100	28	2000	41	800	46	2838	12	3649	4	3079	8
X75TA	3	80S	43064	<u>2438</u>	36	3457	24	2284	28	966	35	<u>3612</u>	20	<u>1293</u>	33	1275	19	2600	6	750	47	2926	11	3285	9	2921	19
X75TA	9	80S	43209	<u>2210</u>	41	3100	35	2019	38	629	44	<u>2723</u>	42	<u>1256</u>	35	750	43	1925	45	825	44	2216	31	3265	10	2646	31
X75TA	10	80S	43238	<u>2781</u>	29	3779	10	<u>3904</u>	2	1241	18	<u>4427</u>	2	<u>1108</u>	41	1300	15	2450	15	1275	20	3105	7	3043	17	3184	3
X75TA	16	80S	43341	<u>4038</u>	6	3064	37	<u>3284</u>	7	1441	15	<u>3168</u>	34	<u>848</u>	47	700	44	2000	41	1050	31	2393	25	3962	2	2723	26
X75TA	19	80S	43383	<u>2895</u>	26	2779	42	2699	17	584	45	<u>2649</u>	43	<u>1589</u>	18	800	40	1900	46	475	49	2482	22	3356	7	2642	32
X75TA	33	80S	43651	<u>3524</u>	12	3707	13	<u>3344</u>	6	1155	23	<u>3242</u>	29	<u>1145</u>	39	1575	5	<u>2800</u>	3	1150	24	3193	6	3063	15	3099	5
X75TA	42	80S	43773	<u>4152</u>	5	3457	25	<u>3584</u>	3	955	36	<u>2872</u>	40	<u>2404</u>	1	700	44	2300	22	1225	21	2572	20	2871	22	3067	9
X77TA	60	80S	43971	<u>3010</u>	21	3969	6	2701	16	1104	25	<u>3180</u>	33	<u>1676</u>	9	2000	1	2350	19	1525	5	1594	46	2174	38	2409	45
X77TA	60	80S	43977	<u>4724</u>	3	3648	17	<u>3951</u>	1	1446	14	<u>4254</u>	8	<u>1305</u>	30	1150	26	2600	6	1500	9	2305	28	2668	27	3081	7
X77TA	66	80S	44031	<u>3181</u>	19	3290	32	1436	47	-	-	<u>2847</u>	41	<u>1194</u>	37	1000	34	1750	48	975	37	3194	5	1083	49	2241	48
X77TA	66	80S	44045	<u>3752</u>	11	3148	33	2646	20	1846	5	<u>2995</u>	36	<u>1676</u>	9	800	40	2000	41	1100	27	2305	28	1739	46	2597	38
X77TA	66	80S	44056	<u>2610</u>	32	-	-	2791	14	1789	7	<u>3217</u>	31	<u>1639</u>	12	1300	15	2200	29	1025	33	2038	38	1406	48	2880	21
X77TA	70	80S	44150	<u>4267</u>	4	3112	34	2206	30	1646	11	<u>2995</u>	36	<u>1787</u>	7	1700	2	2250	26	1475	10	2482	23	3052	16	3033	10
X77TA	72	80S	44203	<u>4381</u>	1	3040	38	1846	44	989	33	<u>2995</u>	36	<u>1601</u>	15	800	40	2275	25	1050	31	3372	1	1436	47	2554	41
X77TA	81	80S	44358	<u>3295</u>	15	3576	18	2071	35	1218	20	<u>3365</u>	26	<u>1564</u>	20	1350	8	2350	19	1350	18	1861	43	1891	42	2550	42
X77TA	82	80S	44367	<u>2724</u>	30	2898	40	2301	26	1218	20	<u>3217</u>	31	<u>1120</u>	40	1250	20	2475	14	925	40	1949	41	3174	11	2567	39
X77TA	83	80S	44384	<u>1867</u>	46	4255	3	2681	18	1161	22	<u>2995</u>	36	<u>1083</u>	42	1000	34	2000	41	1025	33	2127	35	2628	28	2447	44
X77TA	86	80S	44474	<u>3276</u>	17	3898	8	2663	19	2069	1	<u>3551</u>	23	<u>1372</u>	25	1350	8	2350	19	1100	27	3046	8	3306	8	2990	14
X77TA	88	80S	44545	<u>3105</u>	20	3362	29	2193	32	984	34	<u>2514</u>	45	<u>1335</u>	27	1100	28	2050	35	1175	22	2780	14	2467	31	2648	30

Table 4.4.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBISN-S during 1982/83 (cont'd)

ENTRY NAME			QATAR		SPAIN		SYRIA						TUNISIA						TURKEY		W.GERMANY		MEAN			
ILB or CROSS No.		PEDIGREE	Rawdat Harma		Cordoba		Izra'a		Lattakia		Tel Hadya Irrigated		Tel Hadya Rainfed		Beja		El-Kef		Mateur		Ankara		Stuttgart			
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
X77TA 101	80S	44812	4362	2	3540	19	2553	23	755	40	2514	45	1890	5	1200	25	2300	22	975	37	2690	15	2285	35	2712	27
X77TA 101	80S	44815	2819	27	3683	15	3018	10	1669	10	3809	14	1076	44	1300	15	2750	4	950	39	3224	3	2831	24	3259	2
X77TA 117	80S	45050	2991	22	4005	5	1888	43	1869	3	3402	25	1890	5	1000	34	2600	6	1025	33	2068	37	2467	32	2953	17
X77TA 119	80S	45089	2362	37	3398	28	2298	27	1069	26	3477	24	1446	22	450	49	2450	15	575	48	2690	16	3609	5	2615	36
X77TA 148	80S	45579	3848	8	3755	11	2588	21	1841	6	4069	9	1705	8	850	39	2150	31	1125	26	1624	45	3710	3	2878	22
X77Sd 11	80S	45676	3790	9	3362	30	2203	31	1698	8	3625	19	2039	2	1150	26	2050	35	1450	12	2513	21	3518	6	2991	13
X77Sd 13	80S	45727	2819	28	4076	4	2327	25	1126	24	3699	17	1224	36	500	48	2600	6	1525	5	2157	34	2932	20	3018	11
X77Sd 14	80S	45777	2133	43	3898	9	2443	24	1955	2	3254	28	1594	17	550	46	2250	26	1450	12	2690	17	3033	18	2835	23
X77Sd 48	80S	45779	2076	45	3076	36	2923	12	538	46	3304	27	1651	11	550	46	1700	49	1750	3	2601	19	3079	14	2618	35
X77TA 48	80S	43856	2533	34	3326	31	3223	8	652	43	3822	12	1318	29	1250	20	2625	5	1725	4	-	-	2867	23	3122	4
X77TA 48	80S	43859	3390	13	4862	1	1348	48	321	48	4637	1	1613	14	1250	20	2575	11	1925	1	3313	2	2170	39	3417	1
X77TA 118	80S	45057	2590	33	4505	2	2723	15	1006	29	3822	12	799	48	950	38	2250	26	1425	14	3224	4	2958	19	2764	24
X77Sd 60	80S	46121	2990	23	3433	26	3148	9	938	37	4267	6	1577	19	1250	20	2850	2	1850	2	-	-	2221	37	3093	6
X77Sd 92	80S	46593	3790	10	3469	21	2978	11	1006	29	4267	6	2021	3	1050	31	2600	6	1525	5	-	-	2898	21	3007	12
Check means																										
Syr.L.Med.	1812		2971	24	3700	14	2556	22	1269	17	3770	16	1400	24	1325	14	2570	12	1385	17	3022	9	2560	30	2976	16
Syr.L.Small	1811		3200	18	2593	44	1925	41	1019	28	2252	48	1044	45	965	37	2040	39	830	43	2382	26	1974	41	2397	46
Local check			400	49	3650	16	1977	39	1463	13	1963	49	619	49	1345	13	2030	40	1000	36	2311	27	3089	13		
Location mean			2923		3405		2479		1184		3426		1426		1141		2305		1194		2491		2686			
C.V.%			22.3		16.9		21.1		59.4		25.0		23.61		22.0		10.1		21.3		22.33		14.61			
L.S.D. (5%)																										
Check means			714		818		662		1083		970		352		389		327		332		837		542			
Adjus.var.in the same block			1596		1830		1481		2421		2169		786		871		731		743		1873		1211			
Adjus.var.in dif.block			1843		2113		1711		2796		2505		908		1006		844		858		2162		1398			
Adjus.var. vs check mean			1427		1637		1325		2166		1940		703		779		653		664		1675		1083			
No.of entries significantly exceeding the local check			46		0		6		0		11		28		0		4		4		0		0			

Table 4.4.7. The five heaviest seed yielding entries at the individual locations in the FBISN-S during 1982/83.

RANK	AFGHANISTAN		CYPRUS		EGYPT				ETHIOPIA		FRANCE		HUNGARY	
	Darulaman		Nicosia		Gemmiza		Sids		Denbi Shoa		Coulommiers		Tapioszele	
	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE
1	X75TA 3	80S 43064	-	Local check	X75TA 10	80S 43238	X77Sd 48	80S 45779	-	Local check	-	Loc. check	-	Loc. check
2	X77TA 88	80S 44545	X77TA 48	80S 43856	X77TA 48	80S 43859	X77Sd 60	80S 46121	X77TA 70	80S 44150	X77TA 60	80S 43977	1812	Syr. L. med.
3	X75TA 16	80S 43341	X77Sd 60	80S 46121	X77TA 70	80S 44150	X75TA 33	80S 43651	1811	Syr. L. small	X77TA 118	80S 45057	1811	Syr. L. small
4	360	74TA 498	X75TA 19	80S 43383	X75TA 150	80S 50088	X77Sd 14	80S 45777	X77TA 118	80S 45057 (1)	287	77Ms 88323	X77TA 86	80S 44474
5	X77TA 60	80S 43977	X75TA 16	80S 43341	X75TA 193	80S 50106	X77Ta 86	80S 44474	X77Sd 60	80S 46121	360	74TA 498	22	78S 49264

RANK	IRAN		ITALY		LEBANON		MOROCCO		PAKISTAN		QATAR	
	Gorgan		Perugia		Terbol		Rabat		Islamabad		Rawdat Hama	
	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE
1	77Sd 13	80S 45727	X75TA 10	80S 43238	X77 66	80S 44056	328	77TA 88138	356	77Ms 88165	X77TA 72	80S 44203
2	75TA 193	80S 50106	X75TA 3	80S 43064	X77 101	80S 44815	X77TA 81	80S 44358	328	77TA 88138	X77TA 101	80S 44812
3	X75TA 33	80S 43651	X75TA 193	80S 50106	X77Sd 13	80S 45727	X75TA 10	80S 43238	X77Sd 11	80S 45676	X77TA 60	80S 43977
4	77TA 148	80S 45579	1105	79S 97330	X77TA 66	80S 44045	X75TA 19	80S 43383	X75TA 42	80S 43773	X77TA 70	80S 44150
5	X77TA 101	80S 44815	X75TA 42	80S 43773	X77TA 117	80S 45050	X75TA 42	80S 43773	X77TA 119	80S 45089	X75 TA 42	80S 43773

RANK	SPAIN		SYRIA				Tel Hadya - Irrigated		Tel Hadya - Rainfed	
	Cordoba		Izra'a		Lattakia		ILB or PEDIGREE		ILB or PEDIGREE	
	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE
1	X77TA 48	80S 43859	X77TA 60	80S 43977	X77TA 86	80S 44474	X77TA 48	80S 43859	X75TA 42	80S 43773
2	X77TA 118	80S 45057	X75TA 10	80S 43238	X77Sd 14	80S 45777	22	79S 49264	X77Sd 11	80S 45676
3	X77TA 83	80S 44384	X75TA 42	80S 43773	X77TA 117	80S 45050	X75TA 193	80S 50106	X77Sd 92	80S 46593
4	X77Sd 13	80S 45727	1105	79S 97330	360	74TA 498	X75TA 10	80S 43238	22	78S 49264
5	X77TA 117	80S 45050	X75TA 150	80S 50088	X77TA 66	80S 44045	287	77Ms 88323	X77TA 117	80S 45050
									X77TA 10	80S 44812

RANK	TUNISIA				TURKEY		W. GERMANY	
	Beja		El-Kef		Ankara		Stuttgart	
	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE	ILB or CROSS No.	PEDIGREE
1	X77TA 60	80S 43971	356	77Ms 88165	X77TA 48	80S 43859	X77TA 72	80S 44203
2	X77TA 70	80S 44150	X77Sd 60	80S 46121	X77Sd 60	80S 46121	X77TA 48	80S 43859
3	1816	78S 49561	X75TA 33	80S 43651	X77Sd 48	80S 45779	X77TA 101	80S 44815
4	22	78S 49264	77TA 101	80S 44815	X77TA 48	80S 43856	X77TA 118	80S 45057
5	X75TA 33	80S 43651	X77TA 48	80S 43856	1816	78S 48561	X77TA 66	80S 44031
					X77TA 60	80S 43971		
					X77Sd 92	80S 46593		

(1) The brackets indicate entries having the same rank.

Table 4.4.8. Correlation (df=35) among different locations for the seed yield of entries in the FBISN-S during 1982/83.

COUNTRY	LOCATION	CYPRUS	EGYPT		ETHIOPIA	FRANCE	HUNGARY	IRAN	ITALY	LEBANON	MOROCCO	PAKISTAN	QATAR	SPAIN
		Nicosia	Gemmiza	Sids	Denbi Shoa	Coulommiers	Tapioszele	Gorgan	Perugia	Terbol	Rabat	Islamabad	Rawdat Hama	Cordoba
AFGHANISTAN	Darulaman	0.06	0.23	-0.17	-0.02	0.07	-0.15	0.20	0.28	0.26	-0.32	-0.15	0.35 ^{††}	-0.08
CYPRUS	Nicosia		0.14	-0.09	0.30	0.17	0.29	0.31	0.23	0.02	0.19	-0.38 [†]	-0.03	0.20
EGYPT	Gemmiza			-0.23	0.22	0.11	-0.03	0.18	0.33 [†]	0.11	0.02	0.01	0.02	0.19
EGYPT	Sids				-0.01	-0.37 [†]	0.01	0.30	0.06	-0.46 ^{††}	-0.13	0.01	-0.26	0.22
ETHIOPIA	Denbi Shoa					0.16	0.48 ^{††}	-0.03	-0.18	0.03	-0.01	-0.02	-0.10	-0.12
FRANCE	Coulommiers						0.20	-0.17	-0.10	0.13	-0.01	-0.08	-0.15	-0.03
HUNGARY	Tapioszele							0.15	-0.09	0.19	-0.22	0.10	-0.34 [†]	0.11
IRAN	Gorgan								0.51 ^{††}	0.13	-0.06	-0.22	0.09	0.60 ^{††}
ITALY	Perugia									0.02	0.07	-0.17	0.15	0.27
LEBANON	Terbol										-0.31	0.08	0.12	0.16
MOROCCO	Rabat											0.03	0.07	0.12
PAKISTAN	Islamabad												-0.13	-0.20
QATAR	Rawdat Hama													-0.10
SPAIN	Cordoba													
SYRIA	Izra'a													
SYRIA	Lattakia													
SYRIA	TH-Irrigated													
SYRIA	TH-Rainfed													
TUNISIA	Beja													
TUNISIA	El-Kef													
TUNISIA	Mateur													
TURKEY	Ankara													

Table 4.4.8. Correlation (df=35) among different locations for the seed yield of entries in the FBISN-S during 1982/83.(cont'd)

COUNTRY	LOCATION	SYRIA				TUNISIA			TURKEY	W.GERMANY
		Izra'a	Lattakia	Tel Hadya- Irrigated	Tel Hadya- Rainfed	Beja	El-Kef	Mateur	Ankara	Stuttgart
AFGHANISTAN	Darulaman	0.30	0.27	-0.02	-0.17	-0.06	0.05	0.10	0.23	0.28
CYPRUS	Nicosia	0.33 [*]	0.14	-0.05	-0.19	0.01	-0.19	0.13	-0.05	0.19
EGYPT	Gemiza	0.22	0.14	0.13	0.01	0.31	0.21	0.04	0.12	0.20
EGYPT	Sids	0.06	-0.23	0.10	0.08	-0.17	-0.15	0.07	0.32	0.23
ETHIOPIA	Denbi Shoa	-0.19	0.17	-0.35 [*]	-0.29	0.23	-0.26	0.11	0.12	-0.07
FRANCE	Coulommiers	-0.07	0.08	-0.10	-0.41 [*]	0.32	0.04	0.02	-0.26	-0.11
HUNGARY	Tapioszele	-0.30	0.33 [*]	-0.15	-0.16	0.20	0.03	0.12	-0.02	-0.07
IRAN	Gorgan	0.47 ^{**}	-0.11	0.16	0.11	-0.10	0.13	0.16	0.15	0.55 ^{**}
ITALY	Perugia	0.51 ^{**}	-0.11	0.50 ^{**}	-0.02	0.07	0.11	0.08	0.08	0.42 ^{**}
LEBANON	Terbol	-0.03	0.43 ^{**}	0.02	0.16	-0.13	0.12	0.31	-0.28	-0.04
MOROCCO	Rabat	0.25	-0.22	-0.10	0.17	0.14	0.05	-0.10	0.10	-0.07
PAKISTAN	Islamabad	-0.26	-0.11	-0.20	0.06	0.05	0.24	-0.35 [*]	0.05	-0.07
QATAR	Rawdat Harma	0.40 [*]	0.13	-0.05	0.36 [*]	-0.15	0.06	0.10	0.24	0.01
SPAIN	Cordoba	0.45 ^{**}	0.01	0.16	0.04	-0.05	0.35 [*]	0.23	0.02	0.32
SYRIA	Izra'a		-0.31	0.29	0.06	-0.23	0.04	0.20	0.11	0.43 ^{**}
SYRIA	Lattakia			0.12	0.04	0.14	-0.08	0.31	0.03	-0.10
SYRIA	Tel Hadya- Irrigated				0.12	0.19	0.16	0.32	-0.11	0.10
SYRIA	Tel Hadya - Rainfed					-0.08	-0.13	0.29	0.05	-0.09
TUNISIA	Beja						0.28	0.13	-0.06	-0.19
TUNISIA	El-Kef							-0.02	0.21	0.08
TUNISIA	Mateur								-0.15	-0.03
TURKEY	Ankara									0.08

in general, no association with that of at Tel Hadya.

4.5. FABA BEAN INTERNATIONAL F_3 TRIAL (FBIF₃T)

Material

The Faba Bean International F_3 Trial was comprised of 13 F_3 test populations and two checks, one namely Syrian Local Large was supplied and the other to be added by the cooperator. The material should have provided a wide range of intra- and inter population variation. The cooperators were suggested to make single plant selections from the border rows for their use in breeding program.

Methods and Management

The material comprising 15 entries was sown in a randomised complete block design with 3 replications. Each entry was sown in 3 row plots each 4 m long with inter row spacing of 50 cm accomodating 105 plants per plot. Fourteen sets of the trial were distributed to cooperators in 9 countries and the results were received for 12 sets covering 8 countries. The data on agronomic practices supplied by the cooperators are presented in Table 4.5.1.

Results and Discussion

The data on time to flowering (Table 4.5.2) and time to maturity (Table 4.5.3) revealed that there were very little differences among the different populations averaged over locations. However, the entry means at different locations varied much and it was observed that at Tapioszele in Hungary the populations flowered (54 days) and matured (114 days) at the earliest and at Terbol in Lebanon, these flowered (140 days) and matured (220 days) at the latest. It was also observed that the populations took much longer time to flowering and to maturity under irrigated conditions (Tel Hadya-Irrigated) as compared to rainfed conditions (Tel Hadya-Rainfed). Similarly the plant height was increased under irrigated conditions (Table 4.5.4). The differences among populations for plant height were well pronounced (range 59 to 70 cm) as compared to time to flowering and maturity. At Sids in Egypt the populations expressed maximum plant height (94 cms) whereas at Sidi Bel Abbes in Algeria the mean plant height was only 42 cm. The correlations between the agronomic characters (Table 4.5.5.) exhibited that plant had significant and positive correlation with time to maturity.

The seed yields of the populations (Table 4.5.6) exhibited that Tel Hadya-Rainfed (Syria) was the poor location (888 kg/ha) and the high yielding locations included Sevilla in Spain (4576 kg/ha), Terbol in Lebanon (4396 kg/ha), Tepioszele in Hungary (3641 kg/ha), Sids in Egypt (3533 kg/ha). The coefficient of variation of the experiment was high only for Terbol in Lebanon (60.4%) whereas at other locations it

Table 4.5.1. Agronomic data for different locations in the FBIF₃T during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide or Fungicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Sidi Bel Abbes	16.11.1982	175	15	70			
EGYPT	Sakha	18.11.1982	180					
EGYPT	Sids	21.11.1982	165	37	75		5	Igran
HUNGARY	Tapioszele	11.4.1982	116	88	75			
ITALY	Salerno	9.11.1982	221		120			Trifluralin
LEBANON	Terbol	15.11.1982	222		50		1	Igran
SYRIA	TH-Irrigated	15.11.1982	196		50			Benlate, Calixin M, Actellic
SYRIA	TH-Rainfed	11.12.1982	166		50			Benlate, Calixin M, Fusilade

Table 4.5.2. Time to flowering (days) of entries at different locations in the FBIF₃T during 1982/83.

CROSS NO./ENTRY	ALGERIA		EGYPT		HUNGARY	ITALY	LEBANON	SYRIA		MEAN
	Sidi	Bel Abbes	Sakha	Sids	Tapioszele	Salerno	Terbol	TH-Irrigated	TH-Rainfed	
Local check	108		50	60	51	135	139	134	109	
X81S 49	110		75	75	54	115	140	129	110	101
X81S 50	112		74	75	53	115	140	130	110	101
X81S 54	113		75	78	54	122	140	129	110	103
X81S 38	112		75	75	53	120	140	128	110	102
X81S 23	113		75	80	55	122	140	130	110	103
X81S 27	111		74	77	56	115	140	129	109	101
X81S 42	112		74	73	56	115	141	129	110	101
X81S 45	113		75	75	55	122	139	129	110	102
X81S 115	112		74	77	52	115	140	129	110	101
X81S 124	112		75	77	54	122	140	129	110	102
X81S 184	111		74	73	55	122	140	129	109	102
X81S 4	110		72	70	54	115	140	129	110	100
X81S 6	108		73	72	54	115	140	128	110	100
Syrial Local Large	112		75	72	55	115	140	128	109	101
Location mean	111		73	74	54	119	140	129	110	

Table 4.5.3. Time to maturity (days) of entries at different locations in the FBIF₃T during 1982/83.

CROSS	ALGERIA	EGYPT	HUNGARY	ITALY	LEBANON	SYRIA	MEAN
NO. /ENTRY	Sidi Bel Abbas	Sakha Sids	Tapioszele	Salerno	Terbol	TH-Irrigated TH-Rainfed	
Local Check	175	170 157	113	221	218	196 164	
X81S 49	175	180 160	113	200	220	195 162	176
X81S 50	175	180 160	113	203	218	194 163	176
X81S 54	175	180 163	114	200	220	196 162	176
X81S 38	175	180 160	114	202	221	190 162	176
X81S 23	175	180 163	115	204	220	192 162	176
X81S 27	175	180 160	115	202	221	195 164	177
X81S 42	175	180 160	116	200	218	190 161	175
X81S 45	175	180 162	115	200	219	195 164	176
X81S 115	175	180 162	114	205	219	193 161	176
X81S 124	175	180 162	113	205	220	195 162	177
X81S 184	175	180 163	114	205	219	196 161	177
X81S 4	175	180 160	112	204	219	191 161	175
X81S 6	175	180 160	114	203	220	194 162	176
Syrian Local Large	175	180 165	114	203	222	195 166	178
Location mean	175	179 161	114	204	220	194 162	

Table 4.5.4. Plant height (cm) of entries at different locations in the FBIF₃T during 1982/83.

CROSS NO./ENTRY	ALGERIA		EGYPT	HUNGARY	ITALY ⁽¹⁾	LEBANON	SYRIA		MEAN ⁽²⁾
	Sidi	Bel Abbes	Sids	Tapioszele	Salerno	Terbol	TH-Irrigated	TH-Rainfed	
Local check	40		95	66	High	58	53	48	
X81S 49	40		85	64	Low	59	63	47	60
X81S 50	43		92	64	Medium	62	63	52	63
X81S 54	42		92	64	Medium	52	72	50	62
X81S 38	40		93	65	High	58	66	45	61
X81S 23	47		110	65	Medium	57	64	52	66
X81S 27	38		85	65	Low	57	65	48	60
X81S 42	38		72	66	Low	63	68	45	59
X81S 45	43		85	65	High	60	65	48	61
X81S 115	38		90	66	Medium	63	66	50	62
X81S 124	45		100	64	Medium	60	65	45	63
X81S 184	47		105	64	Medium	68	61	48	66
X81S 4	38		95	66	Medium	60	62	48	62
X81S 6	40		93	65	Medium	65	69	47	63
Syrian Local Large	45		118	68	High	70	71	50	70
Location mean	42		94	65	-	61	65	48	

(1) High > 120 cm, medium 100-120 cm and Low < 100 cm.

(2) It excludes ITALY (Salerno) location.

Table 4.5.5. Correlation (df = 12) among three agronomic characters and seed yield at different locations in the FBIF₃T during 1982/83.

Character	Time to maturity	Plant height	Seed yield
Time to flowering	0.18	0.16	0.24
Time to maturity		0.65*	0.13
Plant height			0.34

* $P \leq 0.05$

Table 4.5.6. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the FBIF₃T during 1982/83.

CROSS NO./ENTRY	ALGERIA		EGYPT		HUNGARY		ITALY		LEBANON		SPAIN		SYRIA				TUNISIA						MEAN					
	Sidi Bel Abbes		Sakha		Sids		Tapioszele		Salerno		Terbol		Sevilla		TH-Irrigated		TH-Rainfed		Beja		El-kef		Mateur		Y		R	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local check	1299	4	1813	11	4898	1	4733	1	1200	13	3778	12	5417	1	302	15	1704	1	1063	11	2285	1	2761	4				
X81S 49	986	14	1553	13	3204	11	3733	8	1233	11	6074	2	3222	15	<u>2883</u>	6	580	14	1402	2	1599	14	1828	14	2358	9		
X81S 50	1056	12	1960	6	3602	9	3622	9	1477	5	4321	6	4138	12	<u>2568</u>	9	1037	3	1093	9	1796	9	1694	15	2364	8		
X81S 54	1243	6	2330	2	3630	8	2667	14	1247	10	6170	1	4945	5	<u>3222</u>	4	1012	5	1432	1	1852	7	2621	7	2698	1		
X81S 38	1153	9	1930	8	3917	3	4378	3	<u>1593</u> ⁽¹⁾	2	4993	4	5055	4	<u>2772</u>	7	716	10	1366	3	2158	2	2189	12	2685	2		
X81S 23	1201	7	1887	9	3852	4	2889	12	1230	12	3457	13	3888	13	<u>2642</u>	8	840	7	971	12	1902	5	2727	5	2291	11		
X81S 27	1250	5	1537	14	2657	13	2244	15	1090	14	4111	10	4221	11	<u>2062</u>	13	580	14	821	14	1566	15	2488	8	2052	14		
X81S 42	951	15	1430	15	3398	10	4089	5	1333	7	3284	14	3500	14	<u>2302</u>	12	617	13	1071	10	1652	13	3266	2	2241	13		
X81S 45	1340	2	2337	1	2907	12	4022	6	1413	6	5611	3	4333	10	<u>3377</u>	2	667	11	1196	7	1746	11	2683	6	2636	4		
X81S 115	1160	8	2317	3	3815	5	3933	7	<u>1603</u>	1	4025	11	4917	6	<u>3265</u>	3	988	6	1355	4	1963	3	2272	11	2634	6		
X81S 124	1076	11	2030	4	2389	15	4133	4	1263	9	2648	15	5195	3	<u>2438</u>	11	765	8	1152	8	1757	10	2277	10	2260	12		
X81S 184	1681	1	1957	7	4611	2	2778	13	1273	8	4148	9	5333	2	<u>2988</u>	5	1037	3	971	12	1857	6	3500	1	2678	3		
X81S 4	1035	13	1707	12	3806	6	3422	11	1483	4	4222	8	4861	8	<u>1994</u>	14	642	12	1271	6	1693	12	2160	13	2358	9		
X81S 6	1083	10	1853	10	3750	7	3556	10	1487	3	4785	5	4695	9	<u>2543</u>	10	765	8	1355	4	1963	3	2344	9	2515	7		
Syrian Local Large	1306	3	2017	5	2556	14	4422	2	953	15	4311	7	4917	6	<u>4278</u>	1	1370	2	816	15	1836	8	2844	3	2636	4		
Location mean	1188		1910		3533		3641		1325		4396		4576		2642		888		1156		1842		2510					
C.V.%	21.7		23.0		29.9		7.2		15.7		60.4		-		17.4		24.1		22.2		12.0		32.4					
L.S.D. 5%	NS		NS		NS		436		347		NS		NS		767		358		NS		368		NS					
S.E.	148.7		254.3		610.4		150.3		120.2		1535.8		-		264.7		123.7		147.9		127.1		468.9					
No. of entries significantly exceeding the local check	-		-		-		0		2		-		-		14		0		-		0		-					

(1) Seed yield values underlined, significantly exceeded the local check.

was less than 30 per cent. The ANOVA for the experimental design indicated that the differences between the populations were significant only for Tapioszele in Hungary, Salerno in Italy, Tel Hadya-Irrigated and Rainfed in Syria, and El-Kef in Tunisia. At Salerno in Italy two populations namely X81S 115 and X81S 38 gave the yields significantly higher than the local check. Similarly at Tel Hadya-Irrigated in Syria, 13 populations gave significantly higher yield than the local check but Syrian Local Large (the second check) was still the best.

On the basis of average performance of each population over locations, the crosses X81S 54, X81S 38 and X81S 184 were the heaviest yielders. The perusal of the Table 4.5.7 revealed that local check ranked one in six, and four in two locations.

4.6. FABA BEAN INTERNATIONAL F_3 TRIAL - EARLY (FBIF₃T-E)

Material

The Faba Bean International F_3 Trial - Early (FBIF₃T-E) comprised of ten F_3 populations from different crosses and two checks. One check namely Syrian Local Large was supplied and the other was to be added by the cooperator. The material was supposed to provide a wide range of variability within and between the F_3 populations to allow the cooperators to effect selections under their local conditions. The cooperators were suggested to use border rows for single plant selections for their use in breeding program.

Methods and Management

The suggested experimental design was randomised complete block with 3 replications. Each entry was sown in a 3 row plot with a row length of 4 m with inter row spacings of 50 cm accomodating 105 seeds per plot. Fifteen sets of trial were distributed to cooperators in 9 countries and the results were reported from 12 sets covering 7 countries. The agronomic details of the trials reported by the cooperators are given in Table 4.6.1.

Results and Discussion

The data on time to flowering, time to maturity and plant height are given in Tables 4.6.2, 4.6.3 and 4.6.4 respectively. The population performance at most of the locations revealed that the F_3 crosses were, in general, late in flowering as compared to the local check except at Granerous in Chile, Salerno in Italy, Douyet in Morocco and Tel Hadya-Rainfed in Syria. Sids and Gemmiza in Egypt were the locations where the entries flowered at the earliest. On the basis of mean over locations, the cross X81S 3 was the earliest in flowering.

The time to maturity ranged from 176 days for X81S 3 to 180 days for X81S 125. Further the populations matured earliest at Douyet in Morocco (152 days) and followed Sids and Gemmiza (Egypt), Granerous

Table 4.5.7. The five heaviest seed yielding entries at the individual locations in the FBIF₃T during 1982/83.

RANK	ALGERIA	EGYPT		HUNGARY	ITALY	LEBANON	SPAIN	SYRIA		TUNISIA		
	Sidi Bel Abbes	Sakha	Sids	Taploszele	Salerno	Terbol	Sevilla	TH-Irrigated	TH-Rainfed	Beja	El-Kef	Mateur
	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY
1	X81S 184	X81S 45	Local check	Local check	X81S 115	Local check	Local check	Syrian Local Large	Local check	X81S 54	Local check	X81S 184
2	X81S 45	X81S 54	X81S 184	Syrian Local Large	X81S 38	X81S 49	X81S 184	X81S 45	Syrian Local Large	X81S 49	X81S 38	X81S 42
3	Syrian Local large	X81S 115	X81S 38	X81S 38	X81S 6	X81S 45	X81S 124	X81S 115	X81S 50	X81S 38	X81S 115	Syrian Local Large
4	Local check	X81S 124	X81S 23	X81S 124	X81S 4	X81S 38	X81S 38	X81S 54	X81S 184	X81S 6	X81S 6	Local check
5	X81S 27	Syrian Local large	X81S 115	X81S 42	X81S 50	X81S 6	X81S 54	X81S 184	X81S 54	X81S 115	X81S 23	X81S 23

(1) The brackets indicate entries having the same rank.

Table 4.6.1. Agronomic data for different locations in the FBIF₃T-E during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide or fungicide
				N	P ₂ O ₅	K ₂ O		
CHILE	Graneros	28.6.1983	170	48	110			Captan
EGYPT	Gemmiza	25.11.1982	168	35	71			
EGYPT	Sids	21.11.1982	165	37	75		5	Igran
ITALY	Bari	25.11.1982	176		100			
ITALY	Salerno	9.11.1982	221		120			Trifluralin
LEBANON	Terbol	14.11.1982	228		50		1	Igran
MOROCCO	Douyet	12.12.1982	164	30	60	80		
SYRIA	TH-Irrigated	15.11.1982	198		50			Benlate, Calixin M, Actellic
SYRIA	TH-Rainfed	11.12.1982	169		50			Benlate, Calixin M, Actellic, Fusilade

Table 4.6.2. Time to flowering (days) of entries at different locations in the FBIF₃T-E during 1982/83.

CROSS NO./ENTRY	CHILE	EGYPT		ITALY		LEBANON	MOROCCO	SYRIA		MEAN
	Graneros	Gemmiza	Sids	Bari	Salerno	Terbol	Douyet	TH-Irrigated	TH-Rainfed	
Local check	95	60	60	107	135	140	93	131	110	
X81S 12	85	78	77	109	122	142	93	133	110	105
X81S 19	90	79	80	111	122	143	78	133	110	105
X81S 25	85	78	75	109	115	141	93	132	110	104
X81S 32	85	78	75	108	122	140	85	132	110	104
X81S 34	90	78	75	108	115	143	85	133	110	104
X81S 56	95	81	80	111	125	141	85	132	110	107
X81S 106	90	79	75	109	115	141	85	130	110	104
X81S 125	90	80	75	110	122	142	78	133	110	104
X81S 3	80	64	65	104	115	141	93	128	109	100
X81S 10	80	70	67	105	115	141	93	132	108	101
Syrian local large	90	78	80	108	125	140	85	128	110	105
Location mean	88	75	74	108	121	141	87	131	110	

Table 4.6.3. Time to maturity (days) of entries at different locations in the FBIF₃T-E during 1982/83.

CROSS NO./ENTRY	CHILE	EGYPT		ITALY		LEBANON	MOROCCO	SYRIA		MEAN
	Graneros	Gemmiza	Sids	Bari	Salerno	Terbol	Douyet	TH-Irrigated	TH-Rainfed	
Local check	170	157	155	172	221	220	164	197	168	
X81S 12	160	164	162	173	203	224	164	197	163	179
X81S 19	165	166	165	175	206	222	144	198	168	179
X81S 25	160	163	162	173	202	225	164	197	164	179
X81S 32	160	164	162	173	203	219	144	197	161	176
X81S 34	165	163	160	173	202	225	144	196	161	177
X81S 56	170	168	165	174	204	221	144	196	166	179
X81S 106	165	164	163	173	205	226	144	196	168	178
X81S 125	165	166	163	176	207	228	144	198	169	180
X81S 3	155	157	160	173	199	218	164	197	161	176
X81S 10	155	161	160	173	204	225	164	196	161	178
Syrian local large	165	166	165	176	207	224	144	197	166	179
Location mean	163	163	162	174	205	223	152	197	165	

Table 4.6.4. Plant height (cm) of entries at different locations in the FBIF₃T-E during 1982/83.

CROSS NO./ENTRY	CHILE	EGYPT		ITALY ⁽¹⁾		LEBANON	SYRIA		MEAN ⁽²⁾
	Graneros	Gemmiza	Sids	Bari	Salerno	Terbol	TH-Irrigated	TH-Rainfed	
Local check	110	70	93	83	High	58	77	48	
X81S 12	120	90	120	75	Medium	57	72	48	83
X81S 19	120	75	112	72	Medium	58	65	50	79
X81S 25	120	87	108	77	Medium	59	62	48	80
X81S 32	110	80	110	77	Medium	50	70	48	78
X81S 34	113	80	117	76	Medium	50	70	45	79
X81S 56	103	78	100	82	Medium	62	67	43	76
X81S 106	110	75	110	73	Medium	53	63	45	76
X81S 125	125	82	112	80	Medium	61	77	48	84
X81S 3	107	77	102	71	Medium	55	66	45	75
X81S 10	123	90	112	73	High	57	61	47	80
Syrian local large	110	90	117	89	Medium	60	73	45	83
Location mean	114	81	109	77	-	57	69	47	

(1) High >120 cm and medium 100-120 cm.

(2) It excludes ITALY (Salerno) location.

(Chile) and Tel Hadya-Rainfed (Syria). Plant heights at Granerous in Chile (114 cm) and Sids in Egypt (109 cm) were maximum and Tel Hadya-Rainfed in Syria (47 cm) and Terbol in Lebanon (57 cm) were minimum. The location means for entries varied from 75 cm for X81S 3 to 84 cm for X81S 125. As in the previous trials, the plant height was positively and significantly correlated with time to maturity (Table 4.6.5).

The seed yields of the entries at different locations are given in Table 4.6.6. The location means revealed that Salerno in Italy recorded the highest yield of 7778 kg/ha which was followed by Terbol in Lebanon (6001 kg/ha) and Granerous in Chile (5786 kg/ha). The coefficient of variation for the experiment varied from 12.2 per cent for Bari in Italy to 56.8 per cent for Terbol in Lebanon. The ANOVA for the experimental design revealed that the difference between the entries in the trial were significant at Bari and Salerno in Italy, Douyet in Morocco, Tel Hadya-Irrigated in Syria and Beja in Tunisia. At all these locations, none of the populations significantly exceeded the local check but some of the populations were statistically as good as local checks. Since these populations are segregating, there is every possibility of getting some plants which are superior to the checks and could result superior pure lines from the populations which are as good as local check. The five heaviest seed yielding entries at the individual locations (Table 4.6.7.) thus need special attention.

4.7. FABA BEAN INTERNATIONAL DISEASE SCREENING NURSERIES

Faba bean entries having a moderate to a high level of resistance to chocolate spot, Ascochyta blight and rust were identified in the screening program of ICARDA's germplasm collection at Lattakia sub-station in Syria. Seeds from these resistant sources were multiplied and used to form the faba bean international chocolate spot, Ascochyta blight, and rust screening nurseries. These nurseries were provided for the first time, for the 1982/83 season.

4.7.1. FABA BEAN INTERNATIONAL CHOCOLATE SPOT NURSERY (FBICSN)

This nursery was tested in Syria, Egypt and England. Chocolate spot reaction of different faba bean genotypes in this nursery ranged from highly resistant to moderately resistant, depending on location (Table 4.7.1). Of the 33 entries tested only 3 namely, BPL 710(Sel 82 Lat. 3099), BPL 1196(Sel 82 Lat. 3139), and ILB 938, were rated resistant or highly resistant across 3 locations. In England 14 entries were rated more resistant than their widely grown commercial faba bean cultivar Maris Bead, whereas in Egypt 30 entries were rated more resistant than their local faba bean cultivar Rebaya-40. However, in Syria all entries included in this nursery were rated more resistant

Table 4.6.5. Correlation (df = 9) among three agronomic characters and seed yield in the FBIF₃T-E during 1982/83.

Character	Time to maturity	Plant height	Seed yield
Time to flowering	0.56	0.21	0.37
Time to maturity		0.63*	-0.20
Plant height			-0.40

* $P \leq 0.05$

Table 4.6.6 . Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the FBIF₃T-E during 1982/83.

CROSS NO./ENTRY	CHILE		EGYPT				ITALY				LEBANON		MOROCCO		SYRIA				TUNISIA						MEAN	
	Graneros		Gemiza		Sids		Bari		Salerno		Terbol		Douyet		TH-Irrigated		TH-Rainfed		Beja		El-Kef		Mateur			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Local check	7583	1	4583	1	4426	3	4378	2	8089	5	3179	11	5667	3	3374	2	1111	2	732	3	2114	1	1817	9		
X81S 12	4470	12	2889	7	4417	4	3389	10	7622	9	7230	3	4000	11	2247	7	1049	5	665	6	1677	7	2344	7	3500	8
X81S 19	5243	10	2250	10	2528	12	3200	11	8733	3	6519	6	4250	10	1827	10	827	11	566	8	1516	11	1792	10	3271	10
X81S 25	5643	8	2139	11	3843	6	4056	3	6644	10	7963	2	5500	4	2033	8	914	7	427	12	1806	7	1478	12	3537	6
X81S 32	5730	6	3000	6	2750	10	4044	4	7733	7	8667	1	3333	12	2263	6	852	10	727	4	1838	6	2361	6	3608	5
X81S 34	5470	9	3917	3	3519	9	3989	7	8422	4	7012	4	4333	9	2321	5	877	8	471	10	1960	3	2750	3	3753	3
X81S 56	6173	2	4500	2	3657	7	3900	8	8067	6	6370	7	6500	1	3276	3	1148	2	721	5	1952	4	2589	4	4071	1
X81S 106	6173	2	2083	12	4481	2	4000	6	9889	1	4778	9	5000	7	2798	4	877	8	988	1	1647	10	2017	8	3728	4
X81S 125	6260	4	2861	8	2639	11	3033	12	7689	8	2519	12	4417	8	1317	12	704	12	443	11	1277	12	3272	1	3036	11
X81S 3	5230	11	3028	5	4019	5	4011	5	4178	12	6963	5	6250	2	1951	9	1123	3	635	7	1843	5	2439	5	3473	9
X81S 10	5670	7	2583	9	4907	1	3633	9	6489	11	6111	8	5250	5	1449	11	938	6	488	9	1674	9	3072	2	3522	7
Syrian local large	5780	5	3750	4	3593	8	4478	1	9778	2	4704	10	5167	6	3399	1	1309	1	882	2	2109	2	1733	11	3890	2
Location mean	5786		3132		3731		3843		7778		6001		4972		2355		977		646		1788		2305			
C.V.%	17.2		36.4		34.3		12.2		18.4		56.8		19.5		15.9		28.8		30.2		17.3		29.2			
L.S.D. 5%	NS		NS		NS		795		2422		NS		1640		633		NS		331		NS		NS			
S.E.	575		659.5		741.0		271.4		826.6		1971.7		559.5		216.2		162.9		112.8		178.5		388.5			
No. of entries significantly exceeding the local check	-		-		-		0		0		-		0		0		-		0		-		-			

Table 4.6.7. The five heaviest seed yielding entries at the individual locations in the FBIF₃T-E during 1982/83.

RANK	CHILE	EGYPT		ITALY		LEBANON
	Garnerous	Qemmiza	Sids	Bari	Salerno	Tehbol
	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY
1	Local check	Local check	X81S 10	Syrian local large	X81S 106	X81S 32
2	X81S 56	X81S 56	X81S 106	Local check	Syrian local large	X81S 25
3	X81S 106	X81S 34	Local check	X81S 25	X81S 19	X81S 12
4	X81S 125	Syrian local large	X81S 12	X81S 32	X81S 34	X81S 34
5	Syrian local large	X81S 3	X81S 3	X81S 3	Local check	X81S 3

RANK	MOROCCO	SYRIA		TUNISIA		
	Douyet	TH-Irrigated	TH-Rainfed	Beja	El-Kef	Mateur
	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY	CROSS NO./ ENTRY
1	X81S 56	Syrian local large	Syrian local large	X81S 106	Local check	X81S 125
2	X81S 3	Local check	X81S 56	Syrian local large	Syrian local large	X81S 10
3	Local check	X81S 56	X81S 3	Local check	X81S 34	X81S 34
4	X81S 25	X81S 106	Local check	X81S 32	X81S 56	X81S 56
5	X81S 10	X81S 34	X81S 12	X81S 56	X81S 3	X81S 3

(1) The brackets indicate entries having the same rank.

than the local faba bean cultivar ILB 1814. In this nursery, chocolate spot resistance has been confirmed in at least 4 new additional sources in England (Sel. 82 Lat. 3022, -3032, -3139, and -3088) and in Egypt (Sel. 82 Lat. 3032, -3099, -3088, and -3042). Confirmation of resistance in these new sources provides broad based resistance sources for breeding.

Table 4.7.1. Chocolate spot reaction of certain faba bean entries in FBICSN in Syria, Egypt and England during 1982/83.

Sel. 82 Lat.	BPL	Disease reaction*			Average over locations
		Syria	Egypt	England	
3019	110	3.0	3.0	5.5	3.8
3022	112	1.0	3.0	4.5	2.8
3032	261	3.0	2.0	4.5	3.2
3038	266	3.0	2.0	6.5	3.8
3042	274	3.0	2.0	5.5	3.5
3099	710	1.0	2.0	3.0	2.0
3137	1179	1.0	2.0	6.5	3.2
3139	1196	1.0	3.0	3.0	2.3
3151	1278	1.0	5.0	6.0	4.0
3152	1390	1.0	2.0	6.0	3.0
3377	1821	3.0	3.0	5.0	3.7
3088	472	3.0	5.0	4.5	4.2
3169	1538	3.0	3.0	5.0	3.7
3186	1544	3.0	3.0	5.5	3.8
3198	1550	3.0	3.0	5.5	3.8
3204	1556	3.0	3.0	5.0	3.7
3243	1648	3.0	3.0	5.0	3.7
3299	1749	4.0	3.0	5.0	4.0
3322	1764	3.0	4.0	5.0	4.0
3368	1802	3.0	2.0	5.0	3.3
3387	1832	3.0	2.0	5.5	3.5
3407	1876	4.0	2.0	5.0	3.7
-	ILB 938	3.0	2.0	2.5	2.5
Maris bead	-	NA**	N.A.	5.5	-
Syrian local (ILB 1814)	-	5.0	4.0	5.5	4.8
Rebaya-40	-	7.0	5.0	8.0	6.7

* Disease readings were taken on a 1-9 rating scale, where 1= highly resistant, 3= resistant, 5= moderately resistant, 7= susceptible, 9= highly susceptible

** NA= Disease reaction not available.

4.7.2. FABA BEAN INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (FBIABN)

This nursery was provided for testing in Syria, England, Tunisia, Algeria and Canada. Unfortunately data were received only from Syria, England and Canada.

Ascochyta blight reaction of entries included in this nursery ranged from highly resistant to susceptible depending on the location and isolate used for inoculation (Table 4.7.2). Of the 20 entries

Table 4.7.2. Ascochyta blight reaction of certain faba bean entries in FBIABN in Syria, England and Canada during 1981-83.

Sel.80 -Lat.	BPL/ ILB	Disease reaction*						
		Syria		England		Canada Isolates		
		1981	1982	1983	1983	1982	1983	
						A	Y	X
14435	472	2.0	3.0	2.0	R	S	MR	NT
14422	460	3.0	3.0	3.0	R	MR	R	NT
14434	471	3.5	3.0	3.0	R	MR	R	R
14986	ILB 161	3.0	2.0	3.0	R	MR	MR	R
14998	ILB 382	3.0	3.0	3.5	MR	S	MR	NT
15035	ILB 549	3.5	2.0	2.0	R	S	R	NT
70015	ILB 37	4.0	3.0	3.0	HR	MR	MR	NT
14200	230	3.0	3.0	3.5	R	S	S	NT
14336	365	5.0	5.0	3.5	R	R	MR	NT
14339	369	5.0	3.5	3.5	R	S	MR	NT
14398	435	5.0	5.0	5.0	R	S	S	NT
14399	436	5.0	5.0	5.0	R	R	S	NT
14427	465	3.0	3.5	3.0	HR	R	R	NT
BPL 161	161	9.0	9.0	9.0	R	MR	MR	NT
BPL 2485	2485	3.0	3.5	3.5	R	R	R	R
Giza-4	-	9.0	9.0	9.0	MR	S	S	NT
Syr. local	ILB 1814	7.0	7.0	7.0	R	MR	MR	NT
Sel.82-Lat.3099	710	5.0	5.5	5.0	R	S	S	NT
Sel.82-Lat.3137	1179	5.0	5.0	5.0	R	MR	MR	NT
A ₂ (X72TA 46)	-	3.0	3.0	3.0	HR	R	R	NT
Effordia (Canada Local)	-	-	-	-	-	S	S	S
Hylon (England Local)	-	-	-	-	MR	-	-	-

* Disease readings were taken on a 1-9 rating scale, where, 1= Highly resistant (HR), 3= Resistant (R), 5= Moderately resistant (MR), 7= Susceptible (S) and 9= Highly susceptible (HS).

** NT = Not Tested.

included in this nursery only 7 (Sel. 80 Lat. -14422, -14434, -14986, -70015, -14427, BPL 2485 and A₂) were rated highly resistant to moderately resistant in Syria, England and Canada. In Syria 17 entries were rated more resistant than the local check (ILB 1814), whereas in Canada 11 entries were rated more resistant than their local check (Erfordia) across all three isolates. It is important to note that BPL 2485 was resistant to all three isolates in Canada as well as to the mixed inoculum in Syria. In England disease pressure was relatively low as it is evident from disease reaction of the local faba bean cultivar Hylon. However 3 entries (ILB 37, BPL 465 and A₂) were rated highly resistant.

In this nursery *Ascochyta* blight resistance has been confirmed in at least 2 new additional sources in Canada and 3 new sources in England.

4.7.3. **FABA BEAN INTERNATIONAL RUST NURSERY (FBIRN)**

This nursery was provided for testing in Syria, Egypt, Canada, Tunisia and Algeria. The data were, however, obtained only from Syria and Egypt. Rust reaction of entries in this nursery were more or less similar in both Syria and Egypt. Of the 24 entries included in this nursery only 10 were rated resistant or highly resistant in both the countries (Table 4.7.3). In Syria 21 entries were rated more resistant than the local check (ILB 1814), whereas in Egypt 22 were rated more resistant than their local check (Rebaya-40). In this nursery rust resistance has been confirmed in at least 18 new additional sources in Egypt. These are BPL 266, -710, -274, -460, -461, -470, -472, -1055, -1056, -1058, -1107, -1538, -1543, -1547, -1548, -1763, -1764, and F₆. It is important to note that BPL 1055 (Sel 82 Lat. 3114) was highly resistant, both in Syria and Egypt.

4.8. **FABA BEAN INTERNATIONAL OROBANCHE NURSERY (FBION)**

Faba Bean International Orobanche Nursery was distributed to the cooperators for the first time during 1982/83. The main objective of the nursery was to identify stable sources of resistance to Orobanche.

Material and Method

The material comprised of 15 test entries and two checks, one susceptible and one resistant. The test entries were identified as resistant at Kafr Antoon, a research sub-station of ICARDA, in Syria. This station has a very high natural infestation of Orobanche. The experiment was suggested to be sown in randomised complete block design with four replications in 4 row plots 1 m long. Forty seeds per plot

Table 4.7.3. Rust reaction of certain faba bean entries in FBIRN in Syria and Egypt during 1982/83.

Sel. 82 Lat.	BPL	Disease reaction*	
		Syria	Egypt
3137	1179	MR	S
3099	710	MR	MR
3038	266	R	R
3042	274	R	R
3071	460	MR	MR
3073	461	R	R
3084	470	MR	MR
3086	471	HS	S
3088	472	MR	MR
3114	1055	HR	HR
3116	1056	R	HR
3118	1058	R	R
3123	1107	MR	MR
3169	1538	HR	R
3184	1543	HR	R
3193	1547	MR	MR
3196	1548	MR	R
3318	1763	MR	MR
3322	1764	MR	MR
7002	F ₆	MR	MR
7004	F ₁₇	S	S
Sel.80 Lat.15563-3	-	R	R
Sel.80 Lat.15563-1	-	MR	MR
ILB 1814 (Syr. Loc.)	-	HS	HS
ILB 938	-	R	HR
Giza-3	-	-	MR
Rebaya-40	-	-	S

* Disease readings were taken on a 1-9 rating scale where 1= Highly resistant(HR), 3= Resistant(R), 5= Moderately resistant(MR), 7= Susceptible(S) and 9= Highly susceptible(HS).

were suggested for sowing. It was advised to plant the material in an area known to be heavily infested with Orobanche.

Results and Discussion

Nine sets of FBION were distributed to cooperators in 7 countries, however, the results were reported from six locations. At Shandweel in Egypt all the entries except Giza 402 were killed due to very high infestation of Orobanche. The data on number of Orobanche per plot and weight of Orobanche per plot (Table 4.8.1) revealed that number of Orobanche was very high at Lattakia which was followed by Cordoba and Tel Hadya. The analysis of variance of the experimental design revealed that there were significant differences among the entries with respect to number of Orobanche and weight of Orobanche per plot. The data revealed that Syrian Local Large was the most susceptible on the basis of overall location mean and it was among the top five having highest number of Orobanche per plot and BPL 587 and BPL 811 had least number of Orobanche.

Table 4.8.1. Number of Orobanche per plot (No.) and weight of Orobanche per plot (WT) for the entries in FBION during 1982/83.

ENTRY	ORIGIN	EGYPT				SYRIA				MOROCCO [†]				SPAIN			
		Ismailia				Lattakia				Douyet				Cordoba			
		No. of	R	Weight	R	No. of	R	Weight	R	No. of	R	Weight	R	No. of	R	Weight	R
		Orobanche				Orobanche				Orobanche				Orobanche			
Syrian Local Large	SYRIA	12	1	48	4	237	1	187	3	56	3	58	2	0.51	3	-	-
ILB 1278 (Giza F 402)	EGYPT	4	8	19	7	72	12	52	13	15	14	17	14	0.32	9	-	-
BPL 4 Early	JORDAN	7	3	69	2	140	7	130	8	31	6	29	8	0.35	7	-	-
BPL 54 Late	IRAQ	6	4	119	1	98	11	147	6	35	5	26	10	0.21	10	-	-
BPL 108	GERMANY	2	14	10	13	102	8	80	11	57	2	46	3	0.66	1	-	-
BPL 331	TURKEY	3	12	9	14	162	4	153	5	13	16	11	16	0.14	14	-	-
BPL 472	LEBANON	0	16	1	17	169	3	223	1	19	12	20	11	0.21	10	-	-
BPL 485	SPAIN	9	2	69	2	102	8	103	9	31	6	31	7	0.58	2	-	-
BPL 490	SPAIN	4	8	11	12	142	6	117	7	31	6	32	6	0.41	5	-	-
BPL 553	EGYPT	3	12	20	6	99	10	95	10	30	9	35	5	0.17	13	-	-
BPL 562	EGYPT	5	6	16	11	45	17	50	14	19	12	18	13	0.08	17	-	-
BPL 582	EGYPT	4	8	30	5	58	15	59	12	22	11	19	12	0.49	4	-	-
BPL 587	EGYPT	4	8	18	9	62	14	49	16	11	17	10	17	0.10	16	-	-
BPL 730	SUDAN	1	15	4	16	53	16	39	17	28	10	27	9	0.18	12	-	-
BPL 811	ETHIOPIA	5	6	18	9	69	13	50	14	15	14	13	15	0.13	15	-	-
Local check (Resi.)	-	6	4	19	7	177	2	187	3	65	1	67	1	0.33	8	-	-
Local check (Susc.)	-	0	16	5	15	145	5	213	2	54	4	42	4	0.36	6	-	-
Mean		4		28		114		115		31		30		0.31			36
C.V.%		139.7		144.7		52.4		63.1		37.8		40.5		121.5			58.8
L.S.D. at 5%		9		58		84		103		17		17		0.53			30

* The results are based on number of Orobanche per plant.

5. LENTIL INTERNATIONAL TRIALS AND NURSERIES

Twelve lentil international trials and nurseries were available to cooperators in the 1982/83 season. These included yield trials, screening nurseries, F3 trials and agronomy trials. Cooperators were free to use these materials directly or indirectly for the improvement of lentils in their own national programs. The results reported from cooperators are presented in the following pages.

5.1. LENTIL INTERNATIONAL YIELD TRIAL - LARGE SEED (LIYT-L)

Material

The Lentil International Yield Trial - Large Seed comprised of 20 test entries originating from 11 countries and one local check to be supplied by the cooperator. The test entries were selections from germplasm with a seed size greater than 4.5g/100 seeds, which had performed well in the Lentil International Screening Nursery - Large Seed in the previous year.

Methods and Management

The material was suggested to be sown in a randomised complete block design with 3 replications. The recommended plot size was four rows, each 4 m long with inter row spacing of 25 cm and a planting density of 200 plants/m².

Thirty-five sets of the LIYT-L were distributed to 27 cooperators in 18 countries. The results were returned from 26 locations in 16 countries and were analysed. The agronomic data provided by the cooperators are given in Table 5.1.1.

Results and Discussion

The location mean for time to flowering (Table 5.1.2) varied from 57 days at Pullman in USA, where the days were longest, to 168 days at Graneros in Chile. Across the entries, Precoz was the earliest to flower in 100 days and was followed by ILL 857, ILL 4606 and ILL 20 which flowered in 103 days. The entry ILL 323 was, however, the latest and took 115 days to flowering. Similarly the data on time to maturity (Table 5.1.3) also revealed that Precoz was the earliest in maturity at most of the locations and was followed by ILL 8, ILL 20, ILL 842 and ILL 857. However, ILL 323 was the latest in maturity. The entry means at different locations revealed that the entries matured earliest in 116 days at San Lorenzo in Peru and latest at Graneros in Chile (225 days).

The data on plant height (Table 5.1.4) revealed that mean plant height varied from 21 cm at Catamarca in Argentina and La Molino in Peru to 45 cm at Graneros in Chile. The mean height of the entries overall locations varied from 28 cm to 32 cm.

Table 5.1.1. Agronomic data for different locations in the LIYT-L during 1982/83.

COUNTRY	LOCATION	Planting Date	Crop Duration (days)	Fertilizer (kg/ha)			Crop Husbandry	
				N	P ₂ O ₅	K ₂ O	Irrigation	Insecticide/ fungicide
ALGERIA	Sidi Bel Abbes	21.11.1982	180	15	70			
ARGENTINA	Catamarca	24.5.1983	158					
AUSTRALIA	Wagga Wagga	3.6.1983	199		36			Stampede, Sumicidin
CHILE	Graneros	16.4.1983	231					5 Treflan
EGYPT	Gemmiza	27.11.1982	166	23.8	71.4		2	
EGYPT	Sakha	-	160					
IRAN	Karaj	5.3.1983	111					6 Diazinon
ITALY	Leonessa	9.5.1983	103					
JORDAN	Marow	2.11.1982		15	40			
LEBANON	Terbol	22.11.1982	206		50			
LIBYA	El-Marj	11.12.1982	164	18	46			
LIBYA	Kufra	16.11.1982	188					
MOROCCO	Marchouch	23.11.1982			30	15		
MOROCCO	Sidi Laidi	24.11.1982	152	30	40	50		
PERU	La Molina	11.11.1982	177					
PERU	S. Lorenzo	30.10.1982	125					
SYRIA	Izra'a	15.12.1982	146	30	50			
SYRIA	Tel Hadya	16.11.1982	176		50			
USA	Pullman	20.4.1983	127					Tolban, Imidan, Cygon

Table 5.1.2 . Time to flowering (days) of entries at different locations in the LIYT-L during 1982/83.

ENTRY	ORIGIN	ALGERIA	ARGENTINA	AUSTRALIA	CHILE	EGYPT	IRAN	ITALY	JORDAN	LEBANON	LIBYA	MOROCCO	PERU		SYRIA		USA	MEAN			
Selection	ILL	Sidi Del Abbas	Catamarca	Wagga Wagga	Graneros	Gemiza	Sakha	Karaj	Leonessa	Marow	Terbol	El-Marj Kufra	Sidi Laidi	La Molina	San Lorenzo	Izra'a	Tel Nadya	Pullman			
78S 26002	8	Jordan	119	101	119	170	103	85	72	50	154	148	111	96	120	73	68	116	123	54	105
74TA 9	15	Jordan	124	81	126	172	109	113	74	62	159	156	112	116	126	85	85	116	130	58	111
-	20	Jordan	119	95	119	164	108	83	68	54	154	145	105	97	110	75	57	116	122	55	103
74TA 19	28	Syria	126	115	124	170	109	105	74	62	157	154	112	106	120	80	80	116	127	58	111
74TA 20	30	Syria	124	103	127	174	110	108	75	62	157	154	111	109	120	83	87	115	127	59	111
78S 26064	193	Syria	126	106	125	171	109	102	75	61	157	156	112	111	126	85	87	116	127	57	112
78S 26066	193	Syria	124	103	126	172	107	105	75	61	157	155	112	102	122	87	87	116	127	58	111
74TA 264	254	Greece	124	115	126	171	104	103	74	63	155	156	113	116	126	83	85	116	129	57	112
74TA 276	262	Hungary	124	99	121	169	105	107	72	57	156	154	109	104	120	77	75	116	127	57	108
76TA 66136	323	Yugoslavia	126	115	131	175	112	115	80	64	170	159	116	96	126	88	90	116	135	63	115
-	707	Hungary	124	115	122	170	104	107	72	58	156	153	109	106	120	80	85	116	126	57	110
78S 26181	841	Lebanon	124	115	125	171	107	115	72	56	156	154	111	117	126	88	90	116	127	56	113
-	842	Lebanon	119	89	120	166	108	85	69	56	155	146	104	100	110	75	72	116	123	54	104
-	851	Lebanon	119	89	119	166	103	87	70	54	159	147	107	96	110	80	72	116	124	54	104
-	857	Algeria	119	89	119	164	106	82	68	56	156	147	106	97	110	77	72	117	122	54	103
-	947	Iran	126	95	127	172	111	108	76	64	157	157	110	112	122	82	78	115	134	56	111
Syrian local 4400	Syria	124	103	124	172	109	108	73	63	155	154	107	112	126	88	88	115	127	57	111	
-	4523	Syria	122	95	123	171	105	95	71	59	162	150	109	105	122	78	73	115	124	57	108
Precor 4605	Argentina	112	85	117	135	87	80	69	53	169	145	92	95	106	77	82	116	117	55	100	
Nablus 4606	-	119	89	120	164	103	88	68	54	154	145	105	97	110	77	72	116	123	54	103	
Local check	-	-	119	119	129	173	92	82	73	65	155	158	-	-	126	85	88	116	126	58	
Location mean		122	101	123	168	105	98	72	59	158	152	109	105	119	81	80	116	126	57		

Table 5.1.3. Time to maturity (days) of entries at different locations in the LIYT-L during 1982/83.

ENTRY		ALGERIA	ARGENTINA		AUSTRALIA	CHILE	EGYPT		IRAN	ITALY	LEBANON	LIBYA		MOROCCO	PERU		SYRIA		USA	MEAN
Selection	ILL	Sidi Bel Abbes	Catamarca	Mendoza	Wagga Wagga	Graneros	Cemiza	Sakha	Karaj	Leonessa	Terbol	El-Marj	Kufra	Sidi Laldi	La Molina	San Lorenzo	Izra'a	Tel Hadya	Pullman	
78S 26002	8	174	147	141	180	224	154	150	109	96	199	149	161	149	133	110	145	161	122	150
74TA 9	15	179	132	135	194	228	160	150	104	101	204	156	169	152	153	122	144	167	-	156
-	20	174	148	141	187	225	159	150	103	98	206	147	168	144	140	109	142	159	122	151
74TA 19	28	179	143	141	196	225	160	150	104	102	204	155	169	149	153	116	144	165	125	154
74TA 20	30	179	148	140	195	224	164	150	106	101	204	156	171	149	160	120	144	164	125	156
78S 26064	193	179	148	140	194	223	162	150	103	102	205	156	171	152	157	118	143	165	127	155
78S 26066	193	177	148	141	192	225	161	150	104	100	205	154	168	149	160	120	144	164	-	157
74TA 264	254	179	148	141	195	227	159	160	102	102	204	157	170	152	160	120	144	166	125	156
74TA 276	262	174	148	141	194	224	160	150	105	99	199	155	168	149	153	118	143	163	121	154
76TA 66136	323	180	148	141	198	226	166	150	111	102	206	161	188	152	177	125	144	173	126	160
-	707	174	147	139	186	225	159	150	104	99	196	153	168	149	157	117	144	163	121	153
78S 26181	841	179	148	139	196	226	160	150	104	99	205	154	171	152	160	118	144	165	121	155
-	842	174	148	141	191	225	160	150	103	99	205	153	169	144	137	110	143	160	123	152
-	851	177	147	141	194	227	159	150	107	97	206	154	163	144	157	117	143	162	121	154
-	857	174	148	141	187	225	159	150	106	99	204	155	165	144	140	109	146	159	126	152
-	947	179	148	141	198	225	166	150	110	103	205	164	171	149	163	116	145	176	125	157
Syrian local	4400	179	132	139	196	227	161	150	107	101	204	154	170	152	157	117	146	165	-	156
-	4523	177	147	139	195	226	160	150	106	99	205	154	168	149	157	120	143	163	125	155
Precoz	4605	166	147	144	176	221	140	150	102	98	193	141	146	142	130	108	144	155	118	146
Nabius	4606	174	148	140	187	223	157	160	107	98	204	153	168	144	147	111	143	159	122	153
Local check	-	171	158	-	199	231	152	150	107	102	206	-	-	152	163	120	145	159	121	
Location mean		176	146	140	192	225	159	151	105	100	203	154	168	148	153	116	144	163	123	

Table 5.1.4 . Plant height (cm) of entries at different locations in the LIYT-L during 1982/83.

ENTRY		ALGERIA		ARGENTINA		AUSTRALIA		CHILE		EGYPT		IRAN		ITALY		JORDAN		LEBANON		LIBYA		PERU			SYRIA			USA		MEAN
Selection	ILL	Sidi Bel Abbes	Catamarca	Mendoza	Wagga Wagga	Graneros	Gemliza	Karaj	Leonessa	Marow	Terbol	Kufra	La Molina	San Lorenzo	Izra'a	Tel Hadya	Pullman													
78S 26002	8	29	16	31	41	40	38	23	22	32	29	29	22	33	36	35	21													
74TA 9	15	26	22	35	43	48	44	25	22	33	32	33	23	32	33	34	25													
-	20	28	23	33	44	45	40	20	21	32	30	33	20	28	30	33	20													
74TA 19	28	26	24	32	47	42	40	23	24	34	35	37	23	33	32	32	24													
74TA 20	30	27	23	39	40	47	34	27	27	33	33	35	28	35	34	32	24													
78S 26064	193	27	21	29	45	43	43	27	25	34	32	35	20	32	36	34	24													
78S 26066	193	25	24	29	50	45	34	26	26	32	31	31	23	35	24	32	23													
74TA 264	254	28	21	26	46	43	47	25	19	32	32	38	23	32	36	34	26													
74TA 276	262	26	20	25	36	45	41	23	25	29	32	31	18	33	26	30	21													
76TA 66136	323	27	21	40	44	48	40	24	27	34	33	37	20	25	39	33	23													
-	707	26	20	27	36	43	38	25	27	32	28	35	20	33	30	31	23													
78S 26181	841	26	16	26	41	45	33	24	22	30	35	31	20	28	29	32	24													
-	842	28	20	31	38	43	50	21	24	33	33	40	23	28	36	31	20													
-	851	28	20	25	38	47	38	23	20	29	29	33	18	30	37	32	20													
-	857	27	21	30	38	43	37	17	21	31	30	30	25	30	34	33	23													
-	947	25	23	23	45	47	38	26	25	31	35	35	20	32	32	34	25													
Syrian local	4400	27	20	29	46	47	38	21	22	35	29	35	23	30	28	34	24													
-	4523	27	23	27	48	43	37	26	23	31	30	37	20	27	29	33	23													
Precoz	4605	25	20	29	43	45	35	20	23	26	25	29	18	25	30	30	23													
Nablus	4606	27	19	27	44	40	36	19	20	31	30	33	22	30	37	32	22													
Local check	-	29	21	-	54	52	42	22	21	35	36	-	20	27	33	31	27													
Location mean		27	21	30	43	45	39	23	23	32	31	34	21	30	32	32	23													

The mean seed yield and rank of the entries at different locations are given in Table 5.1.5. The location means varied greatly with the extremes represented by 119 kg/ha and 172 kg/ha at Sevilla in Spain and Karaj in Iran to 3295 kg/ha at Kufra in Libya. The coefficient of variation for the experimental design was highest at La Molina in Peru (82.5%) and was followed by Sakha in Egypt (67.4%), San Lorenzo in Peru (53.5%), Gemmiza in Egypt (52.6%), Marow in Jordan (50.5%), Karaj in Iran (49.0%), Marchouch in Morocco (45.9%), etc. At other locations it was less than 40%. The ANOVA for the experimental design revealed that the differences between the entries were significant at most of the locations except at Gemmiza (Egypt), Marow (Jordan), Kufra (Libya), Marchouch (Morocco), La Molina (Peru) and El-Kef (Tunisia). For three locations in Argentina, data were available on a single replication and were thus not analysed for ANOVA. The LSD estimates at the different locations revealed that 3 entries at Graneros in Chile, 1 each at Sakha in Egypt, Karaj in Iran, Leonessa in Italy and Sevilla in Spain, 20 and 14 at Beja and Mateur respectively in Tunisia exceeded the respective local checks by significant margins. The top five entries at each location are given in Table 5.1.6. It is apparent that ILL 707 (13 times), Precoz (10 times), ILL 8 (9 times), and ILL 28 (9 times), occurred more frequently among the five heaviest yielders at different locations and were comparatively more stable than others. On the basis of overall locations ILL 707 ranked no. 1 with an average yield of 1272 kg/ha and was followed by ILL 28 (1265 kg/ha) and ILL 8 (1197 kg/ha) respectively.

The mean seed yield of the common entries, over three years, 1980-83 (Table 5.1.7) revealed that ILL 8 ranked 1 and was followed by ILL 28, ILL 4400, ILL 262, ILL 15 and ILL 30. With the introduction of some new entries in 1981/82, the rankings, however, changed a bit and a new entry ILL 707 standing at No.1 in 1982/83 ranked 3 overall.

The correlations between seed yields at different locations (Table 5.1.8) revealed that Sidi Bel Abbes in Algeria, Graneros in Chile, El-Marj in Libya, Beja and Mateur in Tunisia had significant and positive correlations with Tel Hadya. This exhibited that the materials developed and selected at Tel Hadya, may also prove useful at these correlated environments.

5.2. LENTIL INTERNATIONAL YIELD TRIAL - SMALL SEED (LIYT-S)

Material

The material for the Lentil International Yield Trial - Small Seed comprised 22 test entries which were supplied by ICARDA and one local check to be added by the cooperator. The test entries were selections with a seed size less than 4.5 g/100 seeds performing well in Lentil International Screening Nursery.

Table 5.1.5. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the LIYT-L during 1982/83.

ENTRY		ALGERIA		ARGENTINA						AUSTRALIA		CHILE		EGYPT		IRAN		ITALY		JORDAN		LEBANON					
Selection	ILL	Sidi BelAbbes	Catamarca	Mendoza	Salta	San Pedro	Wagga Wagga	Graneros	Gemiza	Sakha	Karaj	Leonessa	Marow	Terbol													
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
78S 26002	8	1590	4	1031	2	1400	1	1053	3	1061	4	775	14	2125 ⁽¹⁾	1	833	11	785	11	50	19	787	2	1456	16	1521	19
74TA 9	15	1090	19	968	6	1333	4	611	20	996	6	870	5	508	20	611	19	226	18	283	4	287	20	2420	3	2043	1
-	20	1764	1	668	7	800	16	837	12	1058	5	788	13	1342	8	694	15	491	16	34	20	375	17	1489	15	1567	16
74TA 19	28	1438	13	994	4	1266	5	1136	2	821	12	880	4	1264	10	917	8	1165	3	224	7	523	9	3029	1	1889	6
74TA 20	30	1063	20	141	14	1066	9	899	10	838	11	580	17	1181	11	944	6	661	13	373	2	411	16	2473	2	1992	2
78S 26064	193	1313	17	338	11	983	12	703	17	1346	2	920	3	622	19	750	13	841	9	128	12	361	19	2236	6	1939	3
78S 26066	193	1396	15	205	12	1000	11	1033	5	671	15	588	15	1013	14	1139	4	857	7	109	14	371	18	520	21	1920	4
74TA 264	254	1438	13	109	15	1200	8	724	16	626	16	1110	2	1296	9	1361	1	2061	1	169	11	492	11	1698	12	1894	5
74TA 276	262	1444	12	375	10	833	13	859	11	621	17	443	20	1372	7	611	19	846	8	175	10	735	3	1093	19	1852	8
76TA 66136	323	1222	18	31	20	433	20	1017	6	-	-	830	7	349	21	722	14	211	19	407	1	416	14	1720	11	1597	15
-	707	1535	6	1029	3	1366	3	1157	1	-	-	588	15	1676	3	861	10	1143	4	114	13	694	4	2249	5	1627	13
78S 26181	841	1514	9	56	17	1233	6	747	15	693	14	805	11	894	15	778	12	-	-	200	8	413	15	1784	9	1824	9
-	842	1590	4	47	19	766	17	996	8	895	9	415	21	1376	6	944	6	789	10	88	16	541	6	1989	7	1733	10
-	851	1535	6	656	8	766	17	602	21	954	7	820	9	1044	13	528	21	81	20	90	15	451	13	1800	8	1676	12
-	857	1521	8	56	17	833	13	767	14	1088	3	790	12	1783	2	1056	5	1291	2	74	17	564	5	1747	10	1608	14
-	947	778	21	109	15	700	19	671	18	513	18	570	18	638	18	639	18	557	15	259	6	540	7	1298	17	1522	13
Syrian Local	4400	1333	16	1416	1	833	13	930	9	700	13	815	10	760	17	694	15	435	17	298	3	167	21	1593	13	1878	7
-	4523	1451	11	538	9	1233	6	1011	7	875	10	535	19	1168	12	889	9	731	12	184	9	517	10	1002	20	1545	17
Precoz	4605	1722	3	987	5	1400	1	1052	4	1461	1	868	6	1407	5	694	15	587	14	34	20	1073	1	1127	18	1164	21
Nablus	4606	1764	1	190	13	1033	10	774	13	936	8	825	8	1615	4	1333	2	928	6	53	18	460	12	1520	14	1429	20
Local check	-	1500	10	8	21	-	-	656	19	-	-	1118	1	807	16	1250	3	1094	5	265	5	537	8	2407	4	1690	11
Location mean	-	1429	-	474	-	1024	-	868	-	897	-	759	-	1154	-	869	-	751	-	172	-	510	-	1745	-	1710	-
C.V.%	-	15.6	-	-	-	-	-	-	-	13.8	-	20.2	-	43.4	-	52.6	-	67.4	-	49.0	-	39.0	-	50.5	-	13.7	-
L.S.D. at 5%	-	369	-	-	-	-	-	-	-	205	-	320	-	827	-	NS	-	836	-	139	-	328	-	NS	-	388	-
S.E.	-	129	-	-	-	-	-	-	-	71.3	-	88.7	-	289.5	-	264.3	-	293.1	-	48.7	-	115.0	-	509.8	-	135.8	-
No. of entries significantly exceeding the local check	-	0	-	-	-	-	-	-	-	-	-	0	-	3	-	-	-	1	-	1	-	1	-	-	-	0	-

Cont'd. ...

Table 5.1.5. Cont'd.

ENTRY	ILL	LIBYA				MOROCCO				PERU				SPAIN		SYRIA				TUNISIA				USA		MEAN	
		El-Marj		Kufra		Marchouch		La Molina		San Lorenzo		Sevilla		Izra'a		Tel Hadya		Beja		El-Kef		Mateur		Pullman			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
78S 26002	8	2233	10	3111	12	711	19	81	20	300	15	177	2	1787	9	1096	5	1449	10	1363	11	2917	2	224	8	1197	3
74TA 9	15	2158	15	3444	7	911	13	299	3	647	7	105	12	1635	14	770	18	<u>1467</u>	9	1463	6	<u>2088</u>	14	199	11	1097	10
-	20	2333	5	3111	12	1022	8	91	19	92	21	141	8	2223	2	1257	1	<u>1625</u>	1	1388	9	<u>2883</u>	4	196	13	1131	5
74TA 19	28	2000	17	4000	1	1033	7	102	16	752	4	52	20	1707	10	942	14	<u>1583</u>	3	1363	11	<u>2325</u>	7	217	9	1265	2
74TA 20	30	2200	13	3111	12	989	9	168	7	635	8	96	13	1260	17	1016	9	<u>1445</u>	12	1275	17	<u>1850</u>	17	179	16	1074	14
78S 26064	193	2350	4	3111	12	1078	5	161	8	710	6	81	17	1983	5	999	10	<u>1504</u>	6	1278	16	<u>2117</u>	12	239	6	1124	6
78S 26066	193	2425	1	3444	7	1578	1	95	17	855	2	72	18	883	21	1027	7	<u>1449</u>	10	1280	15	<u>3000</u>	1	149	21	1083	12
74TA 264	254	1975	18	2667	17	689	20	322	2	432	12	96	13	1327	16	946	13	<u>1412</u>	14	1246	18	<u>1767</u>	19	292	4	1094	11
74TA 276	262	2300	9	3778	4	933	11	182	6	560	10	88	15	1812	8	1171	3	<u>1562</u>	4	1304	14	<u>2312</u>	8	184	15	1098	9
76TA 66136	323	1842	19	2556	18	800	18	32	21	398	13	117	11	1917	6	696	20	<u>1129</u>	19	1225	19	<u>1433</u>	20	703	2	908	19
-	707	2225	12	3889	2	1556	2	105	15	762	3	148	6	1917	6	812	17	<u>1433</u>	13	1600	3	<u>1808</u>	18	243	5	1272	1
78S 26181	841	2333	5	3333	9	911	13	137	10	537	11	64	19	1053	20	899	15	<u>1341</u>	17	1104	21	<u>2163</u>	11	197	12	1042	17
-	842	2192	14	3889	2	1478	3	127	13	205	17	172	3	2287	1	1023	8	<u>1600</u>	2	1483	4	<u>2583</u>	5	153	20	1174	4
-	851	2233	10	3556	5	911	13	93	18	262	16	168	4	2158	3	894	16	<u>1516</u>	5	1754	1	<u>2225</u>	9	156	19	1077	13
-	857	2367	3	3000	16	911	13	119	14	185	18	144	7	1687	12	1085	6	<u>1479</u>	8	1375	10	<u>1925</u>	15	187	14	1106	8
-	947	1433	20	3333	9	922	12	134	11	378	14	228	1	1235	18	685	21	<u>1100</u>	20	1317	13	<u>1892</u>	16	237	7	868	20
Syrian Local	4400	2333	5	3556	5	1044	6	240	4	1048	1	48	21	1650	13	1148	4	<u>1400</u>	15	1446	8	<u>2167</u>	10	163	18	1124	6
-	4523	2317	8	2556	18	644	21	200	5	620	9	136	9	1985	4	749	19	<u>1400</u>	15	1483	4	<u>2917</u>	2	171	17	1074	14
Precoz	4605	2417	2	-	-	856	17	324	1	98	20	84	16	1100	19	950	12	<u>1320</u>	18	1463	6	<u>2100</u>	13	376	3	1028	18
Nablus	4606	2148	16	-	-	989	9	140	9	175	19	124	10	1690	11	1204	2	<u>1500</u>	7	1671	2	<u>2525</u>	6	208	10	1051	16
Local check	-	-	-	3167	11	1144	4	132	12	743	5	153	5	1623	15	966	11	<u>754</u>	21	1133	20	<u>1025</u>	21	733	1		
Location mean		2086		3295		1005		156		495		119		1663		968		1407		1382		2192		257			
C.V.%		11.8		21.2		45.9		82.5		53.5		-		24.8		20.5		8.1		17.3		28.1		27.6			
L.S.D. at 5%		407		NS		NS		NS		437		50		681		328		187		NS		1017		117			
S.E.		142.8		403.9		267.0		74.6		153.2		-		238.7		114.9		65.5		138.1		357.7		41.0			
No. of entries significantly exceeding the local check		-		-		-		-		0		1		0		0		20		-		14		0			

(1) Seed yield values underlined, significantly exceeded the local check.

Table 5.1.6. The five heaviest seed yielding entries at the individual locations in the LIYT-L during 1982/83.

RANK	ALGERIA		ARGENTINA								AUSTRALIA		CHILE		EGYPT			
	Sidi Bel Abbas		Catamarca		Mendoza		Salta		San Pedro		Wagga Wagga		Graneros		Gemmiza		Sakha	
	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL
1	-	20 ⁽¹⁾	Syr. Local	4400	78S 26002	8	-	707	Precoz	4605	Local check	-	78S 26002	8	74TA 264	254	74TA 264	254
2	Nabius	4606	78S 26002	8	Precoz	4605	74TA 19	28	78S 26064	193	74TA 264	254	-	857	Nabius	4606	-	857
3	Precoz	4605	-	707	-	707	78S 26002	8	-	857	78S 26064	193	-	707	Local check	-	74TA 19	28
4	78S 26002	8	74TA 19	28	74TA 9	15	Precoz	4605	78S 26002	8	74TA 19	28	Nabius	4606	78S 26066	193	-	707
5	-	842	Precoz	4605	74TA 19	28	78S 26066	193	-	20	74TA 9	15	Precoz	4605	-	857	Local check	-

Cont'd. ...

RANK	IRAN		ITALY		JORDAN		LEBANON		LIBYA				MOROCCO		PERU			
	Karaj		Leonessa		Marow		Terbol		El-Marj		Kufra		Marchouch		La Molina		San Lorenzo	
	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL
1	76TA 66136	323	Precoz	4605	74TA 19	28	74TA 9	15	78S 26066	193	74TA 19	28	78S 26066	193	Precoz	4605	Syr. Local	4400
2	74TA 20	30	78S 26002	8	74TA 20	30	74TA 20	30	Precoz	4605	-	707	-	707	74TA 264	254	78S 26066	193
3	Syr. Local	4400	74TA 276	262	74TA 9	15	78S 26064	193	-	857	-	842	-	842	74TA 9	15	-	707
4	74TA 9	15	-	707	Local check	-	78S 26066	193	78S 26064	193	74TA 276	262	Local check	-	Syr. Local	4400	74TA 19	28
5	Local check	-	-	857	-	707	74TA 264	254	-	20	-	851	78S 26064	193	-	4523	Local check	-
									78S 26181	841	Syr. Local	4400						
									Syr. Local	4400								

(1) The brackets indicate entries having the same rank.

Cont'd. ...

Table 5.1.6. Cont'd.

RANK	SPAIN		SYRIA				TUNISIA						USA	
	Sevilla		Izra'a		Tel Hadya		Beja		El-Kef		Mateur		Pullman	
	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL	Selection	ILL
1	-	947	-	842	-	20	-	20	-	851	78S 26066	193	Local check	-
2	78S 26002	8	-	20	Nablus	4606	-	842	Nablus	4606	78S 26002	8	76TA 66136	323
3	-	842	-	851	74TA 276	262	74TA 19	28	-	707	-	4523	Precoz	4605
4	-	851	-	4523	Syr.Local	4400	74TA 276	262	-	842	-	20	74TA 264	254
5	Local check		78S 26064	193	78S 26002	8	-	851	-	4523	-	842	-	707

Table 5.1.8. Correlation (df=18) among different locations for the seed yield of entries in the LIYT-L during 1982/83.

COUNTRY	LOCATION	ARGENTINA				AUSTRALIA	CHILE	EGYPT		IRAN	ITALY	JORDAN	LEBANON
		Catamarca	Mendoza	Salta	San Pedro ⁽¹⁾	Wagga Wagga	Graneros	Gemmiza	Sakha ⁽¹⁾	Karaj	Leonessa	Marow	Terbol
ALGERIA	Sidi Bel Abbes	0.18	0.24	0.27	0.38	0.14	0.66**	0.26	0.18	-0.78**	0.36	-0.19	-0.44*
ARGENTINA	Catamarca		0.46*	0.33	0.13	0.18	0.14	-0.40	-0.42	-0.10	0.13	0.17	-0.08
ARGENTINA	Mendoza			0.26	0.17	0.21	0.40	0.20	0.26	-0.26	0.38	0.17	-0.02
ARGENTINA	Salta				-0.13	-0.31	0.37	0.14	0.20	-0.04	0.40	-0.04	-0.24
ARGENTINA	San Pedro ⁽¹⁾					0.31	0.15	-0.16	-0.18	-0.43	-0.08	0.37	-0.07
AUSTRALIA	Wagga Wagga						-0.14	0.16	0.33	-0.03	-0.16	0.28	0.03
CHILE	Graneros							0.41	0.40	-0.68**	0.59**	0.10	-0.40
EGYPT	Gemmiza								0.85**	-0.21	-0.04	-0.06	0.04
EGYPT	Sakha ⁽¹⁾									-0.14	0.32	0.02	0.10
IRAN	Karaj										-0.46*	0.32	0.48*
ITALY	Leonessa											-0.23	-0.65**
JORDAN	Marow												0.42
LEBANON	Terbol												
LIBYA	El-Harj												
LIBYA	Kufra ⁽¹⁾												
MOROCCO	Marchouch												
PERU	La Molina												
PERU	San Lorenzo												
SPAIN	Sevilla												
SYRIA	Izra'a												
SYRIA	Tel Hadya												
TUNISIA	Beja												
TUNISIA	El-Kef												
TUNISIA	Mateur												

(1) df=13

* $P \leq 0.05$

** $P \leq 0.01$

Table 5.1.7. The mean yield (Y= kg/ha) and rank (R) of the common entries in LIYT-L during 1980-83.

ENTRY	SELECTION	1980/81		1981/82		1982/83		AVERAGE 1 [*]		AVERAGE 2 [*]	
		Y	R	Y	R	Y	R	Y	R	Y	R
ILL 8	78S 26002	1134	1	1397	1	1197	3	1297	1	1243	1
ILL 15	74TA 9	1112	2	1107	8	1097	7	1102	8	1105	5
ILL 28	74TA 19	1106	3	1190	3	1265	2	1228	2	1187	2
ILL 30	74TA 20	1073	4	1004	10	1074	10	1039	10	1050	6
ILL 262	74TA 276	1051	5	1178	4	1098	6	1138	5	1109	4
ILL 4400	Syrian local	1029	6	1228	2	1124	4	1176	4	1127	3
ILL 193	78S 26064	-		1073	9	1124	4	1099	9	-	-
ILL 193	78S 26066	-		1152	6	1083	9	1118	7	-	-
ILL 254	74TA 264	-		1158	5	1094	8	1126	6	-	-
ILL 707	-	-		1146	7	1272	1	1209	3	-	-

1^{*} Average over 1981-83

2^{*} Average over 1980-83

Cont'd Table 5.1.8.

COUNTRY	LOCATION	LIBYA		MOROCCO	PERU		SPAIN	SYRIA		TUNISIA			USA
		El-Marj	Kufra ⁽¹⁾	Marchouch	La Molina	San Lorenzo	Sevilla	Izra'a	Tel Hadya	Beja	El-Kef	Mateur	Pullman
ALGERIA	Sidi Bel Abbes	0.62 ^{**}	0.01	0.09	-0.08	-0.43	-0.11	0.30	0.57 ^{**}	0.55 [*]	0.37	0.47 [*]	-0.12
ARGENTINA	Catamarca	0.26	0.25	0.01	0.25	0.32	-0.20	0.17	0.09	0.20	0.41	0.18	-0.15
ARGENTINA	Mendoza	0.32	-0.29	-0.07	0.44 [*]	0.18	-0.26	-0.32	-0.05	0.19	0.07	0.20	-0.27
ARGENTINA	Salta	0.18	0.20	0.33	-0.24	0.21	-0.17	0.02	0.02	0.03	-0.02	0.22	0.21
ARGENTINA	San Pedro ⁽¹⁾	0.50	-0.20	-0.06	-0.25	-0.27	0.03	0.57 [*]	0.20	0.48	0.20	0.15	-0.01
AUSTRALIA	Wagga Wagga	-0.03	-0.28	-0.44 [*]	0.31	-0.09	-0.35	-0.13	0.02	-0.06	-0.08	-0.30	0.31
CHILE	Graneros	0.34	-0.14	0.05	-0.11	-0.39	0.23	0.13	0.52 [*]	0.46 [*]	0.30	0.38	-0.32
EGYPT	Gemiza	0.03	-0.39	0.13	0.06	-0.05	-0.13	-0.26	0.26	0.16	-0.05	0.11	-0.10
EGYPT	Sakha ⁽¹⁾	-0.10	-0.33	-0.15	0.25	-0.05	-0.24	-0.30	0.12	0.02	-0.60 [*]	-0.23	0.60 [*]
IRAN	Karaj	-0.47 [*]	0.09	-0.20	0.05	0.52 [*]	-0.25	-0.19	-0.48 [*]	-0.50 [*]	-0.41	-0.56 ^{**}	0.37
ITALY	Leonessa	0.07	0.01	-0.12	0.12	-0.46 [*]	0.23	-0.10	-0.04	-0.07	0.12	0.02	0.17
JORDAN	Marow	-0.17	0.29	0.08	-0.05	0.19	-0.15	0.26	-0.15	0.26	0.04	-0.43	0.01
LEBANON	Torbol	0.06	0.29	0.23	0.09	0.68 ^{**}	-0.47 [*]	-0.09	0.02	0.29	-0.37	-0.12	-0.31
LIBYA	El-Marj		-0.07	0.21	0.14	0.09	-0.05	0.07	0.54 [*]	0.58 ^{**}	0.14	0.45 [*]	-0.38
LIBYA	Kufra ⁽¹⁾			0.58 [*]	-0.29	0.17	-0.17	0.13	0.16	0.33	0.23	0.03	-0.39
MOROCCO	Marchouch				-0.30	0.30	-0.04	0.02	0.14	0.30	0.17	0.15	-0.28
PERU	La Molina					0.11	-0.35	-0.34	-0.04	-0.03	0.01	-0.17	-0.11
PERU	San Lorenzo						-0.56 ^{**}	-0.23	-0.17	-0.03	-0.22	-0.07	-0.19
SPAIN	Sevilla							0.37	-0.24	-0.19	0.36	0.06	-0.03
SYRIA	Izra'a								0.13		0.45 [*]	0.48 [*]	0.16
SYRIA	Tel Hadya									0.67 ^{**}	0.07	0.45 [*]	-0.42
TUNISIA	Beja										0.32	0.52 [*]	-0.62 ^{**}
TUNISIA	El-Kef											0.19	-0.27
TUNISIA	Mateur												-0.55 [*]

(1) df=13

* $P \leq 0.05$ ** $P \leq 0.01$

Methods and Management

The material was sown in a randomised complete block design with 4 replications. The suggested plot size was 4 rows, 4 m long with 200 plants per row. The spacing between rows was suggested to be 25 cm.

Thirty five sets of the trial were sent to cooperators in 17 countries and the results were received for 19 sets from 12 countries. The agronomic data received from cooperators are presented in Table 5.2.1.

Results and Discussion

The data on time to flowering (Table 5.2.2) showed that the entries flowered earliest at Leonessa in Italy in 57 days and latest at Marow in Jordan in 158 days. The comparison of location mean with local check values at each location showed that the materials supplied by ICARDA were earlier than the local check at Wagga Wagga (Australia), Mattana (Egypt), Leonessa (Italy), Terbol (Lebanon), Tel Hadya (Syria) and Izmir (Turkey) whereas at other locations the local check was early. Averaged over locations the entries ranged in time to flowering from 114 days for 76TA 66005 to 126 days for W. Red 51. Further for time to maturity (Table 5.2.3), the entries matured earliest at Leonessa in Italy in 98 days and latest at Terbol in Lebanon in 202 days. Except at Catamarca (Argentina), Leonessa (Italy), Faisalabad and Karak (Pakistan), at all other locations the local check was equal or late in maturity. The plant height (Table 5.2.4) ranged from 17 cm at Catamarca in Argentina to 46 cm at Mallawi in Egypt under irrigation. The respective local check at Wagga Wagga (Australia), Leonessa (Italy), Faisalabad (Pakistan), and Izmir (Turkey) were taller than the respective location means whereas at other locations they were either equal or less in height.

The seed yield of the entries at different locations is given in Table 5.2.5. It was observed that seed yields were very low at Islamabad (41 kg/ha) and Karak (151 kg/ha) in Pakistan. However, at Kufra in Libya (3166 kg/ha) the highest yield was obtained which was followed by Mallawi in Egypt (2522 kg/ha), Izra'a in Syria (1902 kg/ha), Mattana in Egypt (1857 kg/ha) and Terbol in Lebanon (1796 kg/ha). The coefficient of variation for the experimental design was very high at Islamabad in Pakistan (168.1%), Mattana in Egypt (74.9%), Faisalabad in Pakistan (51.0%), and Marow in Jordan (46.5%) and at other locations it was low to moderate and ranged from 16.3 per cent to 36.0 per cent. The ANOVA for the design revealed that the differences between the entries were significant at most of the locations except at Mattana in Egypt, Kufra in Libya, Annoceur in Morocco and Islamabad in Pakistan. The LSD estimates showed that out of 18 locations, the test entries exceeded the respective local check at nine locations. These included, Sidi Bel Abbes (Algeria), Mallawi (Egypt), Marow (Jordan), Terbol (Lebanon), Marchouch (Morocco), Karak (Pakistan), Izra'a and Tel

Table 5.2.1. Agronomic data for different locations in the LIYT-S during 1982/83.

COUNTRY	LOCATION	Planting Date	Crop duration (days)	Fertilizer (kg/ha)			Crop Husbandry Irrigation Insecticide Fungicide
				N	P ₂ O ₅	K ₂ O	
ALGERIA	Sidi Bel Abbes	21.11.1982	179	15	70		
ARGENTINA	Catamarca	24.5.1983	148				8
ARGENTINA	Mendoza	11.7.1983	128				
AUSTRALIA	Wagga Wagga	3.6.1983	198		36		Stempede, Sumi ci di n
EGYPT	Mallawi	9.12.1982	153	15	30		3
EGYPT	Mattana	6.11.1982	145				
ITALY	Leonessa	9.5.1983	103				
JORDAN	Marow	2.11.1982	196	15	40		
LEBANON	Terbol	22.11.1982	205		50		
LIBYA	Kufra	15.11.1982	171				
MOROCCO	Annoceur	17.11.1982	199	30	50	60	
MOROCCO	Marchouch	23.11.1982	194		30	15	
PAKISTAN	Dokri	24.10.1982	173		250 kg DAP		
PAKISTAN	Faisalabad	30.10.1982	180	25	55		2
PAKISTAN	Islamabad	15.11.1982	192	20	50		
PAKISTAN	Karak	3.11.1982	184				
SYRIA	Izra'a	15.12.1982	152	30	50		
SYRIA	Tel Hadya	16.11.1982	174		50		
TURKEY	Izmir	7.12.1982	172				

Table 5.2.2. Time to flowering (days) of entries at different locations in the LIYT-5 during 1982/83.

ENTRY		ORIGIN	ALGERIA	ARGENTINA	AUSTRALIA	EGYPT		ITALY	JORDAN	LEBANON	LIBYA	MOROCCO	PAKISTAN			SYRIA		TURKEY	MEAN
Selection	ILL/Cross No.		Sidi BelAbbes	Catamarca	Wagga Wagga	Mallawi	Mattana	Leonessa	Marow	Terbol	Kufra	Annoceur	Faisalabad	Islamabad	Karak	Izra'a	Tel Hadya	Izmir	
76TA 66005	1	Jordan	119	95	118	78	75	51	152	145	97	156	116	139	126	116	119	118	114
78S 26003	8	Jordan	119	95	119	81	107	52	154	147	95	138	126	141	131	116	125	122	117
78S 26004	9	Jordan	119	96	119	79	102	51	155	145	100	138	124	140	125	117	123	122	116
78S 26009	13	Jordan	123	95	124	83	105	60	156	151	108	148	133	145	132	116	127	126	121
78S 26013	16	Jordan	123	115	126	86	94	59	158	148	109	148	138	147	137	116	128	118	122
78S 26018	19	Jordan	119	96	119	78	104	53	153	145	99	156	123	141	124	117	120	127	117
78S 26024	23	Jordan	119	96	123	83	98	55	156	148	105	148	133	142	137	116	127	123	119
74TA 72	54	Iraq	128	89	128	84	101	58	171	157	109	152	134	152	133	115	135	124	123
78S 26052	112	Turkey	123	81	123	82	107	59	156	152	108	148	132	144	132	117	127	133	120
76TA 66088	223	Iran	119	89	122	83	102	58	156	147	110	154	136	143	134	115	124	126	120
74TA 441	353	Mexico	123	95	126	82	98	56	158	152	119	148	136	144	143	116	126	123	122
74TA 565	495	Mexico	126	94	130	90	100	60	168	157	109	148	131	149	128	115	145	127	124
74TA 577	500	Mexico	123	103	124	82	96	58	159	153	105	148	123	141	125	116	128	129	120
74TA 580	501	Mexico	123	96	122	89	107	54	156	151	107	148	121	138	125	116	126	128	119
74TA 583	502	Mexico	123	92	126	83	89	58	161	154	104	148	125	143	126	116	130	126	119
-	975	Chile	119	95	120	82	100	53	156	145	101	138	130	140	127	116	121	125	117
W. Red 51	1880	Turkey	127	95	130	89	99	62	166	158	112	152	147	152	145	116	134	127	126
Jord. local	4354	Jordan	119	89	119	79	104	54	155	145	99	152	127	141	126	116	123	126	117
Syr. local	4401	Syria	123	101	124	84	95	59	157	148	114	148	132	144	131	116	127	117	120
79S 58839	X75TA 20	ICARDA	123	89	131	89	94	57	160	157	107	148	147	150	136	116	132	132	123
78S 13597-1	X75TA 52	ICARDA	126	115	130	90	107	61	164	156	104	152	137	150	144	116	133	121	125
78S 13644-1	X75TA 55	ICARDA	123	93	127	89	91	58	157	154	107	148	118	141	129	116	129	126	119
Local check	-	-	119	95	135	67	104	60	153	158	-	154	102	134	110	116	127	134	
Location mean			122	96	125	83	99	57	158	151	106	149	129	144	131	116	128	125	

Table 5.2.3. Time to maturity (days) of entries at different locations in the LIYT-S during 1982/83.

ENTRY		ALGERIA	ARGENTINA		AUSTRALIA	EGYPT		ITALY	LEBANON	LIBYA	MOROCCO	PAKISTAN		SYRIA		TURKEY	MEAN
Selection	ILL/Cross No.	Sidi Bel Abbas	Catamarca	Mendoza	Wagga Wagga	Hallawi	Mattana	Leonessa	Terbol	Kufra	Annoceur	Faisalabad	Karak	Izra'a	Tel Hadya	Izmir	
76TA 66005	1	174	147	123	196	145	145	96	204	169	190	171	179	148	160	160	160
78S 26003	8	173	147	123	177	150	145	96	202	168	188	177	182	148	162	161	160
78S 26004	9	171	147	125	194	150	145	96	202	168	194	178	181	151	162	160	162
78S 26009	13	174	147	125	187	145	145	100	197	168	191	178	176	148	161	160	160
78S 26013	16	171	148	125	184	146	145	99	195	167	194	177	177	151	159	160	160
78S 26018	19	175	148	123	198	145	145	98	204	168	188	171	177	148	161	163	161
78S 26024	23	174	148	123	193	148	145	98	203	168	186	160	182	149	164	160	160
74TA 72	54	178	148	123	198	153	145	99	204	168	194	172	181	150	170	160	163
78S 26052	112	175	148	127	192	149	145	100	203	169	188	175	179	149	162	168	162
76TA 66088	223	173	148	118	180	147	145	99	201	166	188	172	180	149	159	168	160
74TA 441	353	174	148	123	193	145	145	98	194	171	194	176	182	149	162	160	161
74TA 565	495	174	147	128	198	152	145	99	205	169	194	178	180	148	173	160	163
74TA 577	500	174	147	125	197	146	145	99	205	170	190	174	181	147	172	166	163
74TA 580	501	173	147	125	196	152	145	98	204	166	192	177	180	148	166	164	162
74TA 583	502	178	147	125	197	152	145	99	205	171	194	172	182	148	174	167	164
-	975	174	147	123	192	147	145	98	204	170	194	176	181	152	163	161	162
W.Red 51	1880	178	148	123	196	150	145	103	200	168	192	174	184	148	164	167	163
Jord. local	4354	174	148	125	187	149	145	97	204	167	190	172	182	149	163	167	161
Syr. local	4401	173	143	123	195	147	145	99	194	168	194	177	179	148	162	158	160
79S 58839	X75TA 20	174	148	125	198	150	145	99	203	168	192	176	183	149	167	167	163
78S 13597-1	X75TA 52	179	148	123	196	151	145	101	203	171	199	180	183	148	168	161	164
78S 13644-1	X75TA 55	174	143	123	197	149	145	100	204	168	192	178	180	149	169	160	162
Local check		178	132	125	198	151	145	81	204	-	194	157	163	149	165	172	
Location mean		175	146	124	193	149	145	98	202	168	192	174	180	149	165	163	

Table 5.2.4 . Plant height (cm) of entries at different locations in the LIYT-S during 1982/83.

ENTRY		ALGERIA	ARGENTINA		AUSTRALIA	EGYPT		ITALY	JORDAN	LEBANON	LIBYA	PAKISTAN	SYRIA		TURKEY	MEAN
Selection	ILL/Cross No.	Sidi Bel Abbes	Catamarca	Mendoza	Wagga Wagga	Mallawi	Mattana	Leonessa	Marow	Terbol	Kufra	Faisalabad	Izra'a	TelHadya	Izmir	
76TA 66005	1	27	17	26	43	46	36	25	33	31	36	51	33	31	31	33
78S 26003	8	29	17	26	40	47	24	25	35	30	36	44	32	31	32	32
78S 26004	9	27	20	29	40	46	30	22	30	28	38	50	31	31	32	32
78S 26009	13	28	18	23	38	45	27	25	33	31	31	38	29	30	31	31
78S 26013	16	30	15	25	41	46	32	22	34	30	33	38	35	31	30	32
78S 26018	19	27	16	26	45	45	27	24	36	30	35	46	31	31	34	32
78S 26024	23	26	17	25	39	46	31	26	32	31	31	48	34	30	28	32
74TA 72	54	27	18	22	51	53	32	22	34	34	35	38	38	33	28	33
78S 26052	112	29	17	26	41	48	29	25	34	31	34	47	32	36	35	33
76TA 66088	223	28	19	26	47	46	31	25	35	33	31	44	33	30	37	33
74TA 441	353	25	17	23	37	36	29	20	30	26	21	31	30	26	34	28
74TA 565	495	28	16	17	45	50	25	25	31	36	33	41	31	29	32	31
74TA 577	500	28	22	20	44	50	28	23	25	30	31	48	27	29	31	31
74TA 580	501	27	12	18	41	46	30	20	27	30	29	47	29	25	35	30
74TA 583	502	27	17	20	43	52	32	24	31	35	32	48	29	26	36	32
-	975	26	18	25	44	44	30	23	36	31	36	42	34	30	30	32
W.Red 51	1880	24	15	18	38	41	29	19	29	32	26	30	32	29	35	28
Jord. local	4354	29	16	23	46	44	29	25	32	35	34	48	27	31	34	32
Syr. local	4401	25	19	22	36	39	33	21	33	30	26	35	27	27	27	29
79S 58839	X75TA 20	27	20	20	40	46	30	21	31	31	29	37	30	31	33	30
78S 13597-1	X75TA 52	25	20	19	41	41	26	25	33	32	31	37	30	30	28	30
78S 13644-1	X75TA 55	27	15	20	43	46	32	17	25	32	33	48	25	30	32	30
Local check		27	16	20	55	47	30	45	32	34	-	50	29	31	39	
Location mean		27	17	23	43	46	30	24	32	31	32	43	31	30	32	

Table 5.2.5. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the LIYT-S during 1982/83.

ENTRY			ALGERIA		ARGENTINA				AUSTRALIA		EGYPT				ITALY		JORDAN		LEBANON		LIBYA		MOROCCO			
Selection	ILL/ Cross No.		Sidi Bel Abbes		Catamarca *	Mendoza *			Wagga Wagga			Mallawi		Mattana		Leonessa		Marow		Terbol		Kufra		Annoceur		Marchouch
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
76TA 66005	1		1458 ⁽¹⁾	5	1241	1	1150	8	770	5	3611	3	3054	1	929	13	2070	2	1848	11	4250	2	526	10	500	22
78S 26003	8		1594	2	1174	2	1250	4	552	13	3243	6	1658	13	973	7	1387	12	1677	17	4583	1	489	15	742	11
78S 26004	9		1302	8	1029	3	1275	3	505	15	3993	1	1351	17	972	8	1372	13	1884	9	4167	3	498	13	958	3
78S 26009	13		1432	7	556	11	675	19	457	17	2507	14	1228	19	682	20	2000	4	2245	2	4083	6	474	16	1483	1
78S 26013	16		1672	1	27	13	700	17	433	20	2410	16	2801	4	750	19	2722	1	2298	1	3833	8	516	12	800	8
78S 26018	19		1448	6	11	16	800	14	447	18	3056	7	892	22	961	9	1610	8	2071	5	4000	7	518	11	925	4
78S 26024	23		1125	14	52	12	1225	5	440	19	3799	2	2313	7	1023	5	1940	5	1962	6	2917	16	549	9	583	18
74TA 72	54		458	23	11	16	625	20	800	4	1639	19	1728	12	516	23	908	21	1489	20	2583	18	432	20	642	15
78S 26052	112		1141	12	8	19	550	23	605	11	2819	11	974	21	659	21	2028	3	1783	14	4167	3	669	1	867	5
76TA 66088	223		1573	4	3	22	700	17	612	10	2931	8	2304	8	775	18	1678	7	2112	4	4167	3	429	21	692	12
74TA 441	353		812	22	1	23	625	20	308	23	1382	21	2144	9	859	14	1730	6	1869	10	900	22	458	17	808	7
74TA 565	495		1063	15	1017	4	1175	7	1003	1	2229	17	1239	18	1181	1	1260	16	1286	23	3167	14	586	6	375	23
74TA 577	500		1198	11	881	7	1075	10	743	6	2924	9	1939	11	1078	4	978	19	1683	16	3583	10	398	22	650	13
74TA 580	501		1292	9	22	14	1350	2	565	12	3465	4	723	23	988	6	573	23	1299	22	3417	12	558	8	650	13
74TA 583	502		1063	15	1017	4	1200	6	938	2	2590	13	2507	5	1136	2	1097	18	1580	19	3500	11	452	18	533	20
-	975		1281	10	827	9	950	12	515	14	3403	5	1525	15	940	10	1292	14	2118	3	3833	8	618	4	1042	2
W. Red 51	1880		901	20	20	15	800	14	498	16	819	23	1646	14	521	22	742	22	1910	7	2000	20	568	7	867	5
Jord. Local	4354		1594	2	6	21	575	22	670	8	2910	10	2058	10	933	12	1400	11	1900	8	3417	12	451	19	792	9
Syr. Local	4401		1005	18	566	10	825	13	355	22	1694	18	2857	3	803	17	1503	9	1697	15	2917	16	628	3	508	21
79S 58839	X75TA 20		1026	17	9	18	1050	11	718	7	2431	15	2329	6	1110	3	1107	17	1612	18	2333	19	494	14	625	16
78S 13597-1	X75TA 52		969	19	8	19	1125	9	417	21	1236	22	1047	20	843	15	1292	14	1848	11	2000	20	666	2	625	16
78S 13644-1	X75TA 55		1141	12	838	8	775	16	655	9	2597	12	2924	2	820	16	910	20	1354	21	3000	15	589	5	758	10
Local check	-		896	21	972	6	1450	1	937	3	1458	20	1465	16	937	11	1417	10	1796	13	-	-	366	23	575	19
Location mean			1193		448		953		606		2572		1857		886		1435		1796		3166		519		739	
C.V. %			16.9		-		-		21.7		24.8		74.9		20.9		46.5		16.3		18.5		36.0		34.3	
L.S.D. 5%			284		-		-		217		902		NS		262		944		414		NS		NS		359	
S.E.			100.5		-		-		76.1		318.9		695.4		93.0		333.8		146.3		293.5		93.5		126.9	
No. of entries significantly exceeding the local check			11		-		-		0		16		-		0		1		2		-		-		3	

(1) Seed yield values underlined, significantly exceeded the local check

(2) Mean for Pakistan locations only.

* Data available for only one replication.

Cont'd. ...

Table 5.2.5. Cont'd.

ENTRY			PAKISTAN						SYRIA				TURKEY		MEAN		MEAN (2)	
Selection	ILL/ Cross No.		Faisalabad		Islamabad		Karak		Izra'a		Tel Hadya		Izmir		Y	R	Y	R
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R				
76TA 66005	1		577	10	59	4	161	8	1948	12	782	10	1631	2	1476	1	266	11
78S 26003	8		533	12	18	19	121	17	2144	5	813	9	1634	1	1366	4	224	13
78S 26004	9		1288	4	28	13	150	10	2236	4	998	2	1591	5	1422	2	489	4
78S 26009	13		345	20	35	10	208	4	2513	2	987	3	1405	9	1295	6	196	17
78S 26013	16		347	19	115	2	150	10	2535	1	1082	1	1608	3	1378	3	204	15
78S 26018	19		808	7	29	12	146	12	1690	17	879	6	1064	17	1186	10	328	7
78S 26024	23		467	16	39	7	100	21	1911	14	878	7	1303	11	1257	8	202	16
74TA 72	54		173	22	134	1	146	12	1949	11	574	16	1592	4	911	20	151	21
78S 26052	112		492	14	12	22	142	14	1620	18	931	4	1060	19	1140	14	215	14
76TA 66088	223		185	21	26	14	117	19	2438	3	859	8	1063	18	1259	7	109	22
74TA 441	353		528	13	10	23	171	6	1861	15	424	21	1455	7	908	21	236	12
74TA 565	495		745	8	36	9	171	6	1788	16	504	18	1454	8	1127	15	317	8
74TA 577	500		1050	6	26	14	154	9	1439	22	485	20	860	22	1175	12	410	6
74TA 580	501		1397	3	48	5	258	1	1504	20	506	17	1099	15	1095	16	568	2
74TA 583	502		1107	5	18	19	238	2	1441	21	379	22	1186	13	1221	9	454	5
-	975		720	9	43	6	133	15	1953	9	918	5	1362	10	1304	5	299	9
W. Red 51	1880		98	23	34	11	54	23	2138	6	358	23	1091	16	837	22	62	23
Jord. Local	4354		562	11	113	3	125	16	1951	10	749	11	995	21	1178	11	267	10
Syr. Local	4401		348	18	22	17	208	4	2010	8	588	15	1162	14	1094	17	193	18
79S 58839	X75TA 20		473	15	14	21	58	22	2104	7	683	13	1051	20	1068	18	182	19
78S 13597-1	X75TA 52		357	17	23	16	121	17	1925	13	487	19	1460	6	914	19	167	20
78S 13644-1	X75TA 55		1403	2	22	17	238	2	1074	23	646	14	1221	12	1165	13	554	3
Local check	-		1905	1	39	7	112	20	1588	19	736	12	387	23	-	-	685	1
Location mean			692		41		151		1902		706		1249					
C.V.%			51.0		168.1		29.7		21.7		23.6		24.1					
L.S.D. 5%			499		NS		63		583		235		425					
S.E.			176.3		34.5		22.5		206.5		83.5		150.3					
No. of entries sig- nificantly exceeding the local check			0		-		5		4		3		22					

(1) Seed yield values underlined, significantly exceeded the local check

(2) Mean for Pakistan locations only.

Hadya (Syria), and Izmir (Turkey). The results for two locations in Argentina could not be analysed as the data were available for only one replication.

The five heaviest seed yielding entries at the individual locations are given in Table 5.2.6. It was observed that at all the locations except Mendoza (Argentina) and Faisalabad (Pakistan) where the local check ranked first, and Wagga Wagga (Australia) where the local check ranked third, the top five entries were from ICARDA materials. It is worth mentioning that out of these 76TA 66005, 78S 26004 and 78S 26013 were the entries which ranked among the top five at 9, 9 and 8 locations respectively and were thus more adaptable. All these three lines were also the top rankers on the basis of average over all locations and need special consideration in the breeding program. The mean yields of the common entries during 1980-83 are given in Table 5.2.7. Among the six common entries during 1980-83, ILL 16 (78S 26013) ranked first with average yield of 1178 kg/ha and was closely followed by ILL 1 (76TA 66005) with 1174 kg/ha. Also from the 12 common entries during 1981-83, these two entries again ranked 1st and 2nd.

The correlations between seed yields of different locations (Table 5.2.8) revealed that Tel Hadya, the main research site at ICARDA had positive and significant association with Sidi Bel Abbes (Algeria), Mallawi (Egypt), Marow (Jordan), Terbol (Lebanon), Marchouch (Morocco), and Izra'a (Syria). This shows that the materials developed at Tel Hadya may also be useful at these correlated locations.

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

Material

The Lentil International Screening Nursery - Large Seed comprised 40 test entries and 3 checks, two of the checks namely Syrian Local Large (ILL 4400) and 74TA 138 (ILL 101) were supplied, and one local check was to be added by the cooperator.

Methods and Management

The material comprising 40 test entries and three checks was sown in an augmented block design in four blocks each comprising 10 test entries, and 3 checks repeated in every block. The suggested plot size was single row 4 m long accomodating 200 plants. The between row spacing of 25 cm was suggested.

Thirty-six sets of the nursery were supplied to different cooperators in 22 countries. The results were, however, received from 19 locations and were analysed. The agronomic data received from the cooperators is presented in Table 5.3.1.

Table 5.2.6 . The five heaviest seed yielding entries at the individual locations in the LIYT-S during 1982/83.

RANK	ALGERIA		ARGENTINA				AUSTRALIA		EGYPT			
	Sidi Bel Abbas		Catamarca		Mendoza		Wagga Wagga		Mallawi		Mattana	
	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.
1	78S 26013	16	76TA 66005	1	Local check	-	74TA 565	495	78S 26004	9	76TA 66005	1
2	78S 26003	8 ⁽¹⁾	78S 26003	8	74TA 580	501	74TA 583	502	78S 26024	23	78S 13644-1	X75TA 55
3	Jord. Local	4354	78S 26004	9	78S 26004	9	Local check	-	76TA 66005	1	Syr. Local	4401
4	76TA 66088	223	74TA 565	495	78S 26003	8	74TA 72	54	74TA 580	501	78S 26013	16
5	76TA 66005	1	74TA 583	502	78S 26024	23	76TA 66005	1	-	975	74TA 583	502

Cont'd. ...

RANK	ITALY		JORDAN		LEBANON		LIBYA		MOROCCO			
	Leonessa		Marow		Terbol		Kufra		Annoceur		Marchouch	
	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.
1	74TA 565	495	78S 26013	16	78S 26013	16	78S 26003	8	78S 26052	112	78S 26009	13
2	74TA 583	502	76TA 66005	1	78S 26009	13	76TA 66005	1	78S 13597-1	X75TA 52	-	975
3	79S 58839	X75TA 20	78S 26052	112	-	975	78S 26004	9	Syr. Local	4401	78S 26004	9
4	74TA 577	500	78S 26009	13	76TA 66088	223	78S 26052	112	-	975	78S 26018	19
5	78S 26024	23	78S 26024	23	78S 26018	19	76TA 66088	223	78S 13644-1	X75TA 55	78S 26052	112
											W. Red 51	1880

(1) The brackets indicate entries having the same rank.

Cont'd. ...

Table 5.2.6. Cont'd.

RANK	PAKISTAN						SYRIA				TURKEY	
	Faisalabad		Islamabad		Karak		Izra'a		Tel Hadya		Izmir	
	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.	Selection	ILL/ Cross No.
1	Local check	-	74TA 72	54	74TA 580	501	78S 26013	16	78S 26013	16	78S 26003	8
2	78S 13644-1	X75TA 55	78S 26013	16	74TA 583	502	78S 26009	13	78S 26004	9	76TA 66005	1
3	74TA 580	501	Jord. Local	4354	78S 13644-1	X75TA 55	76TA 66088	223	78S 26009	13	78S 26013	16
4	78S 26004	9	76TA 66005	1	78S 26009	13	78S 26004	9	78S 26052	112	74TA 72	54
5	74TA 583	502	74TA 580	501	Syr. Local	4401	78S 26003	8	-	975	78S 26004	9

Table 5.2.7. . The mean yield (Y = kg/ha) and rank (R) of the common entries in LIYT-S during 1980-83.

ENTRY	1980/81		1981/82		1982/83		AVERAGE 1 [*]		AVERAGE 2 [*]	
	Y	R	Y	R	Y	R	Y	R	Y	R
ILL 1	1098	2	949	5	1476	1	1213	2	1174	2
ILL 16	1105	1	1051	1	1378	3	1215	1	1178	1
ILL 353	1039	3	815	10	908	13	862	13	921	5
ILL 500	1009	4	793	12	1175	9	984	10	992	4
ILL 4354	1002	5	877	6	1178	8	1028	7	1019	3
ILL 4401	736	6	804	11	1094	12	949	12	878	6
ILL 8	-		952	4	1366	4	1159	4	-	-
ILL 9	-		991	2	1422	2	1207	4	-	-
ILL 19	-		971	3	1186	7	1079	5	-	-
ILL 23	-		863	7	1257	5	1060	6	-	-
ILL 495	-		849	9	1127	10	988	9	-	-
ILL 501	-		851	8	1095	11	973	11	-	-
ILL 502	-		770	13	1221	6	996	8	-	-
ILL 1880	-		622	14	837	14	730	14	-	-

1^{*} Average over 1981-83

2^{*} Average over 1980-83

Table 5.2.8. Correlation (df=20) among different locations for the seed yield of entries in the LIYT-5 during 1982/83.

COUNTRY	LOCATION	ARGENTINA		AUSTRALIA	EGYPT		ITALY	JORDAN	LEBANON	LIBYA	MOROCCO		PAKISTAN			SYRIA		TURKEY
		Catamarca	Mendoza	Wagga Wagga	Mallawi	Mattana	Leonessa	Marow	Terbol	Kufra	Annoceur	Marchouch	Faisalabad	Islamabad	Karak	Izra'a	Tel Hadya	Izmir
ALGERIA	Sidi Bel Abbes	0.19	0.07	-0.12	0.61 ^{aa}	0.06	0.23	0.47 ^a	0.47 ^a	0.75 ^{aa}	-0.14	0.28	0.13	0.06	0.03	0.31	0.65 ^{aa}	-0.02
ARGENTINA	Catamarca		0.51 ^a	0.41	0.38	0.21	0.44 ^a	-0.09	-0.25	0.45 ^a	-0.05	-0.11	0.45 ^a	-0.25	0.35	-0.19	0.01	0.34
ARGENTINA	Mendoza			0.24	0.44 ^a	-0.12	0.69 ^{aa}	-0.31	-0.38	0.16	0.08	-0.41	0.49 ^a	-0.32	0.10	-0.19	-0.18	0.19
AUSTRALIA	Wagga Wagga				0.13	0.10	0.37	-0.34	-0.58 ^{aa}	0.20	-0.26	-0.47 ^a	0.26	0.16	0.13	-0.36	-0.30	-0.09
EGYPT	Mallawi					-0.03	0.49 ^a	0.19	0.09	0.74 ^{aa}	-0.14	0.08	0.51 ^a	-0.02	0.13	-0.07	0.60 ^{aa}	0.02
EGYPT	Mattana						0.04	0.26	0.04	-0.09	-0.23	-0.37	-0.10	0.14	0.05	0.03	-0.02	0.08
ITALY	Leonessa							-0.14	-0.31	0.14	-0.13	-0.41	0.56 ^{aa}	-0.33	0.14	-0.33	-0.11	-0.12
JORDAN	Marow								0.69 ^{aa}	0.32	0.04	0.23	-0.39	0.15	-0.10	0.51 ^a	0.69 ^{aa}	0.35
LEBANON	Terbol									0.23	-0.10	0.61 ^{aa}	-0.48 ^a	0.12	-0.38	0.68 ^{aa}	0.63 ^{aa}	0.11
LIBYA	Kufra										-0.09	0.23	0.22	0.07	0.17	0.15	0.67 ^{aa}	0.06
MOROCCO	Annoceur											-0.07	-0.01	-0.27	0.03	-0.18	0.03	0.06
MOROCCO	Marchouch												-0.07	-0.02	-0.01	0.36	0.51 ^a	0.04
PAKISTAN	Faisalabad													-0.25	0.61 ^{aa}	-0.67 ^{aa}	-0.11	-0.15
PAKISTAN	Islamabad														-0.05	0.26	0.19	0.27
PAKISTAN	Karak															-0.46 ^a	-0.15	0.05
SYRIA	Izra'a																0.50 ^a	0.39
SYRIA	Tel Hadya																	0.26

^a $P \leq 0.05$

^{aa} $P \leq 0.01$

Table 5.3.1. Agronomic data for different locations in the LISN-L during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigations	Crop Husbandry Insectidiced/ fungicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Sidi Bel Abbes	21.11.82	176	15	70			
ARGENTINA	Mendoza	23.6.83	147	18	46		8	
AUSTRALIA	Wagga Wagga	23.6.83	194	-	35			
EGYPT	Gemmiza	27.11.82	161	24	71		2	
INDIA	New Delhi	24.11.82	-		40		1	
ITALY	Perugia	9.5.83	107					
JORDAN	Jubeiha	21.10.82	-					
JORDAN	Ramtha	31.10.82	206					
LEBANON	Terbol	24.11.82	205	-	50			
MOROCCO	Marchouch	24.11.82	-		30	15		
PERU	San Lorenzo	30.10.82	145					
SYRIA	Gelline	12.82	-					
SYRIA	Izra'a 1	12.82	-					
SYRIA	Izra'a 2 (Deraa)	12.82	151	30	50			
SYRIA	Tel Hadya	16.11.82	172		50			
TUNISIA	Mateur	29.1.83	-					
USA	Pullman	20.4.83	125					Tolban

Results and Discussion

The time to flowering (Table 5.3.2) revealed that the entries flowered earliest in 58 and 65 days in Pullman (USA) and Perugia (Italy) whereas at Jubeiha (Jordan) the flowering was latest (182 days). Among the entries, it was noted that Precoz was the earliest at most the locations and averaged over locations it was the earliest among all taking 101 days to flowering. Also Precoz was the earliest in maturity taking 149 days (Table 5.3.3).

The plant height in different locations ranged from 19 cm at Perugia in Italy to 43 cm at New Delhi in India (Table 5.3.4). Among the entries, Laird with an average height of 37 cm was the tallest at most of the locations. The correlations between time to flowering, time to maturity, plant height, and seed yield (Table 5.3.5) revealed that in large seeded types none of these variables contribute toward seed yield. However, these variables were positively and significantly correlated with each other.

The crop at Wagga Wagga (Australia) was not harvested thus the yield data was not reported. The adjusted seed yields at different locations (Table 5.3.6) showed that the performance of entries at Izra'a in Syria was the best with average yield of 2708 kg/ha and was followed by Terbol (2347 kg/ha). The CV of the experiment varied from 5.5 per cent for Izra'a in Syria to 84.3 per cent for Perugia in Italy. Except at Sidi Bel Abbes in Algeria, Mendoza in Argentina, Izra'a-1, Izra'a-2 and Tel Hadya in Syria, Beja and Al-Kef in Tunisia and Pullman in USA the CVs were, in general, high.

The ANOVA for the experiment revealed that at some of the locations namely Mendoza in Argentina, Perugia in Italy, Izra'a-1 and Izra'a-2 in Syria, and Beja and El-Kef in Tunisia, 1, 2, 2, 1, 18 and 35 entries, respectively, outyielded the local check by a significant margin. The five heaviest seed yielding entries at the individual locations are given in Table 5.3.7. The entry mean over locations revealed that 80S 42541 was the top yielder with an average of 1610 kg/ha and was followed by 80S 42434, 80S 41667, 80S 41671, ILL 39 etc.

Further the correlations between seed yields at different locations (Table 5.3.8) revealed that the performance at Tel Hadya was positively related only with Ramtha in Jordan, Marchouch in Morocco, Izra'a in Syria, and Mateur in Tunisia.

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

Material

The material for the Lentil International Screening Nursery - Small Seed comprised of 80 test entries. In addition, there were three checks, two namely Syrian Local Small (ILL 4401) and 78S 26018 (ILL 19) were supplied and one local check was to be used by the cooperator. These entries were selected from the materials developed and tested at

Table 5.3.2. Time to flowering (days) of entries at different locations in the LISN-L during 1982/83.

ENTRY NAME		ORIGIN	ALGERIA	ARGENTINA	AUSTRALIA	EGYPT	INDIA	ITALY	JORDAN	LEBANON	PERU	SYRIA		USA	MEAN		
PEDIGREE	ILL/Cross No.		Sidi Bel Abbes	Mendoza	Wagga Wagga	Gemiza	Sakha	New Delhi	Perugia	Jubeiha	Ramtha	Terbol	San Lorenzo	Izra'a	Tol Hadya	Pullman	
-	39	Syria	125	119	110	107	115	112	70	178	155	153	90	117	128	58	117
-	45	Syria	125	119	111	105	115	109	67	184	157	153	85	117	131	5	117
74TA 265	254	Greece	125	119	111	103	110	107	68	184	158	153	90	117	131	56	117
78 26127	642	Turkey	125	126	114	108	115	-	72	178	172	157	90	116	135	64	121
-	780	Syria	123	119	110	100	115	109	72	186	157	153	90	116	129	58	117
-	920	Tunisia	123	114	109	100	110	107	73	189	158	151	80	114	129	54	115
-	2149	Jordan	120	114	105	105	90	93	69	176	154	147	70	114	127	54	110
Laird	4349	Canada	129	130	119	105	115	113	74	194	177	161	90	115	143	69	124
Cyprus Loc.	4368	Cyprus	125	114	107	103	100	102	70	175	155	149	75	115	127	56	112
79Ter 794	4400	Syria	123	119	111	107	115	109	73	187	157	153	90	115	131	58	118
80S 50507	4400	Syria	120	119	111	102	110	109	73	185	157	153	90	116	127	56	116
80Ter 52385	4400	Syria	125	119	111	101	110	106	67	185	157	153	90	115	129	58	116
80Ter 52390	4400	Syria	125	119	111	103	115	111	67	185	156	153	90	115	129	58	117
80Ter 52424	4400	Syria	123	120	109	102	115	109	77	179	157	153	90	116	129	58	117
80Ter 52428	4400	Syria	123	121	111	100	110	105	70	187	157	153	90	116	129	58	116
-	4507	Syria	123	119	110	101	110	109	69	178	157	153	90	116	131	58	116
-	4515	Syria	124	119	111	102	110	108	67	178	157	153	90	115	131	58	116
-	4524	Syria	124	119	110	102	110	110	64	178	155	151	90	115	131	58	116
Precoz	4605	Argentina	111	114	104	88	80	74	68	172	-	143	70	115	119	58	101
Chilean 78	4711	USA	125	116	114	107	110	107	63	178	159	161	75	116	135	62	116
80Ter 32004	-	-	126	118	107	99	110	110	62	190	157	153	90	115	131	56	116
79Ter 1774	X75TA 44	ICARDA	127	119	119	98	120	111	61	188	164	157	85	115	135	64	119
79SH 4806	X75TA 49	ICARDA	123	119	113	96	100	107	58	188	158	157	90	115	135	58	116
79SH 4809	X75TA 49	ICARDA	125	119	112	96	110	104	58	185	157	157	90	115	135	56	116
79S 53247	X75TA 49	ICARDA	125	119	111	96	110	108	57	175	158	153	90	116	131	56	115
79S 59741	X75TA 49	ICARDA	125	118	113	101	110	110	60	188	160	153	90	116	135	58	117
78S 13621-1	X75TA 53	ICARDA	125	118	111	101	105	112	61	175	157	153	90	116	129	56	115
79Ter 3032	X75TA 74	ICARDA	125	118	111	102	105	111	61	178	158	151	90	115	131	58	115
80S 42059	X76TA 11	ICARDA	123	116	111	103	105	110	59	179	157	151	90	115	129	58	115
80S 42221	X76TA 26	ICARDA	125	116	110	107	100	105	60	178	157	151	85	115	129	58	114
80S 42434	X76TA 66	ICARDA	125	120	111	101	100	110	59	189	157	153	90	114	129	62	116
80S 42541	X76TA 70	ICARDA	125	120	111	101	105	109	61	187	158	153	90	117	129	62	116
80S 41671	X76TA 71	ICARDA	120	114	107	102	100	96	60	175	154	143	70	114	129	56	110
80S 32768	X76TA 77	ICARDA	123	120	110	104	105	109	60	189	157	151	90	115	129	56	116
80S 41560	X76TA 250	ICARDA	123	119	109	97	105	100	57	189	155	153	90	116	129	56	114
80S 41620	X76TA 259	ICARDA	120	119	109	101	105	110	57	179	157	153	90	115	129	56	114
80S 41667	X76TA 271	ICARDA	120	113	108	96	105	92	60	178	154	151	85	116	127	56	112
80S 41139	X77TA 66	ICARDA	120	114	107	101	80	82	59	177	154	151	75	117	129	54	109
80S 34047	X77TA 78	ICARDA	125	125	110	103	105	110	61	178	157	153	90	116	129	56	116
80S 34056	X77TA 103	ICARDA	125	126	111	102	105	93	59	178	157	153	90	116	133	56	115
Local check	-	-	120	114	116	86	80	76	66	176	154	157	88	115	127	60	
Check 1	4400	Syria	124	118	111	102	111	110	66	185	157	153	88	115	130	59	116
Check 2	101	Morocco	126	121	114	101	110	108	64	186	158	156	89	115	136	57	117
Location mean	-	-	124	119	111	101	106	105	65	182	158	153	87	115	130	58	

Table 5.3.3. Time to maturity (days) of entries at different locations in the LISN-L during 1982/83.

ENTRY NAME		ALGERIA	ARGENTINA	AUSTRALIA	EGYPT	ITALY	JORDAN	LEBANON	PERU	SYRIA		USA	MEAN
PEDIGREE	ILL/Cross No.	Sidi Bel Abbès	Mendoza	Wagga Wagga	Gemmiza	Perugia	Ramtha	Terbol	San Lorenzo	Izra'a	Tel Hadya	Pullman	
-	39	176	140	189	161	105	198	201	120	149	164	125	157
-	45	176	140	189	158	101	200	201	120	148	164	125	157
74TA 265	254	176	140	188	157	101	195	201	120	150	164	-	159
78 26127	642	176	140	189	162	103	200	205	130	148	169	-	162
-	780	176	140	188	155	104	196	205	120	145	164	-	159
-	920	176	141	190	156	106	196	205	120	146	164	125	157
-	2149	172	141	190	157	103	200	201	115	148	162	-	159
Laird	4349	180	141	188	160	107	206	205	130	148	172	-	164
Cyprus Loc.	4368	176	141	189	159	103	200	201	125	149	162	-	161
79Ter 794	4400	176	141	176	161	105	200	201	130	149	162	125	157
80S 50507	4400	176	139	190	159	108	200	201	135	146	162	118	158
80Ter 52385	4400	176	139	190	158	102	200	201	135	145	162	-	161
80Ter 52390	4400	176	147	189	158	102	200	201	135	149	162	-	162
80Ter 52424	4400	176	141	174	157	109	200	201	135	150	162	-	161
80Ter 52428	4400	176	147	192	156	103	200	201	135	150	162	-	162
-	4507	176	147	190	157	102	200	201	135	151	164	-	162
-	4515	176	144	176	157	99	200	201	130	151	164	-	160
-	4524	176	147	190	157	99	200	201	125	147	164	125	157
Precoz	4605	169	144	167	141	103	191	191	105	147	155	125	149
Chilean 78	4711	176	144	187	161	98	206	205	140	149	169	-	164
80Ter 32004	-	176	141	190	151	97	200	201	130	146	162	-	159
79Ter 1774	X75TA 44	176	144	189	153	97	201	203	130	148	166	-	161
79SH 4806	X75TA 49	172	144	190	151	98	200	201	130	148	166	-	160
79SH 4809	X75TA 49	172	144	191	150	98	200	201	130	149	166	121	157
79S 53247	X75TA 49	172	144	187	150	98	200	201	140	149	166	-	161
79S 59741	X75TA 49	172	-	188	155	99	200	201	140	148	166	-	163
78S 13621-1	X75TA 53	176	147	189	155	100	200	197	140	147	164	-	162
79Ter 3032	X75TA 74	176	147	188	157	99	200	197	140	148	169	-	162
80S 42059	X76TA 11	176	144	190	158	99	200	197	140	149	164	-	162
80S 42221	X76TA 26	176	144	191	160	99	200	197	145	145	164	-	162
80S 42434	X76TA 66	176	144	194	157	98	200	201	140	148	164	-	162
80S 42541	X76TA 70	176	144	194	155	99	200	201	135	146	164	121	158
80S 41671	X76TA 71	169	144	192	155	99	191	201	110	148	162	-	157
80S 32768	X76TA 77	176	147	192	158	101	200	201	130	149	162	-	162
80S 41560	X76TA 250	172	147	191	149	99	200	197	130	150	162	-	160
80S 41620	X76TA 259	176	139	192	155	99	200	201	145	148	162	-	162
80S 41667	X76TA 271	172	144	188	149	101	197	201	135	147	162	-	160
80S 41139	X77TA 66	176	147	189	155	100	200	201	125	148	164	-	161
80S 34047	X77TA 78	176	144	183	158	101	200	201	140	149	164	125	158
80S 34056	X77TA 103	172	144	186	157	101	200	197	145	149	166	-	162
Local check		173	145	189	145	101	197	201	134	147	160	123	
Check 1		176	143	191	157	101	199	202	130	147	163	121	157
Check 2		176	145	189	155	101	200	199	131	147	168	123	158
Location mean		175	143	188	156	101	199	201	131	148	164	123	

Table 5.3.4. Plant height (cm) of entries at different locations in the LISN-L during 1982/83.

ENTRY NAME		ALGERIA		ARGENTINA	AUSTRALIA	EGYPT	INDIA	ITALY	JORDAN	LEBANON	PERU	SYRIA				USA	MEAN		
PEDIGREE	ILL/Cross No.	Sidi	Bel	Abbes	Mendoza	Wagga Wagga	Gemiza	New Delhi	Perugia	Jubeiha	Ramtha	Terbol	San Lorenzo	Gelline	Izra'a 1	Izra'a 2	Tol Hadya	Pullman	
-	39	32		22	33	41	33	16	30	24	38	40	33	39	27		30	22	31
-	45	30		23	32	37	40	19	24	29	35	40	30	35	28		30	22	30
74TA 265	254	28		22	28	47	42	15	30	27	35	30	31	32	28		29	19	30
78 26127	642	30		24	31	41	26	17	26	23	35	25	29	38	23		31	22	28
-	780	26		17	31	34	42	20	20	24	38	30	38	36	43		30	21	30
-	920	26		20	23	39	34	19	28	21	30	30	30	32	30		27	17	27
-	2149	28		24	31	40	54	15	26	25	30	30	35	34	31		30	23	30
Laird	4349	40		29	44	49	58	15	31	29	42	40	41	51	27		35	25	37
Cyprus Loc.	4368	28		27	32	35	42	18	28	29	30	30	33	39	23		29	22	30
79Ter 794	4400	30		24	33	37	40	18	29	25	35	25	36	33	33		30	22	30
80S 50507	4400	25		23	30	40	46	17	30	33	30	40	34	35	26		32	24	31
80Ter 52385	4400	28		21	34	40	65	16	28	25	32	45	38	36	25		35	26	33
80Ter 52390	4400	28		24	33	45	47	18	30	29	35	45	41	38	27		30	21	33
80Ter 52424	4400	30		20	33	40	50	20	31	25	34	45	34	37	29		28	24	32
80Ter 52428	4400	30		24	31	39	37	22	33	26	35	45	31	35	29		30	20	31
-	4507	28		25	35	29	37	19	31	28	30	40	30	32	28		29	23	30
-	4515	30		22	36	35	38	20	34	27	30	40	33	35	28		30	24	31
-	4524	28		25	31	36	38	20	31	30	35	30	35	35	35		30	25	31
Precoz	4605	25		22	29	33	35	17	24	-	23	25	32	26	32		23	19	26
Chilean 78	4711	32		23	40	43	34	17	35	29	40	30	40	41	30		24	25	32
80Ter 32004	-	30		23	28	33	43	18	31	23	32	25	38	35	24		29	22	29
79Ter 1774	X75TA 44	28		17	29	33	40	21	29	24	35	30	33	33	28		30	21	29
79SH 4806	X75TA 49	30		24	31	42	54	20	30	27	35	30	37	34	33		29	23	32
79SH 4809	X75TA 49	28		28	28	35	41	24	31	28	35	30	34	28	31		32	25	31
79S 53247	X75TA 49	28		26	32	40	38	21	32	29	30	40	38	37	35		32	26	32
79S 59741	X75TA 49	28		24	31	40	40	21	33	27	30	35	41	38	36		30	19	32
78S 13621-1	X75TA 53	25		21	33	40	40	19	32	29	30	45	40	34	29		32	23	31
79Ter 3032	X75TA 74	26		20	29	40	46	19	29	26	27	45	36	34	27		30	21	30
80S 42059	X76TA 11	28		24	35	37	40	18	31	27	30	50	36	34	29		33	21	32
80S 42221	X76TA 26	28		25	33	39	42	20	30	27	35	50	36	38	26		30	24	32
80S 42434	X76TA 66	30		24	33	47	52	23	32	30	30	45	31	39	27		35	20	33
80S 42541	X76TA 70	28		30	33	48	49	21	30	32	32	40	41	31	31		31	22	33
80S 41671	X76TA 71	28		30	26	43	44	20	26	-	30	30	37	31	33		30	23	31
80S 32768	X76TA 77	28		31	31	43	37	22	27	27	37	30	32	32	32		34	26	31
80S 41560	X76TA 250	26		28	31	44	40	23	26	25	30	35	34	32	29		30	25	31
80S 41620	X76TA 259	25		26	34	41	40	20	30	24	30	50	36	36	28		32	25	32
80S 41667	X76TA 271	28		22	30	43	40	20	23	23	30	45	34	33	32		30	23	30
80S 41139	X77TA 66	25		25	37	41	52	22	29	30	36	50	37	39	25		33	28	34
80S 34047	X77TA 78	28		25	37	41	50	21	29	28	35	45	36	36	29		35	24	33
80S 34056	X77TA 103	30		21	33	47	46	22	27	29	33	45	36	33	27		30	22	32
Local check		31		22	32	46	42	18	27	26	36	39	37	34	27		28	24	-
Check 1		28		23	32	40	42	18	31	28	32	34	37	35	30		30	22	31
Check 2		28		22	30	39	44	18	27	22	30	34	36	34	31		31	22	30
Location mean		28		24	32	40	43	19	29	27	33	37	35	35	29		30	23	

Table 5.3.5. Correlation (df=40) among three agronomic characters and seed yield of entries in the LISN-L during 1982/83.

Characters	Time to maturity	Plant height	Seed yield
Time to flowering	0.50**	0.35*	-0.11
Time to maturity		0.54**	0.19
Plant height			0.30

* ≤ 0.05 , ** $P \leq 0.01$

Table 5.3.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-L during 1982/83.

ENTRY NAME		ALGERIA		ARGENTINA		EGYPT		INDIA		ITALY		JORDAN		LEBANON		MOROCCO	
PEDIGREE	ILL	Sidi	Bel Ahbes	Mendoza		Gemmiza		New Delhi		Perugia		Jubeiha		Ramtha		Terbol	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
-	39	618	31	958	33	1750	11	745	26	104	36	391	11	1376	31	1054	36
-	45	535	39	1258	8	1250	25	301	42	304	24	482	5	1616	21	2801	2
74TA 265	254	618	31	1008	28	1583	15	401	40	254	28	400	10	1882	7	1081	35
78S 26127	642	618	31	758	42	1750	11	256	43	0	40	391	12	1789	10	1001	38
-	780	618	31	1008	28	1417	20	579	34	4	39	371	17	-	-	1294	29
-	920	618	31	958	33	1917	7	645	30	0	40	391	12	-	-	1654	18
-	2149	701	26	908	36	1583	15	890	17	154	31	376	16	-	-	1534	22
Laird	4349	785	20	858	39	1417	20	579	34	54	38	1551	1	-	-	428	42
Cyprus Loc.	4368	785	20	908	36	1583	15	590	33	0	40	404	9	2056	3	2241	7
79Ter 794	4400	1035	5	1208	11	1250	25	756	25	504	16	413	8	1949	5	1174	34
80S 50507	4400	924	11	1092	19	1083	31	1175	6	521	15	0	37	1593	22	2699	3
80Ter 52385	4400	1007	6	1342	5	1417	20	864	18	571	10	0	37	1713	15	766	40
80Yer 52390	4400	590	38	1092	19	1583	15	408	39	671	4	28	35	1740	13	1619	21
80Ter 52424	4400	840	16	1192	12	917	34	442	37	671	4	0	37	1660	18	1286	30
80Ter 52428	4400	1090	4	1092	19	917	34	819	22	471	18	40	33	2513	1	1219	33
-	4507	757	24	992	30	750	37	819	22	721	2	0	37	1633	20	1046	37
-	4515	757	24	1092	19	1083	31	864	18	721	2	0	37	1700	17	1659	17
-	4524	840	16	1092	19	417	40	942	14	571	10	1509	2	2353	2	1486	23
Precoz	4605	507	40	1192	12	250	43	619	31	571	10	95	29	873	35	166	43
Chilean 78	4711	674	29	742	43	417	40	864	18	421	20	96	28	-	-	1446	24
80Ter 32004	-	-	-	892	38	528	39	708	27	438	19	0	37	1491	24	948	39
79Ter 1774	X75TA 44	618	31	792	41	361	42	375	41	88	37	35	34	1438	27	1228	32
79SH 4806	X75TA 49	868	15	1392	4	1694	13	1764	1	638	6	147	26	1451	26	1428	25
79SH 4809	X75TA 49	785	20	1192	12	1361	23	1397	3	138	32	223	21	1584	23	1268	31
79S 53247	X75TA 49	951	10	1292	6	1361	23	1131	8	138	32	361	18	1744	12	1308	27

...Cont'd

Table 5.3.6. Cont'd.

ENTRY NAME		ALGERIA		ARGENTINA		EGYPT		INDIA		ITALY		JORDAN		LEBANON		MOROCCO					
PEDIGREE	ILL	Sidi Bel Abbas		Mendoza		Gemmiza		Sakha		New Delhi		Perugia		Jubeiha		Ramtha		Terbol		Marchouch	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y		Y	R	Y	R
79S 59741	X75TA 49	618	31	992	30	1194	28	1319	4	288	25	0	37	838	36	1308	27	2328	21	496	20
78S 13621-1	X75TA 53	451	41	1092	19	2028	4	931	15	138	32	418	7	1984	4	1894	14	2439	19	446	27
79Ter 3032	X75TA 74	451	41	992	30	861	36	442	37	138	32	217	22	784	37	1374	26	3106	6	446	27
80S 42059	X76TA 11	701	26	1192	12	1861	9	453	36	188	30	421	6	1638	19	1934	12	2773	13	446	27
80S 42221	X76TA 26	785	20	1292	6	1694	13	686	29	288	25	166	25	1171	34	2041	9	2550	17	346	38
80S 42434	X76TA 66	923	13	1458	2	2639	1	1160	7	538	14	552	4	1793	9	2539	4	3539	2	379	33
80S 42541	X76TA 70	924	11	1908	1	2306	3	1016	9	588	8	284	20	1753	11	2832	1	3095	7	629	10
80S 41671	X76TA 71	1174	3	1458	2	1972	5	982	12	288	25	380	15	1473	25	2019	10	2873	9	379	33
80S 32768	X76TA 77	840	16	1258	8	1139	29	838	21	388	21	145	27	1727	14	2046	8	3706	1	529	15
80S 41560	X76TA 250	1257	2	958	33	1472	19	971	13	-		55	32	1433	28	1686	16	3095	7	729	4
80S 41620	X76TA 259	840	16	1158	16	1806	10	1538	2	638	6	171	24	1233	32	2512	5	3317	3	479	23
80S 41667	X76TA 271	1007	6	858	39	1972	5	1005	10	388	21	5	36	1393	30	1632	19	2650	15	579	12
80S 41139	X77TA 66	674	29	1258	8	2639	1	1005	10	588	8	388	14	1713	15	1926	13	2873	9	729	4
80S 34047	X77TA 78	1007	6	1158	16	639	38	816	24	238	29	72	31	1833	8	2286	6	3317	3	479	23
80S 34056	X77TA 103	1340	1	1158	16	972	33	905	16	488	17	180	23	-	-	2019	10	2095	27	679	9
Check means:																					
Check 1	4400	688	28	1050	26	1250	25	592	32	350	23	88	30	1417	29	1697	15	2236	23	525	17
Check 2	101	875	14	1038	27	1875	8	703	28	563	13	811	3	1173	33	763	41	2069	30	513	18
Local check		958	9	1088	25	1125	30	1208	5	900	1	358	19	1883	6	1623	20	2310	22	500	19
Location mean		801		1109		1374		826		374		289		1605		1581		2347		512	
C.V.%		17.7		11.1		49.1		60.5		53.8		84.30		39.5		38.2		35.8		36.5	
L.S.D. 5%:																					
Check means		257		203		1205		873		563		611		1019		900		1368		324	
Adjusted varieties in the same block		515		406		2410		1747		1125		1222		2039		1801		2736		648	
Adjusted varieties in different blocks		595		469		2783		2018		1300		1411		2354		2080		3160		748	
Adjusted variety vs check mean		470		371		2200		1595		1027		1116		1861		1644		2498		591	
The number of lines significantly exceeding the local check		0		1		0		0		0		2		0		0		0		0	

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Cont'd. ...

Table 5.3.6. Adjusted seed yield (Y = kg/ha) and rank (R) of entries at different locations in the LISN-L during 1982/83.

ENTRY		PERU		SYRIA						TUNISIA						USA		MEAN			
PEDIGREE	ILL/ Cross No.	San lorenzo		Gelline		Izra'a 1		Izra'a 2		Tel Hadya		Beja		El-Kef		Mateur		Pullman			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
-	39	1834	4	2361	4	2881	18	3556	1	984	21	1475	26	1750	11	1600	5	464	29	1438	5
-	45	1144	9	1294	29	2881	18	1716	12	1024	19	1300	35	2050	1	1450	8	497	23	1305	15
74TA 265	254	134	39	2028	8	1721	39	1466	18	704	35	1450	29	1500	27	1150	13	360	35	1034	36
78S 26127	642	544	30	1428	22	1614	41	1176	30	358	40	1050	38	1350	38	-	-	497	23	914	39
-	780	894	17	2028	8	3014	16	1406	23	784	32	-	-	1875	4	-	-	202	41	1155	27
-	920	304	37	2628	1	2374	32	1246	28	691	36	1800	9	1550	22	-	-	469	27	1143	29
-	2149	134	39	1961	12	2814	20	1426	21	984	22	1600	19	1500	27	1300	10	464	29	1111	32
Laird	4349	844	18	361	42	1441	43	776	38	264	41	1050	38	1100	42	450	17	1142	1	816	41
Cyprus Local	4368	529	31	2361	4	2081	37	1056	33	904	27	1250	37	1550	22	-	-	562	20	1192	22
79Ter 794	4400	559	28	1294	29	2481	30	366	42	864	30	1500	23	1850	5	-	-	333	36	1149	28
80S 50507	4400	2227	1	1872	13	2703	23	1016	36	78	42	2300	3	1500	27	-	-	726	14	1335	10
80Ter 52385	4400	2207	2	1672	16	3063	15	1026	34	1118	16	2100	4	1650	17	-	-	639	18	1353	8
80Ter 52390	4400	907	16	1206	33	3330	7	1506	17	1224	8	1700	13	1900	2	-	-	420	33	1314	13
80Ter 52424	4400	977	14	206	43	3263	8	1466	18	1171	12	2325	2	1300	39	2200	1	502	22	1175	25
80Ter 52428	4400	1217	8	739	39	3437	5	1766	10	1224	8	1700	13	1700	14	-	-	256	40	1308	14
-	4507	1467	6	1472	21	3130	13	1076	32	811	31	1350	31	1450	34	-	-	267	38	1098	33
-	4515	667	24	1539	19	2690	24	1746	11	904	27	1575	22	1400	36	-	-	486	26	1187	24
-	4524	617	26	1539	19	2770	21	1286	27	651	39	1725	12	1675	16	-	-	464	29	1266	20
Precoz	4605	72	43	1072	36	1663	40	1556	15	744	34	1350	31	1200	41	-	-	776	11	811	42
Chilean 78	4711	377	35	539	41	1730	38	1526	16	78	42	1325	34	1250	40	450	18	759	12	822	40
80Ter 32004	-	482	34	1983	10	2179	35	1573	14	918	26	1500	23	1500	27	-	-	843	9	1077	34
79Ter 1774	X75TA 44	747	19	1317	24	2286	34	1183	29	678	37	1875	7	1500	27	1550	6	635	19	1018	37
79Sh 4806	X75TA 49	982	13	2317	6	2552	27	623	39	678	37	1300	35	1850	5	1150	14	307	37	1284	18
79Sh 4809	X75TA 49	727	21	650	40	2886	17	2393	4	958	24	1675	15	1500	27	-	-	466	28	1189	23
79Sh 53247	X75TA 49	732	20	1183	34	2619	26	1933	7	1144	14	1675	15	1550	22	-	-	745	13	1296	16

Cont'd. ...

Table 5.3.6. Cont'd. ...

ENTRY		PERU		SYRIA						TUNISIA						USA		MEAN	
PEDIGREE	ILL/ Cross No.	San Lorenzo		Gelline		Izra'a 1		Izra'a 2		Tel Hadya		Beja		El-Kef		Mateur		Pullman	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
79S 59741	X75TA 49	727	21	916	38	1486	42	473	41	1144	14	1500	23	1650	17	-	-	389	34
78S 13621-1	X75TA 53	1052	10	1317	24	3126	14	363	43	1438	2	1400	30	1825	8	-	-	510	21
79Ter 3032	X75TA 74	497	32	1983	10	2352	33	1353	24	1158	13	2550	1	1575	21	1100	15	892	6
80S 42059	X76TA 11	1257	7	1250	31	2752	22	533	40	1558	1	725	41	1500	27	-	-	460	32
80S 42221	X76TA 26	617	26	2250	7	3152	12	993	37	1371	3	1600	19	1800	10	1850	3	488	25
80S 42434	X76TA 66	1497	5	1650	17	3170	11	1696	13	1327	4	925	40	1550	22	-	-	196	42
80S 42541	X76TA 70	1947	3	1317	24	3503	4	2456	3	873	29	1675	15	1750	11	-	-	120	43
80S 41671	X76TA 71	102	42	1850	14	3370	6	1866	9	1020	20	1800	10	1900	2	1500	7	934	4
80S 32768	X76TA 77	247	38	1317	24	3530	3	1306	26	1260	5	175	42	1850	5	1900	2	857	7
80S 41560	X76TA 250	1012	12	2450	2	3237	10	1976	5	1207	10	1875	7	1750	11	-	-	1060	2
80S 41620	X76TA 259	1047	11	1783	15	2143	36	1156	31	1193	11	1675	15	1700	14	1800	4	650	17
80S 41667	X76TA 271	337	36	2383	3	3770	2	2616	2	1247	6	1950	6	1625	20	-	-	661	16
80S 41139	X77TA 66	107	41	1317	24	2503	29	1456	20	1047	17	1600	19	1825	8	1450	9	847	8
80S 34047	X77TA 78	647	25	1183	34	2677	25	1346	2	1247	6	2000	5	1550	22	-	-	666	15
80S 34056	X77TA 103	552	29	1650	17	3810	1	1906	8	1033	18	1475	26	1450	34	-	-	1054	3
Check means:																			
Check 1	4400	915	15	1217	32	2467	31	1018	35	937	25	1775	11	1631	19	1200	12	260	39
Check 2	101	491	33	933	37	2543	28	1425	22	763	33	1456	28	1394	37	1250	11	817	10
Local check		685	23	1333	23	3247	9	1955	6	973	23	1333	33	888	43	875	16	906	5
Location mean		815		1515		2708		1436		947		1558		1586		1346		583	
C.V.%		78.2		46.4		5.5		25.2		19.71		6.3		13.5		-		27.2	
L.S.D. 5%:																			
Check means		943		932		266		639		304		742		305		-		311	
Adjusted varieties in the same block		1887		1864		532		1279		608		332		609		-		623	
Adjusted varieties in different blocks		2180		2152		614		1477		702		383		703		-		720	
Adjusted variety vs check mean	1723			1701		486		1167		555		303		556		-		569	
The number of lines significantly exceeding the local check	0			0		2		1		1		18		35		-		0	

Table 5-3-7. The five heaviest seed yielding entries at the individual locations in the LISH-L during 1982/83.

RANK	ALGERIA		ARGENTINA		EGYPT				INDIA		ITALY	
	Sidi Bel Abbas		Mendoza		Gemmiza		Sakha		New Delhi		Perugia	
	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.
1	80S 34056	X76TA 103	80S 42541	X76TA 70	80S 41139	X77TA 66	79SH 4806	X75TA 49	Local check		Laird	4349
2	80S 41560	X76TA 250	80S 42434	X76TA 66	80S 42434	X76TA 66	80S 41620	X76TA 259	-	4507	-	4524
3	80S 41671	X76TA 71	80S 41671	X76TA 71	80S 42541	X76TA 70	79SH 4809	X75TA 49	-	4515	Check 2	101
4	80Ter 52428	4400	79SH 4806	X75TA 49	78S 13621-1	X75TA 53	79S 59741	X75TA 49	80Ter 52390	4400	80S 42434	X76TA 66
5	79Ter 794	4400	80Ter 52385	4400	80S 41671	X76TA 71	Local check		80Ter 52424	4400	-	45

RANK	JORDAN		LEBANON		Morocco		PERU		SYRIA	
	Jubeiha		Ramtha		Terbol		Marchouch		San Lorenzo	
	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL / Cross No.
1	80Ter 52428	4400	80S 42541	X76TA 70	80S 32768	X76TA 77	-	780	80S 50507	4400
2	-	4524	-	45	80S 42434	X76TA 66	-	45	80Ter 52385	4400
3	Cyprus Loc.	4368	80S 50507	4400	80S 41620	X76TA 259	79Ter 1774	X75TA 44	80S 42541	X76TA 70
4	78S 13621-1	X75TA 53	80S 42434	X76TA 66	80S 34047	X77TA 78	80S 41139	X77TA 66	-	39
5	79Ter 794	4400	80S 41620	X76TA 259	80Ter 52390	4400	80S 41560	X76TA 250	80S 42434	X76TA 66

...Cont'd 2/

Table 5.3.7. Cont'd.

RANK	SYRIA						TUNISIA						USA	
	Izra'a 1		Izra'a 2		Tel Hadya		Beja		El-Kef		Mateur		Pullman	
	Pedigree	ILL/ Cross No.	Pedigree	ILL/ Cross No.	Pedigree	ILL / Cross No.	Pedigree	ILL/ Cross No.	Pedigree	ILL/ Cross No.	Pedigree	ILL/ Cross No.	Pedigree	ILL/ Cross No.
1	80S 34056	X77TA 103	-	39	80S 42059	X76TA 11	79Ter 3032	X75TA 74	-	45	80Ter 52424	4400	Laird	4349
2	80S 41667	X76TA 271	80S 41667	X76TA 271	78S 13621-1	X75TA 53	80Ter 52424	4400	80Ter 52390	4400	80S 32768	X76TA 77	80S 41560	X76TA 250
3	80S 32768	X76TA 77	80S 42541	X76TA 70	80S 42221	X76TA 26	80S 50507	4400	80S 41671	X76TA 71	80S 42221	X76TA 26	80S 34056	X77TA 103
4	80S 42541	X76TA 70	79SH 4809	X75TA 49	80S 42434	X76TA 66	80Ter 52385	4400	-	780	80S 41620	X76TA 259	80S 41671	X76TA 71
5	80Ter 52428	4400	80S 41560	X76TA 250	80S 32768	X76TA 77	80S 34047	X77TA 78	79Ter 794	4400	-	39	Local check	
									79SH 4806	X75TA 49				

(1) The brackets indicate entries having the same rank.

Table 5.3.8. Correlation (df=11) among different locations for the seed yield of entries in the LISN-L during 1982/83.

COUNTRY	LOCATION	ARGENTINA	EGYPT		INDIA	ITALY	JORDAN		LEBANON	MOROCCO	PERU	SYRIA				TUNISIA			USA
		Mendoza	Gemmlza	Sakha	New Delhi	Perugia	Jubeiha	Ramtha	Terbol	Marchouch	San Lorenzo	Gelline	Izra'a 1	Izra'a 2	Tel Hadya	Beja	El-Kef	Mateur	Pullman
ALGERIA	Sidi Bel Abbes	0.61 [*]	0.41	0.53	0.43	0.08	0.12	0.04	0.20	-0.46	-0.19	-0.02	0.52	0.08	0.03	-0.22	0.11	0.34	0.21
ARGENTINA	Mendoza		0.58 [*]	0.54	0.43	0.06	0.20	0.51	0.38	-0.19	-0.07	0.23	0.62 [*]	0.08	0.37	-0.32	0.67 [*]	0.24	0.07
EGYPT	Gemmlza			0.54	0.51	0.52	0.14	0.21	0.25	-0.08	-0.40	0.25	-0.02	0.10	0.06	-0.20	0.36	-0.15	0.18
EGYPT	Sakha				0.62 [*]	-0.08	-0.07	0.21	0.52	-0.04	0.09	0.41	-0.01	-0.48	-0.02	-0.25	0.35	-0.01	0.01
INDIA	New Delhi					0.08	0.19	0.03	0.06	0.01	0.25	-0.32	0.11	-0.20	0.03	-0.13	-0.08	0.29	-0.10
ITALY	Perugia						-0.03	-0.11	-0.10	0.10	-0.35	-0.02	-0.13	0.48	-0.23	-0.18	0.07	-0.43	0.33
JORDAN	Jubeiha							0.18	-0.33	0.46	-0.21	-0.28	0.11	0.25	-0.22	-0.48	0.14	0.22	-0.26
JORDAN	Ramtha								0.50	0.06	0.25	0.17	0.33	0.17	0.57 [*]	-0.28	0.80 ^{**}	0.33	0.06
LEBANON	Terbol									-0.26	-0.20	0.34	0.30	-0.11	0.53	-0.34	0.54	0.10	0.57 [*]
MOROCCO	Marchouch										0.22	-0.14	-0.34	-0.04	0.56 [*]	-0.24	0.21	-0.29	-0.24
PERU	San Lorenzo											-0.19	-0.06	-0.40	0.01	0.20	-0.02	0.17	-0.57 [*]
SYRIA	Gelline												-0.28	-0.36	-0.05	-0.10	0.47	-0.44	-0.10
SYRIA	Izra'a 1													0.23	0.57 [*]	-0.28	0.34	0.61	0.30
SYRIA	Izra'a 2														0.13	0.10	0.06	0.11	0.53
SYRIA	Tel Hadya															-0.01	0.26	0.64 [*]	0.31
TUNISIA	Beja																-0.48	-0.11	-0.01
TUNISIA	El-Kef																	-0.06	0.08
TUNISIA	Mateur																		0.12

* P < 0.05

** P < 0.01

ICARDA sites in Syria and Lebanon.

Methods and Management

The material was grown in an augmented block design. The entries were suggested to be accommodated in eight blocks, each block containing ten test entries and 3 checks. The suggested plot size was single row 4 m long accommodating 200 seeds with inter row spacing of 25 cm. Thirty five sets of screening nursery were sent to cooperators in 22 countries and the results were received from 19 locations from 11 countries. The agronomic data received from cooperators are given in Table 5.4.1.

Results and Discussion

The location mean for time to flowering (Table 5.4.2), time to maturity (Table 5.4.3) and plant height (Table 5.4.4) ranged from 51 to 180 days, 91 to 206 days and 19 to 43 cm, respectively. However, the means of the entries over locations ranged from 111 to 124 days, 155 to 165 days and 22 to 34 cm for time to flowering, time to maturity and plant height, respectively. The correlation estimates among different agronomic variables (Table 5.4.5) revealed that time to flowering, time to maturity and plant height are positively and significantly associated with each other, however, with seed yield both time to flowering and time to maturity had negative and significant association.

Adjusted seed yields of different entries over locations are given in Table 5.4.6. The location mean yield was highest at Pulawy in Poland (2614 kg/ha) and was followed by Jubeiha in Jordan (2493 kg/ha), Izra'a in Syria (2277 kg/ha) and Terbol in Lebanon (2243 kg/ha). The CV was very high at all the locations in Pakistan, high in Mallawi in Egypt, Marchouch in Morocco, and Santa Maria in Brazil and moderate to low at other locations. The LSD estimates at different locations revealed that out of 19 locations, only at 4 locations namely Pulawy in Poland, Gelline and Izra'a in Syria and Izmir in Turkey, 19, 1, 4 and 2 entries respectively exceeded the local check by a significant margin. The five heaviest yielders at each location are given in Table 5.4.7. The average performance of the entries over locations showed that 80S 41664, 80S 41672, ILL 2194, 80S 36013 and 80S 41649 were the best lines.

The correlations between seed yields of the entries at different locations (Table 5.4.8) revealed that Tel Hadya in Syria had a positive and significant correlation with Mallawi in Egypt, Islamabad in Pakistan, and Gelline and Izra'a in Syria, however, with Dokri in Pakistan it showed negative correlation.

Table 5.4.1. Agronomic data for different locations in the LISN-S during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigations	Insecticide/ fungicide/weedicide
				N	P ₂ O ₅	K ₂ O		
AFGHANISTAN	Darulaman	18.4.1983	110	30	60			Metasystox
ALGERIA	Sidi Bel Abbes	22.11.1982	174	15	70			
ARGENTINA	Mendoza	11. 7.1983	121	18	46		8	Parathion
AUSTRALIA	Wagga Wagga	23. 6.1983	194		35			
BRAZIL	Santa Maria	21. 6.1983	153	8	60			
EGYPT	Mallawi	11.12.1982	161	15	30	50		
EGYPT	Bahteem	6. 11.1982	145			-		
ITALY	Leonessa	9. 5.1983	107					
JORDAN	Jubelha		-					
JORDAN	Ramtha	31.10.1982	213	15	40			
LEBANON	Terbol	24.11.1982	201		50			Kerb-Bladex Fusilade
MOROCCO	Marchouch		-					
PAKISTAN	Dokri	4. 11.1982	168	150 kg DAP				
PAKISTAN	Faisalabad	30.10.1982	181	25	55			
PAKISTAN	Islamabad		-					
PAKISTAN	Peshawar	4. 11.1982	197					
POLAND	Pulawy	7. 4.1983	97		80	120		
SYRIA	Gelline		-					
SYRIA	Izra'a 1		-					
SYRIA	Izra'a 2	14.12.1982	148	30	50			
SYRIA	Tel Hadya	16.11.1982	174		50			
TURKEY	Izmir	8. 12.1982	166					

Table 5.4.2. Time to flowering (days) of entries at different locations in the LISN-5 during 1982/83.

ENTRY NAME		COUNTRY OF ORIGIN	AFGHANISTAN		ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT		ITALY	JORDAN	LEBANON		PAKISTAN				POLAND	SYRIA		TURKEY	MEAN
PEDIGREE	ILL/ CROSS No.		Darulaman	Sidi Bel Abbas	Mendoza	Wagga Wagga	Santa Maria	Kallawi	Bahreen	Leonessa	Jubeiha	Rantha	Terbol	Dokri	Faisalabad	Islamabad	Pashawar	Pulway	Izra'a 2	Tel Hadya	Izmir		
78s 26010	15	Jordan	61	118	110	106	92	80	104	59	174	164	147	145	124	140	145	49	117	127	122	115	
-	241	Syria	56	123	110	112	104	89	104	56	187	167	155	144	133	145	155	50	116	133	-	119	
78s 26083	346	Mexico	56	123	101	108	92	84	104	51	174	162	145	140	129	140	154	48	116	125	125	114	
-	1176	Lebanon	55	121	107	111	104	78	103	57	185	167	153	146	125	140	155	50	119	131	-	117	
-	1866	Syria	61	121	101	109	101	70	104	60	172	165	145	145	124	132	140	48	119	123	-	113	
-	1868	Syria	57	123	191	108	104	84	105	63	174	165	145	138	122	135	141	49	116	125	-	114	
78s 26303	1888	Syria	63	123	191	108	101	80	110	61	189	165	153	139	121	140	141	50	116	125	-	116	
-	1895	Syria	60	121	105	109	104	84	111	57	175	165	149	134	132	135	141	49	116	127	-	115	
-	1939	Morocco	62	121	105	108	101	86	101	60	178	167	155	136	129	135	155	50	115	127	-	116	
-	2116	Ethiopia	60	121	105	108	104	80	113	55	176	165	153	133	119	135	155	49	115	125	-	115	
-	2194	Pakistan	60	124	105	111	101	84	104	55	187	170	153	140	100	145	155	49	115	133	-	116	
80s 29318	X75TA 1	ICARDA	56	123	105	112	101	83	104	56	187	167	159	134	118	140	155	49	115	135	-	117	
80s 36103	X75TA 2	ICARDA	50	121	105	112	104	89	102	60	187	168	153	134	133	138	141	49	115	135	-	116	
79Ter 217	X75TA 5	ICARDA	62	123	99	110	104	90	108	61	179	167	155	133	135	140	141	51	116	129	-	117	
78s 13159-1	X75TA14	ICARDA	56	123	99	111	104	90	112	53	178	170	153	138	135	138	154	50	116	141	-	118	
78s 13183-1	X75TA16	ICARDA	61	123	99	109	104	93	107	60	178	168	153	140	137	135	153	50	116	131	-	118	
80s 29558	X75TA18	ICARDA	63	125	99	119	114	102	108	62	178	179	155	139	113	135	135	54	117	147	-	120	
80s 27525	X75TA20	ICARDA	57	121	99	107	104	87	106	61	178	165	151	141	117	135	135	59	116	127	-	116	
80s 37776	X75TA25	ICARDA	62	123	99	110	104	89	107	64	178	168	153	135	133	135	135	52	116	129	-	117	
80s 37944	X75TA28	ICARDA	61	121	99	112	108	91	114	60	178	169	157	140	145	135	135	52	117	133	-	119	
80s 37948	X75TA28	ICARDA	62	121	112	111	114	89	114	61	186	172	155	100	151	140	155	52	117	133	-	119	
80s 29690	X75TA31	ICARDA	56	121	109	113	108	84	104	61	185	171	159	148	127	145	155	51	117	133	-	119	
80s 38214	X75TA33	ICARDA	57	126	109	117	108	86	108	59	184	177	159	141	132	140	155	51	116	143	-	120	
78s 13494-1	X75TA44	ICARDA	64	121	107	114	108	102	119	61	186	-	155	143	147	135	155	53	116	133	127	119	
80s 29855	X75TA46	ICARDA	63	124	107	113	104	95	117	60	186	174	155	114	117	140	155	52	116	141	-	119	

Cont'd 2/..

Table 5.4.2. Cont'd

ENTRY NAME		COUNTRY OF ORIGIN	AFGHANISTAN	ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	LEBANON	PAKISTAN				POLAND	SYRIA		TURKEY	MEAN		
PEDIGREE	ILL / CROSS No.		Darulaman	Sidi Bel Abbas	Mendoza	Wagga Wagga	Santa Maria	Hallawi	Bahteen	Leonessa	Jubeiha	Rantha	Terbol	Dokri	Faisalabad	Islamabad	Peshawar	Pulway	Izra'a2		Tel Hadya	Izmir
78S 13558	X75TA49	ICARDA	58	124	106	115	108	87	104	59	186	174	155	144	121	140	155	54	116	141	128	119
78S 13565-1	X75TA49	ICARDA	56	118	101	105	101	84	103	54	179	165	155	145	113	145	157	50	117	129	125	114
78S 13572-1	X75TA50	ICARDA	64	124	106	115	114	89	117	61	186	173	153	143	137	140	155	52	117	135	127	121
78S 13644	X75TA55	ICARDA	65	118	105	112	104	70	101	59	187	167	153	123	118	135	141	53	118	129	127	114
78S 13740	X75TA65	ICARDA	57	121	101	113	111	80	114	55	184	167	155	138	120	150	155	52	118	135	-	118
80S 39182	X75TA75	ICARDA	57	121	101	109	108	70	105	61	178	165	151	138	139	140	154	50	116	125	-	116
80S 27595	X75TA76	ICARDA	65	121	101	109	114	90	114	60	184	165	153	145	140	140	154	52	116	127	-	119
80S 27596	X75TA78	ICARDA	57	121	101	108	114	87	115	60	173	165	149	137	131	140	141	51	117	127	-	116
80S 13816-1	X75TA78	ICARDA	55	124	101	113	114	84	101	54	185	165	153	134	126	150	141	51	117	135	-	117
80S 39751	X75TA81	ICARDA	54	121	101	111	108	98	108	58	179	170	153	145	134	150	154	51	117	127	-	119
80S 39754	X75TA81	ICARDA	50	121	101	111	114	90	103	53	178	168	153	147	125	150	155	51	117	127	-	117
80S 39778	X75TA82	ICARDA	61	121	101	107	114	94	106	59	175	165	153	132	127	150	142	53	117	127	-	117
78S 13845-1	X75TA83	ICARDA	55	118	101	109	108	89	102	55	170	165	147	130	134	150	155	51	116	129	-	116
80S 41727	X76TA 1	ICARDA	54	121	114	106	108	84	103	57	-	162	145	141	131	140	155	53	116	123	-	112
80S 42371	X76TA47	ICARDA	62	121	103	111	108	90	110	60	178	165	153	145	136	145	154	51	116	125	-	119
80S 42375	X76TA47	ICARDA	58	121	103	112	108	89	114	65	177	165	153	145	145	135	153	49	117	129	-	119
80S 42382	X76TA47	ICARDA	57	121	103	112	108	84	114	62	178	166	153	148	147	135	155	51	117	127	-	119
80S 42391	X76TA47	ICARDA	61	121	105	113	108	85	108	64	178	165	153	132	146	132	155	51	116	127	-	118
80S 42392	X76TA47	ICARDA	59	121	105	112	108	96	114	61	178	166	153	125	149	132	155	51	116	127	-	118
80S 42394	X76TA47	ICARDA	60	121	105	111	108	92	116	63	178	165	153	120	146	135	155	51	116	127	-	118
80S 42416	X76TA47	ICARDA	60	121	105	111	108	95	75	65	178	166	153	131	131	135	141	51	116	127	-	115
80S 43188	X76TA88	ICARDA	58	121	105	111	114	96	117	61	179	166	153	141	137	135	153	51	117	129	-	119
80S 42310	X76TA89	ICARDA	52	121	105	109	-	80	100	55	179	166	155	141	128	135	154	50	116	129	-	116
80S 43215	X76TA89	ICARDA	56	121	105	109	108	84	101	57	169	166	155	140	117	135	154	51	117	129	-	115
80S 28591	X76TA263	ICARDA	50	123	105	111	108	84	99	55	-	167	155	133	124	138	141	50	118	133	-	111

Cont'd 3/..

Table 5.4.2. Cont'd

ENTRY NAME		COUNTRY	AFGHANISTAN	ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	LEBANON	PAKISTAN				POLAND	SYRIA		TURKEY		MEAN		
		OF ORIGIN																					
PEDIGREE	ILL/ CROSS No.		Darulaman	Sidi	Bel Abbas	Mendoza	Magga	Magga	Santa Maria	Mallawi	Bahtem	Leonessa	Jubeiha	Ramtha	Terbol	Dokri	Faisalabad	Islamabad	Peshawar	Pulway	Izra'a 2	Tel Hadya	Izmir
80S 28604	X76TA269	ICARDA	62	121	105	113	114	89	110	64	179	169	155	129	127	140	155	51	118	133	-	119	
80S 41648	X76TA271	ICARDA	49	118	101	105	104	70	94	54	173	164	147	123	129	140	155	50	118	125	-	112	
80S 41649	X76TA271	ICARDA	50	118	96	104	104	70	94	54	173	166	143	131	122	135	141	50	116	127	-	111	
80S 41664	X76TA271	ICARDA	51	118	101	105	104	70	94	53	174	166	143	130	118	135	155	50	116	127	-	112	
80S 41672	X76TA271	ICARDA	51	118	101	104	104	70	93	56	175	166	147	140	134	136	141	50	116	127	-	113	
80S 34103	X77TA 33	ICARDA	64	121	102	108	115	89	109	60	179	167	151	140	135	138	155	51	116	131	-	118	
80S 34934	X77TA 67	ICARDA	55	121	102	108	115	84	110	61	173	167	145	143	133	135	155	51	116	127	-	117	
80S 34954	X77TA 67	ICARDA	57	123	102	108	108	86	110	61	173	167	149	123	139	135	156	51	118	127	-	116	
80S 34968	X77TA 71	ICARDA	60	121	102	107	104	87	108	55	173	167	151	136	137	133	155	51	118	127	-	116	
80S 34971	X77TA 71	ICARDA	61	121	107	109	115	97	119	60	180	167	155	146	150	135	155	51	118	127	-	121	
80S 35068	X77TA 78	ICARDA	65	121	105	110	115	102	104	64	188	168	155	145	147	134	154	54	116	131	-	121	
80S 35090	X77TA 79	ICARDA	56	125	105	113	115	83	114	60	187	168	159	130	127	135	151	53	116	135	-	118	
80S 35172	X77TA 80	ICARDA	61	125	105	115	122	94	106	61	187	168	159	146	151	135	151	53	115	136	-	122	
80S 35177	X77TA 80	ICARDA	64	121	106	113	115	87	116	63	186	168	159	-	139	135	152	53	116	135	-	119	
80S 35182	X77TA 80	ICARDA	63	121	106	113	115	102	119	60	186	167	157	-	150	135	153	53	116	133	-	121	
80S 35183	X77TA 80	ICARDA	65	121	106	116	115	103	119	64	186	167	159	122	152	135	153	53	116	143	-	122	
80S 35184	X77YA 80	ICARDA	64	121	106	114	115	95	94	61	186	164	155	123	138	135	153	53	117	133	127	118	
80Ter 630	-	ICARDA	55	121	106	109	104	80	99	59	178	167	153	131	115	135	151	52	116	127	126	114	
79Ter 140	X75TA 4	ICARDA	55	121	106	110	108	70	105	60	186	168	159	113	125	135	151	49	115	135	126	115	
79Ter 1910	X75TA 47	ICARDA	54	121	105	110	105	84	88	57	186	167	155	145	112	135	153	50	116	135	-	116	
79Ter 1950	X75TA 47	ICARDA	61	121	105	109	104	94	116	57	175	166	153	145	148	135	154	50	116	127	126	119	
79Ter 2002	X75TA 49	ICARDA	63	124	105	121	115	96	125	68	185	178	155	141	146	135	155	55	115	143	-	124	
79Ter 2509	ILL 4399	ICARDA	65	124	105	120	115	104	101	67	184	165	157	136	145	135	155	55	115	143	-	122	
79Ter 2667	X75TA 65	ICARDA	60	124	105	111	108	90	101	60	187	165	155	134	131	140	155	52	116	137	-	118	
79Ter 2824	X75TA 70	ICARDA	55	128	101	106	101	84	108	54	178	167	153	88	117	140	155	50	116	127	126	112	

Cont'd 4/..

Table 5.4.2.Cont'd

ENTRY NAME	COUNTRY	AFGHANISTAN	ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	PAKISTAN						POLAND	SYRIA		TURKEY		MEAN	
	OF ORIGIN																					
PEDIGREE	ILL / CROSS No.	Darulaman	Sidi Bel	Abbes	Mendoza	Magga	Magga	Santa Maria	Mallawi	Bahteen	Leonessa	Jubeiha	Rantha	Terbol	Dokri	Faisalabad	Islamabad	Peshawar	Pulway	Izra'a 2	Tel Hadya	Izmir
79Ter 3023	X75TA74	ICARDA	61	121	105	110	104	91	94	59	178	167	155	145	105	135	155	2	117	129	127	116
79Ter 3222	X75TA78	CARDA	55	121	112	113	104	87	108	53	178	169	153	136	119	138	154	51	117	133	127	117
79Ter 3345	4399	ICARDA	65	124	98	119	115	105	119	69	186	178	157	148	121	140	154	56	116	143	137	123
79Ter 3495	X75TAB5	ICARDA	55	118	98	107	104	84	101	53	186	167	149	139	115	135	138	51	115	131	126	114
79Ter 3617	X75TAB8	ICARDA	56	121	98	114	111	87	104	58	186	168	159	141	116	135	155	51	115	145	-	118
Local check	-	-	58	117	96	120	66	64	81	60	173	165	157	101	101	127	133	64	116	128	135	-
Check 1	4401	Syria	59	122	104	109	104	84	108	61	177	165	151	135	134	136	152	50	116	127	125	116
Check 2	19	Jordan	51	118	96	106	101	71	95	55	171	165	143	137	122	134	142	49	117	121	133	111
Location mean			58	121	104	111	107	87	106	59	180	167	153	136	130	138	151	51	116	131	128	

(1) It excludes TURKEY-Izmir from the mean overall locations.

Table 5.4.3. Time to maturity(days) of entries at different locations in the LISN-S during 1982/83.

ENTRY NAME			ALGERIA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	LEBANON	PAKISTAN			POLAND	SYRIA		TURKEY	MEAN
PEDIGREE	ILL / CROSS No.		Sidi Bel Abbas	Wagga Wagga	Santa Maria	Mallawi	Leonessa	Ramtha	Terbol	Dokri	Faisalabad	Peshawar	Pulway	Izra'a 2	Tel Hadya	Izmir	
78S 26101	15		170	190	139	143	106	201	191	146	171	189	90	138	159	160	156
-	241		174	190	153	148	101	205	201	155	179	-	91	138	164	-	158
78S 26083	346		170	189	143	147	103	201	191	159	176	-	89	141	157	160	156
-	1176		174	190	143	148	109	205	201	161	172	-	91	141	164	-	158
-	1866		170	190	139	145	101	201	191	155	176	-	89	142	157	-	155
-	1968		170	190	139	142	100	201	191	156	174	189	89	141	162	-	157
78S 26303	1888		170	190	143	146	107	205	201	154	177	-	90	144	162	-	157
-	1895		170	191	143	145	105	205	191	145	179	189	89	144	162	-	158
-	1939		170	189	139	146	107	205	193	153	178	189	89	145	162	-	159
-	2116		170	188	139	143	102	201	191	147	176	189	89	146	159	-	157
-	2194		170	189	153	146	106	210	201	154	181	-	90	145	166	-	159
80S 29318	X75TA1		170	190	153	154	103	207	201	157	179	-	90	145	166	-	160
80S 36013	X75TA2		170	189	153	150	102	207	197	139	175	-	89	147	164	-	157
79Ter 217	X75TA5		170	190	153	155	100	210	203	157	173	197	90	147	164	-	162
78S 13159-1	X75TA14		170	190	153	154	105	207	191	154	177	197	89	148	164	-	161
78S 13183-1	X75TA16		170	193	143	155	99	206	193	138	178	197	91	148	164	-	160
80S 29558	X75TA18		174	189	153	161	101	208	203	134	153	-	91	147	174	-	157
80S 27525	X75TA20		170	188	139	149	100	201	191	154	175	-	89	144	159	-	155
80S 37776	X75TA25		170	190	139	142	100	205	193	155	179	197	97	144	159	-	159
80S 37944	X75TA28		174	188	153	147	100	206	197	140	177	197	90	144	162	-	160
80S 37948	X75TA28		170	190	153	160	100	209	201	133	179	197	97	145	166	-	162
80S 29690	X75TA31		170	190	153	159	101	209	197	156	178	197	91	147	166	-	163
80S 38214	X75TA33		175	190	143	148	100	212	201	157	177	-	90	147	166	-	159
78S 13494-1	X75TA44		170	190	153	155	100	-	197	158	175	-	92	147	166	166	155
80S 29855	X75TA46		170	189	153	156	100	-	201	160	175	197	90	148	166	-	159

Cont'd 2/..

Table 5.4.3. Cont'd

ENTRY NAME		ALGERIA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	LEBANON	PAKISTAN			POLAND	SYRIA		TURKEY	MEAN
PEDIGREE	ILL or CROSS No.	Sidi Bel Abbas	Wagga Wagga	Santa Maria	Mallawi	Leonessa	Ramtha	Terbol	Dokri	Faisalabad	Peshawar	Pulway	Izra'a-2	Tel Hadya	Izmir	
78s 13558	X75TA49	170	190	153	155	100	-	201	166	171	197	92	145	166	166	159
78s 13565-1	X75TA49	170	190	139	154	98	-	197	153	179	197	92	145	166	160	157
78s 13572-1	X75TA50	170	193	153	152	101	-	201	157	179	197	92	145	166	160	159
78s 13644	X75TA55	170	190	153	148	100	-	201	156	177	197	92	144	164	-	158
78s 13740	X75TA65	170	189	153	150	98	-	201	154	174	197	92	145	166	163	157
80s 39182	X75TA75	170	189	153	146	100	-	191	152	179	191	89	142	159	-	155
80s 27595	X75TA76	170	186	153	156	100	-	191	154	177	191	92	142	164	-	156
80s 27596	X75TA78	170	188	153	147	100	-	191	151	179	191	90	144	159	-	155
78s 13816-1	X75TA78	170	188	153	145	98	-	193	153	176	189	91	144	164	-	155
80s 39751	X75TA81	170	189	153	146	99	-	191	155	170	189	91	144	164	-	155
80s 39754	X75TA81	170	189	153	147	98	-	197	156	178	189	92	145	164	-	157
80s 39778	X75TA82	170	191	153	146	100	-	197	157	180	189	91	145	162	-	157
78s 13845-1	X75TA83	170	190	153	152	98	-	193	145	170	189	92	144	162	-	155
80s 41727	X76TA 1	170	191	153	143	98	201	191	160	177	189	89	144	159	-	159
80s 42371	X76TA47	170	191	153	145	99	205	191	162	176	189	90	147	159	-	160
80s 42375	X76TA47	170	192	153	147	102	205	191	154	178	189	90	148	159	-	160
80s 42382	X76TA47	170	193	153	149	100	205	191	149	177	189	90	146	159	-	159
80s 42391	X76TA47	170	193	153	148	100	205	191	151	179	189	90	146	159	-	160
80s 42392	X76TA47	170	194	153	154	99	205	191	148	175	189	90	144	159	-	159
80s 42394	X76TA47	170	193	153	150	100	205	191	147	171	189	90	144	159	-	159
80s 42416	X76TA47	170	192	153	148	100	201	191	146	171	189	89	145	159	-	158
80s 43188	X76TA88	174	188	153	147	98	205	191	152	174	189	89	145	162	-	159
80s 43210	X76TA89	174	189	-	149	98	-	197	157	177	189	89	147	162	-	157
80s 43215	X76TA89	170	188	153	148	98	-	197	159	179	189	89	148	162	-	157
80s 28591	X76TA263	170	198	153	147	96	-	193	146	177	189	90	148	164	-	155

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Table 5.4.3. Cont'd

ENTRY NAME		ALGERIA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	LEBANON	PAKISTAN			POLAND	SYRIA		TURKEY	MEAN
PEDIGREE	ILL / CROSS No.	Sidi Bel Abbas	Wagga Wagga	Santa Maria	Mallawi	Leonessa	Ramtha	Terbol	Dokri	Faisalabad	Peshawar	Pulway	Izra'a 2	Tel Hadya	Izmir	
80S 28604	X76TA269	174	190	153	155	102	205	193	152	176	189	90	145	162	-	160
80S 41648	X76TA271	170	190	153	151	97	201	201	154	179	190	89	145	162	-	160
80S 41649	X76TA271	170	189	153	151	97	205	201	140	177	188	90	147	159	-	159
80S 41664	X76TA271	170	189	153	148	97	205	201	152	171	189	90	147	159	-	159
80S 41672	X76TA271	170	190	153	146	97	205	201	149	175	189	90	144	159	-	161
80S 34103	X77TA33	174	187	153	148	100	209	201	155	174	189	90	144	164	-	158
80S 34934	X77TA67	170	189	153	146	100	205	191	151	171	189	89	145	159	-	159
80S 34954	X77TA67	170	189	153	146	100	205	191	156	174	189	89	145	159	-	160
80S 34968	X77TA71	170	190	153	147	98	205	197	164	177	189	89	146	159	-	161
80S 34971	X77TA71	170	189	153	147	100	209	201	162	180	190	90	146	162	-	161
80S 35068	X77TA78	170	190	153	146	99	205	197	163	177	190	90	148	162	-	161
80S 35090	X77TA79	170	187	153	150	100	209	201	164	169	190	91	143	164	-	162
80S 35172	X77TA80	170	188	153	144	100	213	201	164	181	190	91	143	166	-	162
80S 35177	X77TA80	174	192	153	147	101	210	203	-	176	190	92	145	166	-	162
80S 35182	X77TA80	174	186	153	146	100	210	203	-	177	190	97	145	166	-	162
80S 35183	X77TA80	174	188	153	159	102	210	203	144	179	189	97	146	166	-	162
80S 35184	X77TA80	170	188	153	150	100	210	203	164	180	189	91	144	166	-	162
80Ter 630	-	170	190	153	149	100	205	201	146	172	189	91	148	159	-	159
79Ter 140	X75TA4	170	189	114	148	100	209	201	163	170	190	91	144	166	160	158
79Ter 1910	X75TA47	170	190	153	146	99	210	201	162	171	189	92	145	166	160	161
79Ter 1950	X75TA47	174	189	153	155	99	210	191	162	177	189	90	144	162	160	161
79Ter 2002	X75TA47	174	192	153	154	102	212	201	163	181	189	97	145	172	-	164
79Ter 2509	ILL4399	174	194	153	149	102	213	197	168	153	189	97	147	172	-	162
79Ter 2667	X75TA65	174	192	153	149	100	213	201	152	179	189	92	147	172	-	163
79Ter 2824	X75TA70	170	188	153	148	99	205	193	153	164	189	91	144	162	160	158

Cont'd 4/..

Table 5.4.3. Cont'd

ENTRY NAME		ALGERIA		AUSTRALIA		BRAZIL		EGYPT		ITALY		JORDAN		LEBANON		PAKISTAN			POLAND		SYRIA		TURKEY		MEAN
PEDIGREE	ILL / CROSS No.	Sidi Bel Abbas	Wagga Wagga	Santa Maria	Mallawi	Leonessa	Ramtha	Terbol	Dokri	Faisalabad	Peshawar	Pulway	Izra'a 2	Tel Hadya	Izmir										
79Ter 3023	X75TA74	170	188	143	149	99	210	201	171	177	189	91	145	162	163				161						161
79Ter 3222	X75TA78	170	190	153	146	99	209	197	152	175	189	92	145	172	163				161						161
79Ter 3345	4399	174	191	153	159	102	213	201	171	181	189	97	147	172	163				165						165
79Ter 3495	X75TA85	170	191	139	145	107	205	191	152	180	189	91	147	162	160				159						159
79Ter 3617	X75TA88	174	191	153	156	99	207	201	155	169	189	91	148	172	-				162						162
Local check		170	189	114	145	101	205	201	146	158	189	102	145	165	162				-						-
Check 1	4401	170	190	143	146	100	205	192	155	177	191	90	145	161	160				159						159
Check 2	19	170	189	139	148	100	203	196	161	177	189	91	146	161	165				159						159
	Location mean	171	190	149	149	100	206	197	154	175	191	91	145	163	162										

(1) It excludes TURKEY-Izmir from the mean over all locations.

Table 5.4.4. Plant height (cm) of entries at different locations in the LISN-S during 1982/83.

ENTRY NAME		AFGHANISTAN	ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT		ITALY	JORDAN	LEBANON	PAKISTAN		POLAND	SYRIA				TURKEY	MEAN
PEDIGREE	ILL or CROSS No.	Darulaman	Sidi Bel Abbas	Mendoza	Wagga Wagga	Santa Maria	Hallawi	Bahtem	Leonessa	Jubeiha	Rantha	Terbol	Dokri	Faisalabad	Pulway	Gelline	Izra'a-1	Izra'a-2	Tel Hadya	Izmir
78S 26010	15	29	25	24	30	22	45	35	23	12	-	27	22	33	31	39	31	28	28	33
-	241	29	25	17	28	21	35	35	18	13	27	25	21	41	31	30	32	25	26	-
78S 26083	346	31	25	22	22	20	40	33	20	15	22	23	19	32	33	33	30	27	28	28
-	1176	30	25	25	25	22	42	34	26	16	29	23	20	35	32	34	29	25	26	-
-	1866	30	25	22	24	19	35	35	18	11	-	20	19	50	31	37	25	23	25	-
-	1868	29	28	21	23	17	30	37	17	9	22	25	23	33	30	32	35	38	26	-
78S 26303	1888	28	28	22	25	18	52	33	24	15	27	25	19	41	33	43	32	21	30	-
-	1895	32	28	20	22	16	48	30	22	18	28	28	24	38	28	31	30	30	26	-
-	1939	31	30	24	29	22	50	38	24	14	28	28	23	40	29	33	35	25	32	-
-	2116	37	25	19	25	19	36	33	19	18	-	-	21	43	26	33	35	28	29	-
-	2194	29	23	22	30	20	44	33	23	15	30	30	22	48	31	32	32	23	29	-
80S 29318	X75TA1	40	25	24	32	18	48	34	20	16	24	24	21	49	37	34	35	23	30	-
80S 36013	X75TA2	41	20	20	31	21	52	35	19	12	25	25	21	38	27	36	35	29	30	-
79Ter 217	X75TA5	40	25	19	35	20	49	23	19	15	30	30	23	43	36	44	32	25	30	-
78S 13159-1	X75TA14	30	22	22	32	18	54	20	22	12	27	27	20	37	34	34	32	28	29	-
78S 13183-1	X75TA16	31	22	20	28	18	40	28	16	16	31	31	19	39	31	31	29	40	29	-
80S 29558	X75TA18	30	20	19	30	22	53	32	19	20	25	25	20	42	33	37	28	35	23	-
80S 27525	X75TA20	30	20	19	25	18	41	23	17	13	25	25	21	28	32	31	27	29	29	-
80S 37776	X75TA25	30	28	18	31	16	56	33	18	10	25	25	21	49	31	35	30	29	28	-
80S 37944	X75TA28	35	28	19	34	20	45	30	20	17	28	28	22	23	37	37	28	30	30	-
80S 37948	X75TA28	41	28	17	38	21	49	35	28	13	33	33	19	54	39	43	30	30	30	-
80S 20690	X75TA31	41	26	18	32	25	48	38	23	18	29	29	19	46	45	36	29	25	29	-
80S 38214	X75TA33	35	26	17	32	23	43	38	20	14	29	29	20	50	36	30	32	26	20	-
78S 13494-1	X75TA44	31	28	22	32	21	45	28	23	17	-	-	21	50	37	35	34	26	25	28
80S 29855	X75TA46	39	28	19	34	20	38	28	25	20	30	30	18	50	34	40	34	31	23	-

Cont'd 2/..

Table 5.4.4. Cont'd

ENTRY NAME		AFGHANISTAN	ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	LEBANON	PAKISTAN	POLAND	SYRIA				TURKEY		MEAN		
PEDIGREE	ILL / CROSS No.	Darulaman	Sidi Bel Abbas	Mendoza	Wagga Wagga	Santa Maria	Mallawi Bahtem	Leonessa	Jubeiha	Ramtha	Terbol	Dokri	Faisalabad	Pulway	Gelline	Izra'a 1	Izra'a 2	Tel Nadya	Izmir		
78S 13558	X75TA49	35	28	23	33	23	46	35	27	22	28	35	20	54	35	42	31	25	29	29	32
78S 13565-1	X75TA49	39	28	16	31	18	47	30	22	14	29	28	24	43	37	41	30	24	25	26	29
78S 13572-1	X75TA50	28	29	20	28	21	49	25	25	16	26	25	21	29	38	38	32	28	28	25	28
78S 13644	X75TA55	29	28	24	35	19	45	35	21	16	26	30	25	41	36	26	30	27	33	29	29
78S 13740	X75TA65	30	28	29	40	22	53	34	22	20	30	35	22	57	39	48	39	25	31	-	34
80S 39182	X75TA75	21	20	24	31	18	48	25	16	15	27	25	19	50	35	37*	29	28	28	-	28
80S 27595	X75TA76	28	26	23	32	16	45	33	18	16	28	28	19	43	37	35	27	29	28	-	28
80S 27596	X75TA78	25	25	24	31	15	42	28	19	13	27	25	21	39	35	30	34	29	25	-	27
78S 13816-1	X75TA78	22	25	22	37	19	40	34	23	15	25	25	23	55	39	35	34	33	26	-	29
80S 39751	X75TA81	29	28	24	35	19	46	33	25	16	29	33	18	53	39	36	35	31	32	-	31
80S 39754	X75TA81	30	26	23	29	18	43	35	24	14	24	35	20	42	42	34	33	32	27	-	30
80S 39778	X75TA82	29	22	17	29	20	43	23	20	12	25	30	19	35	38	31	29	32	20	-	26
78S 13845-1	X75TA83	28	22	20	29	21	45	20	15	11	26	33	21	46	38	40	27	31	24	-	28
80S 41727	X76TA1	22	22	18	22	16	36	30	15	-	-	30	20	28	34	30	28	33	23	-	25
80S 42371	X76TA47	21	22	20	22	16	30	20	17	13	23	30	20	41	33	32	27	37	26	-	25
80S 42375	X76TA47	19	25	17	17	15	30	25	16	10	22	28	21	37	32	35	27	28	27	-	24
80S 42382	X76TA47	20	20	15	16	13	39	15	18	8	31	25	20	35	33	31	28	27	30	-	24
80S 42391	X76TA47	30	22	19	17	15	42	20	20	11	27	25	21	43	31	35	32	28	28	-	26
80S 42392	X76TA47	19	22	20	18	16	45	23	20	9	24	27	25	36	33	33	31	29	26	-	25
80S 43294	X76TA47	20	19	16	19	15	44	20	21	11	25	25	21	33	31	30	28	29	28	-	24
80S 42416	X76TA47	25	20	13	18	14	35	12	16	13	-	28	19	28	28	29	25	29	27	-	22
80S 43188	X76TA88	20	25	19	25	17	41	23	17	15	29	30	23	32	30	34	30	28	30	-	26
80S 43210	X76TA89	29	20	20	24	-	35	33	18	13	24	25	23	36	28	33	30	35	25	-	27
80S 43215	X76TA89	22	19	18	23	14	31	25	18	10	24	30	24	37	33	32	29	34	25	-	25
80S 28591	X76TA263	21*	30	25	31	20	39	41	25	-	24	32	19	50	35	40	28	32	32	-	31

Cont'd 3/..

Table 5.4.4. Cont'd

ENTRY NAME		AFGHANISTAN	ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT	ITALY	JORDAN	LEBANON	PAKISTAN	POLAND	SYRIA		TURKEY		MEAN			
PEDIGREE	ILL / CROSS No.	Darulaman	Sidi Bel Abbas	Mendoza	Wagga Wagga	Santa Maria	Mallawi Bahtem	Leonessa	Jubeiha	Rantha	Terbol	Dokri	Faisalabad	Pulway	Gelline	Izra'a 1		Izra'a2	Tel Hadya	Izmir
80S 28604	X76TA269	35	26	24	28	17	41 30	21	11	28	35	21	54	37	35	31	33	27	-	30
80S 41648	X76TA271	29	25	24	30	21	44 35	22	8	21	28	23	40	33	32	31	28	27	-	28
80S 41649	X76TA271	29	25	26	26	22	48 35	23	10	28	25	23	43	33	34	31	27	30	-	29
80S 41664	X76TA271	30	22	28	26	22	46 34	23	8	29	30	22	44	35	30	31	25	26	-	28
80S 41672	X76TA271	28	28	24	27	18	44 38	21	7	28	28	18	45	36	32	31	24	31	-	28
80S 34103	X77TA33	30	22	27	31	18	40 20	21	17	27	35	19	47	35	31	29	25	27	-	28
80S 34934	X77TA67	27	22	26	22	18	45 19	18	16	24	30	16	43	34	32	28	24	28	-	26
80S 34954	X77TA67	22	25	20	30	16	42 15	18	14	28	28	19	42	29	34	29	28	30	-	26
80S 34968	X77TA71	20	22	18	25	18	45 15	21	11	26	30	20	30	34	37	31	28	32	-	26
80S 34971	X77TA71	30	28	24	28	18	36 15	26	14	24	35	24	45	36	38	28	28	25	-	28
80S 35068	X77TA78	22	25	20	28	18	46 25	20	13	26	38	22	33	34	29	28	28	30	-	27
80S 35090	X77TA79	30	30	21	33	20	41 24	15	19	28	35	19	35	38	37	31	29	33	-	29
80S 35172	X77TA80	32	28	24	33	20	39 28	30	16	29	38	20	36	42	40	36	28	35	-	31
80S 35177	X77TA80	39	28	38	37	23	48 30	27	18	32	38	-	44	38	45	35	29	36	-	34
80S 35182	X77TA80	40	29	35	38	22	48 35	35	22	29	35	-	45	42	46	35	27	38	-	35
80S 35183	X77TA80	42	26	35	38	21	45 33	35	20	34	38	22	48	51	42	34	27	34	-	34
80S 35184	X77TA80	41	28	32	39	22	44 35	29	18	29	38	19	40	44	42	33	28	34	-	33
80Ter 630	-	35	25	20	30	18	36 28	23	9	34	30	17	38	35	35	32	24	28	-	28
80Ter 140	X75TA4	21	25	18	32	20	49 34	25	8	23	30	18	41	36	38	32	29	25	34	28
79Ter 1910	X75TA47	39	25	29	33	18	50 30	20	14	25	30	20	43	37	45	29	37	26	30	30
79Ter 1950	X75TA47	29	25	20	25	19	36 20	20	12	28	30	21	35	35	40	28	35	24	34	26
79Ter 2002	X75TA49	30	25	25	31	18	42 25	29	16	29	35	22	35	43	40	34	39	31	-	31
79Ter 2509	ILL3499	41	25	22	33	23	35 20	28	13	30	35	23	49	45	39	33	37	30	-	32
79Ter 2667	X75TA65	42	20	25	30	20	46 38	20	17	25	35	20	54	38	40	29	35	33	-	32
79Ter 2824	X75TA70	35	22	24	34	17	49 33	20	13	22	30	21	40	35	35	28	35	23	30	29

Cont'd 4/..

Table 5.4.4. Cont'd.

ENTRY NAME		AFGHANISTAN	ALGERIA	ARGENTINA	AUSTRALIA	BRAZIL	EGYPT		ITALY	JORDAN		LEBANON	PAKISTAN	POLAND	SYRIA				TURKEY		MEAN		
PEDIGREE	ILL / CROSS No.	Darulaman	Sidi Bel	Abbes	Mendoza	Wagga	Wagga	Santa Maria	Mallawi	Bahteem	Leonessa	Jubeiha	Ramtha	Torbol	Dokri	Faisalabad	Pulway	Gelline	Izra'a 1	Izra'a 2	Tel Hadya	Izmir	
79Ter 3023	X75TA74	32	20	22	32	18		45	28	21	10	29	35	22	37	40	37	29	32	25	39	25	
79Ter 3222	X75TA78	28	26	26	36	18		52	23	22	15	28	35	21	50	37	33	28	32	30	40	30	
79Ter 3345	4399	31	26	23	30	25		48	38	23	28	28	33	20	54	41	35	33	31	33	34	32	
79Ter 3495	X75TA85	39	26	17	32	20		43	30	19	26	24	32	18	54	38	38	29	29	32	33	30	
79Ter 3617	X75TA88	50	30	24	36	25		51	38	20	32	22	35	17	51	42	30	32	30	25	-	33	
Local check		39	28	22	33	19		46	37	21	15	29	35	22	48	47	34	33	28	32	32	-	
Check 1	4401	27	25	20	24	17		37	26	19	13	25	28	20	38	34	32	31	31	26	27	26	
Check 2	19	30	27	24	30	25		44	35	23	14	27	29	20	46	38	37	34	28	30	30	30	
Location mean		31	25	22	29	19		43	29	21	15	27	31	21	42	35	36	31	29	28	31		

(1) It excludes TURKEY - Izmir from the mean over all locations.

Table 5.4.5. Correlation (df = 80) among three agronomic characters and seed yield of entries in the LISN-S during 1982/83.

CHARACTERS	Time to maturity	Plant height	Seed yield
Time to flowering	0.49**	0.30**	-0.46**
Time to maturity		0.38**	-0.23*
Plant height			-0.21

* $P \leq 0.05$, ** $P \leq 0.01$

Table 5.4.6. Adjusted seed yield (Y = kg/ha) and rank (R) of entries at different locations in the LISN-S during 1982/83.

ENTRY NAME		ARGENTINA		BRAZIL		EGYPT		ITALY		JORDAN		LEBANON		MOROCCO		PAKISTAN									
PEDIGREE	ILL / CROSS No.	Mendoza		Santa Maria		Bahteem		Mallawi		Leonessa		Jubeiha		Ramtha		Terbol		Marchouch		Dokri		Faisalabad		Islamabad	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
78S 26010	15	560	18	287	1	2223	27	2076	2	630	55	4523	1	1040	62	2287	35	273	74	0	62	37	68	543	1
-	241	660	76	63	42	2601	18	1243	19	1302	5	2590	32	1253	50	2120	45	673	31	1	61	0	70	531	2
78S 26083	346	1060	36	73	37	1934	31	1354	14	919	25	2643	29	1320	47	1498	78	323	70	201	14	31	69	321	6
-	1176	1060	36	49	49	2423	22	1076	25	1095	13	2536	36	1347	43	1898	63	323	70	11	58	164	54	22	74
-	1866	760	70	117	13	2934	9	965	29	739	41	2830	18	2107	11	1176	83	273	75	31	56	0	70	195	19
-	1868	1260	19	110	17	2278	25	1131	23	354	75	2203	58	1707	23	1954	58	223	76	41	55	0	70	0	19
78S 26303	1888	760	70	95	22	1600	40	687	55	875	27	2790	19	1213	52	1231	82	123	78	1	61	64	67	11	76
-	1895	1060	36	53	48	2578	19	798	42	888	26	2750	22	1827	17	2009	54	123	78	11	59	91	62	57	75
-	1939	660	76	214	2	2400	23	1187	22	535	65	3123	12	1133	57	2620	17	1023	5	1	61	231	44	128	70
-	2116	1260	19	93	24	2767	14	854	35	1039	18	1963	66	1707	24	1898	64	-	-	0	62	84	64	177	36
-	2194	694	74	60	45	3541	6	1391	13	1193	7	2430	43	2658	1	2239	39	673	32	144	22	466	16	261	24
80S 29318	X75TA 1	1394	12	91	26	3152	8	557	60	1152	11	2257	54	391	76	2572	20	1123	4	224	8	513	12	102	9
80S 36013	X75TA 2	1344	14	30	50	4175	3	2002	4	706	43	2230	55	658	73	1961	57	1273	2	214	11	493	13	102	46
79Ter 217	X75TA 5	694	74	94	23	2508	20	1557	8	766	38	2763	20	-	-	2739	13	923	13	144	22	326	29	343	4
78S 13159-1	X75TA14	894	57	112	16	1930	32	946	30	1076	15	2350	51	924	65	1485	79	623	42	114	32	306	32	189	22
78S 13183-1	X75TA16	894	57	68	40	2641	16	1835	5	669	49	2083	61	1911	13	2794	11	923	14	144	22	459	17	152	32
80S 29558	X75TA18	894	57	80	32	2486	21	57	83	518	66	-	-	551	75	1561	77	873	16	124	27	279	36	49	72
80S 27525	X75TA20	994	44	167	5	2152	29	113	81	1084	14	3577	2	2124	10	2961	6	623	43	184	16	-	-	187	23
80S 37776	X75TA25	1194	26	142	8	2808	11	446	70	339	73	2737	23	1724	22	3072	5	823	23	134	25	373	22	50	71
80S 37944	X75TA28	1194	26	115	15	2197	28	1280	17	2250	1	2590	33	1164	55	2828	9	973	9	114	32	326	29	85	58
80S 37948	X75TA28	1094	33	136	9	919	51	261	78	1711	2	2692	25	2333	6	2731	14	857	18	151	18	293	34	114	40
80S 29690	X75TA31	944	48	176	4	1997	30	539	61	1183	9	1999	64	1107	59	1893	65	657	35	161	17	253	41	92	56
80S 38214	X75TA33	594	79	54	47	2708	15	1260	20	861	28	1666	73	2200	9	2508	26	857	19	101	46	673	6	177	25
78S 13494-1	X75TA44	794	66	84	30	319	66	94	82	567	63	2412	44	-	-	2620	17	657	36	151	18	286	35	83	60
80S 29855	X75TA46	794	66	146	6	786	55	317	75	571	62	1386	77	1560	31	2064	51	657	36	121	30	253	42	77	63
78S 13558	X75TA49	1644	1	196	3	1563	41	372	74	143	81	2692	25	1453	36	1620	75	1007	7	151	18	299	33	95	51
78S 13565-1	X75TA49	1044	41	146	7	1763	34	539	62	495	67	2039	63	1827	18	2197	41	507	52	121	30	399	21	125	37
78S 13572-1	X75TA50	1294	17	61	44	619	61	317	76	666	50	2346	52	1160	56	2120	46	657	36	151	18	-	-	82	61
78S 13644	X75TA55	944	48	57	46	2897	10	1650	7	687	47	2466	40	907	68	2175	43	457	56	111	40	673	6	98	49
78S 13740	X75TA65	1244	24	89	27	2252	26	1761	6	138	82	2466	40	-	-	2120	47	707	29	131	26	566	9	72	64
80S 39182	X75TA75	1327	15	-	-	1249	48	1428	12	305	78	1799	70	-	-	2257	37	420	61	84	49	99	61	158	30
80S 27595	X75TA76	977	45	-	-	660	59	817	38	590	60	2412	45	1378	41	2479	29	870	17	84	49	173	52	157	31
80S 27596	X75TA78	827	65	-	-	493	63	872	33	274	79	1746	72	938	64	1979	55	520	51	104	42	73	66	223	11
78S 13816-1	X75TA78	1427	7	-	-	782	57	428	71	949	23	1399	76	911	67	1590	76	670	33	124	27	659	8	136	35

Table 5.4.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-S during 1982/83.

		PAKISTAN		POLAND		SYRIA						TURKEY					
ENTRY NAME		Peshawar		Pulway		Gelline		Izra'a- 1		Izra'a-2		Tel Hadya		Izmir		MEAN	
PEDIGREE	ILL / CROSS No.	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
78S 26010	15	18	72	943	83	2508	11	3059	5	1475	65	1262	1	1965	3	1319	19
-	241	58	58	2517	48	2442	13	3259	3	2965	1	729	25	-	-	1389	10
78S 26083	346	58	58	2557	42	2375	19	2632	21	1355	70	1076	5	2482	1	1207	36
-	1176	28	70	1837	79	1708	44	2926	9	1985	29	529	45	-	-	1168	41
-	1866	198	24	2370	58	2642	8	2752	15	2195	21	742	23	-	-	1279	25
-	1868	48	60	3877	1	3508	2	2992	7	2195	22	662	32	-	-	1374	12
78S 26303	1888	48	60	2623	40	2442	14	3459	2	1305	74	542	44	-	-	1103	51
-	1895	98	48	2303	64	2242	22	2539	26	1875	42	609	38	-	-	1215	35
-	1939	98	48	2530	46	3842	1	2686	18	1745	51	729	26	-	-	1379	11
-	2116	18	72	2063	73	2575	9	3659	1	1985	30	742	23	-	-	1343	16
-	2194	124	42	3361	6	2797	5	2779	14	2575	9	427	56	-	-	1541	3
80S 29318	X75TA 1	204	20	3721	2	1731	43	2539	27	1835	47	413	58	-	-	1341	17
80S 36013	X75TA 2	154	37	3334	10	2197	24	3006	6	2445	12	747	21	-	-	1504	4
79Ter 217	X75TA 5	204	20	3361	6	1264	63	2272	42	1655	56	813	19	-	-	1319	19
78S 13159-1	X75TA14	184	27	2787	26	1131	68	1926	60	965	80	747	21	-	-	1038	67
78S 13183-1	X75TA16	124	43	3454	4	1797	37	2872	10	1865	43	973	8	-	-	1425	8
80S 29558	X75TA18	204	20	1881	78	797	75	1539	75	1075	77	427	57	-	-	788	82
80S 27525	X75TA20	124	43	2907	23	1264	63	2539	28	1555	61	1173	3	-	-	1396	9
80S 37776	X75TA25	154	38	2747	31	2931	3	1606	70	2045	26	1027	6	-	-	1356	14
80S 37944	X75TA28	204	20	2801	25	2331	20	1739	66	2595	8	973	8	-	-	1431	6
80S 37948	X75TA28	188	25	2512	49	2153	25	1881	62	1968	32	453	55	-	-	1247	29
80S 29690	X75TA31	258	15	2672	37	1286	62	1948	59	1968	32	133	76	-	-	1070	61
80S 38214	X75TA33	208	18	2766	29	1819	35	1508	77	2798	4	173	72	-	-	1271	26
78S 13494-1	X75TA44	158	34	2179	68	686	80	2721	17	2058	25	200	68	689	-	945	77
80S 29855	X75TA46	148	40	2352	61	753	78	1788	65	1958	34	80	79	-	-	878	80
78S 13558	X75TA49	158	35	2992	20	1619	46	2214	47	1768	50	67	80	1053	-	1114	49
78S 13565-1	X75TA49	158	36	2779	28	1553	50	2148	50	2278	28	160	74	1417	-	1127	48
78S 13572-1	X75TA50	188	26	2752	30	486	82	2414	32	2778	5	227	65	817	-	1078	58
78S 13644	X75TA55	208	18	2886	24	753	78	-	-	1548	62	213	67	1352	-	1102	52
78S 13740	X75TA65	308	13	3352	9	2019	29	2481	30	1438	67	200	68	-	-	1256	28
80S 39182	X75TA75	28	70	2632	39	1775	39	2237	44	1891	41	800	20	-	-	1156	45
80S 27595	X75TA76	18	72	3619	3	1775	39	1703	67	1491	64	480	52	-	-	1158	44
80S 27596	X75TA78	118	45	1966	76	1108	69	1903	61	1541	63	520	48	-	-	894	78
78S 13816-1	X75TA78	168	31	2512	50	775	76	2303	39	1451	66	173	72	-	-	968	75

Cont'd 2/..

Table 5.4.6. Cont'd

		ARGENTINA		BRAZIL		EGYPT		ITALY		JORDAN		LEBANON		MOROCCO		PAKISTAN									
ENTRY NAME		Mendoza		Santa Maria		Bahteem		Mallawi		Leonessa		Jubeiha		Ramtha		Terbol		Marchouch		Dokri		Faisalabad		Islamabad	
PEDIGREE	ILL / CROSS No.	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
80S 39751	X75TA81	1427	8	-	-	1204	49	817	39	385	74	2519	37	1338	46	2368	32	970	10	114	34	186	49	119	38
80S 39754	X75TA81	927	51	-	-	1793	33	761	46	674	48	3239	7	1818	19	2813	10	1170	3	104	42	0	70	207	14
80S 39778	X75TA82	1477	4	-	-	1360	44	817	40	333	77	1852	69	1498	34	2535	22	1020	6	94	47	106	60	198	17
80S 13845-1	X75TA83	1477	4	-	-	860	53	1261	18	691	46	2212	57	1684	26	2757	12	820	24	114	34	166	53	173	27
70S 41727	X76TA 1	1177	28	-	-	2804	12	428	72	233	80	-	-	1431	37	1924	61	470	55	124	27	86	63	334	5
80S 42371	X76TA47	927	51	-	-	615	62	483	66	53	83	3146	10	1898	15	3257	4	670	33	114	34	119	59	231	10
80S 42375	X76TA47	1027	42	-	-	75	72	224	79	706	44	2546	34	1120	58	1746	69	407	62	0	62	271	39	214	12
80S 42382	X76TA47	1077	34	-	-	175	69	502	65	770	36	3012	13	2387	4	1357	80	807	25	14	57	277	37	198	18
80S 42391	X76TA47	1577	2	-	-	1152	50	280	77	489	68	2866	16	1187	53	1857	66	807	25	0	62	951	1	190	21
80S 42392	X76TA47	1277	18	-	-	263	67	835	36	1469	4	2506	38	1520	33	1746	70	657	36	0	62	191	47	96	50
80S 42394	X76TA47	1327	16	-	-	41	73	780	43	646	52	2146	60	1347	44	2057	52	707	30	0	62	211	45	95	51
80S 42416	X76TA47	1027	42	-	-	363	65	613	58	481	69	2172	59	1787	20	1968	56	657	36	0	62	337	27	99	48
80S 43188	X76TA88	927	51	-	-	252	68	224	80	594	59	3199	8	853	70	1635	74	-	-	0	62	531	11	94	54
80S 34210	X76TA93	1227	25	-	-	1286	46	724	47	1543	3	2906	15	1053	61	1302	81	607	44	0	62	691	4	113	41
80S 43215	X76TA89	927	51	-	-	1319	45	724	48	1253	6	3132	11	1307	48	2246	38	357	66	0	62	331	28	91	57
80S 28591	X76TA263	877	60	-	-	4663	1	724	49	1154	10	-	-	800	71	1746	71	557	46	0	62	717	3	140	34
80S 28604	X76TA269	760	70	-	-	1741	36	928	32	705	45	1994	65	1893	16	2045	53	540	47	778	1	355	25	95	51
80S 41648	X76TA271	1060	36	-	-	2775	13	1539	9	1024	21	2408	46	893	69	1934	59	990	8	0	62	308	31	162	29
80S 41649	X76AT271	1060	36	-	-	4141	4	2039	3	741	40	1928	67	1693	25	2067	50	890	15	0	62	188	48	200	16
80S 41664	X76TA271	1560	3	-	-	3275	7	1483	10	636	53	3274	6	2413	3	2467	30	940	11	78	52	208	46	284	7
80S 41672	X77TA33	1260	19	-	-	3919	5	2594	1	922	24	2541	35	1360	42	2534	23	790	28	0	62	468	15	108	43
80S 34103	X77TA67	560	81	-	-	1752	35	983	28	1050	17	2594	30	1413	39	2490	27	440	57	0	62	675	5	112	42
80S 34934	X77TA67	1110	31	-	-	1275	47	1317	15	617	56	2381	49	1227	51	2712	15	-	-	0	62	368	23	104	45
80S 34954	X77TA71	1260	19	-	-	1619	38	706	53	536	64	2434	42	2213	8	1934	60	1340	1	0	62	422	19	94	54
80S 34968	X77TA71	1260	19	-	-	1375	43	706	54	786	33	1514	75	1307	49	2323	33	490	53	0	62	175	51	205	15
80S 34971	X77TA78	560	81	-	-	786	55	483	67	838	31	1581	74	773	72	2934	8	540	48	8	60	-	-	100	47
80S 35068	X77TA79	1077	35	-	-	0	74	872	34	710	42	2061	62	1431	38	1824	68	290	72	114	34	0	70	67	67
80S 35090	X77TA80	117	29	80	33	893	52	539	63	596	58	3488	3	-	-	2546	21	340	67	114	34	0	70	84	59
80S 35172	X77TA80	877	60	62	43	0	74	483	68	860	29	1888	68	1738	21	2602	19	390	63	54	54	0	70	78	62
80S 35177	X77TA80	977	45	69	39	0	74	594	59	415	71	2221	56	1658	28	2179	42	390	63	-	-	0	70	60	68
80S 35182	X77TA80	777	68	97	21	493	64	483	69	780	35	2394	47	1618	29	1713	72	840	21	-	-	-	-	108	49
80S 35183	X77TA80	577	80	66	41	0	74	1483	11	635	54	1768	71	1524	32	1713	72	340	67	104	42	0	70	152	33
80S 35184	X77TA80	877	60	82	31	0	74	428	73	766	39	2328	53	-	-	2435	31	540	48	84	49	0	70	264	8
80Ter 630		1127	30	86	28	171	70	817	41	855	30	2661	28	2511	2	2113	48	640	41	94	48	148	57	177	26

Table 5.4.6. Cont'd

ENTRY NAME			PAKISTAN		POLAND		SYRIA								TURKEY		MEAN	
			Peshawar		Pulway		Gelline		Izra'a-1		Izra'a-2		Tel Hadya		Izmir			
PEDIGREE	ILL / CROSS No.		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
80S 39751	X75TA81		68	55	1992	74	1575	48	2237	45	1851	46	480	53	-	-	1156	45
80S 39754	X75TA81		18	72	2672	38	1375	60	2357	36	2261	19	120	77	-	-	1312	22
80S 39778	X75TA82		118	45	3139	15	1908	31	2197	48	1631	58	187	71	-	-	1204	37
78S 13845-1	X75TA83		168	32	2926	21	842	74	1570	73	1911	39	107	78	-	-	1161	43
80S 41727	X76TA 1		18	72	2472	53	1442	56	2570	23	1901	40	333	62	-	-	1109	50
80S 42371	X76TA47		68	55	2312	63	2242	22	2810	12	2711	6	280	63	-	-	1290	23
80S 42375	X76TA47		98	50	2441	55	1842	34	2543	24	2011	28	644	35	-	-	1054	66
80S 42382	X76TA47		48	60	3121	16	1975	30	2783	13	1691	55	724	27	-	-	1230	30
80S 42391	X67TA47		48	60	3361	6	2442	14	2543	24	2491	10	884	15	-	-	1360	13
80S 42392	X76TA47		18	72	3187	12	2042	28	2317	38	1971	31	658	33	-	-	1221	33
80S 42394	X76TA47		18	72	2707	34	2908	4	2423	31	2471	11	831	17	-	-	1219	34
80S 42416	X76TA47		48	60	2707	35	2442	14	1850	63	1341	71	631	36	-	-	1090	56
80S 43188	X76TA88		18	72	3147	13	1775	39	2117	52	2411	13	818	18	-	-	1162	42
80S 43210	X76TA89		48	60	3227	11	2442	14	2383	34	2831	2	658	33	-	-	1355	15
80S 43215	X76TA89		48	60	2134	71	2442	14	2383	34	1951	36	964	10	-	-	1271	27
80S 28591	X76TA263		398	6	3147	13	2108	26	-	-	1941	37	951	12	-	-	1328	18
80S 28604	X76TA269		81	51	3107	17	486	54	2148	51	1115	76	622	37	-	-	1200	38
80S 41648	X76TA271		381	7	2481	52	953	72	2254	53	2315	14	942	13	-	-	1319	19
80S 41649	X76TA271		81	51	2921	22	1819	35	2414	32	1695	54	1009	7	-	-	1464	5
80S 41664	X76TA271		681	2	2547	44	2486	12	2948	8	2115	23	956	11	-	-	1668	1
80S 41672	X77TA33		81	51	2521	47	1553	51	2681	19	1715	52	1249	2	-	-	1547	2
80S 34103	X77TA67		581	5	3001	19	1419	58	1614	68	1815	49	409	59	-	-	1230	31
80S 34934	X77TA67		131	41	2401	56	419	83	2348	37	2025	27	529	46	-	-	1185	40
80S 34954	X77TA71		381	8	2587	41	1619	46	2174	49	1955	35	609	39	-	-	1287	24
80S 34968	X77TA71		381	8	2467	54	953	73	2748	16	1335	72	462	54	-	-	1087	57
80S 34971	X77TA78		681	2	2507	51	1019	71	1614	68	1371	69	249	64	-	-	1003	73
80S 35068	X77TA79		264	14	2539	45	775	77	1792	64	1861	44	676	30	-	-	962	76
80S 35090	X77TA80		64	57	2313	62	1372	60	2059	55	1831	48	569	41	-	-	1063	64
80S 35172	X77TA80		314	11	2273	66	1242	66	2659	20	2291	15	489	51	-	-	1017	70
80S 35177	X77TA80		114	47	1446	82	1908	31	2059	55	2281	17	-	-	-	-	1023	69
80S 35182	X77TA80		214	16	2366	60	1575	48	2632	22	2811	3	676	30	-	-	1224	32
80S 35184	X77TA80		14	80	1966	77	1508	53	1992	58	1421	68	556	43	-	-	879	79
80S 35184	X77TA80		214	17	2166	70	1442	56	2059	55	2711	7	689	29	-	-	1005	72
80Ter. 630	-		14	80	2179	69	508	81	1592	71	1301	75	849	16	-	-	991	74

Cont'd 3/..

Table 5.4.6. Cont'd

ENTRY NAME		ARGENTINA		BRAZIL		EGYPT		ITALY		JORDAN		LEBANON		MOROCCO		PAKISTAN									
		Mendoza		Santa Maria		Bahteem		Mallawi		Leonessa		Jubeiha		Ramtha		Terbol		Marchouch		Dokri		Faisalabad		Islamabad	
PEDIGREE	ILL/ CROSS No.	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
79Ter. 140	X75TA 4	777	68	21	52	1604	39	650	57	1026	20	2368	50	-	-	1913	62	940	12	104	42	428	18	60	69
79Ter. 1910	X75TA47	877	60	133	10	671	58	539	64	770	37	2594	30	1684	27	2157	44	440	57	114	34	342	26	167	28
79Ter. 1950	X75TA47	910	55	92	25	0	74	987	27	820	32	3154	9	2373	5	2316	34	440	57	564	2	277	37	0	76
79Ter. 2002	X75TA49	960	47	98	20	0	74	709	50	400	72	2848	17	1187	54	3816	1	290	72	224	8	151	56	0	76
79Ter. 2509	4399	910	55	101	19	-	-	765	44	334	76	3288	5	1907	14	2705	16	140	77	214	11	244	43	0	76
79Ter. 2667	X75TA65	1110	32	105	18	0	74	709	51	1038	19	2394	48	920	66	3760	2	440	57	204	13	184	50	0	76
79Ter. 2824	X75TA70	1360	13	25	51	1649	37	1098	24	1001	22	2474	39	1387	40	2094	49	490	54	264	4	491	14	0	76
79Ter. 3023	X75TA74	1410	9	77	35	93	71	765	45	586	61	3008	14	1933	12	2516	24	540	48	224	8	133	58	70	65
79Ter. 3222	X75TA78	710	73	80	34	638	60	820	37	658	51	2754	21	1107	60	2260	36	590	45	234	6	557	10	0	76
79Ter. 3345	4399	660	76	117	14	0	74	709	52	481	69	-	-	947	63	3538	3	40	80	254	5	83	65	0	76
79Ter. 3495	X75TA85	1410	10	120	12	2626	17	1043	26	1136	12	1328	78	1347	45	1849	67	340	67	234	6	257	40	25	73
79Ter. 3617	X75TA88	1410	10	129	11	1538	42	931	31	1193	8	-	-	627	74	2511	25	840	21	194	15	417	20	358	3
CHECK MEANS																									
1.Check 1	4401	844	64	74	36	840	54	674	56	614	57	2678	27	1463	35	2210	40	381	65	75	53	162	55	114	39
2.Check 2	19	944	48	70	38	2382	24	1297	16	786	34	2687	26	2248	7	2486	28	795	27	108	41	358	24	211	13
Local check		1444	6	85	29	4590	2	1201	21	1074	16	3432	4	1582	30	2941	7	844	20	540	3	799	2	68	66
LOCATION MEAN		1043		99		1674		888		773		2493		1473		2243		633		113		282		138	
CV %																									
		18.8		43.8		31.9		51.7		33.0		17.7		25.2		19.0		45.5		75.5		65.4		83.6	
L.S.D.(5%)																									
1.Check means		218		48		892		586		292		558		477		519		328		193		308		117	
2.Adjusted varities in the same block		617		109		2525		1660		825		1578		1350		1468		930		548		872		333	
3.Adjusted varities in different block		712		125		2916		1917		952		1923		1559		1695		1073		632		1006		308	
4.Adjusted variety VS check mean		534		97		2187		1437		714		1367		1169		1271		805		474		755		388	
The number of lines significantly exceeding the local check		0		3		0		0		1		0		0		0		0		0		0		2	

(1) It excludes TURKEY -Izmir from the mean over all locations.

Table 5.4.6. Cont'd.

ENTRY NAME			PAKISTAN		POLAND		SYRIA						TURKEY		MEAN			
PEDIGREE	ILL / CROSS No.		Peshawar		Pulway		Gelline		Izra'a-1		Izra'a-2		Tel Hadya		Izmir		Y	R
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
79Ter. 140	X75TA 4		314	12	3033	18	2708	7	1526	76	1931	38	916	14	901	15	1195	39
79Ter. 1910	X75TA47		614	4	2379	57	1642	45	1192	81	2291	16	716	28	973	13	1073	59
79Ter. 1950	X75TA47		31	67	2263	67	2064	27	2294	40	1065	78	62	81	63	19	1095	54
79Ter. 2002	X75TA49		31	67	2730	33	1864	33	2094	53	1855	45	502	50	-	-	1098	53
79Ter. 2509	4399		81	51	1770	80	1197	67	2294	41	2075	24	529	47	-	-	1091	55
79Ter. 2667	X75TA65		0	82	2703	36	2264	21	1561	74	995	79	196	70	-	-	1032	68
78Ter. 2824	X75TA70		331	10	3396	5	1464	55	1494	78	1335	72	0	82	1983	2	1131	47
79Ter. 3023	X75TA74		0	82	2556	43	1797	38	1361	79	1585	59	516	49	1925	4	1065	62
79Ter. 3222	X75TA78		181	28	2743	32	2531	10	1361	80	1635	57	156	75	1021	12	1056	65
79Ter. 3345	4399		181	28	1490	81	1531	52	2228	46	895	83	369	61	916	14	795	81
79Ter. 3495	X75TA85		31	67	2370	59	1264	63	2494	29	905	82	396	60	1523	6	1065	62
79Ter. 3617	X75TA88		1130	1	2783	27	1397	59	1588	72	945	81	222	66	571	18	1071	60
CHECK MEANS																		
1. Check 1			150	39	1990	75	1767	42	2087	54	1561	60	568	42	1831	5	1014	71
2. Check 2			161	33	2283	65	2717	6	2845	11	2248	20	1090	4	1178	9	1429	7
3. Local check			181	28	2063	72	1108	69	3112	4	1705	53	608	40	1031	11	-	
LOCATION MEAN			169		2614		1762		2277		1868		572		1247			
CV %			94.8		16.6		36.9		24.9		21.4		34.0		23.5			
L.S.D. (5%)																		
1. Check means			167		376		738		718		423		275		408			
2. Adjusted varieties in the same block			472		1063		2089		2032		1197		777		999			
3. Adjusted varieties in different blocks			545		1228		2412		2347		1382		897		1153			
4. Adjusted variety VS check mean			409		921		1809		1760		1036		673		881			
The number of lines significantly exceeding the local check			4		20		3		0		5		0		4			

(1) It excludes TURKEY-Izmir from the mean over all locations.

Table 5.4.7. The five heaviest seed yielding entries at the individual locations in the LISN-S during 1982/83.

RANK	ARGENTINA		BRAZIL		EGYPT				ITALY		JORDAN	
	Mendoza		Santa Maria		Bahteem		Mallawi		Leonessa		Jubieha	
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1	78S 13558	X75TA49	78S 26010	15	80S 28591	X76TA263	80S 41672	X76TA271	80S 37944	X75TA28	78S 2610	15
2	80S 42391	X76TA47	-	1939	Local check		78S 26010	15	80S 37948	X75TA28	80S 27525	X75TA20
3	80S 41664	X76TA271	78S 13558	X75TA49	80S 36013	X75TA2	80S 41649	X76TA271	80S 43210	X76TA89	80S 35090	X77TA79
4	80S 39778	X75TA82	80S 29690	X75TA31	80S 41649	X76TA271	80S 36013	X75TA2	80S 42392	X76TA47	Local check	
5	78S 13845-1	X75TA83	80S 27525	X75TA20	80S 41672	X76TA271	78S 13183-1	X75TA16	-	241	79Ter2509	4399

cont'd												
RANK	JORDAN		LEBANON		MOROCCO		PAKISTAN					
	Ramtha		Terbol		Marchouch		Dokri		Faisalabad		Islamabad	
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1	-	2194	79Ter 2002	X75TA49	80S 43954	X77TA67	80S 28604	X76TA269	80S 42391	X76TA47	78S 26010	15
2	80Ter 630	-	79Ter 2667	X75TA65	80S 36013	X75TA2	79Ter 1950	X75TA47	Local check		-	241
3	80S 41664	X76TA271	79Ter 3345	4399	80S 39754	X75TA81	Local check		80S 28591	X76TA263	79Ter 3617	X75TA88
4	80S 42382	X76TA47	80S 42371	X76TA47	80S 2938	X75TA1	79Ter 2824	X75TA70	80S 43210	X76TA89	79Ter 217	X75TA5
5	79Ter1950	X75TA47	80S 37776	X75TA25	-	1939	79Ter 3345	4399	80S 34103	X77TA33	80S 41727	X76TA1

Table 5.4.7. The five heaviest seed-yielding entries at the individual locations in the LISN-S during 1982/83.

RANK	PAKISTAN		POLAND		TURKEY	
	Peshawar		Pulway		Izmir	
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1	79Ter 3617	X75TA88	-	1868	78S 26083	346
2	80S 41664	X76TA271	80S 29318	X75TA1	79Ter 2824	X75TA70
3	80S 34971	X77TA71	80S 27595	X75TA76	78S 26010	15
4	79Ter 1910	X75TA47	78S 13183-1	X75TA16	79Ter 3023	X75TA74
5	80S 34103	X77TA33	79Ter 2824	X75TA70	Check 1	4401

Cont'd

RANK	SYRIA							
	Gelline		Izra'a- 1		Izra'a- 2		Tel Hadya	
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1	-	1939	-	2116	-	241	78S 26010	15
2	-	1868	78S 26303	1888	80S 43210	X76TA89	80S 41672	X76TA271
3	80S 3776	X75TA25	-	241	80S 35182	X77TA80	80S 27525	X75TA20
4	80S 42394	X76TA47	Local check		80S 38214	X75TA33	Check 2	19
5	-	2194	78S 26010	15	78S 13572-1	X75TA50	78S 26083	346

Table 5.4.8. Correlation (df = 33) among different locations for the seed yield of entries in the LISN-S during 1982/83.

COUNTRY	LOCATION	BRAZIL	EGYPT		ITALY	JORDAN		LEBANON	MOROCCO	PAKISTAN				POLAND	SYRIA			
		Santa Maria	Behateem	Mallawi	Leonessa	Jubeiha	Ramtha	Terbol	Marchouch	Dokri	Faisalabad	Islamabad	Peshawar	Pulway	Gelline	Izra'a-1	Izra'a-2	Tel Hadya
ARGENTINA	Mendoza	-0.01	0.08	-0.26	0.01	-0.14	-0.16	0.06	0.25	0.34*	0.16	-0.31	0.01	0.45**	-0.18	-0.16	-0.18	-0.16
BRAZIL	Santa Maria		-0.02	-0.12	-0.19	0.41*	-0.17	0.03	0.05	-0.20	-0.16	0.24	-0.01	-0.33	0.16	0.28	-0.14	0.12
EGYPT	Bahateem			0.45*	0.15	-0.05	-0.14	-0.26	0.38*	-0.28	0.32	0.31	0.05	0.35*	0.39*	0.52**	0.44**	0.31
EGYPT	Mallawi				0.05	0.22	-0.09	-0.11	0.09	-0.08	0.02	0.44**	0.29	0.04	0.31	0.46**	0.09	0.51*
ITALY	Leonessa					-0.10	-0.05	0.06	0.17	0.02	0.10	0.07	0.13	0.02	0.08	-0.04	0.15	0.07
JORDAN	Jubeiha						-0.02	0.09	-0.14	-0.07	-0.25	0.29	-0.19	-0.39*	0.45*	0.16	-0.15	0.42
JORDAN	Ramtha							0.02	-0.13	0.05	0.01	-0.06	0.01	0.11	-0.01	-0.11	0.20	-0.01
LEBANON	Terbol								0.25	0.23	0.24	0.20	-0.06	0.10	0.13	0.32	0.11	0.01
MOROCCO	Marchouch									0.15	0.65**	0.06	0.22	0.44**	0.04	-0.12	0.36*	0.02
PAKISTAN	Dokri										0.40	-0.35*	-0.02	0.25	-0.20	-0.36*	-0.37*	-0.44**
PAKISTAN	Faisalabad											-0.24	0.40*	0.49**	-0.08	-0.37*	0.20	-0.31
PAKISTAN	Islamabad												-0.05	-0.20	0.14	0.37*	0.29	0.52**
PAKISTAN	Peshawar													0.19	-0.17	-0.36*	0.36*	-0.12
POLAND	Pulway														0.16	-0.01	0.23	0.25
SYRIA	Gelline															0.40*	0.26	0.36*
SYRIA	Izra'a-1																0.17	0.37*
SYRIA	Izra'a-2																	0.12

* $P < 0.05$

** $P < 0.01$

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

Material

The Lentil International Screening Nursery - Early (LISN-E) comprised of 62 test entries including elite germplasm accessions received from other centres and selections made at ICARDA. In addition, there were three checks, two namely ILL 1744 and ILL 4354 were supplied by ICARDA and the third check, the best local cultivar, was to be added by the cooperator.

Methods and Management

The nursery was grown in an augmented block design. The suggested plot size was a single row plot, 4 m long, with 200 seeds/plot. The cooperators were urged to use the locally recommended agronomic practices for the management of the nursery.

Thirty-five sets of nursery were distributed to cooperators in 15 countries. Data were received from 17 sites and were analysable from a total of 15 locations. The details of the agronomic practices supplied by the cooperators are given in Table 5.5.1.

Results and Discussion

The entries namely L 830, P 943 and Precoz took 100, 101 and 102 days to flower and were early whereas ILL 203, ILL 193 took 131 and 134 days and were late (Table 5.5.2). Maximum time to maturity (Table 5.5.3) was taken by the entry 80S 44174 (182 days) whereas ILL 203 and ILL 193 were earliest in maturity taking 157 and 159 days respectively. With respect to plant height, Fl30 was the tallest entry (45 cm) as compared to EL 74, E65 and PI 250155 which were only 27-28 cm in height. The correlations between plant height, time to flowering, time to maturity and seed yield were significant and positive (Table 5.5.5).

The overall mean at each location was, in general, higher than the local check for time to flower but for time to maturity there were little differences at most of the locations except at New Delhi in India where local check was much earlier in maturity. Still some of the entries were as early as the local even at New Delhi and need special consideration in breeding program.

The adjusted seed yields based on the augmented design are given in Table 5.5.6. The yield levels at Jamaa Shaim El Jedida were extremely low and were not analysed. The highest mean yield was recorded at Sids in Egypt (2277 kg/ha) and lowest at Islamabad in Pakistan (174 kg/ha). The CV ranged from 13.5 per cent for Mateur in Tunisia to 135 per cent for Islamabad in Pakistan. The LSD estimates revealed that at El-Kef and Mateur in Tunisia, Mallawi in Egypt and Islamabad in Pakistan, 19, 14, 6 and 4 lines respectively outyielded the local check by a significant margin. At some other locations one or two lines outyielded the local check. The five heaviest yielding entries at individual locations are given in Table 5.5.7. It was noted

Table 5.5.1. Agronomic data for different locations in the LISN-E during 1982/83.

COUNTRY	LOCATION	Planting Date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide/ fungicide
				N	P ₂ O ₅	K ₂ O		
EGYPT	Mallawi	11.12.1982	150	15	30			
EGYPT	Sids	11.11.1982	175	15	30		3	
INDIA	New Delhi	24.11.1982	146		40			
JORDAN	Jubeiha	21.10.1982						
JORDAN	Ramtha	31.10.1982	204	15	40			
MOROCCO	El-Jedida	23.11.1982	186					
NEPAL	Kathmandu	10.10.1982	195	20	60	20		
PAKISTAN	Dokri	25.10.1982	158		50			
PAKISTAN	Faisalabad	30.10.1982	177	25	55		2	
PAKISTAN	Islamabad	22.11.1982	186					
PAKISTAN	Karak	2.11.1982	183					
PAKISTAN	Quetta	17.11.1982	206	23	23		5	
SYRIA	Tel-Hadya	16.11.1982	174		50			Benlate+Calixin M
YEMEN	Sana'a	17.4.1983	81					Actellic

Table 5.5.2. Time to flowering (days) of entries at different locations in the LISN-E during 1982/83.

ENTRY		EGYPT		INDIA	JORDAN		NEPAL	PAKISTAN					SYRIA	MEAN
PEDIGREE	ILL/ Cross No.	Mallawi	Sids	New Delhi	Jubeiha	Ramtha	Kathmandu	Dokri	Faisalabad	Islamabad	Karak	Quetta	Tel Hadya	
76TA 66005	1	78	95	89	170	153	135	93	120	143	128	150	121	123
78S 26066	193	89	120	108	178	153	135	-	127	143	140	158	127	134
-	203	97	120	113	176	155	135	122	119	145	150	160	133	135
PI 250155	228	95	120	110	176	-	141	111	137	149	136	158	133	133
Giza 9	784	67	90	80	175	155	141	85	126	143	99	158	129	121
F 130	813	63	85	85	178	157	141	87	133	153	97	158	135	123
EL 19	1690	66	80	78	171	153	141	85	103	127	121	158	119	117
EL 31	1701	77	95	88	171	153	58	-	119	127	124	158	121	117
EL 43	1713	67	95	88	171	153	93	87	103	127	120	150	121	115
EL 70	1735	69	90	80	170	153	93	-	134	127	119	158	121	119
EL 76	1741	75	95	89	170	-	129	-	106	127	115	158	121	119
Silaim	1861	96	105	85	178	-	94	-	135	143	137	155	129	126
-	1866	92	110	80	171	-	99	-	130	148	117	155	127	123
L 528 (75)	1983	77	90	93	171	-	100	87	113	127	113	150	125	113
80S 44174	X76TA 143	97	100	104	173	-	94	-	129	140	137	150	125	125
L 1057	2022	93	105	95	172	-	145	-	123	140	127	150	127	128
L 1327	2069	96	110	98	174	-	145	111	125	143	123	150	127	127
-	2149	95	105	95	173	-	145	-	121	148	129	150	127	129
EL 39	2431	78	85	83	171	-	145	-	102	140	115	158	119	120
EL 53	2434	78	85	86	170	-	145	76	103	140	124	158	119	117
EL 65	2435	68	90	87	170	-	98	-	111	150	118	158	118	117
EL 74	2437	78	85	87	171	-	98	-	109	139	116	158	119	116
EL 83	2439	78	85	85	172	-	98	-	108	135	130	158	120	117
Pant.L. 538	2500	77	90	87	172	-	98	87	119	130	124	158	125	115
Pant.L. 406	2501	75	85	87	170	-	98	87	117	130	119	155	122	113
T 31	2525	75	85	83	169	-	59	81	102	112	100	155	125	104
T 36	2526	78	85	87	173	-	59	-	105	127	115	155	125	111
Pant.L. 639	2573	78	90	89	173	-	132	-	121	127	122	150	125	121
L 830	2578	64	75	77	171	-	58	76	98	110	98	150	121	100
L 1278	2580	77	85	90	171	-	133	-	113	127	115	150	125	119
L 1282	2581	76	85	83	172	-	130	85	109	127	110	150	125	114
LL 1	2582	75	90	87	173	-	130	97	107	130	118	150	125	117
LWS 3	2590	74	85	78	174	-	58	87	100	120	95	158	125	105
P 257	2768	74	85	84	171	-	135	-	113	145	119	158	123	121
P 943	3278	64	75	71	170	-	58	-	96	115	80	158	119	101

Cont'd. ...

Table 5.5.2. Cont'd. ...

ENTRY		EGYPT		INDIA	JORDAN		NEPAL		PAKISTAN				SYRIA	MEAN
PEDIGREE	ILL/ Cross No.	Mallawi	Sids	New Delhi	Jubeiha	Ramtha	Kathmandu	Dokri	Faisalabad	Islamabad	Karak	Quetta	Tel Hadya	
EL 61	3402	78	90	88	171	-	93	-	103	150	124	158	118	117
EP 3	3416	77	85	78	173	-	93	-	102	135	120	158	119	114
B 77	3493	79	95	89	173	-	133	-	118	130	118	158	127	122
LG 41	3516	78	95	89	174	-	133	-	116	130	124	158	127	122
LG 46	3517	78	90	89	173	-	133	113	111	135	123	158	125	121
LL 37	3601	77	95	89	172	-	89	-	108	127	122	160	127	117
LL 38	3602	78	105	95	174	-	89	-	111	150	124	160	127	121
LL 57	3614	93	105	98	175	-	89	107	123	150	119	160	131	123
Pant.L. 286	4377	78	95	83	173	-	81	-	109	145	124	155	125	117
Syr.Local large	4400	96	110	93	175	-	81	88	133	150	134	155	131	122
12	4402	76	85	88	173	-	79	-	106	127	120	155	125	113
162	4403	77	85	88	173	-	79	105	112	127	121	155	125	113
18-10	4406	78	90	86	170	-	79	-	108	130	118	158	125	114
Precoz	4605	75	85	78	-	-	80	84	101	145	95	158	119	102
EL 142	5071	74	90	87	169	-	80	-	113	130	126	158	119	115
R 186	5425	88	110	-	173	-	100	-	120	145	126	158	145	129
79Sh 4867	X75TA 30	89	110	-	175	-	100	-	110	145	-	158	135	128
79Sh 4806	X75TA 49	90	110	105	178	-	100	-	131	145	129	158	133	128
80S 38650	X75TA 46	79	100	92	175	-	128	-	121	140	128	158	127	125
80S 41515	X76TA 249	80	100	92	171	-	128	-	124	127	137	158	121	124
80S 41648	X76TA 271	80	105	96	174	-	128	-	119	140	126	155	127	125
80S 41649	X76TA 271	80	105	93	175	-	136	-	118	135	134	155	127	126
80S 41664	X76TA 271	79	105	94	173	-	145	-	115	140	134	155	127	127
80S 41672	X76TA 271	79	105	93	174	-	76	-	129	140	135	155	127	121
80S 42431	X76TA 66	75	90	84	175	-	76	-	126	140	92	158	129	115
80S 42612	X76TA 71	94	110	-	173	-	76	-	110	135	135	158	127	124
Local check		64	79	77	173	154	58	89	101	128	124	154	127	-
Check 1	1744	77	85	85	171	152	107	82	104	132	122	158	119	116
Check 2	4354	77	100	94	174	155	105	114	125	136	124	154	125	124
Location mean		79	95	89	173	154	106	93	115	136	121	156	125	

Table 5.5.3. Time to maturity (days) of entries at different locations in the LISN-E during 1982/83.

ENTRY		EGYPT		INDIA	JORDAN	NEPAL	PAKISTAN			SYRIA	MEAN	
PEDIGREE	ILL/ Cross No.	Mallawi	Sids	New Delhi	Ramtha	Kathmandu	Dokri	Faisalabad	Karak	Quetta	Tel Hadya	
76TA 66005	1	145	175	146	191	184	158	171	173	198	162	170
78S 26066	193	147	175	-	203	185	-	172	183	204	164	179
-	203	148	175	-	203	187	123	170	-	204	162	172
P1 250 155	228	148	175	-	195	187	149	175	178	204	162	175
Giza 9	784	148	175	-	200	187	123	173	177	204	162	172
F 130	813	152	175	-	204	187	143	177	177	204	174	177
EL 19	1690	142	150	-	191	187	126	154	160	204	157	163
EL 31	1701	142	150	142	191	187	-	163	162	204	157	166
EL 43	1713	144	160	142	191	187	140	169	160	198	157	165
EL 70	1735	143	150	137	191	187	-	157	159	204	157	165
EL 76	1741	140	155	142	191	190	-	159	159	204	157	166
Silaim	1861	143	175	-	195	149	-	175	181	206	162	173
-	1866	141	175	-	191	185	-	175	176	206	159	176
L 528 (75)	1983	143	155	-	191	187	143	155	160	198	157	165
80S 44174	X76TA 143	144	175	-	195	225	-	176	181	198	164	182
L 1057	2022	143	160	137	191	180	-	171	175	198	159	168
L 1327	2069	144	165	142	191	180	127	171	178	206	159	166
-	2149	145	175	142	202	190	-	175	181	198	164	175
EL 39	2431	143	150	126	191	190	-	153	165	206	157	165
EL 53	2434	141	150	127	191	190	141	154	-	206	157	162
EL 65	2435	142	155	-	191	-	-	155	170	204	157	168
EL 74	2437	142	155	137	191	-	-	156	170	204	157	164
EL 83	2439	142	155	135	191	180	-	157	-	204	157	165
Pant.L. 538	2500	141	160	127	191	180	151	157	165	204	159	164
Pant.L. 406	2501	142	150	142	191	-	143	156	167	206	157	162
T 31	2525	144	155	126	191	-	143	167	162	206	157	161
T 36	2526	143	155	118	191	-	-	157	170	206	157	162
Pant.L. 639	2573	142	155	126	-	-	-	155	165	198	157	157
L 830	2578	145	150	124	191	-	147	153	162	198	157	159
L 1278	2580	141	160	137	191	-	-	155	160	198	157	162
L 1282	2581	144	155	130	191	-	144	166	170	198	159	162
LL 1	2582	142	160	130	191	-	149	165	172	198	159	163
LWS 3	2590	144	165	120	203	190	143	155	174	204	159	166
P 257	2768	143	165	127	-	-	-	156	168	204	157	160
P 943	3278	142	160	115	195	181	-	153	163	204	157	163

Cont'd. ...

Table 5.5.3. Cont'd. ...

ENTRY		EGYPT		INDIA	JORDAN	NEPAL	PAKISTAN				SYRIA	MEAN
PEDIGREE	ILL/ Cross No.	Mallawi	Sids	New Delhi	Rantha	Kathmandu	Dokri	Faisalabad	Karak	Quetta	Tel Hadya	
EL 61	3402	144	155	-	191	-	-	157	171	204	157	168
EP 3	3416	142	165	142	203	195	-	171	172	204	162	173
B 77	3493	142	160	138	195	181	-	170	170	204	162	169
LG 41	3516	142	155	128	-	181	-	168	172	204	159	164
LG 46	3517	142	155	138	195	181	114	161	170	204	159	162
LL 37	3601	142	155	142	195	-	-	159	168	204	159	166
LL 38	3602	142	155	142	195	195	149	162	173	204	159	168
LL 57	3614	143	165	142	195	181	-	164	-	204	159	169
Pant.L. 286	4377	140	155	131	191	185	-	167	168	204	157	166
Syr.Local Large	4400	146	175	-	203	187	147	177	-	206	166	176
12	4402	142	155	130	191	181	-	155	168	206	157	165
162	4403	143	155	128	191	-	139	154	168	206	157	160
18-10	4406	145	155	135	191	-	-	155	170	204	157	164
Precoz	4605	143	155	126	191	181	140	153	170	204	159	162
EL 142	5071	144	150	128	191	-	-	160	165	204	157	162
R 186	5425	150	175	-	203	187	-	155	180	198	172	178
79Sh 4867	X75TA 30	151	175	-	203	187	-	169	-	198	172	179
79Sh 4806	X75TA 49	150	175	-	203	187	-	164	183	204	172	180
80S 38650	X75TA 46	148	175	138	191	187	-	172	182	204	159	173
80S 41515	X76TA 249	147	175	142	191	185	-	161	183	204	159	172
80S 41648	X76TA 271	150	175	143	195	185	-	166	181	204	159	173
80S 41649	X76TA 271	148	175	142	195	185	-	165	182	204	159	173
80S 41664	X76TA 271	149	175	142	199	185	-	170	178	206	159	174
80S 41672	X76TA 271	148	175	142	195	187	-	169	179	206	159	173
80S 42431	X76TA 66	147	165	138	203	187	-	171	170	206	162	172
80S 42612	X76TA 71	144	160	142	195	187	-	171	178	204	157	171
Local check		144	164	126	200	182	148	156	167	202	161	-
Check 1	1744	144	156	129	191	184	149	159	167	203	157	164
Check 2	4354	146	175	142	198	185	149	172	180	202	162	171
Location mean		144	163	134	195	186	141	163	171	203	160	

Table 5.5.4. Plant height (cm) of entries at different locations in the LISN-E during 1982/83.

ENTRY		EGYPT		INDIA	JORDAN		NEPAL	PAKISTAN				SYRIA	MEAN
PEDIGREE	ILL/ Cross No.	Mallawi	Sids	New Delhi	Jubeiha	Ramtha	Kathmandu	Dokri	Faisalabad	Karak	Quetta	Tel Hadya	
76TA 66005	1	50	55	38	31	24	26	35	50	20	30	30	35
78S 26066	193	60	55	43	35	30	22	-	43	26	29	30	37
-	203	37	55	32	34	27	23	29	40	17	30	25	32
PI 250155	228	29	45	39	21	15	19	30	43	16	30	18	28
Giza 9	784	40	70	33	30	26	24	36	43	23	29	22	34
F 130	813	53	85	56	38	31	46	40	62	26	28	30	45
EL 19	1690	30	55	38	28	-	21	28	45	14	28	21	31
EL 31	1701	40	50	33	29	26	27	-	38	18	28	23	31
EL 43	1713	51	60	41	30	27	24	37	45	18	28	21	35
EL 70	1735	50	55	45	30	-	27	-	33	16	31	25	35
EL 76	1741	43	55	39	27	20	20	-	42	12	31	20	31
Silaim	1861	35	50	38	32	27	-	-	34	17	31	23	32
-	1866	40	45	35	31	27	-	-	38	15	30	25	32
L 528 (75)	1983	43	50	38	25	25	24	38	45	17	32	25	33
80S 44174	X76TA 143	45	50	43	31	33	-	-	38	26	32	30	36
L 1057	2022	43	50	48	29	21	21	-	51	16	30	30	34
L 1327	2069	34	50	43	30	26	28	32	42	18	30	25	33
-	2149	47	50	38	31	26	14	-	50	23	31	31	34
EL 39	2431	41	50	41	26	25	25	-	55	13	31	21	33
EL 53	2434	32	50	39	24	28	22	29	28	17	32	24	30
EL 65	2435	28	55	38	23	16	26	-	27	14	31	20	28
EL 74	2437	31	55	30	22	20	18	-	31	16	30	20	27
EL 83	2439	39	60	41	27	22	25	-	45	16	30	22	33
Pant.L. 538	2500	38	50	39	16	30	25	36	53	19	30	23	33
Pant.L. 406	2501	36	50	43	25	17	24	38	44	12	30	22	31
T 31	2525	42	50	47	26	20	26	34	51	13	30	23	33
T 36	2526	37	50	39	26	26	31	-	45	19	29	23	33
Pant.L. 639	2573	27	55	39	24	27	27	-	49	16	30	23	32
L 830	2578	29	50	39	27	25	-	38	48	15	30	23	32
L 1278	2580	35	50	40	24	22	28	-	54	20	30	22	33
L 1282	2581	30	50	38	28	26	28	46	48	26	29	20	34
LL 1	2582	32	55	44	23	16	32	50	40	18	29	20	33
LWS 3	2590	36	60	37	34	23	28	40	53	21	29	20	35
P 257	2768	35	55	40	25	22	29	-	50	21	30	22	33
P 943	3278	30	70	35	26	20	29	-	44	22	29	22	33

Cont'd. ...

Table 5.5.4. Cont'd. ...

ENTRY		EGYPT		INDIA	JORDAN		NEPAL	PAKISTAN				SYRIA	MEAN
PEDIGREE	ILL/ Cross No.	Mallawi	Sids	New Delhi	Jubeiha	Ramtha	Kathmandu	Dokri	Faisalabad	Karak	Quetta	Tel Hadya	
EL 61	3402	40	55	30	32	22	34	-	47	21	30	20	33
EP 3	3416	42	55	37	32	28	-	-	35	20	29	24	34
B 77	3493	43	45	43	23	22	28	-	40	29	29	25	33
LG 41	3516	35	60	43	25	21	36	-	38	25	30	23	34
LG 46	3517	42	60	48	29	23	31	39	48	22	30	23	36
LL 37	3601	27	-	44	23	24	34	-	37	21	29	20	29
LL 38	3602	55	45	40	28	25	-	34	42	20	29	20	34
LL 57	3614	35	55	41	32	25	29	-	34	20	29	21	32
Pant.L. 286	4377	40	45	37	21	20	33	-	32	14	30	22	29
Syr.Local large	4400	46	55	50	33	32	23	31	40	31	29	33	37
12	4402	26	45	40	21	15	29	-	36	21	32	24	29
162	4403	42	50	43	22	16	-	36	44	23	32	24	33
18-10	4406	34	45	41	23	21	-	-	40	19	32	21	31
Precoz	4605	30	55	35	-	22	19	30	32	27	32	26	31
EL 142	5071	42	50	35	27	17	-	-	24	22	29	24	30
R 186	5425	46	55	46	37	22	42	-	41	19	29	28	37
79Sh 4867	X75TA 30	51	60	42	34	25	29	-	42	21	30	30	32
79Sh 4806	X75TA 49	47	60	45	36	27	33	-	46	22	30	28	37
80S 38650	X75TA 46	32	60	36	30	23	30	-	46	24	30	30	34
80S 41515	X76TA 249	45	55	46	29	31	30	-	42	20	30	28	36
80S 41648	X76TA 271	43	55	46	35	29	28	-	48	22	29	30	37
80S 41649	X76TA 271	38	65	40	29	28	27	-	50	23	30	30	36
80S 41664	X76TA 271	46	55	43	33	25	33	-	42	17	30	30	35
80S 41672	X76TA 271	44	50	40	34	26	34	-	43	22	30	30	35
80S 42431	X76TA 66	45	55	38	33	24	29	-	45	18	30	28	35
80S 42612	X76TA 71	34	50	46	36	23	21	-	46	22	29	27	33
Local check		44	61	44	33	30	29	34	48	17	31	28	-
Check 1	1744	41	53	37	29	23	27	34	40	18	29	22	32
Check 2	4354	40	58	37	33	28	25	30	49	22	30	30	35
Location mean		39	54	40	29	24	27	35	43	20	30	25	

Table 5.5.5. Correlation (df = 61) among three agronomic characters and seed yield of entries in the LISN-E during 1982/83.

CHARACTERS	Time to maturity	Plant height	Seed yield
Time to flowering	0.68**	0.27*	0.48**
Time to maturity		0.46**	0.65**
Plant height			0.43**

* $P \leq 0.05$

** $P \leq 0.01$

Table 5.5.6. Adjusted seed yield (Y = kg/ha) and Rank (R) of entries at different locations in the LISN-E during 1982/83.

ENTRY	PEDIGREE	ILL/ Cross No.	EGYPT				INDIA				JORDAN				NEPAL				PAKISTAN								SYRIA				TUNISIA				YEMEN				MEAN (1)		MEAN (2)		MEAN (3)	
			Mallawi		Sids		New Delhi		Jubeiha		Rantha		Kathmandu		Faisalabad		Islamabad		Karak		Quetta		Tel Nadya		Beja		El-Kaf		Mateur		Sana'a		Y		Y		Y							
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R				
76TA 66005	1	2346	6	4493	5	697	20	2824	16	3959	1	0	42	642	37	190	20	13	55	1723	17	1241	12	1875	7	1925	8	2500	3	471	1	1658	2	1105	1	2645	2							
78S 26066	193	3068	2	1793	38	297	43	2377	10	2053	9	73	33	0	58	317	12	40	53	1263	34	1241	12	550	60	1950	7	2100	6	-	-	1287	12	332	46	1892	15							
-	203	735	36	1571	45	0	59	3437	9	2959	3	93	32	0	58	0	50	0	56	1433	26	175	62	1650	13	1850	13	1350	23	-	-	1090	21	254	53	1716	17							
P1 250155	228	1846	11	1804	37	397	33	1477	34	1293	20	143	27	709	36	7	48	80	42	1953	8	415	54	1025	39	750	57	700	42	-	-	900	28	548	28	1164	34							
Giza 9	784	846	28	1882	33	47	54	2597	19	1319	18	0	42	0	58	167	22	0	56	893	49	655	41	1275	28	1500	24	1750	15	-	-	877	32	185	60	1478	24							
F 130	813	1123	21	1782	39	597	24	-	-	1319	18	243	21	135	53	5	49	160	24	913	47	415	54	1425	21	1325	29	1500	18	2	45	782	41	294	48	1270	30							
EL 19	1690	346	56	2771	16	47	54	1957	27	-	-	0	42	335	47	422	7	0	56	763	54	855	28	1450	20	1500	24	1200	30	-	-	896	29	261	52	1440	26							
EL 31	1701	346	57	2327	21	0	59	1344	38	1439	15	0	42	0	58	417	8	0	56	863	50	708	38	1200	33	1350	27	1300	24	-	-	807	37	213	55	1252	31							
EL 43	1713	401	54	2049	28	97	52	1384	37	1506	14	0	42	0	58	267	15	53	47	723	56	95	63	600	59	1150	36	1500	18	-	-	702	51	190	57	1086	37							
EL 70	1735	790	32	2004	29	47	54	130	62	1293	20	0	42	0	58	424	6	53	47	723	57	535	50	850	45	975	42	1050	37	0	47	592	59	178	61	953	44							
EL 76	1741	660	39	1704	42	547	26	948	51	1279	22	52	35	268	49	406	9	178	21	1093	40	828	29	1500	18	1150	36	1800	13	1	46	828	36	364	42	1234	33							
Silaim	1861	1494	17	2227	24	97	52	3201	11	2546	5	0	42	49	57	0	50	191	18	1803	13	735	35	1750	9	2450	2	1550	17	29	40	1208	14	310	47	1994	10							
-	1866	1938	9	2615	19	47	54	3095	12	2346	6	0	42	369	46	114	39	271	7	1223	37	1001	21	1600	15	1800	15	1450	21	17	43	1192	16	292	49	1981	11							
L 528 (75)	1983	883	26	1482	49	797	16	1161	42	1039	30	0	42	1529	16	0	50	298	4	1803	13	628	44	750	55	700	60	1250	27	-	-	880	31	738	13	987	41							
80S 44174	X76TA 143	2716	1	3871	9	397	33	4495	1	2906	4	0	42	255	50	110	43	298	4	1873	11	1601	5	2500	1	2625	1	2200	5	-	-	1918	1	489	35	2989	1							
L 1057	2022	883	27	2404	20	347	38	1521	32	1266	23	102	30	542	40	0	50	244	11	3163	1	921	25	1175	34	975	42	1400	22	29	40	998	24	632	21	1318	28							
L 1327	2069	2438	4	1671	43	647	21	2775	17	2159	7	1282	1	1355	18	0	50	378	1	1943	9	868	26	750	55	950	46	700	43	42	38	1197	15	664	17	1539	20							
-	2149	2883	3	2149	26	647	21	3695	5	1679	12	-	-	755	33	0	50	138	29	2593	2	1668	2	1650	14	1900	11	1900	11	137	15	1557	4	712	14	2191	9							
EL 39	2431	827	29	1838	35	0	59	1481	33	1266	24	52	36	89	56	42	45	271	8	903	48	1001	21	1300	26	1150	36	1150	34	10	44	759	44	195	56	1252	31							
EL 53	2434	605	42	1338	53	0	59	1561	31	1373	17	12	41	0	-	0	50	44	51	813	53	1081	18	1300	26	975	42	900	39	0	47	666	54	124	63	1142	36							
EL 65	2435	383	55	1460	50	13	58	677	54	621	41	-	-	120	54	902	1	47	50	89	63	561	48	1150	35	1175	35	1300	24	-	-	654	56	234	54	916	48							
EL 74	2437	327	58	1515	47	0	59	530	56	848	38	-	-	226	51	119	33	-	-	559	59	775	30	1700	12	1225	31	1250	27	32	39	700	52	187	58	1021	39							
EL 83	2439	494	48	1838	36	113	51	824	52	755	39	100	31	113	55	598	4	60	46	189	61	761	34	1475	19	1525	23	1600	16	137	15	705	50	187	58	1159	35							
Pant.L. 538	2500	660	40	1260	55	313	41	317	60	928	36	610	6	2186	2	223	17	153	25	929	45	575	46	450	62	400	64	450	48	0	47	630	58	631	22	630	62							
Pant.L. 406	2501	494	48	2071	27	463	31	1077	44	235	59	590	9	493	42	119	34	233	13	619	58	655	41	450	62	900	50	400	51	0	47	587	61	360	44	785	53							
T 31	2525	827	30	1349	52	863	14	1064	46	1221	25	-	-	1146	24	123	29	247	10	829	52	455	53	950	40	1200	32	400	51	0	47	762	42	535	30	933	45							
T 36	2526	494	50	1238	56	213	49	1290	39	528	46	590	9	1666	12	119	35	-	-	1539	24	641	43	800	50	950	46	450	48	73	31	756	45	700	15	799	51							
Pant.L. 639	2573	549	44	1293	54	613	23	1637	29	928	37	400	15	1840	6	119	35	-	-	1689	18	775	31	850	45	600	63	750	40	194	6	874	33	809	8	923	47							
L 830	2578	438	53	849	62	713	19	1250	41	315	55	-	-	1353	19	123	30	-	-	2029	7	255	61	850	45	900	50	350	53	68	32	730	48	857	4	651	60							
L 1278	2580	327	59	1149	58	313	41	1024	48	941	35	800	4	2146	3	140	24	127	37	2579	3	575	46	900	42	650	62	150	61	104	20	795	39	887	3	715	55							
L 1282	2581	531	45	1556	46	867	11	1610	30	457	49	360	18	1253	22	130	27	304	3	2139	5	1050	19	900	42	925	48	650	44	152	12	859	34	744	12	960	43							
LL 1	2582	753	35	1990	31	867	11	1037	47	257	58	610	6	1680	11	122	32	238	12	2499	4	-	-	1725	11	700	60	500	46	218	4	942	25	891	2	995	40							
LWS 3	2590	809	31	2167	25	467	30	2237	22	1204	26	330	19	953	29	114	39	131	35	1939	10	717	37	1850	8	1875	12	1950	9	51	35	1120	20	569	26	1601	19							
P 257	2768	531	46	1967	32	517	28	957	50	430	50	140	28	1146	25	135	26	144	27	2099	6	730	36	775	54	825	54	650	44	200	5	750	46	626	23	858	50							

Cont'd.

Table 5.5.6. Cont'd.

ENTRY	PEDIGREE	ILL/ Cross No.	EGYPT				INDIA				JORDAN				NEPAL				PAKISTAN				SYRIA				TUNISIA				YEMEN				MEAN (1)		MEAN (2)		MEAN (3)	
			Mallawi		Sids		New Delhi		Jubeiha		Rantha		Kathmandu		Faisalabad		Islamabad		Karak		Quetta		Tel Hadya		Beja		El-Kaf		Mateur		Sana'a		Y	R	Y	R	Y	R	Y	R
			Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
P 943	3278		475	51	1667	44	267	45	397	58	417	51	420	14	1160	23	126	28	131	36	1289	33	664	40	945	41	1260	32	350	53	194	7	647	57	412	33	764	54		
EL 61	3402		531	47	1501	48	267	45	1437	35	497	47	-	-	320	48	218	18	64	44	1249	36	864	27	1250	30	1260	32	1200	30	47	36	760	43	361	43	1050	38		
EP 3	3416		698	37	2327	22	367	37	2050	25	977	34	130	29	400	45	217	19	51	49	1619	21	1250	11	1350	24	1550	22	2000	8	43	37	1002	23	397	40	1525	21		
B 77	3493		1142	20	2001	30	1467	2	370	59	670	40	580	11	1312	20	114	39	171	23	1769	16	957	24	800	50	1000	41	750	41	300	3	894	30	816	7	961	42		
LG 41	3516		975	24	1745	40	1017	4	797	53	337	52	500	13	1720	10	172	21	64	45	1469	25	1170	16	800	50	1025	40	300	57	372	2	829	35	753	11	894	49		
LG 46	3517		920	25	2278	23	867	11	1077	45	110	62	380	16	1060	28	114	39	144	28	1579	22	1224	14	800	50	850	52	200	60	189	8	786	40	619	24	932	46		
LL 37	3601		623	41	1352	51	997	5	615	55	324	53	801	3	1771	8	0	50	231	14	1063	42	401	56	700	58	725	59	450	48	99	22	676	53	677	16	674	56		
LL 38	3602		679	38	875	59	1197	3	961	49	604	42	701	5	1451	17	0	50	231	14	1063	42	401	56	700	58	725	59	450	48	99	22	676	53	677	16	674	56		
LL 57	3614		2068	7	1708	41	1847	1	1975	26	577	43	1051	2	1291	21	0	50	84	41	343	60	361	58	825	49	750	57	350	53	134	18	591	60	514	31	660	58		
Pant.L. 286	4377		1123	22	1208	57	997	5	175	61	484	48	231	23	1811	7	0	50	191	19	1263	35	1641	4	2200	2	1975	6	1850	12	-	-	1461	7	457	37	2214	8		
Syr.Loc.Large	4400		1068	23	3652	11	397	33	1721	28	3604	2	171	26	717	35	0	50	191	19	1263	35	1641	4	2200	2	1975	6	1850	12	-	-	1461	7	457	37	2214	8		
I2	4402		0	63	875	60	397	33	441	57	577	44	591	8	1584	13	26	47	231	15	1303	31	348	59	500	61	850	52	500	46	142	13	557	62	611	25	511	63		
162	4403		235	61	852	61	997	5	1108	43	163	61	181	25	2217	1	0	50	271	9	1793	15	708	39	975	44	975	42	259	59	96	25	716	49	794	9	659	59		
18-10	4406		790	33	786	63	897	9	1268	40	324	54	-	-	2084	5	0	50	298	4	1683	19	388	57	425	64	921	48	300	57	98	24	733	47	843	5	651	60		
Precoz	4605		2068	8	3564	12	297	43	-	-	1030	31	-	-	764	32	451	5	124	38	1123	39	1335	8	1750	9	1800	15	1050	37	28	42	1184	18	465	36	1800	16		
EL 142	5071		123	62	619	64	247	47	1415	36	297	56	-	-	517	41	0	50	44	52	143	62	348	60	1050	37	1250	30	1200	30	54	34	522	63	168	62	788	52		
R 186	5425		790	34	3300	15	480	29	2139	23	293	57	0	42	753	34	140	25	200	16	833	51	997	23	1050	37	1350	27	1100	35	180	9	907	27	369	41	1377	27		
795h 4867	X75TA 30		0	63	2712	17	230	48	2873	15	-	-	13	39	446	44	123	31	320	2	1173	38	770	33	1275	28	1750	17	1100	35	163	10	924	26	353	45	1497	22		
795h 4806	X75TA 49		1901	10	4023	8	-	-	2593	20	1106	28	63	34	1080	27	142	23	133	34	1573	23	597	45	1400	22	1927	9	-	-	87	27	1279	13	513	32	1935	13		
805 38650	X75TA 46		1679	14	4512	4	330	39	2553	21	546	45	243	21	1766	9	748	2	173	22	1343	30	1024	20	1375	23	1750	17	1800	13	-	-	1417	10	767	10	1905	14		
805 41515	X76TA 249		1512	16	3412	14	580	25	2939	14	1026	32	363	17	1533	15	390	10	200	17	1403	27	1264	9	850	45	775	56	1500	20	99	23	1190	17	653	18	1660	18		
805 41648	X76TA 271		1790	12	4394	3	530	27	3553	7	1933	11	193	24	580	39	307	13	187	20	973	43	1490	6	1350	24	2150	5	2600	2	104	21	1505	5	411	38	2463	4		
805 41649	X76TA 271		1679	15	4045	7	880	10	3553	7	1533	13	263	20	480	43	119	37	67	43	60	64	1664	3	2200	2	1850	14	2300	4	119	19	1387	11	284	50	2353	6		
805 41664	X76TA 271		1735	13	5690	1	730	18	2966	13	1066	29	23	38	1566	14	294	14	147	26	1639	20	1264	9	1250	30	1925	9	-	-	141	14	1460	8	649	20	2271	7		
805 41672	X76TA 271		1346	18	4967	2	830	15	4073	2	1386	16	13	39	940	30	119	37	120	39	1293	32	1877	1	1950	5	2300	3	3150	1	155	11	1634	3	496	34	2631	3		
805 42431	X76TA 66		457	52	4078	6	780	17	2619	18	199	60	0	42	820	31	644	3	27	54	953	44	504	52	1150	35	1750	17	1200	30	-	-	1084	22	537	29	1495	23		
805 42612	X76TA 71		290	60	3467	13	330	39	4073	3	1186	27	-	-	1146	26	352	11	-	-	923	46	1170	16	1900	6	1625	21	2050	7	86	28	1431	9	567	27	1970	12		
Check means:																																								
Check 1	1744		583	43	1850	34	117	50	2109	24	987	33	35	37	222	52	237	16	113	40	1083	41	773	32	1233	32	1446	26	1208	29	59	33	804	38	267	54	1274	29		
Check 2	4354		2352	5	3678	10	442	32	3700	4	1940	10	12	41	596	38	89	44	136	33	1375	28	1467	7	2158	4	2188	4	1925	10	135	17	1480	6	398	39	2426	5		
Local check	1213		19	2696	18	982	8	3689	6	2124	8	503	12	2101	4	31	46	138	30	1850	12	1191	15	1575	16	1063	39	1271	26	81	29	-	-	-	-	-	-	-	-	
Location mean			1041		2277		506		1889		1145		260		900		174		148		1320		857		1224		1331		1187		182		82.9							
C.V.2			28.4		30.2		46.6		19.5		34.2		62.1		48.3		135.0		54.6		45.5		25.9		24.8		14.2		13.5											
L.S.D. 5%:																																								
1. Check means	507				1066		308		797		742		147		605		207		91		842		382		518		287		275		98									
2. Adjusted varieties in the same block	1241				2611		753		1953		1817		359		1483		507		222		2062		935		1270		702		614		239									
3. Adjusted varieties in the different blocks	1433				3015		870		2256		2098		415		1712		585		256		2381		1080		1466		810		709		276									
4. Adjusted variety vs check mean	1094				2303		665		1723		1602		317		1308		447		196		1819		825		1037		573		502		211									
The number of lines significantly exceeding the local check.	6				1		1		0		1		2		0		4		1		0		0		0		19		14		3									

(1) Seed yield values underlined, significantly exceeding the local check.

MEAN 1: Mean for all locations.

MEAN 2: Mean of Southern locations including India, Nepal, Pakistan and Yemen.

Table 5.5.7. The five heaviest seed yielding entries at the individual locations in the LISN-E during 1982/83.

RANK	EGYPT				INDIA		JORDAN				NEPAL		PAKISTAN	
	Halla		Sids		New Delhi		Jubelha		Ramtha		Kathmandu		Faisalabad	
	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.
1	80S 44174	X76TA 143	80S 41664	X76TA 271	LL 57	3614	80S 44174	X76TA 143	76TA 66005	1	L 1327	2069	162	4403
2	78S 26066	193	80S 41672	X76TA 271	B 77	3493	80S 41672	76TA 271	Syr.Local large	4400	LL 57	3614	Pant.L.538	2500
3	-	2149	80S 41648	X76TA 271	LL 38	3602	80S 42612	76TA 71	-	203	IL 37	3601	L 1278	2500
4	L 1327	2069	80S 38650	X75TA 46	LG 41	3516	Check 2	4354	80S 44174	X76TA 143	L 1278	2580	Local check	-
5	Check 2	4354	76TA 66005	1	IL 37	3601	-	2149	Silala	1861	LL 38	3602	18-10	4406

Cont'd. ...

RANK	PAKISTAN						SYRIA		TUNISIA						YEMEN	
	Islamabad		Karak		Quetta		Tel Hadya		Boja		El-Kef		Mateur		Sana'a	
	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.	PEDIGREE	ILL/ Cross No.
1	EL 65	2455	L 1327	2069	L 1057	2022	80S 41672	X76TA 271	80S 44174	X76TA 143	80S 44174	X76TA 143	80S 41672	X76TA 271	76TA 66005	1
2	80S 38650	X75TA 46	79Sh 4867	X75TA 30	-	2149	-	2149	Syr.Local large	4400	Silala	1861	80S 41648	X76TA 271	LG 41	3516
3	80S 42431	X76TA 66	L 1282	2581	L 1278	2580	80S 41649	X76TA 271	80S 41649	X76TA 271	80S 41672	X76TA 271	76TA 66005	1	B 77	3493
4	EL 83	2439	L 528 (75)	1983	LL 1	2582	Syr.Local large	4400	Check 2	4354	Check 2	4354	80S 41649	X76TA 271	LL 1	2582
5	Procoz	4605	80S 44174	X76TA 143	L 1282	2581	80S 44174	X76TA 143	80S 41672	X76TA 271	80S 41648	X76TA 271	80S 44174	X76TA 143	P 257	2768

(1) The brackets indicate entries having the same rank.

that at almost all the locations the top five lines were the lines from ICARDA. On the basis of average over locations, 80S 44174, 76TA 66005, 80S 41672, ILL 2149, and 80S 41648 respectively were the top yielders and gave yields more than 1500 kg/ha.

The correlation between seed yield (Table 5.5.8) at Tel Hadya in Syria was positive and significant with Mallawi and Sids in Egypt; Jubeiha and Ramtha in Jordan; and Beja, El-Kef and Mateur in Tunisia.

5.6. LENTIL INTERNATIONAL SCREENING NURSERY - TALL (LISN-Ta)

Material

The material for the Lentil International Screening Nursery - Tall comprised of 60 test entries and 3 checks, two checks were supplied and one local check was to be added by the cooperator. The entries were selected on the basis of their performance from the germplasm collections and progenies from crosses grown at ICARDA. All the material was tall, considered to be suitable for mechanical harvesting with a cutter bar under normal growing conditions.

Methods and Management

The material comprising 60 test entries and 3 checks was suggested to be planted in Augmented Block Design. In each block 10 entries alongwith 3 check entries were sown in single row plots of 4 m length accomodating 200 plants per plot. The spacings between the rows were suggested to be 25 cm.

Thirty sets of screening nursery were supplied to cooperators in 17 countries and the data were received for 22 sets from 13 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 52 days at Pulawy in Poland to 180 days at Jubeiha in Jordan. However, across locations, the range for time to flowering for different entries was 93 days for 78S 26002 to 112 days for 80S 35172 and 80S 35183. The data on time to maturity (Table 5.6.3) showed that at Pulawy in Poland the entries matured earliest in 92 days and other early locations included Leonessa (Italy), Karaj (Iran), and Tochevo (Bulgaria). Among the entries, 80S 33357 was the earliest to mature in 143 days and was followed by 80S 41727, 80S 42431, 80S 35184 and 80S 37764 maturing in 144 days. Laird and 80S 41120 were, however, the latest lines maturing in 152 days.

The plant height data (Table 5.6.4) showed that plant height at Sids in Egypt was the maximum (61 cm) and at Toshevo in Bulgaria it was minimum (22 cm). The range in plant height was from 28 cm for 80S 41727 and 80S 38651 to 46 cm for 78S 26194. It is interesting to note that at most of the locations some of entries exceeded the local check

Table 5.5.8. Correlation (df = 31) among different locations for the seed yield of entries in the LISN-E during 1982/83.

COUNTRY	LOCATION	EGYPT	INDIA	JORDAN		NEPAL	PAKISTAN				SYRIA	TUNISIA			YEMEN
		Sids	New Delhi	Jubeiha	Ramtha	Kathmandu	Faisalabad	Islamabad	Karak	Quetta	Tel Hadya	Beja	El-Kef	Mateur	Sana'a
EGYPT	Hallawi	0.67**	0.08	0.73**	0.77**	-0.07	-0.22	-0.04	0.04	0.01	0.57**	0.53**	0.56**	0.54**	0.21
EGYPT	Sids		0.02	0.79**	0.54**	-0.42*	-0.37*	0.23	-0.22	-0.08	0.83**	0.65**	0.72**	0.83**	0.29
INDIA	New Delhi			-0.12	-0.29	0.41*	0.58**	-0.27	0.07	0.06	0.10	-0.21	-0.20	-0.17	0.53**
JORDAN	Jubeiha				0.64**	-0.31	-0.36*	-0.04	0.08	0.06	0.76**	0.74**	0.79**	0.77**	-0.01
JORDAN	Ramtha					-0.28	-0.43*	0.04	-0.09	0.11	0.36*	0.64**	0.63**	0.65**	0.07
NEPAL	Kathmandu						0.65**	-0.27	0.37*	0.15	-0.36*	-0.60**	-0.54**	-0.55**	0.02
PAKISTAN	Faisalabad							-0.30	0.20	0.25	-0.31	-0.57**	-0.56**	-0.56**	0.27
PAKISTAN	Islamabad								-0.36*	-0.30	0.13	0.10	0.09	0.33	0.01
PAKISTAN	Karak									0.33	-0.17	-0.32	-0.20	-0.26	-0.32
PAKISTAN	Quetta										-0.01	-0.07	-0.07	-0.09	0.15
SYRIA	Tel Hadya											0.63**	0.59**	0.70**	0.25
TUNISIA	Beja												0.87**	0.84**	0.04
TUNISIA	El-Kef													0.83**	0.10
TUNISIA	Mateur														0.03

* $P \leq 0.05$

** $P \leq 0.01$

Table 5.6.1. Agronomic data for different locations in the LISN-Ta during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)			Irrigation	Insecticide / fungicide
				N	P ₂ O ₅	K ₂ O		
AFGHANISTAN	Darulaman	18.4.1983	96	30	60		7	Metasystox
ALGERIA	Sidi Bel Abbes	21.11.1982	180	15	70			
AUSTRALIA	Wagga Wagga	23.6.1983	194		35			
BRAZIL	Santa Maria	21.6.1983	163	60	50			
BULGARIA	Toshevo	30.3.1983	118	30	60			
EGYPT	Mallawi	12.12.1982	160	15	30			
EGYPT	Sids	11.11.1982	175	15	30		3	
INDIA	New Delhi	24.11.1982	146		40		1	Rogor
IRAN	Karaj	5.3.1983	118				6	
ITALY	Leonessa	9.5.1983	105					
JORDAN	Jubeiha	21.10.1982	-					
JORDAN	Ramtha	31.10.1982	196	15	40			
LEBANON	Terbol	24.11.1982	205		50			Kerb+Bladex, Fusilade
MOROCCO	Marchouch	24.11.1982	209					
PAKISTAN	Islamabad	22.11.1982	186					
POLAND	Pulawy	7.4.1983	101		80	120		Benlate+CalixinM+Actellic
SYRIA	Gelline	-	-					
SYRIA	Izra'a-1	14.12.1982	148	30	50			
SYRIA	Izra'a-2	1.1.1983	146					
SYRIA	Tel Hadya	16.11.1982	180		50			
TUNISIA	Beja	-	-					
TUNISIA	Maceur	-	-					

Table 5.6.2. Time to flowering (days) of entries at different locations in the LISN-Ta during 1982/83.

ENTRY		ORIGIN	AFGHANISTAN	ALGERIA	AUSTRALIA	BRAZIL	BULGARIA	EGYPT	INDIA	IRAN	ITALY	JORDAN	LEBANON	POLAND	SYRIA	MEAN
PEDIGREE	ILL/ Cross No.		Darulaman	Sidi Bel Abbes	Wagga Wagga	Santa Maria	Toshevo	Hallawi Sids	New Delhi	Karaj	Leonessa	Jubeiha Rantha	Terbol	Pulawy	Izra'a Tel Hadya	
78S 26002	8	Jordan	49	120	106	-	62	67	100	92	69	50	-	155	143	93
78S 26003	8	Jordan	49	120	105	101	65	67	105	93	71	53	-	156	147	95
78S 26004	9	Jordan	49	120	106	101	65	67	105	90	71	51	-	156	143	94
74TA 138	101	Morocco	60	127	114	111	65	84	125	87	74	60	-	157	157	102
Giza 9	784	Egypt	55	120	109	101	65	67	95	84	71	60	-	156	149	95
78S 26194	922	Turkey	63	123	119	114	65	91	125	110	84	66	-	167	161	107
Laird	4349	Canada	64	127	115	114	90	91	125	108	83	65	-	168	164	109
Chilean'78	4711	Spain	61	127	114	114	75	90	125	96	80	61	-	162	164	106
-	1918	Australia	65	127	114	114	75	93	125	115	83	65	-	164	164	108
78S 26152	793	Egypt	65	126	115	115	74	91	120	113	85	65	-	166	164	108
-	468	Chile	66	127	115	115	75	93	125	109	82	66	-	164	159	108
-	986	Chile	65	127	113	115	75	90	115	104	80	54	-	164	159	105
-	20	Jordan	53	120	105	104	62	67	105	94	71	53	-	154	147	95
-	23	Jordan	53	120	106	104	62	67	100	90	70	54	-	155	143	94
-	813	Egypt	60	120	110	115	65	63	105	84	85	62	-	163	151	100
78S 26052	112	Turkey	57	125	107	101	72	77	110	100	73	61	-	160	151	99
78S 26024	27	Jordan	55	123	110	108	62	76	110	98	75	54	-	157	151	99
Syr. Loc. Large	4400	Syria	62	123	111	104	72	91	115	104	76	61	-	158	157	103
-	1939	Morocco	59	120	109	88	70	77	105	102	79	61	-	158	151	98
80S 37764	X75TA 25	-	64	126	114	104	65	100	120	122	80	60	-	157	159	105
80S 37768	X75TA 25	-	61	123	113	104	65	92	120	112	77	65	-	159	157	104
80S 38614	X75TA 45	-	63	123	117	111	65	91	120	106	77	60	-	167	161	105
80S 38651	X75TA 46	-	60	124	106	101	65	89	115	93	73	56	-	157	147	99
80S 39928	X75TA 85	-	65	123	114	111	65	92	120	110	80	61	-	167	157	105
80S 41793	X76TA A3	-	61	125	111	101	62	81	110	103	75	59	-	158	155	100
80S 41815	X76TA A3	-	63	123	112	104	62	89	110	103	76	61	-	157	155	102
80S 42188	X76TA 25	-	54	123	108	101	57	67	95	88	72	55	176	155	159	101
80S 42671	X76TA 72	-	62	123	113	104	65	81	120	113	74	66	186	157	155	108
80S 42830	X76TA 75	-	56	123	112	104	62	85	110	109	75	59	178	154	155	105
80S 32376	X76TA 9	-	59	123	111	104	62	81	105	105	73	56	187	157	155	105
80S 20124	X76TA 156	-	57	120	113	104	65	83	110	104	77	57	178	156	155	105
80S 41139	X76TA 66	-	53	120	109	104	62	90	95	80	74	59	178	155	157	102
80S 34047	X77TA 78	-	61	123	110	104	65	84	115	107	76	60	178	156	151	106
80S 34056	X77TA 103	-	60	123	111	101	65	82	115	104	78	55	176	155	157	105
80S 38004	X75TA 29	-	62	123	110	101	72	83	120	103	77	57	176	155	157	106

Cont'd. ...

Table 5.6.2. Cont'd...

ENTRY		ORIGIN	AFGHANISTAN	ALGERIA	AUSTRALIA	BRAZIL	BULGARIA	EGYPT		INDIA	IRAN	ITALY	JORDAN	LEBANON	POLAND	SYRIA		MEAN	
PEDIGREE	ILL/ Cross No.		Darulaman	Sidi Bel Abbes	Wagga Wagga	Santa Maria	Toshevo	Mallawi	Sids	New Delhi	Karaj	Leconessa	Jubeiha	Ramtha	Terbol	Pulawy	Izra'a	Tel Hadya	
80S 41120	X76TA 32	-	66	123	112	108	72	81	120	107	73	63	178	182	153	54	116	131	109
80S 34057	X77TA 103	-	55	120	108	101	62	67	95	90	72	55	187	155	151	51	117	127	101
80S 35146	X77TA 80	-	66	126	113	111	72	87	120	108	78	61	190	155	159	54	117	143	110
80S 27597	X75TA 78	-	66	128	114	108	72	97	120	112	79	64	190	157	157	53	116	141	111
80S 27603	X75TA 88	-	65	123	110	104	72	84	110	110	76	65	178	157	151	51	116	135	107
78S 13159-1	X75TA 14	-	55	123	113	104	62	90	115	106	74	53	190	155	151	50	117	141	106
80S 41727	X76TA 1	-	54	123	107	101	62	86	110	98	73	55	175	154	145	49	117	129	102
80S 39750	X76TA 81	-	50	123	110	101	62	88	115	103	72	53	175	153	149	50	116	127	103
80S 41784	X76TA 3	-	60	123	111	104	65	86	110	95	73	55	178	156	155	52	118	135	105
80S 42431	X76TA 66	-	52	120	106	101	62	67	95	82	68	53	178	156	153	49	118	129	99
80S 44174	X76TA 143	-	56	120	106	101	62	77	105	105	72	56	173	156	151	53	117	121	102
80S 44540	X76TA 186	-	60	123	109	101	70	81	115	111	76	64	178	154	143	51	116	131	105
80S 32725	X76TA 76	-	55	123	110	104	70	77	105	101	78	59	178	155	149	51	116	135	104
80S 33357	X75TA 79	-	50	120	106	104	65	67	100	93	72	54	175	153	153	53	117	125	100
80S 34103	X77TA 33	-	59	123	109	101	62	81	105	97	75	57	173	155	149	51	117	129	103
80S 34927	X77TA 67	-	60	123	111	101	65	93	115	103	72	59	178	155	155	50	116	127	105
80S 35172	X77TA 80	-	63	126	118	114	62	101	120	113	79	67	189	162	159	52	116	145	112
80S 35183	X77TA 80	-	64	126	117	114	72	87	120	127	80	65	187	162	159	53	116	145	112
80S 35184	X77TA 80	-	63	123	113	118	72	87	120	113	80	61	187	164	157	52	117	145	111
80S 32623	X76TA 66	-	50	120	105	92	62	63	85	80	71	52	173	156	155	48	117	127	97
80S 34273	X77TA 36	-	55	123	113	108	62	87	115	96	74	59	188	162	157	51	116	143	107
80S 34826	X77TA 58	-	61	123	112	111	72	86	120	116	80	60	188	157	157	52	116	141	110
80S 35187	X77TA 80	-	62	123	112	122	65	97	120	113	80	60	187	156	157	52	116	141	110
80S 35188	X77TA 80	-	62	123	112	122	65	98	115	112	78	63	-	162	155	54	116	141	105
80S 35190	X77TA 80	-	64	123	113	122	62	83	115	127	80	60	178	162	155	53	117	141	110
Local check		-	57	120	120	61	64	63	79	76	76	60	175	154	156	56	117	129	-
Check 1	ILL 4401	-	58	124	108	108	65	79	110	106	75	60	175	154	152	50	117	128	104
Check 2	ILL 500	-	58	123	109	104	63	84	108	97	73	56	183	157	152	52	116	131	104
Location mean			59	123	111	106	66	83	111	102	76	59	180	158	154	52	117	135	

Table 5.6.3. Time to maturity (days) of entries at different locations in the LISN-Ta during 1982/83.

ENTRY NAME			ALGERIA	AUSTRALIA	BRAZIL	BULGARIA	EGYPT	INDIA	IRAN	ITALY	JORDAN	LEBANON	POLAND	SYRIA		MEAN
PEDIGREE	ILL/ CROSS No.		Sidi Bel Abbes	Wagga Wagga	Santa Maria	Toshevo	Mallawi	Sids	New Delhi	Karaj	Leonessa	Ramtha	Terbol	Pulway	Izra'a-1	Tel Hadya
78S 26002	8		172	190	-	104	142	175	137	104	97	196	201	91	148	159
78S 26003	8		172	190	143	100	143	175	137	104	98	192	193	96	144	159
78S 26004	9		176	184	143	106	144	175	137	109	98	192	193	91	146	162
74TA 138	101		176	188	153	109	148	175	130	102	105	196	201	91	147	169
Giza 9	784		176	189	153	107	149	175	130	99	103	192	193	90	147	164
78S 26194	922		176	188	153	110	155	175	-	114	105	-	203	92	145	174
Laird	4349		180	188	153	118	156	175	-	118	104	-	209	97	148	180
Chilean 78	4711		176	189	153	110	157	175	-	116	99	-	207	97	149	180
-	1918		176	190	153	112	156	175	-	115	100	-	203	97	147	172
78S 26152	793		176	185	153	108	157	175	-	116	102	-	205	97	143	176
-	468		176	189	153	117	157	175	-	117	102	-	203	91	145	172
-	986		176	189	153	110	160	175	-	105	101	-	205	97	145	176
-	20		172	167	153	107	147	165	-	103	97	192	205	91	145	164
-	23		172	189	153	108	148	175	145	106	96	196	203	90	146	162
-	813		176	189	153	110	160	175	142	110	98	-	205	92	146	176
78S 26052	112		172	190	139	110	144	175	142	109	98	196	191	89	144	162
78S 26024	23		176	190	143	100	147	175	145	109	96	196	201	91	144	164
Syr. Loc. Large	4400		176	185	143	112	153	175	145	109	101	196	201	92	145	164
-	1939		172	186	139	106	145	175	145	106	100	196	-	89	146	162
80S 37764	X75TA25		176	186	153	110	159	175	-	108	100	196	201	90	148	164
80S 37768	X75TA25		176	184	153	107	154	175	-	102	101	196	201	90	148	169
80S 38614	X75TA45		177	190	153	107	154	175	140	105	98	196	203	91	147	172
80S 38651	X75TA46		172	192	153	108	143	175	130	99	98	196	191	89	145	164
80S 39928	X75TA85		172	190	139	114	142	175	-	105	100	-	197	91	146	169
80S 41793	X76TAA3		172	190	139	105	144	170	137	101	98	196	197	91	146	166

Cont'd 2/.

Table 5.6.3. Cont'd

ENTRY NAME			ALGERIA	AUSTRALIA	BRAZIL	BULGARIA	EGYPT	INDIA	IRAN	ITALY	JORDAN	LEBANON	POLAND	SYRIA		MEAN	
PEDIGREE	ILL/ CROSS No.		Sidi Bel Abbas	Wagga Wagga	Santa Maria	Toshevo	Mallawi	Sids	New Delhi	Kraraaj	Leonessa	Ramtha	Terbol	Pulway	Izra'a-I	Tel Hadya	
80S 41815	X76TA3		176	188	153	104	148	175	146	104	98	196	201	91	148	169	150
80S 42188	X76TA25		176	194	139	108	142	175	-	107	101	196	203	91	148	169	150
80S 42671	X76TA72		176	188	139	107	147	175	-	104	102	196	201	91	147	164	149
80S 42830	X76TA75		176	188	139	104	145	175	-	105	99	196	201	89	147	166	148
80S 32376	X76TA9		176	190	153	104	152	175	-	102	99	192	197	91	144	166	149
80S 28124	X76TA156		176	192	153	108	150	175	146	109	99	-	203	92	144	164	147
80S 41139	X76TA66		176	192	153	108	147	175	142	109	99	-	203	92	144	164	146
80S 34047	X77TA78		176	191	153	114	149	175	-	104	99	-	203	92	145	164	147
80S 34056	X77TA103		176	189	153	114	155	175	-	100	97	196	201	92	145	166	151
80S 38004	X75TA29		176	192	153	114	149	175	-	106	97	196	201	92	145	166	151
80S 41120	76TA32		172	189	153	114	156	175	-	104	100	196	203	92	146	166	152
80S 34057	X77TA103		176	187	139	104	148	165	138	104	98	196	203	97	147	166	147
80S 35146	X77TA80		176	185	153	114	158	175	-	105	100	196	201	97	144	-	150
80S 27597	X75TA78		176	189	153	106	157	175	-	105	102	196	201	92	143	166	151
80S 27603	X75TA88		169	176	153	110	149	175	-	103	102	196	193	91	143	164	149
78S 13159-1	X75TA14		169	190	153	104	153	175	146	103	97	192	193	92	149	166	149
80S 41727	X76TA1		172	190	139	90	142	165	138	101	97	196	191	89	148	159	144
80S 39750	X76TA81		176	190	139	107	147	175	137	103	95	192	191	90	142	162	146
80S 41784	X76TA3		172	190	139	110	147	165	128	102	98	196	197	91	148	166	146
80S 42431	X76TA66		176	191	153	107	146	165	128	102	97	-	201	91	146	169	144
80S 44174	X76TA143		176	190	153	107	148	175	-	100	95	196	201	92	142	162	149
80S 44540	X76TA186		172	192	153	104	144	175	-	103	100	196	193	91	146	162	149
80S 32725	X76TA76		176	190	153	107	143	165	-	101	99	196	193	91	147	166	148
80S 33357	X75TA179		169	166	139	107	141	165	135	100	97	192	191	91	145	162	143
80S 34103	X77TA33		176	190	153	104	149	175	135	102	97	196	201	97	145	166	149

Cont'd 3/..

Table 5.6.3. Cont'd

ENTRY NAME		ALGERIA	AUSTRALIA	BRAZIL	BULGARIA	EGYPT	INDIA	IRAN	ITALY	JORDAN	LEBANON	POLAND	SYRIA		MEAN		
PEDIGREE	ILL/ CROSS No.	Sidi Bel Abbes	Wagga Wagga	Santa Maria	Toshevo	Mallawi	Sids	New Delhi	Karaj	Leonessa	Ramtha	Terbol	Pulway	Izra'a-l	Tel Hadya		
80S 34927	X77TA67	172	190	153	107	147	175	-	104	99	196	197	89	149	159	149	
80S 35172	X77TA80	176	190	153	111	155	175	-	103	103	-	201	91	142	172	148	
80S 35183	X77TA80	176	190	163	114	156	175	-	108	103	-	201	92	144	172	149	
80S 35184	X76TA80	176	189	139	114	153	175	-	104	101	-	197	92	145	172	144	
80S 32623	X77TA66	176	190	153	104	143	165	-	109	96	-	201	90	145	166	148	
80S 34273	X77TA36	176	190	153	106	154	175	-	104	99	-	201	97	144	172	147	
80S 34826	X77TA58	176	186	153	108	156	175	-	106	99	-	197	97	143	169	148	
80S 35187	X77TA80	176	189	153	110	156	175	-	104	99	-	197	97	146	169	148	
80S 35188	X77TA80	176	190	153	110	155	175	-	102	102	-	197	97	146	169	148	
80S 35190	X77TA80	176	186	153	104	155	175	-	103	99	-	197	97	144	166	146	
Local check		172	189	114	106	143	165	125	107	100	193	201	101	147	166		
Check 1	ILL4401	173	190	139	104	145	175	144	104	100	194	192	89	147	162	147	
Check 2	ILL 500	175	189	153	106	153	175	142	103	97	196	201	93	145	169	150	
LOCATION MEAN		175	188	149	108	150	173	138	105	99	193	193	92	146	167		

Table 5.6.4. Plant height (cm) of entries at different locations in the LISN-Ta during 1982/83.

ENTRY		AFGHANISTAN	ALGERIA	AUSTRALIA	BRAZIL	BULGARIA	EGYPT		INDIA	IRAN	ITALY	JORDAN	LEBANON	POLAND	SYRIA			MEAN
PEDIGREE	ILL/ Cross No.	Darulaman	Sidi Bel Abbas	Wagga Wagga	Santa Maria	Toshevo	Hallawi	Sids	New Delhi	Karaj	Leonessa	Jubeiha	Terbol	Pulawy	Izra'a-1	Izra'a-2	Tel Hadya	
78S 26002	8	26	25	31	-	15	42	55	39	25	25	-	30	38	32	29	25	31
78S 26003	8	30	28	32	24	15	51	65	41	23	24	-	30	39	23	33	30	33
78S 26004	9	28	25	24	18	15	43	60	31	24	27	-	25	39	28	31	30	30
74TA 138	101	40	25	29	22	24	45	45	38	26	28	-	37	41	28	29	32	33
Giza 9	784	36	22	25	16	22	36	60	41	25	27	-	30	35	29	31	28	31
78S 26194	922	68	25	39	30	34	69	90	60	38	29	-	47	45	31	46	34	46
Laird	4349	48	32	48	27	27	59	65	47	40	38	-	47	47	32	43	35	42
Chilean'78	4711	46	30	45	27	28	54	70	46	35	37	-	45	46	37	37	30	41
-	1918	40	30	40	25	25	48	45	50	34	35	-	38	40	38	34	32	37
78S 26152	793	51	29	44	25	30	55	70	35	38	24	-	50	44	35	41	33	40
-	468	46	30	41	27	25	51	60	47	30	28	-	40	43	28	36	31	38
-	986	47	25	38	20	25	47	80	51	27	36	-	39	39	36	33	26	38
-	20	38	25	30	14	15	54	55	41	22	22	-	25	38	24	31	28	31
-	23	38	22	30	14	22	46	65	37	13	32	-	33	38	29	32	29	32
-	813	46	25	38	16	30	54	70	55	34	22	-	40	41	28	31	30	37
78S 26052	112	40	30	30	22	20	48	60	48	20	26	-	35	39	25	29	30	33
78S 26024	23	35	22	28	20	20	47	50	41	22	24	-	33	37	31	30	29	31
Syr. Loc. Large	4400	36	22	36	24	20	49	65	38	25	31	-	35	40	30	28	30	34
-	1939	32	29	32	25	22	45	65	46	27	30	-	37	36	29	33	32	35
80S 37764	X75TA 25	39	29	35	17	28	49	65	35	28	21	-	37	44	28	32	25	34
80S 37768	X75TA 25	33	25	36	18	24	48	70	40	24	24	-	38	37	29	36	28	34
80S 38614	X75TA 45	38	30	33	19	26	54	70	41	28	25	-	40	40	27	38	28	36
80S 38651	X75TA 46	26	25	25	20	16	38	50	33	24	18	-	25	35	29	26	24	28
80S 39928	X75TA 85	32	20	28	20	22	47	40	30	25	23	-	35	37	36	27	29	30
80S 41793	X76TA A3	34	22	30	18	20	51	65	29	29	24	-	37	34	37	34	30	33
80S 41815	X76TA A3	38	28	31	19	20	46	65	31	24	22	-	38	33	31	31	24	32
80S 42188	X76TA 25	40	20	30	24	20	46	45	49	23	29	34	34	35	30	33	27	32
80S 42671	X76TA 72	30	20	31	23	20	49	50	30	25	27	29	32	33	29	33	30	31
80S 42830	X76TA 75	26	22	29	20	22	47	65	43	27	19	26	35	36	31	32	28	32
80S 32376	X76TA 9	27	22	35	22	18	51	75	40	30	24	29	30	36	30	29	29	33
80S 28124	X76TA 156	35	28	34	22	22	53	70	34	32	27	30	35	35	34	32	32	35
80S 41139	X76TA 66	34	28	38	22	26	50	65	48	33	29	32	37	40	35	38	34	37
80S 34047	X77TA 78	26	28	34	20	20	54	60	40	25	28	35	30	38	33	38	33	34
80S 34056	X77TA 103	28	26	34	20	25	51	70	43	27	26	31	35	38	32	39	30	35
80S 38004	X75TA 29	37	26	39	23	18	49	60	27	23	22	33	27	38	33	37	35	33

Cont'd. ...

Table 5.6.4. Cont'd. ...

ENTRY		AFGHANISTAN	ALGERIA	AUSTRALIA	BRAZIL	BULGARIA	EGYPT	INDIA	IRAN	ITALY	JORDAN	LEBANON	POLAND	SYRIA			MEAN
PEDIGREE	ILL/ Cross No.	Darulaman	Sidi Bel Abbas	Wagga Wagga	Santa Maria	Toshevo	Mallawi Sids	New Delhi	Karaj	Leonessa	Jubeiha	Terbol	Pulawy	Izra'a-1	Izra'a-2	Tel Hadya	
80S 41120	X76TA 32	32	28	39	25	20	43	60	38	26	28	29	32	38	35	34	34
80S 34057	X77TA 103	29	30	37	24	22	49	65	40	30	22	26	35	38	31	34	34
80S 35146	X77TA 80	39	28	42	22	26	48	80	40	29	31	35	38	43	30	32	37
80S 27597	X75TA 78	34	23	39	23	28	51	60	40	20	33	33	38	40	29	35	35
80S 27603	X75TA 88	28	25	37	18	24	49	55	31	21	21	32	35	39	28	29	31
78S 13159-1	X75TA 14	42	25	33	20	20	51	55	48	22	22	22	33	34	30	31	28
80S 41727	X76TA 1	33	28	25	20	12	41	50	34	18	21	26	25	36	31	26	28
80S 39750	X76TA 81	26	28	31	20	20	44	50	39	27	27	30	30	41	31	35	29
80S 41784	X76TA 3	31	25	24	21	20	37	50	44	19	24	26	30	34	32	28	27
80S 42431	X76TA 66	36	25	30	20	15	46	50	42	28	25	32	30	33	33	27	30
80S 44174	X76TA 143	30	30	33	25	24	43	55	40	29	20	31	28	33	31	31	30
80S 44540	X76TA 186	36	25	21	22	24	40	55	37	21	23	25	28	33	32	28	27
80S 32725	X76TA 76	37	25	27	19	20	42	50	35	26	27	26	30	34	32	27	28
80S 33357	X75TA 179	32	27	26	23	18	46	50	41	23	25	21	27	29	33	25	25
80S 34103	X77TA 33	35	28	28	20	23	43	60	40	27	27	30	33	38	31	30	29
80S 34927	X77TA 67	25	26	23	18	18	41	55	32	20	26	28	30	31	29	26	29
80S 35172	X77TA 80	34	28	34	23	25	40	60	39	31	27	34	33	38	31	31	30
80S 35183	X77TA 80	32	30	36	26	30	39	70	43	33	32	36	40	42	30	31	32
80S 35184	X77TA 80	31	30	40	-	24	45	65	52	29	31	35	35	35	35	35	33
80S 32623	X76TA 66	22	28	30	16	18	49	55	39	25	20	32	30	32	34	27	25
80S 34273	X77TA 36	34	30	36	20	27	50	80	40	30	21	30	35	37	33	32	33
80S 34826	X77TA 58	37	28	40	26	28	55	50	59	33	27	39	37	40	35	34	33
80S 35187	X77TA 80	34	28	37	26	25	58	65	63	30	30	37	35	43	31	31	36
80S 35188	X77TA 80	30	28	36	25	24	49	65	59	22	30	-	35	42	33	30	30
80S 35190	X77TA 80	38	26	40	25	25	45	65	60	31	25	36	37	47	29	27	32
Local check		45	29	34	20	27	48	59	41	29	23	30	37	41	32	32	-
Check 1	ILL 4401	32	25	25	18	17	45	56	36	19	22	29	31	35	33	28	26
Check 2	ILL 500	34	26	34	20	19	44	61	41	23	25	29	33	35	31	31	27
Location mean		35	26	33	21	22	48	61	42	27	26	31	34	38	31	32	30

in plant height. The correlations among different agronomic variables (Table 5.6.5) revealed that plant height was positively correlated with time to flowering and time to maturity which were in turn associated with each other. But none of these variables showed significant association with seed yield.

The adjusted seed yield for different entries at different locations is given in Table 5.6.6. The mean over entries for each location that the yields were lowest at Islamabad in Pakistan (54 kg/ha) and highest at Pulawy in Poland (2590 kg/ha). CV was highest at Islamabad in Pakistan (80.5%) and was followed by New Delhi in India (75.5%), Santa Maria in Brazil (60.4%), Karaj in Iran (47.4%), Mallawi in Egypt (44.6%) and Gelline in Syria (39.5%). At other locations the CV varied from 7.9 to 28.6 per cent. The LSD estimates revealed that at 8 locations some of the entries exceeded the local check by a significant margin. The five heaviest yielding entries at each location are given in Table 5.6.7. It is evident that except at Mallawi in Egypt where the local check was among the top five heavy yielders, at all other locations the top five entries were from ICARDA materials. On the basis of average over all locations the top five lines included 78S 26002, 80S 44174, 78S 26152, 80S 41120 and 80S 35183.

The correlations between seed yields at different locations (Table 5.6.8) revealed that Tel Hadya (Syria) is positively and significantly associated with Santa Maria (Brazil), Ramtha (Jordan), Islamabad (Pakistan), Gelline and Izra'a (Syria), and Beja (Tunisia).

5.7. LENTIL INTERNATIONAL F_3 TRIAL (LIF₃T)

Material

The material for the Lentil International F_3 trial comprised of 12 F_3 populations and one local check to be added by the cooperator. These populations were derived from the divergent crosses (Table 5.7.1) 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 material comprising 13 entries was sown in a randomised complete block design with 2 replications. The suggested plot size was 4 rows, each 4 m long accomodating 640 seeds per plot. The between row spacing was suggested to be 25 cm.

Fifteen sets of trial were distributed to cooperators in 12 countries. However, the results received back from cooperators were 11 only. The agronomic data received from the cooperators is presented in Table 5.7.2.

Table 5.6.5. Correlation (df = 60) among three agronomic characters and seed yield of entries in the LISN-Ta during 1982/83.

CHARACTERS	Time to maturity	Plant height	Seed yield
Time to flowering	0.43**	0.50**	-0.24
Time to maturity		0.44**	0.04
Plant height			-0.09

** $P \leq 0.01$

Table 5.6.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-Ta during 1982/83.

PEDIGREE	ILL or CROSS No.	BRAZIL		BULGARIA		EGYPT				INDIA		IRAN		ITALY		JORDAN				LEBANON		MOROCCO	
		Santa Maria		Toshevo		Mallawi		Sids		New Delhi		Karaj		Leonessa		Jubeiha		Ramtha		Terbol		Mar'chouch	
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
78S 26002	8	-	-	218	25	534	45	4236	2	661	17	-	-	860	31	-	-	2334	10	1973	46	671	27
78S 26003	8	30	60	287	15	2034	9	4658	1	711	12	153	51	720	43	-	-	1974	20	2084	43	471	51
78S 26004	9	31	59	210	28	2034	9	2380	17	711	12	203	43	805	36	-	-	1814	24	1695	56	-	-
74TA 138	101	41	57	271	17	1812	13	1714	42	1461	1	183	47	960	26	-	-	1347	39	2640	18	471	51
Giza 9	784	66	47	270	18	0	56	1769	40	711	12	98	55	70	62	-	-	1854	23	1418	59	521	49
78S 26194	922	83	37	446	8	645	42	1669	44	861	7	438	17	1955	1	-	-	1067	46	1418	59	571	38
Laird	4349	42	56	111	48	0	56	1380	53	461	35	368	22	235	61	-	-	1281	41	1751	54	571	38
Chilean '78	4711	73	40	145	40	756	40	1602	46	561	26	238	38	395	56	-	-	1147	43	1418	61	721	21
-	1918	142	18	222	24	0	56	1491	48	511	30	563	10	66	63	-	-	2187	13	2140	41	571	38
78S 26152	793	161	12	205	30	34	55	1491	48	611	20	-	-	900	29	-	-	667	61	1751	55	821	15
-	468	212	5	162	36	0	56	602	61	444	37	760	5	1275	10	-	-	1561	32	2092	42	438	54
-	986	66	48	152	38	1052	35	491	62	494	32	235	39	795	37	-	-	1134	44	2425	29	538	45
-	20	71	43	111	49	3219	4	1880	34	444	37	315	25	910	28	-	-	2334	10	2425	29	788	16
-	23	55	51	248	20	3608	3	2380	17	494	32	300	28	619	47	-	-	2494	5	2481	27	738	17
-	813	48	55	548	4	1108	32	1669	44	644	18	425	18	1285	9	-	-	1067	47	1759	53	538	45
-	112	108	31	62	59	1108	32	1602	46	894	4	175	48	345	58	-	-	2041	16	2870	9	1138	1
78S 26024	23	60	50	144	41	775	38	2047	28	894	4	170	49	861	30	-	-	2027	17	3225	3	488	50
Syr. Loc. Large	4400	20	61	0	63	386	48	1269	55	494	32	560	11	455	55	-	-	1587	31	2592	24	538	45
-	1939	314	1	124	46	330	50	2825	12	744	11	385	20	619	47	-	-	1561	33	3536	1	988	4
80S 37764	X75TA 25	72	42	259	19	441	46	1325	54	294	45	725	7	970	25	-	-	2267	12	2925	2	838	13
80S 37768	X75TA 25	91	35	291	14	0	56	1177	58	311	43	445	15	994	22	-	-	1352	38	2600	21	354	56
80S 38614	X75TA 45	113	29	723	2	0	56	2065	27	611	20	490	14	1078	17	-	-	1499	34	2211	37	655	30
80S 38651	X75TA 46	151	15	209	29	0	56	977	59	211	48	230	40	988	24	-	-	779	55	1600	57	554	43
80S 39928	X75TA 85	200	7	131	44	0	56	199	63	111	54	265	35	578	50	-	-	1859	22	2822	11	554	43
80S 41793	X76TA A3	156	14	309	13	1590	16	2232	23	711	12	250	37	1323	8	-	-	1005	51	2666	16	854	12
80S 41815	X76TA A3	196	8	462	7	4201	1	2977	11	561	26	270	34	1183	14	-	-	1605	30	2766	13	354	56
80S 42188	X76TA 25	67	46	227	22	3812	2	3732	3	461	35	210	42	723	42	-	-	712	58	2377	32	1054	2
80S 42671	X76TA 72	143	17	154	37	367	49	899	60	111	54	200	45	558	51	2733	4	1979	19	2800	12	1004	3
80S 42830	X76TA 75	296	2	314	11	1590	17	3390	6	311	43	120	53	1018	20	1467	15	1805	25	2866	10	604	35
80S 32376	X76TA 9	131	22	311	12	756	41	1243	56	361	42	380	21	958	27	1133	17	1459	36	1322	62	704	22
80S 28124	X76TA156	151	15	232	21	1275	26	1421	50	194	50	292	29	1080	16	-	-	2112	15	2155	40	588	36
80S 41139	X76TA 66	114	28	212	27	1052	36	3565	5	544	28	277	31	840	33	-	-	1992	18	2377	33	938	6
80S 34047	X77TA 78	117	27	100	53	1830	10	1743	41	244	46	272	32	744	40	2520	9	2939	2	2666	16	638	31
80S 34056	X77TA103	243	3	171	34	1830	12	1788	38	244	46	0	58	364	57	1227	16	1712	29	2600	21	888	7
80S 38004	X75TA 29	90	36	31	61	2219	6	1843	36	0	59	162	50	744	40	1973	11	2459	6	1516	58	738	17
80S 41120	X76TA 32	65	49	25	62	1219	27	2143	26	544	29	272	33	769	39	-	-	3312	1	2266	35	738	17
80S 34057	X77TA103	118	25	227	23	2164	8	2565	14	794	8	202	44	1480	7	-	-	2779	3	1866	48	888	7
80S 35146	X77TA 80	49	54	67	57	830	37	1788	38	0	59	327	24	990	23	-	-	1779	27	2211	37	888	7
80S 27597	X75TA 78	54	52	174	33	441	46	1232	57	144	53	412	19	1075	18	-	-	2339	9	1822	49	688	23
80S 27603	X75TA 88	131	22	106	51	552	44	1899	33	194	50	302	27	855	32	-	-	1792	26	3044	5	588	36

Table 5.6.6. Cont'd

ENTRY NAME		PAKISTAN		POLAND		SYRIA						TUNISIA				MEAN	
PEDIGREE	ILL/ CROSS No.	Islamabad		Pulway		Gelline	Izra'a-1	Izra'a-2		Tel Hadya		Beja		Mateur		Y	R
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
78S 26002	8	134	6	2896	18	3004	3	3156	5	2524	21	872	23	2150	3	1600	4
78S 26003	8	123	8	1322	63	2670	9	1596	44	2791	11	792	26	1700	15	1800	2
78S 26004	9	104	10	2536	33	2537	13	2236	24	2391	27	1125	6	2175	2	1750	3
74TA 138	101	54	23	3296	7	1204	42	1416	51	1191	61	405	54	1500	24	1250	13
Giza 9	784	50	27	2122	53	1604	28	1456	48	2524	21	592	44	1350	33	750	41
78S 26194	922	-	-	2789	23	1737	27	1516	46	3191	4	339	57	1300	37	450	58
Laird	4349	11	49	2989	16	870	51	1456	49	1924	42	299	59	1275	39	1250	13
Chilean '78	4711	11	49	2189	46	804	54	1046	58	1524	52	205	62	1275	39	700	44
-	1918	12	48	2776	24	2604	11	2296	20	1858	46	525	49	1400	29	1350	9
78S 26152	793	19	46	2389	41	1004	48	1306	54	2417	26	219	61	1300	37	1150	18
-	468	-	-	3078	12	2648	10	2159	26	1902	45	956	18	1700	15	1100	24
-	986	-	-	2185	47	715	55	2249	23	2636	16	276	60	1200	45	600	51
-	20	87	11	2198	45	2315	15	1989	32	1809	48	1436	2	2300	1	850	38
-	23	124	7	2571	30	2848	6	2809	7	2609	18	1383	3	1850	8	1400	7
-	813	18	47	1865	59	581	56	1699	42	1276	58	196	63	875	59	600	51
78S 26052	112	78	14	2798	22	2781	7	2359	17	2142	36	1116	7	1600	19	1150	18
78S 26024	23	55	21	2625	28	2981	4	2799	8	2569	20	663	35	1900	6	1150	18
Syr. Loc. Large	4400	43	32	2665	26	2048	17	1609	43	1369	56	356	56	1550	21	1300	12
-	1939	232	3	2158	50	1448	33	3499	2	3009	7	1530	1	1825	9	1350	9
80S 37764	X75TA 25	30	43	3225	9	1848	24	2079	29	2302	30	570	47	1550	21	1150	18
80S 37768	X75TA 25	36	36	2278	43	2959	5	2016	30	2049	38	1112	8	1050	52	750	42
80S 38614	X75TA 45	40	33	2825	20	1759	25	1896	38	2382	28	552	48	1400	29	550	55
80S 38651	X75TA 46	61	20	2398	39	2159	16	1436	50	1916	43	1059	11	1950	5	950	32
80S 39928	X75TA 85	36	36	2518	34	826	53	1156	56	1849	47	899	21	1875	7	750	42
80S 41793	X76TA A3	53	26	1691	60	893	50	2086	28	2476	24	765	29	1800	11	1100	24
80S 41815	X76TA A3	40	33	2465	37	2559	12	2226	25	2449	25	659	37	1250	42	-	-
80S 42188	X76TA 25	62	19	1891	58	1559	29	1486	47	2249	33	605	43	1150	48	700	44
80S 42671	X76TA 72	36	36	2638	27	3359	1	2426	16	3049	6	645	40	1100	50	1000	28
80S 42830	X76TA 75	35	40	2131	51	1959	19	2006	31	2809	10	445	51	1750	13	1550	5
80S 32376	X76TA 9	37	35	2611	29	559	57	1986	33	1476	53	445	51	1350	33	-	-
80S 28124	X76TA156	-	-	2011	55	1448	34	1819	40	1693	49	659	37	1425	28	950	32
80S 41139	X76TA 66	-	-	3357	6	1448	34	1979	34	1693	49	832	24	1825	9	1100	24
80S 34047	X77TA 78	50	27	2904	17	1381	37	3239	4	2893	9	792	26	1750	13	1000	28
80S 34056	X77TA103	48	31	2544	32	1181	43	2479	15	2226	34	579	46	1050	52	1150	18
80S 38004	X77TA 29	54	23	3557	5	2048	18	2299	19	2627	17	659	37	1800	11	1250	13
80S 41120	X77TA 32	-	-	3917	1	1915	21	2259	22	3133	5	765	30	1625	18	1400	7
80S 34057	X77TA103	71	16	3291	8	1115	44	2349	18	2693	14	1085	10	1550	21	1000	28
80S 35146	X77TA 80	55	21	2811	21	1515	32	2719	9	2760	12	965	17	750	61	1150	18
80S 27597	X77TA 78	50	27	3757	3	981	49	1859	39	1960	40	992	15	1175	47	95	61
80S 27603	X77TA 88	54	23	3717	4	1381	37	2119	27	1960	40	1059	12	800	60	600	51

Table 5.6.6. Cont'd

ENTRY NAME		BRAZIL		BULGARIA		EGYPT				INDIA		IRAN		ITALY		JORDAN				LEBANON		MOROCCO	
PEDIGREE		Santa Maria		Toshevo		Mallawi		Sids		New Delhi		Karaj		Leonessa		Jubeiha		Ramtha		Terbol		Marchouch	
ILL/ CROSS No.		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
78S 13159-1	X75TA 14	135	20	799	1	775	39	2336	21	761	9	110	54	1059	19	-	-	570	62	1881	47	471	51
80S 41727	X76TA 1	141	19	110	50	1775	14	3114	8	111	54	0	58	495	54	-	-	2356	8	1192	63	421	55
80S 39750	X76TA 81	177	11	163	35	1108	32	2202	24	511	30	525	13	538	53	-	-	2143	14	2637	19	671	27
80S 41784	X76TA 3	157	13	147	39	1497	20	1980	31	761	9	50	57	1515	5	-	-	1316	40	2681	15	221	59
80S 42431	X76TA 66	18	61	87	55	1497	20	2036	29	711	12	-	-	305	59	-	-	703	59	2081	44	271	58
80S 44174	X76TA143	185	9	140	43	1552	18	3591	4	411	39	545	12	635	46	-	-	2636	4	2525	25	71	61
80S 44540	X76TA186	51	53	536	5	219	51	2369	19	211	48	195	46	539	52	920	18	970	52	2414	31	57	62
80S 32725	X76TA 76	73	41	93	54	164	53	2980	10	611	20	145	52	1239	11	1600	14	1436	37	2303	34	871	11
80S 33357	X75TA179	181	10	650	3	164	54	2425	15	1161	2	220	41	1670	2	680	19	1476	35	2248	36	121	60
80S 34103	X77TA 33	107	32	217	26	219	51	2402	16	961	3	600	9	1235	13	2933	1	1770	28	2637	20	671	27
80S 34927	X77TA 67	76	39	275	16	1330	25	2240	22	28	58	-	-	698	44	2387	10	965	53	2432	28	678	24
80S 35172	X77TA 80	79	38	63	58	1219	28	2017	30	0	59	440	16	778	38	2547	8	752	57	1766	51	878	10
80S 35183	X77TA 80	111	30	121	47	1219	28	1406	51	78	57	760	6	303	60	2587	7	1125	45	2877	7	978	5
80S 35184	X77TA 80	71	44	59	60	1219	28	1706	43	0	59	695	8	1018	20	2707	5	845	54	3210	4	728	20
80S 32623	X77TA 66	34	58	176	32	1386	23	2706	13	578	23	260	36	1108	15	-	-	727	63	1766	52	528	48
80S 34273	X76TA 36	220	4	471	6	2219	7	2984	9	628	19	990	2	1514	6	-	-	672	60	2599	23	678	24
80S 34826	X77TA 58	212	5	85	56	1608	15	2351	20	178	52	1235	1	1554	4	2880	2	1059	48	2710	14	828	14
80S 35187	X77TA 80	134	21	104	52	1386	23	2184	25	578	23	830	4	1238	12	1747	13	779	55	2877	8	678	24
80S 35188	X77TA 80	118	25	194	31	1219	28	1795	37	578	23	315	26	1623	3	-	-	1032	49	1821	50	628	33
80S 35190	X77TA 80	100	33	129	45	1441	22	1406	51	0	59	870	3	838	34	2840	3	1032	49	3432	2	628	33
Check means																							
1. Check 1	ILL 4401	98	34	142	42	620	43	1880	34	400	40	79	56	604	49	1760	12	1933	21	2161	39	567	41
2. Check 2	ILL 500	70	45	329	10	1519	19	1948	32	883	6	288	30	834	35	-	-	1167	42	2002	45	630	32
3. Local check		120	24	438	9	2407	5	3169	17	400	40	358	23	666	45	2693	6	2382	7	2524	39	567	41
LOCATION MEAN		114		226		1165		2073		481		359		880		2070		1594		2317		637	
C.V. %		60.4		16.1		44.6		26.1		75.5		47.4		39.7		-		17.8		18.6		21.8	
L.S.D. (5%)																							
1. Check means		74		62		870		784		545		147		538		-		419		533		165	
2. Adjusted varieties in the same block		182		153		2132		1920		1335		361		877		-		1027		1307		404	
3. Adjusted varieties in different blocks		210		177		2462		2218		1541		417		1013		-		1186		1509		466	
4. Adjusted variety VS check mean		161		135		1880		1694		1177		318		774		-		905		1152		356	
The number of lines significantly exceeding the local check		2		3		0		0		0		8		7		-		1		0		6	

Table 5.6.6. Cont'd

ENTRY NAME		PAKISTAN		POLAND		SYRIA								TUNISIA				MEAN	
PEDIGREE	ILL/ CROSS No.	Islamabad		Pulway		Gelline		Izra'a-1		Izra'a-2		Tel Hadya		Beja		Matcur		Y	R
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
78S 13159-1	X75TA 14	28	44	1998	56	448	59	1416	52	3253	3	325	58	700	62	650	47	984	51
80S 41727	X76TA 1	198	5	2398	39	1248	40	1976	35	2693	14	1112	9	1500	24	550	55	1188	32
80S 39750	X76TA 81	225	4	3104	11	1048	45	2606	11	2520	23	1059	12	925	57	1350	9	1306	22
80S 41784	X76TA 3	36	36	2238	44	515	58	2706	10	2760	12	792	28	1250	42	1000	28	1201	31
80S 42431	X76TA 66	7	52	2131	51	0	63	826	59	960	62	365	55	1350	33	400	59	809	62
80S 44174	X76TA143	119	9	3078	12	3048	2	3766	1	2960	8	1370	4	2150	3	1500	5	1683	2
80S 44540	X76TA186	79	13	2571	30	115	60	2526	12	2600	19	445	51	1000	56	900	36	985	50
80S 32725	X76TA 76	237	1	2184	48	48	62	2486	14	2253	32	619	42	1250	42	650	47	1118	42
80S 33357	X75TA179	237	1	1998	56	115	61	106	63	1360	57	725	32	1500	24	400	59	918	57
80S 34103	X77TA 33	69	17	2118	54	848	52	3286	3	2027	39	912	20	1375	31	900	36	1331	19
80S 34927	X77TA 67	0	53	2420	38	1759	26	1376	53	1404	55	890	22	1050	52	950	32	1164	36
80S 35172	X77TA 80	80	12	2167	49	1559	29	1166	55	1684	51	690	33	900	58	650	47	1023	47
80S 35183	X77TA 80	32	41	1353	62	1293	39	1056	57	1271	59	690	33	1375	31	800	40	1023	47
80S 35184	X77TA 80	0	53	3033	14	1893	22	1536	45	3271	2	930	19	1100	50	1200	17	1327	20
80S 32623	X76TA 66	0	53	1687	61	1026	47	806	60	711	63	623	41	1275	39	550	55	861	60
80S 34273	X77TA 36	25	45	3767	2	1426	36	2266	21	2271	31	796	25	1050	52	1900	1	1471	6
80S 34826	X77TA 58	0	53	2993	15	1559	29	2956	6	1271	59	1223	5	1200	46	1250	15	1429	12
80S 35187	X77TA 80	0	53	3127	10	1226	41	1936	37	2151	35	996	14	1450	27	600	51	1264	25
80S 35188	X77TA 80	9	51	2473	36	2759	8	536	62	1444	54	583	45	1650	17	650	47	1079	44
80S 35190	X77TA 80	68	18	2687	25	2493	14	756	61	2137	37	663	36	600	63	850	38	1208	28
Check means																			
1. Check 1	ILL 4401	50	27	2489	35	1889	23	1937	36	2376	29	749	31	1108	49	933	35	1146	40
2. Check 2	ILL 500	32	41	2827	19	1044	46	1783	41	1909	44	447	50	1580	20	1050	27	1130	41
Local check		74	15	2331	6	1944	20	2507	13	3289	1	980	16	1346	36	671	46	-	-
LOCATION MEAN		54		2590		1596		1983		2204		753		1411		985			
C.V. %		80.5		11.6		39.5		24.0		7.9		28.5		9.6		28.6			
L.S.D. (5%)																			
1. Check means		54		383		827		641		256		266		165		352			
2. Adjusted varieties in the same block		132		938		2027		1570		628		650		403		786			
3. Adjusted varieties in different blocks		152		1083		2341		1813		725		751		466		908			
4. Adjusted variety VS check mean		116		827		1788		1384		554		574		329		642			
The number of lines significantly exceeding the local check		5		9		0		0		0		0		16		11			

Table 5.6.7. The five heaviest seed yielding entries at the individual locations in the LISN-Ta during 1982/83.

RANK	BRAZIL		BULGARIA			EGYPT				INDIA		IRAN	
	Santa Maria		Toshevo			Mallawi		Sids		New Delhi		KaraJ	
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.		PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1.	-	1939	78S 13159-1	X75TA14		80S 41815	X76TA3	78S 26003	8	74TA138	101	80S 34826	X77TA58
2.	80S 42830	X76TA75	80S 38614	X75TA45		80S 42188	X76TA25	78S 26002	8	80S 33357	X75TA179	80S 34273	X77TA36
3.	80S 34056	X77TA103	80S 33357	X75TA179		-	23	80S 42188	X76TA26	78S 34103	X77TA33	80S 35190	X77TA80
4.	80S 34273	X77TA36	-	813		-	20	80S 44174	X76TA143	78S 26052	112	80S 35187	X77TA80
5.	-	468	(1) 80S 44540	X76TA186	Local check			80S 41139	X76TA66	78S 26024	23	-	468
	80S 34926	X77TA58											

RANK	ITALY		JORDAN				LEBANON		MOROCCO		PAKISTAN	
	Leonessa		Jubeiha		Ramtha		Terbol		Marchouch		Islamabad	
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1.	78S 26194	922	80S 34103	X77TA33	80S 41120	X76TA32	-	1939	78S 26052	112	80S 32725	X76TA76
2.	80S 33357	X75TA179	80S 34826	X77TA58	80S 34047	X77TA78	80S 37764	X75TA25	80S 42188	X76TA25	80S 33357	X75TA179
3.	80S 35188	X77TA80	80S 35190	X77TA80	80S 34057	X77TA103	78S 26024	23	80S 42671	23	-	1939
4.	80S 34826	X77TA58	80S 42671	X76TA72	80S 44174	X76TA143	80S 35184	X77TA80	-	X77TA80	80S 39750	X76TA81
5.	80S 41784	X76TA3	80S 35184	X77TA80		23	80S 27603	X75TA88	80S 35183	X75TA88	80S 41727	X76TA 1

Table 5.6.7. Cont'd

RANK	POLAND				SYRIA							
	Pulway		Gelline		Izra'a- 1		Izra'a- 2		Tel Hadya			
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1.	80S 41120	X76TA32	80S 42671	X76TA72	80S 44174	X76TA134	Local check	-	-	-	1939	
2.	80S 34273	X77TA36	80S 44174	X76TA143	-	1939	80S 35184	X77TA80	-	-	20	
3.	80S 27597	X75TA78	78S 26002	8	80S 34103	X77TA33	78S 13159-1	X75TA14	-	-	23	
4.	80S 27603	X75TA88	78S 26024	23	80S 34047	X77TA78	78S 26194	922	80S 44174	X76TA143		
5.	80S 38004	X75TA29	80S 37768	X75TA25	78S 26002	8	80S 41120	X76TA32	80S 34829	X77TA58		

RANK	TUNISIA			
	Beja		Mateur	
	PEDIGREE	ILL/ CROSS No.	PEDIGREE	ILL/ CROSS No.
1.	-	20	80S 34273	X77TA36
2.	78S 26004	9	78S 26003	8
3.	78S 26002	8	78S 26004	9
4.	80S 44174	X76TA143	78S 26002	8
5.	80S 38651	X77TA146	80S 42830	X76TA75

(1) The brackets indicate entries having the same rank.

Table 5.6.8. Correlation (df = 46) among different locations for the seed yield of entries in the LISN-Ta during 1982/83.

COUNTRY	LOCATION	BULGARIA	EGYPT		INDIA	IRAN	ITALY	JORDAN	LEBANON	MOROCCO	PAKISTAN	POLAND	SYRIA				TUNISIA	
		Toshevo	Mallawi	Sids	New Delhi	Karaj	Leonessa	Ramtha	Terbol	Marchouch	Islamabad	Pulawy	Gelline	Izra'a-1	Izra'a-2	Tel Hadya	Beja	Hateur
BRAZIL	Santa Maria	0.08	-0.03	0.14	-0.03	0.09	0.13	0.03	0.34 [*]	0.06	0.22	0.05	-0.05	0.28	0.24	0.32 [*]	0.15	0.26
BULGARIA	Toshevo		-0.14	0.19	0.39 ^{**}	-0.09	0.31 [*]	-0.27	-0.17	-0.38 ^{**}	0.02	-0.20	-0.30 [*]	-0.21	0.06	-0.34 [*]	-0.18	-0.16
EGYPT	Mallawi			0.47 ^{**}	-0.01	-0.02	0.13	0.10	0.02	0.25	0.01	-0.02	0.18	0.11	0.10	0.25	0.21	0.27
EGYPT	Sids				0.27	-0.11	0.20	-0.01	-0.01	-0.12	0.41 ^{**}	-0.26	-0.05	0.22	0.29 [*]	0.16	0.12	0.30 [*]
INDIA	New Delhi					-0.22	0.26	-0.05	0.01	-0.19	0.21	-0.17	-0.19	-0.02	-0.16	-0.13	0.22	0.08
IRAN	Karaj						0.22	-0.24	0.38 ^{**}	0.15	-0.25	0.30 [*]	0.12	0.06	-0.25	0.18	-0.18	0.18
ITALY	Leonessa							-0.30 [*]	0.06	-0.11	-0.04	0.06	-0.26	-0.07	-0.12	0.10	-0.04	-0.18
JORDAN	Ramtha								0.01	0.02	0.30 [*]	0.33 [*]	0.32 [*]	0.50 ^{**}	0.37 [*]	0.37 [*]	0.44 ^{**}	0.22
LEBANON	Terbol									0.18		0.03	0.13	0.21	0.33 [*]	0.20	0.03	0.33 [*]
MOROCCO	Marchouch										-0.07	0.02	0.15	0.10	0.13	0.14	-0.05	0.06
PAKISTAN	Islamabad											-0.15	-0.16	0.20	0.22	0.39 ^{**}	0.17	0.02
POLAND	Pulawy												0.12	0.30 [*]	0.14	0.19	-0.08	0.16
SYRIA	Gelline													0.15	0.18	0.30 [*]	0.33 [*]	0.40 ^{**}
SYRIA	Izra'a-1														0.53 ^{**}	0.48 ^{**}	0.20	0.45 ^{**}
SYRIA	Izra'a-2															0.25	0.05	0.34 [*]
SYRIA	Tel Hadya																0.36 [*]	0.14
TUNISIA	Beja																	0.27

* $P \leq 0.05$

** $P \leq 0.01$

Table 5.7.1. Parents of crosses included in LIF₃T.

Cross No.	Female parent			Origin	Male parent		
	Selection/	ILL	Previous No.		Selection	ILL	Origin
X81S 19	L-9-12	4353		India	76TA 66054	99	Morocco
X81S 20	L-9-12	4353		India	74TA 138	101	Morocco
X81S 63	349	4404		Pakistan	-	4400	Syria
X81S 65	9-6	4405		Pakistan	74TA 138	101	Morocco
X81S 72	9-6	4405		Pakistan	-	4400	Syria
X81S 74	18-10	4406		Pakistan	74TA 138	101	Morocco
X81S 83	18-12	4407		Pakistan	74TA 138	101	Morocco
X81S 106	78S 26152	793		Egypt	78S 26064	193	Syria
X81S 116	-	1386		Iran	-	4400	Syria
X81S 125	-	2672		India	-	4354	Jordan
X81S 130	L 1282	2581		India	76TA 66116	264	Hungary
X81S 132	-	3165		India	76TA 66116	264	Hungary

Table 5.7.2. Agronomic data for different locations in the LIF₃T during 1982/83.

COUNTRY	LOCATION	Planting Date	Crop duration (days)	Fertilizer (kg/ha)			Crop Husbandry Irrigation	Insecticide Fungicide/Weedicide
				N	P ₂ O ₅	K ₂ O		
ALGERIA	Sidi Bel Abbas	21.11.1982	178	15	70			
ALGERIA	Setif	4.1.1982	138		100		Treflan	
AUSTRALIA	Wagga Wagga	3.6.1983	199		36		Stampede, Sumicidin	
EGYPT	Bahteem	25.11.1982	161	25	67.5		3	
ITALY	Leonessa	9.5.1983	101					
MOROCCO	Marchouch	23.11.1982	195		30	15		
PAKISTAN	Faisalabad	30.10.1982	180	25	55		2	
SYRIA	Izra'a	15.12.1982	146	30	50			
SYRIA	Tel Hadya	16.11.1982	188		50			
USA	Pullman	20.4.1983	129				Tolban, Immidan Cygon	

Results and Discussion

The data on time to flowering (Table 5.7.3) revealed that the populations flowered earliest in 55 and 58 days at Pullman in USA and Leonessa in Italy, respectively. At Tel Hadya in Syria, however, the genotypes flowered latest in 128 days. The range in time to flowering varied from 97 days for X81S 19 to 110 days for X81S 106. The crosses which flowered earlier were, in general, also earlier in maturity (Table 5.7.4) and similarly at early flowering locations the maturity was also early. The plant height data (Table 5.7.5) showed that the expression of plant height was least at Pullman (21 cm) and maximum at Faisalabad in Pakistan (52 cm). The cross X81S 106 which took maximum time to flower and mature was the tallest (37 cm).

The data on seed yield and rank of different entries in CIF₃T are given in Table 5.7.6. The performance was poor at Sevilla in Spain (122 kg/ha) and best at Faisalabad in Pakistan (1562 kg/ha). The coefficient of variation for the experiment was less than 30 per cent at all the locations except at Leonessa in Italy where it was slightly higher (37.1%). The ANOVA for the experimental design revealed that there were significant differences among the entries at all the locations except at Setif in Algeria, Leonessa in Italy and Marchouch in Morocco. The LSD estimates further revealed that except at Pullman in USA none of the entries at different locations exceeded the local check by a significant margin. It is worth mentioning that the populations which gave as good yield as the local checks and did not differ significantly from the local check should give some segregates which are better than the respective checks. The five heaviest yielding entries at different locations are given in Table 5.7.7.

5.8. LENTIL INTERNATIONAL F₃ TRIAL - EARLY (LIF₃T-E)

Material

The material for the Lentil International F₃ Trial Early comprised of 58 test entries and one local check. The test entries were supplied and local check was to be added by the cooperator. These F₃ populations originated from single crosses between diverse parents (Table 5.8.1).

Methods and Management

The randomised complete block design with two replications was suggested. The suggested plot size was four rows 4 m long, spaced 25 cm apart, accommodating 640 seeds/plot.

Fifteen sets of LIF₃T-E were sent to cooperators in 10 countries and the results were received for 10 sets from 8 countries. The agronomic data pertaining to the locations reported are presented in Table 5.8.2.

Table 5.7.3. Time to flowering (days) of entries at different locations in the LIF₃T during 1982/83.

ENTRY Cross No.	ALGERIA		AUSTRALIA	EGYPT	ITALY	PAKISTAN	SYRIA		USA	MEAN
	Sidi Bel Abbes	Setif	Wagga Wagga	Bahteem	Leonessa	Faisalabad	Izra'a	Tel Hadya	Pullman	
X81S 19	112	100	122	85	57	110	117	119	54	97
X81S 20	116	105	123	88	56	116	115	122	54	99
X81S 63	119	105	124	108	58	122	116	128	54	104
X81S 65	124	107	124	91	59	122	117	129	54	103
X81S 72	119	103	129	102	58	119	116	125	54	103
X81S 74	122	105	124	100	58	127	117	129	54	104
X81S 83	122	108	123	102	57	119	116	131	54	104
X81S 106	124	112	131	103	61	139	116	146	57	110
X81S 116	124	112	127	116	59	127	116	137	57	108
X81S 125	116	102	123	92	61	118	117	122	55	101
X81S 130	119	109	123	85	56	117	115	125	54	100
X81S 132	116	107	121	80	56	113	115	123	54	98
Local check	119	112	135	82	60	101	116	126	58	
Location mean	119	107	125	95	58	119	116	128	55	

Table 5.7.4. Time to maturity (days) of entries at different locations in the LIF₃T during 1982/83.

ENTRY Cross No.	ALGERIA		AUSTRALIA	EGYPT	ITALY	PAKISTAN	SYRIA		MEAN
	Sidi Bel Abbas	Setif	Wagga Wagga	Bahteem	Leonessa	Faisalabad	Izra'a	Tel Hadya	
X81S 19	171	120	190	153	99	163	143	162	150
X81S 20	173	125	197	156	98	170	144	168	154
X81S 63	174	122	198	159	99	173	144	171	155
X81S 65	174	126	196	160	99	174	145	169	155
X81S 72	174	122	197	161	99	180	145	171	156
X81S 74	174	124	198	157	99	177	146	172	156
X81S 83	174	120	197	158	99	174	144	169	154
X81S 106	177	136	199	161	100	179	144	188	161
X81S 116	178	138	197	161	99	177	144	188	160
X81S 125	171	119	190	153	101	168	145	163	151
X81S 130	174	129	196	159	99	177	144	171	156
X81S 132	173	127	197	158	98	176	142	172	155
Local check	173	125	199	156	100	156	142	165	
Location mean	174	126	196	158	99	173	144	171	

Table 5.7.5. Plant height (cm) of entries at different locations in the LIF₃T during 1982/83.

ENTRY Cross No.	ALGERIA		AUSTRALIA	ITALY	PAKISTAN	SYRIA		USA	MEAN
	Sidi Bel Abbas	Setif	Wagga Wagga	Leonessa	Faisalabad	Izra'a	Tel Hadya	Pullman	
X81S 19	27	25	38	21	50	29	26	20	30
X81S 20	27	20	47	25	56	32	31	21	32
X81S 63	28	20	46	26	60	33	25	23	33
X81S 65	29	25	56	24	56	30	27	21	34
X81S 72	29	30	50	26	51	29	29	21	33
X81S 74	28	22	52	22	55	33	26	21	32
X81S 83	25	25	43	19	49	28	27	21	30
X81S 106	31	32	52	29	53	41	30	28	37
X81S 116	28	30	49	21	43	28	30	22	31
X81S 125	24	20	44	19	49	31	26	17	29
X81S 130	25	22	43	20	53	30	24	19	30
X81S 132	25	25	44	22	56	25	24	19	30
Local check	28	23	47	22	47	34	29	25	
Location mean	27	25	47	23	52	31	27	21	

Table 5.7.6. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the LIF₃T during 1982/83.

ENTRY	Cross No.	ALGERIA				AUSTRALIA		EGYPT		ITALY		MOROCCO		PAKISTAN		SPAIN		SYRIA				USA		MEAN	
		Sidi Bel Abbès		Setif		Wagga Wagga		Bahteem		Leonessa		Marchouch		Faisalabad		Sevilla		Izra'a		Tel Hadya		Pullman		Y	R
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		
X81S 19		958	4	1063	3	375	12	972	9	363	11	1744	1	1017	10	186	2	1168	4	707	5	238	12	799	7
X81S 20		1083	2	1144	2	608	7	1097	7	535	6	1038	11	907	11	138	3	873	9	726	4	399	11	777	8
X81S 63		927	6	1038	6	618	6	875	11	641	5	1225	7	2047	5	96	10	1313	2	464	11	525	6	888	4
X81S 65		865	9	913	10	753	4	1806	2	761	2	800	13	1870	6	126	5	898	7	750	3	607	5	923	1
X81S 72		875	7	956	8	368	13	1542	3	509	7	1288	6	1537	8	114	8	830	10	672	6	451	9	831	6
X81S 74		875	7	881	11	643	5	1000	8	698	3	1031	12	2220	3	78	12	1295	3	538	8	710	3	906	2
X81S 83		792	11	938	9	790	3	1222	5	316	12	1094	10	2433	1	84	11	1148	5	382	13	505	7	882	5
X81S 106		938	5	1056	4	955	1	417	13	990	1	1325	5	370	13	126	5	813	11	527	9	<u>2426</u> ⁽¹⁾	1	904	3
X81S 116		1000	3	1050	5	490	9	1181	6	657	4	1513	2	437	12	138	3	875	8	409	12	691	4	767	10
X81S 125		771	12	750	13	450	10	1472	4	150	13	1388	3	1303	9	60	13	928	6	767	2	227	13	751	12
X81S 130		594	13	1006	7	415	11	819	12	474	9	1156	8	2307	2	120	7	653	13	473	10	505	7	775	9
X81S 132		833	10	838	12	523	8	917	10	481	8	1156	8	1673	7	102	9	788	12	559	7	443	10	756	11
Local check		1094	1	1175	1	860	2	1917	1	428	10	1363	4	2187	4	216	1	1433	1	979	1	1915	2		
Location mean		893		985		603		1172		538		1240		1562		122		1001		612		742			
C.V. %		12.4		18.8		26.4		10.2		37.1		17.4		27.3		-		19.7		22.2		28.4			
L.S.D. at 5%		240		NS		347		261		NS		NS		930		40		429		296		459			
S.E.		78.0		131.2		112.6		84.7		141.3		152.7		301.7		-		139.1		96.2		148.8			
No. of entries significantly exceeding the local check		0		-		0		0		-		-		0		0		0		0		1			

(1) Seed value underlined, significantly exceeded the local check.

Table 5.7.7. The five heaviest seed yielding entries at the individual locations in the LIF₃T during 1982/83.

RANK	ALGERIA		AUSTRALIA	EGYPT	ITALY	MOROCCO	PAKISTAN	SPAIN	SYRIA		USA
	Sidi Bel Abbas	Setif	Wagga Wagga	Bahteem	Leonessa	Marchouch	Faisalabad	Sevilla	Izra'a	Tel Hadya	Pullman
	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.
1	Local check	Local check	X81S 106	Local check	X81S 106	X81S 19	X81S 83	Local check	Local check	Local check	X81S 106
2	X81S 20	X81S 20	Local check	X81S 65	X81S 65	X81S 116	X81S 130	X81S 19	X81S 63	X81S 125	Local check
3	X81S 116	X81S 19	X81S 83	X81S 72	X81S 74	X81S 125	X81S 74	X81S 20 ⁽¹⁾	X81S 74	X81S 65	X81S 74
4	X81S 19	X81S 106	X81S 65	X81S 125	X81S 116	Local check	Local check	X81S 116	X81S 19	X81S 20	X81S 116
5	X81S 106	X81S 116	X81S 74	X81S 83	X81S 63	X81S 106	X81S 63	X81S 65 X81S 106	X81S 83	X81S 19	X81S 65

(1) The brackets indicate entries having the same rank.

Table 5.7.8. Correlation (df = 10) among different locations for the seed yield of entries in the LIF₃T during 1982/83.

COUNTRY	LOCATION	AUSTRALIA	EGYPT	PAKISTAN	SPAIN	SYRIA		USA
		Wagga Wagga	Bahteem	Faisalabad	Sevilla	Izra'a	Tel Hadya	Pullman
ALGERIA	Sidi Bel Abbas	0.19	-0.05	-0.65*	0.45	0.27	0.19	0.16
AUSTRALIA	Wagga Wagga		-0.26	-0.03	-0.18	0.15	-0.26	0.72**
EGYPT	Bahteem			0.21	-0.17	-0.02	0.49	-0.57
PAKISTAN	Faisalabad				-0.51	0.31	-0.23	-0.43
SPAIN	Sevilla					-0.18	0.18	0.07
SYRIA	Izra'a						-0.15	-0.19
SYRIA	Tel Hadya							-0.27

* $P \leq 0.05$

** $P \leq 0.01$

Table 5.8.1. Parents of crosses included in LIF₃T-E

Cross No.	Female Parent			Male Parent		
	Previous No.	ILL	Origin	Selection	ILL	Origin
X81S 5	Pant. L. 406	2501	India	74TA 441	353	Mexico
X81S 11	T-36	2526	India	74TA 138	101	Morocco
X81S 12	T-36	2526	India	74TA 260	253	Greece
X81S 18	T-36	2526	India	Syr. Loc.	4400	Syria
X81S 19	L-9-12	4353	India	76TA 66054	99	Morocco
X81S 20	L-9-12	4353	India	74TA 138	101	Morocco
X81S 21	L-9-12	4353	India	74TA 260	253	Greece
X81S 22	L-9-12	4353	India	74TA 276	262	Greece
X81S 23	L-9-12	4353	India	74TA 441	353	Mexico
X81S 24	L-9-12	4353	India	Giza 9	784	Egypt
X81S 26	L-9-12	4353	India	Jordan Loc.	4354	Jordan
X81S 27	L-9-12	4353	India	Syr. Loc.	4400	Syria
X81S 29	Pant. L. 234	4380	India	74TA 138	101	Morocco
X81S 56	340	4404	Pakistan	74TA 138	101	Morocco
X81S 63	340	4404	Pakistan	Syr. Loc.	4400	Syria
X81S 65	9-6	4405	Pakistan	74TA 138	101	Morocco
X81S 67	9-6	4405	Pakistan	74TA 276	262	Hungary
X81S 68	9-6	4405	Pakistan	74TA 441	353	Mexico
X81S 69	9-6	4405	Pakistan	Giza 9	784	Egypt
X81S 71	9-6	4405	Pakistan	Jordan Loc.	4354	Jordan
X81S 72	9-6	4405	Pakistan	Syr. Loc.	4400	Syria
X81S 74	18-10	4406	Pakistan	74TA 138	101	Morocco
X81S 75	18-10	4406	Pakistan	74TA 260	253	Greece
X81S 76	18-10	4406	Pakistan	74TA 276	262	Hungary
X81S 77	18-10	4406	Pakistan	74TA 441	353	Mexico
X81S 83	18-12	4407	Pakistan	76TA 66054	99	Morocco
X81S 86	18-12	4407	Pakistan	74TA 441	353	Mexico
X81S 89	18-12	4407	Pakistan	Jordan Loc.	4354	Jordan
X81S 118		2672	India	Syr. Loc.	4400	Syria

Table 5.8.2 Agronomic data for different locations in the LIF₃T-E during 1982/83.

COUNTRY	LOCATION	Planting date	Crop duration (days)	Fertilizer (kg/ha)		Crop Husbandry Insecticide/ Fungicide
				N	P ₂ O ₅	
EGYPT	Bahteem	25-11-1982	164	25	67.5	3
EGYPT	Mallawi	11-12-1982	150	15	30	
GREECE	Larissa	25-11-1982	181			Decis
INDIA	New Delhi	24-11-1982	139		40	Rogor
LEBANON	Terbol	22-11-1982	205		50	
PAKISTAN	Dokri	25-10-1982	168		150kg DAP	
PAKISTAN	Faisalabad	30-10-1982	180	25	55	
PERU	S. Lorenzo	30-10-1982	148			
SYRIA	Tel Hadya	16-11-1982	186		50	2

Results and Discussion

The mean time to flowering (Table 5.8.3) ranged from 73 days at Mallawi (Egypt) to 149 days at Terbol (Lebanon). At New Delhi in India, and Faisalabad and Dokri in Pakistan, none of the populations was as early as the local check. However, at other locations at least a few populations were as early or even much earlier than the local check. The mean time taken to flower for each entry over different locations revealed that the population X81S 23 was the earliest and took 98 days to flower and was followed by X81S 69, X81S 26, X81S 19, X81S 21 etc. The trend for time to maturity (Table 5.8.4) was almost similar to that of time to flowering. The two populations namely X81S 19 and X81S 26 which matured at the earliest were among the earliest in flowering also.

The mean plant height (Table 5.8.5) ranged from 27 cm at Terbol in Lebanon, and Tel Hadya in Syria to 53 cm at Faisalabad in Pakistan. On the basis of average over locations the tall populations included X81S 65, X81S 74, X81S 75, and X81S 89 etc.

The seed yield and rank of entries at different locations in the trial are given in Table 5.8.6. The highest mean yield was recorded at Larissa in Greece (2065 kg/ha) and lowest at Dokri in Pakistan (270 kg/ha). The CV at Dokri in Pakistan was also very high (81.2%). The ANOVA showed that the differences between the populations were statistically significant at Bahteem in Egypt, Larissa in Greece and Faisalabad in Pakistan but at none of these locations the local check was excelled by a significant margin. The five heaviest seed yielding entries at the individual locations are given in Table 5.8.7. It is evident that at 4 locations the local check ranked no. 1, and at one location ranked no. 2, whereas, at other 5 locations the populations were among the five heaviest yielders. The perusal of Table 5.8.3, 5.8.4, and 5.8.6 revealed that the populations which were early in flowering and maturity were the poor yielders.

5.9. LENTIL INTERNATIONAL OROBANCHE NURSERY (LION)

Lentil International Orobanche Nursery was distributed to the cooperators for the first time during 1982/83. The main objective of the nursery was to identify stable sources of resistance to Orobanche.

Material and Methods

The material comprised of seven test entries and one local check to be added by the cooperator. The test entries were identified as resistant at Kafr Antoon research sub-station of ICARDA in Syria. This station has a very high natural infestation of Orobanche. The suggested experimental design was a randomised complete block with 3 replications and plot size was 4 rows, 1 m long with 200 plants/plot. It was suggested to plant the material in an area known to be heavily

Table 5.8.3. Time to flowering (days) of entries at different locations in the LIF₃T-E during 1982/83.

ENTRY	EGYPT		GREECE	INDIA	LEBANON	PAKISTAN		PERU	SYRIA	MEAN
Cross No.	Bahteem	Mallawi	Larissa	New Delhi	Terbol	Dokri	Faisalabad	San Lorenzo	Tel Hadya	
X81S 5	88	80	137	91	149	113	139	73	127	111
X81S 11	93	81	138	98	152	105	119	78	128	110
X81S 12	89	80	137	97	151	87	113	73	127	106
X81S 18	88	77	137	90	151	103	114	70	125	106
X81S 19	83	77	131	84	145	95	112	73	117	102
X81S 20	89	79	132	91	148	109	137	73	123	109
X81S 21	83	70	130	88	145	100	116	70	118	102
X81S 22	85	77	134	88	148	95	119	73	121	104
X81S 23	80	65	130	83	145	86	104	70	119	98
X81S 24	88	66	133	89	146	86	116	75	123	102
X81S 26	85	78	131	85	145	84	114	73	117	101
X81S 27	86	80	133	87	146	111	113	70	117	105
X81S 29	86	79	139	95	148	94	130	73	129	108
X81S 56	93	80	139	96	153	105	125	75	129	111
X81S 63	91	79	138	96	153	112	134	70	129	111
X81S 65	89	77	138	95	152	104	130	70	129	109
X81S 67	86	78	137	93	149	107	121	73	127	108
X81S 68	83	78	136	85	149	95	113	70	126	104
X81S 69	83	64	137	87	148	86	102	73	126	101
X81S 71	88	80	136	89	145	109	120	70	127	107
X81S 72	92	81	137	98	152	113	119	70	126	110
X81S 74	92	79	139	95	152	106	128	75	129	111
X81S 75	92	78	138	96	149	88	139	70	128	109
X81S 76	92	78	136	90	149	105	123	73	126	108
X81S 77	80	76	133	84	153	86	120	70	123	103
X81S 83	92	80	139	97	151	109	119	75	130	110
X81S 86	80	78	131	88	146	103	139	73	125	107
X81S 89	91	77	137	89	151	113	132	70	129	110
X81S 118	89	78	134	87	148	114	115	70	125	107
Local check	80	69	141	77	157	82	103	88	123	
Location mean	87	77	136	90	149	100	121	73	125	

Table 5.8.4. Time to maturity (days) of entries at different location in the LIF₃T-E during 1982/83.

ENTRY Cross No.	EGYPT		INDIA	LEBANON	PAKISTAN		PERU	SYRIA	MEAN
	Bahteem	Mallawi	New Delhi	Terbol	Dokri	Faisalabad	San Lorenzo	Tel Hadya	
X81S 5	161	148	135	203	165	178	140	176	163
X81S 11	155	148	139	203	159	177	140	174	162
X81S 12	155	150	134	201	158	175	143	174	161
X81S 18	157	146	136	205	164	176	133	172	161
X81S 19	153	145	130	203	159	160	133	165	156
X81S 20	159	146	132	203	161	172	148	172	162
X81S 21	154	145	132	203	164	167	133	162	158
X81S 22	157	145	138	203	162	170	135	168	160
X81S 23	155	147	136	205	166	162	123	172	158
X81S 24	156	145	136	203	164	170	140	172	161
X81S 26	153	145	133	203	163	164	130	164	157
X81S 27	155	145	133	203	167	165	138	172	160
X81S 29	158	146	137	203	161	173	143	176	162
X81S 56	157	149	138	201	165	177	135	172	162
X81S 63	162	147	135	204	163	180	135	174	163
X81S 65	162	145	136	201	163	174	138	172	161
X81S 67	156	145	137	203	164	179	135	168	161
X81S 68	162	148	137	205	166	171	128	174	161
X81S 69	158	146	136	203	162	178	130	176	161
X81S 71	154	147	131	203	168	175	135	172	161
X81S 72	162	147	137	204	162	177	140	172	163
X81S 74	158	145	134	204	161	175	140	172	161
X81S 75	164	149	138	203	162	174	135	174	162
X81S 76	158	145	133	199	162	172	140	164	159
X81S 77	162	145	135	204	156	180	130	172	161
X81S 83	156	147	139	203	162	178	143	174	163
X81S 86	160	146	138	203	165	178	140	172	163
X81S 89	163	150	135	203	163	180	140	172	163
X81S 118	159	147	134	204	163	176	125	174	160
Local check	158	148	126	205	142	155	145	176	
Location mean	158	147	135	203	162	173	136	172	

Table 5.8.5. Plant height (cm) of entries at different locations in the LIF₃T-E during 1982/83.

ENTRY		EGYPT	GREECE	INDIA	LEBANON	PAKISTAN		PERU	SYRIA	MEAN
Cross No.		Mallawi	Larissa	New Delhi	Terbol	Dokri	Faisalabad	San Lorenzo	Tel Hadya	
X81S	5	41	43	51	28	31	59	43	25	40
X81S	11	36	35	48	24	38	57	45	26	39
X81S	12	39	40	52	28	39	48	53	28	41
X81S	18	46	35	54	27	36	53	40	29	40
X81S	19	38	35	48	25	35	50	40	24	37
X81S	20	44	35	45	30	41	52	55	29	41
X81S	21	41	40	52	29	32	53	40	30	40
X81S	22	37	33	53	24	41	51	45	27	39
X81S	23	51	38	38	26	38	46	35	23	37
X81S	24	42	35	47	26	41	49	48	26	39
X81S	26	35	35	47	25	34	49	40	30	37
X81S	27	36	35	51	29	34	49	50	30	39
X81S	29	46	38	52	28	38	54	45	25	41
X81S	56	42	38	50	31	36	59	40	28	41
X81S	63	39	38	54	23	37	57	45	25	40
X81S	65	39	43	62	32	41	57	38	30	43
X81S	67	43	35	50	27	41	58	48	28	41
X81S	68	40	38	50	23	36	54	40	21	38
X81S	69	44	38	56	26	38	53	40	30	41
X81S	71	39	33	52	25	37	54	45	24	39
X81S	72	41	40	50	30	35	50	48	27	40
X81S	74	47	38	64	28	39	52	45	29	43
X81S	75	43	40	60	27	45	58	43	28	43
X81S	76	40	35	47	22	36	53	48	27	39
X81S	77	47	35	47	29	33	57	33	22	38
X81S	83	43	35	55	29	29	53	45	27	40
X81S	86	48	35	44	28	35	63	38	23	39
X81S	89	46	38	57	30	41	54	45	28	42
X81S	118	44	38	49	25	34	44	38	28	38
Local check		43	35	46	29	41	44	48	26	
Location mean		42	37	51	27	37	53	44	27	

Table 5.8.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIF₃T-E during 1982/83.

ENTRY	EGYPT				GREECE		INDIA		LEBANON		PAKISTAN				PERU		SYRIA		TUNISIA		MEAN	
	Bahteem		Mallawi		Larissa		New Delhi		Terbol		Dokri		Faisalabad		San Lorenzo		Tel Hadya		Beja			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Cross No.																						
X81S 5	1542	17	2153	3	2113	12	431	24	1681	4	33	30	1080	28	265	28	383	25	1363	3	1104	17
X81S 11	1028	29	2764	1	1631	29	775	10	1144	17	288	10	2060	8	393	19	426	20	963	21	1147	13
X81S 12	1681	15	2181	2	1938	18	625	21	1064	21	567	3	1623	19	375	22	451	17	1250	8	1176	9
X81S 18	1231	28	1889	7	1938	18	400	27	1364	7	155	22	1703	18	793	4	412	21	925	22	1081	19
X81S 19	1847	10	1542	16	2556	2	425	25	987	24	162	21	1600	20	308	26	411	22	1400	1	1124	15
X81S 20	1722	14	1181	22	2288	7	906	5	1467	6	154	23	1187	27	672	7	493	12	713	28	1078	20
X81S 21	2944	1	1597	13	2419	4	406	26	1241	11	47	29	1047	29	468	14	772	2	763	25	1170	10
X81S 22	1514	21	1667	10	1681	27	653	17	961	26	220	16	1190	26	1058	2	438	19	1150	11	1053	22
X81S 23	1542	17	1375	20	1856	23	288	30	1208	15	245	13	1543	21	475	13	337	28	1050	18	992	27
X81S 24	1542	17	778	28	1881	22	717	11	1222	14	252	12	1297	24	460	15	360	26	800	24	931	29
X81S 26	2194	4	1764	9	2344	5	800	9	1095	20	104	27	1243	25	313	25	750	3	763	25	1137	14
X81S 27	1403	26	1458	19	2281	8	334	29	1873	3	71	28	717	30	1358	1	516	9	1100	16	1111	16
X81S 29	1806	11	736	29	2006	16	580	23	1042	23	135	24	1707	17	375	22	466	15	988	20	984	28
X81S 56	2056	6	1556	14	2019	15	854	6	1260	10	313	9	2253	6	613	8	409	23	675	30	1201	6
X81S 63	1778	13	1611	12	2244	9	338	28	1111	19	117	25	2207	7	720	5	503	11	1200	9	1183	8
X81S 65	1903	9	486	30	2063	14	930	3	927	28	376	7	1830	15	382	21	678	4	1125	15	1070	21
X81S 67	2028	7	2083	4	1675	28	838	7	958	27	366	8	2483	4	483	12	458	16	1300	6	1267	4
X81S 68	1264	27	1042	24	1981	17	688	15	1306	9	171	20	2030	11	450	16	294	30	1192	10	1042	23
X81S 69	1444	23	1139	23	2300	6	706	13	873	30	229	14	1513	22	265	28	317	29	1343	5	1013	25
X81S 71	2014	8	1500	17	2163	11	816	8	1886	2	517	5	2037	9	498	11	443	18	1140	14	1301	1
X81S 72	2167	5	1208	21	1850	24	938	2	982	25	570	2	2000	12	587	9	602	5	713	28	1162	11
X81S 74	1611	16	1653	11	2094	13	1059	1	1229	13	257	11	2580	2	387	20	530	8	1350	4	1275	3
X81S 75	1542	17	1889	7	1925	21	644	18	1140	18	434	6	1850	14	362	24	572	6	1150	11	1151	12
X81S 76	1806	11	1944	5	1538	30	639	20	926	29	547	4	2037	9	905	3	509	10	1300	6	1215	5
X81S 77	2403	3	1472	18	1938	18	694	14	1563	5	182	19	2530	3	435	18	392	24	1388	2	1300	2
X81S 83	1444	23	1917	6	1756	26	713	12	1192	16	222	15	1877	13	283	27	484	14	1150	11	1104	17
X81S 86	1444	23	1042	24	1794	25	914	4	1056	22	197	17	1817	16	703	6	348	27	838	23	1015	24
X81S 89	1028	29	972	26	2513	3	625	21	1241	11	189	18	1490	23	503	10	491	13	1038	19	1009	26
X81S 118	1458	22	1556	14	2225	10	644	18	1308	8	106	26	2313	5	438	17	808	1	1075	17	1193	7
Local check	2778	2	972	26	3025	1	681	16	2475	1	870	1	2943	1	-	-	538	7	750	27		
Location mean	1739		1504		2068		669		1259		270		1792		528		486		1065			
C.V. %	15.1		53.1		7.5		36.8		35.4		81.2		29.1		49.4		29.8		27.8			
L.S.D. at 5%	538		NS		317		NS		NS		NS		1066		NS		NS		NS			
S.E.	185.9		564.9		109.8		173.9		315.4		154.9		368.4		184.6		102.5		209.3			
No. of entries significantly exceeding the local check	0		-		0		-		-		-		0		-		-		-			

Table 5.8.7. The five heaviest seed yielding entries at the individual locations in the LIF3T-E during 1982/83.

RANK	EGYPT		GREECE	INDIA	LEBANON	PAKISTAN		PERU	SYRIA	TUNISIA
	Bahteem	Mallawi	Larissa	New Delhi	Terbol	Dokri	Faisalabad	San Lorenzo	Tel Hadya	Beja
	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.	Cross No.
1	X81S 21	X81S 11	Local check	X81S 74	Local check	Local check	Local check	X81S 27	X81S 118	X81S 19
2	Local check	X81S 12	X81S 19	X81S 72	X81S 71	X81S 72	X81S 74	X81S 22	X81S 21	X81S 77
3	X81S 77	X81S 5	X81S 89	X81S 65	X81S 27	X81S 12	X81S 77	X81S 76	X81S ⁴ 26	X81S 5
4	X81S 26	X81S 67	X81S 21	X81S 86	X81S 5	X81S 76	X81S 67	X81S 18	X81S 65	X81S 74
5	X81S 72	X81S 76	X81S 26	X81S 20	X81S 77	X81S 71	X81S 118	X81S 63	X81S 72	X81S 69

infested with Orobanche.

Results and Discussion

Nine sets of LION were sent to cooperators in Czechoslovakia, Morocco, Tunisia, Turkey and ICARDA managed research stations. The results were, however, received from four locations and the data on number of Orobanche and weight of Orobanche are given in Table 5.9.1. The infestation of Orobanche at all the locations was reported to be lower except at Shandweel in Egypt. The ANOVA for the experimental design at these locations revealed that there were no significant differences among entries at Shandweel and Douyet with respect to number and weight of Orobanche shoots but at Tel Hadya the differences were significant for number of Orobanche shoots. Two lines namely 2581 and 3005 from India did not show any infestation of Orobanche. This needs further testing and confirmation for being resistant as the infestation was very little at this location.

Table 5.9.1. Number of Orobanche per plot (No.) and weight of Orobanche per plot (WT) for the entries in LION during 1982/83.

ENTRY	ORIGIN	EGYPT		MOROCCO				SYRIA	
		Shandweel		Douyet		Marchouch		Tel Hadya	
		No.	WT	No.	WT	No.	WT	No.	WT
155	Turkey	20	118	0	-	0	-	1	-
784	Egypt	20	128	1	-	0	-	2	-
1386	Iran	15	98	1	1	0	-	5	-
2547	India	21	103	0	-	0	-	1	-
2581	India	19	119	0	-	0	-	0	-
3005	India	20	112	0	-	0	-	0	-
3112	India	16	105	1	1	0	-	1	-
Local check		25	125	0	-	0	-	2	-
Mean		20	113	.40	.3	0	-	1.5	-
C.V.%		32.6	19.7	231.8	236.6	-	-	72	-
L.S.D. at 5%		NS	NS	NS	NS	-	-	2	-

6. AGRONOMY

6.1. DATE OF PLANTING AND PLANT-POPULATION TRIAL (DPPT)

Introduction

This was the fourth season to conduct the Date of Planting and Plant-population Trial in Faba Beans, Lentils and Chickpeas. The objectives of the trial in all the three crops were: (i) to find out the optimum date of planting in the different agro-ecological locations in the ICARDA region; (ii) to find out the consequence of deviating from this date on the crop performance and (iii) to determine the response of the crop to change in plant-population in relation to the date of planting.

Results of previous seasons have revealed that in most locations advancing date of planting early into the season increased growth and seed yields of faba beans and lentils. In case of chickpeas, delaying planting into spring reduced growth and seed yield substantially in all locations, however, varying the planting dates within winter did not lead to significant changes in the crop performance. The results on data from the plant population treatments reveal a tendency to increase seed yield with increasing population in wetter areas; however, under drier conditions, the existing genotypes of the three legumes have shown consistent high degree of plasticity.

Material and Methods

It was suggested that the cooperators should use the locally adapted cultivar. There were four dates for each crop. The four dates for faba beans in the Mediterranean region were suggested as follows: D₁-10 October; D₂-30 October; D₃-20 November and D₄-10 December. In Ethiopia the dates were to be evenly distributed from beginning of June to end July. However, the cooperators could modify the dates to suit their requirements. The four dates in lentils were selected as follows: D₁-40 days earlier than the conventional date; D₂-20 days earlier; D₃- the conventional date, and D₄-20 days later than the conventional date. The four dates for chickpeas were selected as follows: D₁- early winter; D₂- mid winter; D₃- later winter and D₄- early spring.

The population levels were varied by changing the row width while keeping the spacing within the row constant. The details of the treatments are given in the appropriate tables.

Each experiment was conducted in a single split-plot design with dates of planting ascribed to the main plots and the population levels to the sub plots. It was suggested that the sub-plot size should be 20 m² (4m x 5m) for each of the three crops; the net plot harvested and seed yields reported to come from the central rows of 4 m, and the outside rows and 0.5 m at either end of the central rows to be discarded. Some of the cooperators provided data on monthly maximum and minimum temperatures and total rainfall for the duration of the crop. These are presented in Figure 1.

6.1.1. FABA BEAN DATE OF PLANTING AND PLANT-POPULATION TRIAL (FBDPPT)

Results and Discussion

The FBDPPT was sent to 16 locations in 8 countries. The results were, however, reported from only two locations namely Terbol in Lebanon and Rabat in Morocco. These are presented in Table 6.1.1.

The ANOVA for the experimental design revealed that the seed yield varied significantly due to different dates of planting and plant population levels at both the locations. The interaction between date of planting x plant population was also significant.

As in the previous year (International Nursery Report No. 6), early December planting at Terbol gave the highest yields and the later planting on December 31 gave significantly lower yields. The earlier planting November 12 though gave less yield but the reduction was not significant. Further the yields were higher at high plant population levels i.e. 33- and 25 plants/m² and were reduced at low plant population levels i.e. 20- and 16 plants/m². The perusal of mean values at different plant population levels and dates of planting exhibited that the optimum plant population and date of planting for faba bean could be 33.3 plants/m² planted on December 10.

At Rabat, in Morocco the highest yields were recorded from December 9 planted crop. The seed yields were reduced significantly when planted earlier or later. Similarly there was a significant increase in seed yield from one plant population level to the other with the increasing plant population intensity and the plant population intensity of 33.3 plants/m² was the best. The interaction being significant, the best combination was identified as one with plant population level of 33.3 plants/m² planted on December 9 (D₂ planting date). All other combinations gave significantly much lower yields to this.

It can, therefore, be concluded from this trial that earlier plantings in November or Early December give better yields than late plantings in late December or January. Similarly the higher plant population density gave more yields as compared to low plant population densities.

6.1.2. LENTIL DATE OF PLANTING CUM PLANT POPULATION TRIAL (LDPPT)

Results and Discussion

Seventeen trials were sent to cooperators in 10 countries but data were not received back from any of the cooperators except two ICARDA managed trials at Terbol in Lebanon and Tel Hadya in Syria. The yield levels (Table 6.1.2.) at Terbol (Lebanon) were higher than those at Tel Hadya (Syria).

The ANOVA for the experimental design exhibited that at Terbol

Table 6.1.1. Seed yield of faba beans at different dates of planting (D) and plant population (P) levels in FBDPPT at different locations during 1982/83.

PLANT POPULATION	Yield (kg/ha)									
	LEBANON (Terbol)					MOROCCO (Rabat)				
	Date of planting					Date of planting				
	D ₁	D ₂	D ₃	D ₄	MEAN	D ₁	D ₂	D ₃	D ₄	MEAN
33.3 plants / m ² (P ₁)	2865	2262	3194	2696	2754	2607	3537	2408	1486	2510
25.0 plants / m ² (P ₂)	2753	2742	2831	2698	2756	2627	2793	2023	1264	2177
20.0 plants / m ² (P ₃)	2650	2676	2770	2159	2564	2231	2356	2163	983	1933
16.7 plants / m ² (P ₄)	2722	2247	2555	2548	2518	1628	2342	1510	856	1584
MEAN	2748	2482	2838	2525		2273	2757	2026	1147	
C.V.%	D=13.5	P=11.5				D=16.8		P=11.9		
L.S.D 5%	D=128	P=109		DXP=434		D=344		P=207	DXP=454	
Dates	Nov 12	Nov 27	Dec 10	Dec 31		Nov 24	Dec 9	Dec 23	Jan 8	

Table 6.1.2. Seed yield of lentils at different dates of planting (D) and plant population (P) levels in LDPPT at different locations during 1982/83.

PLANT POPULATION	Yield (kg/ha)									
	LEBANON (Terbol)					SYRIA (Tel Hadya)				
	Date of planting				MEAN	Date of planting				MEAN
	D ₁	D ₂	D ₃	D ₄		D ₁	D ₂	D ₃	D ₄	
333.3 plants / m ² (P ₁)	2145	2120	1930	1751	1986	1246	1110	1086	1111	1138
222.2 plants / m ² (P ₂)	2093	2091	1912	1783	1970	1184	1295	888	762	1032
166.7 plants / m ² (P ₃)	1979	1901	1973	1815	1916	1041	820	529	652	761
133.3 plants / m ² (P ₄)	1931	1731	1760	1554	1744	1215	905	862	827	952
MEAN	2036	1961	1893	1726		1171	1032	841	838	
C.V.%	D=22.0	P=12.0				D=19.4	P=24.2			
L.S.D at 5%	D=329	P=166	DXP=NS			D=151	P=168	DXP=238		
Dates	Nov 13	Nov 27	Dec 10	Jan 31		Nov 15	Dec 3	Dec 23	Jan 4	

in Lebanon, there were significant differences among dates and plant population levels but the interaction between dates x populations was not significant. At Terbol November 13 planting gave the highest yield and January 31, the lowest, however, the differences were statistically not significant. Further the yields were lowest at lowest plant population level of 133.3 plants/m² but with increase in population density to 166.7 plants/m² or more there was significant increase in seed yield. So November plantings with higher plant population densities were the optimum date of planting cum plant population treatments.

At Tel Hadya in Syria, the ANOVA revealed that differences between means for dates, population levels and interactions were significant. The advancement of planting date from December 23 to November 15 significantly increased the seed yield. Similarly the highest mean yield was recorded at 333.3 plants/m² (1138 kg/ha) and was followed 222.2 plants/m² (1032 kg/ha). Among the interactions, the combination of December 3 sowing and 222.2 plants/m² gave the highest seed yield. High yields were also obtained at plant populations of 222.2 and 133.3/m² sown on November 15.

6.1.3. CHICKPEA DATE OF PLANTING CUM PLANT POPULATION TRIAL (CDPPT)

Results and Discussion

Twenty two trials were sent to cooperators in 11 countries and the results were received from only two locations namely Terbol in Lebanon and Gelline in Syria and are given in Table 6.1.3.

The ANOVA for the experimental design indicated that the seed yield varied significantly with dates and plant population levels. The interaction between dates and plant population at both locations was, however, not significant.

The data from Terbol revealed that December 10 planting gave the heaviest seed yield and there was a great reduction in seed yield when the plantings were done in March. Further advancement of date of planting from December 10 to November 13 didnot increase the yield. The mean yields at different population levels further revealed that 33.3 plants/m² gave the highest seed yield and with the decreasing population density, the seed yield decreased significantly.

The best sowing date for highest seed yield in Gelline (Syria) was December 19. Advancing sowing date to November 11 had no significant influence on yield, but delaying sowing until March resulted in a significant reduction in yield. Also the plant populations at a density of 33.3 plants/m² gave the highest yield which was significantly better than yields at other population densities.

Table 6.1.3. Seed yield of chickpea at different dates of planting (D) and plant population (P) levels in COPPT at different locations during 1982/83.

PLANT POPULATION	Yield (kg/ha)								
	LEBANON (Terbol)				MEAN	SYRIA (Gelline)			MEAN
	Date of planting					Date of planting			
	D ₁	D ₂	D ₃	D ₄		D ₁	D ₂	D ₄	
33.3 plants / m ² (P ₁)	2590	2636	2861	1908	2499	2234	2126	1208	1856
25.0 plants / m ² (P ₂)	2328	2547	2675	1762	2328	1764	2072	748	1528
20.0 plants / m ² (P ₃)	2278	2413	2497	1759	2237	2019	1882	791	1564
16.7 plants / m ² (P ₄)	2050	2430	2250	1504	2058	1592	1683	832	1369
MEAN	2311	2506	2571	1733		1902	1941	895	
C.V.%	D=14.8	P=8.6				D=39.6	P=21.5		
L.S.D. at 5%	D=270	P=140	DXP=NS			D=383	P=202	DXP=NS	
Dates	Nov 13	Nov 27	Dec 10	March 26		Nov 11	Dec 19	March 19	

6.2. FERTILITY-CUM-INOCULATION TRIAL (FIT)

Introduction

The FIT was planned to study the response of faba beans, lentils and chickpeas to the application of fertilizer nutrients and to inoculation with Rhizobium culture under different agro-ecological conditions in the region. The objectives of this trial have been to investigate:

- (i) whether there is 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 the 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 phosphorus and/or potassium.

Material and Methods

The basic set of fertility and inoculation treatments was the same for all the three crops. These consisted of: (i) an unfertilized uninoculated control, (ii) 50 kg P_2O_5 /ha; (iii) 60 kg K_2O /ha, (iv) inoculation, (v) inoculation + 50 kg P_2O_5 /ha, (vi) inoculation + 60 kg K_2O /ha, (vii) inoculation + 50 kg P_2O_5 /ha + 60 kg K_2O /ha and (viii) 100 kg N/ha + 50 kg P_2O_5 /ha + 60 kg K_2O /ha. In Syria, additional treatments were used and these are presented in the appropriate tables.

The trial was designed as a randomized complete block and four replications were recommended. The cooperators could reduce the replications to three if land was limiting. The suggested plot sizes were: 18.0 m² (3.6m x 5.0m) for faba beans and chickpeas, and 13.5m² (2.7m x 5.0m) for lentils. The net plot for harvesting was suggested to be comprised of the central rows 4 m long leaving one row at either side of the plot and 0.5 m at either end of row as borders.

6.2.1. FAB A BEAN FERTILITY-CUM-INOCULATION TRIAL (FBFIT)

Results and Discussion

Twenty one trials were sent to 11 countries and the results were received from six trials covering three countries. The ANOVA of yield data for these locations (Table 6.2.1.) indicated that the differences between the treatments were statistically significant only at Setif in Algeria whereas these were not significant at other locations.

At Setif in Algeria, the application of potash at 60 kg K_2O /ha (T_3), gave the highest yield which was about 99 per cent more than the control (T_1). The other four treatments which gave significantly

Table 6.2.1. Seed yield (Y = kg/ha) and rank (R) of different fertilizer-cum-inoculation treatments in FBFIT at various locations during 1982/83.

TREATMENTS	ALGERIA				EGYPT				TUNISIA				MEAN	
	Guelino		Setif		Sakha		Sids		Mateur		Moghrahe			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
T ₁ Control	3510	3	450	8	1351	7	2632	5	2268	8	2069	8	2047	6
T ₂ Phosphate at 50 kg P ₂ O ₅ /ha	3150	7	612	6	1458	4	3132	2	2620	1	2140	6	2185	4
T ₃ Potash at 60 kg K ₂ O /ha	3550	2	<u>895</u> ⁽¹⁾	1	1635	2	3062	3	2610	2	2194	5	2324	1
T ₄ Inoculation with Rhizobium	3200	6	<u>827</u>	2	1708	1	1594	8	2303	6	2562	1	2032	7
T ₅ Inoculation + Phosphate	3300	5	<u>695</u>	5	1276	8	3174	1	2520	4	2222	4	2198	3
T ₆ Inoculation + Potash	3350	4	<u>767</u>	3	1597	3	2052	6	2600	3	2313	3	2113	5
T ₇ Inoculation + Phosphate+ Potash	3700	1	548	7	1448	5	3045	4	2288	7	2319	2	2225	2
T ₈ 100 kg N/ha + Phosphate + Potash	3000	8	<u>705</u>	4	1437	6	1858	7	2403	5	1979	7	1897	8
LOCATION MEAN	3345		687		1489		2569		2451		2225			
C.V.%	15.6		20.4		24.9		40.2		16.22		19.3			
L.S.D. at 5%	NS		207		NS		NS		NS		NS			
No. of treatments significantly exceeding the control			5		-		-		-		-			

(1) Seed yield underlined, significantly exceeded the control.

better yield than the control included Inoculation with Rhizobium (T_4), Inoculation + Potash (T_6), 100 kg N/ha + Phosphate + Potash (T_8) and Inoculation + Phosphate (T_5) with respective increase of 84, 70, 57 and 54 per cent over control (T_1).

6.2.2. LENTIL FERTILITY-CUM-INOCULATION TRIAL (LFIT)

Results and Discussion

Twenty Trials were sent to cooperators in 10 countries and the results were received from 5 trials covering five countries. The ANOVA (Table 6.2.2) of yield for the experimental design revealed that only at Setif in Algeria, the differences in treatment means were significant. The LSD estimates at Setif, however, revealed that none of the treatments was significantly superior to control. It could, therefore, be concluded that application of phosphate or potash or inoculation of materials with Rhizobia didnot add much to seed yield. Rather it seems that symbiotic nitrogen fixation was adequate in seeking the nitrogen requirement of the crop.

6.2.3. CHICKPEA FERTILITY-CUM-INOCULATION TRIAL (CFIT)

Results and Discussion

Twenty nine trials were sent to cooperators in 15 countries and the results were received back from only eight trials from six countries. The results are presented in Table 6.2.3. The location mean values revealed that the highest seed yield was recorded at Jinderis in Syria (2855 kg/ha) and was followed by Sevilla in Spain (2627 kg/ha) and Muslimiya (J.F.) in Syria (2509 kg/ha).

The ANOVA of seed yield for the experimental design showed that differences between treatments were significant only at Setif in Algeria, Karak and Kallurkot in Pakistan, and Jinderis in Syria.

At Setif in Algeria, five treatments significantly exceeded the control. The inoculation with application of potash (T_6) gave the highest yield (850 kg/ha) and exceeded the control by a margin of 470 per cent and was followed by T_8 (100 kg N/ha + Phosphate + Potash), T_4 (Inoculation with Rhizobium), T_5 (Inoculation + Phosphate) and T_7 (Inoculation + Phosphate + Potash) respectively.

At Karak in Pakistan four treatments exceeded the control by a significant margin. The best treatment among these was T_8 (application of 100 kg of N/ha + Phosphate + Potash) with increase of about 308 per cent over the control. The other treatments in order of merit included T_7 (Inoculation + Phosphate + Potash) and T_2 (Phosphate at 50 kg P_{2O_5} /ha).

In Syria, four treatments exceeded the control by a significant margin. The treatment T_5 , the inoculation with Phosphate application,

Table 6.2.2. Seed yield (Y = kg/ha) and rank (R) of different fertilizer-cum-inoculation treatments in LFIT at various locations during 1982/83

TREATMENTS		ALGERIA		IRAN		PAKISTAN		POLAND		SYRIA		MEAN	
		Setif		Karaj		Islamabad		Pulway		Muslimiya(J.E.)			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
T ₁	Control	3718	2	636	2	38	6	4330	5	1428	4	2030	3
T ₂	Phosphate at 50 kg P ₂ O ₅ /ha	3780	1	622	4	62	1	4581	2	1464	3	2102	1
T ₃	Potash at 60 kg K ₂ O /ha	3498	3	741	1	62	1	4518	3	1376	8	2039	2
T ₄	Inodulation with Rhizobium	2190	7	331	8	39	4	5340	1	1601	1	1900	5
T ₅	Inoculation + Phosphate	2903	6	400	7	37	7	3739	8	1427	5	1701	7
T ₆	Inoculation + Poyash	3080	5	562	5	39	4	4424	4	1425	6	1906	4
T ₇	Inoculation + Phosphate+ Potash	1605	8	433	6	49	3	4056	7	1471	2	1523	8
T ₈	100 kg N/ha + Phosphate+ Potash	3098	4	623	3	29	8	4323	6	1422	7	1899	6
LOCATION MEAN		2984		544		44		4414		1452			
C.V.%		26.1		55.0		68.3		18.3		11.0			
L.S.D at 5%		1146		NS		NS		NS		NS			
No. of treatments significantly exceeding the control.		0		-		-		-		-			

Table 6.2.3. Seed yield (Y = kg/ha) and rank (R) of different fertilizer-cum- inoculation treatments in CFIT at various locations during 1982/83.

TREATMENTS		ALGERIA		IRAN		PAKISTAN				SPAIN		SYRIA				TUNISIA		MEAN	
		Setif		Karaj		Karak		Kallurkot		Sevilla		Muslimiya(J.F.)		Jinderis		Tunis			
		Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
T ₁	Control	149	8	452	8	353	7	1759	1	2579	5	2617	3	1779	8	650	5	1292	8
T ₂	Phosphate at 50 kg P ₂ O ₅ /ha	299	7	609	5	<u>1277</u>	3	1613	3	2624	3	2854	1	<u>3025</u>	4	658	4	1620	3
T ₃	Potash at 60 kg K ₂ O/ha	300	6	886	1	375	5	1547	5	2776	2	2804	2	2458	5	615	7	1470	5
T ₄	Inoculation with Rhizobium	<u>501</u> ⁽¹⁾	3	759	3	334	8	1550	4	2565	7	2550	4	2025	7	912	3	1400	7
T ₅	Inoculation + Phosphate	<u>408</u>	4	607	6	<u>1061</u>	4	1422	6	2595	6	2317	6	<u>3879</u>	1	918	2	1651	2
T ₆	Inoculation + Potash	<u>850</u>	1	620	4	365	6	1358	7	2620	4	2450	5	2291	6	935	1	1436	6
T ₇	Inoculation + Phosphate + Potash	<u>406</u>	5	508	7	<u>1431</u>	2	1009	8	2948	1	2175	8	<u>3717</u>	2	628	6	1603	4
T ₈	100 kg N/ha + Phosphate + Potash	<u>580</u>	2	798	2	<u>1442</u>	1	1734	2	2308	8	2304	7	<u>3666</u>	3	592	8	1678	1
LOCATION MEAN		437		655		830		1499		2627		2509		2855		738			
C.V. %		28.5		30.6		22.4		16.9		10.7		10.7		20.5		38.9			
L.S.D. at 5%		183		NS		273		372		N.S		N.S		864		N.S			
No. of treatments significantly exceeding the control		5		-		4		0		-		-		4		-			

(1) Seed yield underlined, significantly exceeded the control

gave the maximum yield with an increase of about 118 per cent over the control. The other three treatments in order of merit were T_7 (Inoculation + Potash + Phosphate), T_8 (100 kg N/ha + Potash + Phosphate) and T_2 (Phosphate).

6.3. WEED CONTROL TRIAL (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 weeds. It also aimed at assessing the relative merit of some selected weed control treatments under the different agro-ecological conditions in the three crops in the ICARDA region.

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 was 18.0 m² (3.6 m x 5.0 m) for all the three crops. 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 came from the central rows of 4 m length.

6.3.1. FABA BEAN WEED CONTROL TRIAL (FBWCT)

Results and Discussion

Twenty-six Faba Bean Weed Control Trials were supplied to cooperators in 11 countries. The results were, however, received for 8 trials from 5 countries and are presented in Table 6.3.1. The comparison of the weedy check (treatment T_1) and weed free check (treatment T_2) showed that weeds caused heavy losses in yield in faba beans in almost all the locations. On an average across locations, the loss in seed yield was 29 per cent, however, the maximum loss was observed in an irrigated trial at Shandweel (63%) in Egypt.

The location mean for seed yield was highest at Hama in Syria (5988 kg/ha) and was followed by Sakha (5084 kg/ha), however, the lowest seed yields were recorded at Tel Hadya in Syria (1147 kg/ha). The coefficient of variation was high at Terbol in Lebanon (47.2%) whereas at other locations it was moderate to low. The ANOVA of the yield data exhibited significant differences between treatments at all the locations except at Nobariya and Sakha in Egypt, and Terbol in Lebanon where the differences were not significant.

The treatment means at Shandweel in Egypt exhibited that loss

Table 6.3.1. Seed yield (Y =kg/ha) and rank (R) of faba beans as affected by weed control treatments in FBWCT at various locations during 1982/83.

TREATMENTS	EGYPT						ETHIOPIA		LEBANON		SYRIA				TUNISIA		MEAN		
	Nobariya		Sakha		Shandweel		Addis Ababa		Terbol		Hama		Tel Hadya		Hoghrane				
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R			
T ₁	Weedy check	2531	12	4360	12	1292	12	1661	4	989	12	4844	12	882	12	889	10	2181	12
T ₂	Weed free by repeated hand weeding	3217	3	5328	2	<u>3472</u> ⁽¹⁾	3	1481	9	2417	5	<u>6144</u>	4	<u>1304</u>	1	1287	9	3081	3
T ₃	Hand weeding twice(30-40 and 7-80 DAE)	3181	4	5141	5	<u>2528</u>	5	1464	10	1843	11	<u>6141</u>	5	<u>1298</u>	2	1574	7	2896	8
T ₄	Pre-emergence application of chlorbromuron (Maloran) at 1.5 kg a.i. /ha	2821	11	5116	7	<u>2375</u>	7	1544	6	2007	8	<u>5914</u>	9	913	11	1583	6	2784	10
T ₅	Pre-emergence application of methabenzthiazuron Tribunil at 3.0 kg a.i./ha	3175	6	5158	4	<u>2736</u>	4	985	12	2628	2	<u>6105</u>	6	1135	9	1639	5	2945	6
T ₆	Pre-emergence application of terbutryne(Igran) at 2.5 kg a.i./ha	3102	8	5031	9	<u>3750</u>	2	1172	11	3742	1	<u>6358</u>	3	1136	7	<u>2833</u>	1	3391	1
T ₇	Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha.	3181	4	5016	10	<u>2056</u>	11	1560	5	1942	10	<u>5952</u>	8	<u>1278</u>	3	500	12	2686	11
T ₈	Pre-emergence application of cyanazine (Bladex) at 1.0 kg a.i./ha.	3369	1	4802	11	<u>2250</u>	9	1505	8	2200	6	<u>5883</u>	10	<u>1201</u>	5	1556	8	2846	9
T ₉	Same as 4 above + 0.5 kg a.i./ha of Pronamide (Kerb)	3135	7	5262	3	<u>2431</u>	6	1512	7	1999	9	<u>6105</u>	6	<u>1217</u>	4	<u>1972</u>	4	2954	5
T ₁₀	Same as 5 above + Pronamide	2992	9	5120	6	<u>2097</u>	10	2180	3	2513	4	<u>6210</u>	3	1136	7	<u>2296</u>	2	3068	4
T ₁₁	Same as 6 above + Pronamide	3238	2	5575	1	<u>3917</u>	1	<u>2349</u>	2	2583	3	<u>5699</u>	11	1061	10	<u>1981</u>	3	3300	2
T ₁₂	Same as 7 above + Pronamide	2965	10	5097	8	<u>2292</u>	8	<u>2398</u>	1	2102	7	<u>6502</u>	1	<u>1200</u>	6	722	11	2910	7
LOCATION MEAN		3076		5084		2600		1651		2247		5988		1147		1569			
C.V.%		17.0		9.0		7.9		23.7		47.2		7.8		15.7		29.9			
L.S.D.5%		NS		NS		295		663		NS		667		254		794			
No. of treatments singificantly exceeding the check.		-		-		11		2		-		11		6		4			

(1) Seed yield values underlined, significantly exceeding the weedy check.

due to weeds was 63 per cent. All the 9 weedicide treatments significantly increased the seed yield. Two treatments namely T_{11} (Igran + Kerb) and T_6 (Igran only) gave the highest yield and were the most promising.

In Ethiopia, two treatments namely T_{12} (Bladex + Kerb) and T_{11} (Igran + Kerb) gave significantly higher yield than the weedy check. It is worth mentioning that at Addis Ababa the differences between the weedy check and the weed per plots were not significant. This indicates that these two treatments might have some harmonic effect resulting in increased seed yields in Addis Ababa.

At Hama in Syria where the loss due to weeds was recorded at 21 per cent, all the nine weedicide treatments gave significantly better yields than the weedy check, indicating that the weedicides did help in controlling weeds at this location. The best weedicide treatment was T_{12} (Bladex + Kerb) which gave 34 per cent higher yield than the weedy check and was followed by T_6 (Igran), T_{10} (Tribunil + Kerb), T_5 (Tribunil), T_9 (Maloran + Kerb) with 31, 28, 26, and 26 per cent, respectively, more yield than the weedy check. Similarly at Tel Hadya 32 per cent loss was observed due to weeds and four weedicide treatments gave significantly better yield than the weedy check. Among these treatments T_7 (Bladex @ 0.5 kg a.i./ha) was the best and was followed by T_9 (Maloran + Kerb) T_8 (Bladex @ 1.0 kg a.i./ha) and T_{12} (Bladex @ 0.5 kg a.i./ha + Kerb), respectively.

The seed yields at Mograne in Tunisia showed that four weedicide treatments gave significantly higher yields than the weedy check. Among these Igran (T_6) was the best weedicide treatment and was followed by Tribunil + Kerb (T_{10}), Igran + Kerb (T_{11}) and Maloran + Kerb (T_9).

On the basis of average across locations the pre-emergence application of Igran @ 2.5 kg a.i. per hectare (T_6) was the best.

6.3.2. LENTIL WEED CONTROL TRIAL (LWCT)

Results and Discussion

The LWCT was distributed to 32 cooperators in 15 countries and the results were received from six locations and are given in Table 6.3.2. The location mean data revealed that seed yield was highest at Terbol in Lebanon (1777 kg/ha) and was followed by Bahteem in Egypt (1399 kg/ha). At Islamabad, the yield levels were extremely low (89 kg/ha). The coefficient of variation was high at Islamabad in Pakistan (57.6%) and was moderate to low (range 25.6 to 10.0%) at other locations.

The comparison of seed yields of weedy and weed free checks revealed that the loss due to weeds at different locations varied and the overall loss was 44 per cent. This showed the importance of weed control in lentils.

Table 6.3.2. Seed yield (Y =kg/ha) and rank (R) of lentils as affected by weed control treatments in LWCT at various locations during 1982/83.

TREATMENTS	EGYPT		LEBANON		NEPAL		PAKISTAN		POLAND		SYRIA		MEAN	
	Bahteem		Terbol		Parwanipur		Islamabad		Wroclaw		Muslimiya (J.F)			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
T ₁ Weedy check	688	10	1129	12	511	10	91	6	507	10	918	4	641	11
T ₂ Weed free by repeated hand weeding	<u>2121</u> ⁽¹⁾	1	<u>1962</u>	4	619	1	140	1	-	-	855	5	1139	1
T ₃ Hand weeding twice(30-40 and 70-80 DAE)	<u>1727</u>	5	<u>2038</u>	2	550	8	107	3	-	-	1125	1	1109	2
T ₄ Pre-emergence application of chlorboraunon (Maloran) at 1.5 kg a.i./ha	<u>1371</u>	7	<u>1836</u>	6	599	3	71	10	704	1	417	9	833	8
T ₅ Pre-emergence application of Prometryne (Gesagard) at 1.5 kg a.i./ha	<u>2017</u>	2	<u>1988</u>	3	582	4	74	9	598	7	576	6	973	3
T ₆ Pre-emergence application of methabenzthiauran (Tribuni) at 2.0 kg a.i./ha	<u>1785</u>	4	1515	11	498	11	107	3	646	5	489	8	840	7
T ₇ Pre-emergence application of cyanazine (Bladex) at 1.0 a.i./ha	<u>1552</u>	6	1584	10	570	7	81	8	698	2	1006	2	915	4
T ₈ Pre-emergence application of cyanazine (Bladex) at 1.0 kg. a.i./ha	<u>972</u>	9	1587	9	448	12	83	7	524	9	975	3	765	9
T ₉ Same as No. 4 above + 0.5 kg a.i./ha of pronamide (Kerb)	<u>649</u>	11	<u>1687</u>	8	522	9	57	11	571	8	231	10	620	12
T ₁₀ Same as No. 5 above + Pronamide	<u>1802</u>	3	<u>1784</u>	7	580	5	46	12	688	3	178	11	846	6
T ₁₁ Same as No. 6 above + Pronamide	<u>1344</u>	8	<u>2286</u>	1	577	6	96	5	646	5	166	12	853	5
T ₁₂ Same as No. 7 above + Pronamide	646	12	<u>1930</u>	5	607	2	118	2	683	4	520	7	751	10
LOCATION MEAN	1399		1777		555		89		627		621			
C.V.%	10.0		10.0		14.0		57.6		-		25.6			
L.S.D. at 5%	195		528		N.S		N.S		-		229			
No. of treatments significantly exceeding the weedy check.	9		8		-		-		-		0			

(1) Seed yield values underlined, significantly exceeding the check.

The ANOVA of the yield data showed that the differences between the treatment means were significant only at Bahteem (Egypt), Terbol (Lebanon) and Myslimiya Jail Farm (Syria).

At Bahteem in Egypt, eight weedicide treatments out-yielded the weedy check by a significant margin and Gesagard was the best weedicide giving 193% more yield than the weedy check.

At Terbol in Lebanon, five weedicide treatments gave significantly better yield than the weedy check. The treatment T_{11} (Tribunil and Pronamide) was the best giving about 102 per cent higher yield than the weedy check, the Gesagard (T_5) was the second best weedicide at this location.

On the basis of overall performance of weedicide treatments, across locations, Gesagard gave the highest yields.

6.3.3. CHICKPEA WEED CONTROL TRIAL (CWCT)

Results and Discussion

A total of 41 trials were sent to different locations in 18 countries. The data were, however, received from 14 locations and is presented in Table 6.3.3. The seed yield at Sids in Egypt was the highest (3590 kg/ha) and was followed by that of Terbol in Lebanon (1701 kg/ha), Faisalabad (1630 kg/ha) and Kallurkot (1563 kg/ha) in Pakistan. The lowest yields were, however, recorded from Douyet in Morocco and El-Marj in Libya (226 kg/ha). The coefficient of variation ranged from 12.0 per cent at Bahteem in Egypt to 72 per cent at Karak in Pakistan. There were significant treatment differences at all the locations except at Sids in Egypt, Terbol in Lebanon, Parwanipur in Nepal, Marchouch in Morocco, and Faisalabad in Pakistan. At El-Marj in Libya the presence of weeds reduced the yield to the extent of 98 per cent and at other locations also the yields were reduced to a greater extent. Across locations, the average loss due to weeds was 57 per cent. This clearly emphasised the importance of weed control in faba bean. Nine herbicidal treatments at Kallurkot in Pakistan, 4 at El-Marj in Libya, three at Bahteem in Egypt and two each at Douyet in Morocco, and Jinderis and Tel Hadya in Syria significantly out-yielded the weedy checks.

At Bahteem Igran @ 3.0 kg a.i./ha (T_6), and Igran @ 3.0 kg a.i./ha + 0.05 a.i./ha Kerb (T_{11}) were the most effective treatments. But the seed yields in weed free plots were almost 50 to 100 per cent higher than the treated plots. Similarly Igran @ 3.0 kg a.i./ha + Kerb @ 0.05 kg a.i./ha (T_{11}) was the best treatment at El-Marj in Libya. The yields of weed free plots were much higher than the weedicide treated plots which showed that there is a good scope for further improvement by using some other treatments.

At Douyet in Morocco, the treatment combination T_9 , Maloran @ 2.5 kg a.i./ha + Kerb 0.05 kg a.i./ha gave the best results and was

Table 6.3.3. Seed yield (Y= kg/ha) and rank (R) of chickpeas as affected by weed control treatments in CWCT at various locations during 1982/83.

TREATMENTS	EGYPT				LEBANON		LIBYA		NEPAL		MOROCCO		PAKISTAN				SYRIA				TUNISIA		MEAN							
	Bahteem		Sids		Terbol		El-Marj		Parwanipur		Douyet		Marchouch		Faisalabad		Korak		Kallurkot		Muslimiya(J.F.)			Jinderis		Tel-Hadya		Tunis		
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R		Y	R	Y	R	Y	R	
T ₁ Weedy check	285	10	2100	12	1381	10	18	12	741	5	148	11	802	8	1334	12	291	6	953	12	989	5	855	12	563	11	1009	3	819	12
T ₂ Weed free by repeated hand weeding	<u>2028</u>	⁽¹⁾ 1	3850	4	2231	2	<u>870</u>	1	873	2	<u>294</u>	3	810	7	1675	7	<u>1276</u>	1	<u>1779</u>	2	<u>1292</u>	2	<u>1361</u>	2	<u>1068</u>	1	630	12	1431	1
T ₃ Hand weeding twice (30-40 and 70-80 DAE)	<u>1691</u>	2	3658	7	2178	3	<u>532</u>	2	731	7	<u>304</u>	2	706	12	1923	2	634	2	<u>1645</u>	5	<u>1497</u>	1	913	10	<u>909</u>	2	1000	4	1302	2
T ₄ Pre-emergence application of chlorbromuron (Haloran) at 2.5 kg a.i./ha	260	12	4875	1	1772	5	96	7	646	12	<u>275</u>	4	942	4	1919	1	-	-	<u>1536</u>	8	621	10	949	8	583	10	991	5	1190	4
T ₅ Pre-emergence application of methabenzthiazuron (Tribunil) at 3.0 kg a.i./ha	385	6	4175	3	1094	12	95	8	724	8	169	10	946	3	1757	3	-	-	<u>1452</u>	11	787	7	1076	6	537	12	778	9	1075	7
T ₆ Pre-emergence application of terbutryne (Igran) at 3.0 kg a.i./ha	<u>1021</u>	4	4735	2	2344	1	<u>194</u>	5	711	9	192	8	792	9	1570	9	-	-	<u>1804</u>	1	548	11	980	7	<u>817</u>	3	898	6	1277	3
T ₇ Pre-emergence application of cyanazine (Bladex) at 0.5 kg a.i./ha	267	11	3260	9	1633	7	47	11	945	1	194	7	944	2	1397	10	485	4	<u>1508</u>	10	1184	3	885	11	<u>792</u>	4	676	10	1019	9
T ₈ Cyanazine at 1.0 kg a.i./ha	<u>510</u>	5	2325	11	1382	9	87	9	693	10	250	5	1083	1	1707	5	287	7	<u>1673</u>	4	1163	4	<u>1529</u>	1	673	8	1019	2	1027	8
T ₉ Same as 4 above + 0.05 a.i./ha Pronamide (Kerb)	354	7	3680	6	1711	6	<u>253</u>	4	869	3	<u>329</u>	1	713	10	1684	6	-	-	<u>1583</u>	7	709	8	937	9	623	9	843	7	1100	6
T ₁₀ Same as 5 above + Pronamide	313	9	3193	10	1922	4	<u>160</u>	6	807	4	146	12	710	11	1598	8	86	8	<u>1675</u>	3	526	12	<u>1350</u>	3	741	7	843	7	1005	10
T ₁₁ Same as 6 above + Pronamide	<u>1035</u>	3	3788	5	1562	8	<u>302</u>	3	678	11	229	6	856	6	1729	4	460	5	<u>1633</u>	6	652	9	1104	5	749	6	1037	1	1130	5
T ₁₂ Same as 7 above + Pronamide	344	8	3445	8	1193	11	60	10	733	6	183	9	873	5	1368	11	621	3	<u>1515</u>	9	913	6	<u>1289</u>	4	776	5	676	11	999	11
LOCATION MEAN	708		3590		1701		226		763		226		852		1630		518		1563		907		1102		736		867			
C.V. %	12.0		20.7		49.3		37.4		20.0		37.0		31.20		16.1		71.6		17.6		21.8		24.5		20.7		16.4			
L.S.D. 5%	127		N.S		N.S		121		N.S		121		N.S		N.S		395		395		284		389		220		241			
No. of treatments significantly exceeding the weedy check.	5		-		-		6		-		4		-		-		1		11		2		4		4		0			

(1) Seed yield values underlined, significantly exceeding the check.

followed by Maloran 2.5 kg a.i./ha (T_4).

At Kallurkot in Pakistan, the application of Igran @ 3.0 kg a.i./ha (T_6) gave as high yields as that of weed free control and the increase in yield over the weedy check was 89%.

In Syria, three locations conducted this trial (Table 6.3.3). At Muslimiya (Jail Farm), the seed yields were not significantly influenced by weedicide treatments, however, the hand weeding significantly increased the seed yields. At Tel Hadya Igran @ 3.0 kg a.i./ha was the best weedicide and was followed by Bladex 0.5 kg a.i./ha. At Jinderis, a relatively wetter location, Cyanazine @ 1.0 kg a.i./ha proved to be most efficient and gave even better yields than the weed free check. The other two treatments namely Tribunil + Pronamide, and Bladex + Kerb were in order of merit.

The average performance over locations revealed that the losses due to weeds were tremendous (43%) and Igran was the best overall treatment to control weeds and Maloran was the second best.

6.4. CHICKPEA IRON EFFICIENCY TRIAL (CIET)

In 1982/83 a new trial on the efficiency of iron utilization in chickpea was made available to the cooperators. The main objective of the trial is to seek the information on the possibility of removing the iron-deficiency-stress in susceptible entries by foliar spray of the ferrous sulphate solution. It may also help in quantifying the magnitude of yield loss that might be occurring due to iron deficiency in the susceptible entries and in the identification of any latest deficiency in the efficient entry.

Material and Methods

Two entries, one which shows iron deficiency and the other which does not show iron deficiency under local conditions were suggested to be used in this trial. There were four treatments with spray of ferrous sulphate and other four with water. The randomised complete block design with four replications was suggested. The suggested plot size was six rows, 5 m long spaced at 30 cm with within row spacing of 10 cm. At harvest time the two out side rows and 0.5 m at either end of the central rows were discarded. Thus the seed yields described in this report came from the central rows of 4 m length.

Results and Discussion

Ten sets of trial were sent to cooperators in 7 countries and the results were received from 3 locations namely Giza (Egypt), Islamabad (Pakistan), and Tel Hadya (Syria) and are reported in Table 6.4.1. The mean yield at Islamabad was lowest (420 kg/ha) and at Giza was highest (1385 kg/ha). The ANOVA for yield data revealed that the treatment differences were, significant only at Tel Hadya. The perusal

of means of different treatments revealed that the ferrous sulphate solution sprays though improved to some extent the foliage colour of the susceptible varieties but there was no improvement in yield with different sprays.

Table 6.4.1. Seed yield (kg/ha) of different treatments in CIET at various locations during 1982/83.

TREATMENTS		EGYPT Giza	PAKISTAN Islamabad	SYRIA Tel Hadya	MEAN
T ₁	V ₁ , spray with water once	1574	-	733	1174
T ₂	V ₂ , spray with water once	1412	372	1797	1194
T ₃	V ₁ , spray with water twice	1264	-	739	1002
T ₄	V ₂ , spray with water twice	1440	416	1284	1047
T ₅	V ₁ , spray with 0.5% ferrous sulphate solution once	1384	-	899	1142
T ₆	V ₂ , spray with 0.5% ferrous sulphate solution once	852	463	1565	960
T ₇	V ₁ , spray with 0.5% ferrous sulphate solution twice	1475	-	863	1169
T ₈	V ₂ , spray with 0.5% ferrous sulphate solution twice	1676	430	1087	1064
Location Mean		1385	420	1126	
C.V.%		32.0	23.2	34.0	
L.S.D. 5%		NS	NS	559	

V₁ = Entry which shows iron deficiency, V₂ = Entry which doesnot show iron deficiency.

ICARDA'S FOOD LEGUME SCIENTISTS COOPERATING IN THE INTERNATIONAL TESTING PROGRAM.

1. Dr Cesar Cardona,
Legume Entomologist
2. Dr William Erskine,
Lentil Breeder
3. Dr Howard Gridley,
Legume Breeder (Tunisia)
4. Dr Salim Hanounik,
Faba Bean Pathologist
5. Dr M.V. Reddy,
Chickpea Pathologist (ICRISAT)
6. Dr Larry D. Robertson,
Faba Bean Breeder (Joined in June, 1983)
7. Dr Mohan C. Saxena,
Program Leader and Agronomist
8. Dr K.B. Singh,
Chickpea Breeder (ICRISAT)
9. Dr Farouk El-sayed,
Post Doctoral Research Fellow (Left in April, 1983)
10. Dr R.S. Malhotra,
International Trials Officer
11. Dr M.V. Murinda,
Post Doctoral Research Fellow (Left in December, 1984)
12. Dr Mohamed El-sharbini,
Post Doctoral Research Fellow (Joined in June, 1983)
13. Dr Said N. Silim,
Post Doctoral Research Fellow (Joined in January, 1985)

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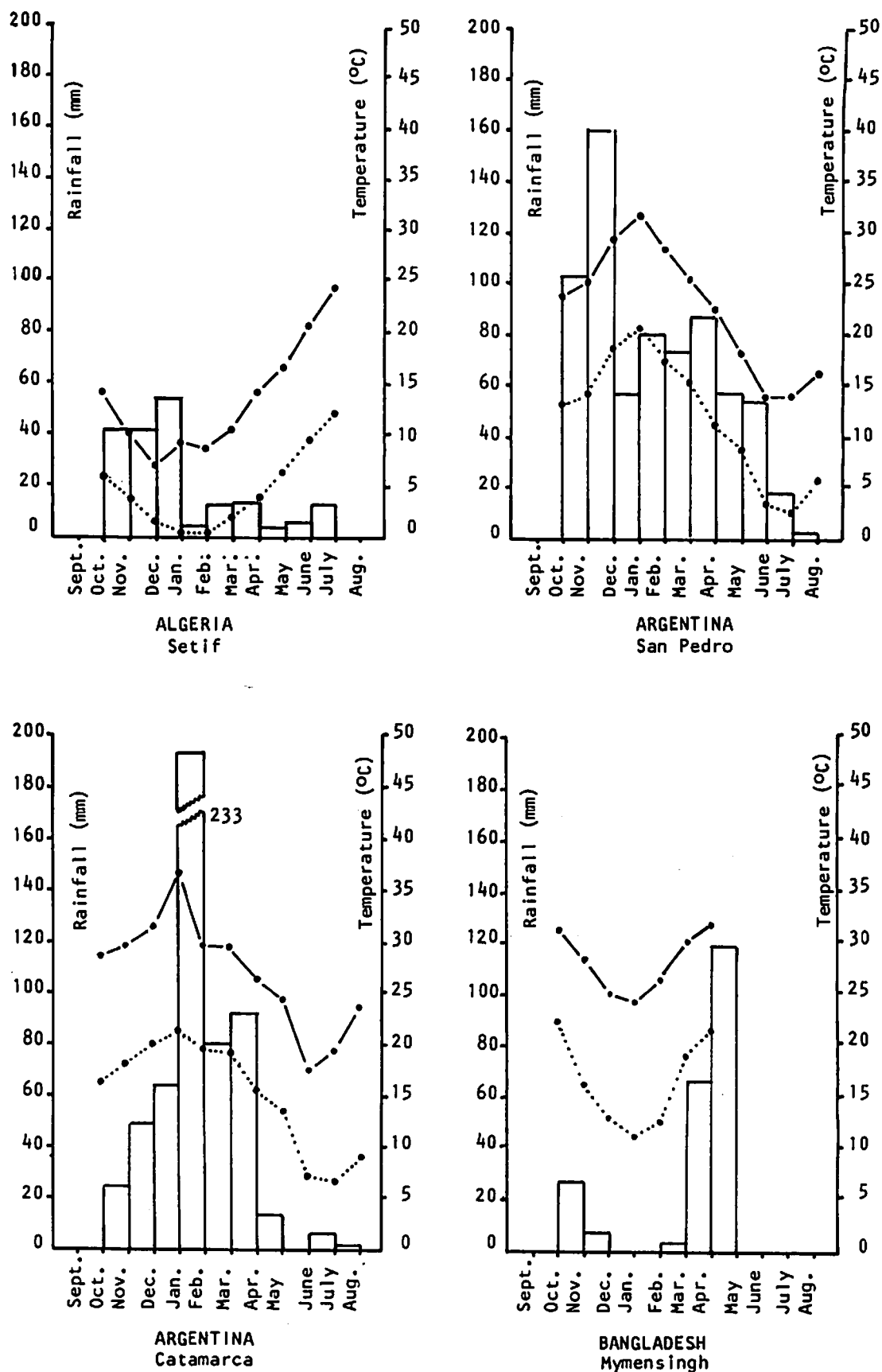


Figure 1. Monthly temperature (°C) and rainfall (mm) data for the 1982/83 cropping season for different locations.

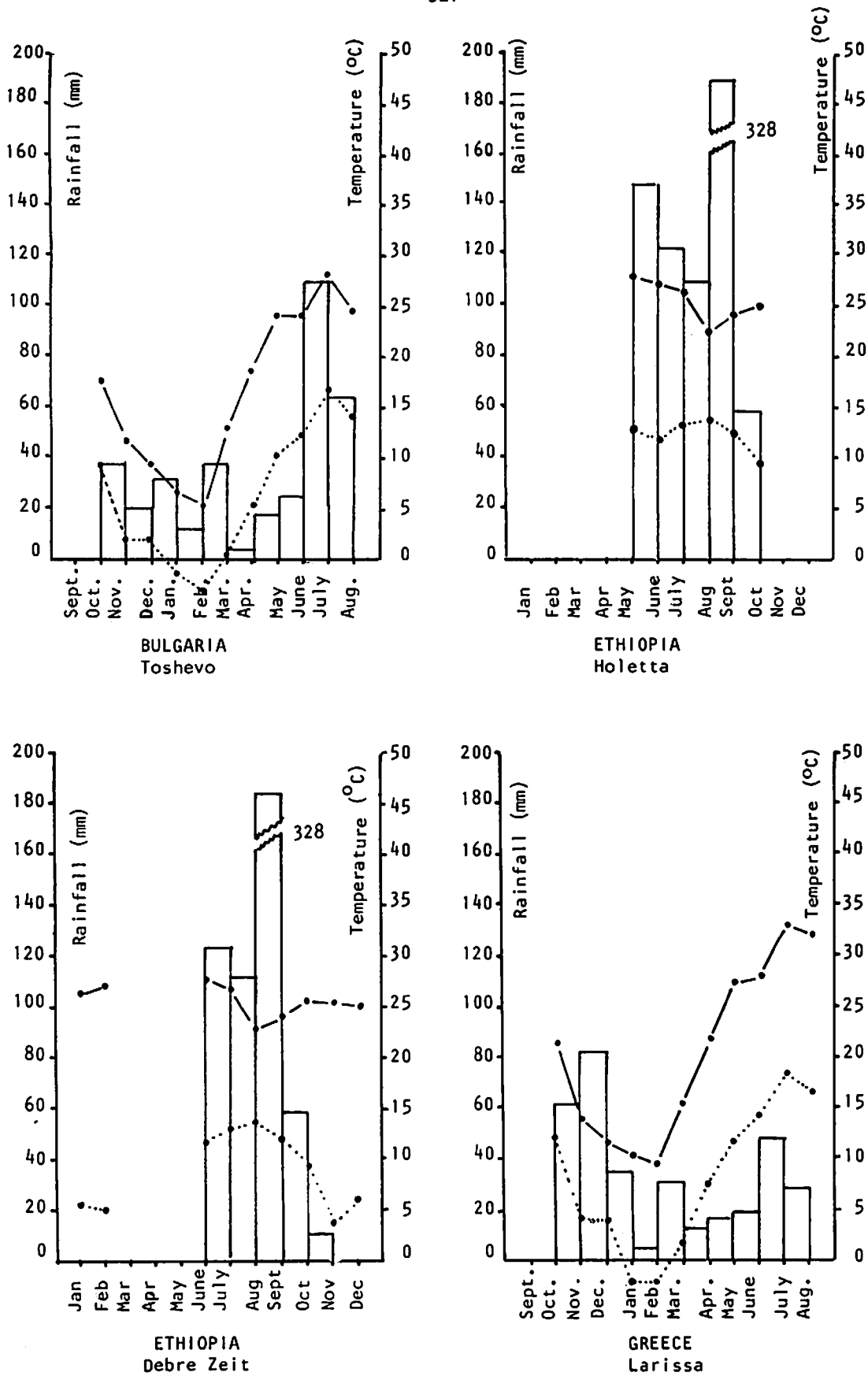


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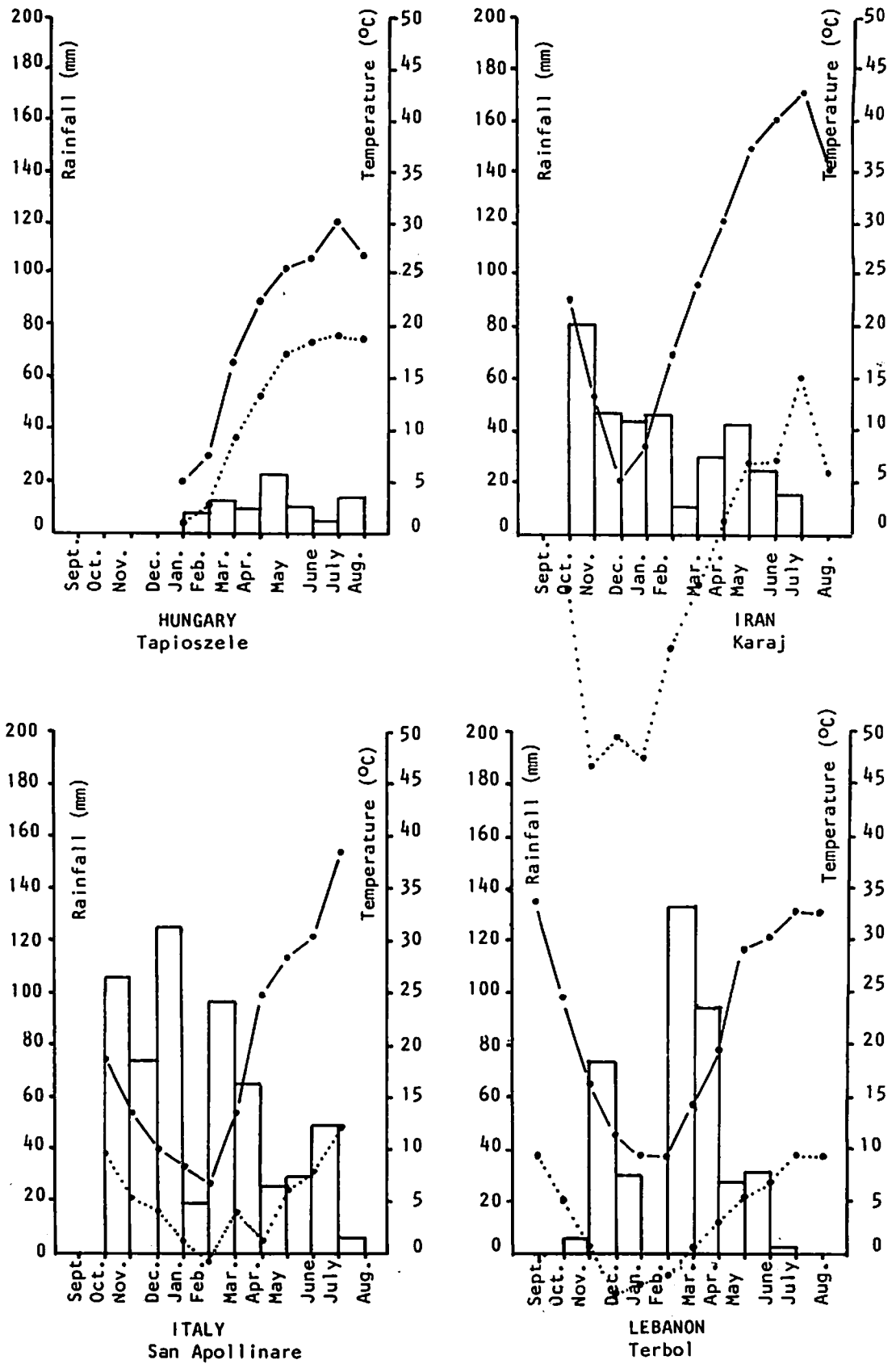


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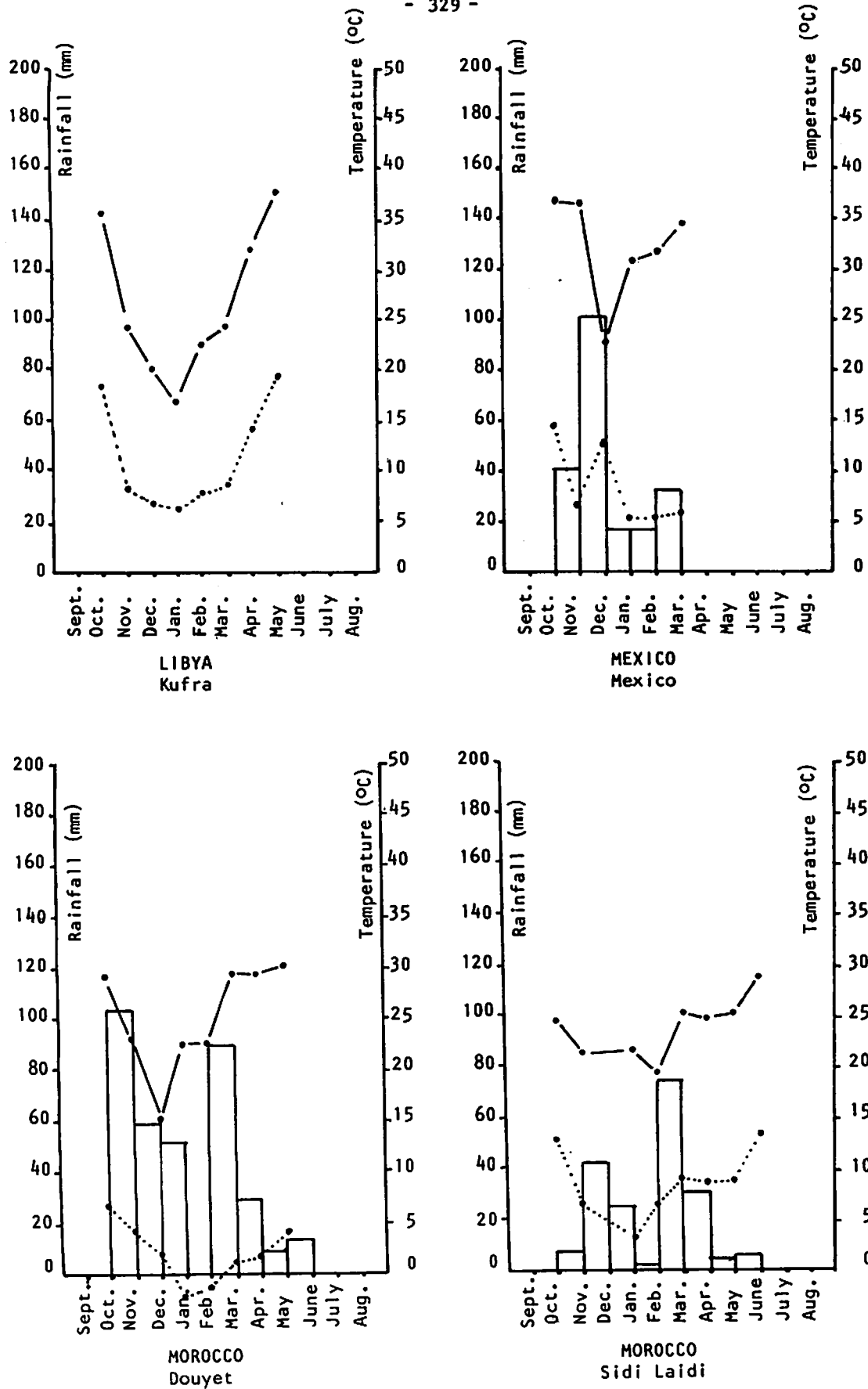


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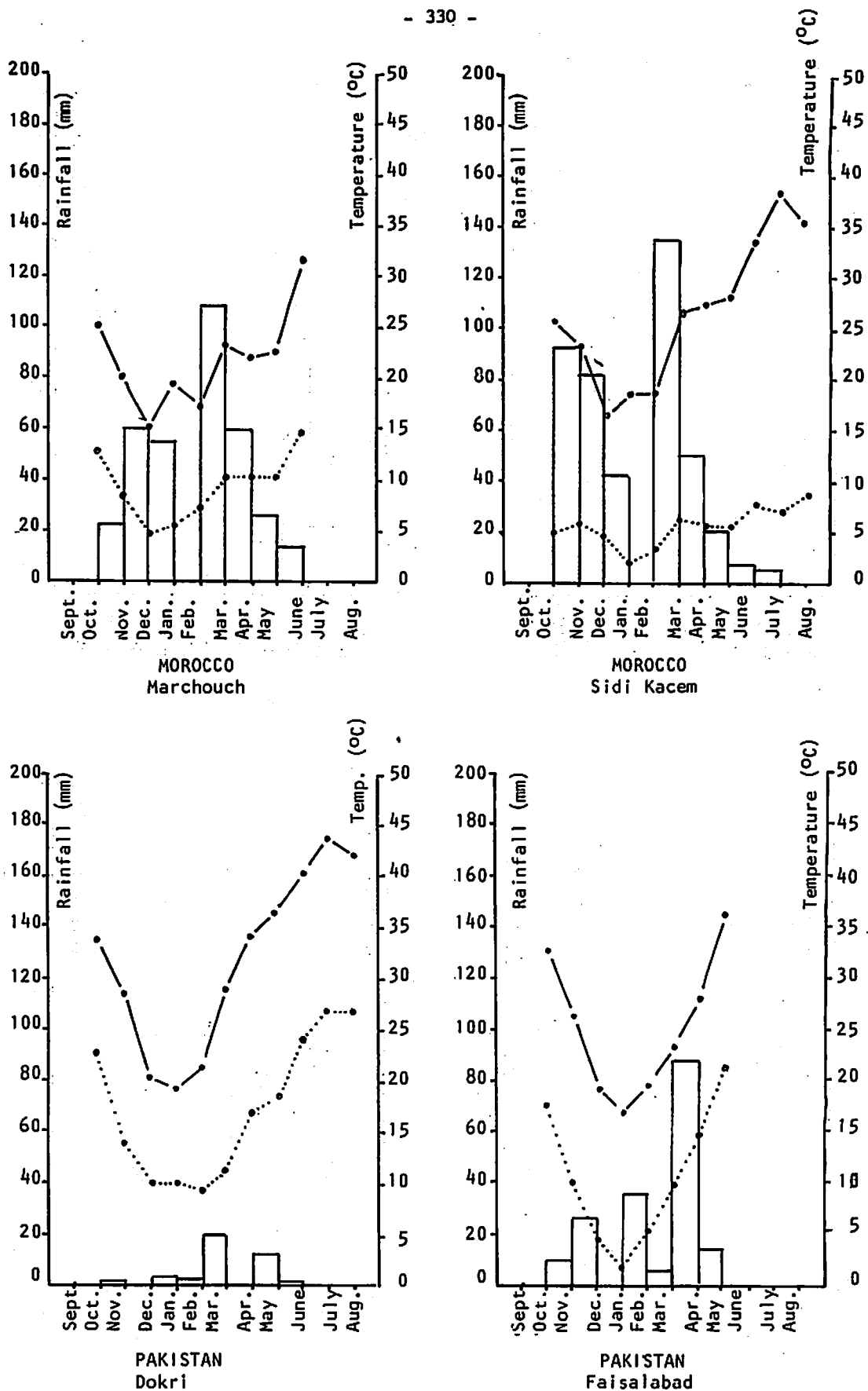


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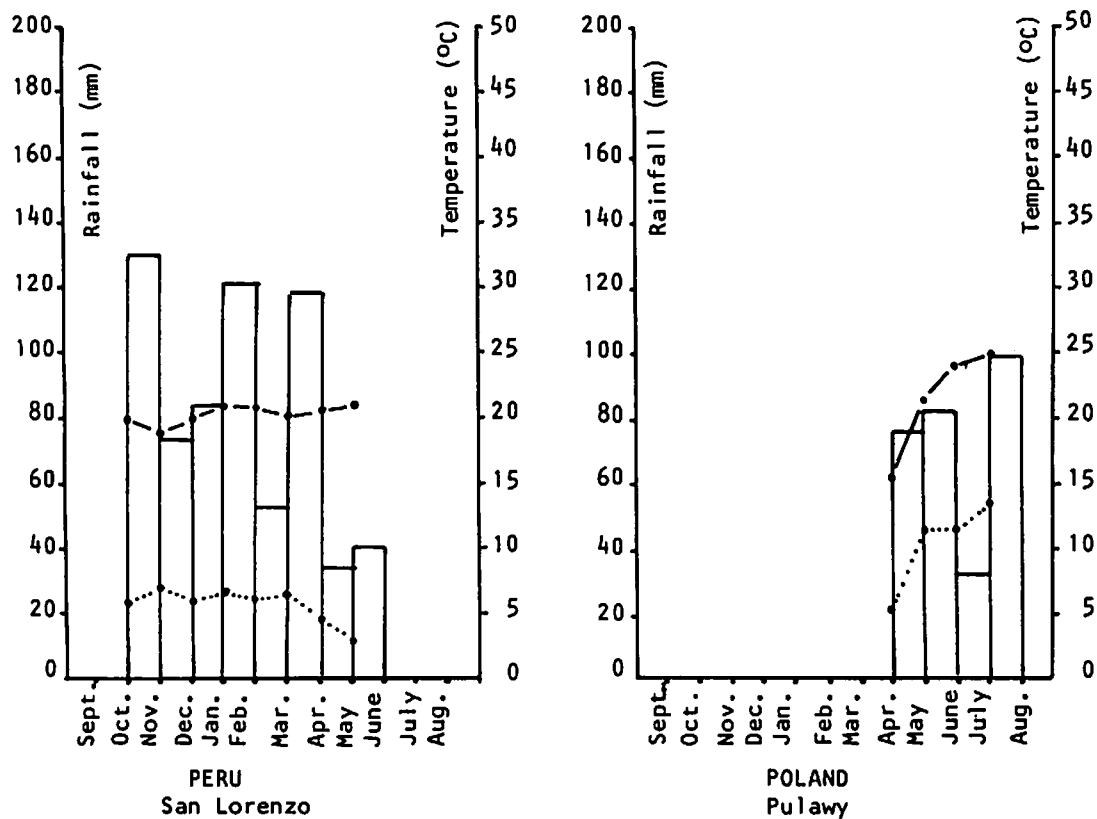
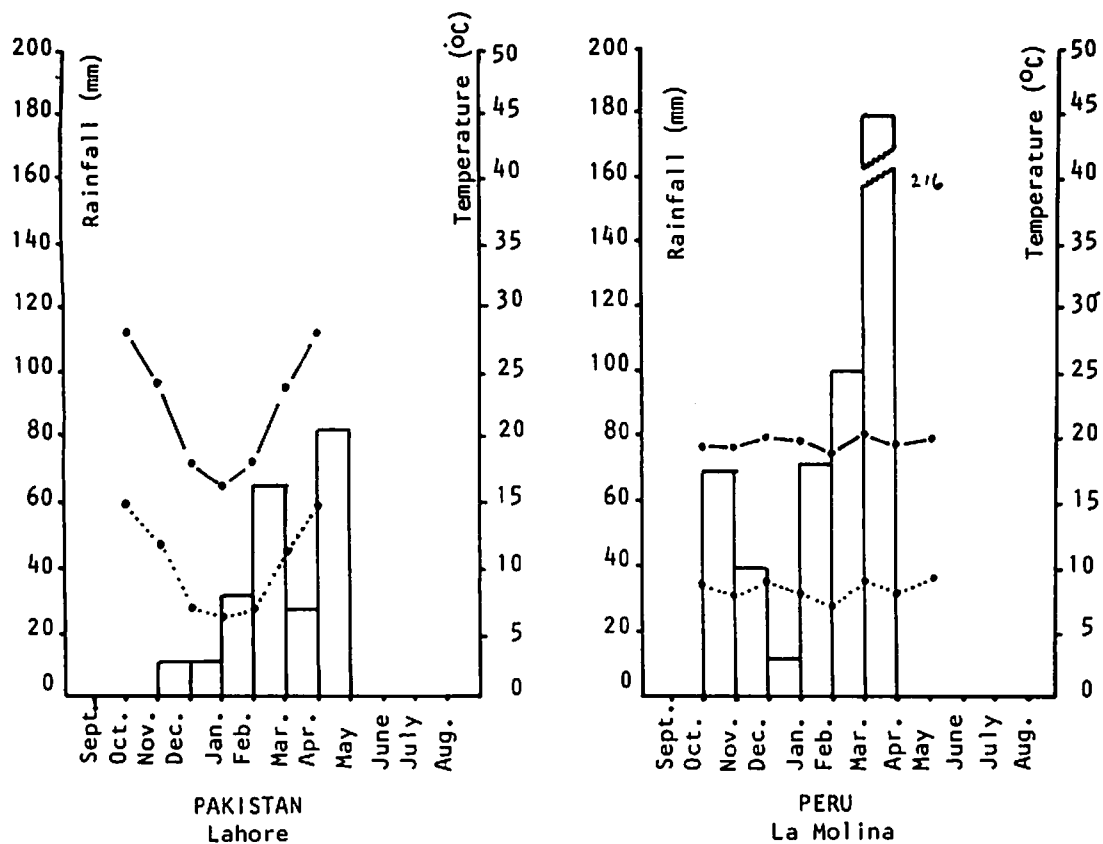


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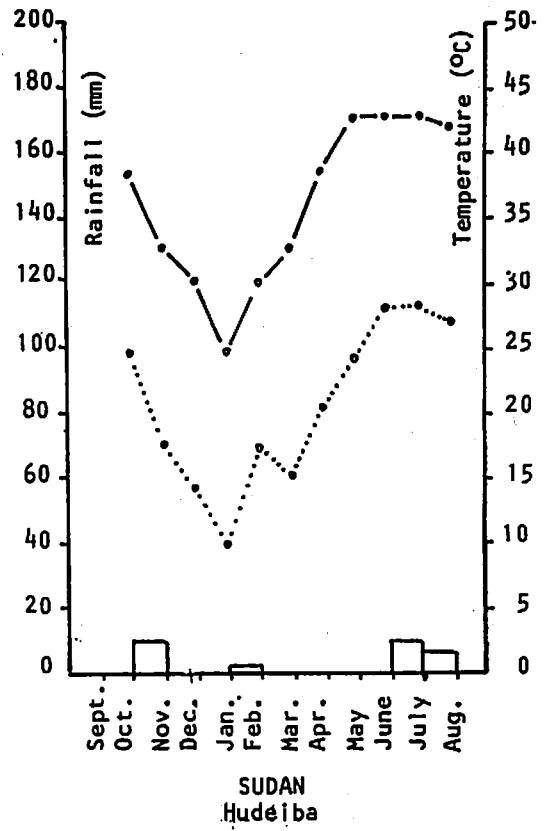
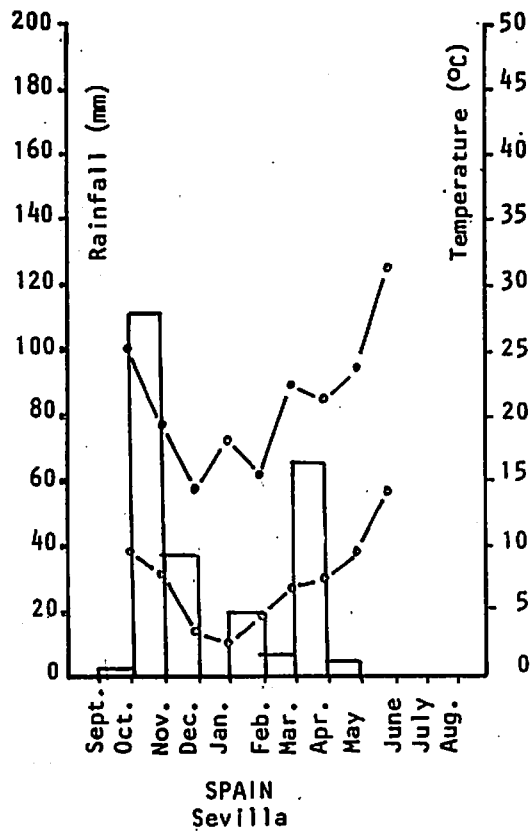
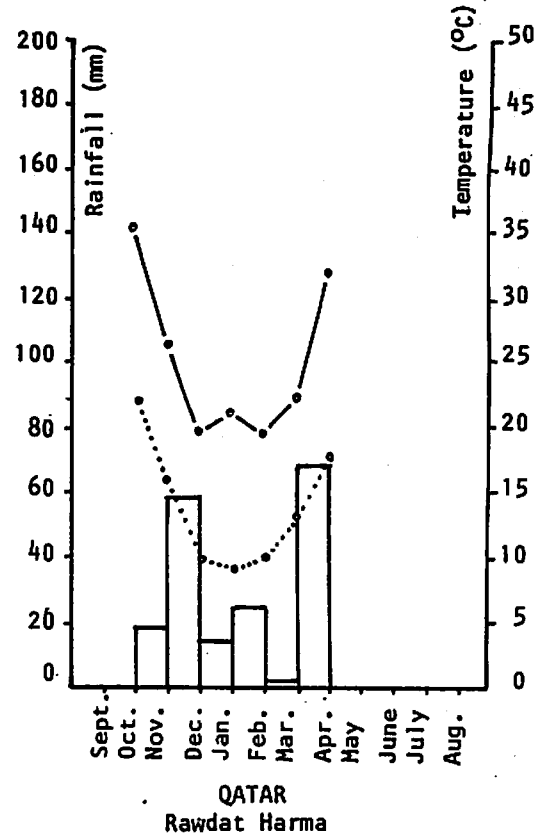
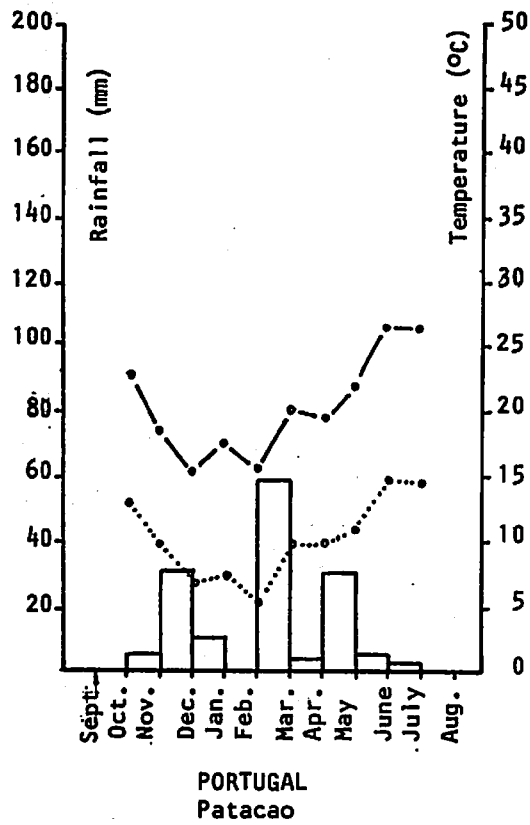


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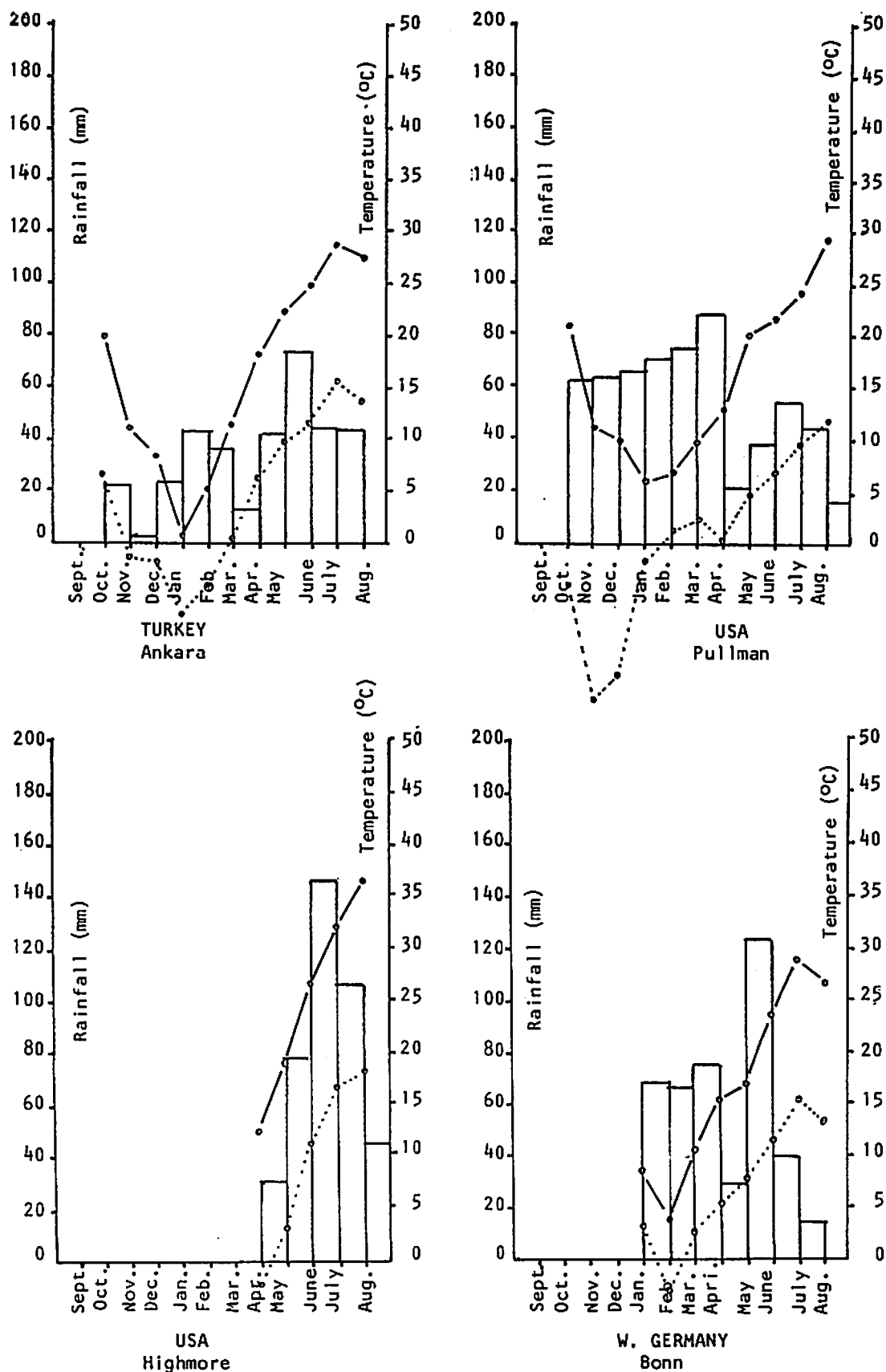


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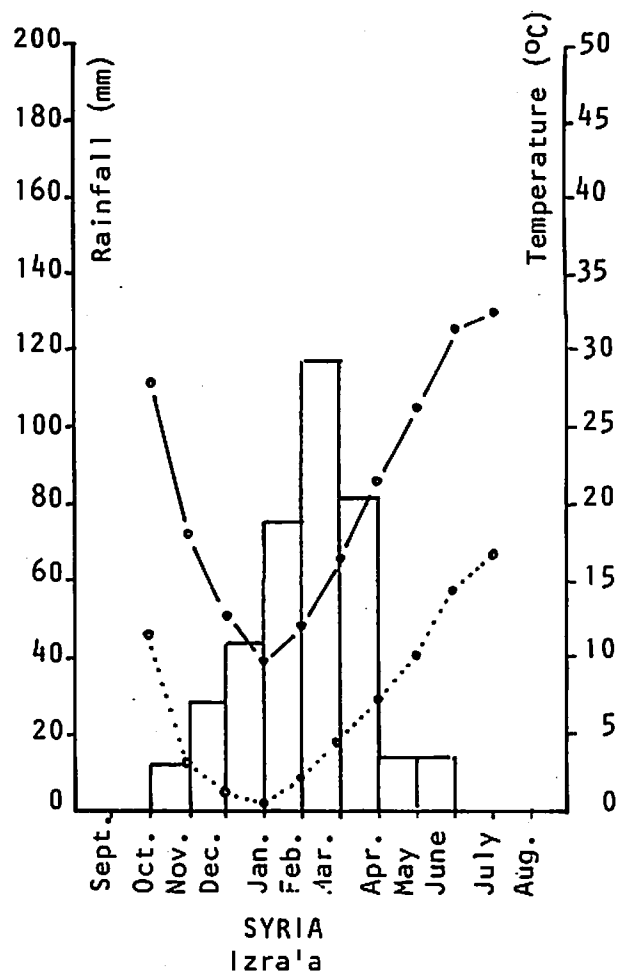
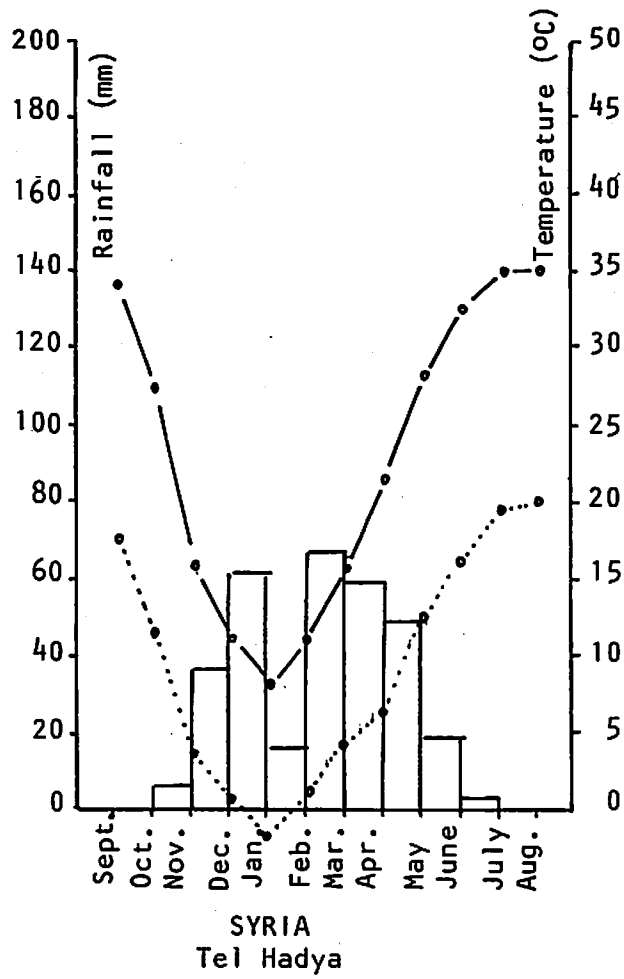


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