INTERNATIONAL NURSERY REPORT NO. 17

LEGUME NURSERIES

1992/93

INTERNATIONAL CENTER FOR AGRICULTURAL
RESEARCH IN THE DRY AREAS

About ICARDA and the CGIAR

Established in 1977, the International Center for Agricultural Research in the Dry Areas (ICARDA) is governed by an independent Board of Trustees. Based at Aleppo, Syria, it is one of 16 centers supported by the Consultative Group on International Agricultural Research (CGIAR).

ICARDA serves the entire developing world for the improvement of lentil, barley and faba bean; all dry-area developing countries for the improvement of on-farm water-use efficiency, rangeland and small-ruminant production; and the West and Central Asia and North Africa region for the improvement of bread and durum wheats, chickpea, and farming systems. ICARDA's research provides global benefits of poverty alleviation through productivity improvements integrated with sustainable natural-resource management practices. ICARDA meets this challenge through research, training, and dissemination of information in partnership with the national agricultural research and development systems.

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

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International Nursery Report No. 17

Legume Nurseries 1992/93

Germplasm Program

International Center for Agricultural Research in the Dry Areas
(ICARDA)

P. O. Box 5466, Aleppo, Syria

December 1997

PREFACE

A number of trials and nurseries were supplied by the Erstwhile, Legume Improvement Program to cooperating scientists within and outside the ICARDA region for the 1992/93 growing season. Many of these were also grown at ICARDA sites in Syria and Lebanon. This report summarizes the data obtained at ICARDA sites from these trials and nurseries and those returned by the cooperating scientists.

The report has been prepared by Dr. R.S. Malhotra, International Trials Scientist (Legumes). The assistance of Ms. Suhaila Arslan and Mr. Samir Hajjar in computerization of data is sincerely acknowledged.

Our thanks are due to all the donors of ICARDA for making this cooperative research effort possible. We are grateful to the cooperators from different national programs for conducting the experiments and returning the data books.

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

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INTRODUCTION

The International Cooperative Testing Program on Legumes namely faba bean, lentil, kabuli chickpea, peas and forage legumes is coordinated by the International Center for Agricultural Research in the Dry Areas (ICARDA). The main objective of the program is to provide the improved genetic materials and production practices to the national programs for testing and use under their local conditions.

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

2. INTERNATIONAL TRIALS AND NURSERIES FOR THE 1992/93 SEASON

2.1. DESCRIPTION

2.1.1. INTERNATIONAL YIELD TRIALS (IYT)

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

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

As in the past there were separate large-seeded and small seeded trials of lentil. The large seeded yield trials comprised entries with a minimum seed size 4.5 g/100 seeds. To satisfy the need of cooperators in southern latitudes in South Asia and Africa a Lentil International Yield Trial - Early was distributed.

As in the past there were two chickpea trials for southern latitudes, CIYT-SL1 (Southerly Latitude-1) for the subtropical regions and CIYT-SL2 (Southerly Latitude-2) having extra early and another trial, CIYT-LA (Latin American) having extra large seed (greater than 45 g/100 seeds) for the Latin American countries. For the Mediterranean region, the two trials, namely CIYT-SP and CIYT-W-MR, continued. The seed size in these trials was upgraded and is in the range of 35 to 45g/100 seeds and many entries have tall stature. Most of the entries included in the yield trials possess resistance to Ascochyta blight and cold except those included in CIYT-LA and CIYT-SL2. A trial on peas with improved cultivars from different parts of world was supplied to cooperators to observe their adaptation under their local conditions.

Two new trials on forage legumes, International Lathyrus Adaptation Trial (ILAT) and International Vetch Adaptation Trial (IVAT), which were added last season were also supplied to a large number of cooperators this season.

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

2.1.2. INTERNATIONAL SCREENING NURSERIES (ISN)

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

As with the IYT's, Lentil International Screening Nurseries were divided into large and small seeded types. There was also a screening nursery of early lentil lines (LISN-E) available particularly for those countries of a more southern latitude in South Asia and Africa and a nursery of lentil with tall and erect growth habit (LISN-T) which can be harvested with a cutter-bar. Two Chickpea International Screening Nurseries, southerly latitudes -1 (CISN-SL1) for subtropical countries and southerly latitudes -2 (CISN-SL2) for more southerly latitudes with short season were supplied. Another nursery of extra large seed size for Latin America (CISN-LA), which was initiated last year, was also available. Based on winter (W) and spring (S) seasons, the Chickpea International Screening Nursery (CISN) for the Mediterranean Region was divided into two, CISN-W and CISN-SP.

In view of the reduction in the emphasis on faba bean research, at ICARDA headquarters, the faba bean nurseries were dropped this season.

Cooperators who wished to enter material into an ISN were requested to send to ICARDA for each entry approximately 1000 seeds of lentil and chickpea for increase and inclusion in the next year's nursery.

2.1.3. INTERNATIONAL F_4/F_5 NURSERIES (IF_4/F_5N)

Genotypes tested in the IYTs and in the ISNs tend to be relatively advanced breeding material that are approaching homozygosity, so nullifying any chances for re-selection in superior performing genotypes. In contrast, the F_4 bulk nurseries comprise early generation segregating material, thus permitting breeders in the national programs to practice their own selection in the populations best adapted to the local environment.

The F_4 nurseries in chickpeas were split into two nurseries, Chickpea International F_4 Nursery - Mediterranean Region (CIF_4N-MR) and Chickpea International F_4 Nursery - Southern Latitudes (CIF_4N-SL). Similarly in lentils, four F_5 nurseries, namely F_5 Nursery Large Seed (LIF_5N-L), F_5 Nursery Small Seed

(LIF_5N-S), F_5 Nursery Early Type (LIF_5N-E) and F_5 Nursery Cold Tolerance (LIF_5N-CT) were available this year.

2.1.4. INTERNATIONAL STRESS NURSERIES (I-N)

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

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

2.2. DISTRIBUTION

The list of the trials and nurseries distributed from ICARDA to the different countries; list of legume scientists in the national programs and at ICARDA cooperating in international testing program; and details of latitude, longitude, and altitude and rainfall data of the locations at which the trials were conducted are given in appendices I, II, III and IV, respectively. Weather conditions during the cropping season for the locations reporting data are given in Figures as Appendix V. In total, 1060 sets of trials were distributed to the cooperators in 50 countries. Data were returned for 440 trials and nurseries, representing 42.0% of the total distributed nurseries.

2.3. DESIGN, ANALYSIS AND MANAGEMENT

2.3.1. DESIGN AND ANALYSIS

The design used for the individual trials and nurseries are given in the crop reports.

The data on seed yield, time to flowering, time to maturity, plant height and 100-seed weight have been analyzed statistically, and the term

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

2.3.2. MANAGEMENT

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

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

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

3. CHICKPEA INTERNATIONAL TRIALS AND NURSERIES

Seventeen chickpea international trials and nurseries were available to the cooperators in 1992/93 season. These included yield trials, screening nurseries, segregating populations, and stress nurseries including disease, insect-pest, and cold tolerance nurseries. All nurseries and trials are discussed in this section. Cooperators were free to use these materials directly or indirectly for the improvement of chickpea in their own national programs.

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

Material

The material for Chickpea International Yield Trial - Spring comprised 23 test entries and one local check to be supplied by the cooperator. Twenty two of the test entries were the advanced breeding lines developed through hybridization at ICARDA and one (ILC 482 long term check) originated from Turkey. These entries were selected on the basis of their superior performance either in international, regional, or local trials.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was 4 rows, each 4 m long. Forty six sets were sent to cooperators in 19 countries. The results were, however, received for 30 trials from 13 countries. The agronomic information received from the cooperators is given in Table 3.1.1.

Results and Discussion

On an average over locations, the entry means ranged from 61 to 72 days for time to flowering (Table 3.1.2), 105 to 111 days for time to maturity (Table 3.1.3), and 34 to 45 cm for plant height (Table 3.1.4). The overall mean for the entries for 100-seed weight, varied from 25 to 39 g, and the entries FLIP 88-7C, FLIP 88-11C, FLIP 89-118C, and FLIP 90-136C had the largest seed size (Table 3.1.5). The location means for 100-seed weight varied from 28 g for Tel Hadya in Syria to 42 g for Papiano in Italy.

The highest mean seed yield in spring sowing (Table 3.1.6) was obtained at Tolentino in Italy (3495 kg/ha) and was followed by Sousse in Tunisia (3062 kg/ha), Papiano in Italy (2977 kg/ha), and Toshevo in Bulgaria (2958 kg/ha), Khroub in Algeria (2882 kg/ha), and Mashhad in Iran (2712 kg/ha), respectively. On an average over locations FLIP 89-67C gave the highest seed yield (1894 kg/ha) and was closely followed by FLIP 90-64C, FLIP 90-37C, FLIP 89-85C and FLIP 90-79C with seed yields of 1862, 1782, 1754 and 1753 kg/ha, respectively.

The ANOVA for seed yield for locations sown in spring revealed that the local check was excelled by 6, 2, 2, 1, 2, 3, 14, 16, 1, 2, and 3 entries by a significant margin at Khroub and Oued-Smar in Algeria; Toshevo in Bulgaria; Mashhad and Shiraz in Iran; Paoiano and Tolentino in Italy; Jimah in Oman; Amasya, Erzurum and Menemen in Turkey. The five heaviest seed yielders at each location are given in Table 3.1.7. Some of the lines including, FLIP 90-64C, FLIP 89-67C, FLIP 88-70C occurred most frequently among the top five heaviest yielding lines and were thus most adaptable across locations.

Table 3.1.1. Agronomic details for CIYT-SP-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Afghanistan	Jalalabad	16.02.93	18.06.93	-	-	-	-	-	Herati
Algeria	Khroub	24.01.93	06.07.93	17	46	-	-	Igran + Kerb	ILC 3279
Algeria	Oued-Smar	08.03.93	12.07.93	-	200	-	-	Igran	Rabat 9
Bulgaria	Toshevo	20.04.93	13.08.93	-	60	-	-	Galant E150	Stepnoy-1
Greece	Thessaloniki	15.03.93	28.06.93	-	30	-	1	-	Gravia (M-10768)
India+	Navsari	04.12.92	06.04.93	20	40	-	5	Endosalfan, Monocrotophos	ICCC-4
Iran	Karaj-1	10.04.93	18.08.93	24	72	-	6	Treflan, Metasystox, Sevin	12-60-31
Iran	Karaj-2	-	-	-	-	-	-	-	-
Iran	Maragheh	12.04.93	28.08.93	45	50	-	-	Tecto, Actellic	Jam
Iran	Mashhad	11.04.93	10.08.93	27	72	-	6	Sevin	Jam
Iran	Shiraz	14.04.94	22.07.94	27	69	-	-	-	Kaorosh
Italy	Papiano	12.03.93	29.06.93	-	80	-	-	Linuron	-
Italy	Tolentino	11.03.93	21.07.93	-	-	-	1	-	Calia
Lebanon	Terbol	01.04.93	14.07.93	-	50	-	-	Igran + Kerb	Lebanese Local
Oman+	Jimmah	21.10.92	20.02.93	20	100	-	200 mm/18	Revoral, Kafil, Semocid	ILC 237
Spain+	Badajoz	11.11.92	12.07.93	-	-	-	-	Terbutrex, Igran, Kerb	Castuo
Syria	Gelline	02.03.93	12.06.93	20	50	-	-	-	Syrian Local
Syria	Hama	01.03.93	22.06.93	-	50	-	-	-	Syrian Local
Syria	Heimo	07.04.93	13.07.93	-	50	-	-	-	Syrian Local
Syria	Idleb	17.03.93	26.06.93	40	60	-	-	-	Syrian Local
Syria	Izra'a	22.02.93	10.07.93	-	110	-	-	-	Syrian Local
Syria	Jindiress	01.03.93	24.06.93	-	50	-	-	-	Syrian Local
Syria	Tel Hadya	28.02.93	01.07.93	-	50	-	-	Kerb + Igran	Syrian Local
Tunisia	Sousse	04.03.93	28.06.93	-	-	-	-	-	-
Turkey	Amasya	07.04.93	11.08.93	50	50	-	-	-	Damla 89 (F.85-7C)
Turkey+	Antalya	24.12.92	-	-	-	-	-	-	-
Turkey	Diyarbakir	19.03.93	17.07.93	-	-	-	-	Fusilade	Yerli Nohut
Turkey	Erzurum	20.05.93	24.08.93	30	70	-	-	Tribunil	Erzurum/Türkie
Turkey	Eskisehir	13.04.93	20.08.93	30	60	-	-	Igran	Canitez-87
Turkey	Menemen	16.02.93	-	30	60	-	-	Terbutryn	Canitez-87

+ Planted in winter

Table 3.1.2. Time to flowering (days) of entries at different locations in the CIYT-SP during 1992/93.

Entry name	Pedigree	Origin	Afghanistan Jalalabad	Algeria Khroub	Algeria Oued-Smar	Bulgaria Toshevo	Greece Thessa-loniki
FLIP 87-58C	X85TH264/ILC 3777XFLIP 83-46C	ICARDA/ICRISAT	56	90	63	49	105
FLIP 88-7C	X84TH26/FLIP 82-225CXILC 3651	ICARDA/ICRISAT	78	114	76	55	111
FLIP 88-11C	X85TH51/(FLIP 81-293CXILC 165)XILC 482	ICARDA/ICRISAT	79	118	76	55	109
FLIP 88-24C	X85TH214/ILC 2375XFLIP 83-13C	ICARDA/ICRISAT	66	103	71	51	103
FLIP 88-68C	X85TH262/ILC 3777XFLIP 83-13C	ICARDA/ICRISAT	60	97	68	51	106
FLIP 88-70C	X85TH262/ILC 3777XFLIP 83-13C	ICARDA/ICRISAT	63	93	69	49	105
FLIP 89-24C	X87TH271/ILC 136XFLIP 84-18C	ICARDA/ICRISAT	80	118	75	53	104
FLIP 89-67C	X86TH78/ILC 493XFLIP 81-65C	ICARDA/ICRISAT	74	106	72	51	108
FLIP 89-85C	X87TH186/ICC 14198XFLIP 82-150C	ICARDA/ICRISAT	60	94	68	48	103
FLIP 89-118C	X85TH262/ILC 3777XFLIP 83-13C	ICARDA/ICRISAT	69	102	73	51	109
FLIP 89-127C	X87TH4/ILC 482XFLIP 84-79C	ICARDA/ICRISAT	64	98	69	49	106
FLIP 90-5C	X87TH32/FLIP 83-7CXFLIP 84-109C	ICARDA/ICRISAT	75	101	75	52	110
FLIP 90-10C	X85TH67/FLIP 82-65CXFLIP 81-3C	ICARDA/ICRISAT	76	115	75	54	108
FLIP 90-37C	X86TH131/FLIP 84-48CXILC 493	ICARDA/ICRISAT	72	114	75	55	108
FLIP 90-59C	X87TH344/(FLIP 84-48CXILC 3856)XFLIP 84-48C	ICARDA/ICRISAT	63	101	76	51	106
FLIP 90-64C	X86TH34/ILC 1919XFLIP 82-150C	ICARDA/ICRISAT	71	102	72	50	105
FLIP 90-79C	X86TH33/ILC 1919XFLIP 81-65C	ICARDA/ICRISAT	77	113	71	51	104
FLIP 90-97C	X87TH31/FLIP 83-7CXFLIP 84-92C	ICARDA/ICRISAT	76	106	72	54	108
FLIP 90-98C	X87TH31/FLIP 83-7CXFLIP 84-92C	ICARDA/ICRISAT	77	111	73	54	111
FLIP 90-136C	X87TH67/FLIP 82-87CXFLIP 85-46C	ICARDA/ICRISAT	79	116	75	51	104
FLIP 90-137C	X87TH216/ILC 429XFLIP 84-93C	ICARDA/ICRISAT	59	93	70	49	109
FLIP 82-150C	X79TH101/ILC 523XILC 183 (Improved check)	ICARDA/ICRISAT	76	109	75	51	108
ILC 482	(Long term check)	Turkey	69	97	70	51	107
Local check		-	73	115	69	53	109
Location Mean			**71**	**105**	**72**	**52**	**106**
S.E. Of Mean			1.49	one	1.33	0.74	1.30
LSD at .05			4.25	rep	3.78	2.10	3.71
C.V. %			3.66		3.19	2.48	2.12

Cont'd. ...

Table 3.1.2. Cont'd. ...

Entry name	India	Iran					Italy		Lebanon	Oman	Spain	Syria	
	Navsari	Karaj-1	Karaj-2	Mara-gheh	Mash-had	Shiraz	Papiano	Tolen-tino	Terbol	Jimah	Badajoz	Gel-line	Hama
FLIP 87-58C	46	42	60	62	52	42	67	65	50	85	115	59	57
FLIP 88-7C	82	58	77	68	46	54	74	76	62	84	136	71	72
FLIP 88-11C	80	59	72	69	51	51	76	75	62	84	133	66	71
FLIP 88-24C	68	55	62	62	53	46	69	72	56	75	127	58	62
FLIP 88-68C	50	51	63	63	51	49	69	70	54	76	122	57	57
FLIP 88-70C	49	48	59	65	51	41	68	70	52	75	123	57	57
FLIP 89-24C	57	59	68	64	54	49	73	76	57	86	129	63	64
FLIP 89-67C	69	56	65	66	53	47	74	74	56	76	131	67	65
FLIP 89-85C	49	46	59	62	53	43	71	64	53	88	117	57	59
FLIP 89-118C	57	53	67	65	57	48	67	75	56	79	126	57	59
FLIP 89-127C	57	52	60	65	52	46	69	70	54	97	124	57	60
FLIP 90-5C	69	63	75	64	53	56	74	74	58	96	129	65	65
FLIP 90-10C	82	60	75	69	52	53	74	77	64	94	133	76	74
FLIP 90-37C	77	59	70	68	53	49	76	76	62	91	132	70	71
FLIP 90-59C	48	48	62	65	54	43	71	69	54	72	121	61	59
FLIP 90-64C	68	55	71	63	55	47	74	73	57	86	127	65	66
FLIP 90-79C	63	55	72	64	52	46	70	74	56	78	127	63	66
FLIP 90-97C	81	60	74	68	55	55	75	76	59	93	137	73	72
FLIP 90-98C	81	56	76	68	53	50	74	76	62	84	136	67	73
FLIP 90-136	68	57	71	63	53	48	71	75	56	84	128	59	64
FLIP 90-137	50	48	59	65	52	47	68	68	52	79	127	58	57
FLIP 82-150	69	58	71	67	49	50	74	75	58	77	134	65	70
ILC 482	67	54	66	66	54	46	71	72	55	77	129	60	62
Local check	55	57	71	66	54	53	74	73	56	95	130	57	62
Location Mean	**64**	**55**	**68**	**65**	**53**	**48**	**72**	**73**	**57**	**83**	**128**	**63**	**64**
S.E. Of Mean	0.71	1.33	2.47	0.70	1.55	2.75	0.71	0.55	0.31	7.46	1.06	1.70	0.66
LSD at .05	2.02	3.78	6.99	1.99	4.41	7.83	2.01	1.57	0.87	NS	3.03	4.85	1.87
C.V. %	1.91	4.21	6.28	1.85	5.10	9.86	1.71	1.32	0.93	15.42	1.44	4.70	1.77

Cont'd. ...

Table 3.1.2. Cont'd. ...

Entry name	Syria					Tunisia	Turkey					Overall mean (1)
	Heimo	Idleb	Izraa	Jindi-ress	Tel-Hadya	Sousse	Antalya	Diyar-bakir	Erzurum	Eski-sehir	Menemen	
FLIP 87-58C	45	49	77	56	56	68	176	63	46	65	73	61
FLIP 88-7C	55	65	82	76	70	65	177	75	54	71	76	71
FLIP 88-11C	57	66	83	75	70	69	171	77	58	74	76	72
FLIP 88-24C	54	53	75	62	62	69	170	69	46	67	73	65
FLIP 88-68C	49	49	78	60	60	73	179	68	48	69	73	64
FLIP 88-70C	48	49	76	60	59	68	179	65	51	67	73	63
FLIP 89-24C	56	57	81	68	66	74	178	74	47	68	76	69
FLIP 89-67C	56	61	80	70	66	76	178	71	51	70	76	68
FLIP 89-85C	45	50	73	58	56	71	172	65	49	65	73	62
FLIP 89-118C	50	50	78	60	61	73	176	71	53	71	73	66
FLIP 89-127C	51	52	77	61	62	69	177	68	46	66	73	64
FLIP 90-5C	52	57	81	65	66	68	177	70	49	70	74	68
FLIP 90-10C	58	68	83	74	69	73	179	75	55	72	75	72
FLIP 90-37C	56	63	82	73	70	69	178	75	56	70	76	71
FLIP 90-59C	48	52	81	58	58	75	176	67	50	73	74	65
FLIP 90-64C	53	61	80	73	67	69	177	73	46	70	76	68
FLIP 90-79C	54	60	81	72	67	67	178	72	51	67	73	68
FLIP 90-97C	57	65	82	73	70	67	177	75	54	72	76	71
FLIP 90-98C	55	66	85	76	70	68	177	75	55	71	76	71
FLIP 90-136C	55	54	80	64	64	76	172	75	49	65	76	68
FLIP 90-137C	48	49	75	59	59	68	176	63	48	66	73	62
FLIP 82-150C	54	64	81	69	67	67	177	74	52	71	76	69
ILC 482	53	56	78	63	62	67	176	69	49	68	73	65
Local check	57	50	75	61	62	65	180	-	57	69	76	-
Location Mean	**53**	**57**	**79**	**66**	**64**	**70**	**176**	**71**	**50**	**69**	**75**	
S.E. Of Mean	1.18	0.99	0.76	0.82	0.41	2.37	2.17	0.63	1.52	1.21	0.35	
LSD at .05	3.36	2.83	2.16	2.34	1.16	6.75	NS	1.79	4.34	3.46	1.00	
C.V. %	3.88	3.03	1.65	2.15	1.10	5.88	2.13	1.53	5.19	3.04	0.82	

(1) Navsari in India, Jimah in Oman and Antalya in Turkey were planted in winter and were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.1.3. Time to maturity (days) of entries at different locations in the CIYT-SP during 1992/93.

Entry name	Afghanistan	Algeria		Bulgaria	India	Iran					Italy	Lebanon
	Jalalabad	Khroub	Oued-Smar	Toshevo	Navsari	Karaj-1	Karaj-2	Mara-gheh	Mash-had	Shiraz	Papiano	Terbol
FLIP 87-58C	122	150	106	109	99	97	125	95	107	75	98	84
FLIP 88-7C	122	156	111	112	120	98	131	98	111	85	110	95
FLIP 88-11C	120	157	111	113	108	93	129	100	111	88	109	97
FLIP 88-24C	110	152	111	111	112	94	127	96	109	82	106	95
FLIP 88-68C	116	150	106	110	100	99	134	97	111	87	104	87
FLIP 88-70C	118	150	108	110	98	96	128	97	109	78	105	87
FLIP 89-24C	121	158	111	113	109	96	130	95	110	83	110	94
FLIP 89-67C	118	154	111	110	111	93	130	98	109	84	105	91
FLIP 89-85C	120	151	106	110	101	98	130	95	110	79	101	86
FLIP 89-118C	117	159	111	113	104	98	134	100	109	85	106	93
FLIP 89-127C	117	150	108	108	107	100	123	96	105	83	103	87
FLIP 90-5C	115	150	111	110	111	93	133	96	108	87	104	91
FLIP 90-10C	118	154	111	110	121	98	133	100	111	86	112	104
FLIP 90-37C	117	152	111	110	115	94	134	100	109	84	106	96
FLIP 90-59C	121	161	111	113	101	93	126	97	108	81	106	91
FLIP 90-64C	122	156	111	110	109	94	128	97	106	83	106	93
FLIP 90-79C	116	156	111	112	108	96	131	97	111	79	103	88
FLIP 90-97C	115	155	111	111	114	93	134	99	111	85	111	106
FLIP 90-98C	121	157	111	109	119	97	133	98	105	83	110	96
FLIP 90-136C	121	156	111	111	116	94	131	96	111	80	105	90
FLIP 90-137C	121	154	109	111	105	96	131	97	109	81	104	86
FLIP 82-150C	122	151	111	112	112	99	131	97	111	86	107	94
ILC 482	115	150	109	110	109	97	126	96	106	82	104	86
Local check	117	155	111	110	109	98	129	97	108	84	112	87
Location mean	**118**	**154**	**110**	**111**	**109**	**96**	**130**	**97**	**109**	**83**	**106**	**92**
S.E. of mean	0.37	one	0.66	0.68	1.91	1.00	1.97	0.62	1.43	1.64	0.94	0.55
LSD at .05	1.07	rep	1.88	1.93	5.44	2.85	5.61	1.77	4.06	4.68	2.67	1.58
C.V. %	0.55		1.04	1.06	3.04	1.81	2.62	1.10	2.27	3.44	1.53	1.04

Cont'd. ...

Table 3.1.3. cont'd. ...

	Spain	Syria							Tunisia	Turkey		
	Badajoz	Gel-line	Hama	Heimo	Idleb	Izraa	Jindi-ress	Tel-Hadya	Sousse	Diyar-bakir	Erzurum	**Overall mean** (1)
FLIP 87-58C	232	127	104	81	84	127	104	96	108	105	100	105
FLIP 88-7C	235	131	111	86	94	131	109	106	108	106	105	110
FLIP 88-11C	239	131	111	86	93	132	109	107	109	108	100	110
FLIP 88-24C	237	131	110	87	94	127	108	103	109	107	105	108
FLIP 88-68C	237	127	107	86	89	127	104	99	110	106	100	107
FLIP 88-70C	234	127	107	82	85	127	104	99	112	106	100	106
FLIP 89-24C	236	128	111	86	93	131	109	103	113	107	100	110
FLIP 89-67C	235	129	109	85	92	131	108	104	108	106	100	108
FLIP 89-85C	234	127	107	81	85	123	105	98	112	104	96	106
FLIP 89-118C	235	127	110	86	88	127	107	101	112	107	105	109
FLIP 89-127C	232	127	107	83	87	127	105	101	110	104	96	106
FLIP 90-5C	235	129	110	83	89	128	107	103	110	106	100	108
FLIP 90-10C	239	132	111	88	96	128	109	108	112	107	101	111
FLIP 90-37C	235	131	110	86	94	130	107	106	111	106	105	109
FLIP 90-59C	236	127	109	86	87	130	107	104	113	108	105	109
FLIP 90-64C	238	130	109	84	93	126	108	106	113	106	105	109
FLIP 90-79C	237	128	110	84	91	132	108	103	111	106	100	108
FLIP 90-97C	236	132	112	88	95	129	109	108	111	108	105	111
FLIP 90-98C	233	131	111	86	95	134	109	108	109	107	105	110
FLIP 90-136C	238	127	111	85	92	130	107	101	109	106	96	108
FLIP 90-137C	234	127	107	84	85	125	106	100	110	106	105	107
FLIP 82-150C	238	131	110	85	95	131	108	105	110	106	100	110
ILC 482	237	127	108	84	91	126	106	103	107	104	100	107
Local check	237	127	110	87	85	126	106	98	109	-	105	
Location mean	**236**	**129**	**109**	**85**	**90**	**129**	**107**	**103**	**110**	**106**	**102**	
S.E. of mean	0.85	0.60	0.62	0.71	1.21	2.37	0.49	0.69	1.61	0.70	2.74	
LSD at .05	2.41	1.70	1.78	2.03	3.45	NS	1.38	1.97	NS	2.00	NS	
C.V. %	0.62	0.80	0.99	1.45	2.32	3.19	0.79	1.17	2.53	1.15	4.67	

(1) Navsari in India was planted in winter and excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.1.4. Plant height (cm) of entries at different locations in the CIYT-SP during 1992/93.

Entry name	Afghanistan	Algeria		Bulgaria	Greece	India	Iran			
	Jalalabad	Khroub	Oued-Smar	Toshevo	Thessa-loniki	Navsari	Karaj-1	Karaj-2	Mara-gheh	Mash-had
FLIP 87-58C	37	57	43	40	50	56	26	29	33	46
FLIP 88-7C	43	70	43	48	52	62	39	41	36	49
FLIP 88-11C	40	66	49	45	57	48	31	41	36	40
FLIP 88-24C	43	55	38	36	53	44	26	30	33	43
FLIP 88-68C	43	57	44	44	48	49	31	40	33	50
FLIP 88-70C	54	58	46	40	48	56	27	31	32	44
FLIP 89-24C	35	60	44	48	62	47	30	36	31	49
FLIP 89-67C	48	48	43	37	53	56	28	30	32	48
FLIP 89-85C	28	44	39	36	50	52	18	31	29	44
FLIP 89-118C	32	58	45	47	52	48	29	36	32	46
FLIP 89-127C	39	48	41	35	53	53	23	24	32	44
FLIP 90-5C	33	52	40	43	42	48	29	49	32	56
FLIP 90-10C	50	59	48	45	57	46	30	40	33	53
FLIP 90-37C	38	60	44	50	50	54	33	50	32	50
FLIP 90-59C	44	62	43	47	52	74	30	30	36	40
FLIP 90-64C	41	50	40	38	48	51	26	32	32	53
FLIP 90-79C	52	53	40	36	58	54	23	37	34	50
FLIP 90-97C	43	55	44	41	57	60	30	38	32	47
FLIP 90-98C	44	44	40	44	45	61	27	38	27	46
FLIP 90-136C	54	63	43	45	60	51	29	34	31	57
FLIP 90-137C	40	56	41	45	47	53	25	35	30	41
FLIP 82-150C	44	48	43	45	50	52	30	34	35	46
ILC 482	40	48	39	40	50	71	22	27	33	44
Local check	48	70	38	50	55	43	30	35	34	44
Location Mean	**42**	**56**	**42**	**43**	**52**	**54**	**28**	**35**	**33**	**47**
S.E. Of Mean	-	one	1.93	1.88	4.03	1.70	1.74	3.00	1.24	3.88
LSD at .05	-	rep	5.48	5.36	NS	4.82	4.94	8.54	3.53	NS
C.V. %	-		7.90	7.63	13.41	5.46	10.71	14.70	6.60	14.23

Cont'd. ...

Table 3.1.4. cont'd. ...

Entry name	Iran	Italy		Lebanon	Oman	Spain	Syria			
	Shiraz	Papiano	Tolen-tino	Terbol	Jimah	Badajoz	Gelline	Hama	Heimo	Idleb
FLIP 87-58C	34	40	50	48	61	32	28	43	31	31
FLIP 88-7C	47	49	54	50	69	42	41	43	40	42
FLIP 88-11C	43	49	57	49	70	40	37	40	41	45
FLIP 88-24C	37	38	44	44	62	33	28	45	31	28
FLIP 88-68C	36	46	49	47	64	36	30	45	35	38
FLIP 88-70C	31	44	49	45	58	33	29	45	38	35
FLIP 89-24C	38	45	56	48	59	42	33	43	41	35
FLIP 89-67C	34	39	49	47	60	37	29	45	30	33
FLIP 89-85C	32	37	43	41	63	30	25	42	30	27
FLIP 89-118C	37	47	53	49	63	37	33	45	36	38
FLIP 89-127C	33	38	51	43	67	28	28	43	30	32
FLIP 90-5C	44	40	49	48	77	40	36	43	32	40
FLIP 90-10C	39	46	56	47	72	42	32	43	38	37
FLIP 90-37C	42	45	53	50	77	41	37	43	38	44
FLIP 90-59C	37	46	53	46	66	38	32	43	44	40
FLIP 90-64C	34	37	46	40	55	36	27	45	34	33
FLIP 90-79C	33	39	48	43	66	38	26	42	32	27
FLIP 90-97C	38	46	51	47	60	37	32	45	31	39
FLIP 90-98C	38	42	47	43	53	32	28	43	31	36
FLIP 90-136C	37	42	50	48	63	39	25	45	40	38
FLIP 90-137C	35	44	47	44	60	29	28	45	34	30
FLIP 82-150C	38	46	51	46	68	36	31	43	36	42
ILC 482	36	38	48	43	62	37	31	40	33	35
Local check	39	46	-	42	68	40	28	37	32	26
Location Mean	**37**	**43**	**50**	**46**	**64**	**36**	**31**	**43**	**35**	**35**
S.E. Of Mean	1.81	1.85	2.24	1.56	5.29	1.64	1.58	1.19	2.05	2.26
LSD at .05	5.16	5.26	6.40	4.44	NS	4.66	4.49	3.39	5.84	6.43
C.V. %	8.42	7.47	7.75	5.93	14.26	7.77	8.93	4.76	10.17	11.02

Cont'd. ...

Table 3.1.4. cont'd. ...

Entry name	Syria			Tunisia	Turkey				Overall mean (1)
	Izraa	Jindi-ress	Tel-Hadya	Sousse	Amasya	Diyar-bakir	Erzurum	Eskisehir	
FLIP 87-58C	33	35	27	36	47	32	37	24	38
FLIP 88-7C	38	45	37	34	56	42	43	33	45
FLIP 88-11C	35	42	34	33	51	41	44	29	43
FLIP 88-24C	30	36	28	35	51	34	35	21	37
FLIP 88-68C	32	37	30	40	51	37	37	26	40
FLIP 88-70C	31	39	30	44	50	36	35	26	39
FLIP 89-24C	35	43	31	45	57	43	43	26	42
FLIP 89-67C	31	35	26	44	44	36	35	23	38
FLIP 89-85C	27	35	24	37	43	33	36	21	34
FLIP 89-118C	35	43	30	39	50	41	37	30	41
FLIP 89-127C	33	33	26	36	43	32	34	22	36
FLIP 90-5C	33	42	31	37	49	41	36	26	40
FLIP 90-10C	37	42	31	40	53	40	39	30	42
FLIP 90-37C	37	45	34	35	53	39	40	28	43
FLIP 90-59C	35	42	34	40	54	40	40	28	42
FLIP 90-64C	32	37	30	43	49	35	37	24	38
FLIP 90-79C	31	37	27	37	47	37	40	25	38
FLIP 90-97C	33	39	30	38	51	37	33	27	40
FLIP 90-98C	34	37	30	35	46	34	34	23	38
FLIP 90-136C	31	42	31	40	54	38	46	27	42
FLIP 90-137C	30	35	26	34	49	34	37	25	37
FLIP 82-150C	31	35	31	32	47	40	41	27	40
ILC 482	28	33	27	32	42	33	37	23	36
Local check	28	35	24	34	50	-	37	27	
Location Mean	**32**	**38**	**30**	**37**	**49**	**37**	**38**	**26**	
S.E. Of Mean	1.89	1.19	0.96	3.25	2.03	1.84	2.22	1.05	
LSD at .05	5.37	3.39	2.73	NS	5.78	5.24	6.33	2.99	
C.V. %	10.07	5.36	5.64	15.05	7.12	8.58	10.13	7.06	

(1) Navsari in India and Jimah in Oman were planted in winter and excluded from the overall mean.
NS = Not significant at $P \leq 0.05$.

Table 3.1.5. 100-seed weight (g) of entries at different locations in the CIYT-SP during 1992/93.

Entry name	Algeria	Bulgaria	Greece	India	Iran				Italy		Lebanon
	Oued-Smar	Toshevo	Thessa-loniki	Navsari	Karaj-1	Karaj-2	Mara-gheh	Shiraz	Papiano	Tolen-tino	Terbol
FLIP 87-58C	36	40	30	38	36	32	40	34	42	39	34
FLIP 88-7C	45	51	36	40	39	36	45	40	54	44	42
FLIP 88-11C	46	45	34	39	39	35	44	39	52	46	42
FLIP 88-24C	36	42	28	40	32	30	36	34	40	36	31
FLIP 88-68C	39	43	31	37	33	29	39	31	42	40	32
FLIP 88-70C	33	42	29	36	32	29	39	31	40	38	31
FLIP 89-24C	40	44	31	38	34	35	39	35	47	43	36
FLIP 89-67C	33	39	30	31	27	29	34	33	38	32	29
FLIP 89-85C	28	32	22	25	24	27	30	24	31	32	24
FLIP 89-118C	39	48	35	39	40	32	44	38	45	42	36
FLIP 89-127C	34	37	26	35	30	26	35	27	37	35	28
FLIP 90-5C	32	39	25	25	28	29	32	26	38	32	25
FLIP 90-10C	42	45	30	40	36	33	43	32	53	43	38
FLIP 90-37C	36	35	26	35	28	28	34	32	41	37	31
FLIP 90-59C	38	38	31	30	34	31	39	39	44	42	34
FLIP 90-64C	29	33	22	24	24	21	28	23	30	30	23
FLIP 90-79C	37	43	32	34	31	28	34	29	42	40	30
FLIP 90-97C	38	39	28	35	33	31	38	32	43	36	33
FLIP 90-98C	39	42	28	41	34	30	39	32	46	38	33
FLIP 90-136C	44	47	32	28	34	31	44	39	51	45	38
FLIP 90-137C	38	43	30	25	36	31	42	36	43	40	36
FLIP 82-150C	30	34	26	30	24	22	29	22	32	30	25
ILC 482	31	34	24	30	26	23	33	28	35	33	26
Local check	41	31	34	14	28	28	35	31	39	-	28
Location Mean	**37**	**40**	**29**	**33**	**32**	**29**	**37**	**32**	**42**	**38**	**32**
S.E. Of Mean	1.42	1.24	1.72	0.49	1.12	1.24	0.75	1.90	1.06	1.04	0.61
LSD at .05	3.53	3.52	4.89	1.38	3.19	3.52	2.14	5.41	3.02	2.97	1.72
C.V. %	5.84	5.31	10.22	2.56	6.12	7.30	3.49	10.30	4.39	4.77	3.29

Cont'd. ...

Table 3.1.5. cont'd. ...

Entry name	Spain	Syria				Tunisia	Turkey				
	Badajoz	Gelline	Heimo	Jindi-ress	Tel-Hadya	Sousse	Amasya	Antalya	Diyar-bakir	Erzurum	**Overall mean** (1)
FLIP 87-58C	37	31	31	29	31	34	40	30	41	33	34
FLIP 88-7C	41	39	36	34	35	29	47	41	47	38	39
FLIP 88-11C	41	44	36	34	33	30	46	27	50	37	39
FLIP 88-24C	37	32	31	28	27	26	41	33	40	33	32
FLIP 88-68C	39	32	31	27	30	32	43	38	42	35	33
FLIP 88-70C	41	31	31	27	29	40	38	38	41	33	32
FLIP 89-24C	36	34	31	31	29	38	43	38	42	35	35
FLIP 89-67C	31	30	28	27	26	32	36	29	38	32	30
FLIP 89-85C	31	27	25	23	23	35	34	36	30	26	26
FLIP 89-118C	44	33	37	33	34	34	47	40	46	35	37
FLIP 89-127C	35	30	30	25	26	31	34	35	35	30	29
FLIP 90-5C	31	26	28	23	22	33	33	35	36	31	28
FLIP 90-10C	42	37	32	29	26	39	43	37	47	36	36
FLIP 90-37C	33	30	31	28	25	38	36	38	41	32	31
FLIP 90-59C	36	38	35	34	32	34	42	33	44	36	35
FLIP 90-64C	29	22	24	22	21	33	33	36	31	24	25
FLIP 90-79C	38	30	28	29	25	38	39	38	40	33	32
FLIP 90-97C	34	32	29	30	25	31	39	41	43	32	32
FLIP 90-98C	34	34	31	30	25	37	37	.39	44	34	33
FLIP 90-136C	42	35	36	36	32	30	45	42	47	37	37
FLIP 90-137C	36	36	36	29	33	31	42	38	44	35	35
FLIP 82-150C	29	28	23	24	23	35	32	34	32	25	26
ILC 482	30	26	28	22	24	34	33	35	35	27	27
Local check	30	30	25	34	29	37	47	38	55	-	
Location Mean	**36**	**32**	**31**	**29**	**28**	**34**	**40**	**36**	**41**	**33**	
S.E. Of Mean	1.14	One	0.45	1.06	0.50	3.11	1.12	2.69	0.91	0.841	
LSD at .05	3.24	rep	1.28	3.01	1.43	NS	3.17	7.65	2.59	2.41	
C.V. %	5.51		2.56	6.39	3.14	15.93	4.87	12.84	3.83	4.49	

(1) Navsari in India and Antalya in Turkey were planted in winter and excluded from the overall mean.
NS = Not significant at $P \leq 0.05$.

Table 3.1.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-SP during 1992/93.

Entry name	Afghanistan		Algeria				Bulgaria		Greece		India		Iran			
	Jalalabad		Khroub		Oued-Smar		Toshevo		Thessaloniki		Navsari		Karaj-1		Karaj-2	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-58C	129	21	2859	13	1612	17	2667	18	2571	5	1238	7	1552	11	1016	21
FLIP 88-7C	258	15	2487	22	1935	6	2774	17	2041	16	558	22	1114	24	2153	9
FLIP 88-11C	154	18	2729	17	1827	13	2167	23	2095	13	762	16	1471	15	1399	17
FLIP 88-24C	132	20	3747	1	1841	11	3190	10	2762	1	898	12	2167	1	1800	12
FLIP 88-68C	119	22	3078	6	1838	12	3821	2	2000	17	694	18	1138	21	1412	16
FLIP 88-70C	480	7	3602	3	2013	3	3226	9	2476	6	1619	2	1529	12	1525	14
FLIP 89-24C	143	19	2794	15	1735	15	2845	16	1810	21	639	20	1133	22	1095	20
FLIP 89-67C	955	1	3492	4	1367	20	2869	15	2667	4	803	15	1605	10	3461	2
FLIP 89-85C	114	23	3648	2	1692	16	3054	12	2000	18	1456	4	1452	16	2510	6
FLIP 89-118C	51	24	2836	14	1210	24	2357	22	2111	10	599	21	1329	19	2920	4
FLIP 89-127C	318	12	2872	12	1936	5	3286	6	2762	2	1320	6	1976	3	156	24
FLIP 90-5C	342	11	2919	10	1344	22	2887	14	1143	24	707	17	1619	8	3261	3
FLIP 90-10C	381	9	2706	18	1312	23	2631	19	2190	9	544	23	1495	14	2471	7
FLIP 90-37C	269	14	2885	11	1880	8	3226	8	2095	14	803	14	1519	13	2576	5
FLIP 90-59C	255	16	1654	24	1402	19	1750	24	1905	19	1197	8	2014	2	259	23
FLIP 90-64C	633	6	2935	9	2287	1	3429	3	2667	3	1524	3	1762	5	856	22
FLIP 90-79C	685	4	2578	20	1874	9	2619	20	2381	7	1333	5	1133	23	2267	8
FLIP 90-97C	649	5	2508	21	2196	2	3851	1	2095	12	476	24	1743	6	1141	19
FLIP 90-98C	426	8	2979	7	1982	4	3065	11	1810	22	694	19	1371	18	1875	10
FLIP 90-136C	192	17	2951	8	1916	7	3232	7	2190	8	1034	10	1448	17	1322	18
FLIP 90-137C	270	13	3086	5	1867	10	2899	13	1905	20	1048	9	1300	20	1841	11
FLIP 82-150C	352	10	2745	16	1765	14	3292	4	2095	11	1034	11	1771	4	1618	13
ILC 482	748	2	2672	19	1355	21	2565	21	2095	15	857	13	1710	7	1438	15
Local check	696	3	2417	23	1513	18	3292	5	1705	23	1878	1	1614	9	3627	1
Location Mean	**365**		**2882**		**1737**		**2958**		**2149**		**988**		**1540**		**1833**	
S.E. Of Mean	169.61		230.77		200.94		151.07		294.63		94.80		253.86		578.16	
LSD at .05	482.80		656.89		571.99		430.03		NS		269.85		NS		1645.74	
C.V. %	80.58		13.87		20.03		8.85		23.75		16.62		28.55		54.62	
Entry > L. check	0		6		2		2		-		0		-		0	

Cont'd. ...

Table 3.1.6. cont'd. ...

Entry name	Iran						Italy				Lebanon		Oman		Spain	
	Maragheh		Mashhad		Shiraz		Papiano		Tolentino		Terbol		Jimah		Badajoz	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-58C	914	13	2306	20	770	1	2980	11	3603	9	1707	3	1249	22	1741	15
FLIP 88-7C	751	22	2694	13	429	12	2824	19	3353	15	1218	18	2461	4	2637	2
FLIP 88-11C	789	18	2250	21	302	19	3065	7	3458	14	-	-	1547	20	1976	11
FLIP 88-24C	996	8	917	24	540	7	3017	9	3679	6	1687	4	2076	11	2416	4
FLIP 88-68C	1015	5	2583	14	238	21	2887	16	3593	10	1565	8	2282	6	1567	20
FLIP 88-70C	932	10	2528	16	730	3	2893	15	3917	2	1823	1	1919	15	1761	13
FLIP 89-24C	884	15	2417	18	294	20	2963	12	3906	3	1490	14	1675	18	1140	23
FLIP 89-67C	1200	1	3361	4	405	14	3080	6	3670	7	1585	5	1973	14	1663	17
FLIP 89-85C	1015	6	4111	1	746	2	2843	18	4063	1	1158	20	2542	1	1641	18
FLIP 89-118C	777	19	1550	22	341	17	3493	1	3331	17	-	-	1555	19	1997	10
FLIP 89-127C	1091	2	2972	9	310	18	2813	20	3288	19	1524	11	2507	3	1690	16
FLIP 90-5C	835	16	2861	11	151	23	3469	2	3303	18	1558	10	2106	10	2269	7
FLIP 90-10C	650	24	3111	6	198	22	2700	22	2875	23	1190	19	1496	21	1616	19
FLIP 90-37C	909	14	3167	5	516	8	2750	21	3342	16	1293	17	2183	8	2765	1
FLIP 90-59C	720	23	1389	23	579	6	2606	23	3206	20	1571	7	1713	17	1244	21
FLIP 90-64C	924	11	3944	2	460	10	3183	5	3555	11	1721	2	2153	9	1790	12
FLIP 90-79C	921	12	2917	10	484	9	2896	14	3683	5	1510	12	2027	12	2490	3
FLIP 90-97C	799	17	3556	3	127	24	3248	4	3510	13	1075	22	1033	23	2038	9
FLIP 90-98C	761	21	2389	19	397	15	2985	10	3536	12	1129	21	1762	16	1162	22
FLIP 90-136C	1054	3	2472	17	651	4	3054	8	3688	4	1558	9	2393	5	1758	14
FLIP 90-137C	766	20	2861	12	349	16	3283	3	3605	8	1463	16	2004	13	1018	24
FLIP 82-150C	1026	4	3111	7	413	13	2937	13	3190	21	1469	15	2278	7	2405	5
ILC 482	973	9	2544	15	611	5	2598	24	3033	22	1571	6	2532	2	2337	6
Local check	996	7	3083	8	460	11	2883	17	-		1497	13	936	24	2053	8
Location Mean	**904**		**2712**		**438**		**2977**		**3495**		**1471**		**1933**		**1882**	
S.E. Of Mean	109.60		343.44		96.36		137.54		145.19		131.30		288.98		287.49	
LSD at .05	NS		977.60		274.29		391.51		413.83		374.75		822.60		818.34	
C.V. %	21.00		21.93		38.15		8.00		7.20		15.46		25.89		26.45	
Entry > L. check	-		1		2		3		14		0		16		0	

Cont'd. ...

Table 3.1.6. cont'd. ...

Entry name	Syria														Tunisia	
	Gelline		Hama		Heimo		Idleb		Izraa		Jindiress		Tel Hadya		Sousse	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-58C	1381	24	2296	6	897	12	1497	8	565	22	2244	2	1020	6	1420	23
FLIP 88-7C	1839	5	1852	18	870	15	1081	22	912	13	1329	22	800	13	904	24
FLIP 88-11C	1811	7	1661	24	848	16	1301	14	925	12	1338	21	722	19	1811	21
FLIP 88-24C	1838	6	2201	12	679	23	1305	13	939	11	1871	5	854	11	2837	13
FLIP 88-68C	1695	15	2513	1	940	7	1558	4	973	9	1673	11	1037	4	3664	6
FLIP 88-70C	1771	9	2492	2	1016	2	1828	1	952	10	1852	7	1157	1	2351	18
FLIP 89-24C	1517	21	1915	17	814	19	1411	10	476	24	1420	19	799	14	3063	10
FLIP 89-67C	1624	17	2217	9	975	6	1283	15	1184	3	2244	1	750	17	3664	7
FLIP 89-85C	1747	13	2106	13	1038	1	1219	17	816	16	1801	8	1103	2	2677	15
FLIP 89-118C	1799	8	2349	5	893	14	1517	6	558	23	1901	4	1072	3	4150	4
FLIP 89-127C	1985	3	2376	4	980	5	1765	2	1088	5	1661	12	969	10	2449	16
FLIP 90-5C	1715	14	1915	16	826	18	1145	18	898	14	1503	16	852	12	3956	5
FLIP 90-10C	1495	22	1672	23	777	20	826	24	796	18	1521	14	317	24	3169	9
FLIP 90-37C	1534	20	1831	19	837	17	1372	12	898	15	1720	10	602	22	5989	1
FLIP 90-59C	1754	11	2048	14	909	11	1457	9	622	21	1274	23	773	15	3004	11
FLIP 90-64C	1951	4	2212	11	987	4	1564	3	1116	4	1861	6	766	16	3482	8
FLIP 90-79C	1494	23	1974	15	752	22	1119	20	789	19	1463	18	715	20	5620	2
FLIP 90-97C	1574	19	1762	22	758	21	1092	21	1048	7	1480	17	586	23	2207	20
FLIP 90-98C	1755	10	1794	21	931	8	1136	19	803	17	1392	20	675	21	4906	3
FLIP 90-136C	1587	18	1820	20	896	13	1516	7	1020	8	1753	9	1018	7	3003	12
FLIP 90-137C	1646	16	2217	10	922	10	999	23	1075	6	1221	24	988	9	1649	22
FLIP 82-150C	2011	2	2217	8	999	3	1377	11	1224	2	1582	13	733	18	2411	17
ILC 482	1753	12	2222	7	926	9	1251	16	741	20	1520	15	1018	8	2760	14
Local check	2282	1	2423	3	536	24	1518	5	1292	1	2086	3	1032	5	2337	19
Location Mean	**1732**		**2087**		**875**		**1339**		**905**		**1655**		**848**		**3062**	
S.E. Of Mean	122.32		134.66		100.60		129.89		163.75		197.43		71.64		994.36	
LSD at .05	348.20		383.33		NS		369.72		NS		562.00		203.91		NS	
C.V. %	12.24		11.18		19.91		16.80		31.36		20.67		14.63		56.25	
Entry > L. check	0		0		-		0		-		0		0		-	

Cont'd. ...

Table 3.1.6. cont'd. ...

Entry name	Turkey												(1)	
	Amasya		Antalya		Diyarbakir		Erzurum		Eskisehir		Menemen		Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-58C	1151	16	898	15	880	21	1549	18	408	24	284	22	1549	18
FLIP 88-7C	762	22	1054	7	1009	17	1627	14	429	22	586	6	1463	21
FLIP 88-11C	881	18	643	22	1051	16	1384	23	435	20	228	23	1385	22
FLIP 88-24C	2286	1	602	23	1171	8	1910	4	431	21	438	13	1740	6
FLIP 88-68C	1537	10	837	16	1157	9	1928	3	545	6	438	14	1729	8
FLIP 88-70C	302	24	1181	5	829	23	1780	8	531	10	475	11	1731	7
FLIP 89-24C	1675	9	925	14	1227	4	1525	20	521	11	654	5	1559	17
FLIP 89-67C	1143	17	1225	3	1338	2	1833	7	531	9	735	2	1894	1
FLIP 89-85C	1310	15	767	20	1199	5	1431	22	442	19	302	21	1754	4
FLIP 89-118C	714	23	602	24	889	20	1252	24	505	15	370	18	1545	19
FLIP 89-127C	857	19	985	10	1134	10	1757	9	515	13	531	8	1668	13
FLIP 90-5C	1484	12	930	13	1111	11	1549	17	532	8	512	9	1680	12
FLIP 90-10C	1373	14	1182	4	1056	15	1609	15	505	14	494	10	1520	20
FLIP 90-37C	1381	13	773	19	991	19	1664	12	498	16	586	7	1782	3
FLIP 90-59C	802	21	814	17	838	22	1486	21	414	23	389	17	1349	23
FLIP 90-64C	2016	3	781	18	1065	14	2095	1	549	5	401	15	1862	2
FLIP 90-79C	1778	7	1231	2	1176	7	1539	19	551	4	667	4	1753	5
FLIP 90-97C	2087	2	967	12	1176	6	1593	16	542	7	463	12	1649	14
FLIP 90-98C	1952	5	1448	1	1250	3	1627	13	460	18	401	16	1684	11
FLIP 90-136C	1508	11	1058	6	995	18	1972	2	560	3	698	3	1695	9
FLIP 90-137C	2016	4	1013	9	1111	12	1863	6	518	12	963	1	1642	15
FLIP 82-150C	1794	6	1034	8	1407	1	1736	10	492	17	204	24	1691	10
ILC 482	833	20	704	21	1083	13	1905	5	563	2	327	20	1570	16
Local check	1738	8	975	11	-99		1711	11	652	1	362	19		
Location Mean	**1391**		**943**		**1093**		**1680**		**505**		**480**			
S.E. Of Mean	170.50		199.98		115.73		83.98		34.61		115.87			
LSD at .05	485.32		NS		NS		239.05		98.51		329.84			
C.V. %	21.23		36.74		18.34		8.66		11.86		41.85			
Entry > L. check	1		-		-		2		0		3			

(1) Navsari in India, Jimah in Oman and Antalya in Turkey were planted in winter and Terbol in Lebanon had some missing lines, these were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.1.7. The five heaviest seed yielding entries at the individual locations in the CIYT-SP during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Afghanistan	Jalalabad	FLIP 89-67C	ILC 482	Local check	FLIP 90-79C	FLIP 90-97C
Algeria	Khroub	FLIP 88-24C	FLIP 89-85C	FLIP 88-70C	FLIP 89-67C	FLIP 90-137C
Algeria	Oued Smar	FLIP 90-64C	FLIP 90-97C	FLIP 88-70C	FLIP 90-98C	FLIP 89-127C
Bulgaria	Toshevo	FLIP 90-97C	FLIP 88-68C	FLIP 90-64C	FLIP 82-150C	Local check
Greece	Thessaloniki	FLIP 88-24C	FLIP 89-127C	FLIP 90-64C	FLIP 89-67C	FLIP 87-58C
India	Navsari	Local check	FLIP 88-70C	FLIP 90-64C	FLIP 89-85C	FLIP 90-79C
Iran	Karaj-1	FLIP 88-24C	FLIP 90-59C	FLIP 89-127C	FLIP 82-150C	FLIP 90-64C
Iran	Karaj-2	Local check	FLIP 89-67C	FLIP 90-5C	FLIP 89-118C	FLIP 90-37C
Iran	Maragheh	FLIP 89-67C	FLIP 89-127C	FLIP 90-136C	FLIP 82-150C	FLIP 88-68C
Iran	Mashhad	FLIP 89-85C	FLIP 90-64C	FLIP 90-97C	FLIP 89-67C	FLIP 90-37C
Iran	Shiraz	FLIP 87-58C	FLIP 89-85C	FLIP 88-70C	FLIP 90-136C	ILC 482
Italy	Papiano	FLIP 89-118C	FLIP 90-5C	FLIP 90-137C	FLIP 90-97C	FLIP 90-64C
Italy	Tolentino	FLIP 89-85C	FLIP 88-70C	FLIP 89-24C	FLIP 90-136C	FLIP 90-79C
Lebanon	Terbol	FLIP 88-70C	FLIP 90-64C	FLIP 87-58C	FLIP 88-24C	FLIP 89-67C
Oman	Jimah	FLIP 89-85C	ILC 482	FLIP 89-127C	FLIP 88-7C	FLIP 90-136C
Spain	Badajoz	FLIP 90-37C	FLIP 88-7C	FLIP 90-79C	FLIP 88-24C	FLIP 82-150C
Syria	Gelline	Local check	FLIP 82-150C	FLIP 89-127C	FLIP 90-64C	FLIP 88-7C
Syria	Hama	FLIP 88-68C	FLIP 88-70C	Local check	FLIP 89-127C	FLIP 89-118C
Syria	Heimo	FLIP 89-85C	FLIP 88-70C	FLIP 82-150C	FLIP 90-64C	FLIP 89-127C
Syria	Idleb	FLIP 88-70C	FLIP 89-127C	FLIP 90-64C	FLIP 88-68C	Local check
Syria	Izra'a	Local check	FLIP 82-150C	FLIP 89-67C	FLIP 90-64C	FLIP 89-127C
Syria	Jindiress	FLIP 89-67C	FLIP 87-58C	Local check	FLIP 89-118C	FLIP 88-24C
Syria	Tel Hadya	FLIP 88-70C	FLIP 89-85C	FLIP 89-118C	FLIP 88-68C	Local check
Tunisia	Sousse	FLIP 90-37C	FLIP 90-79C	FLIP 90-98C	FLIP 89-118C	FLIP 90-5C
Turkey	Amasya	FLIP 88-24C	FLIP 90-97C	FLIP 90-64C	FLIP 90-137C	FLIP 90-98C
Turkey	Antalya	FLIP 90-98C	FLIP 90-79C	FLIP 89-67C	FLIP 90-10C	FLIP 88-70C
Turkey	Diyarbakir	FLIP 82-150C	FLIP 90-79C	FLIP 89-67C	FLIP 90-10C	FLIP 88-70C
Turkey	Erzurum	FLIP 90-64C	FLIP 90-136C	FLIP 88-68C	FLIP 88-24C	ILC 482
Turkey	Eskisehir	Local check	ILC 482	FLIP 90-136C	FLIP 90-79C	FLIP 90-64C
Turkey	Menemen	FLIP 90-137C	FLIP 89-67C	FLIP 90-136C	FLIP 90-79C	FLIP 89-24C

On the basis of average seed yield of common entries over two years (1991/92 and 1992/93), FLIP 88-68C ranked number 1 and was followed by FLIP 88-70C, FLIP 89-127C, FLIP 89-85C and FLIP 88-24C with respective seed yields of 1513, 1506, 1504, 1494, and 1477 kg/ha (Table 3.1.8).

Table 3.1.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-SP conducted during 1991/92 and 1992/93.

Entry Name	1991/92		1992/93		Mean	
	Y	R	Y	R	Y	R
FLIP 87-58C	1245	5	1549	9	1397	8
FLIP 88-7C	1190	9	1463	11	1327	11
FLIP 88-11C	1074	12	1385	12	1230	12
FLIP 88-24C	1213	7	1740	2	1477	5
FLIP 88-68C	1297	3	1729	4	1513	1
FLIP 88-70C	1281	4	1731	3	1506	2
FLIP 89-24C	1207	8	1559	8	1383	9
FLIP 89-85C	1234	6	1754	1	1494	4
FLIP 89-118C	1187	10	1545	10	1366	10
FLIP 89-127C	1339	2	1668	6	1504	3
FLIP 82-150C	1185	11	1691	5	1438	7
ILC 482	1347	1	1570	7	1459	6

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

Material

The Chickpea International Yield Trial Winter Mediterranean Region (CIYT-W-MR) comprised 21 test entries and three checks, two checks were provided and one local check to be supplied by the cooperator. Twenty-two entries from these were the advanced breeding lines developed through hybridization at ICARDA. All these lines were selected on the basis of their superior performance at least once either in local, regional or international trials.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was four rows, each 4 m long with an inter row spacing of 35 cm. Sixty one sets of trial were distributed to cooperators in 19 countries. Results were returned from 31 sets covering 11 countries. The agronomic practices employed at different locations are given in Table 3.2.1.

Results and Discussion

The entry means for time to flowering, time to maturity, plant height and 100-seed weight at various locations are given in Tables 3.2.2, 3.2.3, 3.2.4 and 3.2.5, respectively. The entry means across locations ranged from 119 days to 129 days for time to flowering, 175 to 179 days for days to maturity, 47 to 62 cm for plant height, and 30 to 46 g for 100-seed weight. In general, early flowering entries were also earlier in maturity. FLIP 85-5C had the largest seed size.

The ANOVA for seed yield revealed that at 14 locations some of the test entries exceeded the respective local check by a significant margin (Table 3.2.6). Across locations, the highest seed yield was recorded for FLIP 90-96C (2486 kg/ha) which was closely followed by FLIP 88-85C, FLIP 89-29C, FLIP 90-13C and FLIP 90-132C with respective yields of 2397, 2383, 2342, and 2329 kg/ha. The top five high yielding lines at each location are given in Table 3.2.7. FLIP 88-85C occurred most frequently among the top five and was closely followed by FLIP 84-15C, FLIP 89-29C, FLIP 90-96C, and FLIP 90-132C and these lines were comparatively more adaptable.

On the basis of average over two years for the 13 common entries (Table 3.2.8.), FLIP 88-85C (2250 kg/ha) ranked number 1 in seed yield and was closely followed by FLIP 89-29C (2146 kg/ha), FLIP 84-15C (2088 kg/ha), FLIP 89-78C (2083 kg/ha) and FLIP 88-82C (2069 kg/ha), respectively.

Table 3.2.1. Agronomic details for CIYT-W-MR-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Guelma	18.01.93	30.06.93	-	200	-	-	Igran	FLIP 84-79C
Algeria	Khroub	24.01.93	06.07.93	17	46	-	-	Igran + Kerb	ILC 3279
Algeria	Oued Smar	16.12.92	04.07.93	-	200	-	-	Igran + Kerb	Rabat 9
Algeria	Setif	29.11.92	28.06.93	-	100	-	-	Trifluraline	ILC 3279
Cyprus	Athalassa	08.12.92	18.06.93	32	72	-	-	-	Cyprus Local
Iran	Gorgan	21.12.92	11.07.93	-	-	-	1	Chlopyrifos	Kooroush
Italy+	Caltagirone	02.02.93	03.07.93	-	60	-	-	-	Calia
Italy	Papiano	11.11.92	25.06.93	-	80	-	-	-	Unknown
Italy	Tolentino	15.12.92	19.07.93	-	92	-	-	-	Sultano
Jordan	Mushaggar	13.12.92	08.06.93	-	-	-	-	Fusilade	Jubeiha 2
Jordan	Rabba	NA	NA	NA	NA	NA	NA	NA	NA
Lebanon	Terbol	09.12.92	15.07.93	-	50	-	-	Kerb + Igran	Lebanese Local
Libya	El Safsaf	10.12.92	20.06.93	-	-	-	-	-	ILC 484
Libya	Sebha	06.12.92	18.05.93	40	150	-	-	-	Tork var.
Portugal	Elvas	03.11.92	12.07.93	60	60	-	-	Terbutryne + Propizamide	Chk 510
Spain	Badajoz	11.11.92	07.07.93	-	-	-	-	Terbutryne + Propizamide	Castuo
Spain	Cordoba	19.12.92	07.07.93	-	-	-	-	Bladex 50	Pedrosillano
Syria	Gelline	23.12.92	12.06.93	20	50	-	-	-	Ghab 2
Syria	Hama	28.12.92	13.06.93	-	50	-	-	-	Ghab 2
Syria	Al Ghab	31.12.92	18.06.93	-	-	-	-	-	Ghab 2
Syria	Heimo	31.12.92	11.07.93	-	50	-	-	-	Ghab 2
Syria	Idleb	24.12.92	28.06.93	40	60	-	-	-	Ghab 2
Syria	Izra'a	17.01.93	25.06.93	-	110	-	-	-	Ghab 2
Syria	Jableh	03.01.93	25.07.93	-	-	-	-	-	Ghab 2
Syria	Jindiress	08.12.92	17.06.93	-	50	-	-	Kerb + Igran	Ghab 2
Syria	Tel Hadya	10.12.92	21.06.93	-	50	-	-	Kerb + Igran	Ghab 2
Turkey	Adana-1	06.01.93	17.06.93	30	60	-	-	-	FLIP 85-46C
Turkey	Adana-2	01.12.92	12.07.93	30	50	-	-	-	Local chickpea
Turkey+	Amasya	06.04.93	11.08.93	50	50	-	-	-	Canitez 87
Turkey	Diyarbakir	06.12.92	14.07.93	30	60	-	-	Fusilade, Phostoxine	Yerli Nohut
Turkey	Menemen	14.01.93	06.07.93	30	60	-	-	Terbutryne	Canitez 87

+ = Planted in spring, NA = Not available

Table 3.2.2. Time to flowering (days) of entries at different locations in the CIYTW-MR during 1992/93.

Entry name	Pedigree	Origin	Algeria			
			Guelma	Khroub	Oued-Smar	Setif
FLIP 84-15C	X81TH199/ILC 202(WH)XILC 3355	ICARDA/ICRISAT	98	104	115	162
FLIP 85-5C	X81TH199/ILC 202(WH)XILC 3355	ICARDA/ICRISAT	107	109	124	162
FLIP 86-6C	X81TH203/ILC 3279(WH)XILC 3355	ICARDA/ICRISAT	108	103	118	162
FLIP 87-96C	X83TH124/FLIP 82-64CXILC 72	ICARDA/ICRISAT	108	109	124	162
FLIP 88-82C	X84TH68/ILC 484XFLIP 82-80C	ICARDA/ICRISAT	110	113	118	162
FLIP 88-85C	X85TH143/ILC 629XFLIP 82-144C	ICARDA/ICRISAT	98	109	115	162
FLIP 89-29C	X84TH73/ILC 482XFLIP 82-73C	ICARDA/ICRISAT	100	101	115	162
FLIP 89-38C	X86TH279/(ILC 1919XFLIP 82-191C)XFLIP 84-18C	ICARDA/ICRISAT	98	98	115	162
FLIP 89-44C	X87TH31/FLIP 83-7CXFLIP 84-92C	ICARDA/ICRISAT	110	109	124	162
FLIP 89-78C	X87TH67/FLIP 82-87CXFLIP 85-46C	ICARDA/ICRISAT	108	107	124	156
FLIP 89-96C	X86TH112/FLIP 82-64CXFLIP 81-293C	ICARDA/ICRISAT	112	117	124	162
FLIP 90-3C	X86TH289/(FLIP 81-65CXILC 187)XFLIP 84-19C	ICARDA/ICRISAT	108	118	115	162
FLIP 90-4C	X86TH289/(FLIP 81-65CXILC 187)XFLIP 84-19C	ICARDA/ICRISAT	110	118	124	162
FLIP 90-13C	X87TH317/(Pl.Se.Be 81-40XILC 195)XFLIP 84-46C	ICARDA/ICRISAT	108	119	118	159
FLIP 90-58C	X87TH318/(Pl.Se.Be 81-41XFLIP 81-79C)XFLIP 85-18C	ICARDA/ICRISAT	112	118	126	159
FLIP 90-76C	X86TH303/(ILC 171XFLIP 82-127C)XILC 171	ICARDA/ICRISAT	106	114	121	162
FLIP 90-96C	X87TH26/ILC 5342XFLIP 84-93C	ICARDA/ICRISAT	110	108	121	159
FLIP 90-105C	X87TH160/S 85088XILC 3870	ICARDA/ICRISAT	110	114	124	156
FLIP 90-109C	X88TH89/FLIP 83-98CXFLIP 86-93C	ICARDA/ICRISAT	108	116	115	156
FLIP 90-132C	X85TH246/ILC3398XFLIP 83-13C	ICARDA/ICRISAT	99	96	115	156
FLIP 90-179C	X87TH192/ICC 14212XFLIP 83-98C	ICARDA/ICRISAT	97	93	109	162
FLIP 82-150C	X79TH101/ILC 523XILC 183 (Improved check)	ICARDA/ICRISAT	107	107	115	159
ILC 482	(Long term check)	Turkey	97	99	115	162
Local check		-	108	115	124	162
Location Mean			**106**	**109**	**119**	**161**
S.E. Of Mean			0.90	One	2.05	-
LSD at .05			2.55	rep	5.85	-
C.V. %			1.47		2.99	-

Cont'd. ...

Table 3.2.2. Cont'd. ...

Entry name	Greece	Iran	Italy			Jordan		Lebanon	Lybia		Portugal	Spain	Syria
	Athal-assa	Gorgan	Calta-girone	Papiano	Tolen-tino	Musha-gar	Raba'a	Terbol	El-Saf-saf	Sibha	Elvas	Bada-joz	Al-Ghab
FLIP 84-15C	115	125	95	181	144	124	63	131	131	112	153	132	110
FLIP 85-5C	115	126	96	181	147	125	66	137	129	112	157	138	111
FLIP 86-6C	116	123	96	181	143	124	63	131	128	107	153	134	111
FLIP 87-96C	114	124	96	181	150	125	65	133	132	112	153	134	111
FLIP 88-82C	116	125	104	177	149	124	62	139	128	111	154	129	111
FLIP 88-85C	113	124	95	177	142	121	60	128	126	101	153	132	110
FLIP 89-29C	115	120	95	179	141	121	62	130	127	98	150	130	107
FLIP 89-38C	112	122	92	177	140	120	60	128	125	102	152	125	112
FLIP 89-44C	115	120	97	178	144	124	65	132	132	104	153	137	110
FLIP 89-78C	117	125	97	180	148	123	65	138	130	111	156	137	110
FLIP 89-96C	113	124	103	180	148	124	65	133	132	113	155	135	112
FLIP 90-3C	116	127	95	180	152	126	66	138	132	111	154	137	111
FLIP 90-4C	116	125	95	179	151	126	66	139	132	113	157	139	111
FLIP 90-13C	116	132	105	181	148	127	66	139	132	109	156	140	109
FLIP 90-58C	116	128	105	181	150	130	66	140	134	114	157	138	111
FLIP 90-76C	115	126	96	179	152	122	62	131	132	108	153	134	111
FLIP 90-96C	116	125	96	178	148	125	66	133	130	107	154	141	110
FLIP 90-105C	114	128	96	178	151	125	66	139	132	111	157	135	108
FLIP 90-109C	115	125	96	180	148	125	66	136	132	109	153	136	111
FLIP 90-132C	112	118	90	177	141	120	60	128	129	98	147	125	108
FLIP 90-179C	116	117	90	176	137	116	57	128	125	102	148	122	106
FLIP 82-150C	114	124	96	179	147	122	62	128	128	105	154	135	111
ILC 482	112	121	96	180	142	121	61	128	126	98	148	125	107
Local check	114	124	96	180	149	120	59	131	126	104	149	128	108
Location Mean	**115**	**124**	**97**	**179**	**146**	**123**	**63**	**133**	**129**	**107**	**153**	**133**	**110**
S.E. Of Mean	1.05	1.10	0.66	0.39	0.94	0.78	0.71	0.59	0.78	1.98	1.09	1.48	1.42
LSD at .05	NS	3.12	1.87	1.10	2.68	2.23	2.03	1.67	2.22	5.64	3.11	4.22	NS
C.V. %	1.58	1.53	1.18	0.37	1.11	1.10	1.95	0.76	1.04	3.20	1.23	1.93	2.24

Cont'd...

Table 3.2.2. Cont'd. ...

Entry name	Syria								Turkey				Overall mean (1)
	Gelline	Hama	Heimo	Idleb	Izraa	Jableh	Jindi-ress	Tel-Hadya	Adana-1	Adana-2	Diyar-bakir	Menemen	
FLIP 84-15C	109	111	118	118	103	96	130	128	100	137	-	103	122
FLIP 85-5C	114	112	122	119	106	101	133	130	107	144	-	106	125
FLIP 86-6C	109	110	117	116	102	97	130	127	103	136	-	104	122
FLIP 87-96C	114	111	119	119	105	99	131	128	105	140	-	105	124
FLIP 88-82C	111	111	120	118	102	96	132	127	107	138	-	106	124
FLIP 88-85C	108	109	114	116	101	96	129	126	100	135	-	103	120
FLIP 89-29C	107	108	112	113	100	96	129	127	104	135	-	103	119
FLIP 89-38C	105	109	111	114	101	97	129	126	103	136	-	103	119
FLIP 89-44C	110	110	115	112	104	98	131	126	105	137	-	103	122
FLIP 89-78C	111	111	119	119	105	99	131	128	105	140	167	104	125
FLIP 89-96C	110	110	124	120	104	98	131	128	103	140	-	104	124
FLIP 90-3C	113	113	124	119	105	102	133	131	105	143	170	108	127
FLIP 90-4C	114	113	120	122	104	100	133	130	107	143	171	106	127
FLIP 90-13C	113	113	122	120	107	101	134	129	105	140	173	106	127
FLIP 90-58C	115	114	127	125	107	102	134	132	105	144	172	108	129
FLIP 90-76C	111	110	117	118	102	97	132	129	107	140	167	103	125
FLIP 90-96C	114	112	119	117	105	100	132	127	98	140	167	105	125
FLIP 90-105C	113	112	117	120	106	101	133	129	107	141	168	107	126
FLIP 90-109C	113	112	119	120	106	99	133	128	107	136	165	106	125
FLIP 90-132C	105	106	108	111	100	95	125	125	103	135	162	103	119
FLIP 90-179C	105	105	111	111	100	96	120	123	103	137	165	103	119
FLIP 82-150C	109	110	117	115	103	97	132	126	107	136	-	103	122
ILC 482	107	107	113	113	101	94	130	126	98	134	162	103	120
Local check	114	114	127	119	107	100	135	130	107	134	167	103	
Location Mean	**111**	**110**	**118**	**117**	**104**	**98**	**131**	**128**	**104**	**138**	**167**	**105**	
S.E. Of Mean	0.59	0.37	2.02	1.33	1.14	0.82	0.40	0.51	0.61	0.97	0.53	0.59	
LSD at .05	1.67	1.05	5.74	3.78	3.24	2.32	1.14	1.45	1.74	2.77	1.34	1.67	
C.V. %	0.92	0.58	2.96	1.96	1.91	1.44	0.53	0.69	1.02	1.22	0.45	0.97	

(1) Caltagirone in Italy was planted in spring and Diyarbakir in Turkey had missing lines and were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.2.3. Time to maturity (days) of entries at different locations in the CIYTW-MR during 1992/93.

Entry name	Algeria			Iran	Italy		Jordan		Lebanon	Libya	Portugal	Spain	Syria
	Khroub	Oued-Smar	Setif	Hasham-abad	Papiano	Tolen-tino	Mushagar	Raba'a	Terbol	Sebha	Elvas	Badajoz	Al-Ghab
FLIP 84-15C	158	188	193	204	225	182	169	112	185	153	232	230	168
FLIP 85-5C	160	188	186	205	223	182	170	112	190	154	232	230	169
FLIP 86-6C	157	188	186	202	224	182	173	112	185	156	233	232	168
FLIP 87-96C	158	188	186	204	222	182	172	112	185	152	238	232	168
FLIP 88-82C	156	188	186	204	216	182	168	101	185	158	232	231	168
FLIP 88-85C	156	188	186	203	223	182	169	112	186	155	234	231	168
FLIP 89-29C	153	181	186	200	222	182	167	101	182	154	232	232	167
FLIP 89-38C	152	188	186	201	222	182	167	108	181	154	240	232	167
FLIP 89-44C	160	188	186	199	222	182	172	112	187	158	233	231	167
FLIP 89-78C	155	188	186	204	222	182	167	112	186	156	232	229	167
FLIP 89-96C	157	188	186	204	221	182	168	112	185	155	232	232	168
FLIP 90-3C	155	188	186	206	219	182	170	112	187	153	239	231	167
FLIP 90-4C	156	188	186	204	221	182	167	112	185	158	232	235	168
FLIP 90-13C	160	188	186	211	220	182	170	112	188	155	238	231	167
FLIP 90-58C	160	188	186	207	220	182	174	112	187	157	232	232	168
FLIP 90-76C	156	188	186	205	215	182	168	112	187	152	232	231	169
FLIP 90-96C	154	188	186	204	222	182	174	112	188	159	233	230	168
FLIP 90-105C	156	188	186	207	218	182	172	112	186	158	233	235	168
FLIP 90-109C	159	185	193	204	222	182	175	112	188	153	233	230	169
FLIP 90-132C	154	188	186	197	223	182	170	112	187	156	235	229	167
FLIP 90-179C	156	188	186	196	223	182	172	108	186	157	236	231	168
FLIP 82-150C	153	188	186	203	218	182	169	112	183	154	231	229	169
ILC 482	152	188	186	200	222	182	167	101	181	157	230	230	166
Local check	154	188	186	203	223	182	168	105	184	161	235	233	167
Location Mean	**156**	**188**	**187**	**203**	**221**	**182**	**170**	**110**	**186**	**156**	**234**	**231**	**168**
S.E. Of Mean	One	0.98	0.00	1.15	0.54	-	1.24	1.26	0.56	2.59	1.676	0.64	0.50
LSD at .05	rep	2.80	0.00	3.29	1.54	-	3.52	3.58	1.60	NS	4.77	1.82	1.43
C.V. %		0.91	0.00	0.98	0.42	-	1.26	1.98	0.52	2.88	1.24	0.48	0.52

Cont'd. ...

Table 3.2.3. Cont'd. ...

Entry name	Syria								Turkey			**Overall mean** (1)
	Gelline	Hama	Hemo	Idleb	Izraa	Jableh	Jindi-diress	Tel-Hadya	Adana-I	Adana-II	Diyar-bakir	
FLIP 84-15C	160	161	179	128	154	150	180	178	148	212	-	177
FLIP 85-5C	161	164	177	138	157	172	184	180	144	213	-	179
FLIP 86-6C	160	162	176	138	156	166	180	177	-	214	-	179
FLIP 87-96C	160	162	175	131	156	167	180	177	140	215	-	178
FLIP 88-82C	160	161	173	135	154	161	180	175	144	213	-	177
FLIP 88-85C	161	161	173	133	155	163	180	176	140	214	-	177
FLIP 89-29C	160	159	172	130	154	157	181	175	148	211	-	175
FLIP 89-38C	160	159	175	132	149	167	179	175	142	213	-	177
FLIP 89-44C	161	162	174	135	156	167	180	176	144	214	-	178
FLIP 89-78C	160	160	170	136	156	166	180	176	140	212	-	177
FLIP 89-96C	160	160	175	136	154	159	180	176	144	216	-	178
FLIP 90-3C	160	163	174	136	158	171	182	178	144	212	206	179
FLIP 90-4C	160	162	173	135	155	168	181	177	148	214	206	178
FLIP 90-13C	161	162	173	136	156	165	181	176	144	212	206	179
FLIP 90-58C	161	165	173	138	158	167	181	179	144	212	206	179
FLIP 90-76C	160	161	175	134	154	169	181	177	148	216	204	178
FLIP 90-96C	160	163	172	137	158	170	182	177	141	213	206	179
FLIP 90-105C	161	164	175	137	157	172	183	177	148	212	205	179
FLIP 90-109C	162	163	175	137	158	169	183	179	148	211	206	179
FLIP 90-132C	160	163	179	135	155	158	181	175	144	213	200	178
FLIP 90-179C	160	162	180	135	155	165	181	175	144	216	203	178
FLIP 82-150C	160	162	171	136	153	164	182	176	148	211	-	177
ILC 482	160	158	172	130	155	157	179	175	138	210	203	175
LOCAL CHECK	160	165	171	138	156	171	184	178	147	211	-	
Location Mean	**160**	**162**	**174**	**135**	**155**	**165**	**181**	**177**	**144**	**213**	**204**	
S.E. Of Mean	0.23	0.82	1.16	1.84	1.31	3.33	0.85	0.64	0.61	1.34		
LSD at .05	0.66	2.34	3.30	5.23	3.73	9.49	2.43	1.81	1.73	NS		
C.V. %	0.25	0.88	1.15	2.36	1.46	3.50	0.82	0.62	0.73	1.09		

(1) Caltagirone in Italy was planted in spring and Adana I and Diyarbakir in Turkey had missing lines were were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.2.4. Plant height (cm) of entries at different locations in the CIYTW-MR during 1992/93.

Entry name	Algeria				Cyprus	Iran	Italy			Jordan	
	Guelma	Khroub	Oued-Smar	Setif	Athalassa	Hasham-abad	Calta-girone	Papiano	Tolen-tino	Mushaggar	Raba'a
FLIP 84-15C	55	62	58	32	67	81	30	58	60	47	40
FLIP 85-5C	55	65	62	44	63	78	31	55	63	54	43
FLIP 86-6C	45	62	63	41	65	82	29	55	64	52	43
FLIP 87-96C	65	78	60	46	68	83	36	58	63	48	48
FLIP 88-82C	65	54	56	44	63	93	33	58	60	49	35
FLIP 88-85C	55	60	53	41	57	63	29	54	59	46	35
FLIP 89-29C	66	66	57	49	62	73	29	55	59	45	40
FLIP 89-38C	50	54	51	31	57	84	26	55	52	43	36
FLIP 89-44C	55	68	57	36	62	78	31	57	63	52	41
FLIP 89-78C	40	60	58	41	67	77	30	55	61	45	33
FLIP 89-96C	60	64	57	44	67	83	33	59	63	51	45
FLIP 90-3C	55	56	56	30	57	80	31	60	58	41	33
FLIP 90-4C	53	58	53	31	55	86	30	57	55	43	42
FLIP 90-13C	55	58	56	31	52	82	29	53	56	41	33
FLIP 90-58C	50	72	67	53	73	97	33	64	67	63	44
FLIP 90-76C	60	60	60	41	68	93	37	65	67	44	40
FLIP 90-96C	60	60	56	30	63	74	26	60	59	44	47
FLIP 90-105C	50	55	61	41	67	83	29	58	62	45	35
FLIP 90-109C	60	65	58	41	58	82	29	57	60	45	38
FLIP 90-132C	60	59	54	31	53	77	30	55	59	41	37
FLIP 90-179C	70	58	56	31	58	79	27	51	60	46	35
FLIP 82-150C	50	50	49	36	58	77	28	53	57	43	40
ILC 482	60	48	48	32	57	79	24	50	50	41	41
Local check	55	71	55	51	55	82	25	53	67	41	42
Location Mean	**56**	**61**	**57**	**39**	**61**	**81**	**30**	**56**	**60**	**46**	**39**
S.E. Of Mean	0.33	One	2.53	0.68	2.47	3.63	1.37	2.78	1.81	1.64	0.14
LSD at .05	0.95	rep	7.21	1.94	7.03	10.32	3.89	NS	5.16	4.67	0.39
C.V. %	1.3		7.76	3.06	6.97	7.75	7.95	8.54	5.22	6.14	0.60

Cont'd. ...

Table 3.2.4. Cont'd. ...

Entry name	Lebanon	Libya		Portugal	Spain	Syria				
	Terbol	El-Safsaf	Sebha	Elvas	Badajoz	Al-Ghab	Gelline	Hama	Hemo	Idleb
FLIP 84-15C	53	49	71	67	37	47	47	55	77	31
FLIP 85-5C	53	40	64	71	44	50	47	62	74	38
FLIP 86-6C	51	52	73	72	41	50	46	55	73	45
FLIP 87-96C	56	50	66	71	39	47	50	63	83	47
FLIP 88-82C	48	44	66	66	42	47	42	55	74	44
FLIP 88-85C	50	43	50	64	38	50	37	50	66	37
FLIP 89-29C	49	47	63	63	41	43	45	55	70	41
FLIP 89-38C	44	35	54	72	37	47	36	47	68	35
FLIP 89-44C	54	46	70	66	34	48	47	62	73	44
FLIP 89-78C	51	49	67	71	42	52	41	57	67	45
FLIP 89-96C	52	44	59	64	37	53	49	57	72	48
FLIP 90-3C	46	39	62	73	34	50	35	47	67	37
FLIP 90-4C	45	43	67	63	39	45	35	52	67	41
FLIP 90-13C	51	37	68	68	35	45	44	47	65	35
FLIP 90-58C	59	56	65	78	43	53	56	68	84	41
FLIP 90-76C	54	50	70	78	41	52	47	62	80	45
FLIP 90-96C	48	43	67	67	34	43	40	57	68	37
FLIP 90-105C	54	48	73	69	37	43	46	58	73	47
FLIP 90-109C	50	44	61	62	38	48	40	57	72	42
FLIP 90-132C	49	40	54	61	33	43	36	50	69	37
FLIP 90-179C	51	43	63	67	38	43	42	57	71	39
FLIP 82-150C	46	43	61	71	39	42	40	50	64	40
ILC 482	45	53	54	63	35	47	34	45	62	40
Local check	42	-	59	72	37	50	47	73	81	58
Location Mean	**50**	**45**	**64**	**68**	**38**	**47**	**43**	**56**	**72**	**41**
S.E. Of Mean	2.04	2.12	4.41	3.73	2.37	4.22	1.57	1.60	2.61	4.94
LSD at .05	5.82	6.04	12.55	NS	NS	NS	4.59	4.56	7.43	NS
C.V. %	7.08	8.13	12.00	9.48	10.76	15.41	6.35	4.97	6.30	20.71

Cont'd. ...

Table 3.2.4. Cont'd. ...

Entry name	Syria				Turkey					Overall mean (1)
	Izra'a	Jableh	Jin-diress	Tel-Hadya	Adana-I	Adana-II	Amasya	Diyar-bakir	Menemen	
FLIP 84-15C	40	56	47	37	84	85	-	-	44	53
FLIP 85-5C	46	69	48	40	73	89	42	-	47	56
FLIP 86-6C	40	70	51	42	-	88	51	-	53	56
FLIP 87-96C	41	66	51	43	78	94	48	-	46	58
FLIP 88-82C	34	51	47	34	86	87	54	-	44	53
FLIP 88-85C	39	51	43	34	-	70	48	-	41	49
FLIP 89-29C	39	60	42	38	69	80	48	-	45	53
FLIP 89-38C	32	50	44	30	84	87	46	-	41	49
FLIP 89-44C	41	57	48	39	85	92	52	-	46	55
FLIP 89-78C	39	69	49	41	80	86	50	47	51	54
FLIP 89-96C	40	58	48	37	81	94	57	-	44	55
FLIP 90-3C	39	52	37	31	85	82	43	49	42	50
FLIP 90-4C	36	50	38	32	85	86	48	47	47	50
FLIP 90-13C	36	57	40	33	75	82	44	39	42	50
FLIP 90-58C	49	77	58	48	91	92	55	58	49	62
FLIP 90-76C	43	63	53	39	86	97	53	66	42	58
FLIP 90-96C	40	58	43	36	81	88	50	47	48	52
FLIP 90-105C	41	64	48	39	90	87	51	54	45	54
FLIP 90-109C	37	56	43	37	82	88	52	48	43	53
FLIP 90-132C	39	56	40	35	77	77	46	54	42	49
FLIP 90-179C	36	59	48	34	83	86	46	52	46	52
FLIP 82-150C	37	50	40	32	84	81	51	-	44	49
ILC 482	34	47	38	30	84	71	34	44	42	47
Local check	45	73	54	46	88	72	-	47	43	
Location Mean	**39**	**59**	**46**	**37**	**82**	**85**	**49**	**50**	**45**	
S.E. Of Mean	1.58	4.90	2.40	0.82	1.53	3.42	2.44	2.25	3.08	
LSD at .05	4.48	13.94	6.83	2.32	4.36	9.73	6.95	5.67	NS	
C.V. %	6.96	14.34	9.08	3.82	3.21	6.97	8.68	6.37	11.90	

(1) Caltagirone in Italy and Amasya in Turkey were planted in spring and Adana-I and Diyarbakir in Turkey had missing lines were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.2.5. 100-seed weight (g) of entries at different locations in the CIYTW-MR during 1992/93.

Entry name	Algeria		Iran	Italy			Jordan	Lebanon	Libya		Portugal	Spain	
	Oued-Smar	Setif	Hasham-abad	Calta-girone	Papiano	Tolen-tino	Raba'a	Terbol	Al-Safsaf	Sebha	Elvas	Badajoz	Cordoba
FLIP 84-15C	47	40	52	35	47	48	44	41	42	35	40	44	51
FLIP 85-5C	52	44	53	40	35	49	55	51	46	39	42	48	52
FLIP 86-6C	43	40	46	36	48	47	44	42	39	39	40	43	42
FLIP 87-96C	43	44	47	31	46	45	47	39	38	34	41	40	44
FLIP 88-82C	36	36	38	26	37	35	35	31	33	26	29	32	36
FLIP 88-85C	37	40	37	29	38	35	39	33	35	28	33	36	39
FLIP 89-29C	34	36	41	28	38	35	37	30	33	26	30	34	35
FLIP 89-38C	40	36	43	25	41	41	40	33	36	32	34	40	39
FLIP 89-44C	39	32	41	32	45	44	39	39	38	33	32	37	37
FLIP 89-78C	33	42	41	28	40	38	39	33	33	28	29	33	36
FLIP 89-96C	37	44	45	31	43	39	41	37	34	30	30	35	33
FLIP 90-3C	40	44	47	32	47	43	46	40	38	35	36	39	41
FLIP 90-4C	39	40	46	30	46	41	41	39	37	32	35	37	38
FLIP 90-13C	39	40	45	30	45	45	42	39	37	31	33	37	40
FLIP 90-58C	36	40	41	30	43	41	45	38	33	29	33	35	36
FLIP 90-76C	39	36	43	30	39	39	41	33	35	32	31	39	38
FLIP 90-96C	36	38	39	28	41	38	37	33	33	28	29	34	33
FLIP 90-105C	37	32	39	29	41	38	38	35	33	29	30	34	34
FLIP 90-109C	43	40	47	35	49	47	47	43	38	36	35	38	41
FLIP 90-132C	42	44	44	32	47	47	47	38	40	33	40	43	43
FLIP 90-179C	38	37	43	32	46	45	47	40	39	33	37	38	42
FLIP 82-150C	31	32	33	25	32	31	39	32	29	23	26	31	28
ILC 482	33	32	36	22	34	35	32	31	31	26	23	31	28
Local check	37	32	33	22	39	34	38	30	32	28	39	33	26
Location Mean	**39**	**38**	**42**	**30**	**42**	**41**	**42**	**37**	**36**	**31**	**34**	**37**	**38**
S.E. Of Mean	0.93	0.20	1.77	0.74	3.63	0.96	2.07	1.26	1.08	1.95	1.31	0.93	1.00
LSD at .05	2.64	0.58	5.05	2.10	NS	2.74	5.88	3.57	3.09	5.56	3.73	2.64	2.84
C.V. %	4.14	0.91	7.23	4.27	15.05	4.07	8.59	5.94	5.21	10.87	6.74	4.32	4.55

Cont'd. ...

Table 3.2.5. Cont'd. ...

Entry name	Syria						Turkey					Overall mean (1)
	Al-Ghab	Gelline	Hemo	Jableh	Jin-diress	Tel-Hadya	Adana-I	Adana-II	Amasya	Diyar-bakir	Menemen	
FLIP 84-15C	42	54	43	40	38	40	-	33	41	-	37	42
FLIP 85-5C	49	59	42	44	42	44	-	27	50	-	43	46
FLIP 86-6C	39	50	38	43	37	41	-	39	44	-	41	42
FLIP 87-96C	42	51	42	41	35	37	27	34	44	-	37	41
FLIP 88-82C	43	48	29	32	28	30	26	35	38	-	33	34
FLIP 88-85C	40	45	31	33	34	34	-	35	37	-	38	36
FLIP 89-29C	48	42	30	30	25	29	-	43	34	-	31	34
FLIP 89-38C	39	42	35	33	30	34	31	40	37	-	35	37
FLIP 89-44C	39	48	34	38	32	39	33	35	43	-	38	38
FLIP 89-78C	39	40	30	36	30	32	26	33	36	35	30	34
FLIP 89-96C	39	44	34	33	31	34	30	37	39	-	34	37
FLIP 90-3C	42	46	38	40	37	34	42	31	41	39	36	40
FLIP 90-4C	42	46	37	41	35	34	40	27	43	40	37	38
FLIP 90-13C	36	50	31	39	32	34	35	41	42	35	36	38
FLIP 90-58C	39	46	33	35	30	31	33	32	39	34	41	37
FLIP 90-76C	40	45	31	35	31	33	29	30	40	32	35	36
FLIP 90-96C	43	39	29	34	29	33	28	33	37	33	33	35
FLIP 90-105C	44	43	32	35	32	33	28	31	38	33	36	35
FLIP 90-109C	44	46	38	40	37	38	37	31	45	38	37	41
FLIP 90-132C	37	47	40	38	37	39	37	31	42	37	39	40
FLIP 90-179C	35	47	34	38	37	43	26	37	40	38	42	40
FLIP 82-150C	34	36	25	32	25	28	27	31	33	-	29	30
ILC 482	33	35	29	26	24	27	26	40	34	30	27	30
Local check	31	30	27	30	24	26	40	39	38	35	38	
Location Mean	**40**	**45**	**34**	**36**	**32**	**34**	**32**	**34**	**40**	**35**	**36**	
S.E. Of Mean	1.32	2.83	0.46	1.87	0.70	0.94	0.86	One	1.26	0.85	2.24	
LSD at .05	3.76	8.04	1.31	5.33	1.99	2.68	2.45	rep	3.59	2.14	6.38	
C.V. %	5.73	10.88	2.35	9.00	3.87	4.75	4.69		5.49	3.40	10.82	

(1) Caltagirone in Italy and Amasya in Turkey were planted in spring and Adana-I and Diyarbakir in Turkey had missing lines were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.2.6. Seed yield (Y=kg/ha) of entries at different locations in the CIYT-W-MR during 1992/93.

Entry name	Algeria								Cyprus		Iran		Italy			
	Guelma		Khroub		Oued-Smar		Setif		Athalassa		Hashamabad		Caltagirone		Papiano	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-15C	2777	1	3117	4	2210	23	1100	22	3840	1	1901	12	465	1	1707	24
FLIP 85-5C	1438	17	2299	24	3458	4	890	24	2896	20	1999	10	190	21	2580	19
FLIP 86-6C	1289	19	3039	7	2803	15	1486	5	3125	14	1886	13	340	6	2441	20
FLIP 87-96C	2536	3	2646	21	2668	20	1614	2	2872	22	2248	4	273	13	2220	22
FLIP 88-82C	1256	20	3099	6	3043	11	1175	18	3656	3	1286	24	209	19	3139	10
FLIP 88-85C	1233	21	3630	1	3233	8	1319	12	3653	4	1869	14	436	4	2836	16
FLIP 89-29C	-	-	2987	9	3432	6	1369	10	2962	17	2448	2	454	2	2385	21
FLIP 89-38C	1906	10	2646	22	2757	16	1440	8	3698	2	1554	20	275	12	2915	15
FLIP 89-44C	1734	12	3102	5	2582	21	1255	14	3337	6	1830	15	228	17	2617	18
FLIP 89-78C	682	22	3547	2	2840	14	1115	21	2920	18	2122	8	226	18	3231	3
FLIP 89-96C	1621	15	2620	23	2900	12	1372	9	3233	8	1490	22	260	14	3022	11
FLIP 90-3C	1365	18	2867	11	3662	1	1561	4	2618	24	2446	3	443	3	3157	9
FLIP 90-4C	1661	14	2792	15	2684	18	1240	15	2913	19	2084	9	136	24	3415	2
FLIP 90-13C	2544	2	2669	20	3171	9	1167	19	2681	23	1541	21	188	22	3169	6
FLIP 90-58C	375	23	2701	18	3372	7	1212	16	3142	13	2163	7	186	23	3015	12
FLIP 90-76C	1979	9	2846	12	3658	2	1642	1	2878	21	1766	16	287	11	3754	1
FLIP 90-96C	2143	8	3263	3	2860	13	1093	23	3319	7	2810	1	207	20	3194	5
FLIP 90-105C	1802	11	2719	16	3120	10	1267	13	3233	9	2207	6	299	10	3211	4
FLIP 90-109C	1701	13	2935	10	3447	5	1189	17	3024	15	1751	17	257	16	3159	8
FLIP 90-132C	2441	4	2990	8	3644	3	1456	6	3167	12	1698	18	365	5	2993	14
FLIP 90-179C	2156	7	2792	14	2705	17	1131	20	3222	10	1969	11	338	7	3163	7
FLIP 82-150C	2234	6	2703	17	2419	22	1588	3	3010	16	2229	5	259	15	3015	13
ILC 482	1563	16	2682	19	2677	19	1363	11	3219	11	1690	19	332	8	1891	23
Local check	2292	5	2815	13	1273	24	1446	7	3396	5	1341	23	301	9	2696	17
Location Mean	**1771**		**2896**		**2942**		**1312**		**3167**		**1930**		**290**		**2872**	
S.E. Of Mean	269.25		270.31		330.55		203.69		375.73		254.39		55.09		193.48	
LSD at .05	767.41		NS		940.93		NS		NS		724.12		156.83		550.75	
C.V. %	26.34		16.17		19.46		26.89		20.55		22.83		32.94		11.67	
Entry > L. check	0		-		22		-		-		9		1		2	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry name	Italy		Jordan				Lebanon		Libya				Portugal		Spain	
	Tolentino		Mushaqqar		Raba'a		Terbol		Al-Safsaf		Sebha		Elvas		Badajoz	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-15C	2521	12	2026	10	773	1	2830	3	1167	13	3194	7	2336	15	1371	20
FLIP 85-5C	2978	1	1984	12	589	13	2605	10	732	21	2431	15	1945	19	2049	8
FLIP 86-6C	2519	13	2146	5	543	19	2782	4	1393	6	3125	8	2841	10	2139	4
FLIP 87-96C	2716	5	958	24	764	2	2653	7	863	18	2222	19	4258	2	1083	23
FLIP 88-82C	2097	24	2060	9	669	6	2320	21	1661	1	3194	6	1367	23	1910	9
FLIP 88-85C	2586	8	2720	1	563	16	3014	1	1619	2	2500	14	1826	21	1782	13
FLIP 89-29C	2433	15	2134	6	591	12	2741	5	827	20	3056	9	2253	16	2952	1
FLIP 89-38C	2328	18	2064	8	546	17	2503	17	845	19	2222	21	3596	4	2512	2
FLIP 89-44C	2313	20	1582	20	572	15	2527	16	1143	14	3403	3	2570	13	1086	22
FLIP 89-78C	2555	10	2181	4	707	4	2551	12	1524	3	3472	2	1518	22	1429	16
FLIP 89-96C	2145	23	2075	7	635	7	2544	15	1256	11	2222	20	2143	18	1793	12
FLIP 90-3C	2601	6	1822	14	544	18	2551	14	1006	17	1806	24	2914	9	1034	24
FLIP 90-4C	2305	21	1664	18	499	20	2423	19	1292	10	3333	4	2617	12	1586	15
FLIP 90-13C	2552	11	1736	15	409	24	2333	20	1244	12	2639	11	5060	1	1635	14
FLIP 90-58C	2353	16	1522	21	577	14	2259	24	1333	7	1806	23	3013	8	1807	11
FLIP 90-76C	2858	4	1614	19	476	22	2551	13	1310	8	2708	10	2430	14	2109	5
FLIP 90-96C	2599	7	1990	11	618	9	2449	18	1458	5	2639	12	3852	3	2098	6
FLIP 90-105C	2518	14	1333	23	429	23	2293	23	1107	16	2361	17	2773	11	1371	19
FLIP 90-109C	2578	9	1728	16	679	5	2571	11	1298	9	2431	16	3193	6	1420	18
FLIP 90-132C	2321	19	2597	2	730	3	2701	6	560	23	2292	18	3029	7	1810	10
FLIP 90-179C	2256	22	1479	22	619	8	2619	8	1125	15	3333	5	2234	17	1423	17
FLIP 82-150C	2348	17	2388	3	482	21	2612	9	1512	4	3681	1	1935	20	1246	21
ILC 482	2970	2	1907	13	601	11	2946	2	649	22	2569	13	1122	24	2087	7
Local check	2969	3	1670	17	609	10	2313	22	482	24	1944	22	3332	5	2378	3
Location Mean	**2517**		**1891**		**593**		**2570**		**1142**		**2691**		**2673**		**1755**	
S.E. Of Mean	202.77		341.64		91.32		120.47		216.53		490.00		297.82		232.61	
LSD at .05	577.20		NS		NS		342.93		616.35		NS		847.76		662.13	
C.V. %	13.95		31.30		26.69		8.12		32.84		31.54		19.30		22.96	
Entry > L. check	0		-		-		6		16		-		2		0	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry name	Spain		Syria													
	Cordoba		Al-Ghab		Gelline		Hama		Hemo		Idleb		Izra'a		Jableh	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-15C	5378	4	2619	21	2950	5	3730	3	1052	21	3605	1	2211	6	1674	23
FLIP 85-5C	5530	2	3279	4	3182	1	3164	13	919	22	1733	24	2089	9	4238	1
FLIP 86-6C	5205	10	3041	10	2823	12	3010	16	1149	19	2497	11	1871	16	2987	8
FLIP 87-96C	5162	11	3306	3	2414	22	3296	8	1068	20	2147	18	1728	23	2769	12
FLIP 88-82C	5283	9	3483	2	2876	7	3280	10	1295	17	2415	12	1932	15	2898	9
FLIP 88-85C	5378	3	3021	12	2495	20	3688	4	1636	4	2678	8	2639	1	2354	19
FLIP 89-29C	4590	19	3578	1	2967	4	3349	6	1666	3	2922	5	2496	2	2449	17
FLIP 89-38C	4878	14	2578	22	2539	18	3492	5	1472	13	2270	15	2075	10	2408	18
FLIP 89-44C	4221	23	3252	6	2823	11	2958	18	1617	6	2224	16	1802	21	2816	11
FLIP 89-78C	4579	20	3000	14	2898	6	3270	11	1501	11	2190	17	1973	13	3497	4
FLIP 89-96C	2919	24	2769	19	2857	9	2878	21	1504	10	2653	9	1782	22	2204	21
FLIP 90-3C	5054	12	2939	16	2691	14	2921	20	1577	7	2108	19	2422	3	2284	20
FLIP 90-4C	4789	15	3007	13	2531	19	3016	15	1626	5	2057	21	1946	14	3565	3
FLIP 90-13C	5338	7	2313	24	2869	8	2751	22	1347	15	2634	10	1850	17	3238	7
FLIP 90-58C	4490	21	2857	18	2842	10	2471	23	1705	2	2030	22	2122	7	2898	10
FLIP 90-76C	4711	16	3061	9	2667	16	2942	19	1241	18	1832	23	2095	8	2599	13
FLIP 90-96C	5375	5	2959	15	2985	3	3222	12	1782	1	2346	13	2272	5	3374	5
FLIP 90-105C	4652	18	2755	20	2298	23	2963	17	1552	8	2089	20	1837	19	3265	6
FLIP 90-109C	5329	8	2497	23	2615	17	3037	14	1410	14	2825	6	2027	12	2490	16
FLIP 90-132C	4486	22	2918	17	2794	13	3280	9	818	23	2992	4	2286	4	2528	15
FLIP 90-179C	4708	17	3252	5	2442	21	3762	2	612	24	2767	7	1816	20	1680	22
FLIP 82-150C	5357	6	3184	7	2671	15	3302	7	1505	9	3024	3	2068	11	2599	14
ILC 482	4905	13	3041	11	3133	2	3778	1	1311	16	3044	2	1837	18	1660	24
Local check	5614	1	3082	8	1589	24	2323	24	1477	12	2305	14	1619	24	4204	2
Location Mean	**4914**		**2991**		**2706**		**3162**		**1368**		**2474**		**2033**		**2778**	
S.E. Of Mean	308.72		356.29		246.41		133.00		175.93		323.73		213.89		404.16	
LSD at .05	878.78		NS		701.41		378.58		500.79		921.50		NS		1150.46	
C.V. %	10.88		20.63		15.77		7.29		22.27		22.66		18.22		25.20	
Entry > L. check	0		-		23		22		0		1		-		0	

Cont'd. ...

Table 3.2.6. Cont'd. ...

Entry name	Syria				Turkey										(1)	
	Jindiress		Tel Hadya		Adana-I		Adana-II		Amasya		Diyarbakir		Menemen		**Overall mean**	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 84-15C	2701	3	2761	2	447	22	3463	9	95	24	-	-	1704	6	2240	14
FLIP 85-5C	1774	23	2236	15	380	23	2691	23	484	23	-	-	1648	7	2171	17
FLIP 86-6C	2562	7	2465	5	246	24	3333	12	571	21	-	-	1414	15	2268	11
FLIP 87-96C	2131	13	2417	7	777	17	3477	8	892	16	-	-	1160	19	2166	19
FLIP 88-82C	2141	12	2582	3	1542	7	3110	13	1571	6	-	-	1481	12	2303	6
FLIP 88-85C	2978	1	3372	1	635	20	1915	24	1643	2	-	-	1512	10	2397	2
FLIP 89-29C	2049	19	2476	4	466	21	4371	1	889	17	-	-	1815	3	2383	3
FLIP 89-38C	2628	5	2351	11	963	16	3851	4	817	19	-	-	1790	4	2276	10
FLIP 89-44C	2253	10	1840	22	1456	9	3096	14	1516	10	-	-	1284	18	2183	16
FLIP 89-78C	2584	6	2295	12	1039	14	3393	11	1548	7	1545	8	747	23	2291	7
FLIP 89-96C	2097	17	2185	16	972	15	3048	18	786	20	-	-	938	22	2045	23
FLIP 90-3C	2308	9	1650	24	2522	1	3088	16	1492	11	1844	5	1420	14	2259	12
FLIP 90-4C	2020	20	1998	20	1704	4	2967	21	1635	3	1872	4	1494	11	2253	13
FLIP 90-13C	2113	15	2457	6	1656	6	4087	2	1524	9	1600	7	1543	9	2342	4
FLIP 90-58C	1920	21	2184	17	1158	12	3437	10	1095	15	1500	9	1019	21	2162	22
FLIP 90-76C	2122	14	2251	14	1744	3	2858	22	1151	13	2039	1	580	24	2232	15
FLIP 90-96C	2222	11	2146	18	1815	2	3631	6	1548	8	1156	12	1975	1	2486	1
FLIP 90-105C	2107	16	1887	21	1237	11	3095	15	1659	1	1822	6	1148	20	2165	20
FLIP 90-109C	1829	22	2100	19	1664	5	3592	7	1571	5	1900	3	1623	8	2285	9
FLIP 90-132C	2923	2	2414	9	1153	13	3800	5	1095	14	2000	2	1716	5	2329	5
FLIP 90-179C	2698	4	2415	8	660	19	3046	20	817	18	1378	11	1864	2	2171	18
FLIP 82-150C	2057	18	2294	13	1329	10	3070	17	1230	12	-	-	1296	17	2290	8
ILC 482	2440	8	2376	10	709	18	3884	3	492	22	1433	10	1426	13	2163	21
Local check	1716	24	1701	23	1482	8	3047	19	1619	4	0	13	1321	16		
Location Mean	**2266**		**2286**		**1157**		**3306**		**1156**		**1545**		**1413**			
S.E. Of Mean	315.20		198.19		138.39		359.93		138.30		156.66		200.60			
LSD at .05	NS		564.16		393.93		1024.54		393.66		394.17		571.01			
C.V. %	24.10		15.02		20.73		18.86		20.72		14.34		24.58			
Entry > L. check	-		13		1		2		0		12		1			

(1) Caltagirone in Italy and Amasya in Turkey were planted in spring and Guelma in Algeria and Diyarbakir in Turkey had missing lines were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.2.7. The five heaviest seed yielding entries at the individual locations in the CIYT-W-MR during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Algeria	Guelma	FLIP 84-15C	FLIP 90-13C	FLIP 87-96C	FLIP 90-132C	Local check
Algeria	Khroub	FLIP 88-85C	FLIP 89-78C	FLIP 90-96C	FLIP 84-15C	FLIP 89-44C
Algeria	Oued Smar	FLIP 90-3C	FLIP 90-76C	FLIP 90-132C	FLIP 85-5C	FLIP 90-109C
Algeria	Setif	FLIP 90-76C	FLIP 87-96C	FLIP 82-150C	FLIP 90-3C	FLIP 86-6C
Cyprus	Athalassa	FLIP 84-15C	FLIP 89-38C	FLIP 88-82C	FLIP 88-85C	Local check
Iran	Hashamabad	FLIP 90-96C	FLIP 89-29C	FLIP 90-3C	FLIP 87-96C	FLIP 82-150C
Italy	Caltagirone	FLIP 84-15C	FLIP 89-29C	FLIP 90-3C	FLIP 88-85C	FLIP 90-132C
Italy	Papiano	FLIP 90-76C	FLIP 90-4C	FLIP 89-78C	FLIP 90-105C	FLIP 90-96C
Italy	Tolentino	FLIP 85-5C	ILC 482	Local check	FLIP 90-76C	FLIP 87-96C
Jordan	Mushaggar	FLIP 88-85C	FLIP 90-132C	FLIP 82-150C	FLIP 89-78C	FLIP 86-6C
Jordan	Rabba	FLIP 84-15C	FLIP 87-96C	FLIP 90-132C	FLIP 89-78C	FLIP 90-109C
Lebanon	Terbol	FLIP 88-85C	ILC 482	FLIP 84-15C	FLIP 86-6C	FLIP 89-29C
Libya	Al-Safsaf	FLIP 88-82C	FLIP 88-85C	FLIP 89-78C	FLIP 82-150C	FLIP 90-96C
Libya	Sebha	FLIP 82-150C	FLIP 89-78C	FLIP 89-44C	FLIP 90-4C	FLIP 90-179C
Portugal	Elvas	FLIP 90-13C	FLIP 87-96C	FLIP 90-96C	FLIP 89-38C	Local check
Spain	Badajoz	FLIP 89-29C	FLIP 89-38C	Local check	FLIP 86-6C	FLIP 90-76C
Spain	Cordoba	Local check	FLIP 85-5C	FLIP 88-85C	FLIP 84-15C	FLIP 90-96C
Syria	Al Ghab	FLIP 89-29C	FLIP 88-82C	FLIP 87-96C	FLIP 85-5C	FLIP 90-179C
Syria	Gelline	FLIP 85-5C	ILC 482	FLIP 90-96C	FLIP 89-29C	FLIP 84-15C
Syria	Hama	ILC 482	FLIP 90-179C	FLIP 84-15C	FLIP 88-85C	FLIP 89-38C
Syria	Heimo	FLIP 90-96C	FLIP 90-58C	FLIP 89-29C	FLIP 88-85C	FLIP 90-4C
Syria	Idleb	FLIP 84-15C	ILC 482	FLIP 82-150C	FLIP 90-132C	FLIP 89-29C
Syria	Izra'a	FLIP 88-85C	FLIP 89-29C	FLIP 90-3C	FLIP 90-132C	FLIP 90-96C
Syria	Jableh	FLIP 85-5C	Local check	FLIP 90-4C	FLIP 89-78C	FLIP 90-96C
Syria	Jindiress	FLIP 88-85C	FLIP 90-132C	FLIP 84-15C	FLIP 90-179C	FLIP 89-38C
Syria	Tel Hadya	FLIP 88-85C	FLIP 84-15C	FLIP 88-82C	FLIP 89-29C	FLIP 86-6C
Turkey	Adana-1	FLIP 90-3C	FLIP 90-96C	FLIP 90-76C	FLIP 90-4C	FLIP 90-109C
Turkey	Adana-2	FLIP 89-29C	FLIP 90-13C	ILC 482	FLIP 89-38C	FLIP 90-132C
Turkey	Amasya	FLIP 90-105C	FLIP 88-85C	FLIP 90-4C	Local check	FLIP 90-109C
Turkey	Menemen	FLIP 90-96C	FLIP 90-179C	FLIP 89-29C	FLIP 89-38C	FLIP 90-132C

Table 3.2.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-W-MR during 1991/92 and 1992/93.

Entry Name	1991/92		1992/93		Mean	
	Y	R	Y	R	Y	R
FLIP 84-15C	1935	2	2240	8	2088	3
FLIP 85-5C	1900	4	2171	10	2036	8
FLIP 86-6C	1819	9	2268	7	2044	7
FLIP 87-96C	1667	12	2166	11	1917	12
FLIP 88-82C	1835	8	2303	3	2069	5
FLIP 88-85C	2102	1	2397	1	2250	1
FLIP 89-29C	1908	3	2383	2	2146	2
FLIP 89-38C	1858	7	2276	6	2067	6
FLIP 89-44C	1866	6	2183	9	2025	10
FLIP 89-78C	1875	5	2291	4	2083	4
FLIP 89-96C	1666	13	2045	13	1856	13
FLIP 82-150C	1768	11	2290	5	2029	9
ILC 482	1800	10	2163	12	1982	11

3.3. CHICKPEA INTERNATIONAL YIELD TRIAL-SOUTHERLY LATITUDES - 1 (CIYT-SL1)

Material

The material for the CIYT-SL1 comprised 21 test entries, and three checks, two checks were provided and one local check to be supplied by the cooperator. All the test entries from these were the advanced breeding lines developed through hybridization. These test entries were resistant to Ascochyta blight and were selected from the local and regional yield trials based on their superior yield performance.

Methods and Management

The trial design was a randomized complete block with two replications. The suggested plot size was four rows each 4 m long with an inter row spacing of 35 cm.

Nineteen sets of trial were distributed to cooperators in 13 countries and the results were returned from 12 sets covering 9 countries. The agronomic practices employed at different locations are shown in Table 3.3.1.

Results and Discussion

Mean for time to flowering, time to maturity, plant height, and 100-seed weight are compiled in Tables 3.3.2, 3.3.3, 3.3.4 and 3.3.5, respectively. The entry means over locations varied from 72 to 87 days for time to flowering, 136 to 141 days for time to maturity, 46 to 69 cm for plant height, and 24 to 36 g for 100-seed weight.

The ANOVA of the seed yield at the locations revealed that at 3 locations some of the test entries exceeded the respective checks (Table 3.3.6). The seed yields were highest at Toshevo in Bulgaria, and were followed by Tel Hadya in Syria, and New Delhi in India. The five heaviest entries at different locations are given in Table 3.3.7. Some of the entries

Table 3.3.1. Agronomic details for CIYT-SL1-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Bulgaria	Toshevo	21.04.93	17.08.93	-	60	-	-	Galant	Stepnoy 1
Egypt	Sids	06.11.92	22.04.93	36	71	-	4	-	G88/G531/G195
Ethiopia	Ghinchi	02.09.93	01.03.94	-	-	-	-	-	Mariye
Ethiopia	Debre Zeit	13.09.94	08.02.95	-	-	-	-	-	DZ-10-4
India	Durgapura	23.11.92	02.04.93	20	40	-	2	Endosulphane, Basalin	-
India	New Delhi	18.11.92	27.04.93	20	-	-	1	Endosulphane	Pusa 267
Pakistan	Dokri	04.11.93	02.04.94	35	69	-	-	Thiodan	Chhola
Saudi Arabia	Al Gassim	11.11.92	01.05.93	50	120	-	35/9mm	-	FLIP 85-130C
Saudi Arabia	Alkharj	17.12.92	12.05.93	80	100	50	13/week	-	Local variety
Srilanka	Bandarawela	04.05.93	20.08.93	20	60	40	3	Selicron	Annigeri
Sudan	Hudeiba	09.12.92	—.03.93	43	-	-	9/2wks	-	Shendi (ILC 1335)
Syria	Tel Hadya-ICARDA	10.12.92	21.06.93	-	50	-	-	Kerb + Igran	Ghab 2

Table 3.3.2. Time to flowering (days) of entries at different locations in the CIYT-SL1 during 1992/93.

Entry name	Pedigree	Origin	Bulgaria Toshevo	Egypt Sids	Ethiopia Debre Zeit
FLIP 87-60C	X85TH276/ILC 3843 X FLIP 82-191C	ICARDA/ICRISAT	49	112	66
FLIP 88-79C	X85TH278/ILC 3843 X FLIP 83-13C	ICARDA/ICRISAT	49	109	63
FLIP 88-83C	X85TH15/FLIP 82-100C X ILC 200	ICARDA/ICRISAT	48	117	83
FLIP 88-84C	X85TH211/ILC 2371 X FLIP 82-144C	ICARDA/ICRISAT	49	105	84
FLIP 88-86C	X86TH79/ILC 493 X FLIP 82-150C	ICARDA/ICRISAT	50	99	88
FLIP 88-87C	X86TH79/ILC 493 X FLIP 82-150C	ICARDA/ICRISAT	51	96	90
FLIP 89-47C	X87TH57/FLIP 83-104C X FLIP 84-78C	ICARDA/ICRISAT	54	102	93
FLIP 89-48C	X87TH86/FLIP 84-78C X ILC 4921	ICARDA/ICRISAT	50	105	85
FLIP 89-49C	X87TH19/FLIP 85-4C X FLIP 84-78C	ICARDA/ICRISAT	52	106	82
FLIP 89-50C	X87TH146/FLIP 85-62C X FLIP 82-78C	ICARDA/ICRISAT	54	111	88
FLIP 89-110C	X85TH67/(FLIP 82-65C X FLIP 81-3C) X ILC 3279	ICARDA/ICRISAT	53	112	89
FLIP 89-130C	X87TH299/(ILC 165 X FLIP 81-65C) X ILC 165	ICARDA/ICRISAT	50	116	82
FLIP 90-9C	X85TH67/(FLIP 82-65C X FLIP 81-3C) X ILC 3279	ICARDA/ICRISAT	54	102	87
FLIP 90-14C	X86TH29/ILC 263 X FLIP 82-150C	ICARDA/ICRISAT	53	102	80
FLIP 90-27C	X86TH276/(ILC 1919 X FLIP 82-127C) X FLIP 84-18C	ICARDA/ICRISAT	50	99	77
FLIP 90-62C	X86TH32/ILC 1919 X FLIP 81-293C	ICARDA/ICRISAT	54	113	89
FLIP 90-63C	X86TH34/ILC 1919 X FLIP 82-150C	ICARDA/ICRISAT	50	104	80
FLIP 90-65C	X86TH34/ILC 1919 X FLIP 82-150C	ICARDA/ICRISAT	54	99	81
FLIP 90-72C	X86TH142/FLIP 84-46C X ILC 484	ICARDA/ICRISAT	54	100	88
FLIP 90-78C	X86TH29/ILC 263 X FLIP 82-150C	ICARDA/ICRISAT	54	104	81
FLIP 90-93C	X87TH9/FLIP 81-293C X FLIP 84-79C	ICARDA/ICRISAT	54	104	84
FLIP 82-150C	X79TH101/ILC 523 X ILC 183 (Improved check)	ICARDA/ICRISAT	50	111	87
ILC 482	(Long term check)	Turkey	50	102	83
Local check	-	-	54	95	57
Location Mean			**52**	**105**	**82**
S.E. Of Mean			0.55	0.83	1.97
LSD at 0.05			1.55	2.35	4.71
C.V. %			1.82	1.36	3.41

Cont'd. ...

Table 3.3.2. Cont'd. ...

Entry name	Ethiopia Ghinchi	India Durgapura	India New Delhi	Pakistan Dokri	Saudi Arabia Al Gassim	Saudi Arabia Al Kharj	Srilanka Bandarawela	Sudan Hudeiba	Syria Tel Hadya	**Overall mean(1)**
FLIP 87-60C	58	59	73	82	96	65	54	49	124	74
FLIP 88-79C	58	59	71	82	90	67	52	48	123	72
FLIP 88-83C	67	71	74	87	102	87	54	75	126	82
FLIP 88-84C	82	73	77	90	108	88	54	-	125	85
FLIP 88-86C	82	76	75	90	106	88	61	-	127	85
FLIP 88-87C	79	77	77	93	105	87	54	-	126	84
FLIP 89-47C	80	78	77	94	112	90	51	-	128	86
FLIP 89-48C	77	78	76	88	110	88	55	-	128	85
FLIP 89-49C	82	75	76	94	114	91	61	-	129	87
FLIP 89-50C	58	77	79	93	116	93	55	-	131	85
FLIP 89-110C	84	76	78	93	108	83	57	-	131	87
FLIP 89-130C	67	69	75	90	101	78	51	75	127	81
FLIP 90-9C	84	79	78	93	107	88	57	-	127	86
FLIP 90-14C	77	75	75	89	105	86	51	76	127	82
FLIP 90-27C	67	72	76	87	99	86	48	72	126	79
FLIP 90-62C	84	80	78	92	106	88	51	-	128	87
FLIP 90-63C	84	77	79	89	102	87	49	75	129	83
FLIP 90-65C	77	76	78	91	108	88	48	77	128	83
FLIP 90-72C	84	80	75	96	113	90	54	-	128	87
FLIP 90-78C	84	76	79	91	103	86	54	75	129	84
FLIP 90-93C	84	77	77	93	111	89	57	-	130	86
FLIP 82-150C	84	78	78	91	107	88	51	-	127	86
ILC 482	67	68	76	88	102	77	47	69	126	79
Local check	72	-	76	91	98	59	55	48	132	
Location Mean	**76**	**74**	**76**	**90**	**105**	**84**	**53**	**67**	**128**	
S.E. Of Mean	4.34	2.42	0.98	1.78	0.90	5.94	4.08	1.15	0.58	
LSD at 0.05	11.31	6.90	2.78	5.06	2.57	16.92	NS	2.95	1.64	
C.V. %	8.84	5.65	2.22	3.41	1.48	12.25	13.23	2.42	0.78	

(1) Toshevo in Bulgaria and Tel Hadya in Syria being not in southerly latitudes, and Hudeiba in Sudan with missing values were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.3.3. Time to maturity (days) of entries at different locations in the CIYT-SL1 during 1992/93.

Entry name	Bulgaria Toshevo	Egypt Sids	Ethiopia Debre-Zeit	Ethiopia Ghinchi	India Durga-pura	India New-Delhi	Pakistan Dokri	Saudi Arabia Al Gassim	Saudi Arabia Al Kharj	Srilanka Bandara-wela	Sudan Hudeiba	Syria Tel-Hadya	**Overall mean(1)**
FLIP 87-60C	111	158	127	140	127	144	137	154	143	99	92	174	138
FLIP 88-79C	112	162	125	140	128	140	139	151	144	85	94	175	136
FLIP 88-83C	111	166	140	143	129	145	138	153	144	101	103	173	140
FLIP 88-84C	111	162	-	145	128	144	142	153	142	102	-	173	140
FLIP 88-86C	111	165	138	145	128	146	140	155	143	100	-	175	140
FLIP 88-87C	111	169	139	145	127	142	141	153	145	102	-	174	141
FLIP 89-47C	112	161	145	145	128	144	143	153	144	107	-	177	141
FLIP 89-48C	112	163	139	145	128	144	139	151	144	99	-	174	139
FLIP 89-49C	112	163	137	145	129	144	142	156	144	102	-	177	141
FLIP 89-50C	112	158	142	140	128	145	142	154	145	101	-	178	139
FLIP 89-110C	112	166	137	145	127	145	143	154	145	104	-	178	141
FLIP 89-130C	110	161	132	143	128	139	142	156	145	102	103	173	139
FLIP 90-9C	110	158	141	145	129	140	137	153	145	97	-	174	138
FLIP 90-14C	112	163	134	145	127	147	140	154	145	99	103	176	140
FLIP 90-27C	111	164	127	143	127	143	141	152	144	102	105	173	139
FLIP 90-62C	110	161	-	145	129	145	140	154	143	105	-	175	140
FLIP 90-63C	112	158	129	145	128	141	141	151	145	100	100	176	138
FLIP 90-65C	113	164	135	145	127	148	142	153	143	97	102	177	140
FLIP 90-72C	110	166	141	145	127	142	143	155	143	97	-	175	140
FLIP 90-78C	111	162	131	145	128	143	140	151	144	99	102	177	139
FLIP 90-93C	110	164	-	145	128	145	141	154	144	102	-	177	140
FLIP 82-150C	111	162	135	145	127	139	142	154	145	100	-	174	139
ILC 482	110	167	138	143	127	144	138	156	145	99	96	173	140
Local check	112	146	127	143	-	143	141	151	146	104	91	179	
Location Mean	**111**	**162**	**135**	**144**	**128**	**143**	**140**	**153**	**144**	**100**	**99**	**175**	
S.E. Of Mean	0.73	0.74	2.03	1.21	0.59	One rep	0.81	0.76	0.46	3.92	1.08	0.70	
LSD at 0.05	NS	2.10	4.89	2.68	NS		2.31	2.16	1.30	NS	2.78	1.99	
C.V. %	1.14	0.79	2.13	1.10	0.80		1.00	0.86	0.55	6.78	1.54	0.69	

(1) Toshevo in Bulgaria and Tel Hadya in Syria being not in southerly latitudes and Debre Zeit in Ethiopia and Hudeiba in Sudan with missing values were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.3.4. Plant height (cm) of entries at different locations in the CIYT-SL1 during 1992/93.

Entry name	Bulgaria Toshevo	Egypt Sids	Ethiopia Debre-Zeit	Ethiopia Ghinchi	India Durgapura	India New-Delhi	Pakistan Dokri	Saudi Arabia Al Kharj	Srilanka Bandara-wela	Syria Tel-Hadya	Overall mean(1)
FLIP 87-60C	45	57	37	45	62	74	52	35	41	34	52
FLIP 88-79C	39	61	29	43	55	54	50	33	38	31	48
FLIP 88-83C	42	55	41	50	62	63	52	33	41	33	51
FLIP 88-84C	36	52	-	40	63	59	50	34	41	30	49
FLIP 88-86C	44	60	47	49	60	70	48	37	43	31	52
FLIP 88-87C	43	62	53	51	47	66	48	37	40	34	50
FLIP 89-47C	49	69	-	60	89	77	55	53	53	41	65
FLIP 89-48C	49	74	49	60	73	87	56	46	48	43	63
FLIP 89-49C	48	67	-	50	82	77	57	47	47	41	61
FLIP 89-50C	53	68	56	67	93	98	62	52	44	44	69
FLIP 89-110C	53	65	-	60	70	73	55	47	49	39	60
FLIP 89-130C	43	50	40	44	61	57	52	33	41	31	48
FLIP 90-9C	46	60	58	49	58	63	52	41	48	38	53
FLIP 90-14C	41	61	46	48	46	62	53	30	42	28	49
FLIP 90-27C	38	59	44	39	47	60	50	31	40	30	47
FLIP 90-62C	45	62	54	48	70	71	53	41	48	37	56
FLIP 90-63C	42	58	43	45	53	60	49	31	43	30	48
FLIP 90-65C	45	60	46	46	53	76	53	39	45	33	53
FLIP 90-72C	46	62	49	51	65	65	51	43	37	35	53
FLIP 90-78C	45	62	45	47	79	70	60	41	45	31	58
FLIP 90-93C	45	58	-	46	69	68	54	39	44	31	54
FLIP 82-150C	45	65	43	51	64	63	54	35	45	34	54
ILC 482	39	60	48	43	41	56	45	33	42	29	46
Local check	56	69	37	36	-	52	49	33	45	45	
Location Mean	**45**	**61**	**45**	**48**	**64**	**68**	**53**	**39**	**44**	**35**	
S.E. Of Mean	1.94	3.83	One	3.50	3.86	One	3.68	1.86	2.81	1.16	
LSD at 0.05	5.51	10.91	rep	8.37	11.00	rep	NS	5.29	7.99	3.30	
C.V. %	7.47	10.80		10.24	10.52		12.13	8.33	11.12	5.77	

(1) Toshevo in Bulgaria and Tel Hadya in Syria being not in southerly latitudes and Debre Zeit in Ethiopia with missing values were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.3.5. 100-seed weight (g) of entries at different locations in the CIYT-SL1 during 1992/93.

Entry name	Bulgaria	Egypt	Ethiopia		India		Pakistan	Saudi Arabia	Syria	Overall mean
	Toshevo	Sids	Debre-Zeit	Ghinchi	Durgapura	New-Delhi	Dokri	Al Gassim	Tel-Hadya	
FLIP 87-60C	36	20	25	28	31	35	26	19	29	28
FLIP 88-79C	38	18	28	34	32	31	29	-	31	28
FLIP 88-83C	28	17	31	25	26	24	24	13	24	24
FLIP 88-84C	33	19	28	29	32	27	25	19	30	27
FLIP 88-86C	34	21	28	29	27	26	25	19	27	26
FLIP 88-87C	34	25	29	28	27	29	25	21	28	27
FLIP 89-47C	44	31	36	36	46	41	24	24	35	36
FLIP 89-48C	41	33	34	33	32	36	30	18	34	33
FLIP 89-49C	44	33	36	37	37	41	28	13	33	35
FLIP 89-50C	43	30	35	38	38	36	27	16	32	34
FLIP 89-110C	31	20	28	23	29	26	25	20	21	25
FLIP 89-130C	34	20	28	30	29	27	27	19	27	27
FLIP 90-9C	43	19	35	34	33	35	26	-	32	30
FLIP 90-14C	32	28	27	27	25	31	25	17	23	27
FLIP 90-27C	41	21	34	33	29	37	28	20	31	30
FLIP 90-62C	40	21	34	31	38	34	28	18	32	31
FLIP 90-63C	33	23	27	28	26	26	25	19	26	26
FLIP 90-65C	42	30	34	35	33	34	26	20	35	32
FLIP 90-72C	41	21	32	36	37	39	28	14	33	32
FLIP 90-78C	30	25	29	29	25	30	27	18	24	28
FLIP 90-93C	32	24	31	30	31	29	26	16	27	28
FLIP 82-150C	35	40	28	29	28	28	25	20	28	29
ILC 482	35	21	28	30	28	28	24	17	26	26
Local check	31	24	13	13	-	20	23	18	27	
Location Mean	**36**	**24**	**30**	**30**	**31**	**31**	**26**	**18**	**29**	
S.E. Of Mean	1.01	4.22	2.55	0.89	1.44	1.15	0.60	2.51	1.24	
LSD at 0.05	2.88	12.02	6.09	2.13	4.12	2.74	1.71	NS	3.52	
C.V. %	4.80	30.09	12.08	4.22	8.00	5.24	3.98	24.08	7.40	

(1) Toshevo in Bulgaria and Tel Hadya in Syria being not in southerly latitudes and Al Gassim in Saudi Arabia with missing values were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.3.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-SL1 during 1992/93.

Entry name	Bulgaria		Egypt		Ethiopia				India				Pakistan	
	Toshevo		Sids		Debre Zeit		Ghinchi		Durgapura		New Delhi		Dokri	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-60C	3595	5	2444	6	525	15	1390	8	867	1	2500	5	750	7
FLIP 88-79C	2756	20	681	23	335	21	1198	12	524	4	1493	19	573	12
FLIP 88-83C	3214	10	1264	15	760	6	1146	13	515	5	2292	7	417	22
FLIP 88-84C	2726	21	688	22	867	3	1279	10	193	19	1667	17	462	20
FLIP 88-86C	3643	3	2486	5	646	11	1208	11	291	13	1979	12	521	16
FLIP 88-87C	3214	11	2542	3	579	14	1779	2	294	12	1701	16	417	23
FLIP 89-47C	2690	22	1111	17	108	24	815	20	39	23	1319	22	566	13
FLIP 89-48C	3565	6	2514	4	671	9	1283	9	215	17	1389	21	479	19
FLIP 89-49C	3732	2	2708	2	708	7	869	19	110	21	1424	20	500	18
FLIP 89-50C	2756	19	500	24	338	20	719	22	179	20	868	24	556	14
FLIP 89-110C	3613	4	1042	18	373	19	671	24	278	14	1632	18	948	2
FLIP 89-130C	2863	17	792	20	223	23	1552	6	675	3	1806	15	639	9
FLIP 90-9C	3048	14	931	19	677	8	710	23	443	6	1910	14	417	21
FLIP 90-14C	2935	16	1208	16	910	2	1525	7	228	16	2708	3	618	10
FLIP 90-27C	2244	24	1347	14	654	10	756	21	329	10	2604	4	764	6
FLIP 90-62C	3458	8	2278	8	404	18	896	18	315	11	3194	2	1035	1
FLIP 90-63C	2494	23	2083	11	448	16	1065	14	418	7	2187	8	674	8
FLIP 90-65C	2821	18	1375	13	846	4	1623	4	338	8	2049	10	535	15
FLIP 90-72C	2952	15	694	21	308	22	952	16	194	18	1944	13	764	5
FLIP 90-78C	3185	12	3194	1	773	5	948	17	737	2	2326	6	799	4
FLIP 90-93C	3851	1	2097	10	596	12	1694	3	334	9	2083	9	590	11
FLIP 82-150C	3333	9	2139	9	410	17	1608	5	76	22	1250	23	514	17
ILC 482	3143	13	1528	12	579	13	1044	15	272	15	2049	11	378	24
Local check	3458	7	2347	7	1042	1	1929	1	-		3889	1	799	3
Location Mean	**3137**		**1666**		**574**		**1194**		**342**		**2011**		**613**	
S.E. Of Mean	335.30		244.39		188.24		300.06		133.24		238.07		114.89	
LSD at 0.05	NS		695.66		NS		NS		379.75		677.66		327.04	
C.V. %	18.51		25.40		46.36		35.54		67.50		20.50		32.46	
Entry > L. check	-		1		-		-		3		0		0	

Cont'd. ...

Table 3.3.6. Cont'd. ...

Entry name	Saudi Arabia				Srilanka		Sudan		Syria		Overall mean	
	Al Gassim		Al Kharj		Bandarawela		Hudeiba		Tel Hadya			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 87-60C	1170	11	294	1	594	3	786	5	2552	1	1170	3
FLIP 88-79C	54	24	272	4	616	2	879	3	2300	7	638	19
FLIP 88-83C	498	16	29	23	650	1	321	10	2095	14	841	13
FLIP 88-84C	1425	9	185	8	106	24	-	-	2099	13	764	16
FLIP 88-86C	2263	3	174	9	245	22	-	-	2140	12	1090	4
FLIP 88-87C	3168	2	282	2	375	10	-	-	2437	2	1237	2
FLIP 89-47C	811	13	195	7	343	12	-	-	2369	4	590	22
FLIP 89-48C	178	22	150	11	299	15	-	-	1936	20	797	14
FLIP 89-49C	195	21	121	12	188	23	-	-	2260	8	758	17
FLIP 89-50C	354	19	33	22	407	8	-	-	2069	16	439	23
FLIP 89-110C	471	17	101	13	269	21	-	-	1834	23	643	18
FLIP 89-130C	1632	8	20	24	394	9	309	11	1963	18	859	11
FLIP 90-9C	84	23	80	14	285	16	-	-	1947	19	615	21
FLIP 90-14C	1416	10	156	10	278	20	474	9	2222	10	1005	8
FLIP 90-27C	735	15	60	17	347	11	1063	2	2354	6	844	12
FLIP 90-62C	378	18	63	16	486	7	-	-	2357	5	1005	9
FLIP 90-63C	1916	6	39	20	280	18	726	6	2429	3	1012	6
FLIP 90-65C	1719	7	210	6	280	17	508	8	2169	11	997	10
FLIP 90-72C	310	20	65	15	500	6	-	-	2082	15	637	20
FLIP 90-78C	2200	5	280	3	278	19	556	7	1901	22	1282	1
FLIP 90-93C	863	12	220	5	580	4	-	-	1572	24	1006	7
FLIP 82-150C	3414	1	33	21	338	13	-	-	2242	9	1087	5
ILC 482	748	14	42	19	333	14	800	4	2052	17	775	15
Local check	2251	4	53	18	539	5	1792	1	1911	21		
Location Mean	**1177**		**132**		**375**		**747**		**2137**			
S.E. Of Mean	504.17		55.21		67.00		247.66		125.00			
LSD at 0.05	1435.14		157.16		190.72		NS		355.81			
C.V. %	74.18		72.71		30.91		46.91		10.13			
Entry > L. check	0		0		0		-		7			

(1) Toshevo in Bulgaria and Tel Hadya in Syria being not in southerly latitudes and Hudeiba in Sudan with missing values were excluded from the overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.3.7. The five heaviest seed yielding entries at the individual locations in the CIYT-SL1 during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Bulgaria	Toshevo	FLIP 90-93C	FLIP 89-49C	FLIP 88-86C	FLIP 89-110C	FLIP 87-60C
Egypt	Sids	FLIP 90-78C	FLIP 89-49C	FLIP 88-87C	FLIP 89-48C	FLIP 88-86C
Ethiopia	Debre Zeit	Local check	FLIP 90-14C	FLIP 88-84C	FLIP 90-65C	FLIP 90-78C
Ethiopia	Ghinchi	Local check	FLIP 88-87C	FLIP 90-93C	FLIP 90-65C	FLIP 82-150C
India	Durgapura	FLIP 87-60C	FLIP 90-78C	FLIP 89-130C	FLIP 88-79C	FLIP 88-83C
India	New Delhi	Local check	FLIP 90-62C	FLIP 90-14C	FLIP 90-27C	FLIP 87-60C
Pakistan	Dokri	FLIP 90-62C	FLIP 89-110C	Local check	FLIP 90-78C	FLIP 90-72C
Saudi Arabia	Al Gassim	FLIP 82-150C	FLIP 88-87C	FLIP 88-86C	Local check	FLIP 90-78C
Saudi Arabia	Al Kharj	FLIP 87-60C	FLIP 88-87C	FLIP 90-78C	FLIP 88-79C	FLIP 90-93C
Sri Lanka	Bandarawela	FLIP 88-83C	FLIP 88-79C	FLIP 87-60C	FLIP 90-93C	Local check
Sudan	Hudeiba	Local check	FLIP 90-27C	FLIP 88-79C	ILC 482	FLIP 87-60C
Syria	Tel Hadya	FLIP 78-60C	FLIP 88-87C	FLIP 90-63C	FLIP 89-47C	FLIP 90-62C

including, FLIP 87-60C, FLIP 90-93C, FLIP 90-78C and FLIP 88-87C occurred most frequently among the top five entries and were thus more adaptable.

On the basis of average over two years for the common entries (Table 3.3.8), FLIP 87-60C (1577 kg/ha) ranked number 1 in seed yield and was closely followed by FLIP 88-87C, FLIP 88-79C, FLIP 88-86C, and FLIP 82-150C, respectively.

Table 3.3.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-SL1 conducted during 1991/92 and 1992/93.

Entry Name	1991/92		1992/93		Mean	
	Y	R	Y	R	Y	R
FLIP 87-60C	1984	2	1170	2	1577	1
FLIP 88-79C	2025	1	638	12	1332	3
FLIP 88-83C	1455	10	841	6	1148	9
FLIP 88-84C	1619	5	764	9	1192	7
FLIP 88-86C	1472	8	1090	3	1281	4
FLIP 88-87C	1619	5	1237	1	1428	2
FLIP 89-47C	1269	13	590	13	930	13
FLIP 89-48C	1458	9	797	7	1128	11
FLIP 89-49C	1314	12	758	10	1036	12
FLIP 89-50C	1101	14	439	14	770	14
FLIP 89-110C	1629	3	643	11	1136	10
FLIP 89-130C	1626	4	859	5	1243	6
FLIP 82-150C	1439	11	1087	4	1263	5
ILC 482	1527	7	775	8	1151	8

3.4. CHICKPEA INTERNATIONAL YIELD TRIAL-SOUTHERLY LATITUDES - 2 (CIYT-SL2)

Material

The material for CIYT-SL2 comprised of 21 test entries and three checks. The test entries were tolerant to ascochyta blight and were selected from the local and regional yield trials based on their superior yield performance.

Methods and Management

The trial design was randomized complete block with two replications. The suggested plot size was four rows 4 meter long with an inter row spacing of 35 cm.

Nineteen sets of trial were distributed to cooperators in 12 countries and the data books were returned for 8 sets covering 6 countries. The agronomic practices employed at different locations are given in Table 3.4.1.

Results and Discussion

Means for time to flowering, time to maturity, plant height, and 100-seed weight are compiled in Tables 3.4.2, 3.4.3, 3.4.4 and 3.4.5, respectively. For entry means the time to flowering ranged from 56 days (for FLIP 88-44C), to 72 days (for FLIP 82-150C); for the time to maturity from 129 days to 134 days, for plant height from 50 cm to 63 cm, and for 100-seed weight from 25 g to 36 g.

Table 3.4.1. Agronomic data for different locations in the CIYT-SL2 during 1992/93.

Country/ Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N/P/K	Irri-gation	Insecticide/ Herbicide/ Fungicide	Local Check
Egypt						
Mallawy	27.11.92	10.05.93	36/72/-	2	-	-
Ethiopia						
Debre Zeit	14.09.94	31.01.95	-/-/-	-	-	DZ-0-4
India						
Kovilangulam	06.11.92	NA	13/25/-	-	-	CO. 3
New Delhi	17.11.92	28.04.93	20/-/-	1	Endosulphane	Pusa 267
Pakistan						
Dokri	04.11.93	31.03.94	35/69/-	-	Thiodan	Chhola
Sudan						
Hudeiba	09.12.92	20.03.93	43/-/-	9	-	Shendi
Syria						
Breda	01.12.92	06.06.93	-/50/-	-	Kerb + Igran	ILC 3279
Tel Hadya	10.12.92	21.06.93	-/50/-	-	Kerb + Igran	ILC 3279

The seed yields for different locations are given in Table 3.4.6. On an average over locations the five best entries included FLIP 89-82C, FLIP 88-39C, FLIP 90-127C, FLIP 90-180C, and FLIP 89-81C with seed yields of 1801, 1749, 1712, 1517 and 1443 kg/ha, respectively. The five heaviest yielders at each location are given in Table 3.4.7.

Table 3.4.2. Time to flowering (days) of entries at different locations in the CIYT-SL2 during 1992/93.

Entry name	Pedigree	Origin	Egypy Mallawi	Ethiopia Debre Zeit
FLIP 88-30C	X85TH230/ILC 3395 X FLIP 83-13C	ICARDA/ICRISAT	65	46
FLIP 88-34C	X85TH246/ILC 3398 X FLIP 83-13C	ICARDA/ICRISAT	70	48
FLIP 88-36C	X85TH247/ILC 3398 X FLIP 83-15C	ICARDA/ICRISAT	66	47
FLIP 88-39C	X85TH255/ILC 3713 X FLIP 82-59C	ICARDA/ICRISAT	78	47
FLIP 88-42C	X85TH230/ILC 3395 X FLIP 83-13C	ICARDA/ICRISAT	80	49
FLIP 88-44C	X85TH230/ILC 3395 X FLIP 83-13C	ICARDA/ICRISAT	62	45
FLIP 88-46C	X85TH231/ILC 3396 X FLIP 83-15C	ICARDA/ICRISAT	67	50
FLIP 88-47C	X85TH233/ILC 3396 X ILC 187	ICARDA/ICRISAT	67	46
FLIP 88-48C	X85TH233/ILC 3396 X ILC 187	ICARDA/ICRISAT	79	51
FLIP 88-56C	X85TH229/ILC 3395 X FLIP 82-243C	ICARDA/ICRISAT	69	52
FLIP 88-61C	X85TH230/ILC 3395 X FLIP 83-13C	ICARDA/ICRISAT	66	56
FLIP 88-66C	X85TH246/ILC 3398 X FLIP 83-13C	ICARDA/ICRISAT	62	46
FLIP 89-81C	X87TH180/ICC 14194 X FLIP 83-48C	ICARDA/ICRISAT	78	52
FLIP 89-82C	X87TH186/ICC 14198 X FLIP 82-150C	ICARDA/ICRISAT	66	45
FLIP 89-84C	X87TH186/ICC 14198 X FLIP 82-150C	ICARDA/ICRISAT	67	46
FLIP 89-117C	X85TH65/(ILC 4297 X FLIP 82-64C) X ILC 2380	ICARDA/ICRISAT	74	46
FLIP 89-120C	X85TH223/ILC 3326 X FLIP 82-59C	ICARDA/ICRISAT	81	50
FLIP 90-127C	X88TH346/(ICC 14212 X FLIP 82-150C) X ICC 14212	ICARDA/ICRISAT	64	67
FLIP 90-163C	X86TH137/FLIP 84-48C X ILC 4293	ICARDA/ICRISAT	69	54
FLIP 90-178C	X87TH177/ICC 14194 X FLIP 84-78C	ICARDA/ICRISAT	68	48
FLIP 90-180C	X87TH216/ILC 4296 X FLIP 84-93C	ICARDA/ICRISAT	66	50
FLIP 82-150C	X79TH101/ILC 523 X ILC 183 (Improved check)	ICARDA/ICRISAT	88	85
ILC 482	(Long term check)	Turkey	78	85
Local check	-	-	76	54
Location Mean			71	52
S.E. Of Mean			1.05	2.43
LSD at 0.05			2.99	5.81
C.V. %			2.56	6.56

Cont'd. ...

Table 3.4.2. Cont'd. ...

Entry name	India	Pakistan	Sudan	Syria		Overall mean
	New Delhi	Dokri	Hudeiba	Breda	Tel Hadya	(1)
FLIP 88-30C	59	77	39	127	119	57
FLIP 88-34C	59	76	44	128	119	59
FLIP 88-36C	57	74	42	126	119	57
FLIP 88-39C	59	75	41	127	119	60
FLIP 88-42C	64	77	48	129	121	63
FLIP 88-44C	60	75	40	125	118	56
FLIP 88-46C	58	74	39	128	119	57
FLIP 88-47C	62	77	48	125	118	60
FLIP 88-48C	59	77	47	127	120	62
FLIP 88-56C	57	74	40	125	119	58
FLIP 88-61C	60	75	48	128	120	61
FLIP 88-66C	60	76	39	125	119	57
FLIP 89-81C	58	74	49	130	143	62
FLIP 89-82C	63	74	39	125	117	57
FLIP 89-84C	58	76	50	124	115	59
FLIP 89-117C	62	75	45	128	120	60
FLIP 89-120C	58	76	45	128	120	62
FLIP 90-127C	58	79	41	124	115	62
FLIP 90-163C	57	75	47	128	121	60
FLIP 90-178C	60	76	48	125	119	60
FLIP 90-180C	61	75	47	127	117	60
FLIP 82-150C	63	81	41	136	128	72
ILC 482	59	83	37	134	127	68
Local check	63	83	48	139	129	
Location Mean	**60**	**76**	**44**	**128**	**121**	
S.E. Of Mean	One	1.08	1.05	0.48	4.76	
LSD at 0.05	rep	3.08	2.51	1.36	13.55	
C.V. %		2.45	3.42	0.65	6.82	

(1) Breda and Tel Hadya in Syria being not in southerly latitudes were excluded from the overall mean.

Table 3.4.3. Time to maturity (days) of entries at different locations in the CIYT-SL2 during 1992/93.

Entry name	Egypt Mallawi	Ethiopia Debre Zeit	India New Delhi	Pakistan Dokri	Sudan Hudeiba	Syria Breda	Syria Tel Hadya	**Overall mean** (1)
FLIP 88-30C	148	118	146	137	89	176	171	130
FLIP 88-34C	149	119	144	136	93	176	171	130
FLIP 88-36C	147	119	140	136	91	174	171	129
FLIP 88-39C	149	119	141	136	92	171	168	129
FLIP 88-42C	154	120	141	139	96	177	171	132
FLIP 88-44C	151	118	143	137	90	176	174	130
FLIP 88-46C	150	121	142	136	90	174	171	129
FLIP 88-47C	145	119	144	137	92	171	167	129
FLIP 88-48C	150	121	139	138	93	173	169	130
FLIP 88-56C	155	124	145	139	92	172	172	132
FLIP 88-61C	155	126	140	139	94	178	173	132
FLIP 88-66C	149	118	142	139	91	177	172	130
FLIP 89-81C	152	125	148	137	98	177	173	134
FLIP 89-82C	147	117	145	136	92	171	167	130
FLIP 89-84C	148	117	141	138	96	173	170	131
FLIP 89-117C	151	116	139	139	92	177	170	130
FLIP 89-120C	150	122	141	138	93	173	172	130
FLIP 90-127C	152	128	146	141	91	177	173	133
FLIP 90-163C	149	126	143	139	94	174	174	131
FLIP 90-178C	153	127	142	139	94	177	174	132
FLIP 90-180C	153	122	143	136	92	178	174	131
FLIP 82-150C	155	-	142	140	91	177	172	132
ILC 482	153	133	143	141	90	177	170	132
Local check	153	119	142	141	89	182	176	
Location Mean	**151**	**121**	**143**	**138**	**92**	**175**	**171**	
S.E. Of Mean	1.72	2.64	One	1.11	0.45	0.66	1.04	
LSD at 0.05	4.90	6.33	rep	3.15	1.09	1.88	2.97	
C.V. %	1.98	3.08		1.39	0.70	0.65	1.56	

(1) Breda and Tel Hadya in Syria being not in southerly latitudes were excluded from the overall mean.

Table 3.4.4. Plant height (cm) of entries at different locations in the CIYT-SL2 during 1992/93.

Entry name	Egypt	Ethiopia	India	Pakistan	Syria		Overall mean
	Mallawi	Debre Zeit	New Delhi	Dokri	Breda	Tel Hadya	(1)
FLIP 88-30C	67	32	58	55	29	31	53
FLIP 88-34C	67	35	58	53	31	32	53
FLIP 88-36C	67	32	62	48	33	35	52
FLIP 88-39C	62	32	50	56	32	33	50
FLIP 88-42C	59	36	55	54	35	33	51
FLIP 88-44C	62	33	63	51	30	32	52
FLIP 88-46C	69	31	67	52	34	34	55
FLIP 88-47C	69	32	56	53	32	32	53
FLIP 88-48C	64	39	55	54	32	31	53
FLIP 88-56C	75	33	62	56	32	34	56
FLIP 88-61C	67	38	62	56	31	33	56
FLIP 88-66C	60	33	69	54	31	33	54
FLIP 89-81C	70	37	54	56	30	32	54
FLIP 89-82C	65	32	71	52	30	32	55
FLIP 89-84C	58	32	60	51	30	31	50
FLIP 89-117C	70	32	60	55	35	34	54
FLIP 89-120C	73	32	65	52	31	33	55
FLIP 90-127C	62	34	59	46	29	26	50
FLIP 90-163C	74	34	60	59	34	34	57
FLIP 90-178C	64	44	66	53	30	31	57
FLIP 90-180C	61	35	67	57	29	32	55
FLIP 82-150C	66	57	71	59	30	34	63
ILC 482	67	41	52	58	30	31	55
Local check	72	39	56	49	41	45	
Location Mean	**66**	**35**	**61**	**54**	**32**	**33**	
S.E. Of Mean	3.27	3.07	One	2.57	1.46	0.88	
LSD at 0.05	9.30	7.34	rep	NS	4.17	2.49	
C.V. %	8.53	12.26		8.28	7.97	4.59	

(1) Breda and Tel Hadya in Syria being not in southerly latitudes were excluded from the overall mean.

Table 3.4.5. 100-seed weight (g) of entries at different locations in the CIYT-SL2 during 1992/93.

Entry name	Ethiopia Debre Zeit	India New Delhi	Pakistan Dokri	Sudan Hudeiba	Syria Breda	Syria Tel Hadya	Overall mean (1)
FLIP 88-30C	35	42	27	34	43	41	34
FLIP 88-34C	37	45	28	30	40	39	35
FLIP 88-36C	42	33	25	40	44	44	35
FLIP 88-39C	38	39	26	31	37	38	33
FLIP 88-42C	37	40	25	29	39	38	33
FLIP 88-44C	47	40	23	35	45	42	36
FLIP 88-46C	38	48	25	35	40	39	36
FLIP 88-47C	39	43	26	28	42	41	34
FLIP 88-48C	36	38	27	30	40	41	32
FLIP 88-56C	41	40	27	32	41	42	35
FLIP 88-61C	45	34	25	37	50	46	35
FLIP 88-66C	39	37	27	35	41	40	34
FLIP 89-81C	33	34	26	29	36	37	30
FLIP 89-82C	37	39	27	31	35	37	33
FLIP 89-84C	38	36	27	31	36	37	33
FLIP 89-117C	34	36	27	34	40	37	33
FLIP 89-120C	41	40	26	30	40	40	34
FLIP 90-127C	27	28	27	19	29	30	25
FLIP 90-163C	25	40	27	31	41	43	31
FLIP 90-178C	40	36	26	31	40	39	33
FLIP 90-180C	38	41	27	32	43	44	34
FLIP 82-150C	29	29	25	21	30	30	26
ILC 482	31	34	24	22	30	29	28
Local check	12	20	24	16	30	28	
Location Mean	**36**	**37**	**26**	**30**	**39**	**38**	
S.E. Of Mean	1.81	1.37	0.43	1.47	0.66	1.40	
LSD at 0.05	4.33	3.28	1.22	3.52	1.86	3.99	
C.V. %	7.16	5.26	2.87	6.95	2.92	6.31	

(1) Breda and Tel Hadya in Syria being not in southerly latitudes were excluded from the overall mean.

Table 3.4.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-SL2 during 1992/93.

Entry name	Egypt Mallawi		Ethiopia Debre Zeit		India New Delhi		Pakistan Dokri		Sudan Hudeiba		Syria Breda		Syria Tel Hadya		Overall mean (1)	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 88-30C	2222	10	543	14	2361	7	698	10	1131	10	1048	13	2145	12	1391	6
FLIP 88-34C	2162	13	902	5	2292	8	403	23	1009	14	1083	11	2484	2	1354	9
FLIP 88-36C	2866	3	450	20	1528	22	608	16	1413	8	878	23	2029	17	1373	8
FLIP 88-39C	3333	1	598	11	2882	4	694	12	1236	9	1219	3	2200	9	1749	2
FLIP 88-42C	2148	14	1210	3	1677	18	694	11	861	16	1044	14	2068	16	1318	12
FLIP 88-44C	2046	19	762	7	1875	11	535	18	1455	7	947	20	1808	24	1335	10
FLIP 88-46C	2139	15	279	23	1792	16	486	21	803	19	1027	16	2149	10	1100	21
FLIP 88-47C	2204	11	455	18	1840	15	285	24	919	15	1129	8	2147	11	1140	18
FLIP 88-48C	2185	12	493	16	1667	19	528	19	1494	5	1116	10	2071	15	1273	15
FLIP 88-56C	2023	20	450	21	2500	6	816	6	682	20	1254	2	2209	7	1294	13
FLIP 88-61C	2051	18	638	9	1840	14	503	20	639	22	895	22	1904	23	1134	19
FLIP 88-66C	1917	21	457	17	1771	17	653	14	846	18	925	21	2127	13	1129	20
FLIP 89-81C	2435	6	657	8	1563	21	1042	2	1521	4	1027	17	2008	18	1443	5
FLIP 89-82C	2338	8	1264	2	3090	2	833	5	1478	6	1297	1	2335	5	1801	1
FLIP 89-84C	2264	9	510	15	1510	23	906	3	851	17	1174	6	2003	20	1208	16
FLIP 89-117C	1833	23	626	10	1868	12	625	15	1693	2	1061	12	2205	8	1329	11
FLIP 89-120C	2125	16	571	13	2604	5	556	17	1061	12	1185	5	2090	14	1384	7
FLIP 90-127C	2352	7	1364	1	2917	3	799	8	1129	11	1137	7	2365	4	1712	3
FLIP 90-163C	1889	22	202	24	1389	24	733	9	1039	13	1032	15	2397	3	1050	22
FLIP 90-178C	1440	24	452	19	1632	20	472	22	657	21	1025	18	2008	19	931	23
FLIP 90-180C	2069	17	897	6	2118	9	806	7	1695	1	970	19	1996	21	1517	4
FLIP 82-150C	2843	4	579	12	1944	10	691	13	348	23	1188	4	2602	1	1281	14
ILC 482	2681	5	307	22	1840	13	854	4	310	24	1118	9	2310	6	1199	17
Local check	3208	2	1081	4	4063	1	1285	1	1591	3	722	24	1956	22		
Location Mean	**2282**		**656**		**2107**		**688**		**1078**		**1063**		**2151**			
S.E. Of Mean	208.84		197.94		283.06		132.63		335.41		47.72		111.20			
LSD at 0.05	594.48		472.88		805.73		377.53		NS		135.84		316.55			
C.V. %	15.85		42.66		23.27		33.41		44		7.78		8.96			
Entry > L. check	0		0		0		0		-		23		6			

(1) Breda and Tel Hadya in Syria being not in southerly latitudes were excluded from the overall mean.

On the basis of results of the common entries over two years (Table 3.4.8) the five best entries included FLIP 88-39C, FLIP 89-82C, FLIP 88-36C, FLIP 88-30C, and FLIP 88-56C, with seed yield of 1609, 1603, 1423, 1418, and 1382 kg/ha, respectively.

Table 3.4.7. The five heaviest seed yielding entries at the individual locations in the CIYT-SL2 during 1992/93.

Country	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Egypt					
Mallawy	FLIP88-39C	Local check	FLIP88-36C	FLIP82-150C	ILC 482
Ethiopia					
Debre Zeit	FLIP90-127C	FLIP89-82C	FLIP88-42C	Local check	FLIP88-34C
India					
New Delhi	Local check	FLIP89-82C	FLIP90-127C	FLIP88-39C	FLIP89-120C
Pakistan					
Dokri	Local check	FLIP89-81C	FLIP89-84C	ILC 482	FLIP89-82C
Sudan					
Hudeiba	FLIP90-180C	FLIP89-117C	Local check	FLIP89-81C	FLIP88-48C
Syria					
Breda	FLIP89-82C	FLIP88-56C	FLIP88-39C	FLIP82-150C	FLIP89-120C
Tel Hadya	FLIP82-150C	FLIP88-34C	FLIP90-163C	FLIP90-127C	FLIP89-82C

Table 3.4.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-SL2 conducted during 1991/92 and 1992/93.

Entry Name	1991/92		1992/93		Mean	
	Y	R	Y	R	Y	R
FLIP 88-30C	1444	5	1391	4	1418	4
FLIP 88-34C	1276	10	1354	7	1315	9
FLIP 88-36C	1473	1	1373	6	1423	3
FLIP 88-39C	1469	2	1749	2	1609	1
FLIP 88-42C	1255	11	1318	10	1287	10
FLIP 88-44C	1310	9	1335	8	1323	8
FLIP 88-46C	1243	12	1100	18	1172	15
FLIP 88-47C	1337	8	1140	15	1239	14
FLIP 88-48C	1210	15	1273	13	1242	13
FLIP 88-56C	1469	2	1294	11	1382	5
FLIP 88-61C	1152	16	1134	16	1143	16
FLIP 88-66C	1445	4	1129	17	1287	10
FLIP 89-81C	1219	14	1443	3	1331	7
FLIP 89-82C	1404	6	1801	1	1603	2
FLIP 89-117C	1226	13	1329	9	1278	12
FLIP 89-120C	1368	7	1384	5	1376	6
FLIP 82-150C	593	18	1281	12	937	18
ILC 482	1062	17	1199	14	1131	17

3.5. CHICKPEA INTERNATIONAL YIELD TRIAL-LATIN AMERICAN (CIYT-LA)

Material

The CIYT-LA comprised of 21 test entries and three checks. Two of the checks, FLIP 88-52C and FLIP 88-58C were supplied, and one local check to be added by the cooperator. Seventeen of the test entries were derived through hybridization at ICARDA and the remaining were selections from germplasm accessions selected on the basis of their superior performance in regional, or local trials.

Methods and Management

The trial design was randomized complete block with three replications. The suggested plot size was 4 rows, each 4 meter long with inter row spacings of 35 cm.

Twenty two sets of trial were sent to cooperators in 15 countries. The results were, however, received for 4 trials from 4 countries. The agronomic information received from the cooperators is given in Table 3.5.1.

Table 3.5.1. Agronomic data for different locations in the CIYT-LA during 1992/93.

Country/ Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N/P/K	Irri-gation	Insecticide/ Herbicide/ Fungicide	Local Check
Chile						
Graneros	02.11.92	30.04.93	-/-/-	4	Trifluraline	Gussos-SNA
Spain						
Badajoz	11.11.92	08.07.93	-/-/-	-	Terbutrine + Propizamide	Castuo
Syria						
Tel Hadya	10.12.92	21.06.93	-/50/-	-	Kerb + Igran	ILC 482
Turkey						
Menemen	16.02.93	07.07.93	30/60/-	-	Terbutrine	Canitez

Results and Discussion

The entry means for time to flowering (Table 3.5.2.), time to maturity (Table 3.5.3), and plant height (Table 3.5.4) ranged from 88 to 100 days, 182 to 188 days, and 36 to 48 cm, respectively. The overall mean for the entries for 100-seed weight, varied from 39 to 49 g (Table 3.5.5.). The ANOVA for seed yield revealed that only at Graneros in Chile, 11 entries exceeded the local check by a significant margin. On an average over locations, the five best yielding entries included FLIP 90-15C, FLIP 88-6C, FLIP 87-90C, FLIP 85-5C and ILC 4184 with respective seed yields of 2466, 2445, 2379, 2360 and 2325 kg/ha (Table 3.5.6). The five heaviest yielding entries at each location are given in Table 3.5.7. Among the five common entries in two years, 1991/92 and 1992/93, FLIP 88-6C gave the highest yield (1840 kg/ha) on the basis of average over two years and was followed by ILC 4184, FLIP 87-90C, ILC 99 and ILC 3356 with seed yields of 1831, 1797, 1732 and 1679 kg/ha respectively (Table 3.5.8).

Table 3.5.2. Time to flowering (days) of entries at different locations in the CIYT-LA during 1992/93.

Entry name	Pedigree	Origin	Chile Graneros	Spain Badajoz	Syria Tel Hadya	Turkey Menemen	Overall mean
ILC 97	-	Spain	52	130	128	77	97
ILC 99	-	Spain	48	130	127	74	95
ILC 136	-	Spain	48	129	127	73	94
ILC 169	-	Tunisia	48	141	129	76	99
ILC 613	-	Tunisia	49	135	128	75	97
ILC 3356	-	Spain	48	134	128	75	96
ILC 3367	-	Spain	54	133	128	76	98
ILC 3847	-	Morocco	55	137	126	76	99
ILC 3930	-	Chile	46	129	125	74	94
ILC 4178	-	Tunisia	47	129	125	73	94
ILC 4184	-	Tunisia	48	132	128	74	96
FLIP 85-2C	X82TH60/ILC 95 X ILC 2956	ICARDA/ICRISAT	55	138	131	76	100
FLIP 86-93C	X83TH132/ILC 195 X FLIP 82-78C	ICARDA/ICRISAT	53	140	130	77	100
FLIP 86-110C	X82TH91/ILC 202 X ILC 464	ICARDA/ICRISAT	49	133	130	76	97
FLIP 87-5C	X85TH230/ILC 3395 X FLIP 83-13C	ICARDA/ICRISAT	40	127	125	73	91
FLIP 87-90C	X83TH124/FLIP 82-64C X ILC 72	ICARDA/ICRISAT	48	139	128	78	98
FLIP 88-6C	X84TH332/(FLIP 82-69C X FLIP 82-81C)X ILC 3847	ICARDA/ICRISAT	55	137	125	78	99
FLIP 89-131C	X85TH230/ILC 3395 X FLIP 83-13C	ICARDA/ICRISAT	48	126	123	74	93
FLIP 90-15C	X87TH166/ILC 1919 X FLIP 85-4C	ICARDA/ICRISAT	55	129	128	77	97
FLIP 90-124C	X88TH346/(ICC 14212 X FLIP 82-150C)X ICC 14212	ICARDA/ICRISAT	48	126	125	75	93
FLIP 90-138C	X87TH216/ILC 4296 X FLIP 84-93C	ICARDA/ICRISAT	40	117	122	73	88
FLIP 85-5C	X81TH199/ILC 202(WH) X ILC 3355	ICARDA/ICRISAT	58	139	127	75	100
ILC 464	-	Turkey	51	134	128	75	97
Local check	-	-	48	130	126	76	
Location Mean			**50**	**132**	**127**	**75**	
S.E. Of Mean			1.52	1.82	1.13	0.64	
LSD at 0.05			4.32	5.19	3.21	1.82	
C.V. %			5.29	2.39	1.54	1.47	

Table 3.5.3. Time to maturity (days) of entries at different locations in the CIYT-LA during 1992/93.

Entry name	Chile Graneros	Spain Badajoz	Syria Tel Hadya	Overall mean
ILC 97	143	237	177	186
ILC 99	143	235	176	185
ILC 136	143	237	176	185
ILC 169	143	241	178	187
ILC 613	145	241	177	188
ILC 3356	145	236	177	186
ILC 3367	140	239	177	185
ILC 3847	143	237	177	186
ILC 3930	145	239	175	186
ILC 4178	140	236	175	184
ILC 4184	142	236	176	184
FLIP 85-2C	145	239	178	187
FLIP 86-93C	143	237	179	186
FLIP 86-110C	143	237	178	186
FLIP 87-5C	140	235	177	184
FLIP 87-90C	143	234	177	185
FLIP 88-6C	145	235	175	185
FLIP 89-131C	140	234	173	182
FLIP 90-15C	143	235	176	185
FLIP 90-124C	142	239	174	185
FLIP 90-138C	143	228	174	182
FLIP 85-5C	147	236	177	186
ILC 464	142	238	175	185
Local check	140	237	171	
Location Mean	**143**	**236**	**176**	
S.E. Of Mean	2.41	1.50	0.60	
LSD at 0.05	6.86	4.26	1.71	
C.V. %	2.92	1.10	0.59	

Table 3.5.4. Plant height (cm) of entries at different locations in the CIYT-LA during 1992/93.

Entry name	Chile Graneros	Spain Badajoz	Syria Tel Hadya	Turkey Menemen	Overall mean
ILC 97	65	39	40	35	45
ILC 99	63	40	39	32	44
ILC 136	60	40	38	36	44
ILC 169	63	41	40	35	45
ILC 613	65	41	38	36	45
ILC 3356	63	40	39	36	45
ILC 3367	65	41	39	36	45
ILC 3847	67	37	38	36	44
ILC 3930	63	38	36	38	44
ILC 4178	53	36	37	37	41
ILC 4184	52	35	39	34	40
FLIP 85-2C	70	45	41	37	48
FLIP 86-93C	63	42	41	42	47
FLIP 86-110C	67	42	43	37	47
FLIP 87-5C	53	34	36	32	39
FLIP 87-90C	63	41	39	37	45
FLIP 88-6C	60	36	38	37	43
FLIP 89-131C	58	30	35	33	39
FLIP 90-15C	57	38	36	37	42
FLIP 90-124C	48	36	35	29	37
FLIP 90-138C	52	30	31	31	36
FLIP 85-5C	60	43	43	38	46
ILC 464	60	39	38	37	44
Local check	52	38	31	31	
Location Mean	**60**	**38**	**38**	**35**	
S.E. Of Mean	2.95	2.19	1.01	2.34	
LSD at 0.05	8.41	6.23	2.86	6.65	
C.V. %	8.51	9.87	4.59	11.41	

Table 3.5.5. 100-seed weight (g) of entries at different locations in the CIYT-LA during 1992/93.

Entry name	Spain Badajoz	Syria Tel Hadya	Turkey Menemen	**Overall mean**
ILC 97	47	50	48	48
ILC 99	44	48	47	46
ILC 136	45	48	47	47
ILC 169	44	50	43	46
ILC 613	45	46	44	45
ILC 3356	48	48	46	47
ILC 3367	43	46	49	46
ILC 3847	49	51	47	49
ILC 3930	41	46	39	42
ILC 4178	47	48	48	48
ILC 4184	48	49	48	48
FLIP 85-2C	48	47	44	46
FLIP 86-93C	46	44	48	46
FLIP 86-110C	45	42	40	43
FLIP 87-5C	43	45	37	42
FLIP 87-90C	47	45	42	44
FLIP 88-6C	46	49	43	46
FLIP 89-131C	42	45	31	39
FLIP 90-15C	49	50	45	48
FLIP 90-124C	47	44	40	44
FLIP 90-138C	38	44	42	41
FLIP 85-5C	48	46	47	47
ILC 464	44	48	45	45
Local check	32	26	43	
Location Mean	**45**	**46**	**44**	
S.E. Of Mean	1.39	1.31	1.14	
LSD at 0.05	3.97	3.73	3.24	
C.V. %	5.39	4.94	4.49	

Table 3.5.6. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CIYT-LA during 1992/93.

Entry name	Chile Graneros		Spain Badajoz		Syria Tel Hadya		Turkey Menemen		**Overall mean**	
	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 97	3487	14	1010	21	2952	13	512	7	1990	15
ILC 99	3590	13	1695	7	2921	14	432	11	2160	10
ILC 136	4128	5	1546	11	2919	15	660	3	2313	7
ILC 169	4154	4	667	24	2555	22	346	15	1930	18
ILC 613	3615	12	1301	18	3235	4	414	13	2141	11
ILC 3356	3256	16	1603	9	3114	6	537	5	2128	12
ILC 3367	3051	17	1527	12	3133	5	340	17	2012	14
ILC 3847	2923	20	1331	16	3030	10	512	8	1949	17
ILC 3930	2897	21	1429	14	2820	20	364	14	1878	20
ILC 4178	3846	7	1393	15	2955	12	673	2	2217	8
ILC 4184	4103	6	1624	8	3037	9	537	6	2325	5
FLIP 85-2C	2436	24	1020	20	2746	21	284	20	1621	23
FLIP 86-93C	3333	15	1314	17	2858	18	420	12	1981	16
FLIP 86-110C	4231	3	2370	2	2366	24	309	19	2319	6
FLIP 87-5C	2949	18	1589	10	2838	19	265	23	1910	19
FLIP 87-90C	3667	11	2220	3	3094	7	537	4	2379	3
FLIP 88-6C	4487	1	1962	5	3002	11	329	18	2445	2
FLIP 89-131C	3769	9	1151	19	2886	16	272	22	2019	13
FLIP 90-15C	4256	2	1897	6	3260	2	451	10	2466	1
FLIP 90-124C	2590	22	1453	13	3062	8	185	24	1822	21
FLIP 90-138C	2949	19	950	23	2435	23	346	16	1670	22
FLIP 85-5C	3821	8	2468	1	2875	17	278	21	2360	4
ILC 464	3744	10	963	22	3256	3	710	1	2168	9
Local check	2487	23	2204	4	3382	1	481	9		
Location Mean	**3490**		**1529**		**2947**		**425**			
S.E. Of Mean	408.26		265.82		198.73		105.21			
LSD at 0.05	1162.13		756.65		565.70		299.48			
C.V. %	20.26		30.12		11.68		42.90			
Entry > L. check	11		0		0		0			

Table 3.5.7. The five heaviest seed yielding entries at the individual locations in the CIYT-LA during 1992/93.

Country	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Chile					
Graneros	FLIP88-6C	FLIP90-15C	FLIP86-110C	ILC 169	ILC 136
Spain					
Badajoz	FLIP85-5C	FLIP86-110C	FLIP87-90C	Local check	FLIP88-6C
Syria					
Tel Hadya	Local check	FLIP90-15C	ILC 464	ILC 613	ILC 3367
Turkey					
Menemen	ILC 464	ILC 4178	ILC 136	FLIP87-90C	ILC 3356

Table 3.5.8. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in CIYT-LA conducted during 1991/92 and 1992/93.

Entry Name	1991/92		1992/93		Mean	
	Y	R	Y	R	Y	R
ILC 97	1094	8	1990	9	1542	9
ILC 99	1303	2	2160	5	1732	4
ILC 169	867	13	1930	11	1399	12
ILC 613	1141	7	2141	6	1641	7
ILC 3356	1230	5	2128	7	1679	5
ILC 4184	1337	1	2325	3	1831	2
FLIP 85-2C	1020	11	1621	13	1321	13
FLIP 86-93C	939	12	1981	10	1460	11
FLIP 87-5C	1031	10	1910	12	1471	10
FLIP 87-90C	1215	6	2379	2	1797	3
FLIP 88-6C	1234	4	2445	1	1840	1
FLIP 89-131C	1288	3	2019	8	1654	6
ILC 464	1086	9	2168	4	1627	8

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

Material

The Chickpea International Screening Nursery-Winter comprised 61 test entries which originated from the materials developed through hybridization at ICARDA. The nursery also included three checks namely FLIP 82-150C, ILC 482 and one local check to be supplied by the cooperator. All the test entries were almost homozygous and had shown superior performance in local or regional trials at ICARDA.

Methods and Management

The entries were sown in single row plots of 4m length in 8 x 8 simple lattice design with 2 replications. The suggested spacings between and within rows were 45- and 10 cm, respectively.

Fifty two sets of nursery were distributed to cooperators in 17 countries and the results were received from 31 locations in 12 countries. The agronomic details received from the cooperators are given in Table 3.6.1.

Results and Discussion

The data on time to flowering, time to maturity, plant height and 100-seed weight are given in Tables 3.6.2, 3.6.3, 3.6.4, and 3.6.5, respectively. On the basis of average over locations, the entries ILC 482, FLIP 82-150C, FLIP 90-28C, FLIP 90-182C, FLIP 91-186C, FLIP 91-192C and FLIP 91-209C were among the earliest to flower, and FLIP 90-28C and ILC 482 were among the earliest to mature. The entry FLIP 91-150C was tallest with 60 cm height; and entries FLIP 91-168C and FLIP 91-193C had the largest seed size (41 g/100-seed).

The adjusted seed yields of entries are presented in Table 3.6.6. The ANOVA for seed yield revealed that at 18 locations, some of the test entries excelled the respective local check by a significant margin. The five heaviest seed yielding entries across locations included FLIP 90-12C, FLIP 90-8C, FLIP 90-182C, FLIP 91-52C, and FLIP 91-58C. The entries FLIP 90-12C, FLIP 90-182C and FLIP 90-8C occurred most frequently among the top five heaviest yielders and were relatively more adaptable across locations. The top five yielders at each location are presented in Table 3.6.7.

Table 3.6.1. Agronomic details for CISN-W-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Khroub	24.01.93	06.07.93	17	46	-	-	Igran + Kerb	ILC 3279
Algeria	Setif	29.11.92	11.06.93	-	-	-	-	-	ILC 3279
Chile	Chillan	28.07.93	15.01.94	-	90	-	-	-	California-INIA
Cyprus	Athalassa	08.12.92	18.06.93	32	72	-	-	-	Cyprus Local
India	Almora	27.11.92	NA	20	40	-	-	-	VL 86
India+	Srinagar	17.02.93	15.07.93	30	50	-	-	-	-
Iran	Karaj	NA	NA	-	-	-	-	-	-
Iran	Sararood	30.10.92	12.08.93	20	100	-	-	Sevin	-
Iran+	Zarghan-Shiraz	06.03.94	09.07.94	27	69	-	9	-	Kooroush
Italy+	Caltagirone	02.02.93	30.06.93	-	60	-	-	-	Calia
Italy	Tolentino	16.12.92	20.07.93	-	92	-	-	-	Sultano
Italy	Tarquinia	24.01.93	16.08.93	18	21	-	-	-	Principe
Lebanon	Terbol	09.12.92	15.07.93	-	50	-	-	Kerb + Igran	Lebanese Local
Portugal	Elvas	04.11.92	15.07.93	-	60	60	-	Terbutrine + Propizamide	Chk 510
Spain	Badajoz	12.11.92	03.07.93	-	-	-	-	Terbutrine + Propizamide	Candil
Spain	Sevilla	27.10.92	05.07.93	25	50	-	-	Acachlor + Linuron	FLIP 82-64C
Syria	Aleppo	05.12.92	01.06.93	-	50	-	-	-	Ghab 2
Syria	Al Ghab	28.12.92	20.05.93	-	-	-	-	-	Ghab 2
Syria	Gelline	22.12.92	06.06.93	20	50	-	-	-	Ghab 2
Syria	Hama	28.12.92	20.06.93	-	50	-	-	-	Ghab 2
Syria	Idleb	24.12.92	28.06.93	40	60	-	-	-	Ghab 2
Syria	Izra'a	16.01.93	25.06.93	-	110	-	-	-	Ghab 2
Syria	Jableh	02.01.93	30.07.93	-	-	-	-	-	Ghab 2
Syria	Jindiress	08.12.92	17.06.93	-	50	-	-	-	Ghab 2
Syria	Tel Hadya	10.12.92	21.06.93	-	50	-	-	Kerb + Igran	Ghab 3
Tunisia	Beja	NA	NA	NA	Na	NA		NA	NA
Turkey+	Amasya	06.04.93	11.08.93	50	50	-	-	-	Canitez 87
Turkey	Antalya	24.12.92	NA	-	-	-	-	-	-
Turkey+	Denizli	20.03.93	28.07.93	30	60	-	-	Terbutrine	Canitez 87
Turkey	Diyarbakir	06.12.92	01.07.93	-	-	-	-	Phostoxine, Fusilade	Yerli Nohut
Turkey	Menemen	23.10.92	07.07.93	30	60	-	-	Terbutrine	Canitez 87

+ Planted in spring, NA = Not available

Table 3.6.2. Adjusted time to flowering (days) of entries at different locations in the CISN-W during 1992/93.

Entry name	Pedigree	Origin	Algeria		Chile	Cyprus
			Khroub	Setif	Chillan	Athalassa
FLIP 90-6C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	118	156	99	116
FLIP 90-8C	X87TH317/(Be.Sel. 81-40 X ILC 195) X FLIP 84-46C	ICARDA/ICRISAT	119	162	98	116
FLIP 90-12C	X87TH317/(Be.Sel. 81-40 X ILC 195) X FLIP 84-46C	ICARDA/ICRISAT	116	162	100	118
FLIP 90-28C	X86TH279/(ILC 1919 X FLIP 82-191C) X FLIP 84-18C	ICARDA/ICRISAT	101	154	97	117
FLIP 90-29C	X86TH284/(FLIP 81-54W X ILC 3856) X FLIP 82-64C	ICARDA/ICRISAT	115	159	97	118
FLIP 90-31C	X86TH75/ILC 480 X FLIP 84-48C	ICARDA/ICRISAT	116	162	100	116
FLIP 90-38C	X86TH165/ILC 3546 X ILC 3856	ICARDA/ICRISAT	118	159	100	116
FLIP 90-45C	X86TH286/(FLIP 81-54W X ILC 2506) X FLIP 82-64C	ICARDA/ICRISAT	115	159	99	117
FLIP 90-47C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	118	159	99	116
FLIP 90-71C	X86TH141/FLIP 84-46C X ILC 482	ICARDA/ICRISAT	115	156	97	116
FLIP 90-77C	X86TH303/(ILC 171 X FLIP 82-127C) X ILC 171	ICARDA/ICRISAT	107	162	99	116
FLIP 90-95C	X87TH26/ILC 5342 X FLIP 84-93C	ICARDA/ICRISAT	116	162	99	116
FLIP 90-102C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	115	159	99	116
FLIP 90-103C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	116	159	98	116
FLIP 90-104C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	115	162	95	116
FLIP 90-123C	X88TH323/(ILC 519 X FLIP 83-47C) X ILC 519	ICARDA/ICRISAT	117	162	100	116
FLIP 90-182C	X87TH290/(ILC 263 X FLIP 82-150C) X ILC 263	ICARDA/ICRISAT	106	156	97	117
FLIP 91-12C	X87TH212/ILC 237 X FLIP 84-79C	ICARDA/ICRISAT	114	162	99	116
FLIP 91-15C	X87TH106/FLIP 85-1C X FLIP 84-78C	ICARDA/ICRISAT	116	162	99	116
FLIP 91-21C	X87TH31/FLIP 83-7C X FLIP 84-92C	ICARDA/ICRISAT	106	159	100	118
FLIP 91-32C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	117	156	98	118
FLIP 91-35C	X87TH119/FLIP 85-4C X FLIP 84-78C	ICARDA/ICRISAT	107	159	97	116
FLIP 91-50C	X88TH79/FLIP 85-42C X FLIP 86-93C	ICARDA/ICRISAT	113	162	99	116
FLIP 91-52C	X88TH270/(FLIP 85-2C X FLIP 84-93C) X FLIP 85-2C	ICARDA/ICRISAT	118	156	100	116
FLIP 91-58C	X89TH10/ILC 1254 X FLIP 84-182C	ICARDA/ICRISAT	112	162	100	116
FLIP 91-59C	X89TH15/ILC 4291 X FLIP 84-182C	ICARDA/ICRISAT	108	162	99	116
FLIP 91-60C	X89TH25/ILC 2371 X FLIP 84-182C	ICARDA/ICRISAT	114	162	98	116
FLIP 91-61C	X89TH25/ILC 2371 X FLIP 84-182C	ICARDA/ICRISAT	107	159	98	118
FLIP 91-63C	X89TH29/ILC 3777 X FLIP 84-92C	ICARDA/ICRISAT	107	162	99	116
FLIP 91-130C	X87TH20/ILC 576 X FLIP 84-93C	ICARDA/ICRISAT	115	162	99	117
FLIP 91-131C	X88TH32/FLIP 85-142C X FLIP 82-150C	ICARDA/ICRISAT	118	159	99	116
FLIP 91-139C	X88TH/(FLIP 85-18C X FLIP 81-293C) X FLIP 85-18C	ICARDA/ICRISAT	115	162	100	116
FLIP 91-140C	X88TH307/(FLIP 85-62C X FLIP 82-92C) X FLIP 85-62C	ICARDA/ICRISAT	109	162	96	116
FLIP 91-141C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	115	162	99	116

Cont'd. ...

Table 3.6.2. Cont'd. ...

Entry name	Pedigree	Origin	Algeria Khroub	Algeria Setif	Chile Chillan	Cyprus Athalassa
FLIP 91-142C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	116	159	99	117
FLIP 91-143C	X87TH230/FLIP 85-91C X ILC 3279	ICARDA/ICRISAT	113	165	98	118
FLIP 91-144C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	118	162	99	118
FLIP 91-146C	X87TH136/FLIP 84-46C X FLIP 82-78C	ICARDA/ICRISAT	119	162	99	116
FLIP 91-147C	X87TH159/S 85088 X ILC 3856	ICARDA/ICRISAT	115	162	97	116
FLIP 91-149C	X87TH318/(Be.Sel. 81-41 X FLIP 81-79C) X FLIP 85-18C	ICARDA/ICRISAT	115	162	100	116
FLIP 91-150C	X87TH318/(Be.Sel. 81-41 X FLIP 81-79C) X FLIP 85-18C	ICARDA/ICRISAT	114	162	100	116
FLIP 91-153C	X87TH107/FLIP 85-1C X FLIP 84-81C	ICARDA/ICRISAT	107	162	100	117
FLIP 91-162C	X88TH32/FLIP 85-142C X FLIP 82-150C	ICARDA/ICRISAT	115	162	100	116
FLIP 91-168C	X87TH106/FLIP 85-1C X FLIP 84-78C	ICARDA/ICRISAT	118	159	100	118
FLIP 91-169C	X88TH206/ILC 202 X S 86301	ICARDA/ICRISAT	113	159	100	116
FLIP 91-175C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	108	159	97	116
FLIP 91-177C	X87TH230/FLIP 85-91C X ILC 3279	ICARDA/ICRISAT	119	162	97	117
FLIP 91-186C	X87TH36/FLIP 83-47C X FLIP 84-145C	ICARDA/ICRISAT	103	156	96	116
FLIP 91-192C	X87TH167/ILC 1919 X FLIP 83-47C	ICARDA/ICRISAT	107	154	97	116
FLIP 91-193C	X87TH189/ICC 14212 X FLIP 84-78C	ICARDA/ICRISAT	107	156	95	117
FLIP 91-195C	X87TH9/FLIP 81-293C X FLIP 84-79C	ICARDA/ICRISAT	116	159	99	117
FLIP 91-197C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	121	162	96	117
FLIP 91-200C	X87TH67/FLIP 82-87C X FLIP 85-46C	ICARDA/ICRISAT	114	162	99	117
FLIP 91-204C	X87TH67/FLIP 82-87C X FLIP 85-46C	ICARDA/ICRISAT	103	159	99	116
FLIP 91-208C	X88TH54/FLIP 85-112C X ILC 482	ICARDA/ICRISAT	115	162	99	116
FLIP 91-209C	X88TH89/FLIP 83-98C X FLIP 83-93C	ICARDA/ICRISAT	101	156	96	116
FLIP 91-212C	X88TH319/(FLIP 85-91C X ILC 3856) X FLIP 85-91C	ICARDA/ICRISAT	118	162	99	116
FLIP 91-213C	X88TH319/(FLIP 85-91C X ILC 3856) X FLIP 85-91C	ICARDA/ICRISAT	119	156	99	116
FLIP 91-219C	X87TH94/FLIP 84-164C X ILC 4921	ICARDA/ICRISAT	104	159	96	117
FLIP 91-220C	X89TH10/ILC 1254 X FLIP 84-182C	ICARDA/ICRISAT	107	162	96	117
FLIP 91-222C	X88TH206/ILC 202 X S 86301	ICARDA/ICRISAT	118	159	100	116
FLIP 82-150C	X79TH101/ILC 523 X ILC 183 (Improved check)	ICARDA/ICRISAT	103	159	98	116
ILC 482	(Long term check)	Turkey	102	156	95	116
Local check		-	117	162	98	116
Location Mean			**113**	**160**	**98**	**116**
S.E. Of Mean			One	0.38	0.71	0.60
LSD at .05			rep	1.06	2.02	NS
C.V. %				0.33	1.02	0.74

Cont'd. ...

Table 3.6.2. Cont'd. ...

Entry name	India		Iran			Italy			Lebanon	Portugal	Spain	
	Almora	Srinagar	Karaj	Sara-rood	Zarghan	Calta-girone	Tarqui-nia	Tolen-tino	Terbol	Elvas	Badajoz	Sevilla
FLIP 90-6C	150	75	154	200	62	100	96	152	135	153	136	139
FLIP 90-8C	-	79	157	199	61	99	106	146	136	151	136	136
FLIP 90-12C	143	78	164	200	64	102	99	153	138	151	138	143
FLIP 90-28C	134	79	154	200	58	100	105	143	128	153	130	140
FLIP 90-29C	-	79	155	198	63	107	103	152	137	154	139	143
FLIP 90-31C	133	77	155	199	61	100	107	151	136	150	137	142
FLIP 90-38C	134	77	154	199	61	99	95	147	133	151	136	144
FLIP 90-45C	144	78	163	199	63	99	100	154	139	150	137	139
FLIP 90-47C	151	79	159	199	67	107	107	154	140	152	139	149
FLIP 90-71C	145	77	155	199	61	104	98	145	132	149	136	143
FLIP 90-77C	136	78	164	198	61	96	99	150	131	148	135	149
FLIP 90-95C	-	79	158	198	65	106	98	152	138	153	139	142
FLIP 90-102C	149	78	156	198	63	106	105	154	139	154	139	145
FLIP 90-103C	150	79	159	200	62	103	98	153	140	155	142	157
FLIP 90-104C	147	77	155	199	62	95	100	154	139	154	138	160
FLIP 90-123C	-	79	166	201	64	107	96	153	139	154	146	145
FLIP 90-182C	134	78	154	200	61	96	99	145	129	151	133	137
FLIP 91-12C	143	78	157	198	63	106	98	153	138	152	146	139
FLIP 91-15C	-	76	156	199	65	103	98	158	138	154	143	154
FLIP 91-21C	-	79	156	200	61	103	107	147	133	150	139	144
FLIP 91-32C	149	79	156	200	63	104	95	149	133	151	136	140
FLIP 91-35C	144	77	157	200	60	96	99	150	132	151	136	129
FLIP 91-50C	147	78	157	201	63	100	98	148	136	150	136	137
FLIP 91-52C	151	77	153	198	61	101	110	152	135	153	139	145
FLIP 91-58C	139	79	154	199	63	102	95	152	133	150	139	144
FLIP 91-59C	144	78	155	199	62	106	97	152	133	154	139	144
FLIP 91-60C	-	78	154	198	61	105	98	149	133	150	139	140
FLIP 91-61C	-	78	156	197	63	106	107	151	133	151	138	146
FLIP 91-63C	138	78	154	199	61	100	110	151	132	152	139	142
FLIP 91-130C	-	78	160	198	63	107	101	158	139	153	143	146
FLIP 91-131C	146	79	155	200	62	106	98	150	136	150	137	133
FLIP 91-139C	137	78	163	199	63	107	101	153	135	148	138	135
FLIP 91-140C	137	78	155	203	61	105	100	148	138	151	139	144
FLIP 91-141C	-	78	157	198	64	107	103	154	140	153	140	141

Cont'd. ...

Table 3.6.2. Cont'd. ...

Entry name	India		Iran			Italy			Lebanon	Portugal	Spain	
	Almora	Srinagar	Karaj	Sara-rood	Zarghan	Calta-girone	Tarqui-nia	Tolen-tino	Terbol	Elvas	Badajoz	Sevilla
FLIP 91-142C	-	78	156	198	62	107	95	154	139	154	143	143
FLIP 91-143C	-	77	155	200	61	106	104	154	138	152	135	142
FLIP 91-144C	149	78	164	199	65	108	92	157	141	152	146	153
FLIP 91-146C	-	80	155	198	64	101	100	152	135	150	136	126
FLIP 91-147C	144	78	155	199	61	104	104	155	135	154	137	143
FLIP 91-149C	152	77	165	199	65	107	96	156	141	153	143	148
FLIP 91-150C	-	78	164	199	66	107	102	155	142	155	142	153
FLIP 91-153C	141	76	157	199	61	101	97	145	133	153	137	143
FLIP 91-162C	145	80	153	200	62	105	97	153	138	153	137	146
FLIP 91-168C	150	76	156	199	62	100	102	155	138	152	137	137
FLIP 91-169C	139	80	157	199	63	105	99	147	133	149	136	138
FLIP 91-175C	-	77	153	200	65	101	98	157	139	154	143	156
FLIP 91-177C	144	78	160	200	61	105	95	151	139	149	137	140
FLIP 91-186C	137	78	156	198	57	103	98	146	131	150	134	136
FLIP 91-192C	136	80	153	199	59	100	99	146	128	149	131	139
FLIP 91-193C	-	79	157	199	57	103	100	145	130	147	132	137
FLIP 91-195C	-	79	158	199	62	99	103	152	134	152	139	143
FLIP 91-197C	153	78	159	200	64	101	96	158	138	156	144	150
FLIP 91-200C	-	79	160	198	64	106	104	153	140	152	145	156
FLIP 91-204C	-	78	162	199	64	104	103	150	132	152	139	143
FLIP 91-208C	-	79	157	198	64	106	103	150	136	150	146	145
FLIP 91-209C	133	78	155	198	60	90	99	144	128	150	129	143
FLIP 91-212C	150	78	159	199	63	104	101	149	138	150	142	149
FLIP 91-213C	147	79	156	199	61	100	100	152	136	152	138	143
FLIP 91-219C	135	78	155	199	58	104	100	147	132	152	138	143
FLIP 91-220C	145	79	158	200	61	105	100	152	132	152	137	149
FLIP 91-222C	146	78	159	198	63	101	99	153	133	152	139	142
FLIP 82-150C	144	79	155	197	61	104	101	145	129	151	135	134
ILC 482	135	78	154	198	54	100	98	142	128	148	129	138
Local check	143	78	160	199	63	98	100	150	131	150	132	144
Location Mean	**143**	**78**	**157**	**199**	**62**	**103**	**100**	**151**	**135**	**152**	**138**	**143**
S.E. Of Mean	One	0.55	3.17	1.08	1.33	2.80	0.68	1.03	1.03	1.32	0.71	3.95
LSD at .05	rep	1.54	9.02	3.06	3.78	7.97	1.91	2.93	2.94	3.75	2.01	11.16
C.V. %		0.99	2.86	0.77	3.03	3.86	0.96	0.97	1.08	1.23	0.73	3.91

Cont'd. ...

Table 3.6.2. Cont'd. ...

Entry name	Syria									Turkey		Overall mean
	Aleppo	Al-Ghab	Gelline	Hama	Idleb	Izra'a	Jableh	Jindi-ress	Tel-Hadya	Antalya	Diyarbakir	
FLIP 90-6C	129	109	116	116	117	102	99	132	129	175	-	129
FLIP 90-8C	128	113	112	114	116	103	102	134	129	178	-	130
FLIP 90-12C	126	113	115	116	118	104	104	135	130	178	-	131
FLIP 90-28C	127	109	111	111	111	97	99	129	127	181	-	127
FLIP 90-29C	126	116	116	117	119	108	104	136	130	177	-	131
FLIP 90-31C	127	110	114	113	116	100	101	131	128	177	-	130
FLIP 90-38C	124	111	114	112	116	102	101	131	128	177	-	129
FLIP 9045C	125	114	114	117	122	107	103	135	130	178	-	131
FLIP 90-47C	126	116	113	116	117	108	103	135	130	180	-	132
FLIP 90-71C	129	113	115	113	116	104	103	132	128	177	-	129
FLIP 90-77C	127	112	116	116	115	99	100	133	127	176	-	129
FLIP 90-95C	128	116	116	116	118	103	103	135	130	180	-	131
FLIP 90-102C	128	114	114	115	117	105	104	134	130	175	-	131
FLIP 90-103C	127	116	114	115	118	103	104	133	129	177	-	132
FLIP 90-104C	129	114	114	118	120	102	104	134	129	176	-	131
FLIP 90-123C	128	115	114	115	118	102	106	133	134	178	-	132
FLIP 90-182C	125	109	114	117	114	98	100	131	130	175	-	127
FLIP 91-12C	127	115	113	116	116	101	102	132	129	181	170	131
FLIP 91-15C	127	116	117	119	119	109	102	137	130	179	164	133
FLIP 91-21C	127	111	111	114	115	101	103	131	129	178	165	130
FLIP 91-32C	125	109	111	114	115	100	102	131	129	178	163	129
FLIP 91-35C	127	112	111	112	114	98	100	130	127	176	161	128
FLIP 91-50C	128	114	116	113	117	105	104	133	133	178	163	130
FLIP 91-52C	125	113	115	119	116	101	103	133	131	177	169	131
FLIP 91-58C	126	109	117	115	115	101	102	132	130	177	165	130
FLIP 91-59C	128	114	116	115	114	103	102	134	130	181	163	130
FLIP 91-60C	126	110	114	114	114	102	101	132	128	181	169	130
FLIP 91-61C	126	110	114	117	114	101	101	134	128	180	167	130
FLIP 91-63C	125	109	114	117	114	102	102	132	129	180	169	130
FLIP 91-130C	127	115	114	118	117	111	104	140	132	178	171	133
FLIP 91-131C	128	112	112	115	120	104	104	136	130	180	164	130
FLIP 91-139C	129	115	116	116	118	104	103	135	130	177	169	131
FLIP 91-140C	125	115	111	115	117	104	104	135	130	181	170	131
FLIP 91-141C	129	116	118	118	120	108	104	140	129	178	174	132

Cont'd. ...

Table 3.6.2. Cont'd. ...

Entry name	Syria									Turkey		(1)
	Aleppo	Al-Ghab	Gelline	Hama	Idleb	Izra'a	Jableh	Jindi-ress	Tel-Hadya	Antalya	Diyarbakir	**Overall mean**
FLIP 91-142C	127	113	117	118	116	104	103	136	131	178	174	131
FLIP 91-143C	126	115	113	116	118	101	103	132	131	177	171	131
FLIP 91-144C	126	117	117	119	124	110	105	138	132	178	173	134
FLIP 91-146C	127	111	114	114	116	102	103	133	128	181	165	130
FLIP 91-147C	127	115	113	115	114	101	102	131	130	177	167	130
FLIP 91-149C	128	118	117	115	124	103	106	141	134	176	175	133
FLIP 91-150C	126	117	117	119	119	108	104	137	133	178	175	133
FLIP 91-153C	129	110	114	114	114	102	101	131	128	178	165	129
FLIP 91-162C	129	114	117	116	116	104	101	137	129	176	167	131
FLIP 91-168C	126	116	117	120	118	104	103	136	132	176	174	131
FLIP 91-169C	127	110	115	113	116	99	101	133	129	180	167	129
FLIP 91-175C	126	116	115	115	121	106	103	135	130	178	176	132
FLIP 91-177C	127	115	116	117	118	103	104	133	129	176	171	131
FLIP 91-186C	128	108	111	115	112	95	100	130	129	178	167	127
FLIP 91-192C	130	109	111	113	113	97	102	130	127	177	163	127
FLIP 91-193C	125	115	109	111	115	100	101	130	127	180	165	128
FLIP 91-195C	127	113	114	113	116	100	102	134	129	178	169	130
FLIP 91-197C	127	114	116	115	122	103	104	132	129	176	175	132
FLIP 91-200C	128	115	117	117	119	105	103	135	131	178	175	133
FLIP 91-204C	128	114	113	114	116	99	102	132	129	180	172	130
FLIP 91-208C	129	114	116	118	114	110	103	135	132	178	170	132
FLIP 91-209C	129	109	110	110	111	96	99	129	129	175	166	126
FLIP 91-212C	128	115	116	114	118	104	103	134	129	179	171	132
FLIP 91-213C	128	115	116	115	116	102	104	132	130	174	170	130
FLIP 91-219C	128	111	114	114	113	99	100	130	129	180	168	129
FLIP 91-220C	129	110	118	115	115	99	101	132	128	177	171	130
FLIP 91-222C	130	113	116	113	116	102	103	133	129	176	168	130
FLIP 82-150C	125	110	111	113	113	95	100	130	128	181	167	127
ILC 482	127	109	110	115	111	96	99	129	127	180	166	126
Local check	125	116	115	117	118	103	103	135	134	177	162	
Location mean	**127**	**113**	**114**	**115**	**117**	**102**	**102**	**133**	**129**	**178**	**169**	
S.E. Of Mean	1.40	1.09	1.72	1.55	1.30	1.74	0.83	0.81	1.02	One	One	
LSD at	3.96	3.11	4.86	4.41	3.68	4.94	2.35	2.29	2.88	rep	rep	
C.V. %	1.55	1.37	2.13	1.91	1.57	2.40	1.14	0.86	1.11			

(1) Srinagar in India, Zarghan in Iran and Caltagirone in Italy being planted in spring and Almora in India and Diyarbakir in Turkey having missing values are excluded from the overall mean.

Table 3.6.3. Adjusted time to maturity (days) of entries at different locations in the CISN-W during 1992/93.

Entry name	Algeria	Chile	Iran			Italy	Lebanon	Portugal	Spain		Syria
	Khroub	Chillan	Karaj	Sararood	Zarghan	Tarquinia	Terbol	Elvas	Badajoz	Sevilla	Aleppo
FLIP 90-6C	155	158	206	285	96	180	183	232	225	210	169
FLIP 90-8C	153	160	206	284	98	177	185	231	220	213	167
FLIP 90-12C	159	163	207	285	101	181	188	235	222	222	168
FLIP 90-28C	153	159	204	285	92	179	181	232	223	212	166
FLIP 90-29C	159	160	206	283	98	178	189	232	232	214	165
FLIP 90-31C	154	159	207	284	95	188	186	235	224	211	167
FLIP 90-38C	153	160	206	284	93	179	186	231	224	212	167
FLIP 90-45C	156	160	208	284	98	178	188	234	227	209	170
FLIP 90-47C	157	160	207	284	98	178	187	233	223	221	167
FLIP 90-71C	154	159	206	284	96	178	182	231	222	216	170
FLIP 90-77C	154	158	203	282	92	177	186	238	226	219	166
FLIP 90-95C	158	160	206	283	99	177	185	238	222	212	167
FLIP 90-102C	158	158	204	283	98	182	187	236	222	216	168
FLIP 90-103C	158	159	206	285	98	175	187	235	222	223	167
FLIP 90-104C	156	158	201	284	98	185	186	233	223	221	167
FLIP 90-123C	155	160	208	286	98	176	186	234	223	218	169
FLIP 90-182C	154	159	205	285	93	179	183	230	223	210	167
FLIP 91-12C	155	158	206	283	97	175	186	233	225	214	168
FLIP 91-15C	158	160	205	284	98	181	190	236	224	219	169
FLIP 91-21C	154	159	206	285	96	181	183	233	220	213	168
FLIP 91-32C	155	158	205	285	96	177	187	235	223	214	171
FLIP 91-35C	156	158	207	285	95	182	186	232	222	205	163
FLIP 91-50C	155	160	205	286	94	178	187	235	225	211	167
FLIP 91-52C	157	158	209	283	98	186	185	233	224	214	165
FLIP 91-58C	156	158	211	284	97	180	187	239	222	213	167
FLIP 91-59C	157	161	206	285	98	178	187	233	227	217	168
FLIP 91-60C	155	161	209	283	99	183	186	233	223	212	165
FLIP 91-61C	155	160	210	282	99	189	187	233	222	217	168
FLIP 91-63C	156	160	209	284	99	187	185	235	223	212	165
FLIP 91-130C	160	159	212	283	101	183	190	237	224	217	166
FLIP 91-131C	156	158	206	285	97	177	186	232	223	209	170
FLIP 91-139C	160	160	208	284	97	187	187	238	223	208	169
FLIP 91-140C	155	160	202	288	99	187	187	232	221	214	165
FLIP 91-141C	155	158	205	283	99	185	187	234	224	215	172

Cont'd. ...

Table 3.6.3. Cont'd. ...

Entry name	Algeria Khroub	Chile Chillan	Iran Karaj	Iran Sararood	Iran Zarghan	Italy Tarquinia	Lebanon Terbol	Portugal Elvas	Spain Badajoz	Spain Sevilla	Syria Aleppo
FLIP 91-142C	160	160	206	283	99	181	186	233	226	213	167
FLIP 91-143C	154	158	209	285	97	174	187	233	222	211	167
FLIP 91-144C	157	158	210	284	98	171	187	233	226	221	165
FLIP 91-146C	153	160	206	283	97	178	185	233	220	209	167
FLIP 91-147C	154	158	202	284	96	190	183	231	221	214	163
FLIP 91-149C	159	160	207	284	93	176	188	232	225	219	168
FLIP 91-150C	158	159	205	284	100	183	188	233	224	219	165
FLIP 91-153C	155	160	203	284	93	181	186	232	222	214	169
FLIP 91-162C	155	159	207	285	96	179	185	233	221	218	168
FLIP 91-168C	158	161	205	284	99	179	188	234	224	208	168
FLIP 91-169C	155	159	208	284	98	175	187	233	221	213	170
FLIP 91-175C	157	162	207	285	99	173	187	233	221	221	166
FLIP 91-177C	154	158	208	285	98	177	187	235	224	212	168
FLIP 91-186C	153	159	206	283	94	180	184	235	225	208	165
FLIP 91-192C	154	158	208	284	98	176	184	236	226	215	169
FLIP 91-193C	154	160	204	284	93	175	184	233	223	210	165
FLIP 91-195C	158	158	205	284	99	179	187	233	229	215	166
FLIP 91-197C	160	158	207	285	96	177	186	233	221	220	166
FLIP 91-200C	155	157	205	283	99	184	188	236	225	220	168
FLIP 91-204C	154	159	204	284	95	189	186	234	230	214	169
FLIP 91-208C	155	161	205	283	99	182	187	233	222	214	170
FLIP 91-209C	154	160	207	283	95	174	184	235	223	211	168
FLIP 91-212C	155	156	206	284	94	189	187	233	225	217	170
FLIP 91-213C	155	158	205	284	97	186	186	234	227	214	170
FLIP 91-219C	154	158	205	285	98	177	182	233	224	219	167
FLIP 91-220C	155	158	208	285	98	185	187	233	229	217	168
FLIP 91-222C	156	158	208	283	99	178	186	238	223	217	169
FLIP 82-150C	156	158	205	282	97	180	184	233	223	212	169
ILC 482	154	160	204	283	95	174	181	235	223	214	168
Local check	154	159	212	284	96	188	183	235	222	213	168
Location Mean	**156**	**159**	**206**	**284**	**97**	**180**	**186**	**234**	**224**	**214**	**167**
S.E. Of Mean	One	0.59	1.64	1.05	1.41	0.83	0.74	1.15	1.41	2.89	1.51
LSD at .05	rep	1.68	4.67	2.99	4.00	2.34	2.11	3.27	4.00	8.20	4.29
C.V. %		0.53	1.13	0.52	2.05	0.65	0.57	0.70	0.89	1.90	1.28

Cont'd. ...

Table 3.6.3. Cont'd. ...

Entry name	Syria								Turkey	Overall mean
	Al-Ghab	Gelline	Hama	Idleb	Izra'a	Jableh	Jindiress	Tel Hadya	Diyarbakir	
FLIP 90-6C	169	160	169	132	149	170	181	174	-	179
FLIP 90-8C	167	169	168	134	143	160	181	173	-	178
FLIP 90-12C	169	160	170	131	152	171	181	174	-	181
FLIP 90-28C	168	160	167	129	144	169	178	171	-	177
FLIP 90-29C	173	169	173	140	152	174	185	177	-	182
FLIP 90-31C	167	160	170	136	148	164	182	174	-	179
FLIP 90-38C	168	161	169	133	150	166	182	174	-	179
FLIP 9045C	173	161	174	137	148	172	183	178	-	181
FLIP 90-47C	170	161	170	137	147	174	183	176	-	181
FLIP 90-71C	166	161	170	131	148	161	181	173	-	178
FLIP 90-77C	168	160	170	134	147	166	181	173	-	179
FLIP 90-95C	168	160	173	137	145	175	182	175	-	180
FLIP 90-102C	170	160	170	135	151	172	184	177	-	181
FLIP 90-103C	170	161	170	134	150	174	183	177	-	181
FLIP 90-104C	169	162	170	134	148	166	183	177	-	180
FLIP 90-123C	168	160	168	131	148	170	180	176	-	180
FLIP 90-182C	167	160	169	130	146	162	181	176	-	178
FLIP 91-12C	167	160	170	132	147	174	181	176	209	179
FLIP 91-15C	170	161	172	133	148	170	184	176	209	181
FLIP 91-21C	169	161	168	133	149	165	181	175	208	179
FLIP 91-32C	168	160	171	134	146	172	183	176	208	180
FLIP 91-35C	169	160	171	132	146	149	181	174	202	178
FLIP 91-50C	169	161	169	134	146	174	182	178	208	180
FLIP 91-52C	169	160	170	133	149	171	182	177	208	180
FLIP 91-58C	171	160	172	135	146	170	181	176	208	180
FLIP 91-59C	169	160	171	135	149	173	183	176	208	181
FLIP 91-60C	169	160	171	133	149	172	183	174	208	180
FLIP 91-61C	169	169	170	134	147	170	184	174	209	181
FLIP 91-63C	168	161	170	133	148	170	182	176	209	180
FLIP 91-130C	171	161	176	137	152	171	184	179	210	182
FLIP 91-131C	168	161	170	132	149	174	181	175	208	179
FLIP 91-139C	169	164	171	138	150	174	182	177	208	181
FLIP 91-140C	167	160	171	131	150	164	181	175	209	179
FLIP 91-141C	169	169	172	138	150	171	184	175	210	181

Cont'd. ...

Table 3.6.3. Cont'd. ...

Entry name	Syria								Turkey	(1)
	Al-Ghab	Gelline	Hama	Idleb	Izra'a	Jableh	Jindiress	Tel Hadya	Diyarbakir	Overall mean
FLIP 91-142C	169	161	170	135	150	173	183	178	211	181
FLIP 91-143C	168	161	170	134	146	171	181	176	209	179
FLIP 91-144C	171	163	175	136	145	174	185	176	211	181
FLIP 91-146C	167	169	169	135	146	172	183	173	207	179
FLIP 91-147C	167	161	170	129	146	164	179	173	208	178
FLIP 91-149C	169	162	169	136	149	175	183	179	208	181
FLIP 91-150C	169	160	172	138	151	173	185	178	209	181
FLIP 91-153C	167	160	167	131	148	166	182	175	204	179
FLIP 91-162C	168	161	171	132	149	168	182	175	208	180
FLIP 91-168C	170	160	173	137	151	172	184	178	209	181
FLIP 91-169C	167	161	169	135	147	172	182	176	206	180
FLIP 91-175C	171	160	170	133	155	175	184	178	209	181
FLIP 91-177C	167	161	169	135	151	171	182	176	208	180
FLIP 91-186C	167	163	168	129	142	166	181	174	208	178
FLIP 91-192C	167	160	169	130	145	169	182	171	205	179
FLIP 91-193C	168	160	169	133	146	166	179	174	205	178
FLIP 91-195C	169	160	169	135	148	172	182	177	208	180
FLIP 91-197C	170	161	173	135	150	171	183	176	-	180
FLIP 91-200C	171	169	172	131	148	171	183	178	209	181
FLIP 91-204C	171	161	171	135	146	169	184	175	208	181
FLIP 91-208C	168	161	172	129	152	172	183	176	208	180
FLIP 91-209C	169	160	168	132	143	169	182	176	208	179
FLIP 91-212C	170	160	170	134	150	172	183	176	208	180
FLIP 91-213C	167	161	169	135	144	171	183	175	208	180
FLIP 91-219C	167	160	167	129	147	169	181	174	207	179
FLIP 91-220C	169	160	170	134	146	172	181	176	209	181
FLIP 91-222C	169	160	170	134	149	172	182	175	208	180
FLIP 82-150C	170	161	171	131	141	171	181	174	207	179
ILC 482	167	160	170	128	142	157	179	171	208	177
Local check	167	160	169	133	148	172	183	177	208	
Location mean	**169**	**161**	**170**	**134**	**148**	**170**	**182**	**175**	**208**	
S.E. Of Mean	0.62	0.63	1.03	1.51	2.21	2.70	0.72	0.93	One	
LSD at	1.75	1.80	2.93	4.30	6.28	7.66	2.05	2.65	rep	
C.V. %	0.52	0.55	0.86	1.60	2.12	2.25	0.56	0.75		

(1) Zarghan in Iran planted in spring and Diyarbakir in Turkey having missing values are excluded from the overall mean.

Table 3.6.4. Adjusted plant height (cm) of entries at different locations in the CISN-W during 1992/93.

Entry name	Algeria		Chile	Cyprus	India		Iran			Italy
	Khroub	Setif	Chillan	Athalassa	Almora	Srinagar	Karaj	Sararood	Zarghan	Caltagirone
FLIP 90-6C	60	35	59	69	60	43	38	56	49	30
FLIP 90-8C	60	32	72	67	-	44	30	54	49	32
FLIP 90-12C	50	28	53	49	60	45	30	48	46	32
FLIP 90-28C	44	25	45	54	60	45	23	51	37	25
FLIP 90-29C	50	35	63	64	-	44	35	55	46	25
FLIP 90-31C	68	30	77	61	65	44	38	57	53	30
FLIP 90-38C	55	30	65	58	75	45	32	56	48	30
FLIP 90-45C	69	35	65	63	65	45	40	55	50	36
FLIP 90-47C	60	28	79	66	70	44	33	56	50	39
FLIP 90-71C	49	25	56	55	65	44	28	53	44	30
FLIP 90-77C	69	38	65	64	65	45	33	51	43	36
FLIP 90-95C	60	40	66	71	-	44	36	55	57	45
FLIP 90-102C	62	35	59	66	50	43	36	54	45	31
FLIP 90-103C	58	28	53	58	50	45	28	54	46	31
FLIP 90-104C	54	35	59	66	45	44	26	55	46	34
FLIP 90-123C	42	20	44	48	-	45	26	55	42	22
FLIP 90-182C	48	35	53	60	55	43	25	55	41	31
FLIP 91-12C	63	38	70	66	70	45	39	58	52	34
FLIP 91-15C	68	36	67	66	-	45	41	53	56	43
FLIP 91-21C	60	31	65	62	-	44	35	53	47	28
FLIP 91-32C	50	28	57	58	55	45	28	55	39	30
FLIP 91-35C	59	32	67	63	75	45	28	55	45	32
FLIP 91-50C	57	32	62	64	65	44	28	54	39	31
FLIP 91-52C	52	38	57	66	50	44	38	56	48	31
FLIP 91-58C	52	28	70	58	60	45	32	54	46	29
FLIP 91-59C	45	28	58	59	65	46	32	55	44	24
FLIP 91-60C	52	38	67	59	-	45	31	54	44	30
FLIP 91-61C	50	35	52	58	-	45	33	55	50	33
FLIP 91-63C	50	25	54	59	70	45	31	56	42	31
FLIP 91-130C	60	34	73	67	-	43	35	54	58	41
FLIP 91-131C	55	30	47	60	75	43	33	51	52	34
FLIP 91-139C	72	38	59	63	85	43	33	55	58	40
FLIP 91-140C	68	38	62	62	90	44	36	56	51	34
FLIP 91-141C	60	36	81	66	-	44	35	52	54	41

Cont'd. ...

Table 3.6.4 Cont'd. ...

Entry name	Algeria		Chile	Cyprus	India		Iran			Italy
	Khroub	Setif	Chillan	Athalassa	Almora	Karewa	Karaj	Sararood	Zarghan	Caltagirone
FLIP 91-142C	64	38	62	71	-	44	29	52	49	36
FLIP 91-143C	60	38	62	60	-	44	32	56	58	26
FLIP 91-144C	62	35	48	75	80	43	40	56	57	33
FLIP 91-146C	64	35	71	68	-	43	40	55	52	33
FLIP 91-147C	72	42	57	66	85	45	31	54	53	38
FLIP 91-149C	68	34	75	76	90	43	39	54	51	43
FLIP 91-150C	62	40	75	76	-	43	33	56	60	43
FLIP 91-153C	69	35	72	71	75	44	32	56	49	35
FLIP 91-162C	72	32	68	66	85	45	38	54	50	42
FLIP 91-168C	58	40	63	78	75	44	35	55	59	38
FLIP 91-169C	68	40	77	60	70	44	40	56	54	35
FLIP 91-175C	61	32	55	52	-	44	32	55	52	37
FLIP 91-177C	60	36	67	70	75	44	32	57	54	34
FLIP 91-186C	52	30	65	60	60	44	27	55	43	28
FLIP 91-192C	40	25	51	56	70	45	38	54	45	26
FLIP 91-193C	58	38	77	57	-	44	31	52	48	30
FLIP 91-195C	46	32	69	67	-	43	34	53	49	29
FLIP 91-197C	58	35	54	58	70	44	31	55	48	31
FLIP 91-200C	60	35	57	46	-	43	32	54	49	34
FLIP 91-204C	50	28	44	49	-	45	26	56	37	28
FLIP 91-208C	62	34	64	59	-	44	33	53	46	33
FLIP 91-209C	52	32	57	55	60	46	30	54	40	30
FLIP 91-212C	58	34	65	66	65	45	32	55	46	38
FLIP 91-213C	58	35	50	66	60	45	33	56	51	33
FLIP 91-219C	44	28	58	56	65	45	30	55	41	27
FLIP 91-220C	55	28	52	58	70	45	33	57	47	31
FLIP 91-222C	50	35	54	56	65	45	33	53	47	30
FLIP 82-150C	48	25	60	56	65	44	29	55	41	33
ILC 482	42	25	58	55	50	44	27	53	37	28
Local check	72	38	51	58	40	44	35	55	44	32
Location Mean	**57**	**33**	**61**	**62**	**66**	**44**	**33**	**54**	**48**	**33**
S.E. Of Mean	One	0.14	4.57	3.80	One	0.80	3.07	1.45	2.50	2.50
LSD at .05	rep	0.34	12.98	10.79	rep	2.26	8.72	4.11	7.10	7.06
C.V. %		0.54	10.51	8.68		2.55	13.27	3.76	7.37	10.83

Cont'd. ...

Table 3.6.4 Cont'd. ...

Entry name	Italy		Lebanon	Portugal	Spain		Syria			
	Tarquinia	Tolentino	Terbol	Elvas	Badajoz	Sevilla	Aleppo	Al-Ghab	Gelline	Hama
FLIP 90-6C	46	63	48	67	41	61	42	40	40	61
FLIP 90-8C	55	60	49	66	38	72	36	53	55	61
FLIP 90-12C	52	63	47	70	33	55	47	44	50	50
FLIP 90-28C	44	54	46	60	34	66	43	41	40	50
FLIP 90-29C	51	61	49	65	34	70	40	46	45	60
FLIP 90-31C	57	64	53	78	39	62	41	49	55	60
FLIP 90-38C	53	60	49	63	35	62	43	45	51	55
FLIP 9045C	61	66	54	78	39	70	41	50	51	70
FLIP 90-47C	56	72	46	71	36	66	37	55	50	60
FLIP 90-71C	57	59	50	62	39	60	42	46	45	50
FLIP 90-77C	56	68	52	73	40	61	41	48	55	60
FLIP 90-95C	65	66	51	82	41	66	40	51	55	60
FLIP 90-102C	54	59	54	73	34	63	44	50	40	61
FLIP 90-103C	54	57	50	73	38	56	39	49	50	56
FLIP 90-104C	49	56	51	60	39	50	40	46	55	50
FLIP 90-123C	41	46	48	60	23	48	41	43	45	50
FLIP 90-182C	48	57	48	68	39	59	42	38	45	56
FLIP 91-12C	58	60	55	76	39	69	39	52	50	60
FLIP 91-15C	71	70	56	71	36	64	48	57	55	71
FLIP 91-21C	57	55	49	69	29	53	38	45	50	50
FLIP 91-32C	52	59	44	63	31	58	41	41	45	41
FLIP 91-35C	58	63	47	66	34	65	44	46	50	51
FLIP 91-50C	54	60	50	71	38	53	40	44	50	58
FLIP 91-52C	58	67	49	72	34	56	43	50	49	61
FLIP 91-58C	63	60	53	67	27	52	41	44	50	60
FLIP 91-59C	51	60	50	71	31	58	44	45	45	55
FLIP 91-60C	56	60	52	66	29	59	39	46	50	60
FLIP 91-61C	67	59	47	60	28	57	39	47	50	61
FLIP 91-63C	46	60	46	59	30	60	43	48	49	45
FLIP 91-130C	61	67	53	71	38	65	36	53	52	65
FLIP 91-131C	51	59	49	70	36	63	38	46	50	50
FLIP 91-139C	61	70	54	76	43	73	42	49	55	65
FLIP 91-140C	50	62	56	75	39	61	39	49	52	51
FLIP 91-141C	57	73	56	79	41	62	39	53	54	73

Cont'd. ...

Table 3.6.4 Cont'd. ...

Entry name	Italy		Lebanon	Portugal	Spain		Syria			
	Tarquinia	Tolentino	Terbol	Elvas	Badajoz	Sevilla	Aleppo	Al-Ghab	Gelline	Hama
FLIP 91-142C	57	61	51	74	38	64	41	58	50	71
FLIP 91-143C	63	61	51	75	39	63	40	48	55	60
FLIP 91-144C	58	66	56	79	39	75	41	53	52	65
FLIP 91-146C	60	67	53	73	36	72	38	53	55	66
FLIP 91-147C	60	65	53	75	39	69	42	57	60	61
FLIP 91-149C	65	71	57	86	50	76	40	67	60	65
FLIP 91-150C	62	73	60	96	60	61	40	60	60	70
FLIP 91-153C	60	65	54	72	39	57	40	47	55	65
FLIP 91-162C	63	67	51	83	43	72	41	55	55	65
FLIP 91-168C	68	68	54	78	46	56	43	58	60	68
FLIP 91-169C	58	68	57	73	45	67	42	55	55	65
FLIP 91-175C	51	55	51	51	35	51	38	50	45	60
FLIP 91-177C	62	63	49	85	43	70	41	55	55	55
FLIP 91-186C	67	61	52	67	36	66	39	44	50	50
FLIP 91-192C	43	54	47	63	34	58	38	37	40	40
FLIP 91-193C	63	61	49	72	37	56	43	45	50	60
FLIP 91-195C	59	55	52	72	33	48	38	44	45	50
FLIP 91-197C	41	62	47	62	32	51	37	47	48	61
FLIP 91-200C	55	63	52	64	31	58	42	52	55	60
FLIP 91-204C	55	57	51	63	35	57	40	44	45	51
FLIP 91-208C	59	63	52	68	40	60	42	50	53	65
FLIP 91-209C	50	55	53	73	33	38	46	40	42	50
FLIP 91-212C	56	64	48	74	37	70	40	49	55	66
FLIP 91-213C	58	62	52	76	37	61	43	50	50	65
FLIP 91-219C	49	48	47	60	31	47	39	42	40	45
FLIP 91-220C	63	62	49	70	33	51	40	44	45	55
FLIP 91-222C	51	60	48	62	32	51	44	43	45	55
FLIP 82-150C	56	55	51	62	38	61	38	44	45	55
ILC 482	55	57	49	57	38	55	39	34	41	41
Local check	65	70	45	64	37	76	41	54	55	65
Location mean	**56**	**62**	**51**	**70**	**37**	**61**	**40**	**48**	**50**	**58**
S.E. Of Mean	4.13	2.75	3.35	5.19	1.96	4.19	1.91	1.87	0.53	0.57
LSD at	11.73	7.82	9.52	14.76	5.58	11.89	5.39	5.32	1.49	1.61
C.V. %	10.38	6.30	9.32	10.49	7.56	9.74	6.66	5.50	1.48	1.38

Cont'd. ...

Table 3.6.4 Cont'd. ...

Entry name	Syria					Turkey				(1)
	Idleb	Izra'a	Jableh	Jindiress	Tel Hadya	Amasya	Denizli	Diyarbakir	Menemen	**Overall mean**
FLIP 90-6C	35	38	49	46	36	62	35	-	57	43
FLIP 90-8C	45	39	56	47	37	43	38	-	50	45
FLIP 90-12C	33	36	47	43	28	44	36	-	48	39
FLIP 90-28C	32	32	47	41	32	44	35	-	50	37
FLIP 90-29C	37	44	55	44	36	56	38	-	50	43
FLIP 90-31C	45	42	53	49	39	59	45	-	49	47
FLIP 90-38C	41	39	57	42	40	44	43	-	51	43
FLIP 9045C	49	40	62	52	38	58	41	-	63	48
FLIP 90-47C	41	45	70	53	37	56	42	-	58	47
FLIP 90-71C	36	35	54	41	31	40	38	-	47	40
FLIP 90-77C	43	41	53	48	37	59	46	-	56	46
FLIP 90-95C	46	47	59	53	35	56	46	-	60	48
FLIP 90-102C	40	41	54	45	37	50	41	-	50	44
FLIP 90-103C	41	38	56	47	36	57	40	-	50	43
FLIP 90-104C	39	38	58	47	38	53	38	-	52	42
FLIP 90-123C	30	34	48	40	25	45	38	-	41	35
FLIP 90-182C	34	36	52	37	27	41	38	-	41	39
FLIP 91-12C	39	39	60	48	41	56	46	41	51	52
FLIP 91-15C	47	47	69	54	40	59	49	55	55	56
FLIP 91-21C	38	38	51	42	32	44	40	42	50	47
FLIP 91-32C	27	36	48	40	28	50	39	40	38	44
FLIP 91-35C	39	41	59	48	37	56	42	41	51	50
FLIP 91-50C	40	39	54	41	25	49	41	46	38	48
FLIP 91-52C	35	37	50	41	37	56	41	38	52	49
FLIP 91-58C	39	37	49	46	32	50	39	30	51	47
FLIP 91-59C	35	35	52	42	34	50	38	34	49	46
FLIP 91-60C	36	41	54	42	29	45	37	36	43	47
FLIP 91-61C	38	35	50	42	34	47	39	40	48	47
FLIP 91-63C	33	35	50	41	34	51	36	38	42	45
FLIP 91-130C	45	41	65	51	37	61	49	57	48	53
FLIP 91-131C	38	39	54	44	33	56	41	46	52	48
FLIP 91-139C	51	43	67	56	41	50	49	67	66	56
FLIP 91-140C	40	42	57	44	39	59	42	41	55	51
FLIP 91-141C	49	48	70	54	39	61	45	53	63	56

Cont'd. ...

Table 3.6.4 Cont'd. ...

Entry name	Syria					Turkey				Overall mean
	Idleb	Izra'a	Jableh	Jindiress	Tel Hadya	Amasya	Denizli	Diyarbakir	Menemen	
FLIP 91-142C	46	43	65	50	41	63	47	52	61	54
FLIP 91-143C	41	40	68	47	38	66	45	45	45	52
FLIP 91-144C	54	40	66	54	37	56	44	57	62	55
FLIP 91-146C	45	43	63	49	37	50	43	55	48	53
FLIP 91-147C	50	46	64	55	43	58	44	48	63	55
FLIP 91-149C	50	41	78	59	45	59	48	52	57	59
FLIP 91-150C	53	43	77	63	45	62	49	50	66	60
FLIP 91-153C	41	42	60	47	38	65	45	52	49	53
FLIP 91-162C	45	42	63	51	40	61	43	57	58	55
FLIP 91-168C	51	46	72	54	40	55	45	63	57	56
FLIP 91-169C	50	43	56	51	45	59	49	65	58	56
FLIP 91-175C	39	39	47	50	38	55	40	48	48	47
FLIP 91-177C	43	41	60	47	41	48	50	49	44	53
FLIP 91-186C	33	36	49	40	33	52	37	45	45	48
FLIP 91-192C	27	34	61	40	27	46	37	48	50	43
FLIP 91-193C	38	38	58	47	35	49	47	44	37	50
FLIP 91-195C	33	37	56	35	31	51	40	42	48	47
FLIP 91-197C	35	37	52	47	35	46	38	42	44	46
FLIP 91-200C	44	42	55	45	34	51	38	46	44	49
FLIP 91-204C	31	34	53	35	27	44	34	35	36	43
FLIP 91-208C	42	40	60	46	35	49	43	49	52	51
FLIP 91-209C	28	33	51	40	30	42	33	41	42	44
FLIP 91-212C	38	40	61	46	39	42	47	49	44	51
FLIP 91-213C	40	40	62	47	39	58	45	50	51	51
FLIP 91-219C	33	35	49	37	31	37	36	42	39	42
FLIP 91-220C	32	36	53	42	32	44	42	36	42	46
FLIP 91-222C	34	35	50	37	29	48	43	41	45	45
FLIP 82-150C	30	35	43	37	28	45	43	46	40	45
ILC 482	30	30	51	34	26	30	36	40	42	42
Local check	50	41	73	55	41	50	36	48	36	
Location mean	**40**	**39**	**57**	**46**	**35**	**52**	**41**	**46**	**50**	
S.E. Of Mean	2.53	1.83	3.25	2.41	2.07	3.91	2.59	One	4.37	
LSD at	7.18	5.20	9.24	6.84	5.89	11.10	7.31	rep	12.42	
C.V. %	9.00	6.61	8.03	7.41	8.31	10.68	8.87		12.46	

(1) Srinagar in India, Zarghan in Iran and Caltagirone in Italy, Amasya and Denizli being planted in spring and Almora in India and Diyarbakir in Turkey having missing values are excluded from the overall mean.

Table 3.6.5. Adjusted 100-seed weight (g) of entries at different locations in the CISN-W during 1992/93.

Entry name	Chile	Cyprus	Iran		Italy			Lebanon	Portugal	Spain	
	Chillan	Athalassa	Karaj	Zarghan	Caltag-girone	Tarquinia	Tolentino	Terbol	Elvas	Badajoz	Sevilla
FLIP 90-6C	28	25	30	26	20	33	36	27	27	28	32
FLIP 90-8C	27	28	30	38	27	38	41	32	33	33	39
FLIP 90-12C	38	34	27	33	29	44	43	36	37	33	42
FLIP 90-28C	38	35	24	31	30	32	45	31	32	36	40
FLIP 90-29C	23	33	26	32	29	40	44	36	30	31	36
FLIP 90-31C	35	30	22	33	28	37	39	33	33	32	36
FLIP 90-38C	29	27	24	29	28	38	37	30	26	27	31
FLIP 90-45C	39	35	31	35	29	44	41	39	31	32	37
FLIP 90-47C	38	38	33	34	31	47	46	40	34	35	40
FLIP 90-71C	33	30	29	31	29	40	39	32	29	33	39
FLIP 90-77C	35	33	31	33	32	38	40	36	35	33	36
FLIP 90-95C	32	31	26	33	26	42	42	35	29	32	37
FLIP 90-102C	-	31	28	32	28	59	43	36	30	30	34
FLIP 90-103C	36	34	33	36	32	42	41	37	34	31	33
FLIP 90-104C	31	32	31	36	31	43	41	37	31	30	33
FLIP 90-123C	31	32	25	29	29	35	40	31	29	38	34
FLIP 90-182C	38	32	28	31	30	30	43	34	32	35	42
FLIP 91-12C	32	33	29	35	32	41	43	37	34	32	37
FLIP 91-15C	38	35	27	37	34	38	45	39	36	35	38
FLIP 91-21C	32	35	30	33	31	49	44	35	32	35	38
FLIP 91-32C	32	30	28	29	27	36	37	32	32	29	33
FLIP 91-35C	34	33	27	32	35	44	43	38	35	29	38
FLIP 91-50C	37	36	28	35	36	45	50	41	38	38	40
FLIP 91-52C	37	30	31	30	29	38	41	33	32	33	36
FLIP 91-58C	34	30	26	34	32	40	39	34	32	35	39
FLIP 91-59C	31	30	30	33	28	39	41	34	31	33	35
FLIP 91-60C	28	32	27	29	30	42	40	33	29	32	36
FLIP 91-61C	33	31	30	27	29	42	40	33	30	33	38
FLIP 91-63C	31	32	32	31	31	35	41	32	30	32	36
FLIP 91-130C	32	34	32	34	30	44	41	38	33	35	38
FLIP 91-131C	33	35	33	36	33	32	43	39	36	34	36
FLIP 91-139C	44	37	32	40	36	49	49	43	37	34	40
FLIP 91-140C	37	33	25	38	36	38	43	37	33	36	37
FLIP 91-141C	-	36	31	34	28	59	46	40	32	32	37

Cont'd. ...

Table 3.6.5 Cont'd. ...

Entry name	Chile	Cyprus	Iran		Italy			Lebanon	Portugal	Spain	
	Chillan	Athalassa	Karaj	Zarghan	Caltag-girone	Tarquinia	Tolentino	Terbol	Elvas	Badajoz	Sevilla
FLIP 91-142C	34	32	28	37	34	39	42	36	32	29	36
FLIP 91-143C	25	34	28	35	31	33	44	37	33	35	37
FLIP 91-144C	34	32	33	35	26	40	44	38	35	32	37
FLIP 91-146C	30	25	23	23	23	48	30	27	28	25	32
FLIP 91-147C	18	28	24	32	27	32	35	29	27	29	30
FLIP 91-149C	34	34	30	34	31	44	44	40	37	35	40
FLIP 91-150C	29	33	25	34	28	39	43	38	38	35	36
FLIP 91-153C	33	28	26	32	28	39	41	31	31	29	36
FLIP 91-162C	30	33	30	28	24	40	35	33	35	33	35
FLIP 91-168C	31	36	36	36	33	47	49	43	40	39	40
FLIP 91-169C	33	33	28	35	29	40	44	38	34	31	36
FLIP 91-175C	34	34	30	33	30	43	42	39	32	31	33
FLIP 91-177C	28	33	29	37	32	41	44	38	35	32	36
FLIP 91-186C	33	30	27	34	28	38	40	30	32	36	39
FLIP 91-192C	33	31	28	28	31	38	43	32	34	34	37
FLIP 91-193C	32	37	26	38	37	42	52	39	37	39	44
FLIP 91-195C	34	32	31	32	31	38	38	34	34	34	37
FLIP 91-197C	27	34	29	35	29	38	41	38	32	32	35
FLIP 91-200C	24	33	25	34	32	43	44	37	31	31	33
FLIP 91-204C	30	34	27	30	27	36	40	34	32	32	36
FLIP 91-208C	28	27	22	32	26	35	36	32	27	29	33
FLIP 91-209C	37	38	35	34	30	37	49	36	38	42	39
FLIP 91-212C	27	38	30	34	35	44	46	39	40	34	39
FLIP 91-213C	34	32	29	36	32	44	44	36	32	31	37
FLIP 91-219C	32	30	27	29	30	37	37	30	30	33	30
FLIP 91-220C	32	32	31	35	32	38	41	34	33	35	37
FLIP 91-222C	32	29	29	28	30	44	40	34	30	32	33
FLIP 82-150C	25	29	23	33	23	34	34	28	27	27	31
ILC 482	25	27	17	26	27	34	36	29	25	30	33
Local check	44	32	25	26	25	38	35	28	38	32	37
Location Mean	**32**	**32**	**28**	**33**	**30**	**40**	**42**	**35**	**33**	**33**	**36**
S.E. Of Mean	One	0.97	2.38	1.72	1.33	4.71	1.03	0.78	1.17	1.40	1.42
LSD at .05	rep	2.77	6.75	4.88	3.78	13.38	2.92	2.22	3.32	3.95	4.02
C.V. %		4.28	11.87	7.43	6.33	16.55	3.49	3.17	5.08	6.06	5.53

Cont'd. ...

Table 3.6.5 Cont'd. ...

Entry name	Syria					Turkey					Overall mean
	Al-Ghab	Gelline	Jableh	Jindi-ress	Tel-Hadya	Amasya	Antalya	Denizli	Diyar-bakir	Menemen	
FLIP 90-6C	33	35	32	26	27	33	25	31	-	26	30
FLIP 90-8C	36	39	35	26	32	36	36	37	-	26	34
FLIP 90-12C	38	41	33	32	35	40	31	41	-	28	37
FLIP 90-28C	39	39	39	28	34	40	28	35	-	39	35
FLIP 90-29C	38	39	32	31	34	42	36	34	-	-	35
FLIP 90-31C	34	39	29	29	34	34	27	38	-	23	33
FLIP 90-38C	30	37	32	25	31	34	38	45	-	23	32
FLIP 9045C	39	42	36	35	33	40	31	36	-	24	36
FLIP 90-47C	40	44	35	35	36	43	29	40	-	23	39
FLIP 90-71C	34	39	32	28	32	37	24	39	-	27	34
FLIP 90-77C	40	42	35	28	37	37	32	40	-	32	36
FLIP 90-95C	35	39	37	28	33	39	35	38	-	31	35
FLIP 90-102C	37	38	37	32	33	38	33	39	-	29	36
FLIP 90-103C	36	41	36	34	34	41	29	42	-	30	36
FLIP 90-104C	39	40	31	32	35	41	32	43	-	28	36
FLIP 90-123C	34	37	36	28	29	37	33	37	-	26	34
FLIP 90-182C	38	40	39	31	34	41	34	39	-	25	36
FLIP 91-12C	37	41	38	31	37	41	28	43	32	31	36
FLIP 91-15C	34	43	39	36	36	41	32	41	37	30	37
FLIP 91-21C	32	44	41	31	35	44	34	40	35	30	37
FLIP 91-32C	37	39	38	30	29	34	33	38	30	24	33
FLIP 91-35C	42	41	36	32	35	40	35	40	35	28	37
FLIP 91-50C	40	47	42	36	35	47	41	45	39	28	40
FLIP 91-52C	33	38	37	27	32	38	31	38	31	29	34
FLIP 91-58C	36	38	36	29	34	37	29	38	33	31	35
FLIP 91-59C	33	35	38	29	31	38	33	37	31	25	34
FLIP 91-60C	36	36	36	29	35	37	36	36	32	22	35
FLIP 91-61C	33	36	37	29	31	40	34	37	34	28	35
FLIP 91-63C	38	36	39	28	31	36	29	37	34	26	34
FLIP 91-130C	37	38	38	33	35	42	37	39	36	27	37
FLIP 91-131C	40	46	38	31	34	42	28	39	37	28	37
FLIP 91-139C	44	49	35	36	37	43	30	46	40	33	40
FLIP 91-140C	39	43	37	30	33	41	28	44	38	32	36
FLIP 91-141C	37	45	41	31	34	46	30	42	-	26	39

Cont'd. ...

Table 3.6.5 Cont'd. ...

Entry name	Syria					Turkey					(1)
	Al-Ghab	Gelline	Jableh	Jindi-ress	Tel-Hadya	Amasya	Antalya	Denizli	Diyar-bakir	Menemen	**Overall mean**
FLIP 91-142C	37	40	37	31	34	41	28	41	36	30	35
FLIP 91-143C	37	42	35	32	34	42	36	42	34	27	36
FLIP 91-144C	39	43	32	32	33	41	28	36	38	24	36
FLIP 91-146C	30	29	33	23	26	29	35	32	27	21	30
FLIP 91-147C	30	30	35	25	28	35	30	36	29	23	30
FLIP 91-149C	39	45	37	35	34	40	31	41	33	29	38
FLIP 91-150C	40	39	35	33	34	40	35	39	31	31	36
FLIP 91-153C	33	39	35	28	43	35	30	40	30	27	34
FLIP 91-162C	39	42	39	30	-	35	31	34	29	30	27
FLIP 91-168C	40	48	35	39	39	44	36	46	41	29	41
FLIP 91-169C	38	40	36	30	35	39	29	40	34	28	36
FLIP 91-175C	37	41	33	33	34	41	33	39	33	27	36
FLIP 91-177C	36	41	34	30	36	41	32	44	35	28	36
FLIP 91-186C	33	38	35	28	32	39	35	40	33	28	34
FLIP 91-192C	40	37	38	28	30	39	26	36	35	28	34
FLIP 91-193C	43	46	41	35	42	44	37	44	40	-	41
FLIP 91-195C	35	42	38	28	31	38	37	38	32	30	35
FLIP 91-197C	37	42	33	35	33	41	33	41	34	28	36
FLIP 91-200C	36	40	30	33	32	40	35	37	33	27	35
FLIP 91-204C	38	39	35	31	30	39	34	34	30	27	34
FLIP 91-208C	32	36	33	25	30	35	37	34	29	28	32
FLIP 91-209C	45	44	40	34	37	45	36	40	36	-	40
FLIP 91-212C	41	47	39	34	40	46	41	45	37	29	40
FLIP 91-213C	35	42	35	31	35	41	30	41	33	28	36
FLIP 91-219C	34	35	37	28	32	38	33	35	34	26	33
FLIP 91-220C	39	38	35	31	33	40	34	38	32	29	36
FLIP 91-222C	34	37	33	29	34	39	34	39	33	26	34
FLIP 82-150C	31	32	34	27	27	32	29	32	28	24	30
ILC 482	31	30	33	24	27	32	30	32	31	28	29
Local check	31	32	34	23	26	-	36	43	29	28	
Location mean	**37**	**40**	**36**	**30**	**33**	**39**	**32**	**39**	**34**	**28**	
S.E. Of Mean	1.51	1.84	2.65	1.04	1.17	1.18	One	1.47	One	2.38	
LSD at	4.29	5.20	7.53	2.95	3.30	3.35	rep	4.16	rep	6.73	
C.V. %	5.84	6.55	10.46	4.83	4.96	4.27		5.34		12.15	

(1) Zarghan in Iran and Caltagirone in Italy, Amasya and Denizli being planted in spring and Almora in India and Tel Hadya in Syria, Diyarbakir and Menemen in Turkey having missing values are excluded from the overall mean.

Table 3.6.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-W during 1992/93.

Entry name	Chile		Greece		India		Iran						Italy			
	Chillan		Athalassa		Srinagar		Karaj		Sararood		Zarghan		Caltagirone		Tarquinia	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-6C	2897	2	3142	1	343	20	463	8	430	17	870	50	351	47	1253	53
FLIP 90-8C	1763	10	2824	5	219	46	0	64	373	22	1389	11	736	8	2664	4
FLIP 90-12C	1255	26	1940	31	313	25	209	32	722	1	943	46	723	10	2469	10
FLIP 90-28C	662	49	1837	43	172	53	111	53	291	33	1180	22	652	13	2492	8
FLIP 90-29C	518	55	1299	60	548	4	191	37	140	55	1122	27	418	39	2143	16
FLIP 90-31C	3815	1	1866	41	317	24	149	46	244	41	1192	21	486	28	2810	3
FLIP 90-38C	1531	14	1870	40	177	52	305	22	310	32	1612	5	767	7	2245	13
FLIP 9045C	1050	30	2059	20	451	10	261	26	52	62	947	45	628	14	2045	23
FLIP 90-47C	890	41	2263	12	281	30	237	29	185	50	402	63	627	15	2085	21
FLIP 90-71C	1502	15	1969	28	299	26	482	6	707	2	1108	31	718	11	1199	55
FLIP 90-77C	1499	18	1947	30	131	59	449	10	509	11	1539	8	674	12	886	63
FLIP 90-95C	1641	11	1991	26	319	23	184	39	27	63	972	43	472	31	1708	30
FLIP 90-102C	607	50	1939	33	253	38	193	35	185	51	983	41	456	33	1132	57
FLIP 90-103C	773	45	1485	57	32	64	387	14	483	14	1169	23	482	29	1645	33
FLIP 90-104C	773	46	2027	22	332	22	211	31	191	48	965	44	771	6	925	61
FLIP 90-123C	808	44	1573	54	193	48	79	58	271	38	786	54	208	61	1040	60
FLIP 90-182C	2140	5	3076	2	269	35	175	41	189	49	804	52	919	3	2463	11
FLIP 91-12C	591	52	1812	44	146	56	280	25	331	28	1213	18	423	38	2159	15
FLIP 91-15C	931	37	1291	61	129	60	88	55	356	23	406	62	462	32	1638	35
FLIP 91-21C	1000	33	2490	7	380	15	183	40	325	29	1140	26	317	53	900	62
FLIP 91-32C	967	36	2220	15	160	54	146	48	522	9	790	53	352	46	1389	47
FLIP 91-35C	1468	19	2427	8	105	62	80	57	168	53	1272	17	780	5	2661	5
FLIP 91-50C	998	34	2837	4	137	57	175	42	248	40	768	55	524	25	1658	32
FLIP 91-52C	1634	13	2065	19	260	36	649	3	224	44	1626	4	341	50	1772	29
FLIP 91-58C	1801	9	2211	16	242	41	135	50	232	42	1385	12	414	40	1423	45
FLIP 91-59C	1635	12	1960	29	135	58	453	9	487	13	1572	7	187	63	1569	41
FLIP 91-60C	2033	6	2032	21	623	3	290	24	213	47	1078	33	482	30	2004	25
FLIP 91-61C	1950	7	1876	39	376	17	471	7	638	4	1049	38	280	58	2469	9
FLIP 91-63C	1441	20	2400	10	220	45	554	4	286	35	1206	20	529	24	1435	44
FLIP 91-130C	1380	22	2197	17	286	29	483	5	276	37	1005	40	219	60	1473	43
FLIP 91-131C	2208	4	1889	36	743	1	663	2	622	5	1085	32	298	56	2875	2
FLIP 91-139C	1005	32	1392	58	383	13	144	49	106	56	1042	39	326	52	1371	49
FLIP 91-140C	1500	17	2312	11	338	21	163	45	411	20	1115	29	538	22	1602	36
FLIP 91-141C	667	48	1497	55	270	33	98	54	559	8	720	56	187	62	1586	38

Cont'd. ...

Table 3.6.6. Cont'd. ...

Entry name	Chile		Greece		India		Iran						Italy			
	Chillan		Athalassa		Srinagar		Karaj		Sararood		Zarghan		Caltagirone		Tarquinia	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-142C	1306	23	2175	18	518	5	0	63	73	58	695	59	1276	1	1596	37
FLIP 91-143C	0	64	1176	63	379	16	3	61	603	6	1422	10	370	43	1072	59
FLIP 91-144C	185	62	1496	56	490	7	194	34	61	61	712	57	171	64	1397	46
FLIP 91-146C	878	42	2011	23	256	37	305	21	413	19	709	58	345	49	1922	26
FLIP 91-147C	307	61	1585	52	100	63	240	28	344	24	1429	9	859	4	1581	39
FLIP 91-149C	983	35	1984	27	380	14	166	44	173	52	336	64	501	27	1797	28
FLIP 91-150C	549	54	1753	47	388	12	87	56	68	59	687	60	278	59	1210	54
FLIP 91-153C	1502	16	2954	3	457	9	225	30	496	12	1356	15	566	19	2166	14
FLIP 91-162C	1865	8	2244	13	357	19	418	11	512	10	980	42	443	35	1154	56
FLIP 91-168C	390	58	1899	35	468	8	190	38	18	64	1210	19	369	44	1889	27
FLIP 91-169C	919	39	2226	14	510	6	361	18	218	45	1074	34	350	48	2124	17
FLIP 91-175C	382	59	1677	49	249	39	3	62	323	30	1115	30	555	20	2116	18
FLIP 91-177C	724	47	1998	25	269	34	128	51	317	31	1367	13	506	26	2096	20
FLIP 91-186C	2311	3	1937	34	294	28	197	33	280	36	1834	1	306	54	2641	6
FLIP 91-192C	1417	21	1766	46	364	18	303	23	444	16	1359	14	431	36	1699	31
FLIP 91-193C	599	51	1855	42	122	61	174	43	688	3	1118	28	328	51	2081	22
FLIP 91-195C	897	40	1594	51	407	11	393	13	334	26	1305	16	430	37	1482	42
FLIP 91-197C	367	60	1020	64	184	51	193	36	162	54	1071	35	296	57	706	64
FLIP 91-200C	107	63	1325	59	238	42	78	59	83	57	877	49	1060	2	1383	48
FLIP 91-204C	419	56	1681	48	245	40	376	16	339	25	932	48	534	23	1641	34
FLIP 91-208C	826	43	1889	37	159	55	247	27	229	43	1053	37	380	42	2523	7
FLIP 91-209C	1207	28	1575	53	743	2	354	19	215	46	936	47	618	16	2044	24
FLIP 91-212C	393	57	1267	62	211	47	146	47	289	34	614	61	599	18	1314	50
FLIP 91-213C	924	38	1776	45	193	49	65	60	258	39	1736	2	408	41	1312	51
FLIP 91-219C	557	53	1876	38	232	43	322	20	456	15	1067	36	304	55	1109	58
FLIP 91-220C	1255	25	2679	6	274	32	382	15	421	18	1586	6	446	34	2385	12
FLIP 91-222C	1017	31	1939	32	229	44	371	17	331	27	1144	25	550	21	1570	40
FLIP 82-150C	1110	29	1626	50	274	31	402	12	384	21	1711	3	356	45	1283	52
ILC 482	1272	24	2004	24	190	50	116	52	570	7	830	51	599	17	2098	19
Local check	1215	27	2402	9	296	27	1057	1	63	60	1148	24	731	9	2905	1
Location mean	**1144**		**1959**		**298**		**258**		**320**		**1092**		**496**		**1773**	
S.E. Of Mean	328.48		311.72		129.17		94.50		117.43		210.90		167.26		425.55	
LSD at	933.21		885.59		366.99		268.47		333.61		599.18		475.18		1209.00	
C.V. %	40.62		22.50		61.36		51.87		51.90		27.32		47.74		33.94	
Efficiency	160		230		101		174		122		126		105		105	
T.E. > L. check	4		0		2		0		20		1		1		0	

Cont'd. ...

Table 3.6.6. Cont'd. ...

Entry name	Italy		Lebanon		Portugal		Spain				Syria			
	Tolentino		Terbol		Elvas		Badajoz		Sevilla		Aleppo		Al Ghab	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-6C	3197	54	2212	48	1943	30	1219	7	5546	1	780	23	2909	31
FLIP 90-8C	4500	4	2517	26	4818	2	1378	3	4892	8	749	33	3507	5
FLIP 90-12C	3889	27	3091	2	5056	1	563	48	4932	7	18	63	3910	2
FLIP 90-28C	3659	37	2940	8	1664	42	1299	5	5070	5	654	42	3517	4
FLIP 90-29C	3991	25	2062	53	525	64	368	62	2257	54	751	30	2806	36
FLIP 90-31C	3382	45	2813	13	2071	28	783	25	4793	9	696	38	2121	58
FLIP 90-38C	3647	38	2331	35	1394	52	595	45	3343	28	615	44	1828	63
FLIP 9045C	4045	22	2540	25	1254	55	780	28	3311	30	890	11	2947	26
FLIP 90-47C	3154	55	2308	36	1676	41	510	52	3347	27	464	58	2647	41
FLIP 90-71C	4113	17	3055	6	2165	25	1695	1	5136	3	547	53	2934	27
FLIP 90-77C	4058	20	3211	1	2582	16	942	16	2379	49	852	12	2603	42
FLIP 90-95C	4056	21	2418	31	1218	57	625	44	3364	24	917	7	2320	53
FLIP 90-102C	3343	48	2432	29	1875	34	505	54	2646	47	896	10	3169	15
FLIP 90-103C	3277	50	2543	24	1937	31	634	42	1273	63	904	9	2540	45
FLIP 90-104C	3268	52	2723	17	1587	46	659	41	3901	16	822	14	3018	21
FLIP 90-123C	1988	64	1932	60	1573	47	142	64	2206	57	745	35	2326	52
FLIP 90-182C	3787	32	3070	4	1896	33	1283	6	5080	4	813	17	2976	23
FLIP 91-12C	3689	36	1748	64	1755	36	413	59	3929	15	571	51	2407	48
FLIP 91-15C	3996	24	2288	40	1297	54	867	18	3304	31	618	43	2544	44
FLIP 91-21C	3363	47	2233	46	2708	7	792	23	3094	39	747	34	2884	33
FLIP 91-32C	3269	51	2043	54	1658	43	751	30	4054	13	753	29	2899	32
FLIP 91-35C	5008	2	2424	30	2880	4	726	33	3056	40	0	64	3837	3
FLIP 91-50C	4111	18	2796	14	2736	6	951	14	3399	23	750	31	2930	28
FLIP 91-52C	3850	29	2886	10	2654	11	781	27	4285	12	916	8	3485	6
FLIP 91-58C	4146	14	2250	44	1597	45	743	31	4371	11	1555	1	2960	24
FLIP 91-59C	4499	5	2644	21	2503	19	856	19	3268	32	762	26	2761	38
FLIP 91-60C	3836	30	2825	12	1442	51	718	34	3664	19	605	48	3209	13
FLIP 91-61C	4413	7	2375	33	2607	14	947	15	3006	42	941	5	3178	14
FLIP 91-63C	4185	13	2288	41	2612	13	698	37	2830	44	394	60	3469	7
FLIP 91-130C	3214	53	2042	55	2146	27	555	50	4048	14	476	56	2825	35
FLIP 91-131C	4095	19	2768	16	2399	21	776	29	2800	46	788	21	3224	12
FLIP 91-139C	3691	35	2039	56	1909	32	436	57	1816	61	313	62	2072	60
FLIP 91-140C	3735	33	2960	7	2226	23	529	51	3669	18	821	15	1519	64
FLIP 91-141C	3716	34	2036	57	1141	59	560	49	3052	41	579	50	2084	59

Cont'd. ...

Table 3.6.6. Cont'd. ...

Entry name	Italy		Lebanon		Portugal		Spain				Syria			
	Tolentino		Terbol		Elvas		Badajoz		Sevilla		Aleppo		Al Ghab	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-142C	3464	43	2933	9	1208	58	507	53	3722	17	549	52	2990	22
FLIP 91-143C	2841	58	1758	63	1818	35	417	58	3241	35	791	20	2472	46
FLIP 91-144C	2963	57	2214	47	954	62	625	43	3318	29	957	4	2372	50
FLIP 91-146C	3803	31	2681	19	2506	18	1078	11	3643	21	810	18	2852	34
FLIP 91-147C	2721	60	2194	49	1725	39	582	47	2374	50	581	49	2384	49
FLIP 91-149C	4562	3	2239	45	2167	24	672	39	2511	48	469	57	2953	25
FLIP 91-150C	4123	16	2185	50	1357	53	833	20	2086	59	690	39	2778	37
FLIP 91-153C	4374	8	2618	22	2672	8	717	35	3408	22	809	19	2049	61
FLIP 91-162C	3526	41	2707	18	2815	5	783	24	3248	34	780	24	3246	9
FLIP 91-168C	4350	9	2180	51	1750	37	782	26	3103	38	926	6	3027	20
FLIP 91-169C	4298	11	2297	39	2661	9	959	13	2850	43	667	41	2701	40
FLIP 91-175C	2384	63	2299	38	994	61	467	55	2149	58	757	27	2449	47
FLIP 91-177C	3511	42	2021	58	2151	26	378	60	3354	25	722	36	2255	55
FLIP 91-186C	4044	23	3078	3	2461	20	1200	8	3650	20	610	46	3245	10
FLIP 91-192C	3977	26	2381	32	2625	12	1370	4	3350	26	715	37	3229	11
FLIP 91-193C	3387	44	2785	15	2328	22	941	17	2017	60	1002	3	3136	18
FLIP 91-195C	4216	12	2556	23	2594	15	667	40	2319	53	498	55	2749	39
FLIP 91-197C	2677	61	1907	61	657	63	593	46	2231	55	779	25	2266	54
FLIP 91-200C	3084	56	2879	11	1531	48	455	56	2211	56	615	45	3432	8
FLIP 91-204C	5242	1	2497	27	1610	44	797	22	5482	2	606	47	2912	30
FLIP 91-208C	4423	6	2262	43	1500	49	703	36	3264	33	525	54	2160	56
FLIP 91-209C	3854	28	2658	20	1479	50	820	21	2339	52	358	61	4082	1
FLIP 91-212C	2780	59	1997	59	1220	56	276	63	824	64	749	32	2160	57
FLIP 91-213C	3376	46	1832	62	1735	38	377	61	3181	37	420	59	1995	62
FLIP 91-219C	2570	62	2300	37	1706	40	998	12	2340	51	780	22	2914	29
FLIP 91-220C	4124	15	2262	42	2949	3	688	38	2816	45	754	28	3083	19
FLIP 91-222C	3595	40	2446	28	2563	17	737	32	1660	62	829	13	3158	16
FLIP 82-150C	3613	39	3055	5	1989	29	1521	2	4989	6	815	16	3156	17
ILC 482	3321	49	2349	34	1042	60	1137	9	3217	36	682	40	2602	43
Local check	4342	10	2113	52	2658	10	1099	10	4619	10	1024	2	2367	51
Location mean	**3714**		**2446**		**2015**		**770**		**3291**		**702**		**2805**	
S.E. Of Mean	318.32		291.08		522.20		129.39		750.97		188.71		309.95	
LSD at	904.36		826.95		1483.58		367.60		2133.50		536.14		880.56	
C.V. %	12.12		16.83		36.59		23.78		32.27		38.01		15.63	
Efficiency	139		101		117		103		103		141		115	
T.E. >L. check	0		7		2		2		0		0		8	

Cont'd. ...

Table 3.6.6. Cont'd. ...

Entry name	Syria													
	Gelline		Hama		Idleb		Izra'a		Jableh		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-6C	2133	44	1162	61	1502	35	1492	40	938	52	1019	28	1505	41
FLIP 90-8C	2817	14	1788	38	1456	41	1492	38	1193	30	1263	15	2187	8
FLIP 90-12C	3047	7	2546	9	1323	55	2127	2	1176	32	1469	4	2944	2
FLIP 90-28C	2606	23	2253	17	1815	13	1460	43	1446	10	1296	13	1984	17
FLIP 90-29C	1939	59	1754	39	1591	28	1556	29	744	62	1300	12	2062	15
FLIP 90-31C	2678	17	2096	24	1016	61	1635	20	918	53	967	40	1717	28
FLIP 90-38C	2294	37	2365	14	1455	42	1556	26	965	49	970	38	2218	7
FLIP 9045C	2656	20	2423	11	1664	20	1317	54	977	47	973	37	1556	36
FLIP 90-47C	1956	55	2251	18	1816	12	1524	33	1254	23	1201	18	1546	37
FLIP 90-71C	2631	22	2115	23	1542	32	1206	61	748	61	914	46	2088	12
FLIP 90-77C	2494	30	1972	28	1318	56	1778	11	1047	42	1319	9	2152	10
FLIP 90-95C	2881	11	2003	26	1660	21	1714	17	1480	8	927	44	1766	24
FLIP 90-102C	2119	46	1704	42	1736	17	1746	15	1242	24	800	54	1541	38
FLIP 90-103C	2222	40	2275	16	1435	45	1524	32	1044	43	1109	20	1558	35
FLIP 90-104C	2156	43	1888	32	1776	15	2095	4	969	48	1056	25	1504	42
FLIP 90-123C	2164	42	1598	45	1542	31	1619	21	940	51	706	60	1517	39
FLIP 90-182C	3731	1	1421	55	2093	3	2000	5	1052	41	1032	27	2623	3
FLIP 91-12C	2008	53	1340	58	1627	27	1206	59	1600	2	810	53	1642	32
FLIP 91-15C	1889	60	1428	54	1437	44	1333	52	1359	17	755	56	1475	47
FLIP 91-21C	2481	31	579	64	1172	60	1079	63	1072	40	978	34	1574	33
FLIP 91-32C	2422	34	1491	48	1459	39	1397	50	1547	4	1318	10	1656	31
FLIP 91-35C	2644	21	2117	22	1922	9	1476	42	1189	31	1584	1	2270	6
FLIP 91-50C	2550	29	2136	21	1651	22	1810	10	964	50	1005	30	1376	55
FLIP 91-52C	2942	8	2623	8	2061	5	1524	35	1012	44	878	51	2994	1
FLIP 91-58C	2925	9	3305	1	1975	7	1603	23	1406	14	1100	22	1246	61
FLIP 91-59C	2831	13	1955	29	1635	25	1540	31	1589	3	1098	23	1372	56
FLIP 91-60C	2861	12	2411	12	1650	23	1524	34	1475	9	1424	5	1725	27
FLIP 91-61C	3272	3	1821	36	1764	16	1270	56	1508	6	891	48	2080	13
FLIP 91-63C	3122	5	1972	27	2005	6	1619	22	1146	34	976	36	2000	16
FLIP 91-130C	2125	45	1450	52	1429	47	1032	64	777	60	620	61	2067	14
FLIP 91-131C	2903	10	2299	15	1426	48	1810	9	1337	19	1499	3	1455	49
FLIP 91-139C	1872	61	2387	13	939	62	1397	49	828	59	917	45	1707	29
FLIP 91-140C	2586	26	1829	34	1631	26	1492	41	1222	26	931	43	1776	23
FLIP 91-141C	1772	63	1128	62	1366	51	1683	19	1157	33	824	52	1890	18

Cont'd. ...

Table 3.6.6. Cont'd. ...

Entry name	Syria													
	Gelline		Hama		Idleb		Izra'a		Jableh		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-142C	2289	38	1663	43	1536	33	1508	36	1367	16	1529	2	2327	4
FLIP 91-143C	1994	54	1218	60	1450	43	2000	6	1142	35	981	33	1502	43
FLIP 91-144C	1764	64	1095	63	895	63	1270	58	1515	5	549	63	1370	57
FLIP 91-146C	1942	58	1430	53	1432	46	1397	48	1200	29	782	55	1858	19
FLIP 91-147C	2097	47	1308	59	1374	50	1460	44	862	57	1228	16	1072	63
FLIP 91-149C	1950	57	1479	49	1582	29	1429	47	1434	11	977	35	1463	48
FLIP 91-150C	1792	62	1790	37	1459	40	1333	51	1126	36	968	39	1362	58
FLIP 91-153C	2053	50	1913	30	811	64	1762	14	1302	21	935	41	1434	50
FLIP 91-162C	2089	48	1907	31	1702	18	1429	46	1631	1	589	62	0	64
FLIP 91-168C	2072	49	1471	51	1332	54	1556	27	1419	12	743	59	1388	54
FLIP 91-169C	2439	32	1360	57	1482	38	1508	37	1275	22	996	31	1763	25
FLIP 91-175C	2553	28	1720	40	1423	49	1571	25	840	58	1301	11	2162	9
FLIP 91-177C	2236	39	1869	33	1689	19	1556	28	891	54	753	58	1316	59
FLIP 91-186C	3092	6	2221	19	2163	2	1778	12	1208	27	1055	26	1787	22
FLIP 91-192C	2658	19	1601	44	1264	59	1587	24	1356	18	1017	29	1404	53
FLIP 91-193C	2572	27	1540	46	1505	34	1206	60	628	63	1358	6	2308	5
FLIP 91-195C	2336	35	2507	10	2068	4	1825	8	1204	28	994	32	1805	21
FLIP 91-197C	2039	52	1824	35	1272	58	1460	45	619	64	1079	24	1408	51
FLIP 91-200C	2431	33	1404	56	1308	57	1905	7	874	56	1185	19	1497	44
FLIP 91-204C	2589	25	2005	25	1874	11	1492	39	1502	7	1281	14	1483	46
FLIP 91-208C	1953	56	2146	20	1499	36	1095	62	1099	38	517	64	1300	60
FLIP 91-209C	2808	15	2798	6	2237	1	1683	18	997	45	887	49	1658	30
FLIP 91-212C	2322	36	3219	2	1333	53	1317	53	1108	37	880	50	1490	45
FLIP 91-213C	2039	51	1474	50	1547	30	1540	30	876	55	899	47	1573	34
FLIP 91-219C	2592	24	2643	7	1496	37	1746	16	987	46	1202	17	1515	40
FLIP 91-220C	3392	2	2834	4	1913	10	1762	13	1405	15	1352	7	1851	20
FLIP 91-222C	2806	16	2830	5	1943	8	2095	3	1093	39	1105	21	2092	11
FLIP 82-150C	2675	18	2890	3	1646	24	2190	1	1317	20	1337	8	1406	52
ILC 482	3142	4	1709	41	1815	14	1302	55	1235	25	934	42	1728	26
Local check	2192	41	1503	47	1346	52	1270	57	1408	13	754	57	1109	62
Location mean	**2447**		**1926**		**1567**		**1557**		**1160**		**1033**		**1706**	
S.E. Of Mean	230.39		419.03		176.55		241.07		241.14		200.05		294.81	
LSD at	651.04		1190.47		501.57		NS		685.08		568.34		837.57	
C.V. %	13.31		30.77		15.93		21.89		29.40		27.39		24.44	
Efficiency	-		165		125		-		144		238		107	
T.E. > L. check	5		6		11		-		0		8		17	

Cont'd. ...

Table 3.6.6. Cont'd. ...

Entry name	Tunisia		Turkey											
	Beja		Amasya		Antalya		Denizli		Diyarbakir		Menemen		**Overall mean**	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-6C	3150	21	2232	30	1562	17	594	21	-	-	246	20	1755	16
FLIP 90-8C	3235	19	3143	5	1352	31	482	45	-	-	411	4	2061	2
FLIP 90-12C	4753	1	2679	14	1552	18	734	1	-	-	484	1	2144	1
FLIP 90-28C	2653	41	589	61	1124	43	642	14	-	-	157	40	1715	21
FLIP 90-29C	1683	62	1786	46	1343	33	581	25	-	-	110	54	1357	55
FLIP 90-31C	3478	8	2268	26	1114	45	437	53	-	-	197	32	1782	12
FLIP 90-38C	2450	50	768	59	676	62	700	6	-	-	183	33	1495	44
FLIP 9045C	3258	18	2446	21	886	59	462	49	-	-	172	38	1626	27
FLIP 90-47C	2605	43	1786	44	1419	24	593	22	-	-	56	61	1536	37
FLIP 90-71C	3415	11	946	57	1029	52	586	23	-	-	249	19	1748	17
FLIP 90-77C	3123	24	2286	25	1610	15	554	33	-	-	156	41	1696	22
FLIP 90-95C	2620	42	1786	47	1114	46	560	30	-	-	357	6	1592	32
FLIP 90-102C	2823	33	2232	29	1629	12	604	20	-	-	433	3	1519	42
FLIP 90-103C	2765	35	2786	11	1095	48	706	5	-	-	117	51	1480	48
FLIP 90-104C	3290	17	2018	39	933	55	578	26	-	-	251	18	1576	35
FLIP 90-123C	1485	64	2107	35	1362	29	498	42	-	-	147	43	1223	62
FLIP 90-182C	3515	6	2250	28	1648	9	685	9	-	-	275	12	2008	3
FLIP 91-12C	2593	44	3196	4	1267	34	495	44	889	46	274	13	1527	40
FLIP 91-15C	2490	47	2536	19	1381	28	500	41	1689	39	226	26	1460	50
FLIP 91-21C	3390	13	2482	20	1495	20	388	60	1644	40	314	8	1522	41
FLIP 91-32C	2658	40	2179	32	1838	2	437	54	1289	44	270	16	1588	33
FLIP 91-35C	3338	15	2018	38	1362	30	611	19	1378	42	100	57	1846	8
FLIP 91-50C	3475	9	2125	33	1990	1	649	12	2800	10	60	60	1756	15
FLIP 91-52C	3755	3	2304	23	933	54	645	13	2178	27	329	7	1902	4
FLIP 91-58C	3400	12	3607	2	1657	8	560	31	1867	35	271	15	1876	5
FLIP 91-59C	3665	4	2661	15	886	60	638	15	3200	4	144	44	1744	18
FLIP 91-60C	3158	20	2607	18	1219	36	473	47	2711	12	153	42	1761	14
FLIP 91-61C	3575	5	3232	3	1190	37	496	43	2889	9	243	22	1860	7
FLIP 91-63C	2930	28	2607	17	1038	51	636	16	2267	26	176	35	1734	20
FLIP 91-130C	2738	36	2804	9	1419	25	390	59	2400	22	106	55	1532	38
FLIP 91-131C	3505	7	1625	52	1133	42	699	7	1956	34	118	48	1809	10
FLIP 91-139C	2545	45	2286	24	895	58	478	46	1511	41	115	53	1319	59
FLIP 91-140C	2960	26	1732	49	1105	47	729	2	1778	37	386	5	1615	31
FLIP 91-141C	2830	31	1786	45	1705	6	529	37	1822	36	117	50	1382	52

Cont'd. ...

Table 3.6.6. Cont'd. ...

Entry name	Tunisia		Turkey											
	Beja		Amasya		Antalya		Denizli		Diyarbakir		Menemen		Overall mean (1)	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-142C	2440	53	2768	12	1552	19	433	55	1111	45	301	10	1661	25
FLIP 91-143C	2415	55	2125	34	1133	41	429	56	1333	43	179	34	1325	58
FLIP 91-144C	2300	58	2036	37	600	63	565	28	2000	30	102	56	1239	61
FLIP 91-146C	2780	34	1196	54	1638	11	470	48	2400	21	115	52	1580	34
FLIP 91-147C	2343	57	1661	51	1476	22	653	11	2000	31	286	11	1332	57
FLIP 91-149C	2658	39	1768	48	1133	40	455	50	2489	20	206	30	1508	43
FLIP 91-150C	2450	51	1857	43	1648	10	443	52	1956	33	243	23	1379	53
FLIP 91-153C	3388	14	2268	27	1124	44	301	63	3067	6	253	17	1684	24
FLIP 91-162C	3300	16	1929	40	1343	32	533	36	2356	24	305	9	1620	29
FLIP 91-168C	2423	54	1518	53	1590	16	549	34	3022	7	240	25	1487	47
FLIP 91-169C	2848	30	1911	41	1381	27	567	27	3244	3	273	14	1617	30
FLIP 91-175C	2263	59	2089	36	1267	35	416	57	2489	18	174	36	1373	54
FLIP 91-177C	2700	38	2357	22	905	57	582	24	2178	28	173	37	1487	46
FLIP 91-186C	3418	10	1696	50	1000	53	512	39	2667	13	217	27	1844	9
FLIP 91-192C	2458	49	2893	7	1495	21	630	18	3511	1	210	28	1691	23
FLIP 91-193C	3140	23	1000	55	1400	26	506	40	2667	14	0	63	1539	36
FLIP 91-195C	2945	27	2786	10	1438	23	448	51	3111	5	241	24	1653	26
FLIP 91-197C	1720	61	696	60	1152	39	367	61	2311	25	139	45	1105	63
FLIP 91-200C	1883	60	3805	1	1610	14	396	58	1956	32	207	29	1470	49
FLIP 91-204C	2545	46	2821	8	1057	50	634	17	2356	23	17	62	1737	19
FLIP 91-208C	2370	56	3107	6	1686	7	337	62	2578	17	245	21	1531	39
FLIP 91-209C	3010	25	232	63	1752	4	712	3	2044	29	119	47	1620	28
FLIP 91-212C	2825	32	964	56	1790	3	562	29	2578	16	63	59	1276	60
FLIP 91-213C	2460	48	1893	42	800	61	526	38	2489	19	200	31	1339	56
FLIP 91-219C	2863	29	804	58	1095	49	555	32	2667	15	160	39	1436	51
FLIP 91-220C	2720	37	2652	16	1619	13	669	10	2978	8	463	2	1875	6
FLIP 91-222C	4048	2	2750	13	1724	5	709	4	3333	2	118	49	1763	13
FLIP 82-150C	3143	22	2196	31	1171	38	540	35	2756	11	132	46	1798	11
ILC 482	2443	52	286	62	924	56	690	8	1733	38	91	58	1492	45
Local check	1578	63	-	64	1657		165	64			0	64	-	
Location mean	**2862**		**2062**		**1314**		**542**		**2297**		**200**			
S.E. Of Mean	340.71		450.28		One		83.06		One		100.57			
LSD at	962.81		1272.43		rep		235.96		rep		285.71			
C.V. %	16.84		30.88				21.66				71.00			
Efficiency	-		-				101				120			
Entry > L. check	2		2				57				25			

(1) Srinagar in India, Zarghan in Iran and Caltagirone in Italy, Amasya and Denizli being planted in spring and Diyarbakir in Turkey having missing values are excluded from the overall mean.

Table 3.6.7. The five heaviest seed yielding entries at the individual locations in the CISN-W during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Chile	Chillan	FLIP 90-31C	FLIP 90-6C	FLIP 91-186C	FLIP 91-131C	FLIP 90-182C
Greece	Athalassa	FLIP 90-6C	FLIP 90-182C	FLIP 91-153C	FLIP 91-50C	FLIP 90-8C
India	Srinagar	FLIP 91-131C	FLIP 91-209C	FLIP 91-60C	FLIP 90-29C	FLIP 91-142C
Iran	Karaj	Local check	FLIP 91-131C	FLIP 91-52C	FLIP 91-63C	FLIP 91-130C
Iran	Sararood	FLIP 90-12C	FLIP 90-71C	FLIP 91-193C	FLIP 91-61C	FLIP 91-131C
Iran	Zargan	FLIP 91-186C	FLIP 91-213C	FLIP 82-150C	FLIP 91-52C	FLIP 90-38C
Italy	Caltagirone	FLIP 91-142C	FLIP 91-200C	FLIP 90-182C	FLIP 91-147C	FLIP 91-35C
Italy	Tarquinia	Local check	FLIP 91-131C	FLIP 90-31C	FLIP 90-8C	FLIP 91-35C
Italy	Tolentino	FLIP 91-204C	FLIP 91-35C	FLIP 91-149C	FLIP 90-8C	FLIP 91-59C
Lebanon	Terbol	FLIP 90-77C	FLIP 90-12C	FLIP 91-186C	FLIP 90-182C	FLIP 82-150C
Portugal	Elvas	FLIP 90-12C	FLIP 90-8C	FLIP 91-220C	FLIP 91-35C	FLIP 91-162C
Spain	Badajoz	FLIP 90-71C	FLIP 82-150C	FLIP 90-8C	FLIP 91-192C	FLIP 90-28C
Spain	Sevilla	FLIP 90-6C	FLIP 91-204C	FLIP 90-71C	FLIP 90-182C	FLIP 90-28C
Syria	Aleppo	FLIP 91-58C	Local check	FLIP 91-193C	FLIP 91-144C	FLIP 91-61C
Syria	Al Ghab	FLIP 91-209C	FLIP 90-12C	FLIP 91-35C	FLIP 90-28C	FLIP 90-8C
Syria	Gelline	FLIP 90-182C	FLIP 91-220C	FLIP 91-61C	ILC 482	FLIP 91-63C
Syria	Hama	FLIP 91-58C	FLIP 91-212C	FLIP 82-150C	FLIP 91-220C	FLIP 91-222C
Syria	Idleb	FLIP 91-209C	FLIP 91-186C	FLIP 90-182C	FLIP 91-195C	FLIP 91-52C
Syria	Izra'a	FLIP 82-150C	FLIP 90-12C	FLIP 91-222C	FLIP 90-104C	FLIP 90-182C
Syria	Jableh	FLIP 91-162C	FLIP 91-12C	FLIP 91-59C	FLIP 91-32C	FLIP 91-144C
Syria	Jindiress	FLIP 91-35C	FLIP 91-142C	FLIP 91-131C	FLIP 90-12C	FLIP 91-60C
Syria	Tel Hadya	FLIP 91-52C	FLIP 90-12C	FLIP 90-182C	FLIP 91-142C	FLIP 91-193C
Tunisia	Beja	FLIP 90-12C	FLIP 91-222C	FLIP 91-52C	FLIP 91-59C	FLIP 91-61C
Turkey	Amasya	FLIP 91-200C	FLIP 91-58C	FLIP 91-61C	FLIP 91-12C	FLIP 90-8C
Turkey	Antalya	FLIP 91-50C	FLIP 91-32C	FLIP 91-212C	FLIP 91-209C	FLIP 91-222C
Turkey	Denizli	FLIP 90-12C	FLIP 91-140C	FLIP 91-209C	FLIP 91-222C	FLIP 90-103C
Turkey	Menemen	FLIP 90-12C	FLIP 91-220C	FLIP 90-102C	FLIP 90-8C	FLIP 91-140C

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

Material

The Chickpea International Screening Nursery-Spring comprised of 61 test entries which originated from the materials developed through hybridization at ICARDA and three checks. Two of the checks namely FLIP 82-150C and ILC 482 were supplied with other entries from ICARDA and one local check to be added by the cooperator. All these entries were almost homozygous and had shown superior performance in local or regional trials.

Methods and Management

The entries were planted in single row plots of 4m length 8 x 8 simple lattice design with two replications. The spacings between rows were 45 cm.

Thirty six sets of nursery were distributed to cooperators in 11 countries and the results were received from 20 locations in 6 countries. The agronomic details received from the cooperators are given in Table 3.7.1.

Results and Discussion

On the basis of all the locations, the mean time to flowering ranged from 61 to 73 days (Table 3.7.2), time to maturity ranged from 101 to 109 days (Table 3.7.3), plant height ranged from 31 to 43 cm (Table 3.7.4) and for 100-Seed weight ranged from 26 to 41 g (Table 3.7.5.).

The adjusted seed yields for the entries are given in Table 3.7.6. On the basis of overall mean, FLIP 90-173C gave the highest yield (1539 kg/ha) and was followed by FLIP 91-34C (1444 kg/ha), FLIP 90-172C (1433 kg/ha), FLIP 90-41C (1379 kg/ha), and FLIP 91-202C (1364 kg/ha). At five locations some of the test entries exceeded the respective local check by a significant margin. The five heaviest seed yielding entries at different locations are given in Table 3.7.7. The entries FLIP 90-173C, and FLIP 90-172C occurred most frequently among the top five heaviest yielders at varying locations and were relatively more stable.

Table 3.7.1. Agronomic details for CISN-SP-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Greece	Thessaloniki	15.03.93	23.06.93	-	30	-	1	-	Gravia (M-10768)
Iran	Karaj-1	11.04.93	16.08.93	24	72	-	6	Metasystox + Sevin, Treflan	Jam
Iran	Karaj-2	NA	NA	NA	NA	NA	NA	NA	Jam
Iran	Maragheh	14.04.93	31.07.93	45	50	-	-	Tecto, Actellic	Jam
Iran	Mashhad	11.04.93	12.07.93	27	72	-	6	Sevin, Tereflerin	Jam
Lebanon	Terbol	01.04.93	15.07.93	-	50	-	-	Kerb + Igran	Lebanese Local
Syria	Aleppo	03.03.93	14.06.93	-	50	-	-	-	ILC 1929
Syria	Gelline	02.03.93	12.06.93	20	50	-	-	-	ILC 1929
Syria	Hama	01.03.93	24.06.93	-	50	-	-	-	ILC 1929
Syria	Idleb	28.03.93	28.06.93	40	60	-	-	-	ILC 1929
Syria	Izra'a	22.02.93	05.07.93	-	110	-	-	-	ILC 1929
Syria	Jableh	22.02.93	05.08.93	-	-	-	-	-	ILC 1929
Syria	Jindiress	01.03.93	24.06.93	-	50	-	-	-	ILC 1929
Syria	Tel Hadya	28.02.93	01.07.93	-	50	-	-	Kerb + Igran	Syrian local
Tunisia	Beja	NA	NA	NA	NA	NA	NA	NA	NA
Turkey	Amasya	06.04.93	11.08.93	50	50	-	-	-	Canitez 87
Turkey	Diyarbakir	19.03.93	18.07.93	50	30	-	-	Phostoxine, Fusilade	Yerli Nohut
Turkey	Eskisehir	15.04.93	20.08.93	30	60	-	NA	Igran	Canitez 87
Turkey	Haymana	01.04.93	20.08.93	NA	NA	NA	NA	Fusilade	Eser 87
Turkey	Menemen	13.04.93	10.07.93	30	60	-	-	Terbutrine	Canitez 87

NA = Not available

Table 3.7.2. Adjusted time to flowering (days) of entries at different locations in the CISN-S during 1992/93.

Entry name	Pedigree	Origin	Greece	Iran		
			Thessa-loniki	Karaj-1	Karaj-2	Maragheh
FLIP 90-21C	X87TH283/(ILC 295 X FLIP 84-18C) X FLIP 84-164C	ICARDA/ICRISAT	108	49	77	69
FLIP 90-41C	X86TH263/(ILC 451 X FLIP 81-293C) X FLIP 82-92C	ICARDA/ICRISAT	108	51	74	67
FLIP 90-43C	X86TH269/(ILC 480 X FLIP 82-243C) X FLIP 82-64C	ICARDA/ICRISAT	104	56	68	66
FLIP 90-74C	X86TH261/ILC 171 X FLIP 81-13C	ICARDA/ICRISAT	106	61	77	66
FLIP 90-90C	X87TH276/(ILC 1919 X FLIP 84-18C) X FLIP 83-47C	ICARDA/ICRISAT	104	55	73	66
FLIP 90-113C	X88TH216/FLIP 85-122C X FLIP 85-112C	ICARDA/ICRISAT	104	56	71	64
FLIP 90-125C	X88TH346/(ICC 14212 X FLIP 82-150C) X ICC 14212	ICARDA/ICRISAT	103	52	64	62
FLIP 90-170C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	100	47	63	63
FLIP 90-171C	X87TH58/FLIP 83-104C X FLIP 84-99C	ICARDA/ICRISAT	105	55	68	66
FLIP 90-172C	X876TH63/FLIP 82-189C X FLIP 84-164C	ICARDA/ICRISAT	105	62	64	66
FLIP 90-173C	X87TH68/FLIP 82-87C X FLIP 85-180C	ICARDA/ICRISAT	105	64	69	66
FLIP 90-181C	X87TH216/ILC 4296 X FLIP 84-93C	ICARDA/ICRISAT	104	54	63	63
FLIP 90-187C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	104	55	64	65
FLIP 91-3C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	109	46	74	68
FLIP 91-13C	X87TH41/ILC 1929 X FLIP 84-80C	ICARDA/ICRISAT	108	58	76	66
FLIP 91-16C	X88TH215/FLIP 85-122C X S 85036	ICARDA/ICRISAT	103	58	65	64
FLIP 91-22C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	102	60	67	64
FLIP 91-31C	X87TH10/FLIP 81-293C X FLIP 84-93C	ICARDA/ICRISAT	105	55	72	69
FLIP 91-34C	X87TH36/FLIP 83-47C X FLIP 84-145C	ICARDA/ICRISAT	107	56	74	67
FLIP 91-37C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	109	51	76	66
FLIP 91-39C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	109	60	72	71
FLIP 91-46C	X87TH10/FLIP 81-293C X FLIP 84-93C	ICARDA/ICRISAT	106	58	72	68
FLIP 91-47C	X87TH160/S 85091 X FLIP 82-64C	ICARDA/ICRISAT	109	59	76	69
FLIP 91-55C	X87TH175/ILC 482 X FLIP 83-47C	ICARDA/ICRISAT	108	57	74	69
FLIP 91-62C	X89TH29/ILC 3777 X FLIP 84-92C	ICARDA/ICRISAT	106	55	75	68
FLIP 91-64C	X87TH189/ICC 14212 X FLIP 84-78C	ICARDA/ICRISAT	107	56	74	68
FLIP 91-72C	X87TH216/ILC 4296 X FLIP 84-93C	ICARDA/ICRISAT	104	49	66	62
FLIP 91-74C	X88TH346/(ICC 14212 X FLIP 82-150C) X ICC 14212	ICARDA/ICRISAT	100	56	68	60
FLIP 91-81C	X89TH9/ILC 1254 X FLIP 84-92C	ICARDA/ICRISAT	105	53	64	62
FLIP 91-84C	X89TH11/ILC 4291 X ILC 482	ICARDA/ICRISAT	102	52	62	62
FLIP 91-94C	X88TH17/ICC 14218 X FLIP 83-77C	ICARDA/ICRISAT	104	54	61	64
FLIP 91-96C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	104	55	65	66
FLIP 91-99C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	104	52	61	61
FLIP 91-104C	X88TH8/ILC 4293 X FLIP 84-81C	ICARDA/ICRISAT	105	51	64	63
FLIP 91-107C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	105	55	64	60
FLIP 91-108C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	104	46	64	62

Cont'd. ...

Table 3.7.2. Cont'd. ...

Entry name	Pedigree	Origin	Greece	Iran		
			Thessa-loniki	Karaj-1	Karaj-2	Maragheh
FLIP 91-113C	X88TH195/FLIP 85-122C X ILC 148	ICARDA/ICRISAT	103	53	62	60
FLIP 91-116C	X88TH233/(ILC 610 X FLIP 83-48C) X ILC 610	ICARDA/ICRISAT	106	56	68	64
FLIP 91-137C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	104	48	64	63
FLIP 91-151C	X87TH318/(Be.Sel. 81-41 X FLIP 81-79C) X FLIP 85-18C	ICARDA/ICRISAT	108	59	76	70
FLIP 91-158C	X87TH18/ILC 493 X FLIP 84-78C	ICARDA/ICRISAT	105	58	68	64
FLIP 91-159C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	104	55	74	65
FLIP 91-165C	X88TH297/(FLIP 84-46C X FLIP 82-92C) X FLIP 84-46C	ICARDA/ICRISAT	109	57	76	67
FLIP 91-167C	X88TH319/(FLIP 85-91C X ILC 3856) X FLIP 85-91C	ICARDA/ICRISAT	108	54	76	74
FLIP 91-176C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	108	59	75	71
FLIP 91-180C	X87TH345/(FLIP 84-48C X ILC 237) XFLIP 84-48C	ICARDA/ICRISAT	108	56	73	70
FLIP 91-181C	X87TH57/FLIP 83-104C X FLIP 84-78C	ICARDA/ICRISAT	105	57	71	66
FLIP 91-182C	X87TH40/FLIP 83-98C X FLIP 84-155C	ICARDA/ICRISAT	106	55	67	65
FLIP 91-185C	X87TH36/FLIP 83-47C X FLIP 84-145C	ICARDA/ICRISAT	106	56	69	66
FLIP 91-187C	X87TH39/FLIP 83-98C X FLIP 84-145C	ICARDA/ICRISAT	105	58	74	66
FLIP 91-188C	X87TH39/FLIP 83-98C X FLIP 84-145C	ICARDA/ICRISAT	106	58	73	66
FLIP 91-194C	X87TH189/ICC 14212 X FLIP 84-78C	ICARDA/ICRISAT	109	57	74	67
FLIP 91-198C	X87TH160/S 85088 X ILC 3870	ICARDA/ICRISAT	109	56	75	70
FLIP 91-201C	X87TH57/FLIP 83-104C X FLIP 84-78C	ICARDA/ICRISAT	107	57	70	66
FLIP 91-202C	X87TH36/FLIP 83-47C X FLIP 84-145C	ICARDA/ICRISAT	104	54	63	66
FLIP 91-205C	X87TH82/FLIP 81-180C X FLIP 83-48C	ICARDA/ICRISAT	105	55	61	63
FLIP 91-207C	X88TH24/FLIP 84-124C X FLIP 84-93C	ICARDA/ICRISAT	108	58	73	68
FLIP 91-215C	X88TH323/(ILC 519 X FLIP 83-47C) X ILC 519	ICARDA/ICRISAT	108	59	75	72
FLIP 91-217C	X88TH330/(ILC 1920 X FLIP 83-48C) X ILC 1920	ICARDA/ICRISAT	104	46	72	65
FLIP 91-218C	X87TH86/FLIP 84-78C X ILC 4921	ICARDA/ICRISAT	104	55	67	65
FLIP 91-223C	X88TH32/FLIP 85-142C X FLIP 82-150C	ICARDA/ICRISAT	108	57	75	66
FLIP 82-150C	X79TH101/ILC 523 X ILC 183 (Improved check)	ICARDA/ICRISAT	105	59	75	66
ILC 482	(Long term check)	Turkey	104	54	63	65
Local check		-	105	54	73	67
Location Mean			**106**	**55**	**70**	**66**
S.E. Of Mean			0.94	2.45	1.88	1.00
LSD at .05			2.67	6.97	5.34	2.82
C.V. %			1.26	6.29	3.81	2.16

Cont'd. ...

Table 3.7.2. Cont'd. ...

Entry name	Iran	Lebanon	Syria								Turkey			Overall mean
	Mashhad	Terbol	Aleppo	Gelline	Hama	Idleb	Izraa	Jableh	Jindi-ress	Tel-Hadya	Diyar-bakir	Eski-sehir	Haymana	
FLIP 90-21C	51	62	50	73	75	63	85	103	77	70	78	72	83	71
FLIP 90-41C	55	58	48	69	69	56	81	99	73	70	75	71	82	68
FLIP 90-43C	52	59	48	68	65	55	82	99	72	69	72	71	79	67
FLIP 90-74C	56	62	50	70	83	58	87	111	80	69	79	70	81	72
FLIP 90-90C	57	58	50	67	74	55	82	99	72	68	75	72	71	68
FLIP 90-113C	55	57	50	67	68	57	82	99	72	69	73	72	75	68
FLIP 90-125C	53	54	50	60	64	46	77	98	59	63	67	65	70	63
FLIP 90-170C	54	56	50	59	64	54	74	97	66	62	68	66	70	63
FLIP 90-171C	55	56	50	66	70	54	80	99	68	67	73	69	73	67
FLIP 90-172C	53	54	51	64	64	52	79	97	63	64	72	72	72	65
FLIP 90-173C	52	56	49	68	70	55	81	99	70	67	75	70	75	68
FLIP 90-181C	55	54	47	59	58	51	79	97	61	60	63	68	70	63
FLIP 90-187C	53	56	47	63	66	54	80	99	65	63	75	70	73	65
FLIP 91-3C	52	62	48	73	84	57	86	107	80	70	80	73	80	71
FLIP 91-13C	55	57	50	66	67	55	82	99	67	66	72	70	73	67
FLIP 91-16C	50	58	50	66	73	55	82	99	73	67	77	71	73	67
FLIP 91-22C	54	58	47	65	66	54	79	97	69	67	72	70	74	66
FLIP 91-31C	51	59	48	72	72	60	84	106	73	68	77	73	81	70
FLIP 91-34C	49	59	48	71	71	60	83	99	71	65	69	72	80	68
FLIP 91-37C	51	62	48	74	83	59	87	99	79	70	79	74	84	71
FLIP 91-39C	54	62	50	74	83	58	84	106	78	70	79	73	83	72
FLIP 91-46C	54	58	50	69	77	59	82	99	72	67	74	73	80	69
FLIP 91-47C	52	62	49	76	82	57	86	99	80	70	79	74	87	72
FLIP 91-55C	54	62	49	72	83	61	84	99	78	69	79	74	81	71
FLIP 91-62C	53	60	51	70	77	55	84	105	76	69	75	73	81	70
FLIP 91-64C	53	58	49	70	69	55	84	99	73	68	71	73	79	69
FLIP 91-72C	51	51	49	60	56	43	78	97	56	57	60	65	69	61
FLIP 91-74C	55	48	49	59	58	41	77	97	56	55	62	69	78	62
FLIP 91-81C	54	53	49	59	57	45	78	97	58	58	63	70	78	62
FLIP 91-84C	52	52	48	59	57	45	77	97	57	60	61	65	72	61
FLIP 91-94C	54	53	51	60	60	43	80	97	58	58	64	67	83	63
FLIP 91-96C	56	54	49	60	66	52	79	97	67	63	69	70	81	65
FLIP 91-99C	49	51	48	63	57	46	81	99	61	63	65	67	71	62
FLIP 91-104C	52	55	50	59	59	49	81	97	59	59	65	70	69	63
FLIP 91-107C	51	54	49	60	59	54	79	97	61	59	72	71	68	63
FLIP 91-108C	51	53	49	62	59	46	78	97	60	59	67	67	68	62

Cont'd. ...

Table 3.7.2. Cont'd. ...

Entry name	Iran Mashhad	Lebanon Terbol	Syria Aleppo	Gelline	Hama	Idleb	Izraa	Jableh	Jindi-ress	Tel-Hadya	Turkey Diyar-bakir	Eski-sehir	Haymana	Overall mean
FLIP 91-113C	51	52	49	60	58	43	83	97	62	58	61	67	70	62
FLIP 91-116C	54	54	50	61	65	54	78	97	61	62	68	68	69	64
FLIP 91-137C	51	54	50	60	60	49	80	97	61	62	73	67	68	63
FLIP 91-151C	54	62	51	76	83	59	87	107	80	70	79	73	84	73
FLIP 91-158C	50	54	50	65	65	55	79	97	67	63	69	68	73	65
FLIP 91-159C	51	58	49	67	71	56	82	97	73	69	75	71	79	68
FLIP 91-165C	54	62	51	71	84	58	85	106	78	69	80	73	82	72
FLIP 91-167C	56	62	46	74	78	57	84	106	80	70	78	73	84	72
FLIP 91-176C	53	62	48	72	72	65	86	106	75	70	77	75	79	71
FLIP 91-180C	53	62	48	70	83	58	85	99	77	70	79	72	82	71
FLIP 91-181C	50	57	47	69	70	57	81	105	72	65	75	72	78	68
FLIP 91-182C	53	56	50	66	69	57	85	99	67	67	72	72	74	67
FLIP 91-185C	53	60	47	65	67	58	79	104	68	66	69	72	78	67
FLIP 91-187C	56	59	49	67	82	57	84	105	78	68	78	73	79	71
FLIP 91-188C	55	57	48	66	69	57	82	99	67	67	73	71	75	68
FLIP 91-194C	56	58	48	67	68	55	83	97	71	68	74	73	79	68
FLIP 91-198C	52	62	49	73	77	59	84	99	80	70	78	72	81	71
FLIP 91-201C	54	56	48	66	70	56	81	102	67	67	79	72	75	68
FLIP 91-202C	54	56	49	63	64	54	79	97	63	63	69	70	73	65
FLIP 91-205C	54	55	49	60	63	51	78	97	61	61	72	72	73	64
FLIP 91-207C	51	61	47	74	71	57	85	99	77	70	75	72	81	70
FLIP 91-215C	51	62	51	72	76	58	86	102	76	70	78	74	84	72
FLIP 91-217C	54	58	50	68	68	54	83	98	71	69	75	71	71	67
FLIP 91-218C	52	56	48	67	71	55	83	99	67	67	79	69	74	67
FLIP 91-223C	53	60	50	67	72	58	83	99	73	67	74	72	76	69
FLIP 82-150C	55	60	48	68	75	57	83	99	72	67	76	72	75	69
ILC 482	51	55	47	64	63	55	81	97	63	65	67	73	77	65
Local check	55	57	49	60	64	52	78	97	62	61	-	72	70	
Location mean	**53**	**57**	**49**	**66**	**69**	**54**	**81**	**100**	**69**	**65**	**73**	**71**	**76**	
S.E. Of Mean	2.37	0.90	1.13	1.44	2.18	1.92	1.37	One	0.77	0.92	One	1.45	2.16	
LSD at .05	NS	2.54	NS	4.05	6.20	5.42	3.86	rep	2.18	2.60	rep	4.12	6.13	
C.V. %	6.32	2.22	3.26	3.06	4.44	5.00	2.37		1.58	1.99		2.90	3.99	

NS = Not significant at $P \leq 0.05$.

Table 3.7.3. Adjusted time to maturity (days) of entries at different locations in the CISN-S during 1992/93.

Entry name	Iran				Lebanon	Syria		
	Karaj-1	Karaj-2	Maragheh	Mashhad	Terbol	Aleppo	Gelline	Hama
FLIP 90-21C	97	122	108	87	95	97	131	113
FLIP 90-41C	98	124	105	88	92	96	127	110
FLIP 90-43C	99	124	103	81	93	96	127	113
FLIP 90-74C	100	132	105	89	95	97	131	113
FLIP 90-90C	99	116	103	87	93	97	131	113
FLIP 90-113C	95	120	103	85	90	97	131	111
FLIP 90-125C	94	124	103	87	87	96	127	110
FLIP 90-170C	95	119	102	89	88	98	127	110
FLIP 90-171C	98	125	103	88	90	98	127	111
FLIP 90-172C	96	127	105	84	90	98	127	109
FLIP 90-173C	100	127	103	82	92	97	127	111
FLIP 90-181C	97	128	105	86	89	97	127	109
FLIP 90-187C	97	122	105	85	92	96	127	112
FLIP 91-3C	97	127	107	87	96	96	131	113
FLIP 91-13C	96	129	105	90	91	98	127	111
FLIP 91-16C	98	120	103	86	92	98	127	112
FLIP 91-22C	101	122	103	88	92	96	127	112
FLIP 91-31C	95	130	106	85	112	95	131	113
FLIP 91-34C	100	133	103	87	94	96	131	111
FLIP 91-37C	99	122	111	88	104	97	133	113
FLIP 91-39C	100	128	109	85	96	98	131	113
FLIP 91-46C	99	129	107	88	97	98	131	113
FLIP 91-47C	95	119	106	91	105	97	131	114
FLIP 91-55C	97	135	108	87	112	98	131	115
FLIP 91-62C	97	129	107	81	109	98	131	113
FLIP 91-64C	98	126	109	88	106	97	131	112
FLIP 91-72C	99	121	105	85	89	97	127	107
FLIP 91-74C	97	126	101	88	86	97	127	107
FLIP 91-81C	100	115	104	88	91	97	127	110
FLIP 91-84C	98	117	100	86	88	96	127	107
FLIP 91-94C	99	130	103	85	88	98	127	107
FLIP 91-96C	97	123	103	86	89	97	127	110
FLIP 91-99C	99	136	103	84	86	94	127	111
FLIP 91-104C	102	128	107	86	91	97	127	110
FLIP 91-107C	99	135	105	90	92	96	127	113
FLIP 91-108C	99	127	103	86	89	97	127	110

Cont'd. ...

Table 3.7.3. Cont'd. ...

Entry name	Iran				Lebanon	Syria		
	Karaj-1	Karaj-2	Maragheh	Mashhad	Terbol	Aleppo	Gelline	Hama
FLIP 91-113C	99	123	101	86	86	98	127	110
FLIP 91-116C	100	120	102	86	86	97	127	110
FLIP 91-137C	101	126	105	90	90	98	127	112
FLIP 91-151C	96	126	108	88	97	98	131	114
FLIP 91-158C	101	124	105	84	89	97	127	110
FLIP 91-159C	98	128	103	87	91	97	131	111
FLIP 91-165C	98	134	108	85	95	97	131	113
FLIP 91-167C	96	123	109	88	99	96	131	113
FLIP 91-176C	99	132	108	84	104	96	131	112
FLIP 91-180C	100	123	108	89	105	96	129	112
FLIP 91-181C	96	130	109	85	94	96	127	114
FLIP 91-182C	97	126	103	86	92	98	131	110
FLIP 91-185C	95	128	105	88	94	95	131	112
FLIP 91-187C	99	125	106	93	97	97	131	114
FLIP 91-188C	95	130	106	86	94	96	131	113
FLIP 91-194C	97	126	107	93	92	97	127	110
FLIP 91-198C	97	130	109	88	96	98	131	113
FLIP 91-201C	99	130	107	90	94	97	131	112
FLIP 91-202C	96	122	103	88	90	97	127	108
FLIP 91-205C	99	123	103	84	90	96	127	109
FLIP 91-207C	100	127	106	85	94	96	131	109
FLIP 91-215C	100	126	109	88	95	98	131	111
FLIP 91-217C	101	126	104	84	93	99	127	112
FLIP 91-218C	100	125	105	87	94	96	127	112
FLIP 91-223C	101	124	106	87	94	98	131	113
FLIP 82-150C	100	127	104	83	94	97	131	112
ILC 482	101	128	101	90	89	97	131	109
Local check	99	123	102	88	87	96	127	111
Location mean	**98**	**126**	**105**	**87**	**94**	**97**	**129**	**111**
S.E. Of Mean	1.25	2.85	1.41	2.61	2.13	0.96	0.25	0.84
LSD at .05	3.54	8.09	3.98	NS	6.06	NS	0.71	2.39
C.V. %	1.81	3.20	1.90	4.26	3.22	1.40	0.27	1.07

Cont'd. ...

Table 3.7.3. Cont'd. ...

Entry name	Syria					Turkey		Overall mean
	Idleb	Izraa	Jableh	Jindiress	Tel Hadya	Diyarbakir	Haymana	
FLIP 90-21C	85	134	132	109	108	107	114	107
FLIP 90-41C	83	124	170	108	105	106	110	105
FLIP 90-43C	83	124	158	107	104	104	115	104
FLIP 90-74C	86	133	174	109	105	109	110	108
FLIP 90-90C	81	125	167	108	103	106	111	105
FLIP 90-113C	85	125	162	108	106	105	109	105
FLIP 90-125C	74	122	163	106	102	109	114	103
FLIP 90-170C	80	120	150	106	100	104	112	103
FLIP 90-171C	82	124	155	107	105	106	107	105
FLIP 90-172C	83	127	142	106	102	106	109	105
FLIP 90-173C	85	123	170	108	104	106	108	105
FLIP 90-181C	83	124	165	106	103	106	113	105
FLIP 90-187C	83	124	167	107	103	109	109	105
FLIP 91-3C	83	131	172	109	107	109	113	107
FLIP 91-13C	85	128	162	106	106	106	107	106
FLIP 91-16C	86	128	167	107	105	106	110	105
FLIP 91-22C	81	121	161	107	103	107	110	104
FLIP 91-31C	92	127	171	108	108	109	113	108
FLIP 91-34C	84	125	162	107	106	107	115	106
FLIP 91-37C	85	132	172	109	107	109	112	108
FLIP 91-39C	79	130	170	109	106	108	113	107
FLIP 91-46C	89	122	167	108	106	105	110	107
FLIP 91-47C	86	132	172	110	109	109	113	108
FLIP 91-55C	81	128	168	110	108	109	114	109
FLIP 91-62C	89	127	167	109	109	109	113	108
FLIP 91-64C	83	129	161	108	107	108	112	108
FLIP 91-72C	78	122	149	101	99	106	110	103
FLIP 91-74C	73	123	143	101	95	108	-	102
FLIP 91-81C	78	123	144	103	98	103	117	103
FLIP 91-84C	73	121	144	102	100	105	116	101
FLIP 91-94C	73	123	149	105	101	106	117	103
FLIP 91-96C	81	122	149	107	101	103	114	103
FLIP 91-99C	85	127	135	104	102	109	114	105
FLIP 91-104C	79	124	148	104	99	108	112	105
FLIP 91-107C	81	126	155	106	99	107	111	106
FLIP 91-108C	80	121	160	105	100	107	109	104

Cont'd. ...

Table 3.7.3. Cont'd. ...

Entry name	Syria					Turkey		(1)
	Idleb	Izraa	Jableh	Jindiress	Tel Hadya	Diyarbakir	Haymana	**Overall mean**
FLIP 91-113C	74	127	165	103	97	102	111	102
FLIP 91-116C	83	119	150	104	98	104	109	103
FLIP 91-137C	85	124	158	105	100	109	107	105
FLIP 91-151C	89	132	170	109	108	110	113	108
FLIP 91-158C	83	123	138	106	102	106	107	104
FLIP 91-159C	83	128	170	109	106	106	111	106
FLIP 91-165C	77	128	167	108	108	108	116	107
FLIP 91-167C	89	129	169	109	108	109	113	108
FLIP 91-176C	48	129	161	108	109	108	109	105
FLIP 91-180C	87	130	170	109	108	107	112	108
FLIP 91-181C	83	125	171	108	106	108	109	106
FLIP 91-182C	82	123	160	108	106	103	108	105
FLIP 91-185C	88	124	170	107	105	105	114	106
FLIP 91-187C	90	129	168	110	106	109	114	108
FLIP 91-188C	84	123	157	107	106	106	109	106
FLIP 91-194C	80	127	162	106	106	108	117	106
FLIP 91-198C	81	128	170	109	106	106	110	107
FLIP 91-201C	84	125	170	109	106	108	108	107
FLIP 91-202C	82	122	143	106	102	101	109	103
FLIP 91-205C	82	122	158	106	99	105	112	103
FLIP 91-207C	79	128	172	107	108	108	108	106
FLIP 91-215C	85	130	165	108	107	107	113	107
FLIP 91-217C	80	126	165	107	105	105	107	105
FLIP 91-218C	84	127	170	109	105	107	108	106
FLIP 91-223C	86	126	167	108	108	108	111	107
FLIP 82-150C	83	125	162	108	106	107	110	106
ILC 482	83	124	155	106	103	101	114	105
Local check	79	122	158	107	99	-	110	
Location mean	**82**	**125**	**161**	**107**	**104**	**107**	**111**	
S.E. Of Mean	5.29	2.09	One	0.60	1.25	One	1.41	
LSD at .05	NS	5.91	rep	1.72	3.54	rep	3.99	
C.V. %	9.12	2.36		0.80	1.69		1.80	

(1) Haymana in Turkey having a missing value was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.7.4. Adjusted plant height (cm) of entries at different locations in the CISN-S during 1992/93.

Entry name	Greece	Iran				Lebanon	Syria			
	Thessaloniki	Karaj-1	Karaj-2	Maragheh	Mashhad	Terbol	Aleppo	Gelline	Hama	Idleb
FLIP 90-21C	56	32	29	33	44	42	29	35	39	40
FLIP 90-41C	60	31	35	35	56	53	30	41	40	42
FLIP 90-43C	54	29	40	33	49	48	27	35	40	36
FLIP 90-74C	57	33	40	33	43	41	32	29	39	32
FLIP 90-90C	56	36	28	27	43	42	28	25	41	37
FLIP 90-113C	55	34	39	31	39	48	32	40	41	39
FLIP 90-125C	56	24	21	27	43	39	30	25	41	37
FLIP 90-170C	49	22	30	28	45	47	27	30	40	36
FLIP 90-171C	56	26	30	29	51	51	29	35	42	29
FLIP 90-172C	52	44	28	33	39	51	33	25	44	35
FLIP 90-173C	49	36	24	30	49	41	28	30	38	37
FLIP 90-181C	50	34	33	29	46	46	30	30	44	38
FLIP 90-187C	50	39	34	32	56	51	29	30	38	38
FLIP 91-3C	67	37	38	39	35	48	27	45	41	39
FLIP 91-13C	57	31	36	34	49	55	30	40	42	37
FLIP 91-16C	57	38	40	32	50	49	28	35	38	33
FLIP 91-22C	49	37	28	27	41	40	30	25	39	39
FLIP 91-31C	51	26	37	33	48	40	29	35	41	33
FLIP 91-34C	51	35	29	34	41	45	29	30	39	35
FLIP 91-37C	57	29	31	33	54	42	28	36	44	30
FLIP 91-39C	58	40	35	31	54	44	28	35	41	32
FLIP 91-46C	51	33	38	30	50	46	29	36	39	32
FLIP 91-47C	53	35	31	35	55	43	31	36	44	37
FLIP 91-55C	50	33	39	37	47	46	30	30	40	30
FLIP 91-62C	49	36	31	31	39	46	26	35	38	32
FLIP 91-64C	60	32	40	36	46	52	30	30	43	34
FLIP 91-72C	45	28	24	31	41	40	29	30	40	37
FLIP 91-74C	49	32	25	29	43	42	30	20	38	36
FLIP 91-81C	56	31	27	30	48	45	28	30	43	36
FLIP 91-84C	50	32	23	30	54	46	28	25	41	34
FLIP 91-94C	50	34	27	28	42	41	25	30	39	29
FLIP 91-96C	59	29	28	27	39	40	29	30	46	29
FLIP 91-99C	52	29	33	25	50	36	30	20	38	34
FLIP 91-104C	54	32	30	32	42	42	33	30	38	35
FLIP 91-107C	51	32	30	32	48	41	28	25	41	34
FLIP 91-108C	51	28	28	27	58	42	33	30	43	41

Cont'd. ...

Table 3.7.4. Cont'd. ...

Entry name	Greece	Iran				Lebanon	Syria			
	Thessaloniki	Karaj-1	Karaj-2	Maragheh	Mashhad	Terbol	Aleppo	Gelline	Hama	Idleb
FLIP 91-113C	49	32	27	25	50	39	30	25	37	37
FLIP 91-116C	47	32	24	27	61	43	31	26	36	36
FLIP 91-137C	51	29	26	33	52	46	28	31	44	38
FLIP 91-151C	60	40	39	37	55	55	29	45	42	35
FLIP 91-158C	56	33	35	30	44	51	30	35	40	35
FLIP 91-159C	48	28	38	32	48	49	28	35	39	36
FLIP 91-165C	56	44	43	39	48	49	29	40	41	37
FLIP 91-167C	62	38	42	35	56	44	26	35	39	37
FLIP 91-176C	52	38	37	40	37	55	29	40	41	29
FLIP 91-180C	57	35	33	33	44	47	28	33	44	37
FLIP 91-181C	60	31	35	32	50	48	27	30	40	33
FLIP 91-182C	55	36	38	37	53	45	29	35	41	38
FLIP 91-185C	53	33	31	30	45	44	34	35	43	34
FLIP 91-187C	53	37	39	33	52	45	28	33	41	45
FLIP 91-188C	52	33	30	33	41	43	33	30	43	35
FLIP 91-194C	45	28	28	32	50	45	28	30	42	35
FLIP 91-198C	55	32	35	30	48	46	32	35	40	36
FLIP 91-201C	54	33	31	37	38	51	29	35	40	29
FLIP 91-202C	55	30	34	37	50	46	26	35	43	29
FLIP 91-205C	49	31	25	29	47	42	30	30	42	34
FLIP 91-207C	53	34	29	28	44	44	29	30	43	41
FLIP 91-215C	57	39	36	32	59	45	30	40	39	38
FLIP 91-217C	60	34	38	31	37	44	26	35	44	32
FLIP 91-218C	48	32	27	31	55	49	30	30	40	31
FLIP 91-223C	54	40	31	30	54	41	30	35	42	32
FLIP 82-150C	55	44	33	27	39	49	28	30	43	28
ILC 482	45	33	25	29	47	38	29	30	39	36
Local check	54	28	27	32	51	36	28	25	33	35
Location Mean	**53**	**33**	**32**	**31**	**47**	**45**	**29**	**32**	**41**	**35**
S.E. Of Mean	3.66	4.29	3.33	2.06	4.93	2.64	2.11	1.14	2.01	3.40
LSD at .05	10.39	12.11	9.46	5.82	14.00	7.51	NS	3.22	5.71	NS
C.V. %	9.67	18.40	14.68	9.27	14.72	8.28	10.23	5.01	6.98	13.72

Cont'd. ...

Table 3.7.4. Cont'd. ...

Entry name	Syria				Turkey					Overall mean
	Izraa	Jableh	Jindiress	Tel Hadya	Amasya	Diyar-bakir	Eski-sehir	Haymana	Menemen	
FLIP 90-21C	33	53	39	37	56	34	25	25	32	37
FLIP 90-41C	39	53	45	36	58	42	33	35	31	41
FLIP 90-43C	36	32	44	33	53	42	30	32	40	37
FLIP 90-74C	32	55	38	31	52	41	24	24	29	36
FLIP 90-90C	31	55	38	33	50	34	24	30	28	35
FLIP 90-113C	35	52	41	35	55	36	28	28	32	38
FLIP 90-125C	21	40	25	24	42	29	20	21	28	31
FLIP 90-170C	30	44	35	27	39	36	20	27	30	33
FLIP 90-171C	38	60	39	35	50	39	27	34	40	38
FLIP 90-172C	35	55	37	33	50	34	26	30	34	37
FLIP 90-173C	26	50	35	27	53	41	26	28	30	34
FLIP 90-181C	32	53	35	29	45	29	27	27	30	36
FLIP 90-187C	40	64	40	36	50	33	31	30	30	39
FLIP 91-3C	38	61	45	37	62	52	28	34	34	41
FLIP 91-13C	38	60	40	35	49	42	27	35	32	40
FLIP 91-16C	36	50	43	34	47	38	28	30	35	38
FLIP 91-22C	32	63	36	29	43	38	27	23	28	35
FLIP 91-31C	31	55	35	33	47	38	27	32	36	37
FLIP 91-34C	33	60	41	32	52	39	26	27	34	36
FLIP 91-37C	30	52	38	38	53	30	31	33	33	38
FLIP 91-39C	31	45	41	36	56	37	27	34	36	38
FLIP 91-46C	34	50	37	35	51	41	28	27	30	37
FLIP 91-47C	28	47	42	37	58	33	30	29	34	38
FLIP 91-55C	35	50	36	31	48	37	26	28	34	37
FLIP 91-62C	32	50	38	35	47	39	23	31	28	35
FLIP 91-64C	42	48	47	38	59	56	33	34	35	40
FLIP 91-72C	28	68	37	33	36	22	26	26	37	35
FLIP 91-74C	27	51	31	25	43	28	20	16	30	32
FLIP 91-81C	33	51	35	29	43	37	23	23	38	36
FLIP 91-84C	22	40	25	27	50	36	25	27	30	33
FLIP 91-94C	32	54	37	28	53	-	26	21	35	34
FLIP 91-96C	31	50	39	31	29	39	23	20	29	34
FLIP 91-99C	31	40	31	27	44	36	22	20	28	32
FLIP 91-104C	29	47	39	32	43	38	28	25	37	36
FLIP 91-107C	30	55	36	29	50	35	24	29	33	35
FLIP 91-108C	35	47	37	30	53	33	23	24	33	36

Cont'd. ...

Table 3.7.4. Cont'd. ...

Entry name	Syria				Turkey					(1)
	Izraa	Jableh	Jindiress	Tel Hadya	Amasya	Diyar-bakir	Eski-sehir	Haymana	Menemen	**Overall mean**
FLIP 91-113C	32	48	35	26	29	33	25	26	33	34
FLIP 91-116C	26	63	34	27	37	40	26	27	34	35
FLIP 91-137C	33	63	38	31	47	40	25	26	30	37
FLIP 91-151C	41	67	43	41	66	49	34	34	37	43
FLIP 91-158C	35	59	37	34	52	40	28	32	38	38
FLIP 91-159C	33	57	41	39	59	49	28	31	35	38
FLIP 91-165C	39	55	46	36	59	38	31	29	37	41
FLIP 91-167C	45	64	43	38	48	51	31	34	38	41
FLIP 91-176C	41	64	44	37	60	41	32	34	38	40
FLIP 91-180C	37	61	43	37	50	40	30	33	39	39
FLIP 91-181C	31	59	35	32	51	35	29	24	31	37
FLIP 91-182C	35	63	43	37	56	42	31	29	34	40
FLIP 91-185C	29	65	38	32	47	37	28	31	39	38
FLIP 91-187C	39	44	43	32	51	42	29	26	34	38
FLIP 91-188C	34	51	39	33	51	37	28	25	34	36
FLIP 91-194C	24	45	35	30	48	32	23	28	35	34
FLIP 91-198C	37	55	40	34	58	41	30	32	36	38
FLIP 91-201C	36	54	37	34	50	33	26	36	33	37
FLIP 91-202C	29	59	36	31	43	39	26	29	34	37
FLIP 91-205C	29	54	34	31	51	35	27	28	29	35
FLIP 91-207C	24	51	36	29	50	31	25	28	35	35
FLIP 91-215C	36	65	44	38	50	37	31	29	31	40
FLIP 91-217C	37	50	45	36	51	38	30	34	38	38
FLIP 91-218C	32	60	38	32	49	40	29	28	32	37
FLIP 91-223C	32	53	38	30	50	40	22	23	35	36
FLIP 82-150C	30	50	38	31	47	33	20	30	32	36
ILC 482	28	51	33	28	36	33	21	27	34	34
Local check	26	58	33	25	-	-	28	24	35	
Location Mean	**33**	**54**	**38**	**32**	**43**	**38**	**27**	**28**	**33**	
S.E. Of Mean	2.71	One	1.68	1.32	4.11	One	1.64	2.28	3.15	
LSD at .05	7.69	rep	4.74	3.76	11.62	rep	4.62	6.48	NS	
C.V. %	11.68		6.24	5.77	12.27		8.67	11.37	13.39	

(1) Diyarbakir in Turkey having a missing value was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.7.5. Adjusted 100-seed weight (g) of entries at different locations in the CISN-S during 1992/93.

Entry name	Greece	Iran			Lebanon	Syria				Turkey				Overall mean
	Thessa-loniki	Karaj-1	Karaj-2	Mara-gheh	Terbol	Gelline	Jableh	Jin-diress	Tel-Hadya	Amasya	Diyar-bakir	Haymana	Menemen	
FLIP 90-21C	32	37	32	38	35	38	40	30	32	42	36	-	34	35
FLIP 90-41C	30	32	31	36	31	32	36	28	27	37	31	28	31	31
FLIP 90-43C	30	33	31	35	29	30	30	26	27	39	32	-	30	30
FLIP 90-74C	30	31	31	35	31	35	33	28	27	43	35	35	30	31
FLIP 90-90C	27	34	29	39	32	33	40	30	27	41	32	36	31	32
FLIP 90-113C	30	31	26	37	30	29	32	25	26	36	28	-	29	29
FLIP 90-125C	23	33	28	28	30	29	31	23	22	30	23	-	23	26
FLIP 90-170C	29	29	23	31	25	26	32	22	23	36	28	-	25	26
FLIP 90-171C	30	32	28	37	33	29	30	27	28	39	34	40	30	30
FLIP 90-172C	29	35	30	34	31	29	39	27	26	38	31	-	28	30
FLIP 90-173C	29	32	31	35	31	32	32	27	32	37	33	-	32	31
FLIP 90-181C	28	30	31	37	30	30	40	30	30	40	32	-	30	32
FLIP 90-187C	26	37	28	35	28	29	34	27	26	37	31	-	35	30
FLIP 91-3C	28	37	35	39	36	32	35	28	27	44	35	38	30	32
FLIP 91-13C	30	34	29	36	32	32	31	27	28	35	34	30	29	31
FLIP 91-16C	29	28	27	36	28	31	35	27	25	38	30	-	30	30
FLIP 91-22C	31	33	29	35	31	29	35	28	28	39	33	30	28	31
FLIP 91-31C	27	33	30	34	32	30	33	28	27	36	32	34	28	30
FLIP 91-34C	28	35	30	29	30	31	35	28	28	38	32	-	29	30
FLIP 91-37C	28	39	31	39	34	35	35	30	27	39	31	32	34	32
FLIP 91-39C	30	35	31	38	36	33	32	29	29	41	33	33	33	32
FLIP 91-46C	30	37	31	35	32	30	35	28	27	34	33	32	32	31
FLIP 91-47C	31	-	30	42	36	33	36	32	28	42	34	34	34	34
FLIP 91-55C	28	34	28	35	30	31	33	26	26	36	30	29	29	30
FLIP 91-62C	24	29	27	29	30	32	34	27	27	34	31	29	29	29
FLIP 91-64C	34	35	33	41	30	39	38	33	35	42	38	-	35	36
FLIP 91-72C	31	33	30	42	34	32	40	30	32	41	33	-	33	34
FLIP 91-74C	31	31	25	33	28	33	32	26	26	-	33	-	31	30
FLIP 91-81C	29	33	34	41	33	35	36	31	32	-	36	-	30	34
FLIP 91-84C	29	32	31	38	29	27	35	26	30	50	33	-	27	30
FLIP 91-94C	34	34	31	43	37	35	41	30	36	-	35	-	36	36
FLIP 91-96C	31	40	35	44	36	33	43	32	32	-	39	-	35	36
FLIP 91-99C	34	37	36	41	32	34	44	33	34	49	40	-	33	36
FLIP 91-104C	37	42	35	46	39	36	47	36	37	47	40	-	36	39
FLIP 91-107C	32	32	34	39	33	34	41	29	33	44	38	-	32	35
FLIP 91-108C	32	37	35	42	34	27	42	32	32	41	37	-	32	35

Cont'd. ...

Table 3.7.5. Cont'd. ...

Entry name	Greece	Iran			Lebanon	Syria				Turkey				(1)
	Thessa-loniki	Karaj-1	Karaj-2	Mara-gheh	Terbol	Gelline	Jableh	Jin-diress	Tel-Hadya	Amasya	Diyar-bakir	Haymana	Menemen	**Overall mean**
FLIP 91-113C	34	39	37	40	36	36	32	32	34	47	38	-	33	35
FLIP 91-116C	29	40	32	36	29	29	38	24	29	36	35	-	32	31
FLIP 91-137C	36	42	38	48	42	40	52	37	37	52	42	43	36	41
FLIP 91-151C	31	26	30	42	38	36	38	30	28	47	39	33	37	35
FLIP 91-158C	28	29	29	37	31	30	39	28	30	41	35	30	33	32
FLIP 91-159C	30	39	28	38	31	29	36	26	28	42	34	-	29	31
FLIP 91-165C	25	30	26	32	29	29	28	23	24	37	28	-	26	27
FLIP 91-167C	27	32	31	39	34	34	31	30	28	41	35	33	35	32
FLIP 91-176C	31	34	34	40	39	33	37	32	30	43	39	35	32	35
FLIP 91-180C	28	31	29	37	35	32	29	29	27	39	33	36	33	31
FLIP 91-181C	30	26	31	40	34	31	37	28	32	41	35	33	32	33
FLIP 91-182C	29	33	28	35	32	30	35	27	29	36	34	31	31	31
FLIP 91-185C	28	31	28	35	30	35	40	26	28	37	33	-	32	32
FLIP 91-187C	30	-	29	39	33	35	34	35	31	41	36	-	33	34
FLIP 91-188C	31	32	27	36	33	32	32	31	32	37	34	31	32	32
FLIP 91-194C	36	31	36	42	39	39	37	36	35	42	36	-	34	37
FLIP 91-198C	30	34	29	38	29	32	34	30	29	42	32	30	35	32
FLIP 91-201C	32	36	28	37	36	36	36	30	32	40	35	35	33	33
FLIP 91-202C	30	31	30	45	31	31	39	23	29	36	33	-	32	32
FLIP 91-205C	30	34	23	35	30	32	44	27	28	40	36	-	30	32
FLIP 91-207C	26	30	29	33	31	30	34	27	24	36	31	30	32	30
FLIP 91-215C	27	31	31	34	31	31	35	25	24	38	31	32	30	30
FLIP 91-217C	31	32	32	39	31	30	34	28	28	40	33	32	31	32
FLIP 91-218C	31	34	30	33	34	31	36	29	30	41	34	31	32	32
FLIP 91-223C	24	34	26	31	27	28	28	25	25	34	27	27	25	26
FLIP 82-150C	23	34	22	29	25	27	29	24	22	32	25	-	30	26
ILC 482	25	28	23	30	26	27	31	22	24	32	27	-	29	26
Local check	34	32	26	33	27	30	26	29	32	-	-	-	40	
Location Mean	**30**	**33**	**30**	**37**	**32**	**32**	**35**	**28**	**29**	**40**	**33**	**32**	**31**	
S.E. Of Mean	0.97	One	1.68	2.04	1.68	One	One	1.22	0.89	0.91	One	One	1.54	
LSD at .05	2.76	rep	4.77	5.79	4.75	rep	rep	3.44	2.52	2.57	rep	rep	4.38	
C.V. %	4.62		7.93	7.79	7.43			6.06	4.34	3.25			6.93	

(1) Karaj-1 in Iran, Amasya and Haymana in Turkey having missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.7.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-S during 1992/93.

Entry name	Greece		Iran								Lebanon		Syria	
	Thessaloniki		Karaj-1		Karaj-2		Maragheh		Mashhad		Terbol		Aleppo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-21C	2665	25	1289	36	213	55	1225	2	2514	19	1384	36	929	34
FLIP 90-41C	2516	35	1355	27	311	47	1079	20	2823	10	1838	12	547	64
FLIP 90-43C	2583	32	1649	6	925	6	1105	14	2021	36	1952	7	1258	10
FLIP 90-74C	1514	63	1157	48	500	22	905	51	1655	49	1322	39	1023	25
FLIP 90-90C	2347	38	1710	3	444	29	997	32	1224	62	1273	40	1270	9
FLIP 90-113C	2701	21	1239	38	607	14	943	44	1780	47	1174	47	585	61
FLIP 90-125C	3820	1	1521	11	810	7	1060	21	935	64	1703	17	1063	22
FLIP 90-170C	3045	9	998	60	117	62	981	34	2456	21	1706	16	976	30
FLIP 90-171C	2837	15	1202	42	82	64	943	43	2729	15	1860	9	754	52
FLIP 90-172C	3493	3	1193	43	484	23	962	39	1415	60	2166	1	1428	4
FLIP 90-173C	2642	28	1388	20	347	45	965	38	2357	24	1928	8	1239	13
FLIP 90-181C	2147	51	1342	28	764	10	1140	9	1233	61	1245	42	1163	16
FLIP 90-187C	2650	26	1705	4	363	41	1181	4	2448	22	1983	4	939	33
FLIP 91-3C	2153	50	1603	7	387	37	1051	22	1996	39	1332	38	909	38
FLIP 91-13C	3146	5	1163	47	186	58	1105	12	3003	8	1582	23	945	32
FLIP 91-16C	2121	53	1568	9	356	44	867	54	2576	17	1602	21	827	43
FLIP 91-22C	2566	34	1210	39	394	35	838	57	1449	59	1169	48	1020	26
FLIP 91-31C	2227	44	1385	21	1258	1	952	42	2496	20	645	59	860	42
FLIP 91-34C	3295	4	1878	1	396	34	1168	5	2679	16	1517	28	910	37
FLIP 91-37C	2345	39	1092	53	507	21	825	58	3158	4	1587	22	914	35
FLIP 91-39C	1794	62	1138	50	383	38	752	60	3350	1	1082	51	822	47
FLIP 91-46C	3116	6	747	64	1034	3	1003	30	2223	32	1392	34	677	57
FLIP 91-47C	2577	33	925	62	233	51	559	64	2323	25	795	56	645	58
FLIP 91-55C	2000	59	1411	15	723	11	917	49	1925	44	1202	45	619	60
FLIP 91-62C	2309	41	1207	40	776	9	978	36	1519	57	1446	32	776	50
FLIP 91-64C	2689	23	1081	54	316	46	1079	19	1653	50	1027	54	1001	28
FLIP 91-72C	2035	58	1173	46	222	54	1105	13	1661	48	471	62	1384	5
FLIP 91-74C	2945	12	1340	30	170	59	803	59	1588	54	1263	41	972	31
FLIP 91-81C	2792	17	1066	56	457	26	987	33	1968	42	596	61	1211	14
FLIP 91-84C	2774	19	1289	37	101	63	1146	7	2753	13	657	58	1252	11
FLIP 91-94C	2666	24	1340	29	409	32	1032	24	1492	58	643	60	1184	15
FLIP 91-96C	2695	22	1339	31	473	25	1010	27	2842	9	447	63	1145	17
FLIP 91-99C	1078	64	1309	33	456	27	937	45	2068	34	404	64	812	48
FLIP 91-104C	2227	43	1381	22	446	28	1092	17	1154	63	710	57	1028	24
FLIP 91-107C	2597	29	1777	2	978	4	1206	3	2237	29	1743	14	1304	6
FLIP 91-108C	2109	54	1520	12	593	15	1162	6	2804	11	1224	43	1432	3

Cont'd. ...

Table 3.7.6. Cont'd. ...

Entry name	Greece Thessaloniki		Iran Karaj-1		Iran Karaj-2		Iran Maragheh		Iran Mashhad		Lebanon Terbol		Syria Aleppo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-113C	2454	36	1035	58	413	31	978	35	1643	51	1064	52	1107	19
FLIP 91-116C	2153	49	1144	49	571	17	1083	18	1805	46	1501	30	1282	8
FLIP 91-137C	1906	61	1361	25	191	56	1010	28	3109	7	1573	24	1300	7
FLIP 91-151C	2100	55	990	61	167	60	695	62	2238	28	1212	44	567	62
FLIP 91-158C	2445	37	1188	45	373	39	924	47	2062	35	2120	3	1122	18
FLIP 91-159C	2236	42	999	59	526	19	1124	10	2008	38	1682	18	1028	23
FLIP 91-165C	2138	52	1357	26	615	13	905	50	2229	31	1433	33	682	56
FLIP 91-167C	2215	46	1584	8	483	24	956	41	2787	12	1165	49	823	46
FLIP 91-176C	2062	57	1096	52	227	53	670	63	2239	27	1729	15	638	59
FLIP 91-180C	2215	45	922	63	229	52	883	53	2741	14	1050	53	758	51
FLIP 91-181C	2097	56	1393	17	359	42	841	55	2232	30	1845	11	875	41
FLIP 91-182C	3605	2	1391	18	557	18	1102	15	1989	40	1982	5	887	40
FLIP 91-185C	1965	60	1427	13	937	5	1140	8	1932	43	840	55	825	45
FLIP 91-187C	2162	48	1417	14	434	30	1308	1	3217	3	1557	26	1016	27
FLIP 91-188C	2857	14	1289	35	509	20	1006	29	1589	53	1567	25	804	49
FLIP 91-194C	2648	27	1072	55	357	43	930	46	1536	56	1497	31	1088	20
FLIP 91-198C	2189	47	1193	44	311	48	721	61	2425	23	1536	27	986	29
FLIP 91-201C	2898	13	1060	57	392	36	1098	16	2565	18	1973	6	898	39
FLIP 91-202C	2951	10	1363	24	573	16	1032	25	1979	41	1644	19	1628	1
FLIP 91-205C	2828	16	1206	41	277	50	971	37	1561	55	1337	37	1593	2
FLIP 91-207C	2781	18	1370	23	635	12	959	40	2069	33	1385	35	751	53
FLIP 91-215C	2948	11	1307	34	404	33	838	56	1639	52	1198	46	911	36
FLIP 91-217C	3048	8	1669	5	788	8	1000	31	2014	37	1858	10	825	44
FLIP 91-218C	2583	31	1312	32	365	40	895	52	1916	45	1618	20	746	54
FLIP 91-223C	2704	20	1390	19	1064	2	1029	26	2278	26	1507	29	705	55
FLIP 82-150C	2589	30	1110	51	151	61	1117	11	3300	2	2126	2	1076	21
ILC 482	2333	40	1531	10	188	57	917	48	3128	6	1148	50	550	63
Local check	3104	7	1394	16	307	49	1038	23	3150	5	1763	13	1241	12
Location Mean	**2522**		**1301**		**463**		**988**		**2186**		**1390**		**977**	
S.E. Of Mean	376.30		209.99		168.32		69.53		420.80		238.43		232.30	
LSD at .05	1069.08		NS		478.20		196.46		1196.51		677.37		NS	
C.V. %	21.10		22.83		51.43		9.95		27.23		24.25		33.62	
Efficiency	106		103		164		100		100		121		105	
Entry > L. check	0		0		8		1		0		0		0	

Cont'd. ...

Table 3.7.6. Cont'd. ...

Entry name	Syria													
	Gelline		Hama		Idleb		Izraa		Jableh		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-21C	1303	27	1054	53	1007	22	902	26	898	32	1288	43	1007	24
FLIP 90-41C	1679	2	1470	16	927	34	987	19	1498	2	1425	25	1180	13
FLIP 90-43C	1259	31	655	64	985	25	1154	7	490	57	1210	53	815	40
FLIP 90-74C	1150	44	1094	50	677	55	626	47	612	50	1153	59	741	45
FLIP 90-90C	1481	12	1203	37	1211	5	603	48	857	34	1306	41	866	34
FLIP 90-113C	856	64	1211	35	859	40	883	30	531	55	1256	45	851	38
FLIP 90-125C	1506	9	1198	38	1012	21	899	29	939	30	1248	46	907	31
FLIP 90-170C	1128	49	983	61	845	42	938	22	939	29	1170	57	1090	20
FLIP 90-171C	1450	14	1392	21	1152	9	1177	6	653	49	1527	17	675	51
FLIP 90-172C	1106	53	2240	1	929	33	1535	1	776	46	1682	4	1132	18
FLIP 90-173C	1566	5	1883	3	1210	6	1185	5	1673	1	1651	5	1332	4
FLIP 90-181C	1271	29	989	60	836	44	1003	18	1143	11	934	64	1183	12
FLIP 90-187C	1432	15	1324	25	775	47	842	35	1082	13	1529	16	914	29
FLIP 91-3C	1322	26	1121	48	973	27	547	51	980	25	1142	60	583	59
FLIP 91-13C	1340	24	1441	19	893	38	644	46	898	31	1382	30	828	39
FLIP 91-16C	1153	43	755	63	907	36	1098	10	796	45	1223	49	750	44
FLIP 91-22C	1143	46	917	62	967	28	924	24	833	40	1416	27	935	28
FLIP 91-31C	1141	47	1717	9	741	48	930	23	837	37	1349	37	679	50
FLIP 91-34C	1512	8	1777	6	934	32	1147	8	1020	19	1605	8	694	48
FLIP 91-37C	1203	38	1046	55	590	62	324	63	1286	4	1222	50	727	46
FLIP 91-39C	1159	42	1172	41	856	41	860	32	816	43	1235	48	646	55
FLIP 91-46C	1356	22	1126	47	690	52	1029	16	1057	16	1582	10	811	41
FLIP 91-47C	1044	59	1295	28	648	57	391	61	1224	6	1164	58	500	63
FLIP 91-55C	1181	40	1154	45	568	64	1146	9	449	58	1538	15	863	36
FLIP 91-62C	1120	51	1132	46	674	56	801	37	612	53	1450	24	903	32
FLIP 91-64C	1145	45	989	59	1225	2	764	38	347	62	1629	7	914	30
FLIP 91-72C	1091	56	1014	58	1223	3	529	52	408	59	1358	34	974	25
FLIP 91-74C	1242	32	1559	13	1003	24	656	45	184	64	1375	31	1254	8
FLIP 91-81C	1187	39	1298	27	1084	14	901	27	837	39	1512	19	1142	17
FLIP 91-84C	1167	41	1189	40	1099	13	667	44	245	63	1705	2	1491	1
FLIP 91-94C	1364	20	1209	36	1038	17	587	49	510	56	1566	11	945	26
FLIP 91-96C	1500	11	1289	29	1198	7	902	25	694	48	1420	26	1148	15
FLIP 91-99C	1342	23	1171	42	1004	23	400	60	1061	15	1351	36	809	42
FLIP 91-104C	1265	30	1154	44	1327	1	359	62	878	33	1389	29	878	33
FLIP 91-107C	1048	58	1391	22	1151	10	447	57	816	44	1496	21	1142	16
FLIP 91-108C	1524	7	1844	5	1171	8	723	41	1000	24	1500	20	1287	6

Cont'd. ...

Table 3.7.6. Cont'd. ...

Entry name	Syria													
	Gelline		Hama		Idleb		Izraa		Jableh		Jindiress		Tel Hadya	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-113C	1557	6	1319	26	809	45	482	53	1000	22	1596	9	1191	11
FLIP 91-116C	1585	4	1158	43	1017	19	864	31	604	54	1359	33	1120	19
FLIP 91-137C	1137	48	1737	7	952	31	472	55	837	38	1289	42	863	35
FLIP 91-151C	1059	57	1047	54	731	51	855	33	1012	20	1100	62	370	64
FLIP 91-158C	1024	60	1367	23	644	59	728	40	1041	18	1203	54	1040	21
FLIP 91-159C	1231	34	1504	15	685	53	573	50	1469	3	1355	35	1291	5
FLIP 91-165C	1324	25	1033	57	963	30	414	59	367	61	1190	56	608	58
FLIP 91-167C	944	62	1115	49	739	49	900	28	388	60	1243	47	619	57
FLIP 91-176C	1122	50	1414	20	910	35	462	56	612	52	1214	52	553	60
FLIP 91-180C	1431	16	1216	34	573	63	1050	15	1265	5	1519	18	771	43
FLIP 91-181C	1373	19	1189	39	902	37	1003	17	1224	8	1344	39	855	37
FLIP 91-182C	1115	52	1264	32	624	60	1058	14	1082	14	1217	51	1026	23
FLIP 91-185C	1406	17	1522	14	646	58	1271	3	959	27	1407	28	936	27
FLIP 91-187C	1240	33	1459	18	777	46	1064	13	735	47	1696	3	1029	22
FLIP 91-188C	1101	54	2007	2	975	26	803	36	1008	21	1470	22	1245	9
FLIP 91-194C	889	63	1033	56	1107	12	315	64	1094	12	1316	40	1211	10
FLIP 91-198C	1392	18	1274	31	610	61	848	34	845	36	1258	44	645	56
FLIP 91-201C	1224	35	1061	52	841	43	1084	11	1184	9	1190	55	657	53
FLIP 91-202C	1501	10	1462	17	1046	16	948	20	816	41	1646	6	1171	14
FLIP 91-205C	1671	3	1724	8	734	50	1345	2	955	28	1552	13	1278	7
FLIP 91-207C	989	61	1338	24	1013	20	476	54	1224	7	1110	61	503	62
FLIP 91-215C	1357	21	1216	33	685	54	673	42	980	26	1032	63	530	61
FLIP 91-217C	1095	55	1086	51	1023	18	416	58	816	42	1374	32	664	52
FLIP 91-218C	1205	37	1282	30	872	39	672	43	1184	10	1347	38	725	47
FLIP 91-223C	1207	36	1605	12	966	29	738	39	853	35	1468	23	649	54
FLIP 82-150C	1274	28	1664	11	1070	15	1067	12	612	51	1566	12	690	49
ILC 482	1474	13	1844	4	1130	11	942	21	1000	23	1548	14	1362	3
Local check	1951	1	1671	10	1220	4	1205	4	1049	17	2077	1	1406	2
Location Mean	**1275**		**1314**		**916**		**816**		**939**		**1386**		**916**	
S.E. Of Mean	191.52		243.31		147.31		219.08		One		123.76		172.29	
LSD at .05	NS		691.24		418.52		622.42		rep		351.61		489.47	
C.V. %	21.24		26.20		22.73		37.96				12.63		26.61	
Efficiency	101		147		112		101				150		120	
Entry > L. check	0		0		0		0				0		0	

Cont'd. ...

Table 3.7.6. Cont'd. ...

Entry name	Tunisia		Turkey								Overall mean	
	Beja		Amasya		Diyarbakir		Haymana		Menemen			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-21C	3250	22	853	53	889	44	-	-	325	21	1160	41
FLIP 90-41C	2748	46	2547	15	933	41	1229	13	336	14	1379	4
FLIP 90-43C	3217	24	1050	51	844	47	-	-	354	10	1195	33
FLIP 90-74C	2713	47	2518	16	1156	24	-	-	422	3	1072	54
FLIP 90-90C	3633	8	3057	3	1200	18	1042	18	321	22	1258	19
FLIP 90-113C	3358	17	3031	4	711	54	-	-	397	5	1154	42
FLIP 90-125C	3521	13	1127	49	1022	35	-	-	327	18	1241	25
FLIP 90-170C	3809	5	2477	20	1289	14	-	-	260	42	1259	17
FLIP 90-171C	3326	19	2644	11	1422	8	1500	7	329	16	1343	8
FLIP 90-172C	3480	15	2478	19	1111	27	-	-	230	53	1433	3
FLIP 90-173C	4316	1	2716	9	1822	2	-	-	262	38	1539	1
FLIP 90-181C	2215	57	2200	33	667	56	-	-	280	33	1149	45
FLIP 90-187C	2306	55	2334	28	800	49	-	-	336	13	1332	11
FLIP 91-3C	2948	34	2139	34	1111	28	938	20	245	50	1152	43
FLIP 91-13C	3335	18	2390	26	1422	7	1354	10	291	26	1333	9
FLIP 91-16C	2833	41	1600	43	756	50	-	-	422	2	1140	47
FLIP 91-22C	3012	29	2241	31	1067	32	1083	15	279	34	1139	48
FLIP 91-31C	3298	20	2836	5	1467	6	1396	9	218	55	1279	16
FLIP 91-34C	3649	7	2011	38	1644	4	-	-	362	9	1444	2
FLIP 91-37C	2088	58	2201	32	489	62	729	24	337	12	1168	39
FLIP 91-39C	2376	53	2401	25	1244	15	708	25	245	51	1174	37
FLIP 91-46C	3678	6	2368	27	1200	22	2021	1	375	7	1281	15
FLIP 91-47C	1716	60	2565	13	667	58	500	26	197	60	1044	58
FLIP 91-55C	3813	4	3323	2	1200	19	1625	4	187	61	1200	32
FLIP 91-62C	3168	25	3424	1	1289	12	1646	3	248	46	1216	28
FLIP 91-64C	2804	43	1513	45	1289	13	-	-	328	17	1117	51
FLIP 91-72C	1632	61	1377	48	933	40	-	-	260	41	1013	61
FLIP 91-74C	1564	63	92	61	1289	11	-	-	271	37	1060	57
FLIP 91-81C	2749	45	16	62	1778	3	-	-	261	39	1123	50
FLIP 91-84C	2274	56	263	59	1067	31	-	-	288	29	1127	49
FLIP 91-94C	1579	62	0	63	444	63	-	-	308	23	984	62
FLIP 91-96C	2860	40	0	64	1244	16	-	-	207	59	1150	44
FLIP 91-99C	1877	59	609	56	1244	17	-	-	247	48	959	63
FLIP 91-104C	2547	52	701	55	1111	29	-	-	252	45	1020	60
FLIP 91-107C	3536	12	2466	21	533	61	-	-	331	15	1333	10
FLIP 91-108C	3128	26	1476	47	800	48	-	-	280	32	1321	12

Cont'd. ...

Table 3.7.6. Cont'd. ...

Entry name	Tunisia		Turkey								Overall mean	
	Beja		Amasya		Diyarbakir		Haymana		Menemen			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-113C	3010	30	320	58	667	57	-	-	382	6	1060	56
FLIP 91-116C	2586	51	762	54	1867	1	-	-	291	27	1186	34
FLIP 91-137C	2701	49	2046	37	1200	23	1229	12	216	56	1247	23
FLIP 91-151C	2953	32	2701	10	1067	30	-	-	219	54	1066	55
FLIP 91-158C	2878	37	2309	29	1378	10	-	-	257	44	1248	21
FLIP 91-159C	3543	11	1793	41	1067	33	-	-	247	47	1224	27
FLIP 91-165C	3487	14	1483	46	622	59	-	-	278	36	1038	59
FLIP 91-167C	2902	36	2435	24	1200	21	937	21	211	57	1165	40
FLIP 91-176C	3270	21	2488	17	711	55	1417	8	241	52	1082	53
FLIP 91-180C	2878	38	2078	35	978	36	875	23	326	19	1177	36
FLIP 91-181C	2821	42	2554	14	844	46	1083	16	278	35	1248	22
FLIP 91-182C	3561	10	2720	8	1156	25	1917	2	291	25	1357	7
FLIP 91-185C	2874	39	971	52	889	45	-	-	418	4	1146	46
FLIP 91-187C	3619	9	1608	42	1200	20	-	-	348	11	1310	14
FLIP 91-188C	3241	23	1822	40	978	37	1583	5	362	8	1259	18
FLIP 91-194C	2933	35	2798	6	756	51	-	-	259	43	1171	38
FLIP 91-198C	2708	48	2798	7	1111	26	-	-	299	24	1202	31
FLIP 91-201C	2758	44	2077	36	711	53	1500	6	260	40	1245	24
FLIP 91-202C	2998	31	1582	44	1422	9	-	-	435	1	1364	5
FLIP 91-205C	3066	28	1072	50	889	43	-	-	284	30	1251	20
FLIP 91-207C	3948	3	2456	22	756	52	896	22	289	28	1182	35
FLIP 91-215C	2950	33	2441	23	622	60	1063	17	133	63	1112	52
FLIP 91-217C	2690	50	1912	39	978	39	1250	11	326	20	1229	26
FLIP 91-218C	3091	27	2604	12	978	38	938	19	210	58	1206	30
FLIP 91-223C	4152	2	2275	30	1600	5	1167	14	246	49	1311	13
FLIP 82-150C	3438	16	2478	18	1022	34	-	-	282	31	1364	6
ILC 482	2328	54	474	57	933	42	-	-	136	62	1214	29
Local check	990	64	255	60	-	64	-		66	64		
Location mean	**2949**		**1881**		**1060**		**1216**		**284**			
S.E. Of Mean	301.58		391.97		One		264.70		53.50			
LSD at .05	856.79		1113.59		rep		771.15		151.98			
C.V. %	14.46		29.56				30.78		26.60			
Efficiency	113		112				-		102			
Entry > L. check	59		48				0		54			

(1) Haymana in Turkey having missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.7.7. The five heaviest seed yielding entries at the individual locations in the CISN-S during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Greece	Thessaloniki	FLIP 90-125C	FLIP 91-182C	FLIP 90-172C	FLIP 91-34C	FLIP 91-13C
Iran	Karaj-1	FLIP 91-34C	FLIP 91-107C	FLIP 90-90C	FLIP 90-187C	FLIP 91-217C
Iran	Karaj-2	FLIP 91-31C	FLIP 91-223C	FLIP 91-46C	FLIP 91-107C	FLIP 91-185C
Iran	Maragheh	FLIP 91-187C	FLIP 90-21C	FLIP 91-107C	FLIP 90-187C	FLIP 91-34C
Iran	Mashhad	FLIP 91-39C	FLIP 82-150C	FLIP 91-187C	FLIP 91-37C	Local check
Lebanon	Terbol	FLIP 90-172C	FLIP 82-150C	FLIP 91-158C	FLIP 90-187C	FLIP 91-182C
Syria	Aleppo	FLIP 91-202C	FLIP 91-205C	FLIP 91-108C	FLIP 90-172C	FLIP 91-72C
Syria	Gelline	Local check	FLIP 90-41C	FLIP 91-205C	FLIP 91-116C	FLIP 90-173C
Syria	Hama	FLIP 90-172C	FLIP 91-188C	FLIP 90-173C	ILC 482	FLIP 91-108C
Syria	Idleb	FLIP 91-104C	FLIP 91-64C	FLIP 91-72C	Local check	FLIP 90-90C
Syria	Izra'a	FLIP 90-172C	FLIP 91-205C	FLIP 91-185C	Local check	FLIP 90-173C
Syria	Jableh	FLIP 90-173C	FLIP 90-41C	FLIP 91-159C	FLIP 91-37C	FLIP 91-180C
Syria	Jindiress	Local check	FLIP 91-84C	FLIP 91-187C	FLIP 90-172C	FLIP 90-173C
Syria	Tel Hadya	FLIP 91-84C	Local check	ILC 482	FLIP 90-173C	FLIP 91-159C
Tunisia	Beja	FLIP 90-173C	FLIP 91-223C	FLIP 91-207C	FLIP 91-55C	FLIP 90-170C
Turkey	Amasya	FLIP 91-62C	FLIP 91-55C	FLIP 90-90C	FLIP 90-113C	FLIP 91-31C
Turkey	Diyarbakir	FLIP 91-116C	FLIP 90-173C	FLIP 91-81C	FLIP 91-34C	FLIP 91-223C
Turkey	Menemen	FLIP 91-202C	FLIP 91-16C	FLIP 90-74C	FLIP 91-185C	FLIP 90-113C

3.8. CHICKPEA INTERNATIONAL SCREENING NURSERY - SOUTHERLY LATITUDES - 1 (CISN-SL1)

The Chickpea International Screening Nursery - Southernly Latitudes 1 comprised 46 test entries and three checks, namely FLIP 82-150C, ILC 482, and one local check to be supplied by the cooperator.

Methods and Management

The entries were planted in single row plots of 4 m length in a simple 7x7 lattice design with 2 replications. The spacing between and within rows were 45- and 10 cm, respectively. Fifteen sets of nursery were distributed to cooperators in 8 countries and the results were received from 6 locations in 4 countries. The agronomic details received from the cooperators are presented in Table 3.8.1.

Table 3.8.1. Agronomic data for different locations in the CISN-SL1 during 1992/93.

Country/ Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N/P/K	Irri-gation	Insecticide/ Herbicide/ Fungicide	Local Check
Ethiopia						
Debre Zeit	01.09.93	06.02.94	-/-/-	-	-	DZ-10-4
India						
Almora	30.11.92	19.05.93	20/40/-	-	-	VL 86
Durgapura	21.11.92	06.04.93	20/40/-	2	Endosulphane + Basalin	RSG-44
New Delhi	20.11.92	30.04.93	20/-/-	1	Endosulphane	Pusa 267
Sudan						
Hudeiba	10.12.92	NA	43/-/-	9/2wk	-	Shendi
Syria						
Tel Hadya	10.12.92	21.06.93	-/50/-	-	Kerb + Igran	Ghab 2

NA = Not available

Results and Discussion

The adjusted mean time to flowering, time to maturity, plant height, 100-seed weight, and seed yield are given in Tables 3.8.2, 3.8.3, 3.8.4, 3.8.5, and 3.8.6, respectively. The entry means for time to flowering, time to maturity, plant height, 100-seed weight, and seed yield ranged between 84 to 94 days, 127-137 days, 46 to 70 cm, 26 to 38 g and 147 to 1063 kg/ha respectively. The five heaviest yielding entries based on mean over locations included FLIP 91-4C, FLIP 91-163C, FLIP 91-178C, FLIP 91-173C, and FLIP 91-210C, respectively with seed yields of 1063, 1035, 959, 896 and 896 kg/ha.

Table 3.8.2. Adjusted time to flowering (days) of entries at different locations in the CISN-SL1 during 1992/93.

Entry name	Pedigree	Origin	Ethiopia	India	
			Debre Zeit	Almora	Durgapura
FLIP 90-56C	X87TH159/S 85088 X ILC 3856	ICARDA/ICRISAT	74	131	76
FLIP 90-84C	X86TH141/FLIP 84-46C X ILC 482	ICARDA/ICRISAT	70	130	73
FLIP 90-85C	X86TH148/FLIP 84-46 X ILC 3870	ICARDA/ICRISAT	72	134	71
FLIP 90-94C	X87TH20/ILC 576 X FLIP 84-93C	ICARDA/ICRISAT	56	129	70
FLIP 90-99C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	75	133	74
FLIP 90-100C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	71	129	71
FLIP 90-111C	X88TH122/FLIP 85-122C X Be Sel 81-48	ICARDA/ICRISAT	70	128	77
FLIP 91-8C	X87TH346/(FLIP 84-48C X ILC 4293) X FLIP 84-48C	ICARDA/ICRISAT	74	131	69
FLIP 91-9C	X87TH6/FLIP 81-293C X FLIP 83-47C	ICARDA/ICRISAT	69	129	71
FLIP 91-10C	X87TH9/FLIP 81-293C X FLIP 84-79C	ICARDA/ICRISAT	72	133	77
FLIP 91-14C	X88TH216/FLIP 85-122C X FLIP 85-112C	ICARDA/ICRISAT	57	129	75
FLIP 91-18C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	73	129	74
FLIP 91-19C	X87TH230/FLIP 85-91C X ILC 3279	ICARDA/ICRISAT	72	133	77
FLIP 91-23C	X87TH3/ILC 482 X FLIP 84-78C	ICARDA/ICRISAT	55	132	75
FLIP 91-26C	X87TH167/ILC 1919 X FLIP 83-47C	ICARDA/ICRISAT	59	128	75
FLIP 91-29C	X87TH9/FLIP 81-293C X FLIP 84-79C	ICARDA/ICRISAT	69	124	76
FLIP 91-30C	X87TH9/FLIP 81-293C X FLIP 84-79C	ICARDA/ICRISAT	71	130	76
FLIP 91-33C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	61	130	71
FLIP 91-41C	X87TH192/ICC 14212 X FLIP 83-98C	ICARDA/ICRISAT	58	131	75
FLIP 91-45C	X87TH10/FLIP 81-293C X FLIP 84-93C	ICARDA/ICRISAT	70	129	75
FLIP 91-48C	X88TH21/FLIP 84-124C X FLIP 83-48C	ICARDA/ICRISAT	69	130	78
FLIP 91-145C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	63	133	77
FLIP 91-148C	X87TH159/S 85088 X ILC 3856	ICARDA/ICRISAT	66	133	71
FLIP 91-154C	X87TH6/FLIP 81-293C X FLIP 83-47C	ICARDA/ICRISAT	69	129	78
FLIP 91-155C	X87TH144/FLIP 85-18C X ILC 482	ICARDA/ICRISAT	76	134	76
FLIP 91-156C	X87TH144/FLIP 85-18C X ILC 482	ICARDA/ICRISAT	74	130	77
FLIP 91-157C	X87TH144/FLIP 85-18C X ILC 482	ICARDA/ICRISAT	74	130	77
FLIP 91-161C	X88TH32/FLIP 85-142C X FLIP 82-150C	ICARDA/ICRISAT	76	139	75
FLIP 91-163C	X88TH176/FLIP 85-122C X FLIP 85-137C	ICARDA/ICRISAT	63	131	70
FLIP 91-166C	X88TH298/(FLIP 84-46C X FLIP 85-90C) X FLIP 84-46C	ICARDA/ICRISAT	75	131	76

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry name	Pedigree	Origin	Ethiopia	India	
			Debre Zeit	Almora	Durgapura
FLIP 91-170C	X88TH215/FLIP 85-122C X S 85036	ICARDA/ICRISAT	71	133	75
FLIP 91-171C	X88TH215/FLIP 85-122C X S 85036	ICARDA/ICRISAT	72	130	73
FLIP 91-173C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	59	130	71
FLIP 91-178C	X87TH271/(ILC 136 X FLIP 84-18C) X FLIP 84-78C	ICARDA/ICRISAT	65	131	74
FLIP 91-179C	X87TH159/S 85088 X ILC 3856	ICARDA/ICRISAT	76	129	78
FLIP 91-183C	X87TH53/ILC 5342 X FLIP 84-80C	ICARDA/ICRISAT	58	133	77
FLIP 91-184C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	65	130	73
FLIP 91-189C	X87TH98/FLIP 84-17C X ILC 4921	ICARDA/ICRISAT	66	131	75
FLIP 91-190C	X87TH108/FLIP 85-1C X FLIP 84-91C	ICARDA/ICRISAT	75	131	71
FLIP 91-191C	X87TH167/ILC 1919 X FLIP 83-47C	ICARDA/ICRISAT	62	130	78
FLIP 91-196C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	72	132	75
FLIP 91-199C	X87TH213/ILC 237 X FLIP 84-93C	ICARDA/ICRISAT	70	130	70
FLIP 91-203C	X87TH36/FLIP 83-47C X FLIP 84-145C	ICARDA/ICRISAT	57	129	71
FLIP 91-206C	X87TH270/(ILC 482 X FLIP 84-18C) X FLIP 84-99C	ICARDA/ICRISAT	62	128	69
FLIP 91-210C	X88TH176/FLIP 85-122C X FLIP 85-137C	ICARDA/ICRISAT	71	131	75
FLIP 91-216C	X88TH323/(ILC 519 X FLIP 83-47C) X ILC 519	ICARDA/ICRISAT	75	132	77
FLIP 82-150C	X79TH101/ILC 523 X ILC 183 (Improved check)	ICARDA/ICRISAT	65	132	74
ILC 482	(Long term check)	Turkey	55	130	78
Local check		-	47	132	76
Location mean			**67**	**131**	**74**
S.E. Of Mean			2.68	One	1.05
LSD at .05			7.70	rep	3.00
C.V. %			5.64		1.99

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry name	India New Delhi	Sudan Hudeiba	Syria Tel Hadya	**Overall mean**
FLIP 90-56C	97	72	129	90
FLIP 90-84C	96	73	128	89
FLIP 90-85C	95	74	128	89
FLIP 90-94C	95	72	128	84
FLIP 90-99C	93	78	128	91
FLIP 90-100C	96	76	128	89
FLIP 90-111C	94	75	128	89
FLIP 91-8C	92	75	129	88
FLIP 91-9C	91	73	127	86
FLIP 91-10C	96	74	128	90
FLIP 91-14C	94	76	128	86
FLIP 91-18C	95	75	127	89
FLIP 91-19C	93	75	132	90
FLIP 91-23C	93	73	128	86
FLIP 91-26C	92	74	125	86
FLIP 91-29C	92	76	128	87
FLIP 91-30C	94	80	127	90
FLIP 91-33C	94	73	127	86
FLIP 91-41C	95	73	128	86
FLIP 91-45C	92	75	128	88
FLIP 91-48C	92	72	128	88
FLIP 91-145C	96	74	128	89
FLIP 91-148C	93	75	129	88
FLIP 91-154C	92	73	127	88
FLIP 91-155C	93	75	127	91
FLIP 91-156C	90	79	128	90
FLIP 91-157C	93	74	126	90
FLIP 91-161C	94	84	128	94
FLIP 91-163C	93	75	128	86
FLIP 91-166C	90	75	129	89

Cont'd. ...

Table 3.8.2. Cont'd. ...

Entry name	India New Delhi	Sudan Hudeiba	Syria Tel Hadya	(1) **Overall mean**
FLIP 91-170C	92	76	130	89
FLIP 91-171C	92	79	128	89
FLIP 91-173C	92	75	125	85
FLIP 91-178C	94	74	126	88
FLIP 91-179C	92	75	130	90
FLIP 91-183C	91	72	128	86
FLIP 91-184C	94	75	129	87
FLIP 91-189C	97	77	126	89
FLIP 91-190C	92	75	129	89
FLIP 91-191C	90	75	128	87
FLIP 91-196C	94	78	129	90
FLIP 91-199C	91	77	129	88
FLIP 91-203C	92	76	127	85
FLIP 91-206C	90	75	128	85
FLIP 91-210C	94	80	129	90
FLIP 91-216C	86	81	131	90
FLIP 82-150C	94	80	127	89
ILC 482	93	78	126	87
Local check	91	49	132	
Location mean	**93**	**78**	**128**	
S.E. Of Mean	One	One	0.82	
LSD at .05	rep	rep	2.32	
C.V. %			0.90	

(1) Tel Hadya in Syria being not in southerly latitudes was excluded from overall mean.

Table 3.8.3. Adjusted time to maturity (days) of entries at different locations in the CISN-SL1 during 1992/93.

Entry name	Ethiopia	India		Syria	Overall mean
	Debre Zeit	Durgapura	New Delhi	Tel Hadya	
FLIP 90-56C	136	127	142	173	135
FLIP 90-84C	138	129	141	171	136
FLIP 90-85C	135	128	142	171	135
FLIP 90-94C	126	126	142	174	131
FLIP 90-99C	142	129	141	172	137
FLIP 90-100C	137	127	140	174	134
FLIP 90-111C	137	131	140	171	136
FLIP 91-8C	137	126	136	172	133
FLIP 91-9C	131	126	139	171	132
FLIP 91-10C	135	132	142	172	136
FLIP 91-14C	114	130	141	172	128
FLIP 91-18C	141	125	140	175	136
FLIP 91-19C	139	128	139	177	135
FLIP 91-23C	120	129	140	172	130
FLIP 91-26C	125	126	139	171	130
FLIP 91-29C	138	132	140	171	137
FLIP 91-30C	139	131	139	171	136
FLIP 91-33C	125	128	140	172	131
FLIP 91-41C	138	129	140	170	135
FLIP 91-45C	140	129	140	172	136
FLIP 91-48C	137	130	140	172	136
FLIP 91-145C	120	134	142	171	132
FLIP 91-148C	139	126	140	172	135
FLIP 91-154C	135	130	140	170	135
FLIP 91-155C	136	132	140	170	136
FLIP 91-156C	140	128	139	172	136
FLIP 91-157C	136	129	140	170	135
FLIP 91-161C	139	126	139	172	135
FLIP 91-163C	116	126	140	171	127
FLIP 91-166C	131	129	141	172	133

Cont'd. ...

Table 3.8.3. Cont'd. ...

Entry name	Ethiopia Debre Zeit	India Durgapura	India New Delhi	Syria Tel Hadya	(1) **Overall mean**
FLIP 91-170C	139	130	141	174	137
FLIP 91-171C	138	129	140	173	136
FLIP 91-173C	116	127	141	171	128
FLIP 91-178C	128	127	142	175	132
FLIP 91-179C	138	132	139	175	136
FLIP 91-183C	125	130	142	173	132
FLIP 91-184C	135	125	139	175	133
FLIP 91-189C	139	129	139	172	136
FLIP 91-190C	144	126	141	173	137
FLIP 91-191C	138	131	140	172	136
FLIP 91-196C	135	128	140	174	134
FLIP 91-199C	139	129	140	173	136
FLIP 91-203C	119	128	141	170	129
FLIP 91-206C	133	126	139	170	133
FLIP 91-210C	137	127	140	172	135
FLIP 91-216C	140	130	136	174	135
FLIP 82-150C	138	126	139	171	134
ILC 482	125	132	138	171	131
Local check	106	130	142	176	
Location mean	**133**	**128**	**140**	**172**	
S.E. Of Mean	2.09	0.70	1.12	0.90	
LSD at .05	5.98	1.99	NS	2.59	
C.V. %	2.13	0.77	1.13	0.74	

(1) Tel Hadya in Syria being not in southerly latitudes was excluded from overall mean.

Table 3.8.4. Adjusted plant height (cm) of entries at different locations in the CISN-SL1 during 1992/93.

Entry name	Ethiopia	India			Syria	Overall mean
	Debre Zeit	Almora	Durgapura	New Delhi	Tel Hadya	
FLIP 90-56C	56	48	75	64	42	61
FLIP 90-84C	55	55	61	68	37	60
FLIP 90-85C	47	43	54	71	33	54
FLIP 90-94C	40	48	59	72	34	55
FLIP 90-99C	47	53	50	64	35	54
FLIP 90-100C	53	49	50	63	35	54
FLIP 90-111C	49	45	66	69	33	57
FLIP 91-8C	52	45	60	71	37	57
FLIP 91-9C	49	40	58	63	38	52
FLIP 91-10C	45	48	60	64	37	54
FLIP 91-14C	51	46	64	68	34	57
FLIP 91-18C	42	45	67	75	37	57
FLIP 91-19C	63	53	78	75	37	67
FLIP 91-23C	44	52	54	65	38	54
FLIP 91-26C	42	39	49	62	28	48
FLIP 91-29C	45	52	72	59	36	57
FLIP 91-30C	47	45	47	64	33	51
FLIP 91-33C	43	35	62	64	32	51
FLIP 91-41C	42	32	49	62	29	46
FLIP 91-45C	47	48	46	70	33	53
FLIP 91-48C	45	56	54	55	34	52
FLIP 91-145C	48	60	75	72	32	64
FLIP 91-148C	62	44	67	57	45	57
FLIP 91-154C	52	45	63	62	36	56
FLIP 91-155C	53	45	79	65	39	60
FLIP 91-156C	55	53	58	65	39	58
FLIP 91-157C	48	60	59	70	40	59
FLIP 91-161C	57	60	64	50	42	58
FLIP 91-163C	52	40	56	74	36	55
FLIP 91-166C	55	55	71	70	42	63

Cont'd. ...

Table 3.8.4. Cont'd. ...

Entry name	Ethiopia	India			Syria	(1)
	Debre Zeit	Almora	Durgapura	New Delhi	Tel Hadya	**Overall mean**
FLIP 91-170C	57	50	74	78	43	65
FLIP 91-171C	58	49	61	71	41	60
FLIP 91-173C	42	42	69	73	31	56
FLIP 91-178C	48	50	65	77	33	60
FLIP 91-179C	62	60	86	70	41	70
FLIP 91-183C	41	54	51	58	34	51
FLIP 91-184C	49	54	56	70	33	57
FLIP 91-189C	54	54	60	65	36	58
FLIP 91-190C	49	38	58	79	39	56
FLIP 91-191C	45	45	49	60	26	50
FLIP 91-196C	50	42	52	59	31	51
FLIP 91-199C	49	28	60	65	34	50
FLIP 91-203C	41	39	51	54	34	46
FLIP 91-206C	41	55	66	67	37	57
FLIP 91-210C	59	60	56	70	38	61
FLIP 91-216C	49	50	61	66	33	57
FLIP 82-150C	51	45	61	60	33	54
ILC 482	43	46	37	70	28	49
Local check	39	46	45	55	43	
Location mean	**49**	**48**	**60**	**66**	**36**	
S.E. Of Mean	2.52	One	1.82	One	1.75	
LSD at .05	7.17	rep	5.21	rep	5.02	
C.V. %	7.27		4.28		6.93	

(1) Tel Hadya in Syria being not in southerly latitudes was excluded from overall mean.

Table 3.8.5. Adjusted 100-seed weight (g) of entries at different locations in the CISN-SL1 during 1992/93.

Entry name	Ethiopia Debre Zeit	India New Delhi	Syria Tel Hadya	**Overall mean**
FLIP 90-56C	39	30	32	35
FLIP 90-84C	37	29	31	33
FLIP 90-85C	35	31	30	33
FLIP 90-94C	37	24	36	31
FLIP 90-99C	36	24	29	30
FLIP 90-100C	39	31	33	35
FLIP 90-111C	35	29	31	32
FLIP 91-8C	38	25	33	31
FLIP 91-9C	36	27	33	31
FLIP 91-10C	39	27	34	33
FLIP 91-14C	34	29	33	32
FLIP 91-18C	37	30	39	34
FLIP 91-19C	41	30	38	36
FLIP 91-23C	36	24	32	30
FLIP 91-26C	32	27	30	29
FLIP 91-29C	35	20	32	28
FLIP 91-30C	36	31	31	33
FLIP 91-33C	37	33	35	35
FLIP 91-41C	35	29	32	32
FLIP 91-45C	35	27	35	31
FLIP 91-48C	38	33	33	36
FLIP 91-145C	32	30	29	31
FLIP 91-148C	35	25	29	30
FLIP 91-154C	35	30	31	32
FLIP 91-155C	41	28	35	35
FLIP 91-156C	39	18	34	29
FLIP 91-157C	43	27	35	35
FLIP 91-161C	29	23	29	26
FLIP 91-163C	34	34	34	34
FLIP 91-166C	37	30	32	34

Cont'd. ...

Table 3.8.5. Cont'd. ...

Entry name	Ethiopia Debre Zeit	India New Delhi	Syria Tel Hadya	(1) **Overall mean**
FLIP 91-170C	38	32	37	35
FLIP 91-171C	36	28	37	32
FLIP 91-173C	37	39	37	38
FLIP 91-178C	41	29	40	35
FLIP 91-179C	36	32	32	34
FLIP 91-183C	37	28	34	33
FLIP 91-184C	36	23	30	29
FLIP 91-189C	33	29	31	31
FLIP 91-190C	35	28	31	31
FLIP 91-191C	34	30	28	32
FLIP 91-196C	37	26	34	32
FLIP 91-199C	32	25	29	29
FLIP 91-203C	37	32	36	34
FLIP 91-206C	35	29	34	32
FLIP 91-210C	32	31	29	31
FLIP 91-216C	37	25	32	31
FLIP 82-150C	31	25	28	28
ILC 482	31	28	30	29
Local check	13	20	28	
Location mean	**35**	**28**	**33**	
S.E. Of Mean	1.41	1.65	1.37	
LSD at .05	4.00	4.73	3.90	
C.V. %	5.62	8.31	5.95	

(1) Tel Hadya in Syria being not in southerly latitudes was excluded from overall mean.

Table 3.8.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-SL1 during 1992/93.

Entry name	Ethiopia		India				Syria		Overall mean	
	Debre Zeit		Durgapura		New Delhi		Tel Hadya			
	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-56C	496	42	53	44	131	48	1398	38	227	47
FLIP 90-84C	854	27	84	33	408	41	1463	33	449	34
FLIP 90-85C	838	28	99	26	462	36	1944	6	466	32
FLIP 90-94C	1746	6	167	12	469	34	2099	2	794	9
FLIP 90-99C	396	45	63	39	509	31	1591	26	323	45
FLIP 90-100C	1071	21	111	22	732	19	1859	10	638	19
FLIP 90-111C	788	30	323	4	949	10	1697	19	687	15
FLIP 91-8C	483	44	89	32	661	25	1311	41	411	41
FLIP 91-9C	392	46	90	30	867	13	1991	5	450	33
FLIP 91-10C	1238	14	161	13	411	39	2203	1	603	23
FLIP 91-14C	1904	4	223	7	1061	7	1004	48	1063	1
FLIP 91-18C	196	49	75	36	843	15	1663	21	371	42
FLIP 91-19C	792	29	45	47	435	38	815	49	424	38
FLIP 91-23C	983	25	116	21	183	47	1485	32	428	37
FLIP 91-26C	2213	1	159	14	238	45	1599	24	870	6
FLIP 91-29C	558	39	196	9	705	20	1993	4	487	30
FLIP 91-30C	1050	23	155	15	1143	4	1809	13	783	11
FLIP 91-33C	1158	18	155	16	771	18	1886	8	695	14
FLIP 91-41C	1100	20	57	41	783	17	1732	16	647	17
FLIP 91-45C	1175	15	105	24	501	32	1613	22	594	24
FLIP 91-48C	646	36	100	25	587	28	1879	9	444	35
FLIP 91-145C	1263	13	224	6	895	11	1374	39	794	10
FLIP 91-148C	538	40	53	45	367	42	1451	36	319	46
FLIP 91-154C	750	32	150	17	643	26	1764	15	514	27
FLIP 91-155C	1008	24	266	5	882	12	1715	18	719	12
FLIP 91-156C	863	26	127	20	326	44	1281	44	438	36
FLIP 91-157C	708	34	99	27	700	21	1823	12	502	29
FLIP 91-161C	1050	22	106	23	664	24	1912	7	607	22
FLIP 91-163C	1754	5	177	10	1173	3	1307	43	1035	2
FLIP 91-166C	1358	10	96	28	1028	8	1586	27	827	8

Cont'd. ...

Table 3.8.6 Cont'd. ...

Entry name	Ethiopia Debre Zeit		India Durgapura		India New Delhi		Syria Tel Hadya		(1) Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-170C	583	38	64	38	465	35	1267	45	371	43
FLIP 91-171C	496	43	61	40	854	14	1461	34	470	31
FLIP 91-173C	1325	11	399	2	965	9	1488	31	896	4
FLIP 91-178C	2208	2	175	11	493	33	1426	37	959	3
FLIP 91-179C	508	41	56	42	687	23	1456	35	417	40
FLIP 91-183C	1542	8	91	29	347	43	1567	28	660	16
FLIP 91-184C	1646	7	64	37	408	40	1341	40	706	13
FLIP 91-189C	746	33	33	49	228	46	1683	20	335	44
FLIP 91-190C	1325	12	51	46	453	37	1857	11	610	21
FLIP 91-191C	1158	17	83	34	692	22	1308	42	644	18
FLIP 91-196C	1167	16	138	19	603	27	1124	47	636	20
FLIP 91-199C	642	37	78	35	804	16	1765	14	508	28
FLIP 91-203C	771	31	341	3	1434	2	2040	3	849	7
FLIP 91-206C	292	48	217	8	1084	5	1601	23	531	26
FLIP 91-210C	1471	9	143	18	1073	6	1244	46	896	5
FLIP 91-216C	371	47	43	48	28	49	1492	30	147	48
FLIP 82-150C	1129	19	54	43	585	29	1732	17	589	25
ILC 482	658	35	90	31	521	30	1596	25	423	39
Local check	1938	3	1342	1	1512	1	1499	29		
Location mean	**1007**		**152**		**669**		**1596**			
S.E. Of Mean	363.73		70.31		236.39		214.90			
LSD at .05	1033.98		201.64		677.92		616.30			
C.V. %	51.08		65.43		50.00		19.04			
Efficiency	-		101		162		108			
Entry > L. check	0		0		0		1			

(1) Tel Hadya in Syria being not in southerly latitudes was excluded from overall mean.

3.9. CHICKPEA INTERNATIONAL SCREENING NURSERY - SOUTHERLY LATITUDES - 2 (CISN-SL2)

The CISN-SL2 comprised 46 test entries and two checks, namely FLIP 82-150C and ILC 482, which were supplied and one local check to be supplied by the cooperator.

Methods and Management

The entries were planted in single row plots of 4 m length. A simple 7x7 lattice design with 2 replications was followed. The spacing between and within rows were 45- and 10 cm respectively. Eighteen sets of nursery were distributed to cooperators in 10 countries and the results were received from 8 locations from 6 countries. The agronomic details received from the cooperators are presented in Table 3.9.1.

Results and Discussion

The entry mean over locations range from 66 to 89 days for time to flowering (Table 3.9.2.), 126 to 140 days for time to maturity (Table 3.9.3.), 35 to 53 cm for plant height (Table 3.9.4.) and 23 to 41 g per for 100-seed weight (Table 3.9.5.). The five best entries across locations included FLIP 91-129C, FLIP 91-118C, FLIP 91-100C, FLIP 91-127C and FLIP 91-106C with respective seed yields of 2258, 1977, 1936, 1867 and 1700 kg/ha (Table 3.9.6).

Table 3.9.1. Agronomic data for different locations in the CISN-SL2 during 1992/93.

Country/ Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N/P/K	Irri-gation	Insecticide/ Herbicide/ Fungicide	Local Check
Chile						
Graneros	05.11.92	30.04.93	-/-/-	4	Trifluraline	Gussos-SNA
Ethiopia						
Debre Zeit	02.09.93	20.01.94	-/-/-	-	-	DZ-10-4
Ghinchi	02.09.93	20.01.94	-/-/-	-	-	Mariye
India						
Almora	28.11.92	NA	20/40/-	-	-	VL 86
New Delhi	20.11.92	30.04.93	20/-/-	1	Endosulphane	Pusa 267
Pakistan						
Dokri	30.11.93	20.05.94	35/59/-	-	Thiodan	Da 92
Sudan						
Hudeiba	10.12.92	25.03.93	43/-/-	9	-	Shendi
Syria						
Tel Hadya	10.12.92	21.06.93	-/50/-	-	Kerb + Igran	Ghab 3

Table 3.9.2. Adjusted time to flowering (days) of entries at different locations in the CISN-SL2 during 1992/93.

Entry name	Pedigree	Origin	Chile	Ethiopia	
			Graneros	Debre Zeit	Ghinchi
FLIP 90-125C	X88TH346/(ICC 14212 X FLIP 82-150C) X ICC 14212	ICARDA/ICRISAT	45	48	58
FLIP 90-126C	X88TH346/(ICC 14212 X FLIP 82-150C) X ICC 14212	ICARDA/ICRISAT	43	51	60
FLIP 90-131C	X87TH216/(ILC 4296 X FLIP 84-93C	ICARDA/ICRISAT	45	45	71
FLIP 90-159C	X86TH231/ILC 4296 X FLIP 81-293C	ICARDA/ICRISAT	43	47	58
FLIP 90-161C	X86TH333/(ILC 3398 X FLIP 82-191C) X ILC 3398	ICARDA/ICRISAT	48	49	55
FLIP 90-165C	X86TH333/(ILC 3398 X FLIP 82-191C) X ILC 3398	ICARDA/ICRISAT	45	51	60
FLIP 90-166C	X86TH333/(ILC 3398 X FLIP 82-191C) X ILC 3398	ICARDA/ICRISAT	44	46	64
FLIP 90-168C	X87TH214/ILC 4296 X FLIP 83-72C	ICARDA/ICRISAT	41	48	64
FLIP 91-65C	X87TH9/FLIP 81-293C X FLIP 84-79C	ICARDA/ICRISAT	47	56	84
FLIP 91-66C	X87TH79/S 85091 X FLIP 82-64C	ICARDA/ICRISAT	47	57	48
FLIP 91-67C	X87TH34/FLIP 83-15C X FLIP 84-109C	ICARDA/ICRISAT	41	51	60
FLIP 91-68C	X87TH50/ILC 4090 X FLIP 84-81C	ICARDA/ICRISAT	46	57	64
FLIP 91-69C	X87TH96/FLIP 84-164C X ICC 14218	ICARDA/ICRISAT	44	45	62
FLIP 91-70C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	39	49	54
FLIP 91-71C	X87TH216/ILC 4296 X FLIP 84-93C	ICARDA/ICRISAT	41	43	56
FLIP 91-75C	X88TH348/(ICC 14212 X FLIP 83-98C) X ICC 14212	ICARDA/ICRISAT	41	46	70
FLIP 91-76C	X89TH6/ILC 1254 X ILC 482	ICARDA/ICRISAT	41	34	55
FLIP 91-77C	X89TH7/ILC 1254 X FLIP 82-150C	ICARDA/ICRISAT	43	41	58
FLIP 91-78C	X89TH7/ILC 1254 X FLIP 82-150C	ICARDA/ICRISAT	39	43	55
FLIP 91-79C	X89TH7/ILC 1254 X FLIP 82-150C	ICARDA/ICRISAT	43	39	60
FLIP 91-80C	X89TH8/ILC 1254 X FLIP 82-47C	ICARDA/ICRISAT	40	45	58
FLIP 91-83C	X89TH10/ILC 1254 X FLIP 84-182C	ICARDA/ICRISAT	41	46	61
FLIP 91-88C	X89TH26/ILC 3777 X ILC 482	ICARDA/ICRISAT	40	40	54
FLIP 91-89C	X89TH27/ILC 3777 X FLIP 82-150C	ICARDA/ICRISAT	44	44	56
FLIP 91-90C	X89TH28/ILC 3777 X FLIP 83-47C	ICARDA/ICRISAT	42	38	69
FLIP 91-95C	X88TH17/ICC 14218 X FLIP 83-77C	ICARDA/ICRISAT	43	46	58
FLIP 91-100C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	42	48	59
FLIP 91-101C	X88TH20/ICC 14218 X FLIP 84-102C	ICARDA/ICRISAT	44	49	64
FLIP 91-102C	X88TH207/ILC 3279 X FLIP 85-16C	ICARDA/ICRISAT	43	52	65
FLIP 91-103C	X88TH215/FLIP 85-122C X S 85036	ICARDA/ICRISAT	47	60	67

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry name	Pedigree	Origin	Chile	Ethiopia	
			Graneros	Debre Zeit	Ghinchi
FLIP 91-106C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	39	46	56
FLIP 91-110C	X88TH41/S 86301 X FLIP 81-293C	ICARDA/ICRISAT	54	64	87
FLIP 91-114C	X88TH195/FLIP 85-122C X ILC 148	ICARDA/ICRISAT	45	48	69
FLIP 91-115C	X88TH196/FLIP 85-122C X ILC 2593	ICARDA/ICRISAT	46	52	65
FLIP 91-118C	X89TH522/ILC 2876 X ICCV-2	ICARDA/ICRISAT	39	41	57
FLIP 91-118C	X89TH522/ILC 2876 X ICCV-2	ICARDA/ICRISAT	39	38	70
FLIP 91-120C	X89TH522/ILC 2876 C ICCV-2	ICARDA/ICRISAT	38	36	53
FLIP 91-121C	X89TH522/ILC 2876 X ICCV-2	ICARDA/ICRISAT	38	46	68
FLIP 91-122C	X89TH522/ILC 2876 X ICCV-2	ICARDA/ICRISAT	39	36	54
FLIP 91-124C	X89TH523/ILC 2876 X ICCV-3	ICARDA/ICRISAT	39	36	59
FLIP 91-125C	X89TH523/ILC 2876 X ICCV-3	ICARDA/ICRISAT	39	39	68
FLIP 91-126C	X89TH523/ILC 2876 X ICCV-3	ICARDA/ICRISAT	38	39	56
FLIP 91-127C	X89TH527/ILC 2876 X ICCV-32	ICARDA/ICRISAT	39	47	57
FLIP 91-128C	X89TH527/ILC 2876 X ICCV-32	ICARDA/ICRISAT	40	47	50
FLIP 91-129C	X89TH528/ILC 2876 X ICCV-34	ICARDA/ICRISAT	40	45	61
FLIP 91-174C	X87TH189/ICC 14212 X FLIP 84-78C	ICARDA/ICRISAT	46	53	76
FLIP 82-150C	X79TH101/ILC 523 X ILC 183 (Improved check)	ICARDA/ICRISAT	44	60	85
ILC 482	(Long term check)	Turkey	42	55	69
Local check		-	53	43	55
Location mean			**43**	**47**	**62**
S.E. Of Mean			2.18	2.54	4.99
LSD at .05			6.24	7.28	14.30
C.V. %			7.20	7.71	11.34

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry name	India		Pakistan	Sudan	Syria	Overall mean
	Almora	New Delhi	Dokri	Hudeiba	Tel Hadya	
FLIP 90-125C	120	82	81	63	115	75
FLIP 90-126C	132	90	86	62	121	80
FLIP 90-131C	131	90	83	56	124	79
FLIP 90-159C	130	92	83	57	125	78
FLIP 90-161C	130	89	87	77	127	81
FLIP 90-165C	127	89	86	45	126	76
FLIP 90-166C	131	83	85	46	126	76
FLIP 90-168C	132	82	85	48	123	76
FLIP 91-65C	130	90	90	86	128	89
FLIP 91-66C	132	82	91	72	127	80
FLIP 91-67C	127	78	78	66	125	77
FLIP 91-68C	129	97	84	85	125	86
FLIP 91-69C	110	83	85	45	120	72
FLIP 91-70C	134	92	86	60	128	79
FLIP 91-71C	111	88	84	45	121	71
FLIP 91-75C	109	82	81	46	123	72
FLIP 91-76C	110	83	81	43	116	68
FLIP 91-77C	111	80	85	44	120	70
FLIP 91-78C	119	82	88	46	121	72
FLIP 91-79C	111	92	89	48	118	73
FLIP 91-80C	119	92	84	39	122	73
FLIP 91-83C	132	89	84	45	125	76
FLIP 91-88C	109	81	86	46	121	69
FLIP 91-89C	112	97	85	48	119	74
FLIP 91-90C	111	82	81	44	119	71
FLIP 91-95C	131	90	91	46	125	77
FLIP 91-100C	126	83	86	47	124	75
FLIP 91-101C	134	90	84	45	126	78
FLIP 91-102C	131	92	85	68	124	82
FLIP 91-103C	131	82	89	64	126	82

Cont'd. ...

Table 3.9.2. Cont'd. ...

Entry name	India		Pakistan	Sudan	Syria	
	Almora	New Delhi	Dokri	Hudeiba	Tel Hadya	**Overall mean**
FLIP 91-106C	131	89	82	45	124	75
FLIP 91-110C	130	82	89	81	128	89
FLIP 91-114C	112	81	87	44	124	73
FLIP 91-115C	136	90	90	67	128	83
FLIP 91-118C	113	80	88	46	124	71
FLIP 91-118C	110	91	85	46	117	73
FLIP 91-120C	111	80	75	40	114	66
FLIP 91-121C	125	82	83	43	124	78
FLIP 91-122C	111	79	75	55	114	67
FLIP 91-124C	113	93	86	61	117	73
FLIP 91-125C	113	90	72	40	116	70
FLIP 91-126C	113	82	86	41	116	69
FLIP 91-127C	113	82	83	39	121	70
FLIP 91-128C	120	83	82	39	123	70
FLIP 91-129C	120	90	83	48	122	74
FLIP 91-174C	132	90	88	66	124	84
FLIP 82-150C	132	83	92	71	127	87
ILC 482	127	79	86	72	128	81
Local check	127	79	82	44	131	
Location mean	**125**	**86**	**85**	**53**	**123**	
S.E. Of Mean	One	One	2.75	One	1.28	
LSD at .05	rep	rep	7.88	rep	3.66	
C.V. %			4.59		1.47	

(1) Graneros in Chile and Tel Hadya in Syria being not in southerly latitudes were excluded from overall mean.

Table 3.9.3. Adjusted time to maturity (days) of entries at different locations in the CISN-SL2 during 1992/93.

Entry name	Chile	Ethiopia		India	Pakistan	Syria	Overall mean
	Graneros	Debre Zeit	Ghinchi	New Delhi	Dokri	Tel Hadya	
FLIP 90-125C	146	110	140	137	138	177	131
FLIP 90-126C	155	114	136	137	139	170	132
FLIP 90-131C	149	111	145	138	142	176	134
FLIP 90-159C	150	122	140	137	141	170	135
FLIP 90-161C	155	108	140	137	143	174	132
FLIP 90-165C	149	102	140	136	143	170	130
FLIP 90-166C	145	103	143	139	142	174	131
FLIP 90-168C	146	105	143	135	141	176	131
FLIP 91-65C	158	133	145	138	145	172	140
FLIP 91-66C	150	114	143	135	144	173	134
FLIP 91-67C	150	125	140	138	139	170	135
FLIP 91-68C	145	123	143	141	139	175	136
FLIP 91-69C	145	103	143	137	140	170	130
FLIP 91-70C	150	112	140	140	141	175	133
FLIP 91-71C	140	101	136	136	141	171	128
FLIP 91-75C	140	104	136	139	139	171	129
FLIP 91-76C	145	103	137	135	137	167	128
FLIP 91-77C	140	100	132	137	141	169	127
FLIP 91-78C	140	106	140	133	142	172	130
FLIP 91-79C	155	108	140	136	143	174	132
FLIP 91-80C	150	105	136	136	141	171	130
FLIP 91-83C	140	100	140	135	138	170	128
FLIP 91-88C	140	101	132	138	138	171	127
FLIP 91-89C	145	99	136	137	141	170	128
FLIP 91-90C	140	103	132	135	140	169	128
FLIP 91-95C	155	108	140	137	140	171	131
FLIP 91-100C	150	106	140	138	140	170	131
FLIP 91-101C	150	108	143	137	142	178	132
FLIP 91-102C	146	131	143	135	141	172	137
FLIP 91-103C	145	115	143	137	144	171	135

Cont'd. ...

Table 3.9.3. Cont'd. ...

Entry name	Chile	Ethiopia		India	Pakistan	Syria	(1)
	Graneros	Debre Zeit	Ghinchi	New Delhi	Dokri	Tel Hadya	**Overall mean**
FLIP 91-106C	150	105	140	139	140	173	131
FLIP 91-110C	145	135	139	134	143	173	138
FLIP 91-114C	140	105	136	137	139	175	129
FLIP 91-115C	159	122	143	140	144	170	137
FLIP 91-118C	145	106	140	139	141	172	132
FLIP 91-118C	140	104	136	138	139	169	129
FLIP 91-120C	140	105	132	136	138	167	128
FLIP 91-121C	140	106	132	133	141	170	128
FLIP 91-122C	140	99	132	136	138	167	126
FLIP 91-124C	145	99	136	136	143	168	128
FLIP 91-125C	140	101	132	136	139	169	127
FLIP 91-126C	140	105	136	136	141	169	129
FLIP 91-127C	140	108	136	139	141	171	131
FLIP 91-128C	141	103	132	136	141	170	128
FLIP 91-129C	140	103	140	139	138	170	130
FLIP 91-174C	155	122	145	140	145	173	138
FLIP 82-150C	159	133	145	136	139	172	138
ILC 482	155	125	143	136	140	171	136
Local check	155	104	136	140	144	176	
Location mean	**147**	**110**	**139**	**137**	**141**	**171**	
S.E. Of Mean	3.56	3.27	2.43	1.17	1.41	1.18	
LSD at .05	10.21	9.38	6.91	3.36	4.04	3.35	
C.V. %	3.43	4.13	2.48	1.21	1.42	0.97	

(1) Graneros in Chile and Tel Hadya in Syria being not in southerly latitudes were excluded from overall mean.

Table 3.9.4. Adjusted plant height (cm) of entries at different locations in the CISN-SL2 during 1992/93.

Entry name	Chile	Ethiopia		India	Pakistan	Syria	Overall mean
	Graneros	Debre Zeit	Ghinchi	New Delhi	Dokri	Tel Hadya	
FLIP 90-125C	33	37	31	40	45	30	38
FLIP 90-126C	43	41	35	40	50	33	41
FLIP 90-131C	58	44	39	44	41	37	42
FLIP 90-159C	48	43	47	49	73	39	53
FLIP 90-161C	53	48	35	48	62	33	48
FLIP 90-165C	48	45	41	48	44	36	45
FLIP 90-166C	58	46	47	39	45	38	44
FLIP 90-168C	45	39	34	40	45	33	40
FLIP 91-65C	53	54	50	32	56	38	48
FLIP 91-66C	49	40	44	40	42	34	41
FLIP 91-67C	33	39	33	36	40	27	37
FLIP 91-68C	48	39	41	50	55	38	46
FLIP 91-69C	40	32	34	40	48	28	39
FLIP 91-70C	48	41	42	40	44	36	42
FLIP 91-71C	38	40	31	36	55	29	40
FLIP 91-75C	43	42	34	40	39	33	39
FLIP 91-76C	40	34	37	39	41	30	37
FLIP 91-77C	40	37	37	30	47	30	37
FLIP 91-78C	53	39	37	50	49	36	44
FLIP 91-79C	40	36	48	50	47	31	45
FLIP 91-80C	40	40	38	45	51	30	44
FLIP 91-83C	43	39	31	35	62	33	42
FLIP 91-88C	45	34	34	40	39	32	37
FLIP 91-89C	38	39	32	40	46	30	39
FLIP 91-90C	50	39	34	30	39	33	35
FLIP 91-95C	43	38	38	35	47	36	39
FLIP 91-100C	48	40	38	39	43	33	40
FLIP 91-101C	48	41	39	34	49	34	41
FLIP 91-102C	43	48	48	37	49	35	45
FLIP 91-103C	60	55	49	50	46	38	50

Cont'd. ...

Table 3.9.4. Cont'd. ...

Entry name	Chile Graneros	Ethiopia Debre Zeit	Ethiopia Ghinchi	India New Delhi	Pakistan Dokri	Syria Tel Hadya	(1) **Overall mean**
FLIP 91-106C	38	42	39	50	47	30	44
FLIP 91-110C	53	55	40	50	50	38	48
FLIP 91-114C	50	44	34	39	50	32	42
FLIP 91-115C	55	47	50	50	55	37	50
FLIP 91-118C	40	41	47	36	62	31	47
FLIP 91-118C	40	38	44	42	51	29	44
FLIP 91-120C	43	39	31	49	52	29	43
FLIP 91-121C	35	38	44	39	52	33	43
FLIP 91-122C	38	41	32	35	47	31	39
FLIP 91-124C	35	30	33	39	39	27	35
FLIP 91-125C	35	33	37	60	38	31	42
FLIP 91-126C	43	37	30	50	57	26	44
FLIP 91-127C	45	38	35	45	51	29	42
FLIP 91-128C	45	42	34	50	54	31	45
FLIP 91-129C	40	35	43	39	39	32	39
FLIP 91-174C	50	39	49	40	49	39	44
FLIP 82-150C	53	55	48	44	62	35	52
ILC 482	45	43	43	40	48	30	43
Local check	48	43	41	45	47	43	
Location mean	**45**	**41**	**39**	**42**	**49**	**33**	
S.E. Of Mean	3.16	2.56	3.55	One	6.45	1.53	
LSD at .05	9.00	7.34	10.09	rep	18.5	4.40	
C.V. %	10.03	8.84	12.96		18.73	6.58	

(1) Graneros in Chile and Tel Hadya in Syria being not in southerly latitudes were excluded from overall mean.

Table 3.9.5. Adjusted 100-seed weight (g) of entries at different locations in the CISN-SL2 during 1992/93.

Entry name	Ethiopia		India	Pakistan	Sudan	Syria	Overall mean
	Debre Zeit	Ghinchi	New Delhi	Dokri	Hudeiba	Tel Hadya	
FLIP 90-125C	27	26	27	26	28	31	27
FLIP 90-126C	34	35	29	32	23	36	32
FLIP 90-131C	40	36	30	36	19	42	35
FLIP 90-159C	43	42	23	33	35	41	35
FLIP 90-161C	46	42	28	37	32	38	38
FLIP 90-165C	40	39	36	35	33	37	38
FLIP 90-166C	40	40	35	25	30	38	35
FLIP 90-168C	36	40	28	30	30	39	34
FLIP 91-65C	33	31	29	38	-	31	33
FLIP 91-66C	37	37	19	30	-	37	31
FLIP 91-67C	35	28	31	32	27	29	32
FLIP 91-68C	40	36	28	32	-	39	34
FLIP 91-69C	39	37	30	35	33	37	35
FLIP 91-70C	36	34	27	31	26	37	32
FLIP 91-71C	39	45	36	36	34	40	39
FLIP 91-75C	35	29	25	37	27	34	31
FLIP 91-76C	28	31	27	35	26	34	31
FLIP 91-77C	28	27	28	34	21	31	29
FLIP 91-78C	41	35	26	33	31	40	34
FLIP 91-79C	35	41	31	40	32	42	37
FLIP 91-80C	33	34	21	36	24	37	31
FLIP 91-83C	29	37	30	32	32	35	32
FLIP 91-88C	35	39	31	28	32	38	33
FLIP 91-89C	30	29	31	30	24	33	30
FLIP 91-90C	38	42	35	32	28	38	37
FLIP 91-95C	46	43	45	30	33	43	41
FLIP 91-100C	31	31	27	32	26	31	30
FLIP 91-101C	41	33	30	35	28	35	34
FLIP 91-102C	32	30	31	33	21	29	31
FLIP 91-103C	31	28	27	35	27	33	30

Cont'd. ...

Table 3.9.5 Cont'd. ...

Entry name	Ethiopia		India	Pakistan	Sudan	Syria	(1)
	Debre Zeit	Ghinchi	New Delhi	Dokri	Hudeiba	Tel Hadya	**Overall mean**
FLIP 91-106C	34	33	22	30	23	32	29
FLIP 91-110C	34	33	33	29	26	34	32
FLIP 91-114C	38	38	37	33	32	41	37
FLIP 91-115C	40	35	33	33	29	38	35
FLIP 91-118C	28	24	25	35	22	27	28
FLIP 91-118C	26	29	19	29	18	26	26
FLIP 91-120C	34	30	29	33	24	34	31
FLIP 91-121C	30	29	31	32	24	28	30
FLIP 91-122C	30	30	28	33	26	30	30
FLIP 91-124C	31	29	29	34	28	30	31
FLIP 91-125C	37	40	21	32	32	38	32
FLIP 91-126C	31	31	26	32	26	32	30
FLIP 91-127C	24	21	23	36	17	23	26
FLIP 91-128C	23	24	15	28	17	26	23
FLIP 91-129C	22	23	23	31	20	25	25
FLIP 91-174C	45	43	39	37	30	44	41
FLIP 82-150C	31	28	31	41	22	29	33
ILC 482	33	29	20	32	-	29	28
Local check	13	13	19	32	16	28	
Location mean	**34**	**33**	**28**	**33**	**27**	**34**	
S.E. Of Mean	1.61	1.44	1.77	2.46	One	0.94	
LSD at .05	4.62	4.14	5.04	NS	rep	2.69	
C.V. %	6.73	6.16	8.98	10.59		3.86	

(1) Tel Hadya in Syria being not in southerly latitudes and Hudeiba with missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.9.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-SL2 during 1992/93.

Entry name	Chile		Ethiopia				India		Pakistan		Sudan		Syria		Overall mean	
	Graneros		Debre Zeit		Ghinchi		New Delhi		Dokri		Hudeiba		Tel Hadya			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 90-125C	2970	27	3129	6	2709	10	456	13	1063	11	1008	26	2923	3	1673	6
FLIP 90-126C	3939	9	3038	8	3113	6	246	33	485	42	969	27	3148	2	1570	11
FLIP 90-131C	3443	18	2754	14	895	40	209	39	970	13	392	43	1727	44	1044	29
FLIP 90-159C	3482	16	1117	42	1274	31	792	6	427	45	1386	18	2036	34	999	34
FLIP 90-161C	4902	3	2921	12	491	46	264	32	933	15	892	30	1653	45	1100	27
FLIP 90-165C	3822	11	1992	27	1366	28	199	41	682	28	775	34	1883	40	1003	32
FLIP 90-166C	2559	31	1496	35	1184	34	301	28	963	14	647	41	1912	39	918	37
FLIP 90-168C	3102	21	2229	21	887	41	297	30	802	24	789	33	2383	20	1001	33
FLIP 91-65C	4944	2	479	49	1599	20	234	37	817	22	14	47	2299	23	629	47
FLIP 91-66C	1696	47	1258	37	1386	27	238	36	1445	3	8	48	2150	31	867	41
FLIP 91-67C	2980	25	1788	28	2011	17	553	10	686	27	728	36	2210	26	1153	25
FLIP 91-68C	3446	17	613	48	2148	16	240	35	130	49	8	49	2728	6	628	48
FLIP 91-69C	1871	46	667	47	243	47	225	38	680	29	1417	16	1461	48	646	46
FLIP 91-70C	2971	26	1638	30	1783	19	115	49	849	19	714	37	1989	35	1020	30
FLIP 91-71C	2141	40	850	46	918	39	419	16	821	21	2072	7	2210	25	1016	31
FLIP 91-75C	2683	30	2946	10	1176	35	473	11	1306	5	2450	3	2711	7	1670	7
FLIP 91-76C	2354	36	892	45	1114	37	298	29	899	17	1508	11	2169	29	942	35
FLIP 91-77C	2382	34	2738	15	1441	26	432	15	480	43	1464	12	1838	42	1311	18
FLIP 91-78C	3012	24	1383	36	527	45	845	5	464	44	928	28	2691	9	829	42
FLIP 91-79C	2330	37	1121	41	1299	30	301	27	508	41	1214	22	2674	10	889	38
FLIP 91-80C	3950	8	2104	25	1471	23	161	45	1079	9	836	32	2130	33	1130	26
FLIP 91-83C	2145	39	1587	33	622	43	121	48	647	31	1436	14	1804	43	883	39
FLIP 91-88C	3627	14	2067	26	1191	33	788	7	1039	12	1325	20	2779	5	1282	20
FLIP 91-89C	2135	41	2588	17	1092	38	344	23	615	35	689	39	2479	15	1066	28
FLIP 91-90C	2527	33	1542	34	631	42	318	26	363	48	861	31	2502	13	743	44
FLIP 91-95C	2541	32	1158	40	1257	32	371	19	552	39	558	42	2569	12	779	43
FLIP 91-100C	2042	44	3850	1	2666	11	1089	2	646	32	1431	15	2311	22	1936	3
FLIP 91-101C	3035	23	2467	20	1461	24	362	21	1331	4	1322	21	1842	41	1389	14
FLIP 91-102C	3809	12	2179	23	4185	1	369	20	1259	6	206	45	3255	1	1640	9
FLIP 91-103C	4041	7	3154	5	1147	36	749	8	903	16	1022	24	1340	49	1395	13

Cont'd. ...

Table 3.9.6 Cont'd. ...

Entry name	Chile Graneros		Ethiopia Debre Zeit		Ethiopia Ghinchi		India New Delhi		Pakistan Dokri		Sudan Hudeiba		Syria Tel Hadya		(1) Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-106C	3610	15	2588	16	2622	13	194	42	789	25	2306	4	1920	38	1700	5
FLIP 91-110C	4550	5	1017	44	3222	5	241	34	1104	8	322	44	2389	19	1181	22
FLIP 91-114C	3087	22	2967	9	585	44	402	17	718	26	1944	8	2431	16	1323	16
FLIP 91-115C	3925	10	2929	11	1958	18	379	18	576	38	694	38	1924	37	1307	19
FLIP 91-118C	2128	42	3175	4	3332	3	896	4	824	20	1656	10	1579	46	1977	2
FLIP 91-118C	1980	45	2475	18	2214	15	338	24	636	33	908	29	2136	32	1314	17
FLIP 91-120C	1477	49	2217	22	1452	25	128	47	612	36	1372	19	2401	18	1156	24
FLIP 91-121C	3256	19	1633	31	2941	8	358	22	1150	7	2092	6	2901	4	1635	10
FLIP 91-122C	1672	48	2471	19	1579	21	463	12	662	30	2097	5	2412	17	1454	12
FLIP 91-124C	2698	29	1721	29	195	48	277	31	873	18	2831	1	2172	28	1179	23
FLIP 91-125C	2357	35	1071	43	117	49	171	43	417	46	1872	9	2169	30	730	45
FLIP 91-126C	2111	43	2883	13	1364	29	583	9	364	47	1439	13	1957	36	1327	15
FLIP 91-127C	2906	28	3608	2	3251	4	454	14	617	34	1403	17	2278	24	1867	4
FLIP 91-128C	2169	38	3571	3	2719	9	145	46	576	37	1214	23	2376	21	1645	8
FLIP 91-129C	3225	20	2167	24	3946	2	1069	3	1621	2	2486	2	2709	8	2258	1
FLIP 91-174C	4319	6	1225	38	1576	22	324	25	529	40	736	35	2499	14	878	40
FLIP 82-150C	5629	1	1596	32	2639	12	204	40	1063	10	664	40	2656	11	1233	21
ILC 482	4568	4	1200	39	2434	14	168	44	805	23	86	46	2178	27	939	36
Local check	3763	13	3100	7	3068	7	1619	1	1770	1	1017	25	1503	47		
Location mean	**3068**		**2068**		**1724**		**413**		**807**		**1147**		**2253**			
S.E. Of Mean	595.12		475.41		453.11		203.30		273.87		One		284.88			
LSD at .05	1706.72		1351.46		1299.45		583.04		785.41		rep		817.01			
C.V. %	27.44		32.50		37.16		69.67		47.98				17.88			
Efficiency	113		-		129		103		104				114			
Entry > L. check	1		0		0		0		0				21			

(1) Graneros in Chile and Tel Hadya in Syria being not in southerly latitudes were excluded from overall mean.

3.10. CHICKPEA INTERNATIONAL SCREENING NURSERY LATIN AMERICA (CISN-LA)

The Chickpea International Screening Nursery Latin American comprised 46 test entries and three checks, namely FLIP 85-5C, ILC 464, and one local check to be supplied by the cooperator.

Methods and Management

The entries were planted in single row plots of 4 m length. A simple lattice with 7x7 entries with 2 replications was followed. The spacing between and within rows were 45- and 10 cm, respectively. Twenty one sets of nursery were distributed to cooperators in 14 countries and the results were received from 6 locations from 6 countries. The agronomic details received from the cooperators are presented in Table 3.10.1.

Table 3.10.1. Agronomic data for different locations in the CISN-LA during 1992/93.

Country/ Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N/P/K	Irri-gation	Insecticide/ Herbicide/ Fungicide	Local Check
Argentina						
Cordoba	11.05.93	NA	-/-/-	-	-	S-156
Chile						
Chillan	29.07.93	15.01.94	-/90/-	-	-	California
Italy						
Tarquinia	24.01.93	16.08.93	-/40/-	-	-	Principe
Spain						
Badajoz	12.11.92	03.07.93	-/-/-	-	Terbutrine + Propizamide	Candil
Syria						
Tel Hadya	10.12.92	21.06.93	-/50/-	-	Kerb+Igran	Ghab 1
Turkey						
Haymana	01.04.93	25.07.93	30/60/-	-	-	Eser 87

Results and Discussion

The adjusted time to flowering, time to maturity, plant height, 100-seed weight, and seed yield are given in Tables 3.10.2, 3.10.3, 3.10.4, and 3.10.5 respectively. The entry means for time to flowering, time to maturity, plant height, 100-seed weight and seed yield ranged between 84 to 90 days, 165 to 176 days, 35 to 55 cm, 32 to 48 g, and 380 to 1771 kg/ha, respectively. The five heaviest yielding entries based on mean over locations included FLIP 90-18C, ILC 3377, FLIP 90-2C, FLIP 89-121C, and FLIP 85-15C, respectively (Table 3.10.6).

Table 3.10.2. Adjusted time to flowering (days) of entries at different locations in the CISN-LA during 1992/93.

Entry name	Pedigree	Origin	Argentina Cordoba	Chile Chillan
ILC 3377	-	Spain	61	100
ILC 3808	Pch 9	Morocco	61	100
FLIP 84-15C	X81TH199/ILC 202(WH) X ILC 3355	ICARDA/ICRISAT	61	97
FLIP 85-15C	X83TH19/FLIP 82-65C X FLIP 82-69C	ICARDA/ICRISAT	61	100
FLIP 89-4C	X85TH179/ILC 3683 X FLIP 83-15C	ICARDA/ICRISAT	61	100
FLIP 89-17C	X87TH216/ILC 4296 X FLIP 84-93C	ICARDA/ICRISAT	61	100
FLIP 89-20C	X86TH214/ILC 2319 X FLIP 81-54W	ICARDA/ICRISAT	61	98
FLIP 89-89C	X85TH178/ILC 3683 X FLIP 83-13C	ICARDA/ICRISAT	61	99
FLIP 89-116C	X85TH162/ILC 3488 X FLIP 83-13C	ICARDA/ICRISAT	61	101
FLIP 89-121C	X85TH230/ILC 3395 X FLIP 83-13C	ICARDA/ICRISAT	61	98
FLIP 90-2C	X86TH278/(ILC 1919 X FLIP 82-144C) X FLIP 84-18C	ICARDA/ICRISAT	61	100
FLIP 90-16C	X87TH166/ILC 1919 X FLIP 85-4C	ICARDA/ICRISAT	61	98
FLIP 90-17C	X87TH180/ICC 14194 X FLIP 83-48C	ICARDA/ICRISAT	60	102
FLIP 90-18C	X87TH271/(1LC 136 X FLIP 84-18C) X FLIP 84-78C	ICARDA/ICRISAT	61	100
FLIP 90-19C	X87TH271/(ILC 136 X FLIP 84-18C) X FLIP 84-78C	ICARDA/ICRISAT	61	100
FLIP 90-22C	X87TH319/(Pl.Se.Be. 81-46 X FLIP 83-46C)XFLIP 85-18C	ICARDA/ICRISAT	60	99
FLIP 90-32C	X86TH271/(ILC 482 X FLIP 83-15C) X FLIP 84-19C	ICARDA/ICRISAT	61	100
FLIP 90-49C	X87TH229/FLIP 85-91C X ILC 2956	ICARDA/ICRISAT	60	98
FLIP 90-87C	X86TH277/(ILC 1919 X FLIP 82-130C) X FLIP 84-18C	ICARDA/ICRISAT	61	100
FLIP 90-89C	X87TH80/S 85091 X FLIP 85-4C	ICARDA/ICRISAT	65	100
FLIP 90-92C	X87TH291/(1LC 136 X FLIP 81-293C) X ILC 136	ICARDA/ICRISAT	61	100
FLIP 90-119C	X88TH311/(FLIP 85-16C X ILC 72) X FLIP 85-16C	ICARDA/ICRISAT	61	100
FLIP 90-129C	X86TH258/(ILC 171 X FLIP 82-144C) X FLIP 84-17C	ICARDA/ICRISAT	65	100
FLIP 90-130C	X86TH98/FLIP 84-19C X FLIP 82-91C	ICARDA/ICRISAT	65	100
FLIP 90-147C	X86TH275/(ILC 482 X FLIP 82-93C) X FLIP 84-19C	ICARDA/ICRISAT	65	99
FLIP 90-158C	X86TH175/ILC 3843 X ILC 3870	ICARDA/ICRISAT	65	100
FLIP 90-160C	X86TH271/(ILC 482 X FLIP 83-15C) X FLIP 84-19C	ICARDA/ICRISAT	61	98
FLIP 91-82C	X89TH10/ILC 1254 X FLIP 84-182C	ICARDA/ICRISAT	61	95
FLIP 91-85C	X89TH11/ILC 4291 X ILC 482	ICARDA/ICRISAT	61	96
FLIP 91-86C	X89TH14/ILC 4291 X FLIP 84-92C	ICARDA/ICRISAT	65	101

Cont'd. ...

Table 3.10.2. Cont'd. ...

Entry name	Pedigree	Origin	Argentina Cordoba	Chile Chillan
FLIP 91-87C	X89TH22/ILC 2371 X FLIP 82-150C	ICARDA/ICRISAT	61	98
FLIP 91-91C	X89TH28/ILC 3777 X FLIP 83-47C	ICARDA/ICRISAT	61	101
FLIP 91-92C	X89TH29/ILC 3777 X FLIP 84-92C	ICARDA/ICRISAT	61	95
FLIP 91-93C	X87TH86/FLIP 84-78C X ILC 4921	ICARDA/ICRISAT	65	98
FLIP 91-97C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	60	100
FLIP 91-98C	X88TH19/ICC 14218 X FLIP 84-93C	ICARDA/ICRISAT	65	100
FLIP 91-105C	X88TH12/ILC 4293 X FLIP 84-102C	ICARDA/ICRISAT	61	101
FLIP 91-111C	X88TH121/FLIP 85-122C X ILC 4296	ICARDA/ICRISAT	61	100
FLIP 91-112C	X88TH121/FLIP 85-122C X ILC 4296	ICARDA/ICRISAT	61	98
FLIP 91-132C	X87TH271/(ILC 136 X FLIP 84-18C) X FLIP 84-78C	ICARDA/ICRISAT	61	101
FLIP 91-133C	X87TH189/ICC 14212 X FLIP 84-78C	ICARDA/ICRISAT	65	98
FLIP 91-134C	X87TH189/ICC 14212 X FLIP 84-78C	ICARDA/ICRISAT	61	98
FLIP 91-135C	X89TH8/ILC 1254 X FLIP 82-47C	ICARDA/ICRISAT	60	100
FLIP 91-136C	X89TH9/ILC 1254 X FLIP 84-92C	ICARDA/ICRISAT	61	94
FLIP 91-138C	X88TH18/ICC 14218 X FLIP 84-81C	ICARDA/ICRISAT	61	100
FLIP 91-222C	X88TH206/ILC 202 X S 86301	ICARDA/ICRISAT	60	100
FLIP 85-5C	X81TH199/ILC 202(WH) X ILC 3355 (Improved check)	ICARDA/ICRISAT	61	98
ILC 464	(Long term check)	Turkey	61	100
Local check		-	61	95
Location mean			**62**	**99**
S.E. Of Mean			1.59	0.56
LSD at .05			NS	1.60
C.V. %			3.64	0.80

Cont'd. ...

Table 3.10.2. Cont'd. ...

Entry name	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana	Overall mean
ILC 3377	101	135	83	128	87
ILC 3808	100	140	87	128	87
FLIP 84-15C	98	140	80	128	85
FLIP 85-15C	97	140	80	128	86
FLIP 89-4C	108	135	72	128	90
FLIP 89-17C	109	138	76	128	90
FLIP 89-20C	100	129	70	126	86
FLIP 89-89C	109	134	76	128	90
FLIP 89-116C	105	134	70	126	89
FLIP 89-121C	111	130	87	126	90
FLIP 90-2C	110	135	82	128	90
FLIP 90-16C	102	128	69	118	87
FLIP 90-17C	107	139	74	128	90
FLIP 90-18C	104	136	79	129	88
FLIP 90-19C	107	143	79	129	90
FLIP 90-22C	101	140	87	128	87
FLIP 90-32C	101	143	77	128	87
FLIP 90-49C	99	145	83	130	86
FLIP 90-87C	110	143	87	130	90
FLIP 90-89C	91	134	81	128	85
FLIP 90-92C	103	135	90	129	88
FLIP 90-119C	95	140	83	124	85
FLIP 90-129C	99	142	80	126	88
FLIP 90-130C	97	139	82	129	87
FLIP 90-147C	97	140	75	129	87
FLIP 90-158C	96	125	69	122	87
FLIP 90-160C	96	137	77	128	85
FLIP 91-82C	101	126	70	120	86
FLIP 91-85C	97	121	82	117	84
FLIP 91-86C	99	135	78	129	88

Cont'd. ...

Table 3.10.2. Cont'd. ...

Entry name	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana	(1) **Overall mean**
FLIP 91-87C	98	125	90	122	85
FLIP 91-91C	100	125	69	117	87
FLIP 91-92C	97	122	80	122	84
FLIP 91-93C	94	140	77	128	86
FLIP 91-97C	95	132	70	125	85
FLIP 91-98C	97	128	72	117	87
FLIP 91-105C	104	143	89	125	89
FLIP 91-111C	100	121	68	116	87
FLIP 91-112C	100	124	68	118	86
FLIP 91-132C	103	140	79	129	89
FLIP 91-133C	97	123	68	122	87
FLIP 91-134C	100	131	68	121	86
FLIP 91-135C	98	128	69	127	86
FLIP 91-136C	101	122	69	120	85
FLIP 91-138C	100	128	82	116	87
FLIP 91-222C	93	143	85	128	84
FLIP 85-5C	95	142	89	129	85
ILC 464	94	137	91	128	85
Local check	98	135	73	124	
Location mean	**100**	**134**	**78**	**125**	
S.E. Of Mean	1.29	1.89	2.09	1.41	
LSD at .05	3.66	5.36	5.95	4.06	
C.V. %	1.82	1.99	3.81	1.60	

(1) Badajoz in Spain, Tel Hadya in Syria and Haymana in Turkey being non-Latin American locations were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 3.10.3. Adjusted time to maturity (days) of entries at different locations in the CISN-LA during 1992/93.

Entry name	Chile Chillan	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana	**Overall mean**
ILC 3377	160	181	234	175	113	171
ILC 3808	161	188	228	176	111	174
FLIP 84-15C	159	181	225	175	116	170
FLIP 85-15C	160	189	223	175	113	175
FLIP 89-4C	161	186	231	176	115	173
FLIP 89-17C	161	183	225	176	114	172
FLIP 89-20C	159	187	215	176	111	173
FLIP 89-89C	159	179	221	175	115	169
FLIP 89-116C	160	187	212	173	110	174
FLIP 89-121C	161	193	234	175	116	177
FLIP 90-2C	160	191	229	174	113	176
FLIP 90-16C	160	181	218	174	114	171
FLIP 90-17C	160	193	226	177	112	176
FLIP 90-18C	160	182	221	176	114	171
FLIP 90-19C	160	185	233	175	115	173
FLIP 90-22C	159	178	233	176	118	169
FLIP 90-32C	161	180	223	174	112	171
FLIP 90-49C	160	183	233	178	118	171
FLIP 90-87C	160	187	231	177	113	174
FLIP 90-89C	161	176	226	175	113	168
FLIP 90-92C	159	174	229	171	114	166
FLIP 90-119C	160	175	218	176	114	167
FLIP 90-129C	158	176	226	174	115	167
FLIP 90-130C	159	177	221	175	117	168
FLIP 90-147C	159	175	225	173	110	167
FLIP 90-158C	162	175	212	173	110	169
FLIP 90-160C	164	177	227	173	112	170
FLIP 91-82C	158	180	214	174	115	169
FLIP 91-85C	159	178	222	172	116	169
FLIP 91-86C	161	170	227	174	114	165

Cont'd. ...

Table 3.10.3. Cont'd. ...

Entry name	Chile Chillan	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana	(1) **Overall mean**
FLIP 91-87C	159	176	217	171	115	167
FLIP 91-91C	160	188	211	168	111	174
FLIP 91-92C	158	178	216	173	119	168
FLIP 91-93C	159	176	225	175	111	167
FLIP 91-97C	159	176	226	173	112	168
FLIP 91-98C	160	175	230	170	112	168
FLIP 91-105C	160	189	228	175	111	174
FLIP 91-111C	172	178	213	171	115	175
FLIP 91-112C	159	179	211	170	110	169
FLIP 91-132C	163	185	222	176	112	174
FLIP 91-133C	161	175	211	171	110	168
FLIP 91-134C	159	179	234	171	111	169
FLIP 91-135C	160	180	220	175	115	170
FLIP 91-136C	157	186	215	174	112	171
FLIP 91-138C	161	183	222	174	117	172
FLIP 91-222C	160	180	223	176	116	170
FLIP 85-5C	160	178	225	176	117	169
ILC 464	158	178	234	175	115	168
Local check	158	172	223	171	113	
Location mean	**160**	**181**	**223**	**174**	**114**	
S.E. Of Mean	0.79	1.53	2.59	0.69	1.39	
LSD at .05	2.25	4.38	7.43	1.99	3.98	
C.V. %	0.69	1.19	1.64	0.56	1.73	

(1) Badajoz in Spain, Tel Hadya in Syria and Haymana in Turkey being non-Latin American locations were excluded from overall mean.

Table 3.10.4. Adjusted plant height (cm) of entries at different locations in the CISN-LA during 1992/93.

Entry name	Argentina Cordoba	Chile Chillan	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana	**Overall mean**
ILC 3377	16	76	55	30	38	22	49
ILC 3808	15	67	55	32	35	20	46
FLIP 84-15C	14	82	55	31	35	31	50
FLIP 85-15C	15	64	68	32	42	36	49
FLIP 89-4C	16	62	63	29	34	26	47
FLIP 89-17C	17	73	60	33	41	38	50
FLIP 89-20C	14	65	48	27	35	25	42
FLIP 89-89C	14	65	50	28	34	24	43
FLIP 89-116C	17	49	48	26	36	28	38
FLIP 89-121C	14	67	50	31	37	26	44
FLIP 90-2C	13	83	50	29	35	27	48
FLIP 90-16C	14	75	40	29	35	23	43
FLIP 90-17C	16	77	53	32	38	32	48
FLIP 90-18C	16	81	63	34	44	35	53
FLIP 90-19C	15	82	50	30	38	34	49
FLIP 90-22C	13	74	58	30	43	32	48
FLIP 90-32C	15	82	53	35	39	30	50
FLIP 90-49C	15	75	58	34	44	40	49
FLIP 90-87C	15	61	58	33	46	33	44
FLIP 90-89C	13	75	50	32	41	31	46
FLIP 90-92C	16	60	55	28	35	30	44
FLIP 90-119C	13	64	55	35	43	39	44
FLIP 90-129C	16	88	60	32	39	28	55
FLIP 90-130C	15	74	53	35	44	37	47
FLIP 90-147C	15	65	55	41	35	31	45
FLIP 90-158C	14	65	45	36	35	27	42
FLIP 90-160C	12	50	53	35	36	31	38
FLIP 91-82C	15	71	48	28	33	26	45
FLIP 91-85C	15	57	45	25	31	18	39
FLIP 91-86C	16	71	53	30	36	31	47

Cont'd. ...

Table 3.10.4. Cont'd. ...

Entry name	Argentina Cordoba	Chile Chillan	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana	(1) **Overall mean**
FLIP 91-87C	15	63	50	31	33	20	43
FLIP 91-91C	15	60	43	28	33	28	39
FLIP 91-92C	14	73	43	36	32	16	43
FLIP 91-93C	14	67	50	33	38	28	44
FLIP 91-97C	18	68	50	31	35	21	46
FLIP 91-98C	15	50	40	17	30	25	35
FLIP 91-105C	15	54	48	25	34	27	39
FLIP 91-111C	15	46	50	32	36	26	37
FLIP 91-112C	12	81	45	26	34	28	46
FLIP 91-132C	15	77	65	33	39	31	52
FLIP 91-133C	13	68	48	28	33	31	43
FLIP 91-134C	14	56	50	21	30	22	40
FLIP 91-135C	15	58	50	32	32	33	41
FLIP 91-136C	15	82	40	33	31	23	46
FLIP 91-138C	15	88	53	32	39	33	52
FLIP 91-222C	11	72	55	47	44	40	46
FLIP 85-5C	15	72	40	45	40	29	42
ILC 464	16	65	40	35	39	18	40
Local check	16	64	65	35	33	29	
Location mean	**15**	**69**	**51**	**31**	**37**	**29**	
S.E. Of Mean	0.96	7.19	3.67	1.85	1.88	2.24	
LSD at .05	2.75	20.63	10.44	5.25	5.33	6.43	
C.V. %	9.22	14.82	10.09	8.37	7.27	11.08	

(1) Badajoz in Spain, Tel Hadya in Syria and Haymana in Turkey being non-Latin American locations were excluded from overall mean.

Table 3.10.5. Adjusted 100-seed weight (g) of entries at different locations in the CISN-LA during 1992/93.

Entry name	Chile Chillan	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana	Overall Mean
ILC 3377	38	47	37	40	-	41
ILC 3808	37	45	46	50	-	45
FLIP 84-15C	43	40	39	46	-	42
FLIP 85-15C	39	47	35	41	-	41
FLIP 89-4C	35	54	46	48	-	46
FLIP 89-17C	39	50	41	45	-	44
FLIP 89-20C	36	46	41	44	43	42
FLIP 89-89C	32	47	36	44	-	40
FLIP 89-116C	30	47	48	45	43	43
FLIP 89-121C	34	51	37	45	-	42
FLIP 90-2C	41	48	43	43	-	44
FLIP 90-16C	30	49	36	43	-	40
FLIP 90-17C	40	55	35	46	-	44
FLIP 90-18C	36	50	38	46	37	43
FLIP 90-19C	45	45	35	45	39	43
FLIP 90-22C	42	48	42	44	-	44
FLIP 90-32C	32	47	33	45	37	39
FLIP 90-49C	38	44	34	45	38	40
FLIP 90-87C	28	46	33	40	34	37
FLIP 90-89C	34	43	32	40	-	37
FLIP 90-92C	28	52	40	42	-	41
FLIP 90-119C	37	42	39	42	36	40
FLIP 90-129C	33	49	39	42	-	41
FLIP 90-130C	34	48	35	41	-	40
FLIP 90-147C	37	45	31	42	37	39
FLIP 90-158C	28	40	33	44	38	36
FLIP 90-160C	-	41	34	40	37	38
FLIP 91-82C	23	38	32	41	-	34
FLIP 91-85C	35	37	38	43	-	38
FLIP 91-86C	-	45	34	44	-	41

Cont'd. ...

Table 3.10.5. Cont'd. ...

Entry name	Chile Chillan	Italy Tarquinia	Spain Badajoz	Syria Tel Hadya	Turkey Haymana
FLIP 91-87C	30	44	39	47	-
FLIP 91-91C	30	43	33	42	-
FLIP 91-92C	39	40	42	49	-
FLIP 91-93C	39	40	32	50	39
FLIP 91-97C	27	35	30	34	34
FLIP 91-98C	32	42	35	45	-
FLIP 91-105C	35	51	40	51	-
FLIP 91-111C	-	40	33	45	34
FLIP 91-112C	37	42	41	45	40
FLIP 91-132C	35	44	34	45	40
FLIP 91-133C	-	44	35	49	-
FLIP 91-134C	43	47	38	47	-
FLIP 91-135C	34	45	38	45	-
FLIP 91-136C	37	40	39	42	-
FLIP 91-138C	37	44	31	48	40
FLIP 91-222C	33	40	34	34	31
FLIP 85-5C	49	49	46	49	-
ILC 464	44	47	40	49	-
Local check	33	29	28	29	-
Location mean	**36**	**45**	**37**	**44**	**38**
S.E. Of Mean	One	2.97	2.67	2.33	One
LSD at .05	rep	8.51	7.59	6.62	rep
C.V. %		9.37	10.22	7.52	

Table 3.10.6. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the CISN-LA during 1992/93.

Entry name	Chile Chillan		Italy Tarquinia		Spain Badajoz		Syria Tel Hadya		Turkey Haymana		Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
ILC 3377	1710	1	1289	26	651	8	2582	20	-	-	1500	2
ILC 3808	464	24	1656	15	441	22	2848	5	-	-	1060	20
FLIP 84-15C	462	25	1335	24	848	2	2168	39	-	-	898	29
FLIP 85-15C	682	14	2126	7	523	19	2124	40	-	-	1404	5
FLIP 89-4C	231	46	760	45	379	30	1969	43	-	-	496	46
FLIP 89-17C	444	26	1188	29	576	14	2118	41	-	-	816	34
FLIP 89-20C	855	11	845	42	109	46	2257	36	1458	4	850	31
FLIP 89-89C	274	42	1607	17	420	25	2780	10	-	-	940	27
FLIP 89-116C	182	47	1234	27	116	45	2243	37	1563	2	708	39
FLIP 89-121C	564	18	2280	4	685	6	2752	11	-	-	1422	4
FLIP 90-2C	526	20	2337	3	485	21	2400	25	-	-	1431	3
FLIP 90-16C	825	12	760	44	421	24	2797	7	-	-	793	35
FLIP 90-17C	573	16	1826	11	386	29	2682	15	-	-	1199	11
FLIP 90-18C	947	9	2595	1	412	26	2612	19	625	17	1771	1
FLIP 90-19C	764	13	1040	37	363	32	2117	42	1333	6	902	28
FLIP 90-22C	494	22	1038	38	259	38	2310	31	-	-	766	37
FLIP 90-32C	478	23	2039	9	617	12	2491	23	1000	9	1258	9
FLIP 90-49C	305	40	1164	30	349	33	1343	49	1438	5	734	38
FLIP 90-87C	260	44	1531	21	631	10	2339	27	1271	7	895	30
FLIP 90-89C	955	8	1289	25	436	23	2780	9	-	-	1122	16
FLIP 90-92C	343	35	2145	6	609	13	1908	44	-	-	1244	10
FLIP 90-119C	622	15	1422	22	266	37	2865	4	1083	8	1022	22
FLIP 90-129C	437	27	1767	12	402	27	2714	13	-	-	1102	19
FLIP 90-130C	241	45	1420	23	554	17	2271	33	-	-	830	32
FLIP 90-147C	369	33	1733	14	811	3	1894	45	958	11	1051	21
FLIP 90-158C	142	48	1210	28	159	43	2751	12	750	16	676	42
FLIP 90-160C	313	38	1904	10	676	7	2481	24	2354	1	1109	17
FLIP 91-82C	426	28	1130	32	160	42	2829	6	-	-	778	36
FLIP 91-85C	400	31	2354	2	175	41	2780	8	-	-	1377	6
FLIP 91-86C	403	30	2191	5	722	4	2629	17	-	-	1297	7

Cont'd. ...

Table 3.10.6. Cont'd. ...

Entry name	Chile Chillan		Italy Tarquinia		Spain Badajoz		Syria Tel Hadya		Turkey Haymana		Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 91-87C	510	21	839	43	228	39	2548	21	-	-	674	43
FLIP 91-91C	1254	4	1047	36	51	49	3029	2	-	-	1151	15
FLIP 91-92C	982	7	675	47	141	44	2337	28	-	-	829	33
FLIP 91-93C	316	37	2042	8	628	11	1878	46	1000	10	1179	13
FLIP 91-97C	366	34	1579	19	503	20	2657	16	896	13	972	24
FLIP 91-98C	390	32	750	46	311	34	3095	1	-	-	570	45
FLIP 91-105C	311	39	1075	34	290	35	2697	14	-	-	693	41
FLIP 91-111C	405	29	550	49	201	40	2305	32	563	18	477	47
FLIP 91-112C	298	41	960	39	53	48	1876	47	875	14	629	44
FLIP 91-132C	341	36	1557	20	371	31	2262	35	917	12	949	26
FLIP 91-133C	262	43	1650	16	58	47	1745	48	-	-	956	25
FLIP 91-134C	1325	3	1060	35	572	15	2625	18	-	-	1193	12
FLIP 91-135C	103	49	656	48	271	36	2214	38	-	-	380	48
FLIP 91-136C	1460	2	1124	33	396	28	2267	34	-	-	1292	8
FLIP 91-138C	560	19	854	41	527	18	2319	29	833	15	707	40
FLIP 91-222C	571	17	1761	13	688	5	2392	26	1500	3	1166	14
FLIP 85-5C	1071	5	1136	31	1023	1	2317	30	-	-	1103	18
ILC 464	1022	6	935	40	633	9	2986	3	-	-	979	23
Local check	888	10	1583	18	567	16	2519	22	-	-		
Location mean	**574**		**1409**		**432**		**2427**		**1134**			
S.E. Of Mean	282.87		462.75		103.37		344.40		One			
LSD at .05	811.24		NS		296.46		NS		rep			
C.V. %	69.70		46.44		33.86		20.07					
Efficiency	101		100		122		-					
Entry > L. check	1		0		1		0					

(1) Badajoz in Spain, Tel Hadya in Syria and Haymana in Turkey being non-Latin American locations were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

3.11. CHICKPEA INTERNATIONAL F_4 NURSERY (CIF_4N)

There were two Chickpea International F_4 Nurseries namely, Chickpea International F4 Nursery - Mediterranean Region (CIF_4N-MR), and Chickpea International F_4 Nursery - Southerly Latitudes (CIF_4N-SL).

Material

The material for each of these Chickpea International F_4 Nurseries comprised 22 F_4 populations which were derived from different crosses, and two checks, namely ILC 482 or ILC 3279 (which was supplied by ICARDA) and the local check (which was to be added by the cooperator). The populations were assumed to provide a wide range of variation within which the cooperators were free to practice their own selection. The details of entries in these nurseries are given in Table 3.11.1.

Methods and Management

The nurseries were planted in a systematic block designs. The suggested plot size was 4 rows, 4 meter long with an inter- and intra row spacings of 30 - and 10 cm, respectively. Twenty eight sets of CIF_4N-MR and 15 sets of CIF_4N-SL were distributed to cooperators in 14 and 8 countries, respectively.

Results and Discussion

Eight cooperators from CIF_4N-MR and three cooperators from CIF_4N-SL selected some individual plants for their local use in breeding programs.

Table 3.11.1. Details of Chickpea International F_4 Nurseries - Mediterranean Region (CIF_4N-MR) and Southerly Latitudes (CIF_4N-SL) conducted during 1992/93.

CIF_4N-MR	CIF_4N-SL
Pedigree	Pedigree
X90TH12/FLIP 85-4C X FLIP 83-45C	X90TH6/FLIP 84-15C X FLIP 87-60C
X90TH17/FLIP 85-4C X FLIP 87-40C	X90TH7/FLIP 85-4C X FLIP 87-60C
X90TH32/FLIP 87-8C X FLIP 86-5C	X90TH20/FLIP 86-50C X FLIP 87-40C
X90TH34/ILC 1250 X FLIP 86-5C	X90TH37/FLIP 87-8C X FLIP 86-32C
X90TH36/FLIP 87-7C X FLIP 86-32C	X90TH39/ILC 1250 X FLIP 86-32C
X90TH61/FLIP 81-89C X FLIP 84-92C	X90TH40/ILC 4291 X FLIP 86-32C
X90TH62/ILC 4641 X FLIP 84-92C	X90TH42/FLIP 87-8C X FLIP 85-44C
X90TH207/(ILC1254XFLIP84-92C)XFLIP85-42C	X90TH47/FLIP 87-8C X ILC 5921
X90TH208/(ILC1254XFLIP84-182X)XFLIP85-42C	X90TH51/FLIP 81-89C X FLIP 87-76C
X90TH209/(ILC4291XILC482)XFLIP86-81C	X90TH56/FLIP 81-89C X FLIP 87-59C
X90TH218/(ILC2371XFLIP84-92C)XILC1250	X90TH67/ILC 4641 X FLIP 82-104C
X90TH224/(ILC3520XFLIP84-92C)XFLIP84-15C	X90TH76/FLIP 87-85C X FLIP 86-44C
X90TH229/(ILC4492XFLIP83-47C)XFLIP83-77C	X90TH91/FLIP 87-85C X FLIP 86-32C
X90TH230/(ILC4492XFLIP84-102C)XFLIP83-77C	X90TH92/FLIP 88-31C X FLIP 86-32C
X90TH263/(ILC100XFLIP82-150C)XFLIP83-47C	X90TH95/FLIP 86-50C X FLIP 86-32C
X90TH265/(ILC464XFLIP84-93C)XFLIP83-47C	X90TH182/FLIP 86-44C X FLIP 84-43C
X90TH266/(ILC464XFLIP84-102C)XFLIP83-98C	X90TH192/FLIP 86-44C X FLIP83-108C
X90TH270/(ILC482XFLIP84-93C)XFLIP84-87C	X90TH256/(FLIP86-70CXFLIP85-135)XFLIP82-104C
X90TH275/(FLIP85-4CXFLIP84-93C)XFLIP84-155C	X90TH257/(FLIP86-70CXFLIP85-133)XFLIP82-104C
X90TH278/(FLIP85-5CXFLIP82-150C)XFLIP84-182C	X90TH268/(ILC482XFLIP83-47C)XFLIP83-48C
X90TH279/(FLIP83-77CXFLIP83-47C)XFLIP84-83C	X90TH269/(ILC482XFLIP84-92C)XFLIP83-48C
X90TH300/(ILC1932XFLIP84-92C)XILC613	X90TH277/(FLIP85-5CXFLIP84-92C)XFLIP84-182C
ILC 3279	ILC 482
Local Check	Local Check

3.12. CHICKPEA INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (CIABN)

Material

Two Chickpea International Ascochyta Blight Nurseries, CIABN-A (for kabuli types) and CIABN-B (for kabuli and desi types), were developed. CIABN-A included 34 test entries which were all kabuli types; and CIABN-B included 53 entries out of which 34 entries were same as that of CIABN-A and 19 entries were of desi types. In these nurseries 40 test entries were from the materials developed through hybridization at ICARDA. The repeated susceptible check was ILC 263.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 4 m long accommodating 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 of ascochyta blight disease, 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 (where 1 = highly resistant, 3 = resistant, 5 = tolerant, 7 = susceptible, and 9 = highly susceptible) was recommended for scoring the disease severity at least at two times, first at the vegetative stage and the second at the podding stage.

Twenty nine sets of CIABN-A and 38 sets of CIABN-B were distributed to cooperators in 16 and 16 countries, respectively. The results with disease score were, however, received for 12 sets for CIABN-A and 12 sets for CIABN-B.

Results and Discussion

The disease scores of the entries in each location are presented in Table 3.12.1. and discussed as under:

A. Chickpea International Ascochyta Blight Nursery with Kabuli and Desi Types

India: The nursery was conducted at 6 sites. The susceptible check took 9 rating at all the sites except at New Delhi-2. Among these locations, 22, 16, 50, 15, 40 entries were resistant/tolerant at Dhiansar, Hissar, Ludhiana, New Delhi-1 and Sri Ganga Nagar. There was no ascochyta blight infestation at New Delhi-2.

Iran: At Karaj, 39 entries were resistant/tolerant and susceptible check was rated at 9.

Italy: At Tolentino 47 entries were tolerant/resistant, and susceptible check was rated at 9.

Pakistan: The nursery was conducted at Islamabad. All the test entries were resistant and the susceptible chck took 7 rating.

Table 3.12.1. Reaction of chickpea entries to Ascochyta blight at different locations in the CIABN during 1992/93.

Entry name	Pedigree	Origin	India		
			Dhionsar	Hissar	Ludhiana
ILC 72	-	Spain	9	5	4
ILC 200	-	Former USSR	5	9	4
ILC 3279	-	Former USSR	7	5	4
ILC 6482	-	Syria	3	9	5
ILC 6090	K-980	Former USSR	3	9	5
FLIP 82-97C	X79TH23/ILC 262 X ILC 783	ICARDA/ICRISAT	9	9	5
FLIP 82-132C	X79TH23/ILC 262 X ILC 783	ICARDA/ICRISAT	7	9	4
FLIP 84-79C	X80TH176/ILC 72 X ILC 215	ICARDA/ICRISAT	5	7	5
FLIP 84-86C	X80TH176/ILC 72 X ILC 215	ICARDA/ICRISAT	9	7	5
FLIP 84-87C	X80TH176/ILC 72 X ILC 215	ICARDA/ICRISAT	9	9	5
FLIP 84-92C	X80TH176/ILC 72 X ILC 215	ICARDA/ICRISAT	7	5	4
FLIP 84-102C	X80TH176/ILC 72 X ILC 215	ICARDA/ICRISAT	7	7	5
FLIP 84-124C	X81TH53/ILC 1920 X ILC 2506	ICARDA/ICRISAT	7	7	5
FLIP 84-182C	X80TH176/ILC 72 X ILC 215	ICARDA/ICRISAT	7	3	4
FLIP 84-188C	X81TH48/ILC 1920 X ILC 201	ICARDA/ICRISAT	5	5	3
FLIP 85-84C	X80TH113/ILC 1920 X ILC 200	ICARDA/ICRISAT	5	7	3
FLIP 88-83C	X84TH15/FLIP 82-100C X ILC 200	ICARDA/ICRISAT	7	9	5
FLIP 90-3C	X86TH289/(FLIP 81-65C X ILC 187) X FLIP 84-19C	ICARDA/ICRISAT	5	5	4
FLIP 90-56C	X87TH159/S 85088 X ILC 3856	ICARDA/ICRISAT	5	3	3
FLIP 90-85C	X86TH148/FLIP 84-46C X ILC 3870	ICARDA/ICRISAT	7	9	4
FLIP 90-95C	X87TH26/ILC 5342 X FLIP 84-93C	ICARDA/ICRISAT	3	5	5
FLIP 90-96C	X87TH26/ILC 5342 X FLIP 84-93C	ICARDA/ICRISAT	9	5	5
FLIP 90-98C	X87TH31/FLIP 83-7C X FLIP 84-92C	ICARDA/ICRISAT	5	7	4
FLIP 90-104C	X87TH160/S 85-88 X ILC 3870	ICARDA/ICRISAT	5	9	4
FLIP 90-112C	X88TH129/ILC 3856 X ILC 4296	ICARDA/ICRISAT	7	9	5
FLIP 91-2C	X87TH107/FLIP 85-1C X FLIP 84-81C	ICARDA/ICRISAT	3	7	4
FLIP 91-4C	X87TH32/FLIP 83-7C X FLIP 84-109C	ICARDA/ICRISAT	5	7	4
FLIP 91-6C	X87TH138/FLIP 84-46C X FLIP 85-90C	ICARDA/ICRISAT	7	7	3
FLIP 91-11C	X87TH155/S 85036 X ILC 3856	ICARDA/ICRISAT	7	7	4
FLIP 91-14C	X88TH216/FLIP 85-122C X FLIP 85-112C	ICARDA/ICRISAT	5	3	4

Cont'd. ...

Table 3.12.1. Cont'd. ...

Entry name	Pedigree	Origin	India		
			Dhionsar	Haryana	Ludhiana
FLIP 91-18C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	7	5	5
FLIP 91-22C	X87TH165/ILC 1919 X FLIP 84-99C	ICARDA/ICRISAT	3	5	4
FLIP 91-24C	X87TH98/FLIP 84-17C X ILC 4921	ICARDA/ICRISAT	9	7	5
FLIP 91-26C	X87TH167/ILC 1919 X FLIP 83-47C	ICARDA/ICRISAT	5	5	5
FLIP 91-45C	X87TH10/FLIP 81-293C X FLIP 84-93C	ICARDA/ICRISAT	7	3	4
FLIP 91-46C	X87TH10/FLIP 81-293C X FLIP 84-93C	ICARDA/ICRISAT	3	7	4
FLIP 91-50C	X88TH79/FLIP 85-42C X FLIP 86-93C	ICARDA/ICRISAT	5	7	4
FLIP 91-53C	X88TH319/(FLIP 85-91C X ILC 3856) X FLIP 85-91C	ICARDA/ICRISAT	5	7	5
FLIP 91-54C	X88TH323/(ILC 519 X FLIP 83-47C) X ILC 519	ICARDA/ICRISAT	3	7	4
FLIP 91-62C	X89TH29/ILC 3777 X FLIP 84-92C	ICARDA/ICRISAT	5	5	4
ICC 4475	P-5496	Iran	7	9	4
ICC 12004	NEC-2861	Unknown	9	9	4
ICC 13269	-	-	7	9	5
ICC 13416	-	-	9	9	5
ICC 13508	-	-	7	9	4
ICC 13555	-	-	9	9	4
FLIP 87-505C	H 208 X E 100Y-1	ICARDA/ICRISAT	5	7	5
FLIP 87-506C	H 208 X E 100Y-1	ICARDA/ICRISAT	9	7	5
FLIP 87-507C	H 208 X E 100Y-2	ICARDA/ICRISAT	7	7	5
FLIP 87-508C	H 208 X E 100Y-2	ICARDA/ICRISAT	7	5	5
ILC 263 (Susceptible repeated check)		Turkey	9	9	9

Cont'd. ...

Table 3.12.1. Cont'd. ...

Entry name	India			Iran	Italy	Pakistan	Spain	Syria	Turkey	Algeria	
	New Delhi-1	New Delhi-2	Sri Ganga Nagar	Karaj	Tolen-tino	Islam-abad	Badajoz	Tel-Hadya	Eski-sehir	Guelma	Oued-Smar
ILC 72	7	1	3	1	1	3	1	4	3	1	6
ILC 200	3	1	4	1	3	3	3	3	5	1	4
ILC 3279	7	1	7	3	1	4	3	4	3	1	5
ILC 6482	8	1	6	7	7	3	5	4	8	1	8
ILC 6090	7	1	5	3	1	4	3	4	6	1	4
FLIP 82-97C	7	1	5	3	3	3	7	4	7	1	7
FLIP 82-132C	7	1	7	7	3	4	7	5	6	1	6
FLIP 84-79C	7	1	5	1	1	3	5	5	5	1	6
FLIP 84-86C	7	1	6	1	1	2	3	4	5	1	7
FLIP 84-87C	8	1	5	3	5	3	3	3	6	1	6
FLIP 84-92C	3	1	4	1	3	3	1	4	5	1	5
FLIP 84-102C	7	1	5	1	3	3	3	4	5	1	5
FLIP 84-124C	7	1	5	3	3	3	3	4	4	1	5
FLIP 84-182C	9	1	3	1	3	3	3	4	4	1	5
FLIP 84-188C	6	1	5	1	5	4	3	5	5	1	7
FLIP 85-84C	3	1	5	5	1	4	3	5	4	1	7
FLIP 88-83C	7	1	6	5	1	2	3	4	6	1	7
FLIP 90-3C	5	1	5	3	3	3	5	6	5	1	5
FLIP 90-56C	5	1	5	9	1	4	3	4	3	1	3
FLIP 90-85C	7	1	5	7	3	4	5	4	4	1	4
FLIP 90-95C	7	1	5	3	1	4	3	5	6	1	5
FLIP 90-96C	6	1	5	1	1	3	3	5	5	1	7
FLIP 90-98C	9	1	5	7	3	4	5	5	6	1	7
FLIP 90-104C	8	1	5	7	3	3	5	5	5	1	5
FLIP 90-112C	5	1	6	3	3	3	1	3	5	1	7
FLIP 91-2C	6	1	5	1	1	4	3	4	4	1	9
FLIP 91-4C	6	1	6	3	1	3	3	4	4	1	7
FLIP 91-6C	4	1	4	3	3	4	3	5	2	1	5
FLIP 91-11C	5	1	4	7	3	4	3	5	4	1	5
FLIP 91-14C	3	1	5	3	3	3	5	4	4	1	6

Cont'd. ...

Table 3.12.1. Cont'd. ...

Entry name	India			Iran	Italy	Pakistan	Spain	Syria	Turkey	Algeria	
	New Delhi-1	New Delhi-2	Sri Ganga Nagar	Karaj	Tolen-tino	Islam-abad	Badajoz	Tel-Hadya	Eski-sehir	Guelma	Oued-Smar
FLIP 91-18C	6	1	5	5	1	3	5	4	5	1	7
FLIP 91-22C	7	1	5	3	3	4	5	5	5	1	6
FLIP 91-24C	5	1	7	3	3	3	5	6	3	1	5
FLIP 91-26C	6	1	4	1	1	4	3	4	5	1	6
FLIP 91-45C	6	1	4	3	3	3	5	4	4	1	6
FLIP 91-46C	7	1	6	5	3	3	7	5	4	1	7
FLIP 91-50C	4	1	5	3	3	3	3	6	5	1	7
FLIP 91-53C	8	1	4	5	3	4	3	4	3	1	6
FLIP 91-54C	7	1	5	5	1	3	7	5	2	1	5
FLIP 91-62C	5	1	4	1	1	3	5	4	6	1	5
ICC 4475	6	1	4	3	5	2	9	4	9	1	9
ICC 12004	8	1	5	9	5	1	7	4	6	-	-
ICC 13269	5	1	3	9	3	2	7	4	6	-	-
ICC 13416	9	1	5	1	3	1	7	3	9	-	-
ICC 13508	7	1	5	7	3	2	7	3	7	-	-
ICC 13555	5	1	5	7	3	3	7	4	6	-	-
FLIP 87-505C	8	1	5	5	7	4	3	4	6	-	-
FLIP 87-506C	6	1	5	5	7	4	3	4	6	-	-
FLIP 87-507C	5	1	7	5	5	3	3	4	6	-	-
FLIP 87-508C	7	1	5	1	5	3	5	4	5	-	-
ILC 263 (Susceptible repeated check)	9	1	9	9	9	7	7	9	9	1	9

Cont'd. ...

Table 3.12.1. Cont'd. ...

Entry name	Algeria Setif	Bulgaria Toshevo	Egypt Gemmiza	Iran Gonbad	Libya El-Safsaf	Portugal Elvas	Turkey Denizli	Turkey Diyarbakir	Turkey Erzurum	Turkey Menemen
ILC 72	1	3	5	5	4	2	2	5	3	3
ILC 200	1	3	5	7	3	2	2	5	2	4
ILC 3279	1	3	7	7	7	1	2	3	2	3
ILC 6482	1	3	7	7	3	4	2	5	2	7
ILC 6090	1	5	5	7	3	1	2	3	2	3
FLIP 82-97C	1	3	5	7	3	2	2	3	2	4
FLIP 82-132C	1	5	7	7	7	2	2	3	3	4
FLIP 84-79C	1	3	5	5	5	2	2	3	3	4
FLIP 84-86C	1	3	3	5	3	1	2	3	2	3
FLIP 84-87C	1	3	5	7	4	1	3	5	2	4
FLIP 84-92C	1	3	3	5	3	1	2	3	3	3
FLIP 84-102C	1	3	5	5	3	2	2	5	2	3
FLIP 84-124C	1	3	7	5	3	1	2	5	2	3
FLIP 84-182C	1	3	5	3	4	2	2	3	2	3
FLIP 84-188C	1	3	5	5	3	2	2	3	2	4
FLIP 85-84C	1	7	3	3	4	3	2	1	2	3
FLIP 88-83C	1	3	7	5	1	1	2	3	2	4
FLIP 90-3C	1	7	5	5	3	2	2	5	2	3
FLIP 90-56C	1	5	7	5	2	2	2	3	2	3
FLIP 90-85C	1	3	7	5	3	2	2	3	2	3
FLIP 90-95C	1	5	5	5	3	2	2	3	2	4
FLIP 90-96C	1	3	5	5	3	2	2	3	3	4
FLIP 90-98C	1	3	5	5	3	2	2	3	2	3
FLIP 90-104C	1	5	7	5	4	2	2	3	2	4
FLIP 90-112C	1	3	5	5	3	1	2	5	2	7
FLIP 91-2C	1	3	7	5	5	1	2	3	2	3
FLIP 91-4C	1	3	7	5	3	2	2	3	2	3
FLIP 91-6C	1	5	7	5	3	2	2	3	2	3
FLIP 91-11C	1	3	5	7	5	1	2	3	2	3
FLIP 91-14C	1	5	5	5	7	1	2	3	2	4

Cont'd. ...

Table 3.12.1. Cont'd. ...

Entry name	Algeria	Bulgaria	Egypt	Iran	Libya	Portugal	Turkey			
	Setif	Toshevo	Gemmiza	Gonbad	El-Safsaf	Elvas	Denizli	Diyarbakir	Erzurum	Menemen
FLIP 91-18C	1	5	7	5	5	1	2	3	2	9
FLIP 91-22C	1	3	7	5	3	1	2	3	3	4
FLIP 91-24C	1	3	7	5	3	2	2	3	3	4
FLIP 91-26C	1	3	5	5	3	2	2	3	2	4
FLIP 91-45C	1	3	7	7	9	2	2	3	2	3
FLIP 91-46C	1	5	3	7	5	1	2	3	2	4
FLIP 91-50C	1	5	7	5	5	2	2	3	2	4
FLIP 91-53C	1	5	5	3	5	3	2	3	2	3
FLIP 91-54C	1	5	5	5	4	1	2	3	2	3
FLIP 91-62C	1	3	5	5	3	2	2	3	2	3
ILC 263 (Susceptible repeated check)	3	9	7	7	9	7	8	9	4	9

Spain: The susceptible check took rating of 7 and 40 test entries were resistant/tolerant.

Syria: At Tel Hadya, the susceptible check took rating of 9 and 47 of the 50 entries were tolerant/resistant.

Turkey: The nursery was conducted at Eskisehir, and the susceptible check was rated at 9. Thirty-two test entries were tolerant/resistant.

B. Chickpea International Ascochyta Blight Nursery with Kabuli Types

Algeria: The nursery was conducted at Guelma, Oued-Smar and Setif. There was no disease infestation at Guelma and Setif. At Oued-Smar, however, 26 entries were rated as tolerant/resistant, and the susceptible check took 9 rating.

Bulgaria: CIABN-A with kabuli types was evaluated at Toshevo. The susceptible check exhibited 9 rating. All entries except three were resistant or tolerant to ascochyta blight.

Egypt: The CIABN-A nursery was conducted at Gemmiza and the susceptible check took rating of 7. Twenty four of the 40 test entries were tolerant or resistant to ascochyta blight.

Iran: The nursery was conducted at Gonbad and susceptible check took 7 rating. Thirty entries were tolerant/resistant.

Libya: At El-Safsaf the susceptible check took rating of 9 and 36 entries showed resistant/tolerant reaction.

Portugal: At Elvas all the test entries were resistant except the susceptible check which was rated as 7.

Turkey: The nursery was conducted at 4 sites. At three sites namely Denizli, Diyarbakir and Menemen the susceptible check took 8 or 9 rating. At Erzurum, however, none of the entries including susceptible check took rating of more than 4.

At Denizli and Diyarbakir, all test entries were resistant/tolerant whereas at Menemen three entries out of 40 showed susceptibility reaction.

Out of 24 locations reporting the data for Ascochyta reaction of kabuli lines, and 14 locations reporting the data on desi lines, none of the desi or kabuli lines was tolerant across all locations. It was very interesting to note that among kabuli lines, two entries FLIP 84-92C and FLIP 91-263C were resistant at 23 sites followed by the lines FLIP 91-26C, FLIP 91-14C, FLIP 90-95C, FLIP 90-56C, FLIP 90-3C, FLIP 84-188C, FLIP 84-182C, and ILC 200. These lines have wide genetic base for resistance to ascochyta blight. Among 14 locations, reporting data on reaction of desi lines to ascochyta blight, an entry FLIP 87-508C was the most resistant line exhibiting resistant reaction at 10 sites.

3.13. CHICKPEA INTERNATIONAL FUSARIUM WILT NURSERY (CIFWN)

Material

The CIFWN included 30 test entries and one susceptible check (ILC 1929) repeated after every two test entries (Table 3.13.1).

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 2 m long accomodating 20 plants. The susceptible check was repeatedly sown after two test entries/rows to serve as an indicator cum spreader row. A 1-9 scale was recommended for scoring disease severity. The scale recommended was 1=highly resistant; 3=resistant; 5=tolerant; 7=susceptible; and 9=highly susceptible.

Forty five sets of nursery were sent to cooperators in 22 countries.

Results and Discussion

The CIFWN nursery was reported from 13 locations (Table 3.13.1) and the results are presented location viz.

Algeria: The nursery was conducted at Guelma and Oued-Smar. The susceptible check took rating of 9 at Guelma and 3 at Oued-Smar. Thirteen out of 30 entries were resistant at Guelma. There was no disease infestation at Oued-Smar.

Chile: At Graneros the entries including the susceptible check were rated between 1 and 3.

Egypt: The susceptible check at Gemmiza was rated at 9 on 1-9 scale and 13 entries were resistant/tolerant.

Ethiopia: The nursery was conducted at Debre Zeit. The susceptible check rated at 9 and 10 of the test entries were resistant/tolerant.

India: The nursery was conducted at 4 sites, Badnapur, Berhampur, Dholi and New Delhi. All the entries including check took 9 rating at Badnapur and New Delhi. However, at Berhampur, an entry UC 15; and at Dholi, the two entries namely UC 15 and ILC 240 were resistant and all others were susceptible.

Iran: The nursery was conducted at Oroumieh and Karaj, and the susceptible check rated between 7 and 9. Seven entries in Oroumieh and 29 entries in Karaj were resistant (rated $\leq$ 5).

Nepal: All entries including susceptible check were highly susceptible with 9 rating.

Sudan: The nursery was conducted at Hudeiba and susceptible check was rated at 9. Thirteen of the 30 lines were resistant with rating $\leq$ 5.

On the basis of reaction of lines across 13 locations, UC 15 and UC 27 were resistant at 7 sites, followed by ILC 240, ILC 851, FLIP 84-46C, FLIP 85-29C, FLIP 85-30C, FLIP 85-35C, and Be Sel 81-48 which were resistant at six sites. Further the reaction of the lines was different at different locations indicating the presence of variability in the pathogen.

Table 3.13.1. Reaction of chickpea entries to *Fusarium* wilt at different locations in the CIFWN during 1992/93.

Entry name	Pedigree	Origin	Algeria		Chile
			Guelma	Oued-Smar	Graneros
ILC 211	-	India	3	3	3
ILC 240	-	Afghanistan	3	3	1
ILC 336	RPIP (K) 12-071-02574	Iran	9	1	1
ILC 837	RPIP (K) 12-071-03794	Iran	9	1	1
ILC 851	RPIP (K) 12-071-03810	Iran	9	3	3
ILC 858	RPIP (K) 12-071-03816	Iran	9	1	1
ILC 860	RPIP (K) 12-071-03819	Iran	9	1	1
ILC 871	RPIP (K) 12-071-03836	Iran	9	1	1
ILC 911	RPIP (K) 12-071-03884	Iran	9	3	1
ILC 6055	Sonora 80	U.S.A.	1	1	1
FLIP 82-78C	X79TH219/ILC 201 X ILC 3279	ICARDA/ICRISAT	9	1	3
FLIP 82-180C	X79TH220/ILC 72 X ILC 480	ICARDA/ICRISAT	9	1	3
FLIP 84-32C	X81TH105/ILC 72 X ILC 484	ICARDA/ICRISAT	9	3	1
FLIP 84-34C	X81TH9/ILC 480 X ILC 202	ICARDA/ICRISAT	9	1	1
FLIP 84-43C	X81TH16/ILC 480 X ILC 3279	ICARDA/ICRISAT	9	1	1
FLIP 84-46C	X81TH55/ILC 1920 X ILC 2956	ICARDA/ICRISAT	9	1	1
FLIP 84-65C	X79TH220/ILC 72 X ILC 480	ICARDA/ICRISAT	9	1	3
FLIP 84-88C	X80TH177/ILC 195 X ILC 482	ICARDA/ICRISAT	9	1	1
FLIP 84-97C	X80TH181/ILC 3279 X ILC 1108	ICARDA/ICRISAT	9	1	1
FLIP 85-20C	BG 209 X ILC 72	ICARDA/ICRISAT	5	1	3
FLIP 85-29C	X81TH106/ILC 72 X ICC 4935	ICARDA/ICRISAT	1	1	3
FLIP 85-30C	X81TH106/ILC 72 X ICC 4935	ICARDA/ICRISAT	1	1	1
FLIP 85-35C	X81TH114/ILC 191 X ICC 4935	ICARDA/ICRISAT	5	1	3
FLIP 85-130C	ICCC 25 X ILC 202	ICARDA/ICRISAT	3	1	1
UC 15	-	U.S.A.	1	3	3
UC 27	-	U.S.A.	1	3	1
Be Sel 81-48	-	Tunisia	1	1	1
Be Sel 81-103	-	Tunisia	1	1	1
FTA (82) 29	-	Unknown	1	1	1
ICCV-2	-	ICRISAT/India	9	1	3
ILC 1929	(Susceptible repeated check)	Syria	9	3	3

Cont'd. ...

Table 3.13.1. Cont'd. ...

Entry name	Egypt	Ethiopia	India				Iran		Nepal	Sudan
	Gemmiza	Debre Zeit	Badnapur	Berhampore	Dholi	New Delhi	Oroumieh	Karaj	Parwanipur	Hudeiba
ILC 211	9	9	9	9	9	9	5	5	9	9
ILC 240	7	9	9	9	5	9	9	3	9	5
ILC 336	7	5	9	9	9	9	9	3	9	9
ILC 837	5	7	9	9	9	9	9	3	9	9
ILC 851	5	5	9	9	9	9	5	3	9	9
ILC 858	7	9	9	9	9	9	9	1	9	3
ILC 860	5	5	9	9	9	9	9	1	9	9
ILC 871	5	9	9	9	9	9	9	3	9	9
ILC 911	7	7	9	9	9	9	9	3	9	9
ILC 6055	7	9	9	9	9	9	9	5	9	9
FLIP 82-78C	7	9	9	9	7	9	9	3	9	3
FLIP 82-180C	3	9	9	9	9	9	9	1	9	7
FLIP 84-32C	7	9	9	9	9	9	9	3	9	9
FLIP 84-34C	3	9	9	9	9	9	9	1	9	9
FLIP 84-43C	3	5	9	9	9	9	9	1	9	9
FLIP 84-46C	5	5	9	9	7	9	9	3	9	3
FLIP 84-65C	7	7	9	9	9	9	5	3	9	5
FLIP 84-88C	5	5	9	9	9	9	9	1	9	9
FLIP 84-97C	5	9	9	9	7	9	9	3	9	5
FLIP 85-20C	7	5	9	9	9	9	7	1	9	3
FLIP 85-29C	7	9	9	9	7	9	3	3	9	3
FLIP 85-30C	7	9	9	9	9	9	5	3	9	1
FLIP 85-35C	7	5	9	9	9	9	5	1	9	5
FLIP 85-130C	7	7	9	9	9	9	3	5	9	9
UC 15	9	7	9	5	3	9	9	5	9	3
UC 27	3	3	9	9	9	9	9	3	9	5
Be Sel 81-48	3	5	9	9	9	9	9	1	9	9
Be Sel 81-103	5	9	9	9	9	9	9	3	9	9
FTA (82) 29	9	9	9	9	9	9	9	5	9	9
ICCV-2	7	7	9	9	7	9	9	7	9	3
ILC 1929	9	9	9	9	9	9	9	7	9	9
(Susceptible repeated check)										

3.14. CHICKPEA INTERNATIONAL LEAF MINER NURSERY (CILMN)

Material

The Chickpea International Leaf Miner Nursery comprised 30 test entries and one susceptible check, ILC 3397.

Methods and Management

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

Results and Discussion

Fifteen sets of leaf miner nursery were distributed to cooperators in 8 countries and the scores were reported from 6 cooperators from 5 countries (Table 3.14.1) and the results are discussed as under:

Iran: The nursery was conducted at Karaj. The susceptible check took rating of 7 and 26 test entries were rated as tolerant (rating $\leq$ 5).

Italy: The nursery was conducted at Tarquinia and all the entries including the susceptible check were tolerant.

Lebanon: All the entries including the susceptible check were tolerant at Terbol.

Syria: The susceptible check was rated at 9 and 21 test entries were tolerant (rating $\leq$ 5)

Turkey: All the entries at Izmir and Bornova took the rating between 7 and 9 and showed susceptible reaction.

On the basis of reaction across locations, few entries, ILC 394, ILC 822, ILC 992, ILC 1048, ILC 1216, ILC 5901, ILC 7354, ILC 7831, and ILC 7872 which took rating $\leq$ 3 were relatively tolerant as compared to others.

Table 3.14.1. Reaction of chickpea entries to leaf miner at different locations in the CILMN during 1992/93.

Entry name	Pedigree	Origin	Iran	Italy	Lebanon	Syria	Turkey	
			Karaj	Tarquinia	Terbol	Tel Hadya	Izmir	Bornova
ILC 316	-	Iran	5	3	2	5	7	7
ILC 394	-	Iran	3	3	3	3	7	7
ILC 655	-	Iran	7	3	3	4	7	7
ILC 822	-	Iran	3	2	3	3	7	7
ILC 992	-	Iran	3	2	3	3	7	7
ILC 1003	-	Iran	3	3	3	4	7	7
ILC 1009	-	Iran	3	2	3	4	7	7
ILC 1048	-	Iran	1	2	3	3	7	7
ILC 1216	-	Iran	3	2	2	3	7	7
ILC 3800	L-1852	Mexico	9	2	1	3	7	7
ILC 3828	Pch 65	Morocco	5	3	3	5	7	7
ILC 5351	PRT 82-A-140-B	Portugal	3	2	3	4	9	9
ILC 5580	ARI 00379	Cyprus	5	2	3	4	7	7
ILC 5600	PARC 1041-1	Pakistan	5	3	2	7	7	7
ILC 5609	PARC 1042-3	Pakistan	3	3	3	7	7	7
ILC 5614	PARC 1045-1	Pakistan	3	1	2	6	7	7
ILC 5615	PARC 1046-1	Pakistan	1	1	2	6	7	7
ILC 5641	PARC 1060-3	Pakistan	3	3	3	6	9	9
ILC 5648	PARC 1062-5	Pakistan	3	1	2	7	9	9
ILC 5664	PARC 1071-4	Pakistan	7	3	3	6	9	9
ILC 5665	PARC 1071-5	Pakistan	3	3	3	6	7	7
ILC 5682	PARC 1079-2	Pakistan	7	3	2	7	7	7
ILC 5901	K-1154	Former USSR	3	1	1	3	7	7
ILC 7510	ICC 9205	Iran	3	1	3	4	7	7
ILC 7534	ICC 9259	Iran	1	2	2	3	7	7
ILC 7618	ICC 9415	Iran	1	1	3	4	7	7
ILC 7647	ICC 9450	Iran	5	3	3	4	7	7
ILC 7831	ICC 13130	India	1	2	3	3	7	7
ILC 7872	ICC 13272	Iran	3	2	2	3	7	7
ILC 7974	ICC 13527	Iran	5	2	3	3	9	9
ILC 3397 (Repeated susceptible check)	-	Mexico	7	3	5	9	9	9

3.15. CHICKPEA INTERNATIONAL COLD TOLERANCE NURSERY (CICTN)

Material

The Chickpea International Cold Tolerance Nursery (CICTN) comprised 47 test entries and one susceptible check, ILC 533. These test entries were selected on the basis of their reaction to cold under Tel Hadya conditions.

Methods and Management

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

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

Results and Discussion

Thirty-six sets of CICTN were distributed to cooperators in 15 countries, however, the data with cold tolerance scores were received for 8 sets from 7 countries and the results for these locations (Table 3.15.1) are discussed as under:

India: At Durgapura all the entries including the susceptible check rated between 1 and 5.

Iran: At Nishabour, 22 test entries rated as tolerant (rating $\leq$ 5) and the susceptible check rated at 9.

Italy: The nursery was conducted at Tolentino. All the entries including the check rated between 1 and 3 and were tolerant.

Lebanon: The susceptible check took a rating of 8 at Terbol. Eight entries showed a reaction between 1 and 5 and were tolerant.

Portugal: At Elvas the susceptible check took 5 rating and all other entries rated between 1 and 4.

Syria: The nursery was grown at two sites, Breda and Tel Hadya. The susceptible check was killed (rating = 9) at both the sites. Forty one entries at Breda and 44 entries at Tel Hadya were resistant.

Turkey: The nursery was grown at Diyarbakir. The susceptible check was killed (rating = 9). One, 4, 4 entries took rating of 3, 4 and 5, respectively.

On the basis of cold reaction across locations, the entries ILC 1455, ILC 3465, ILC 3470, ILC 3857, ILC 5667, ILC 5947, ILC 5948, ILC 482-205 and ILC 482 Mutant were resistant/tolerant at least at 7 sites and these lines were relatively better in tolerance to cold as compared to others.

Table 3.15.1. Reaction of chickpea entries to cold at different locations in the CICIN during 1992/93.

Entry name	Pedigree	Origin	India Durdapura	Iran Nishabour
ILC 794	-	Iran	3	-
ILC 1071	-	Iran	3	9
ILC 1251	-	Iran	1	5
ILC 1256	-	Afghanistan	1	-
ILC 1444	-	Afghanistan	3	9
ILC 1455	-	Afghanistan	1	5
ILC 1464	-	Afghanistan	1	9
ILC 1875	-	India	5	-
ILC 3287	-	Pakistan	1	7
ILC 3465	-	Spain	3	5
ILC 3470	-	Spain	1	5
ILC 3598	-	India	1	9
ILC 3746	-	Nepal	3	7
ILC 3747	-	Nepal	1	9
ILC 3857	-	Morocco	1	5
ILC 3861	-	Morocco	5	9
ILC 5638	-	Pakistan	1	9
ILC 5663	-	Pakistan	1	3
ILC 5667	-	Pakistan	1	3
ILC 5947	-	Pakistan	1	3
ILC 5948	-	Pakistan	3	5
ILC 5951	-	Pakistan	1	3
ILC 5953	-	Pakistan	1	3
ILC 8262	ILC 3470	Spain	3	3
ILC 482-205	ILC 482	ICARDA	3	5
ILC 482(Mut.)	ILC 482	ICARDA	1	3
ILC 482(Mut.)	(ILC 482) M 17033	ICARDA	1	5
FLIP 81-62C	X77SD184/X75TA173 X NEC 139	ICARDA/ICRISAT	1	7
FLIP 82-6C	X79TH221/ILC 72 X ILC 1922	ICARDA/ICRISAT	3	5
FLIP 82-85C	X79TH118/ILC 1920 X ILC 195	ICARDA/ICRISAT	1	5
FLIP 82-97C	X79TH23/ILC 262 X ILC 783	ICARDA/ICRISAT	3	7
FLIP 82-115C	X80TH199/14TH-1T/ILC33279XIC78184	ICARDA/ICRISAT	1	7
FLIP 82-131C	X79TH23/ILC 262 X ILC 783	ICARDA/ICRISAT	1	5
FLIP 82-132C	X79TH23/ILC 262 X ILC 783	ICARDA/ICRISAT	3	7
FLIP 82-245C	X79TH50/ILC 591 X ILC 200	ICARDA/ICRISAT	1	3
FLIP 83-22C	X80TH177-BTH/ILC 195 X ILC 482	ICARDA/ICRISAT	3	9
FLIP 83-90C	X79TH123/ILC 1929 X ILC 200	ICARDA/ICRISAT	3	7
FLIP 84-107C	X81TH44/ILC 1920 X ILC 187	ICARDA/ICRISAT	1	5
FLIP 84-112C	X81TH53/ILC 1920 X ILC 2506	ICARDA/ICRISAT	1	9
FLIP 84-176C	X80TH199/ILC 3279 X IC 78184	ICARDA/ICRISAT	1	7
FLIP 85-4C	X82TH66/ILC 2593 X ILC 3279	ICARDA/ICRISAT	3	-
FLIP 85-49C	X83TH27/FLIP 82-72C X FLIP 82-81C	ICARDA/ICRISAT	1	9
FLIP 85-81C	X83TH81/ILC 2593 X FLIP 81-67C	ICARDA/ICRISAT	1	7
FLIP 86-86C	X83TH18/FLIP 81-57C X FLIP 82-72C	ICARDA/ICRISAT	1	7
FLIP 87-37C	X83TH23/FLIP 82-69C X FLIP 82-72C	ICARDA/ICRISAT	3	7
FLIP 87-82C	X84TH139/ILC 330 X FLIP 82-64C	ICARDA/ICRISAT	3	3
FLIP 90-92C	X87TH276\(ILC 1919 X FLIP 84-18C)X FLIP 83-47C	ICARDA/ICRISAT	1	5
ILC 533 (Susceptible repeated check)		Egypt	3	9

Cont'd. ...

Table 3.15.1. Cont'd. ...

Entry name	Italy Tolentino	Lebanon Terbol	Portugal Elvas	Syria Breda	Syria Tel Hadya	Turkey Diyarbakir
ILC 794	-	-	2	7	5	-
ILC 1071	1	7	2	4	4	9
ILC 1251	3	9	3	5	7	9
ILC 1256	3	9	2	5	6	9
ILC 1444	3	9	3	6	6	9
ILC 1455	1	6	2	4	4	5
ILC 1464	1	6	2	4	4	5
ILC 1875	3	8	2	4	4	9
ILC 3287	1	6	1	4	4	7
ILC 3465	1	8	1	4	4	4
ILC 3470	1	5	3	4	4	6
ILC 3598	1	9	2	6	5	8
ILC 3746	1	9	1	6	5	9
ILC 3747	1	7	3	7	4	9
ILC 3857	1	4	2	4	5	8
ILC 3861	1	4	2	4	4	8
ILC 5638	1	6	2	4	4	5
ILC 5663	1	6	2	4	3	6
ILC 5667	1	4	3	4	4	7
ILC 5947	1	4	2	4	4	7
ILC 5948	1	5	3	4	4	4
ILC 5951	1	6	1	6	4	4
ILC 5953	1	6	2	4	4	8
ILC 8262	1	6	2	3	3	6
ILC 482-205	3	5	2	4	4	5
ILC 482 (Mut.)	1	6	1	3	3	4
ILC 482 (Mut.)	3	6	2	4	4	9
FLIP 81-62C	1	6	1	4	4	7
FLIP 82-6C	3	7	2	5	5	7
FLIP 82-85C	3	7	4	4	5	6
FLIP 82-97C	3	6	3	5	4	8
FLIP 82-115C	3	6	4	4	4	7
FLIP 82-131C	3	7	2	4	4	8
FLIP 82-132C	3	5	3	4	5	7
FLIP 82-245C	3	6	3	4	4	8
FLIP 83-22C	3	8	3	5	5	8
FLIP 83-90C	3	7	3	5	4	8
FLIP 84-107C	1	6	3	5	4	8
FLIP 84-112C	3	7	2	4	4	3
FLIP 84-176C	3	7	3	4	4	7
FLIP 85-4C	3	-	3	4	4	8
FLIP 85-49C	3	9	3	5	5	8
FLIP 85-81C	3	6	2	4	4	6
FLIP 86-86C	1	7	2	4	4	6
FLIP 87-37C	3	7	2	4	5	6
FLIP 87-82C	1	7	2	4	4	6
FLIP 90-92C	1	6	1	4	4	6
ILC 533 (Susceptible repeated check)	3	9	5	9	9	9

4. LENTIL INTERNATIONAL TRIALS AND NURSERIES

Fourteen lentil international trials and nurseries were available to cooperators in 1992/93 season. These included yield trials, screening nurseries, stress nurseries and segregating populations. The results of these trials and nurseries are discussed in this section. Cooperators were free to use these materials directly or indirectly for the improvement of lentils in their own national programs.

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

Material

The Lentil Interntional Yield Trial - Large Seed comprised 23 test entries which were supplied and one local check to be added by the cooperator. The test entries were selections with seed size more than 4.5 g/100-seed. The test entries were selected on the basis of their superior performance in international screening nursery.

Methods and Management

The suggested trial design was a randomized complete block design with 3 replications. The recommended plot size was four rows, each 4 m long with inter row spacing of 25 cm. Eight hundred seeds per plot were supplied.

Fifty five sets of the trial were sent to cooperators in 27 countries. The results were, however, returned from 33 trials from 14 countries. The agronomic information received from cooperators is given in Table 4.1.1.

Results and Discussion

The data on time to flowering, time to maturity and plant height are given in Tables 4.1.2, 4.1.3 and 4.1.4, respectively. The entry means across locations for time to flowering, time to maturity and plant height ranged from 86 days for FLIP 88-7L to 91 days for Syrian local large (SLL) and FLIP 91-8L; 130 days for FLIP 87-17L, FLIP 88-7L, and FLIP 90-1L to 134 days for SLL; 26 cm to 29 cm, respectively.

The seed yields and rank of entries at different locations are given in Table 4.1.5. The ANOVA revealed that the differences among the entries were significant for 23 out of 32 locations reporting the yield data. The seed yields varied from 246 kg/ha at Izra'a in Syria to 3753 kg/ha at Hama in Syria. Among significant locations, at 13 locations some of the entries exceeded the local check by a significant margin. On the basis of average over locations the top five entries included FLIP 91-9L, FLIP 90-11L, FLIP 87-16L, FLIP 88-7L, and FLIP 89-5L with seed yields of 1406, 1297, 1297, 1275 and 1266 kg/ha, respectively.

The five best entries at different locations are given in Table 4.1.6. A line FLIP 91-9L occurred most frequently among the top five heaviest yielders at individual locations and was thus the widely adapted. Some other lines, namely, FLIP 87-16L, FLIP 88-7L, FLIP 89-5L, FLIP 84-27L, FLIP 88-6L, and FLIP 90-11L were also among the adapted lines across locations.

On the basis of average over two years for the common entries (Table 4.1.7.), FLIP 90-11L ranked number 1 and was followed by FLIP 87-16L, FLIP 88-7L, FLIP 87-17L, and FLIP 88-6L with seed yields of 1275, 1266, 1257, 1234, and 1217 kg/ha, respectively.

Table 4.1.1. Agronomic details for LIYT-L-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Guelma	23.01.93	26.06.93	-	200	-	-	Igran	Local check
Algeria	Khroub	23.01.93	23.06.93	17	46	-	-	Maloran + Kerb	-
Algeria	Setif	29.11.92	23.06.93	-	100	-	-	Treflan	Setif 618
Chile	Chillan	09.06.93	19.11.93	-	90	-	-	-	Araucana-INIA
Chile	Valdivia	20.08.93	26.01.94	40	100	75	-	Linuron	Araucana
China	Gansu	18.03.93	21.06.93	35	53	-	-	-	Xiao Bian Dou
Egypt	Sakha	08.11.92	NA	38	75	-	-	Gesagard	Giza 370
Greece	Larissa	12.11.92	25.05.93	-	60	-	-	Thiodan	Thessalia
Iran	Qazvin	20.03.93	27.07.93	30	50	-	-	-	Qazvin
Iran	Karaj	15.04.93	06.07.93	40	70	-	-	Treflan	Qazvin
Iran	Maragheh	16.04.93	30.07.93	45	50	-	-	-	Ziba
Iran	Nishabour	06.04.93	11.07.93	27	69	-	4	Metasystox	Nishabour
Iran	Sanandaj	23.04.93	28.07.93	8	32	-	-	Sevin	Niskapana
Iran	Zanjan	21.03.93	18.07.93	-	-	-	2	Diazinon	Zanjan
Italy	Caltagirone	05.02.93	12.06.93	-	60	-	-	-	-
Italy	Catania	30.01.93	15.06.93	120	-	-	-	-	Local of Barrafranca
Italy	Tolentino	10.03.93	21.06.93	-	-	-	1	-	Castelluccio
Jordan	Mushaggar	13.12.92	07.06.93	-	-	-	-	Fusilade	Jordan-1
Jordan	Rabba	13.12.92	29.05.93	-	-	-	-	-	Jordan-1
Libya	El Safsaf	10.12.92	05.06.93	-	-	-	-	-	El Safsaf-1
Portugal	Elvas	11.12.92	15.06.93	-	60	60	-	Prometrine	L 214
Spain	Badajoz	12.11.92	23.06.93	-	-	-	-	-	Azagala
Syria	Breda	06.12.92	09.05.93	-	50	-	-	-	Kurdi-1
Syria	Gelline	10.12.92	18.05.93	20	50	-	-	-	Kurdi
Syria	Hama	27.12.92	30.05.93	-	50	-	-	-	Kurdi
Syria	Heimo	04.01.93	13.06.93	-	50	-	-	-	Kurdi-1
Syria	Idleb	20.12.92	29.05.93	20	60	-	-	Fusilade	Kurdi-1
Syria	Izra'a	18.01.93	25.06.93	-	110	-	-	-	Kurdi-1
Syria	Tel Hadya	08.12.92	10.05.93	-	50	-	-	-	Kurdi-1
Tunisia	El Kef	NA	NA	NA	NA	NA	NA	NA	NA
Tunisia	Sousse	25.01.93	24.05.93	NA	NA	NA	NA	NA	NA
Turkey	Erzurum	18.05.93	23.08.93	30	70	NA	NA	Tribunil	-
Turkey	Haymana	06.04.93	16.07.93	30	60	-	-	-	Kaya 91

NA = Not available

Table 4.1.2. Time to flowering (days) of entries at different locations in the LIYT-L during 1992/93.

Entry Name	ILL	Parentage	Origin	Algeria			Chile		China	Egypt
				Guelma	Khroub	Setif	Chillan	Valdivia	Gansu	Sakha
Syrian L. Large	4400	-	Syria	107	94	147	103	90	48	125
78S26002	5582	-	Jordan	99	96	147	104	80	49	100
FLIP84-27L	5699	ILL 20 x ILWL 1	ICARDA	99	96	147	104	77	56	110
FLIP86- 5L	5991	ILL 466 x ILL 212	ICARDA	99	94	150	104	80	53	110
FLIP86-10L	5996	ILL 466 x ILL 212	ICARDA	99	100	147	104	80	50	115
FLIP87- 2L	6192	ILL 262 x ILL 350	ICARDA	99	102	147	104	86	50	115
FLIP87-16L	6206	ILL 8 x ILL 212	ICARDA	99	92	147	104	80	49	95
FLIP87-17L	6207	ILL 8 x ILL 212	ICARDA	99	96	147	104	80	52	100
FLIP88- 6L	6430	ILL4402 x ILL4400	ICARDA	99	95	147	104	77	49	110
FLIP88- 7L	6431	ILL5582 x SH4901	ICARDA	99	92	147	104	77	53	95
FLIP88-12L	6436	ILL4401 x ILL5513	ICARDA	99	96	147	104	83	51	100
FLIP88-13L	6437	ILL5564 x ILL5521	ICARDA	107	105	147	104	83	49	110
FLIP88-14L	6438	ILL5564 x ILL5521	ICARDA	107	96	147	104	88	51	115
FLIP89- 5L	6763	ILL5582 x ILL 253	ICARDA	107	97	147	104	86	50	110
FLIP89- 7L	6765	ILL 262 x ILL5582	ICARDA	99	93	147	104	80	50	115
FLIP90- 1L	6970	ILL1880 x ILL 500	ICARDA	107	98	147	104	80	50	110
FLIP90- 3L	6972	ILL 28 x ILL 851	ICARDA	109	101	147	104	88	58	115
FLIP90- 8L	6977	ILL2587 x ILL 99	ICARDA	109	101	147	104	88	58	115
FLIP90-10L	6979	ILL4349 x ILL 15	ICARDA	107	98	147	104	84	48	115
FLIP90-11L	6980	ILL4400 x ILL5428	ICARDA	99	93	147	104	86	56	115
FLIP90-13L	6982	ILL4400 x ILL5582	ICARDA	107	100	147	104	88	49	115
FLIP91- 8L	7134	ILL5744 x ILL 262	ICARDA	107	104	147	107	88	48	115
FLIP91- 9L	7135	ILL5744 x ILL 262	ICARDA	99	91	147	106	84	51	110
Local check	-	-	-	99	92	150	107	90	48	75
Location Mean				**103**	**97**	**147**	**104**	**83**	**51**	**109**
S.E. of Mean				One	One	One	0.57	One	0.14	One
LSD at 5%				rep	rep	rep	1.63	rep	0.39	rep
C.V. %							0.95		0.46	

Cont'd. ...

Table 4.1.2. Cont'd. ...

Entry Name	Greece	Iran						Italy			Jordan	
	Larissa	Qazvin	Karaj	Maragheh	Nisha-bour	Sanandaj	Zanjan	Catania	Calta-girone	Tolen-tino	Mushaggar	Rabba
Syrian L. Large	157	73	37	62	37	38	67	92	92	69	85	61
78S26002	156	73	32	63	40	33	61	88	93	62	80	60
FLIP84-27L	157	71	34	62	37	35	59	88	91	62	79	60
FLIP86- 5L	157	71	32	62	36	39	60	88	91	63	78	59
FLIP86-10L	157	72	31	63	38	38	60	88	89	63	79	59
FLIP87- 2L	155	71	38	63	47	37	67	88	89	68	82	60
FLIP87-16L	155	71	29	62	54	34	59	88	90	62	79	57
FLIP87-17L	155	73	33	62	33	36	59	88	90	62	80	60
FLIP88- 6L	155	72	32	62	49	32	59	88	89	62	79	59
FLIP88- 7L	155	72	29	62	38	33	59	88	90	61	78	59
FLIP88-12L	155	72	36	63	44	31	61	88	90	65	79	59
FLIP88-13L	157	72	38	61	39	33	62	91	93	64	79	60
FLIP88-14L	155	72	38	62	35	37	62	91	92	68	84	60
FLIP89- 5L	156	71	35	61	39	33	59	88	90	65	82	60
FLIP89- 7L	155	71	35	61	35	37	59	88	90	64	79	60
FLIP90- 1L	156	72	26	61	34	32	59	88	90	62	79	60
FLIP90- 3L	155	71	34	63	33	35	63	88	93	66	81	60
FLIP90- 8L	156	73	38	63	34	37	65	89	93	67	80	60
FLIP90-10L	159	73	39	62	33	35	66	89	89	66	81	60
FLIP90-11L	157	71	31	62	35	35	65	89	93	66	84	60
FLIP90-13L	157	73	32	62	35	36	66	88	93	67	84	60
FLIP91- 8L	156	72	40	63	48	39	67	89	93	69	85	60
FLIP91- 9L	154	72	35	62	37	34	63	89	94	66	79	57
Local check	158	72	40	63	41	34	64	92	101	72	79	55
Location Mean	**156**	**72**	**34**	**62**	**39**	**35**	**62**	**89**	**92**	**65**	**81**	**59**
S.E. of Mean	0.51	0.56	1.96	0.69	0.26	1.18	0.90	0.48	0.78	0.31	0.83	0.86
LSD at 5%	1.46	NS	5.58	NS	0.74	3.35	2.81	1.37	2.21	0.88	2.36	2.46
C.V. %	0.57	1.36	9.89	1.91	1.15	5.80	2.75	0.94	1.47	0.83	1.78	2.52

Cont'd. ...

Table 4.1.2. Cont'd. ...

Entry name	Libya	Portugal	Spain		Syria						Tunisia	Turkey		Overall Mean
	El-Safsaf*	Elvas	Badajoz	Breda	Gelline	Hama	Heimo	Idleb	Izra'a	Tel-Hadya	Sousse	Erzurum	Haymana	
Syrian L. Large	125	111	130	131	109	108	113	115	102	126	72	59	67	91
78S26002	125	108	127	125	106	104	106	114	92	122	77	49	62	87
FLIP84-27L	125	102	127	125	105	103	105	115	92	119	77	49	62	87
FLIP86- 5L	125	103	127	126	104	102	105	115	92	120	82	48	62	87
FLIP86-10L	125	103	128	125	106	102	105	114	92	120	82	49	62	88
FLIP87- 2L	125	108	130	126	106	108	107	114	96	126	76	55	64	90
FLIP87-16L	125	106	128	125	105	105	104	114	91	123	72	48	61	87
FLIP87-17L	125	106	127	125	105	104	104	114	91	122	69	47	61	86
FLIP88- 6L	125	106	127	125	106	105	105	114	92	122	73	48	61	87
FLIP88- 7L	125	104	125	125	104	103	103	115	91	122	74	47	60	86
FLIP88-12L	125	106	127	126	106	105	108	114	92	123	76	47	60	87
FLIP88-13L	125	105	127	127	106	105	111	115	93	121	74	50	63	89
FLIP88-14L	125	108	128	127	107	107	112	114	100	124	81	55	60	90
FLIP89- 5L	125	108	128	127	107	107	108	114	94	125	74	47	60	88
FLIP89- 7L	125	103	127	125	105	104	104	114	93	121	73	48	62	87
FLIP90- 1L	125	105	128	127	105	105	107	115	93	123	79	50	62	87
FLIP90- 3L	125	104	128	125	105	106	107	114	98	125	79	51	63	89
FLIP90- 8L	125	103	129	127	106	107	109	113	99	124	81	51	63	90
FLIP90-10L	125	106	128	128	109	104	110	113	96	124	74	56	63	89
FLIP90-11L	125	109	129	128	109	108	109	115	95	127	73	52	63	89
FLIP90-13L	125	110	131	128	109	109	110	114	97	127	71	56	65	90
FLIP91- 8L	125	109	132	127	108	108	109	115	97	126	74	58	66	91
FLIP91- 9L	125	102	127	125	103	106	105	113	92	123	81	49	61	88
Local check	125	107	121	128	107	109	112	115	97	127	76	56	84	-
Location Mean	**125**	**106**	**128**	**126**	**106**	**106**	**107**	**114**	**95**	**123**	**76**	**51**	**64**	
S.E. of Mean		0.85	0.84	0.75	0.55	0.46	1.01	0.49	1.61	0.77	3.65	1.12	0.54	
LSD at 5%		2.41	2.40	2.15	1.57	1.32	2.89	NS	4.57	2.19	NS	3.18	1.53	
C.V. %		1.38	1.14	1.03	0.90	0.76	1.64	0.75	2.94	1.08	8.34	3.79	1.46	

* The data could not be analyzed as the values recorded were similar for all the entries in all replications.
NS = Not Significant at $P \leq 0.05$.

Table 4.1.3. Time to maturity (days) of enries at different locations in the LIYT-L during 1992/93.

Entry Name	Algeria			Chile		China	Greece	Iran		
	Guelma*	Khroub	Setif*	Chillan	Valdivia*	Gansu	Larissa	Qazvin	Karaj	Maragheh
Syrian L. Large	154	144	195	146	151	92	175	94	69	95
78S26002	154	144	195	146	151	92	171	91	69	94
FLIP84-27L	154	195	146	146	151	93	169	91	73	94
FLIP86- 5L	154	141	195	146	151	92	169	90	69	95
FLIP86-10L	154	144	195	146	151	93	169	90	69	93
FLIP87- 2L	154	147	195	146	151	91	173	95	70	94
FLIP87-16L	154	142	195	146	151	91	172	91	66	93
FLIP87-17L	154	145	195	146	151	92	169	88	71	93
FLIP88- 6L	154	142	195	146	151	92	171	93	69	94
FLIP88- 7L	154	144	195	146	151	92	170	89	66	95
FLIP88-12L	154	144	195	146	151	92	174	93	70	93
FLIP88-13L	154	146	195	146	151	92	170	91	72	93
FLIP88-14L	154	143	195	146	151	91	170	94	68	94
FLIP89- 5L	154	144	195	146	151	92	174	92	69	93
FLIP89- 7L	154	146	195	146	151	94	172	91	73	95
FLIP90- 1L	154	144	195	146	151	91	171	91	64	93
FLIP90- 3L	154	148	195	146	151	92	172	92	72	94
FLIP90- 8L	154	145	195	146	151	91	173	94	72	93
FLIP90-10L	154	144	195	146	151	92	178	92	72	95
FLIP90-11L	154	142	195	146	151	92	174	94	66	94
FLIP90-13L	154	145	195	146	151	91	174	93	65	95
FLIP91- 8L	154	143	195	160	151	94	172	94	71	95
FLIP91- 9L	154	146	195	151	151	94	171	93	71	94
Local check	154	144	195	164	151	93	179	94	74	94
Location Mean	**154**	**146**	**195**	**148**	**151**	**92**	**172**	**92**	**70**	**94**
S.E. of Mean		One		One		0.10	0.66	0.30	2.12	0.75
LSD at 5%		rep		rep		0.27	1.88	0.86	NS	NS
C.V. %						0.18	0.66	0.57	5.27	1.39

Cont'd...

Table 4.1.3. Cont'd. ...

Entry Name	Iran			Italy		Jordan		Libya	Portugal	Spain	Syria
	Nishabour	Sanandaj	Zanjan	Catania	Tolentino	Mushaggar	Rabba	El Safsaf*	Elvas	Badajoz	Breda
Syrian L. Large	75	73	100	133	107	134	98	177	171	217	172
78S26002	80	76	93	128	102	129	96	177	168	217	163
FLIP84-27L	76	73	97	128	104	129	96	177	170	218	165
FLIP86- 5L	77	77	100	129	105	126	94	177	169	217	164
FLIP86-10L	77	79	96	128	104	125	92	177	168	216	166
FLIP87- 2L	80	75	95	130	105	127	98	177	169	218	168
FLIP87-16L	86	76	93	128	102	122	92	177	168	217	163
FLIP87-17L	75	76	101	126	101	123	92	177	168	216	163
FLIP88- 6L	83	75	96	128	102	118	94	177	168	217	163
FLIP88- 7L	82	75	92	126	102	126	92	177	168	215	163
FLIP88-12L	80	74	94	130	107	132	96	177	168	219	168
FLIP88-13L	79	76	96	128	105	122	92	177	168	216	164
FLIP88-14L	76	73	95	130	107	125	98	177	168	217	170
FLIP89- 5L	80	75	94	128	106	122	97	177	168	217	170
FLIP89- 7L	74	75	97	128	106	122	96	177	169	219	165
FLIP90- 1L	74	74	89	127	103	119	96	177	168	216	163
FLIP90- 3L	72	76	95	131	105	130	96	177	169	220	164
FLIP90- 8L	74	76	97	129	107	122	96	177	168	216	170
FLIP90-10L	72	76	96	129	105	123	98	177	169	219	169
FLIP90-11L	76	74	100	130	105	133	98	177	170	217	169
FLIP90-13L	76	74	97	132	112	134	98	177	171	218	171
FLIP91- 8L	82	74	99	130	103	130	98	177	169	219	169
FLIP91- 9L	77	74	97	128	102	126	96	177	168	218	164
Local check	77	72	97	136	105	120	94	177	170	222	171
Location Mean	**77**	**75**	**96**	**129**	**105**	**126**	**96**	**177**	**169**	**218**	**166**
S.E. of Mean	0.42	1.21	2.38	0.89	0.47	2.72	1.33		0.33	0.93	1.14
LSD at 5%	1.19	NS	NS	2.52	1.35	7.75	3.77		0.95	2.64	3.23
C.V. %	0.93	2.79	4.29	1.19	0.78	3.75	2.40		0.34	0.74	1.18

Cont'd. ...

Table 4.1.3. Cont'd. ...

Entry name	Syria						Tunisia	Turkey		Overall Mean
	Gelline	Hama	Heimo	Idleb	Izra'a	Tel Hadya	Sousse	Erzurum	Haymana	
Syrian L. Large	162	154	157	163	150	170	96	97	95	134
78S26002	158	146	156	158	143	167	102	91	87	131
FLIP84-27L	157	150	160	155	146	167	98	91	87	132
FLIP86- 5L	159	152	161	161	148	168	107	91	89	132
FLIP86-10L	159	151	160	162	145	167	107	91	88	132
FLIP87- 2L	161	150	155	158	146	167	102	95	92	133
FLIP87-16L	156	147	154	155	146	164	99	91	85	131
FLIP87-17L	156	148	155	158	143	165	93	91	86	130
FLIP88- 6L	156	146	154	162	146	166	98	91	84	131
FLIP88- 7L	154	146	155	158	145	166	99	91	85	130
FLIP88-12L	158	150	157	164	149	168	100	93	89	133
FLIP88-13L	153	147	158	155	140	166	99	91	87	131
FLIP88-14L	159	150	161	163	145	167	106	97	91	132
FLIP89- 5L	158	148	156	158	150	168	99	93	89	132
FLIP89- 7L	157	148	155	154	143	165	98	93	87	131
FLIP90- 1L	157	148	153	159	144	163	104	91	89	130
FLIP90- 3L	158	149	157	159	151	166	104	97	91	133
FLIP90- 8L	157	148	161	158	146	166	106	97	87	132
FLIP90-10L	160	147	158	156	146	168	98	95	88	132
FLIP90-11L	162	152	155	161	149	168	98	95	90	133
FLIP90-13L	162	154	156	164	151	169	95	97	95	133
FLIP91- 8L	158	149	153	161	145	166	98	97	93	133
FLIP91- 9L	157	149	155	153	143	163	106	91	90	132
Local check	161	153	157	165	147	167	100	93	101	
Location Mean	**158**	**149**	**157**	**159**	**146**	**167**	**100**	**93**	**89**	
S.E. of Mean	One	0.52	1.11	2.60	1.98	0.83	4.27	1.00	0.78	
LSD at 5%	rep	1.48	3.17	NS	5.64	2.38	NS	2.84	2.21	
C.V. %		0.60	1.23	2.32	2.35	0.87	7.36	1.85	1.50	

* The data could not be analyzed as the values recorded were similar for all the entries in all replications. NS = Not Significant at $P \leq 0.05$.

Table 4.1.4. Plant height (cm) of entries at different locations in the LIYT-L during 1992/93.

Entry Name	Algeria			Chile		China	Greece	Iran		
	Guelma	Khroub	Setif	Chillan	Valdivia	Gansu	Larissa	Qazvin	Karaj	Maragheh
Syrian L. Large	40	33	17	30	27	26	30	33	31	19
78S26002	30	33	19	30	29	23	30	27	27	20
FLIP84-27L	30	35	19	32	29	26	28	37	28	17
FLIP86- 5L	30	30	26	33	24	24	30	25	29	19
FLIP86-10L	27	30	26	28	27	26	33	24	26	19
FLIP87- 2L	33	27	25	28	26	25	32	35	26	18
FLIP87-16L	32	32	24	30	24	20	30	20	26	17
FLIP87-17L	28	36	26	30	28	29	30	28	26	19
FLIP88- 6L	38	30	26	32	30	28	32	28	27	19
FLIP88- 7L	40	25	19	33	27	28	32	19	25	19
FLIP88-12L	34	32	20	27	27	27	32	31	28	17
FLIP88-13L	30	28	24	30	29	23	30	32	31	18
FLIP88-14L	30	28	18	33	27	27	32	30	36	16
FLIP89- 5L	40	35	26	27	25	26	30	28	25	18
FLIP89- 7L	30	28	28	33	30	24	32	28	24	21
FLIP90- 1L	26	32	25	32	25	25	30	27	22	18
FLIP90- 3L	30	35	19	30	26	27	33	31	28	19
FLIP90- 8L	37	37	27	30	26	26	28	32	27	22
FLIP90-10L	36	33	25	33	27	28	30	30	31	20
FLIP90-11L	40	30	28	32	26	25	30	30	29	18
FLIP90-13L	32	37	26	33	27	28	32	28	31	20
FLIP91- 8L	34	36	26	30	27	24	32	31	27	18
FLIP91- 9L	42	32	24	30	27	22	32	35	28	19
Local check	30	32	28	30	39	34	28	35	27	17
Location Mean	**33**	**33**	**24**	**31**	**27**	**26**	**31**	**29**	**28**	**19**
S.E. of Mean	One	One	0.52	1.66	1.71	0.13	1.67	0.38	1.25	1.43
LSD at 5%	rep	rep	1.49	NS	4.86	0.36	NS	1.08	3.56	NS
C.V. %			3.81	9.37	10.76	0.85	9.40	2.23	7.84	13.24

Cont'd. ...

Table 4.1.4. Cont'd. ...

Entry Name	Iran			Italy		Jordan		Portugal	Spain	Syria
	Nishabour	Sanandaj	Zanjan	Calta-girone	Tolentino	Mushaggar	Rabba	Elvas	Badajoz	Breda
Syrian L. Large	33	18	19	27	35	33	25	31	28	25
78S26002	35	19	14	22	29	27	22	28	28	25
FLIP84-27L	33	19	17	24	33	30	27	30	33	27
FLIP86- 5L	33	19	14	22	33	29	24	28	29	25
FLIP86-10L	30	18	16	23	31	29	25	26	28	26
FLIP87- 2L	35	17	18	22	31	28	26	31	30	25
FLIP87-16L	37	18	16	23	30	26	24	28	33	27
FLIP87-17L	25	18	14	23	30	27	24	31	28	24
FLIP88- 6L	33	20	14	23	30	27	24	29	30	23
FLIP88- 7L	31	19	16	23	31	29	25	30	34	25
FLIP88-12L	30	18	18	24	33	29	24	32	30	26
FLIP88-13L	33	19	19	25	34	31	24	34	31	27
FLIP88-14L	32	19	19	24	36	33	26	34	31	23
FLIP89- 5L	30	19	17	23	34	29	24	32	32	24
FLIP89- 7L	31	20	17	23	34	31	26	35	33	25
FLIP90- 1L	30	18	14	24	29	27	25	31	34	26
FLIP90- 3L	33	18	18	26	34	28	28	33	35	27
FLIP90- 8L	27	19	16	25	35	28	25	35	35	26
FLIP90-10L	25	18	18	23	31	32	24	30	31	27
FLIP90-11L	32	18	16	25	34	32	27	33	32	27
FLIP90-13L	30	19	19	24	35	31	27	34	34	26
FLIP91- 8L	31	19	18	26	32	31	25	33	35	25
FLIP91- 9L	33	18	18	25	32	29	24	31	35	28
Local check	31	20	14	25	34	32	27	35	34	28
Location Mean	**31**	**19**	**17**	**24**	**33**	**29**	**25**	**31**	**32**	**26**
S.E. of Mean	0.35	0.73	0.91	0.90	1.00	1.15	1.40	1.21	1.50	0.94
LSD at 5%	1.00	NS	2.60	2.56	2.85	3.28	NS	3.45	4.26	NS
C.V. %	1.95	6.79	9.50	6.50	5.33	6.79	9.70	6.68	8.17	6.33

Cont'd. ...

Table 4.1.4. Cont'd. ...

Entry name	Syria						Tunisia	Turkey		Overall Mean
	Gelline	Hama	Heimo	Idleb	Izra'a	Tel Hadya	Sousse	Erzurum	Haymana	
Syrian L. Large	30	37	33	24	15	28	37	26	26	28
78S26002	30	32	30	23	16	26	40	25	24	26
FLIP84-27L	35	32	32	20	17	28	37	27	25	28
FLIP86- 5L	35	32	31	22	16	24	38	25	23	27
FLIP86-10L	35	30	32	22	18	26	42	25	24	27
FLIP87- 2L	31	33	35	23	17	26	39	22	24	27
FLIP87-16L	35	32	33	22	17	25	41	24	23	27
FLIP87-17L	34	32	32	23	17	25	45	23	24	27
FLIP88- 6L	35	35	30	22	15	26	36	22	24	27
FLIP88- 7L	35	33	32	23	18	26	41	24	23	27
FLIP88-12L	35	35	32	23	17	26	38	25	24	27
FLIP88-13L	40	35	31	24	17	25	36	26	25	28
FLIP88-14L	35	37	33	25	15	26	40	24	26	28
FLIP89- 5L	37	34	33	23	16	27	37	22	24	28
FLIP89- 7L	35	35	39	24	17	29	40	26	25	28
FLIP90- 1L	35	35	29	24	14	25	37	23	22	26
FLIP90- 3L	30	33	34	24	15	26	39	28	25	28
FLIP90- 8L	31	33	30	23	18	28	36	25	25	28
FLIP90-10L	35	37	32	24	15	28	38	24	24	28
FLIP90-11L	30	35	37	23	16	27	38	26	24	28
FLIP90-13L	35	37	34	23	18	27	35	26	25	29
FLIP91- 8L	32	37	37	25	17	29	35	24	25	28
FLIP91- 9L	35	37	36	21	18	26	32	28	26	28
Local check	45	38	32	22	20	30	35	28	29	
Location Mean	**34**	**34**	**33**	**23**	**17**	**27**	**38**	**25**	**25**	
S.E. of Mean	0.31	1.62	1.87	1.23	1.26	1.31	2.23	1.65	0.77	
LSD at 5%	0.89	4.60	5.33	NS	NS	NS	NS	NS	2.20	
C.V. %	1.58	8.16	9.86	9.22	13.08	8.55	10.16	11.48	5.45	

NS = Not significant at $P \leq 0.05$.

Table 4.1.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIYT-L during 1992/93.

Entry Name	Algeria				Chile				China		Egypt		Greece	
	Guelma		Setif		Chillan		Valdivia		Gansu		Sakha		Larissa	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian L. Large	347	22	471	24	1140	18	427	17	211	15	167	20	1758	24
78S26002	280	24	890	7	1256	12	353	21	44	18	204	16	2558	18
FLIP84-27L	507	11	524	21	1016	24	300	24	2511	4	167	21	2317	22
FLIP86- 5L	457	18	532	20	1340	9	396	20	2478	6	167	22	2658	15
FLIP86-10L	473	17	649	19	1373	8	400	19	2311	13	222	12	2317	21
FLIP87- 2L	437	20	721	14	1122	20	320	23	2311	12	204	15	2667	13
FLIP87-16L	607	4	982	4	1489	5	667	6	2111	16	278	8	2975	2
FLIP87-17L	433	21	908	5	1422	6	438	15	2444	7	222	13	2733	6
FLIP88- 6L	573	8	772	12	1113	22	549	11	2478	5	296	7	2675	11
FLIP88- 7L	573	7	1056	1	1509	4	720	4	2544	2	278	9	2675	12
FLIP88-12L	503	13	482	23	1153	16	431	16	2544	3	333	6	2892	3
FLIP88-13L	453	19	521	22	1033	23	1082	2	1511	23	444	2	2733	7
FLIP88-14L	490	15	783	10	1604	3	1240	1	1578	22	148	23	2667	14
FLIP89- 5L	563	9	694	16	1400	7	402	18	2867	1	426	3	2392	20
FLIP89- 7L	503	12	707	15	1160	15	482	13	2022	19	185	19	2733	5
FLIP90- 1L	533	10	779	11	1329	11	329	22	2200	14	333	5	2692	9
FLIP90- 3L	500	14	832	8	1209	13	651	7	2089	17	204	17	2642	16
FLIP90- 8L	573	6	901	6	1120	21	629	8	1911	21	407	4	2675	10
FLIP90-10L	307	23	769	13	1124	19	502	12	1489	24	185	18	2300	23
FLIP90-11L	480	16	651	18	1336	10	576	10	2367	11	259	10	2692	8
FLIP90-13L	753	2	1044	2	1147	17	620	9	2444	8	93	24	2625	17
FLIP91- 8L	670	3	658	17	1193	14	480	14	2422	10	222	14	2867	4
FLIP91- 9L	993	1	1007	3	1869	1	687	5	2433	9	241	11	3108	1
Local check	589	5	832	9	1729	2	962	3	1922	20	1056	1	2450	19
Location Mean	**525**		**757**		**1299**		**568**		**2214**		**281**		**2617**	
S.E. of Mean	74.35		147.45		116.23		117.83		269.65		77.68		151.74	
LSD at 5%	211.65		NS		330.86		335.41		NS		221.12		431.93	
C.V. %	24.53		33.74		15.49		35.90		21.09		47.91		10.04	
Entry > L. check	1		-		0		0		-		0		3	

Table 4.1.5. Cont'd. ...

Entry Name	Iran												Italy	
	Qazvin		Karaj		Maragheh		Nishabour		Sanandaj		Zanjan		Catania	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian L. Large	200	24	267	24	369	6	1743	14	435	15	350	2	560	22
78S26002	667	6	609	10	327	8	1791	11	445	12	213	20	667	18
FLIP84-27L	867	1	676	7	371	5	1792	10	463	10	231	15	1137	4
FLIP86- 5L	444	20	465	19	269	17	2236	4	597	1	230	16	790	12
FLIP86-10L	556	9	480	18	276	14	1970	6	490	7	302	4	667	19
FLIP87- 2L	444	18	480	17	300	10	2522	2	385	21	239	13	600	20
FLIP87-16L	544	10	600	11	204	23	1672	16	493	6	246	10	1157	3
FLIP87-17L	544	11	794	4	271	15	1480	21	435	14	206	23	1077	5
FLIP88- 6L	722	3	487	15	347	7	1614	19	438	13	270	8	943	7
FLIP88- 7L	689	4	552	13	289	11	1745	13	494	5	315	3	953	6
FLIP88-12L	667	7	552	12	247	19	1186	23	366	24	259	9	680	16
FLIP88-13L	667	5	857	2	249	18	2787	1	423	17	235	14	670	17
FLIP88-14L	267	23	293	22	231	22	1822	9	454	11	226	17	440	23
FLIP89- 5L	467	17	487	16	284	12	1830	8	406	20	361	1	923	9
FLIP89- 7L	489	13	728	5	233	21	1896	7	377	23	206	22	747	14
FLIP90- 1L	467	16	269	23	389	4	1640	17	425	16	226	18	1197	2
FLIP90- 3L	444	19	513	14	430	2	2189	5	477	8	200	24	733	15
FLIP90- 8L	278	22	857	3	280	13	1569	20	422	18	207	21	927	8
FLIP90-10L	478	15	857	1	309	9	1628	18	494	4	213	19	590	21
FLIP90-11L	622	8	454	20	184	24	1472	22	506	3	244	11	887	10
FLIP90-13L	500	12	313	21	244	20	1757	12	512	2	270	7	837	11
FLIP91- 8L	422	21	609	9	269	16	994	24	382	22	281	6	770	13
FLIP91- 9L	778	2	626	8	438	1	2282	3	421	19	302	5	1497	1
Local check	489	14	685	6	407	3	1729	15	471	9	243	12	340	24
Location Mean	**530**		**563**		**301**		**1806**		**451**		**253**		**824**	
S.E. of Mean	90.20		107.68		75.68		106.87		47.15		41.54		142.50	
LSD at 5%	256.76		306.50		NS		304.20		NS		NS		405.62	
C.V. %	29.50		33.13		43.59		10.25		18.13		28.42		29.94	
Entry > L. check	2		0		-		5		-		-		14	

Cont'd...

Table 4.1.5. Cont'd. ...

Entry Name	Italy				Jordan				Libya		Portugal		Spain	
	Caltagirone		Tolentino		Mushaggar		Rabba		El Safsaf		Elvas		Badajoz	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian L. Large	404	17	2436	8	962	24	1400	8	1355	19	2093	24	1084	6
78S26002	372	22	2001	23	1317	21	1267	16	1842	5	2965	6	498	24
FLIP84-27L	522	11	2357	12	1385	17	1507	5	1952	4	2677	17	969	8
FLIP86- 5L	380	20	2403	9	1444	16	1411	7	1553	16	2558	20	511	23
FLIP86-10L	411	16	2298	14	1351	18	924	24	1585	15	2542	21	720	18
FLIP87- 2L	663	3	2639	3	1171	23	1120	20	1502	18	3032	4	907	10
FLIP87-16L	623	4	2488	6	1559	12	1122	19	1613	14	2910	9	1200	3
FLIP87-17L	508	12	2159	19	1464	14	1331	11	1635	11	3076	2	1031	7
FLIP88- 6L	741	1	2092	20	1606	7	1762	1	1618	12	3042	3	929	9
FLIP88- 7L	571	9	2267	17	1608	6	1368	10	1828	6	2849	13	698	19
FLIP88-12L	597	7	2045	22	1478	13	1290	13	2293	2	2882	12	1173	4
FLIP88-13L	359	24	1955	24	1602	8	1269	15	1215	22	2576	19	636	21
FLIP88-14L	412	15	2479	7	1827	2	1621	2	1828	7	2125	23	680	20
FLIP89- 5L	617	6	2380	10	1327	20	1290	12	2168	3	2438	22	729	17
FLIP89- 7L	582	8	2236	18	1564	11	1008	22	1225	21	2809	14	594	22
FLIP90- 1L	376	21	2332	13	1611	5	1394	9	1672	10	3026	5	809	13
FLIP90- 3L	621	5	2508	5	1264	22	1206	17	1523	17	2927	8	733	16
FLIP90- 8L	546	10	2283	16	1567	10	1074	21	897	24	2955	7	818	11
FLIP90-10L	432	13	2078	21	1683	4	1286	14	1795	8	2899	11	751	14
FLIP90-11L	400	18	2812	1	1573	9	1541	3	1338	20	2795	15	1133	5
FLIP90-13L	399	19	2291	15	1706	3	1442	6	2392	1	2674	18	1578	2
FLIP91- 8L	420	14	2375	11	1460	15	931	23	1737	9	2678	16	1578	1
FLIP91- 9L	738	2	2739	2	1339	19	1177	18	1180	23	2910	10	809	12
Local check	369	23	2593	4	2053	1	1531	4	1618	13	3081	1	742	15
Location Mean	**503**		**2344**		**1497**		**1640**		**1640**		**2772**		**888**	
S.E. of Mean	98.59		152.05		175.71		248.51		248.51		188.85		208.40	
LSD at 5%	NS		432.83		NS		707.39		707.39		537.57		593.22	
C.V. %	33.96		11.24		20.33		26.24		26.24		11.80		40.65	
Entry > L. check	-		0		-		1		1		0		2	

Cont'd. ...

Table 4.1.5. Cont'd. ...

Entry name	Syria											
	Breda		Gelline		Hama		Heimo		Idleb		Izra'a	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian L. Large	827	20	1111	24	3004	22	2049	10	204	24	24	24
78S26002	962	11	2875	10	3621	17	1990	15	331	18	246	12
FLIP84-27L	1030	4	3306	1	3263	19	1722	18	382	14	175	20
FLIP86- 5L	772	23	2770	12	3863	11	1708	19	343	17	150	22
FLIP86-10L	866	19	2738	13	3604	18	1813	17	264	22	233	14
FLIP87- 2L	959	12	2438	21	3854	12	2088	8	551	5	292	5
FLIP87-16L	1069	2	3120	3	4375	4	2234	4	512	6	350	4
FLIP87-17L	1001	6	2990	8	4471	2	2074	9	313	20	275	8
FLIP88- 6L	987	9	3015	5	4288	5	1434	24	389	12	242	13
FLIP88- 7L	957	13	3064	4	4004	9	1999	14	393	11	358	2
FLIP88-12L	886	18	2474	20	2425	24	2017	13	475	7	167	21
FLIP88-13L	992	7	2652	16	3854	13	1589	22	385	13	267	9
FLIP88-14L	740	24	2405	22	3158	20	1621	21	795	2	192	18
FLIP89- 5L	784	22	2646	17	4021	7	2161	5	759	3	229	15
FLIP89- 7L	814	21	3000	6	4013	8	2034	11	417	10	283	6
FLIP90- 1L	966	10	2558	19	3671	16	1665	20	464	8	113	23
FLIP90- 3L	1012	5	2624	18	2963	23	2118	7	368	15	218	16
FLIP90- 8L	912	15	2870	11	3775	14	2029	12	271	21	279	7
FLIP90-10L	924	14	2883	9	3979	10	1558	23	796	1	263	10
FLIP90-11L	989	8	2992	7	4675	1	2535	2	243	23	188	19
FLIP90-13L	888	17	2248	23	3017	21	1941	16	426	9	213	17
FLIP91- 8L	1060	3	2691	15	4400	3	2303	3	361	16	351	3
FLIP91- 9L	1224	1	3175	2	3692	15	2553	1	713	4	550	1
Local check	898	16	2724	14	4092	6	2152	6	326	19	250	11
Location Mean	**938**		**2724**		**3753**		**1974**		**437**		**246**	
S.E. of Mean	77.60		199.45		321.14		214.62		136.16		51.80	
LSD at 5%	220.90		567.73		914.12		610.93		NS		147.46	
C.V. %	14.33		12.68		14.82		18.83		54.01		36.46	
Entry > L. check	1		1		0		0		-		1	

Cont'd. ...

Table 4.1.5. Cont'd. ...

Entry name	Syria		Tunisia				Turkey				Overall Mean	
	Tel Hadya		El Kef		Sousse		Erzurum		Haymana			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian L. Large	1546	12	651	11	76	23	694	23	685	19	908	23
78S26002	1768	2			199	22	711	22	681	20	1058	22
FLIP84-27L	1629	8	753	6	36	24	901	10	733	15	1193	12
FLIP86- 5L	1582	10	898	4	288	21	824	15	770	13	1165	18
FLIP86-10L	1514	13	535	15	473	18	942	9	812	8	1128	20
FLIP87- 2L	1370	19	505	16	914	10	991	6	806	10	1205	11
FLIP87-16L	1368	20	873	5	416	19	834	14	806	9	1297	3
FLIP87-17L	1474	16	296	22	491	17	746	19	908	3	1239	7
FLIP88- 6L	1727	5	543	14	297	20	944	8	763	14	1241	6
FLIP88- 7L	1514	14	753	7	663	13	726	20	798	11	1275	4
FLIP88-12L	1271	23	213	23	868	11	1038	4	817	7	1147	19
FLIP88-13L	1344	22	653	10	996	9	815	16	901	4	1179	15
FLIP88-14L	1236	24	439	20	569	15	861	12	655	21	1121	21
FLIP89- 5L	1648	6	500	17	1371	3	1008	5	941	2	1266	5
FLIP89- 7L	1400	18	425	21	1348	5	764	18	605	23	1175	16
FLIP90- 1L	1357	21	570	13	1175	7	663	24	713	16	1186	13
FLIP90- 3L	1642	7	1040	2	1596	1	720	21	780	12	1218	10
FLIP90- 8L	1456	17	493	19	1040	8	969	7	827	6	1182	14
FLIP90-10L	1928	1	496	18	737	12	1081	3	700	18	1172	17
FLIP90-11L	1610	9	988	3	1192	6	891	11	874	5	1297	2
FLIP90-13L	1509	15	616	12	1484	2	766	17	701	17	1233	8
FLIP91- 8L	1734	4	660	9	658	14	848	13	635	22	1222	9
FLIP91- 9L	1554	11	1163	1	506	16	1246	1	1053	1	1406	1
Local check	1756	3	669	8	1356	4	1225	2	518	24		
Location Mean	**1539**		**640**		**781**		**884**		**770**			
S.E. of Mean	126.54		44.84		386.18		54.90		82.21			
LSD at 5%	360.21		107.39		NS		156.27		234.02			
C.V. %	14.24		9.90		85.63		10.76		18.49			
Entry > L. check	0		5		-		0		14			

NS = Not significant at $P \leq 0.05$.

Table 4.1.6. The five heaviest seed yielding entries at the individual locations in the LIYT-L during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Algeria	Guelma	FLIP 91-9L	FLIP 90-13L	FLIP 91-8L	FLIP 87-16L	Local check
Algeria	Setif	FLIP 88-7L	FLIP 90-13L	FLIP 91-9L	FLIP 87-16L	FLIP 87-17L
Chile	Chillan	FLIP 91-9L	Local check	FLIP 88-14L	FLIP 88-7L	FLIP 87-16L
Chile	Valdivia	FLIP 88-14L	FLIP 88-13L	Local check	FLIP 88-7L	FLIP 91-9L
China	Gansu	FLIP 89-5L	FLIP 88-7L	FLIP 88-12L	FLIP 84-27L	FLIP 88-6L
Egypt	Sakha	Local check	FLIP 88-13L	FLIP 89-5L	FLIP 90-8L	FLIP 90-1L
Greece	Larissa	FLIP 91-9L	FLIP 87-16L	FLIP 88-12L	FLIP 91-8L	FLIP 89-7L
Iran	Karaj	FLIP 90-10L	FLIP 88-13L	FLIP 90-8L	FLIP 87-17L	FLIP 89-7L
Iran	Maragheh	FLIP 91-9L	FLIP 90-13L	Local check	FLIP 90-1L	FLIP 84-27L
Iran	Nishabour	FLIP 88-13L	FLIP 87-2L	FLIP 91-9L	FLIP 86-5L	FLIP 90-3L
Iran	Qazvin	FLIP 84-27L	FLIP 91-9L	FLIP 88-6L	FLIP 88-7L	FLIP 88-13L
Iran	Samandaj	FLIP 86-5L	FLIP 90-13L	FLIP 90-11L	FLIP 90-10L	FLIP 88-7L
Iran	Zanjan	FLIP 89-5L	SLL	FLIP 88-7L	FLIP 86-10L	FLIP 91-9L
Italy	Catania	FLIP 91-9L	FLIP 90-1L	FLIP 87-16L	FLIP 84-27L	FLIP 87-17L
Italy	Caltagirone	FLIP 88-6L	FLIP 91-9L	FLIP 87-2L	FLIP 87-16L	FLIP 90-3L
Italy	Tolentino	FLIP 90-11L	FLIP 91-9L	FLIP 87-2L	Local check	FLIP 90-3L
Jordan	Mushaggar	Local check	FLIP 88-14L	FLIP 90-13L	FLIP 90-10L	FLIP 90-1L
Jordan	Rabba	FLIP 88-6L	FLIP 88-14L	FLIP 90-11L	Local check	FLIP 84-27L
Libya	El Safsaf	FLIP 90-13L	FLIP 88-12L	FLIP 89-5L	FLIP 84-27L	78S26002
Portugal	Elvas	Local check	FLIP 87-17L	FLIP 88-6L	FLIP 87-2L	FLIP 90-1L
Spain	Badajoz	FLIP 91-8L	FLIP 90-13L	FLIP 87-16L	FLIP 88-12L	FLIP 90-11L
Syria	Breda	FLIP 91-9L	FLIP 87-16L	FLIP 91-8L	FLIP 84-27L	FLIP 90-3L
Syria	Gelline	FLIP 84-27L	FLIP 91-9L	FLIP 87-16L	FLIP 88-7L	FLIP 88-6L
Syria	Hama	FLIP 90-11L	FLIP 87-17L	FLIP 91-8L	FLIP 87-16L	FLIP 88-6L
Syria	Heimo	FLIP 91-9L	FLIP 90-11L	FLIP 91-8L	FLIP 87-16L	FLIP 89-5L
Syria	Idleb	FLIP 90-10L	FLIP 88-14L	FLIP 89-5L	FLIP 91-9L	FLIP 87-2L
Syria	Izra'a	FLIP 91-9L	FLIP 88-7L	FLIP 91-8L	FLIP 87-16L	FLIP 87-2L
Syria	Tel Hadya	FLIP 90-10L	78S26002	Local check	FLIP 91-8L	FLIP 88-6L
Tunisia	El Kef	FLIP 91-9L	FLIP 90-3L	FLIP 90-11L	FLIP 86-5L	FLIP 87-16L
Tunisia	Sousse	FLIP 90-3L	FLIP 90-13L	FLIP 89-5L	Local check	FLIP 89-7L
Turkey	Erzurum	FLIP 91-9L	Local check	FLIP 90-10L	FLIP 88-12L	FLIP 89-5L
Turkey	Haymana	FLIP 91-9LC	FLIP 89-5L	FLIP 87-17L	FLIP 88-13L	FLIP 90-11L

Table 4.1.7. The mean seed yield (Y=kg/ha) and rank (R) of the common entries in LIYT-L during 1991/92 and 1992/93.

Entry Name	1991/92 Y	R	1992/93 Y	R	Mean Y	R
Syrian local large	997	17	908	18	953	18
78S 26002	1191	8	1058	17	1125	11
FLIP 86-5L	1211	6	1165	14	1188	6
FLIP 86-10L	1294	1	1128	15	1161	10
FLIP 87-2L	1141	10	1205	8	1173	7
FLIP 87-16L	1234	4	1297	1	1266	2
FLIP 87-17L	1229	5	1239	6	1234	4
FLIP 88-6L	1192	7	1241	5	1217	5
FLIP 88-7L	1239	3	1275	3	1257	3
FLIP 88-13L	1042	14	1179	11	1111	14
FLIP 88-14L	1049	13	1121	16	1085	16
FLIP 89-5L	1072	11	1266	4	1169	8
FLIP 89-7L	988	18	1175	12	1082	17
FLIP 90-1L	1152	9	1186	10	1169	8
FLIP 90-3L	1031	15	1218	7	1125	11
FLIP 90-8L	1013	16	1182	9	1098	15
FLIP 90-10L	1060	12	1172	13	1116	13
FLIP 90-11L	1252	2	1297	1	1275	1

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

Material

The material for the Lentil International Yield Trial-Small seed comprised of 23 test entries and one local check to be supplied by the cooperator. The test entries were selections with seed size less than 4.5 g/100-seeds and were selected from the international screening nurseries based on their superior yield performance. All the test entries were developed at ICARDA through hybridization.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was four rows each 4 m long with an inter row spacing of 25 cm. Thirty five sets of trial were distributed to cooperators in 19 countries. The results were received for 19 trials from 10 countries and are reported. The agronomic practices employed at different locations are given in Table 4.2.1.

Results and Discussion

The data on time to flowering, and time to maturity and plant height are given in Tables 4.2.2, and 4.2.3, and 4.2.4, respectively. The entry means over locations ranged from 104 to 108 days for time to flowering, 156 to 159 days for time to maturity, and 28 to 32 cm for plant height. The entry 81S15 with plant height of 32 cm was the tallest (Table 4.2.4).

The seed yields and rank of entries at different locations are given in Table 4.2.5. The ANOVA revealed that the differences among the entries were significant for 15 out of 19 locations reporting data. The seed yields varied from 368 kg/ha at Izra'a in Syria to 3320 kg/ha at Hama in Syria. At 9 locations some of the entries exceeded the local check by a significant

Table 4.2.1. Agronomic details for LIYT-S-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Setif	29.11.92	23.06.93	-	100	-	-	Treflan	Syrie 229
Egypt	Gemmiza	19.11.92	10.05.93	36	71	-	3	Gessagard, Malathion	Giza 370
Egypt	Sids	25.11.92	15.05.93	36	71	-	3	Gessagard, Malathion	Giza 370
Iran	Karaj	NA	NA	NA	NA	NA	NA	NA	NA
Italy	Catania	30.01.93	15.06.93	-	120	-	-	-	-
Italy	Tolentino	10.03.93	21.06.93	-	-	-	1	-	Lentil of Castelluccio
Libya	El Marj	23.12.92	25.05.93	-	-	-	-	-	El Safsaf-3
Libya	El Safsaf	10.12.92	05.06.93	-	-	-	-	-	El Safsaf-3
New Zealand	Lincoln	14.09.93	15.02.94	-	-	-	-	Cyanazine	Rajah
Portugal	Elvas	10.12.92	15.06.93	-	60	60	-	Gessagard	L 294
Spain	Badajoz	12.11.92	23.06.93	-	-	-	-	Gessagard	Azagala
Syria	Breda	06.12.92	26.05.93	-	-	-	-	-	Hurani 1
Syria	Gelline	10.12.92	19.05.93	20	50	-	-	-	Hurani 1
Syria	Hama	27.12.92	30.05.93	-	50	-	-	-	Hurani 1
Syria	Heimo	04.01.93	13.06.93	-	50	-	-	-	Hurani 1
Syria	Idleb	20.12.92	29.05.93	-	60	-	-	-	Hurani 1
Syria	Izra'a	18.01.93	27.06.93	-	110	-	-	-	Hurani 1
Syria	Tel Hadya	08.12.92	27.05.93	-	50	-	-	-	Hurani 1
Tunisia	Sousse	23.01.93	23.05.93	NA	NA	NA	NA	NA	NA

NA = Not available

Table 4.2.2. Time to flowering (days) of entries at different locations in the LIYT-S during 1992-93.

Entry Name	Accession No. (ILL)	Parentage	Origin	Algeria	Egypt		Iran
				Setif	Gemmiza	Sids	Karaj
Syrian L. Small	4401	-	Syria	147	114	115	148
FLIP84-29L	5700	ILL20 X ILWL 1	ICARDA	147	105	104	146
FLIP84-51L	5722	ILL883 X ILL 470	ICARDA	150	100	117	149
81S15	5883	UJL 197 X ILL4400	Jordan	147	107	117	146
FLIP87-48L	6238	ILL4354 X ILL 922	ICARDA	150	105	113	146
FLIP87-55L	6245	ILL4400 X ILL 703	ICARDA	147	112	111	147
FLIP87-57L	6247	ILL2129 X ILL 13	ICARDA	147	111	111	147
FLIP88-27L	6451	ILL5564 X ILL5521	ICARDA	150	105	109	149
FLIP89-16L	6774	ILL3165 X ILL4400	ICARDA	147	100	100	156
FLIP89-20L	6778	ILL5588 X ILL5582	ICARDA	150	111	104	149
FLIP89-25L	6783	ILL 223 X ILL 193	ICARDA	150	104	114	148
FLIP89-26L	6784	ILL5588 X ILL 262	ICARDA	150	110	114	145
FLIP89-37L	6795	ILL3112 X ILL4354	ICARDA	150	111	116	150
FLIP90-16L	6985	ILL3112 X ILL1880	ICARDA	147	109	114	147
FLIP90-22L	6991	ILL5588 X ILL 223	ICARDA	150	108	117	150
FLIP90-26L	6995	ILL 19 X ILL 223	ICARDA	147	103	112	151
FLIP90-27L	6996	ILL 19 X ILL 223	ICARDA	150	104	113	148
FLIP90-30L	6999	ILL2578 X ILL 99	ICARDA	150	105	113	151
FLIP90-33L	7002	ILL 784 X ILL 99	ICARDA	150	107	120	147
FLIP90-36L	7005	ILL 788 X ILL5588	ICARDA	150	110	105	154
FLIP90-40L	7009	80S42188 X ILL 223	ICARDA	150	105	112	147
FLIP90-41L	7010	80S42188 X ILL 223	ICARDA	147	102	113	146
FLIP90-43L	7012	ILL4354 X (ILL1880XILL 813)	ICARDA	150	109	117	148
Local check	-	-	-	150	91	94	154
Location Mean				**149**	**106**	**111**	**149**
S.E. of Mean				0.00	0.77	1.06	2.58
L.S.D. at 5%				0.01	2.19	3.02	NS
C.V. %				0.00	1.25	1.65	3.00

Cont'd. ...

Table 4.2.2. Cont'd. ...

Entry Name	Italy		LIbya	New Zealand	Portugal	Spain	Syria
	Catania	Tolentino	El Marj	Lincoln	Elvas	Badajoz	Gelline
Syrian L. Small	91	66	103	72	106	130	108
FLIP84-29L	90	62	103	70	103	128	106
FLIP84-51L	93	63	104	71	112	128	108
81S15	93	66	103	71	109	128	106
FLIP87-48L	91	63	103	72	106	128	108
FLIP87-55L	95	66	103	72	107	128	107
FLIP87-57L	91	63	103	70	104	129	107
FLIP88-27L	90	65	103	71	105	128	106
FLIP89-16L	93	63	103	71	104	126	104
FLIP89-20L	94	65	103	72	110	129	108
FLIP89-25L	93	64	103	71	108	128	107
FLIP89-26L	93	66	104	72	109	128	107
FLIP89-37L	94	66	103	72	107	129	106
FLIP90-16L	90	65	103	72	105	129	106
FLIP90-22L	91	66	103	71	109	129	108
FLIP90-26L	89	63	103	71	103	127	105
FLIP90-27L	91	63	103	70	103	128	106
FLIP90-30L	91	63	103	71	105	128	106
FLIP90-33L	92	64	104	71	105	127	106
FLIP90-36L	94	64	103	71	112	130	108
FLIP90-40L	95	66	103	72	105	128	104
FLIP90-41L	93	65	103	71	103	126	105
FLIP90-43L	92	65	103	72	110	129	108
Local check	101	72	104	72	110	120	108
Location Mean	**92**	**65**	**103**	**71**	**107**	**128**	**107**
S.E. of Mean	0.66	0.51	0.27	0.42	0.82	0.56	0.61
L.S.D. at 5%	1.86	1.45	NS	1.20	2.32	1.60	1.73
C.V. %	1.23	1.36	0.44	1.02	1.32	0.76	0.99

Cont'd. ...

Table 4.2.2. Cont'd. ...

Entry Name	Syria						Tunisia	Overall
	Hama	Heimo	Idleb	Izra'a	Breda	Tel Hadya	Sousse	Mean
Syrian L. Small	105	106	117	93	128	98	72	107
FLIP84-29L	103	105	116	92	126	95	74	104
FLIP84-51L	103	108	116	95	130	100	74	107
81S15	105	105	117	92	127	98	77	106
FLIP87-48L	105	105	116	93	128	100	69	106
FLIP87-55L	107	106	117	93	128	101	74	107
FLIP87-57L	104	108	113	94	127	100	69	105
FLIP88-27L	103	106	115	94	129	96	77	106
FLIP89-16L	103	105	116	93	125	97	72	104
FLIP89-20L	105	107	117	93	129	101	74	107
FLIP89-25L	103	107	118	93	128	96	77	106
FLIP89-26L	103	108	117	92	128	98	77	107
FLIP89-37L	104	108	116	94	127	98	74	107
FLIP90-16L	104	105	117	92	127	98	77	106
FLIP90-22L	106	106	120	94	129	101	74	107
FLIP90-26L	103	105	117	92	127	95	77	105
FLIP90-27L	103	107	117	94	127	96	77	106
FLIP90-30L	104	104	117	94	127	96	77	106
FLIP90-33L	105	106	115	93	127	97	74	106
FLIP90-36L	107	109	116	93	129	101	84	108
FLIP90-40L	103	108	116	93	128	97	77	106
FLIP90-41L	102	105	117	93	127	95	75	105
FLIP90-43L	105	108	116	93	128	101	77	107
Local check	105	107	116	94	126	98	77	
Location Mean	**104**	**107**	**117**	**93**	**128**	**98**	**75**	
S.E. of Mean	0.87	0.93	1.10	0.80	0.37	0.83	2.66	
L.S.D. at 5%	NS	2.66	NS	NS	1.04	2.36	NS	
C.V. %	1.45	1.52	1.64	1.49	0.50	1.46	6.11	

NS = Not significant at $P \leq 0.05$.

Table 4.2.3. Time to maturity (days) of entries at different locations in the LIYT-S during 1992-93.

Entry Name	Algeria	Egypt		Iran	Italy		Libya		Portugal
	Setif*	Gemmiza	Sids	Karaj	Catania	Tolentino	El Marj*	El Safsaf*	Elvas
Syrian L. Small	195	158	150	196	126	103	153	175	168
FLIP84-29L	195	159	154	198	124	105	153	175	168
FLIP84-51L	195	158	150	200	124	102	153	175	170
81S15	195	159	154	197	125	113	153	175	168
FLIP87-48L	195	156	150	197	125	107	153	175	168
FLIP87-55L	195	160	157	198	124	104	153	175	169
FLIP87-57L	195	158	146	199	125	106	153	175	168
FLIP88-27L	195	158	152	196	125	105	153	175	168
FLIP89-16L	195	158	150	200	124	113	153	175	169
FLIP89-20L	195	159	154	201	126	102	153	175	168
FLIP89-25L	195	158	152	198	124	102	153	175	168
FLIP89-26L	195	155	152	197	124	111	153	175	168
FLIP89-37L	195	157	152	198	124	105	153	175	168
FLIP90-16L	195	159	153	198	125	111	153	175	168
FLIP90-22L	195	160	152	197	125	103	153	175	169
FLIP90-26L	195	154	154	198	126	104	153	175	168
FLIP90-27L	195	156	155	197	125	105	153	175	168
FLIP90-30L	195	158	156	198	124	105	153	175	169
FLIP90-33L	195	157	152	197	126	103	153	175	168
FLIP90-36L	195	160	152	202	124	104	153	175	168
FLIP90-40L	195	157	155	199	125	110	153	175	168
FLIP90-41L	195	157	150	196	124	106	153	175	168
FLIP90-43L	195	159	152	199	126	103	153	175	168
Local check	195	161	152	201	129	104	153	175	170
Location Mean	**195**	**158**	**152**	**198**	**125**	**106**	**153**	**175**	**168**
S.E. of Mean		0.93	0.80	2.01	0.44	0.87			0.30
L.S.D. at 5%		2.65	2.28	NS	1.26	2.49			0.84
C.V. %		1.02	0.91	1.76	0.62	1.43			0.31

Cont'd. ...

Table 4.2.3. Cont'd. ...

Entry Name	Spain	Syria							Tunisia	Overall
	Badajoz	Gelline	Hama	Heimo	Idleb	Izra'a	Breda	Tel Hadya	Sousse	Mean
Syrian L. Small	216	159	150	155	158	141	169	143	101	156
FLIP84-29L	216	158	150	159	162	144	169	142	104	157
FLIP84-51L	219	160	152	160	159	150	173	151	104	159
81S15	219	155	147	154	162	143	164	140	107	157
FLIP87-48L	218	158	148	154	156	144	165	142	99	156
FLIP87-55L	218	156	149	154	158	147	168	143	104	157
FLIP87-57L	217	156	148	160	160	144	166	141	99	156
FLIP88-27L	218	157	148	156	155	143	168	142	107	157
FLIP89-16L	216	157	149	157	161	147	166	143	102	157
FLIP89-20L	217	157	148	155	155	142	169	140	104	157
FLIP89-25L	217	158	149	156	160	142	171	144	107	157
FLIP89-26L	216	155	147	155	160	144	170	143	107	157
FLIP89-37L	216	157	147	157	156	141	165	141	104	156
FLIP90-16L	219	159	148	159	162	145	163	140	107	158
FLIP90-22L	216	156	146	154	157	143	168	142	104	156
FLIP90-26L	216	155	146	155	159	143	163	138	107	156
FLIP90-27L	217	156	148	156	155	143	165	140	107	156
FLIP90-30L	217	157	148	156	158	146	170	142	107	157
FLIP90-33L	217	156	147	156	155	144	163	141	104	156
FLIP90-36L	216	157	147	157	156	146	170	143	114	158
FLIP90-40L	219	154	148	159	157	144	172	145	107	158
FLIP90-41L	220	155	146	153	155	143	167	144	109	156
FLIP90-43L	217	157	147	156	156	143	165	140	107	157
Local check	219	156	148	156	154	142	163	137	107	
Location Mean	**217**	**157**	**148**	**156**	**158**	**144**	**167**	**142**	**105**	
S.E. of Mean	0.81	0.36	0.98	0.77	2.24	1.33	1.53	1.00	2.66	
L.S.D. at 5%	2.31	1.02	2.78	2.19	NS	3.78	4.36	2.85	NS	
C.V. %	0.65	0.40	1.14	0.85	2.46	1.60	1.59	1.22	4.37	

* The data could not be analyzed as the values recorded were similar for all the entries in all replications.
NS = Not significant at $P \leq 0.05$.

Table 4.2.4. Plant height (cm) of entries at different locations in the LIYT-S during 1992-93.

Entry Name	Algeria	Egypt	Iran	Italy	Portugal	Spain	Syria
	Setif	Gemmiza	Karaj	Tolentino	Elvas	Badajoz	Gelline
Syrian L. Small	18	35	22	30	27	29	35
FLIP84-29L	25	34	21	34	29	29	35
FLIP84-51L	18	42	22	29	31	30	35
81S15	28	37	24	38	28	34	31
FLIP87-48L	19	39	22	33	28	32	40
FLIP87-55L	19	42	23	35	29	31	40
FLIP87-57L	23	32	20	32	26	30	37
FLIP88-27L	18	39	23	34	29	35	39
FLIP89-16L	25	39	23	35	28	29	35
FLIP89-20L	28	39	24	33	26	29	35
FLIP89-25L	26	38	22	31	27	28	35
FLIP89-26L	18	38	22	33	28	31	35
FLIP89-37L	21	42	25	32	27	32	36
FLIP90-16L	19	39	23	35	32	33	40
FLIP90-22L	28	38	23	31	25	29	35
FLIP90-26L	28	42	22	34	27	34	40
FLIP90-27L	26	39	21	33	29	34	37
FLIP90-30L	25	40	22	32	28	30	38
FLIP90-33L	24	35	21	36	28	29	35
FLIP90-36L	25	38	26	32	27	29	35
FLIP90-40L	25	40	21	36	27	30	36
FLIP90-41L	27	39	21	34	30	31	40
FLIP90-43L	24	43	21	31	27	30	35
Local check	20	55	24	36	32	33	38
Location Mean	**23**	**39**	**22**	**33**	**28**	**31**	**37**
S.E. of Mean	0.64	2.73	1.41	1.18	1.21	1.49	0.42
L.S.D. at 5%	1.82	7.76	NS	3.35	3.45	4.25	1.19
C.V. %	4.78	11.98	10.95	6.14	7.46	8.39	1.98

Cont'd. ...

Table 4.2.4. Cont'd. ...

Entry Name	Syria					Tunisia	Overall
	Hama	Heimo	Idleb	Izra'a	Breda	Sousse	Mean
Syrian L. Small	33	35	25	17	24	40	28
FLIP84-29L	30	34	23	15	26	37	29
FLIP84-51L	37	39	25	15	27	43	30
81S15	35	40	26	23	28	42	32
FLIP87-48L	35	39	26	20	27	47	31
FLIP87-55L	35	37	26	18	25	46	31
FLIP87-57L	32	33	24	14	24	43	28
FLIP88-27L	32	35	25	16	28	39	30
FLIP89-16L	35	37	26	15	25	40	30
FLIP89-20L	32	36	25	17	26	44	30
FLIP89-25L	33	34	26	15	29	46	30
FLIP89-26L	35	37	25	16	27	41	30
FLIP89-37L	33	36	24	17	25	40	30
FLIP90-16L	35	42	25	17	28	40	31
FLIP90-22L	33	37	26	15	25	37	29
FLIP90-26L	35	38	26	17	27	39	31
FLIP90-27L	33	32	25	13	26	40	30
FLIP90-30L	32	34	25	14	25	41	30
FLIP90-33L	30	36	26	16	26	48	30
FLIP90-36L	33	33	25	15	26	42	30
FLIP90-40L	35	33	25	15	25	36	30
FLIP90-41L	33	39	26	16	24	43	31
FLIP90-43L	35	36	27	16	27	40	30
Local check	30	35	24	18	25	41	
Location Mean	**33**	**36**	**25**	**16**	**26**	**41**	
S.E. of Mean	1.34	1.77	1.04	1.24	0.87	2.34	
L.S.D. at 5%	3.83	5.05	NS	3.53	2.47	NS	
C.V. %	6.97	8.46	7.12	13.22	5.77	9.77	

NS = Not significant at $P \leq 0.05$.

Table 4.2.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIYT-S during 1992-93.

Entry Name	Algeria		Egypt				Iran		Italy			
	Setif		Gemmiza		Sids		Karaj		Catania		Tolentino	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian L. Small	185	24	1429	10	508	23	1756	21	313	23	2482	15
FLIP84-29L	649	10	1754	4	873	9	1951	19	610	9	2506	12
FLIP84-51L	474	18	1048	19	1381	2	2102	15	380	22	2319	20
81S15	832	5	1786	3	1063	5	1980	18	625	7	2710	6
FLIP87-48L	417	19	1603	6	857	11	2902	4	537	15	2756	2
FLIP87-55L	682	9	2087	1	754	14	2256	9	475	18	2629	11
FLIP87-57L	649	11	1197	14	873	10	2144	11	619	8	2664	8
FLIP88-27L	493	17	1563	8	643	17	2742	5	420	20	2293	22
FLIP89-16L	1115	1	984	23	897	7	3313	1	1063	1	2488	14
FLIP89-20L	583	12	929	24	548	22	1853	20	631	6	2742	3
FLIP89-25L	503	16	1944	2	595	20	1982	17	388	21	2938	1
FLIP89-26L	543	13	1429	9	563	21	1547	24	504	16	2238	23
FLIP89-37L	1044	2	1405	11	849	12	2562	7	581	11	2739	4
FLIP90-16L	394	21	1706	5	683	16	2196	10	737	4	2329	19
FLIP90-22L	408	20	1183	15	722	15	1651	22	485	17	2497	13
FLIP90-26L	842	3	1159	16	802	13	1598	23	683	5	2372	17
FLIP90-27L	525	15	1373	12	619	18	2038	16	559	13	2359	18
FLIP90-30L	813	6	1000	21	1071	4	2111	13	567	12	2630	10
FLIP90-33L	281	23	1079	18	1000	6	2107	14	774	3	2659	9
FLIP90-36L	717	8	1040	20	611	19	3296	2	609	10	2671	7
FLIP90-40L	383	22	1000	22	873	8	2129	12	438	19	2165	24
FLIP90-41L	529	14	1302	13	1278	3	2678	6	539	14	2738	5
FLIP90-43L	724	7	1587	7	476	24	2542	8	820	2	2303	21
Local check	835	4	1143	17	2183	1	3087	3	113	24	2394	16
Location Mean	**609**		**1364**		**863**		**2272**		**561**		**2526**	
S.E. of Mean	169.07		201.46		85.70		327.10		108.02		129.12	
L.S.D. at 5%	481.26		573.45		243.95		931.11		307.49		367.55	
C.V. %	48.08		25.59		17.19		24.94		33.34		8.85	
Entry > L. Check	0		4		0		0		19		1	

Cont'd. ...

Table 4.2.5. Cont'd. ...

Entry Name	Libya El Safsaf Y	Libya El Safsaf R	Libya El Marj Y	Libya El Marj R	New Zealand Lincoln Y	New Zealand Lincoln R	Portugal Elvas Y	Portugal Elvas R	Spain Badajoz Y	Spain Badajoz R	Syria Gelline Y	Syria Gelline R
Syrian L. Small	645	14	1105	24	1488	24	1372	24	233	24	1838	24
FLIP84-29L	817	9	1695	8	1824	21	1976	12	502	21	2981	5
FLIP84-51L	1013	6	1403	23	1872	20	1521	23	1080	4	2054	23
81S15	690	13	1747	4	3794	4	2215	7	1120	3	3124	3
FLIP87-48L	817	10	1417	22	3808	2	2080	10	1142	2	3160	2
FLIP87-55L	145	24	1658	14	3208	12	2143	8	542	20	2889	9
FLIP87-57L	1067	5	1512	20	3411	10	2226	6	996	5	2727	15
FLIP88-27L	393	19	1610	18	1728	23	1535	22	556	18	2953	7
FLIP89-16L	335	22	1477	21	2173	18	2493	1	400	23	2363	22
FLIP89-20L	722	12	1660	13	3419	9	1906	13	853	7	2626	17
FLIP89-25L	880	8	1660	12	4096	1	1819	16	729	11	2683	16
FLIP89-26L	573	16	1692	9	2679	16	1576	21	662	14	2809	13
FLIP89-37L	633	15	1888	2	2784	15	2480	2	569	16	2827	12
FLIP90-16L	1113	4	1655	15	3623	5	1729	17	1364	1	2955	6
FLIP90-22L	1642	1	1652	16	2938	14	1864	15	564	17	2852	10
FLIP90-26L	892	7	1685	10	2678	17	1636	19	613	15	2848	11
FLIP90-27L	348	20	1537	19	2162	19	1988	11	720	12	2618	18
FLIP90-30L	345	21	1752	3	3523	7	2431	3	809	9	2794	14
FLIP90-33L	1270	3	1622	17	1819	22	1681	18	853	8	2920	8
FLIP90-36L	492	18	1963	1	3545	6	2111	9	933	6	3002	4
FLIP90-40L	1277	2	1723	5	2960	13	1892	14	756	10	2538	19
FLIP90-41L	205	23	1702	7	3802	3	2354	5	693	13	3241	1
FLIP90-43L	753	11	1682	11	3505	8	1592	20	542	19	2522	20
Local check	545	17	1718	6	3301	11	2421	4	498	22	2438	21
Location Mean	**734**		**1634**		**2923**		**1960**		**739**		**2740**	
S.E. of Mean	286.50		191.58		200.18		228.77		152.73		177.73	
L.S.D. at 5%	NS		NS		569.81		651.21		434.75		505.92	
C.V. %	67.62		20.31		11.86		20.22		35.81		11.24	
Entry > L. Check	-		-		1		0		6		7	

Cont'd. ...

Table 4.2.5. Cont'd. ...

Entry Name	Syria												Tunisia		Overall Mean	
	Hama		Heimo		Idleb		Izra'a		Breda		Tel Hadya		Sousse			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian L. Small	3308	15	2157	12	960	18	217	19	1172	17	1403	14	157	24	1251	23
FLIP84-29L	2600	23	1614	23	1105	16	267	16	1513	2	1560	6	336	22	1492	19
FLIP84-51L	2892	20	2116	14	755	24	-99	-99	857	24	1271	22	643	18	1399	22
81S15	3379	14	2968	1	792	21	717	3	1055	21	1871	1	597	19	1797	4
FLIP87-48L	2717	21	2700	3	1106	15	358	8	1356	7	1367	17	1563	11	1795	5
FLIP87-55L	3721	4	2636	4	782	22	267	17	1165	18	1236	23	371	21	1632	15
FLIP87-57L	3300	16	1889	19	1162	10	283	14	1291	8	1412	12	485	20	1646	14
FLIP88-27L	2658	22	1902	18	1971	1	188	21	1434	4	1314	19	1833	6	1558	18
FLIP89-16L	4146	1	2057	15	1413	6	433	4	1201	13	1689	2	1705	9	1740	7
FLIP89-20L	3613	5	2354	8	1321	7	392	7	1110	19	1431	10	889	17	1622	16
FLIP89-25L	3454	9	2233	11	1157	11	183	22	971	23	1325	18	1638	10	1722	9
FLIP89-26L	3388	13	2035	16	1121	14	329	11	1177	16	1144	24	321	23	1445	21
FLIP89-37L	3433	11	1874	20	1484	5	267	15	1019	22	1561	5	2912	1	1814	3
FLIP90-16L	2442	24	2438	6	771	23	408	6	1229	11	1502	9	2144	5	1723	8
FLIP90-22L	3850	3	2151	13	1128	13	1050	1	1254	10	1398	15	2169	4	1689	11
FLIP90-26L	3188	18	2536	5	840	19	350	9	1400	6	1541	7	1753	7	1615	17
FLIP90-27L	3208	17	1748	21	826	20	167	23	1475	3	1404	13	1352	15	1492	20
FLIP90-30L	3488	8	2393	7	1656	3	233	18	1207	12	1594	4	1730	8	1773	6
FLIP90-33L	3496	7	2349	9	1295	8	213	20	1648	1	1386	16	2212	3	1692	10
FLIP90-36L	3442	10	1732	22	1511	4	317	12	1108	20	1532	8	2895	2	1845	1
FLIP90-40L	3429	12	2852	2	1264	9	283	13	1284	9	1305	21	1511	12	1654	12
FLIP90-41L	3604	6	2330	10	1788	2	788	2	1191	14	1413	11	1373	13	1820	2
FLIP90-43L	3867	2	2023	17	1133	12	342	10	1413	5	1306	20	903	16	1649	13
Local check	3050	19	1584	24	1019	17	408	5	1186	15	1671	3	1371	14		
Location Mean	**3320**		**2195**		**1182**		**368**		**1238**		**1443**		**1369**			
S.E. of Mean	283.93		263.49		229.18		174.72		151.68		113.88		590.40			
L.S.D. at 5%	808.23		750.04		652.37		NS		NS		324.16		1680.60			
C.V. %	14.82		20.80		33.60		82.29		21.22		13.67		74.69			
Entry > L. Check	2		9		2		-		-		0		0			

NS = Not significant at $P \leq 0.05$.

Table 4.2.6. The five heaviest seed yielding entries at the individual locations in the LIYT-S during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Algeria	Setif	FLIP 89-16L	FLIP 89-37L	FLIP 90-26L	Local check	81S15
Egypt	Gemmiza	FLIP 87-55L	FLIP 89-25L	81S15	FLIP 84-29L	FLIP 90-16L
Egypt	Sids	Local check	FLIP 84-51L	FLIP 90-41L	FLIP 90-30L	81S15
Iran	Karaj	FLIP 89-16L	FLIP 90-36L	Local check	FLIP 87-48L	FLIP 88-27L
Italy	Catania	FLIP 89-16L	FLIP 90-43L	FLIP 90-33L	FLIP 90-16L	FLIP 90-26L
Italy	Tolentino	FLIP 89-25L	FLIP 87-48L	FLIP 89-20L	FLIP 89-37L	FLIP 90-41L
Libya	El Safsaf	FLIP 90-22L	FLIP 90-40L	FLIP 90-33L	FLIP 90-16L	FLIP 87-57L
Libya	El Marj	FLIP 90-36L	FLIP 89-37L	FLIP 90-30L	81S15	FLIP 90-40L
New Zealand	Lincoln	FLIP 89-25L	FLIP 87-48L	FLIP 90-41L	81S15	FLIP 90-16L
Portugal	Elvas	FLIP 89-16L	FLIP 89-37L	FLIP 90-30L	Local check	FLIP 90-41L
Spain	Badajoz	FLIP 90-16L	FLIP 87-48L	81S15	FLIP 84-51L	FLIP 87-57L
Syria	Breda	FLIP 90-33L	FLIP 84-29L	FLIP 90-27L	FLIP 88-27L	FLIP 90-43L
Syria	Gelline	FLIP 90-41L	FLIP 87-48L	81S15	FLIP 90-36L	FLIP 84-29L
Syria	Hama	FLIP 89-16L	FLIP 90-43L	FLIP 90-22L	FLIP 87-55L	FLIP 89-20L
Syria	Heimo	81S15	FLIP 90-40L	FLIP 87-48L	FLIP 87-55L	FLIP 90-26L
Syria	Idleb	FLIP 88-27L	FLIP 90-41L	FLIP 90-30L	FLIP 90-36L	FLIP 89-37L
Syria	Izra'a	FLIP 90-22L	FLIP 90-41L	81S15	FLIP 89-16L	Local check
Syria	Tel Hadya	81S15	FLIP 89-16L	Local check	FLIP 90-30L	FLIP 89-37L
Tunisia	Sousse	FLIP 89-37L	FLIP 90-36L	FLIP 90-33L	FLIP 90-22L	FLIP 90-16L

margin. On the basis of average over locations the top five entries included FLIP 90-36L, FLIP 90-41L, FLIP 89-37L, 81S15 and FLIP 87-48L with seed yields of 1845, 1820, 1814, 1797, and 1795 kg/ha, respectively.

The five best entries at different locations are given in Table 4.2.6. The lines, 81S15, FLIP 89-16L, FLIP 89-37L, and FLIP 90-41L occurred most frequently than others among the top five and were thus comparatively widley adapted.

On the basis of average over two years for the common entries (Table 4.2.7), FLIP 87-551L ranked number 1 and was closely followed by FLIP 90-43L, FLIP 90-36L, FLIP 89-25L, and FLIP 90-40L with seed yields of 1715, 1694, 1681, 1659 and 1646 kg/ha, respectively.

Table 4.2.7. The mean seed yield (Y=kg/ha) and rank (R) of the common entries in LIYT-S during 1991/92 and 1992/93.

	1991/92		1992/93		Mean	
Entry Name	Y	R	Y	R	Y	R
Syrian local small	1142	18	1251	18	1197	18
FLIP 84-29L	1428	9	1492	15	1460	15
FLIP 84-51L	1430	8	1399	17	1415	17
FLIP 87-48L	1454	7	1795	4	1625	6
FLIP 87-55L	1798	1	1632	13	1715	1
FLIP 87-57L	1401	13	1646	12	1524	12
FLIP 89-16L	1404	12	1740	6	1572	8
FLIP 89-20L	1333	15	1622	14	1478	14
FLIP 89-25L	1595	4	1722	8	1659	4
FLIP 89-26L	1405	11	1445	16	1425	16
FLIP 89-37L	1264	16	1814	3	1539	11
FLIP 90-16L	1480	6	1723	7	1602	7
FLIP 90-22L	1416	10	1689	9	1553	10
FLIP 90-30L	1349	14	1773	5	1561	9
FLIP 90-36L	1517	5	1845	1	1681	3
FLIP 90-40L	1638	3	1654	10	1646	5
FLIP 90-41L	1193	17	1820	2	1507	13
FLIP 90-43L	1738	2	1649	11	1694	2

4.3. LENTIL INTERNATIONAL YIELD TRIAL - EARLY (LIYT-E)

Material

The material for the Lentil International Yield Trial - Early comprised 23 test entries and one local check to be supplied by the cooperator. The test entries were selections with earliness. These were selected from the international screening nurseries based on their superior yield performance.

Methods and Management

The trial design was a randomised complete block with 3 replications. The suggested plot size was four rows each 4 m long with an inter row spacing of 25 cm. Forty five sets of trials were distributed to cooperators in 25 countries. The results were received for 15 trials from 11 countries and are reported. The agronomic practices employed at different locations are given in Table 4.3.1.

Results and Discussion

On an average over locations, the entry means ranged from 89 to 104 days for time to flowering (Table 4.3.2), 144 to 149 days for time to maturity (Table 4.3.3), and 27 to 34 cm for plant height (Table 4.3.4). The highest seed yields (Table 4.3.5) were obtained at Karaj in Iran (1798 kg/ha). The seed yield at Ghinchi in Ethiopia was, however, very low (389 kg/ha).

On an average over locations, the five best yielding entries included FLIP 89-71L, 86S91, 74TA441 x Pant L639, FLIP 86-39L and L 1282 with respective seed yields of 1253, 1227, 1196, 1176 and 1129 kg/ha.

The ANOVA for seed yield revealed that at 4 locations the local check was excelled by some entries by a significant margin ($P \leq 0.05$). The five best entries in each of the locations are given in Table 4.3.6. The entries, FLIP 86-39L, FLIP 89-53L, and 74TA441 x Pant L639 occured most frequently among the five heaviest yielders and were thus comparatively better in adaptation.

On the basis of average performance of common entries over two years (Table 4.3.7), FLIP 86-39L ranked number 1 and was closely followed by L 1282, FLIP 87-72L, FLIP 88-43L, and FLIP 89-53L with seed yields of 1290, 1221, 1217, 1217, and 1212 kg/ha, respectively.

Table 4.3.1. Agronomic details for LIYT-E-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
				N	P	K			
Algeria	Guelma	23.01.93	22.06.93	-	200	-	-	Igran	P.B. Jabra
Bulgaria	Toshevo	20.04.93	18.07.93	-	60	-	-	Galant, Vastak	Tadjikskaya 95
Egypt	Gemmiza	19.11.92	10.05.93	36	71	-	3	Gessagard, Malathion	Giza 370
Egypt	Nubaria	28.10.92	NA	36	71	-	-	Gessagard, Actellic	Giza 370
Ethiopia	Debre Zeit	27.07.93	27.10.93	-	-	-	-	-	EL-142
Ethiopia	Ghinchi	17.08.93	27.12.93	-	-	-	-	-	NEL 358
India	New Delhi	07.11.92	05.04.93	20	46	-	2	Stomp	L-830
Iran	Karaj	NA	NA	NA	NA	NA	NA	NA	NA
Pakistan	Faisalabad	30.11.92	07.04.93	20	60	-	1	-	Masoor 85
Pakistan	Swat	13.11.93	21.05.94	20	46	-	-	-	Local Lentil
Saudi Arabia	Al Gassim	11.11.92	04.05.93	50	120	-	35	-	FLIP 88-6L
Srilanka	Bandarawela	07.04.93	23.07.93	20	60	-	10	-	LIF3-N-15
Sudan	Hudeiba	18.12.92	20.03.93	43	-	-	7	-	Selaim
Syria	Breda	06.12.92	28.05.93	-	50	-	-	-	ILL 4401
Syria	Tel Hadya	08.12.92	16.05.93	-	50	-	-	-	ILL 4401

NA = Not Available

Table 4.3.2. Time to flowering (days) of entries at different locations in the LIYT-E during 1992/93.

Entry Name	Accession No.	Parentage	Origin	Algeria	Bulgaria	Egypt	Ethiopia	
				Guelma	Toshevo	Gemmiza	Debre Zeit	Ghinchi
L1282	2581	-	India	166	45	101	41	60
LL1	2582	-	India	170	48	96	42	66
162	4403	-	Pakistan	170	48	104	42	62
FLIP86-16L	6002	ILL4349 X ILL4605	ICARDA	168	49	86	47	64
FLIP86-39L	6025	ILL 1 X ILL 936	ICARDA	166	45	97	42	64
FLIP87-66L	6256	ILL4406 X ILL 262	ICARDA	166	45	104	43	61
FLIP87-70L	6260	ILL2526 X ILL 253	ICARDA	170	48	95	42	66
FLIP87-72L	6262	ILL2526 X ILL4354	ICARDA	164	47	93	43	61
FLIP87-75L	6265	ILL4380 X ILL 99	ICARDA	166	48	103	43	64
FLIP88-34L	6458	ILL5584 X ILL2501	ICARDA	170	47	95	43	62
FLIP88-35L	6459	ILL5562 X ILL3493	ICARDA	166	45	97	42	63
FLIP88-41L	6465	ILL4400 X ILL4605	ICARDA	168	49	88	48	66
FLIP88-43L	6467	ILL4605 X ILL2582	ICARDA	168	48	84	42	61
FLIP89-34L	6792	ILL 223 X ILL 9	ICARDA	170	48	105	74	68
FLIP89-52L	6810	ILL2573 X ILL1861	ICARDA	166	48	104	71	54
FLIP89-53L	6811	ILL2578 X ILL5588	ICARDA	168	48	103	43	69
FLIP89-58L	6816	ILL3527 X ILL5071	ICARDA	166	45	104	47	71
FLIP89-60L	6818	ILL4225 X ILL 353	ICARDA	168	48	95	42	63
FLIP89-61L	6819	ILL4225 X ILL 353	ICARDA	168	48	104	59	70
FLIP89-67L	6825	ILL4407 X ILL 99	ICARDA	166	48	104	52	70
FLIP89-71L	6829	ILL4407 X ILL4605	ICARDA	168	45	103	42	58
86S91	7164	IIL4354 X IIL 101	Pakistan/ICARDA	168	48	100	41	65
74TA441XPantL639	7165	ILL5538 X ILL2573	Pakistan/ICARDA	170	48	105	42	68
Local check	-	-	-	170	50	90	42	66
Location Mean				**168**	**47**	**98**	**46**	**64**
S.E. of Mean				One	0.35	0.85	1.92	1.52
L.S.D. at 5%				rep	0.99	2.43	5.47	4.34
C.V. %					1.27	1.50	7.15	4.10

Cont'd. ...

Table 4.3.2. Cont'd. ...

Entry Name	India	Iran	Pakistan		Saudi Arabia	Sri Lanka	Sudan	Syria		Overall Mean
	New-Delhi	Karaj	Faisala-bad	SWAT (NIAB)	Gassim	Banda-rawela	Hudeiba	Breda	Tel-Hadya	
L1282	92	144	95	132	97	22	68	100	99	95
LL1	93	144	95	132	97	28	66	100	99	96
162	96	146	85	133	101	26	67	100	98	96
FLIP86-16L	82	148	74	132	78	22	58	100	95	91
FLIP86-39L	93	144	95	127	104	30	62	98	96	95
FLIP87-66L	96	146	104	133	104	22	68	99	98	97
FLIP87-70L	92	144	93	131	103	30	62	98	98	96
FLIP87-72L	95	148	101	127	101	26	64	98	98	95
FLIP87-75L	87	144	95	132	100	26	65	100	97	96
FLIP88-34L	93	144	95	128	96	26	68	97	98	95
FLIP88-35L	93	144	94	128	93	30	63	98	95	94
FLIP88-41L	79	150	73	128	79	30	62	96	97	91
FLIP88-43L	79	145	70	127	74	26	57	99	97	89
FLIP89-34L	113	146	107	134	116	-	68	99	99	104
FLIP89-52L	107	144	102	137	109	22	69	99	97	101
FLIP89-53L	97	144	97	133	107	22	67	99	98	98
FLIP89-58L	102	148	103	134	108	30	72	99	98	100
FLIP89-60L	93	145	82	131	94	26	64	96	98	94
FLIP89-61L	102	145	103	132	103	26	66	100	98	100
FLIP89-67L	100	148	103	131	104	26	66	101	99	99
FLIP89-71L	96	146	95	132	103	26	62	99	98	96
86S91	93	145	95	129	98	30	72	100	97	96
74TA441XPantL639	96	147	67	132	107	26	67	100	100	96
Local check	84	164	92	130	108	26	46	99	98	-
Location Mean	**94**	**146**	**92**	**131**	**99**	**21**	**64**	**99**	**98**	
S.E. of Mean	2.19	1.08	0.48	2.22	0.70	0.41	1.71	0.76	0.57	
L.S.D. at 5%	6.22	3.08	1.36	NS	1.99	1.16	4.08	2.16	1.63	
C.V. %	4.03	1.28	0.89	2.93	1.22	3.36	3.76	1.33	1.01	

NS = Not significant at $P \leq 0.05$.

Table 4.3.3. Time to maturity (days) of entries at different locations in the LIYT-E during 1992/93.

Entry Name	Algeria	Bulgaria	Egypt	Ethiopia		India	Iran
	Guelma*	Toshevo	Gemmiza	Debre Zeit	Ghinchi	New Delhi	Karaj
L1282	211	73	153	71	127	140	195
LL1	211	73	156	76	128	137	196
162	211	74	154	73	128	140	197
FLIP86-16L	211	81	153	77	128	134	199
FLIP86-39L	211	73	157	70	126	135	200
FLIP87-66L	211	72	153	79	124	139	196
FLIP87-70L	211	73	151	74	128	134	195
FLIP87-72L	211	79	155	78	128	139	196
FLIP87-75L	211	73	153	75	124	134	198
FLIP88-34L	211	74	151	73	127	137	197
FLIP88-35L	211	74	154	74	127	137	197
FLIP88-41L	211	79	147	77	127	132	196
FLIP88-43L	211	77	151	74	124	129	196
FLIP89-34L	211	79	155	74	128	142	197
FLIP89-52L	211	77	154	83	125	138	197
FLIP89-53L	211	76	157	74	126	138	197
FLIP89-58L	211	74	154	85	128	142	196
FLIP89-60L	211	73	154	69	125	135	197
FLIP89-61L	211	73	154	87	130	139	195
FLIP89-67L	211	75	157	80	130	141	196
FLIP89-71L	211	74	154	66	128	139	197
86S91	211	74	155	74	128	137	197
74TA441XPantL639	211	76	152	75	123	137	197
Local check	211	79	157	75	130	132	208
Location Mean	**211**	**75**	**154**	**75**	**127**	**137**	**197**
S.E. of Mean		1.14	1.29	3.21	1.47	1.77	0.69
L.S.D. at 5%		3.25	3.67	7.67	4.18	5.04	1.98
C.V. %		2.63	1.45	6.02	2.00	2.24	0.61

Cont'd. ...

Table 4.3.3. Cont'd. ...

Entry Name	Pakistan		Saudi Arabia	Sri Lanka	Syria		Overall
	Faisalabad	SWAT	Al Gassim	Bandarawela	Breda	Tel Hadya	Mean(1)
L1282	144	184	147	94	171	148	147
LL1	145	179	146	99	171	149	147
162	140	185	146	96	171	148	147
FLIP86-16L	131	179	141	97	174	149	146
FLIP86-39L	146	182	150	99	169	140	147
FLIP87-66L	150	185	148	97	163	139	147
FLIP87-70L	142	180	142	96	164	137	144
FLIP87-72L	146	184	148	108	162	138	147
FLIP87-75L	145	182	149	99	170	140	146
FLIP88-34L	147	178	147	99	168	140	146
FLIP88-35L	142	182	147	99	163	138	146
FLIP88-41L	129	180	143	99	165	138	144
FLIP88-43L	127	184	144	97	167	140	144
FLIP89-34L	150	182	145	-	170	141	148
FLIP89-52L	148	183	150	108	168	139	148
FLIP89-53L	147	180	149	99	173	145	148
FLIP89-58L	150	183	148	105	169	139	148
FLIP89-60L	138	181	149	94	170	144	146
FLIP89-61L	146	184	146	108	169	141	148
FLIP89-67L	149	182	147	105	172	147	149
FLIP89-71L	145	179	147	96	171	144	146
86S91	147	180	148	99	172	149	148
74TA441XPantL639	132	185	146	96	164	140	145
Local check	144	182	149	94	162	137	
Location Mean	**143**	**182**	**147**	**99**	**168**	**142**	
S.E. of Mean	0.56	2.04	0.75	1.17	1.51	1.43	
L.S.D. at 5%	1.58	NS	2.15	3.32	4.29	4.06	
C.V. %	0.68	1.95	0.89	2.22	1.55	1.74	

(1) Bandarawela in Sri Lanka with missing value was excluded from overall mean.
* Similar value for date of maturity for all the entries, NS = Not Significant at $P \leq 0.05$.

Table 4.3.4. Plant height (cm) of entries at different locations in the LIYT-E during 1992/93.

Entry Name	Bulgaria	Egypt	Ethiopia		India	Iran	Pakistan		Sri Lanka	Syria	(1)
	Toshevo	Gemmiza	Debre-Zeit	Ghinchi	New Delhi	Karaj	Faisal-abad	SWAT	Banda-rawela	Breda	**Overall Mean**
L1282	23	35	25	20	44	22	59	34	17	23	32
LL1	24	40	21	22	41	19	62	35	16	22	32
162	31	35	28	23	37	22	56	38	14	23	33
FLIP86-16L	31	44	27	28	36	33	43	38	18	26	34
FLIP86-39L	24	31	22	17	38	21	45	30	16	23	28
FLIP87-66L	26	33	29	22	37	20	52	39	16	22	31
FLIP87-70L	25	30	23	19	31	19	48	47	15	21	29
FLIP87-72L	25	35	28	21	40	18	45	46	19	25	31
FLIP87-75L	23	32	23	20	30	19	42	29	15	23	27
FLIP88-34L	23	39	24	20	39	18	66	30	14	20	31
FLIP88-35L	24	33	21	19	34	18	42	37	14	23	28
FLIP88-41L	25	37	23	20	35	21	38	32	16	24	28
FLIP88-43L	25	34	30	25	40	21	39	45	17	23	31
FLIP89-34L	28	41	24	21	34	22	45	33	-	27	30
FLIP89-52L	24	34	28	17	30	20	42	43	14	24	29
FLIP89-53L	22	37	27	23	33	19	52	46	17	25	32
FLIP89-58L	24	29	22	19	32	18	48	44	14	21	29
FLIP89-60L	22	33	18	14	39	18	46	33	16	21	27
FLIP89-61L	23	32	23	18	29	17	47	38	11	22	28
FLIP89-67L	27	35	30	24	39	18	50	50	12	23	33
FLIP89-71L	22	36	24	20	39	18	56	33	14	20	30
86S91	27	38	26	21	41	21	54	38	16	21	32
74TA441XPantL639	25	29	21	19	31	19	45	33	13	23	27
Local check	34	44	31	28	42	30	61	43	20	25	-
Location Mean	**25**	**35**	**25**	**21**	**36**	**21**	**49**	**38**	**15**	**23**	
S.E. of Mean	1.85	2.61	1.55	1.56	2.83	0.99	1.38	4.61	1.99	1.05	
L.S.D. at 5%	5.26	7.43	3.70	4.44	6.76	2.82	3.93	NS	5.67	3.00	
C.V. %	12.63	12.79	8.80	12.98	11.10	8.37	4.85	20.98	32.79	7.96	

(1) Bandarawela in Sri Lanka with missing value was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.3.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LIYT-E during 1992/93.

Entry Name	Algeria		Bulgaria		Egypt				Ethiopia				India		Iran	
	Guelma		Toshevo		Gemmiza		Nubaria		Debre Zeit		Ghinchi		New Delhi		Karaj	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
L1282	735	13	633	20	2397	4	775	19	614	7	263	19	1092	9	1840	12
LL1	178	22	733	12	1825	9	1355	3	410	15	494	5	1200	8	1393	15
162	433	19	725	13	1905	6	1043	8	660	6	427	9	725	19	1618	14
FLIP86-16L	1289	8	642	19	2984	1	704	20	356	17	204	22	850	17	1904	11
FLIP86-39L	891	10	758	10	1706	10	1369	2	261	18	440	8	1800	3	1769	13
FLIP87-66L	668	15	692	15	1690	11	1042	9	503	9	369	12	850	16	2051	8
FLIP87-70L	691	14	533	24	1175	17	459	23	434	14	365	13	958	14	1300	18
FLIP87-72L	1578	5	808	8	905	19	1340	4	254	20	488	6	1008	10	2367	2
FLIP87-75L	400	21	625	21	1246	15	493	21	474	13	204	23	1831	2	1211	19
FLIP88-34L	166	23	617	22	944	18	1322	5	409	16	338	15	1217	7	933	24
FLIP88-35L	1600	4	775	9	865	22	909	13	559	8	298	17	361	23	1107	23
FLIP88-41L	1289	7	867	6	484	24	246	24	255	19	90	24	975	13	1178	20
FLIP88-43L	911	9	925	3	1381	14	899	14	932	2	306	16	1517	5	1918	10
FLIP89-34L	1867	3	992	2	1190	16	842	16	496	11	208	21	287	24	2098	7
FLIP89-52L	2491	2	842	7	889	20	833	17	77	24	360	14	433	20	2153	6
FLIP89-53L	1511	6	925	4	817	23	1178	7	686	5	508	4	858	15	2182	4
FLIP89-58L	467	18	683	16	1667	12	489	22	179	22	294	18	375	22	1318	17
FLIP89-60L	489	17	608	23	865	21	960	11	491	12	227	20	1975	1	1338	16
FLIP89-61L	156	24	750	11	1595	13	882	15	130	23	427	10	983	12	1164	21
FLIP89-67L	533	16	658	17	1857	8	800	18	215	21	483	7	425	21	1947	9
FLIP89-71L	877	12	650	18	2762	2	984	10	500	10	400	11	1625	4	1120	22
86S91	400	20	717	14	1873	7	1375	1	710	4	627	2	1000	11	2329	3
74TA441XPantL63	889	11	883	5	2397	3	1320	6	726	3	558	3	742	18	2178	5
Local check	3867	1	1192	1	2032	5	910	12	1320	1	969	1	1467	6	4747	1
Location Mean	**1016**		**760**		**1561**		**939**		**485**		**389**		**1023**		**1798**	
S.E. of Mean	281.98		95.15		257.27		204.64		59.78		66.52		260.20		244.99	
L.S.D. at 5%	802.68		270.83		732.31		582.50		142.82		189.35		740.66		697.38	
C.V. %	48.09		21.69		28.55		37.76		17.42		29.59		44.05		23.60	
Entry > L. Check	0		0		1		0		0		0		0		0	

Cont'd. ...

Table 4.3.5. Cont'd. ...

Entry Name	Pakistan				Saudi Arabia		Sri Lanka		Sudan		Syria				Overall Mean	
	Faisalabad		SWAT		Gassim		Bandarawela		Hudeiba		Breda		Tel Hadya			
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
L1282	2021	8	1722	6	1504	4	313	17	521	21	901	20	785	17	1129	5
LL1	1993	9	1361	12	1356	5	522	12	526	20	927	19	931	15	1049	12
162	2670	1	1806	4	1139	8	640	6	797	13	1089	16	740	21	1127	6
FLIP86-16L	403	23	722	23	553	22	536	11	689	17	525	24	1275	4	936	19
FLIP86-39L	1976	10	833	20	684	19	684	2	1247	2	1463	1	1269	5	1176	4
FLIP87-66L	1156	16	708	24	907	12	342	14	748	16	1075	17	761	20	944	16
FLIP87-70L	1750	11	1222	15	1071	9	656	3	971	9	1315	7	932	14	941	18
FLIP87-72L	1191	15	1181	16	1273	6	329	15	849	12	1297	9	1147	8	1120	8
FLIP87-75L	948	20	1278	14	562	21	538	10	928	10	1202	12	1049	10	889	22
FLIP88-34L	2663	2	1389	10	1592	3	402	13	1953	1	836	23	679	23	1076	10
FLIP88-35L	979	19	2472	1	889	13	253	18	1176	3	1231	10	733	22	997	13
FLIP88-41L	750	21	778	22	887	14	238	19	1039	6	1373	5	774	18	785	23
FLIP88-43L	1056	18	1292	13	602	20	656	4	1022	8	1105	15	949	13	1058	11
FLIP89-34L	212	24	1778	5	133	23	-	-	65	24	1369	6	1421	2	926	17
FLIP89-52L	427	22	1069	17	800	17	47	23	785	14	1195	13	1003	11	954	15
FLIP89-53L	1604	13	861	19	1004	10	627	7	900	11	1378	4	1306	3	1123	7
FLIP89-58L	1628	12	2028	3	876	15	162	22	510	22	1130	14	1236	6	920	20
FLIP89-60L	2410	5	792	21	1660	2	564	9	1115	4	1311	8	881	16	1080	9
FLIP89-61L	2125	7	1694	7	731	18	164	21	683	18	1218	11	1052	9	971	14
FLIP89-67L	1146	17	1500	9	809	16	216	20	235	23	882	22	982	12	891	21
FLIP89-71L	2458	3	1056	18	2631	1	327	16	1052	5	897	21	525	24	1253	1
86S91	2451	4	1653	8	1247	7	640	5	1026	7	993	18	774	19	1227	2
74TA441XPantL639	1431	14	1375	11	999	11	598	8	612	19	1425	3	1208	7	1196	3
Local check	2406	6	2236	2	122	24	998	1	756	15	1462	2	1879	1		
Location Mean	**1577**		**1367**		**1001**		**454**		**842**		**1150**		**1012**			
S.E. of Mean	66.05		330.28		384.08		115.78		185.19		164.50		156.13			
L.S.D. at 5%	188.01		940.16		1093.29		329.57		442.44		468.25		444.43			
C.V. %	7.25		42.85		66.44		49.16		31.11		24.78		26.72			
Entry > L. Check	2		0		7		0		2		0		0			

NS = Not significant at $P \leq 0.05$.

Table 4.3.6. The five heaviest seed yielding entries at the individual locations in the LIYT-E during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Algeria	Guelma	Local check	FLIP 89-52L	FLIP 89-34L	FLIP 88-35L	FLIP 87-72L
Bulgaria	Toshevo	Local check	FLIP 89-34L	FLIP 88-43L	FLIP 89-53L	74TA441XPant*
Egypt	Gemmiza	FLIP 86-16L	FLIP 89-71L	74TA441XPant*	L 1282	Local check
Egypt	Nubaria	86591	FLIP 86-39L	LL 1	FLIP 87-72L	FLIP 88-34L
Ethiopia	Debre Zeit	Local check	FLIP 88-43L	74TA441XPant*	86591	FLIP 89-53L
Ethiopia	Ghinchi	Local check	86591	74TA441XPant*	FLIP 89-53L	LL 1
India	New Delhi	FLIP 89-60L	FLIP 87-75L	FLIP 86-39L	FLIP 89-71L	FLIP 88-43L
Iran	Karaj	Local check	FLIP 87-72L	86591	FLIP 89-53L	74TA441XPant L163
Pakistan	Faisalabad	162	FLIP 88-34L	FLIP 89-71L	86591	FLIP 89-60L
Pakistan	SWAT	FLIP 88-35L	Local check	FLIP 89-58L	162	FLIP 89-34L
Saudi Arabia	Al Gassim	FLIP 89-71L	FLIP 89-60L	FLIP 88-34L	L 1282	LL 1
Sri Lanka	Bandarawela	Local check	FLIP 86-39L	FLIP 87-70L	FLIP 88-43L	86591
Sudan	Hudeiba	FLIP 88-34L	FLIP 86-39L	FLIP 88-35L	FLIP 89-60L	FLIP 89-71L
Syria	Breda	FLIP 86-39L	Local check	74TA441XPant*	FLIP 89-53L	FLIP 88-41L
Syria	Tel Hadya	Local check	FLIP 89-34L	FLIP 89-53L	FLIP 86-16L	FLIP 86-39L

* Pant = Pant L639; ** Pant = Pant L163

Table 4.3.7. The mean seed yield (Y = kg/ha) and rank (R) of the common entries in LIYT-E during 1991/92 and 1992/93.

Entry Name	1991/92 Y	1991/92 R	1992/93 Y	1992/93 R	Mean Y	Mean R
L 1282	1313	3	1129	2	1221	2
162	1183	12	1127	3	1155	6
FLIP 86-16L	1201	8	936	13	1069	13
FLIP 86-39L	1404	1	1176	1	1290	1
FLIP 87-66L	1232	6	944	11	1088	10
FLIP 87-70L	1201	8	941	12	1071	12
FLIP 87-72L	1313	3	1120	5	1217	3
FLIP 88-34L	1221	7	1076	7	1149	7
FLIP 88-35L	1187	11	997	9	1092	9
FLIP 88-43L	1375	2	1058	8	1217	3
FLIP 89-34L	727	16	926	14	827	16
FLIP 89-52L	1201	8	954	10	1078	11
FLIP 89-53L	1301	5	1123	4	1212	5
FLIP 89-58L	1102	14	920	15	1011	14
FLIP 89-60L	1175	13	1080	6	1128	8
FLIP 89-67L	1070	15	891	16	981	15

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

Material

The material for the Lentil International Screening Nursery-Large Seed comprised of 35 test entries and one local check which was to be used by the cooperator. Thirty entries were selected from the materials developed through hybridization and tested at ICARDA sites in Syria and Lebanon.

Methods and Management

The material was sown in a 6X6 simple lattice design with two replications. The suggested plot size was single row 4 m long with inter row spacing of 25 cm. Thirty three sets of screening nursery were sent to cooperators in 15 countries and the results were received from 20 locations from 7 countries. The agronomic data received from cooperators are given in Table 4.4.1.

Results and Discussion

The entry means over all locations ranged from 78 to 88 days for time to flower (Table 4.4.2), 113 ro 126 days for days to maturity (4.4.3), 25 to 29 cm for plant height (Table 4.4.4).

Adjusted seed yields of different entries at various locations are given in Table 4.4.5. The location mean was highest at Gelline in Syria (2411 kg/ha) and lowest at New Delhi in India (228 kg/ha). The ANOVA of the experimental design revealed 2, 23, 4 and 4 test entries, exceeded the local check by a significant margin at Caltagirone in Italy, Lincoln in New Zealand, Heimo in Syria and Erzurum in Turkey, respectively. The five heaviest yielders across locations included FLIP 92-4L, FLIP 92-3L, FLIP 93-33L, FLIP 92-6L, and FLIP 93-21L and yielded 1265, 1245, 1146, 1076, and 1032 kg/ha, respectively. The five heaviest yielders at each location are given in Table 4.4.6.

Table 4.4.1. Agronomic details for LISN-L-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Khroub	23.01.93	23.06.93	17	46	-	-	Kerb + Maloran	Syrie 229
India	New Delhi	07.11.92	04.04.93	20	46	-	2	Metasystox, Stomp	LC-169(4)-2
Iran	Ardabil	09.03.93	26.07.93	-	-	-	-	-	Ardabil
Iran	Karaj-1	14.04.93	07.07.93	40	70	-	-	Treflan	Qazvin
Iran	Karaj-2	NA	NA	NA	NA	NA	NA	NA	NA
Iran	Khorramabad	13.03.93	19.06.93	-	69	-	-	-	Qazvin
Iran	Maragheh	17.04.93	18.07.93	45	50	-	-	Tecto + Actellic	Ziba
Iran	Qazvin	20.03.93	27.07.93	30	50	-	-	-	Qazvin
Iran	Yasoj	18.03.93	24.06.93	18	46	-	-	-	Yasoj
Iran	Zanjan	21.03.93	18.07.93	-	-	-	2	Diazinon	Zanjan
Italy	Caltagirone	05.02.93	14.06.93	-	60	-	-	-	-
New Zealand	Lincoln	14.09.93	15.02.94	NA	NA	NA	NA	Cyanazine	Lauriston
Syria	Aleppo	05.12.92	20.05.93	20	50	-	-	-	ILL 2126
Syria	Gelline	11.12.92	20.05.93	20	50	-	-	-	ILL 2126
Syria	Heimo	05.01.93	14.06.93	-	50	-	-	-	Idleb 1
Syria	Idleb	21.12.92	09.06.93	20	60	-	-	Fusilade	Idleb 1
Syria	Izra'a	19.01.93	22.06.93	-	110	-	-	-	ILL 2126
Syria	Tel Hadya	08.12.92	20.05.93	-	50	-	-	-	Kurdi 1
Turkey	Erzurum	18.05.93	23.08.93	30	70	-	-	Tribunil	Erzurum-89
Turkey	Haymana	05.04.93	13.06.93	30	60	-	-	Fusilade	Sarak 91

NA = Not available

Table 4.4.2. Adjusted time to flowering (days) of entries at different locations in the LISN-L during 1992/93.

Entry name	Accession	Parentage	Origin	Algeria	India	Iran	
				Khroub	New Delhi	Ardabil	Qazvin
Syrian local large	ILL 4400	-	Syria	105	117	68	73
FLIP 90-6L	ILL 6975	ILL 262 X ILL 4606	ICARDA	100	113	66	74
FLIP 91-12L	7138	ILL 5744 X ILL 4605	ICARDA	104	111	68	72
Petrovskaja 6	ILL 7157	-	Former USSR	128	121	68	74
Petrovskaja 4/105	ILL 7159	-	Former USSR	-	119	75	73
Petrovsk Jubilee	ILL 7160	-	Former USSR	126	118	81	74
P. Glauca-Sperma	ILL 7161	-	Former USSR	-	117	79	73
FLIP 92-1L	ILL 7166	ILL 5741 X ILL 1042	ICARDA	100	111	75	73
FLIP 92-2L	ILL 7167	ILL 5815 X ILL 5523	ICARDA	100	109	70	74
FLIP 92-3L	ILL 7168	ILL 5676 X ILL 4354	ICARDA	99	101	69	73
FLIP 92-4L	ILL 7169	ILL 4605 X ILL 5572	ICARDA	98	114	62	73
FLIP 92-5L	ILL 7170	ILL 5582 X ILL 5700	ICARDA	98	99	64	73
FLIP 92-6L	ILL 7171	ILL 5582 X ILL 5700	ICARDA	98	106	65	73
FLIP 92-7L	ILL 7172	ILL 5582 X ILL 5700	ICARDA	99	101	66	73
FLIP 92-8L	ILL 7173	ILL 5582 X ILL 707	ICARDA	100	108	62	73
FLIP 92-9L	ILL 7174	ILL 5582 X ILL 707	ICARDA	99	107	71	73
FLIP 92-10L	ILL 7175	ILL 5582 X ILL 707	ICARDA	97	104	74	72
FLIP 92-11L	ILL 7176	ILL 5582 X ILL 707	ICARDA	98	108	74	73
FLIP 92-12L	ILL 7177	ILL 5582 X ILL 707	ICARDA	98	100	70	73
FLIP 92-13L	ILL 7178	ILL 5507 X ILL 5700	ICARDA	98	103	73	72
FLIP 92-14L	ILL 7179	ILL 5743 X ILL 5698	ICARDA	99	117	75	73
FLIP 92-15L	ILL 7180	ILL 5588 X ILL 5714	ICARDA	103	98	70	74
FLIP 93-21L	ILL 7522	ILL 4400 X ILL 5700	ICARDA	99	109	69	72
FLIP 93-22L	ILL 7523	ILL 4400 X ILL 5753	ICARDA	104	116	77	73
FLIP 93-23L	ILL 7524	ILL 5743 X ILL 707	ICARDA	99	122	77	73
FLIP 93-24L	ILL 7525	ILL 5746 X ILL 5700	ICARDA	101	112	65	73
FLIP 93-25L	ILL 7526	ILL 6005 X ILL 707	ICARDA	108	115	72	74
FLIP 93-26L	ILL 7527	ILL 4400 X ILL 6003	ICARDA	103	117	78	73
FLIP 93-27L	ILL 7528	ILL 5507 X ILL 1939	ICARDA	105	116	78	73
FLIP 93-28L	ILL 7529	ILL 5743 X ILL 1939	ICARDA	99	116	75	72
FLIP 93-29L	ILL 7530	ILL 5744 X ILL 5732	ICARDA	105	113	75	73
FLIP 93-30L	ILL 7531	ILL 5746 X ILL 975	ICARDA	98	105	75	73
FLIP 93-31L	ILL 7532	ILL 5762 X ILL 5884	ICARDA	98	113	75	72
FLIP 93-32L	ILL 7533	ILL 5698 X ILL 6001	ICARDA	102	114	75	73
FLIP 93-33L	ILL 7534	ILL 5745 X ILL 5817	ICARDA	98	104	72	74
Local check	-			93	92	75	73
Location mean				**102**	**110**	**72**	**73**
S.E. of Mean				One	1.96	4.88	0.60
LSD at .05				rep	5.63	NS	NS
C.V. %					2.52	9.62	1.72

Cont'd. ...

Table 4.4.2. Cont'd. ...

Entry name	Iran						Italy	New Zealand	Syria
	Karaj-1	Karaj-2	Khorramabad	Maragheh	Yosaj	Zanjan	Caltagirone	Lincoln	Aleppo
Syrian local large	35	156	71	65	70	67	91	70	124
FLIP 90-6L	29	142	64	63	70	65	88	69	124
FLIP 91-12L	42	156	69	71	70	72	90	71	124
Petrovskaja 6	36	160	83	74	75	73	99	70	129
Petrovskaja 4/105	44	162	80	74	69	73	96	70	130
Petrovsk Jubilee	35	164	75	76	74	77	98	71	130
P. Glauca-Sperma	54	-	76	74	72	72	99	71	132
FLIP 92-1L	36	148	68	63	69	60	88	70	124
FLIP 92-2L	34	151	65	67	70	62	89	71	124
FLIP 92-3L	34	148	61	61	62	59	88	70	124
FLIP 92-4L	35	142	66	61	68	62	90	71	120
FLIP 92-5L	34	145	64	61	65	63	88	70	124
FLIP 92-6L	34	141	63	62	63	58	88	71	124
FLIP 92-7L	33	148	63	61	63	64	88	70	124
FLIP 92-8L	32	143	62	61	62	65	88	71	124
FLIP 92-9L	31	145	63	61	62	71	88	70	122
FLIP 92-10L	28	149	64	61	62	61	88	71	124
FLIP 92-11L	35	139	64	61	62	60	88	70	124
FLIP 92-12L	32	139	63	61	62	65	88	70	124
FLIP 92-13L	29	138	63	61	62	63	88	71	120
FLIP 92-14L	33	144	66	62	70	61	88	70	120
FLIP 92-15L	34	145	63	61	65	60	88	70	120
FLIP 93-21L	29	143	64	61	63	65	88	71	124
FLIP 93-22L	34	151	70	67	70	68	91	73	124
FLIP 93-23L	35	152	67	68	73	66	89	71	126
FLIP 93-24L	30	147	66	68	70	63	91	71	124
FLIP 93-25L	35	152	70	67	69	63	91	71	124
FLIP 93-26L	40	144	69	67	71	63	89	70	124
FLIP 93-27L	33	152	65	65	69	65	88	70	126
FLIP 93-28L	34	149	70	65	68	63	90	70	124
FLIP 93-29L	32	152	67	61	68	60	90	71	126
FLIP 93-30L	28	145	66	61	70	63	88	71	124
FLIP 93-31L	35	147	66	61	70	61	89	70	124
FLIP 93-32L	39	148	65	68	70	66	89	71	124
FLIP 93-33L	32	139	63	61	62	64	88	71	124
Local check	37	156	64	67	70	64	97	68	124
Location mean	**35**	**148**	**67**	**65**	**67**	**65**	**90**	**70**	**124**
S.E. of Mean	2.60	2.46	1.81	2.61	1.03	3.84	0.99	0.70	0.47
LSD at .05	7.58	7.08	5.27	7.50	2.96	NS	2.84	NS	1.35
C.V. %	10.65	2.36	3.83	5.73	2.16	8.40	1.55	1.40	0.53

Cont'd. ...

Table 4.4.2. Cont'd. ...

Entry name	Syria					Turkey		(1)
	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Erzurum	Haymana	**Overall mean**
Syrian local large	108	112	116	98	106	58	67	83
FLIP 90-6L	104	108	115	94	103	53	63	80
FLIP 91-12L	109	113	116	98	108	55	64	83
Petrovskaja 6	109	113	122	96	-	50	78	86
Petrovskaja 4/105	111	114	122	91	-	52	75	86
Petrovsk Jubilee	111	113	122	96	109	53	75	87
P. Glauca-Sperma	111	113	122	91	-	53	83	88
FLIP 92-1L	106	110	114	95	106	54	64	81
FLIP 92-2L	106	106	115	94	104	54	66	81
FLIP 92-3L	104	104	115	91	101	49	62	78
FLIP 92-4L	107	107	115	92	105	52	62	80
FLIP 92-5L	104	104	114	91	102	50	63	78
FLIP 92-6L	105	107	114	92	102	52	64	79
FLIP 92-7L	105	106	115	93	103	50	63	79
FLIP 92-8L	105	107	118	92	102	52	62	79
FLIP 92-9L	104	106	114	91	100	50	62	79
FLIP 92-10L	105	106	114	91	103	49	62	79
FLIP 92-11L	105	105	114	93	103	50	62	79
FLIP 92-12L	103	104	114	92	100	49	63	78
FLIP 92-13L	103	103	115	90	101	50	62	78
FLIP 92-14L	106	107	118	93	104	51	63	81
FLIP 92-15L	105	111	115	94	102	51	63	79
FLIP 93-21L	105	109	114	93	102	50	62	79
FLIP 93-22L	108	110	121	98	107	55	64	83
FLIP 93-23L	108	107	114	95	106	55	62	83
FLIP 93-24L	108	111	115	94	105	57	64	81
FLIP 93-25L	109	111	121	99	107	55	66	83
FLIP 93-26L	104	109	114	94	105	55	65	82
FLIP 93-27L	109	111	115	98	106	58	64	82
FLIP 93-28L	108	109	115	98	105	54	65	82
FLIP 93-29L	109	111	114	95	105	51	62	81
FLIP 93-30L	105	105	115	94	103	50	62	80
FLIP 93-31L	106	107	114	93	105	49	61	80
FLIP 93-32L	108	108	114	95	104	55	68	82
FLIP 93-33L	103	105	114	89	99	49	62	79
Local check	105	106	115	90	106	56	69	-
Location mean	**106**	**108**	**116**	**93**	**104**	**52**	**65**	
S.E. of Mean	0.73	1.12	0.55	1.79	0.76	1.39	1.11	
LSD at .05	2.10	3.25	1.61	5.14	2.17	4.04	3.17	
C.V. %	0.97	1.46	0.67	2.71	1.03	3.74	2.41	

(1) Khroub in Algeria, Karaj-2 in Iran and Tel Hadya in Syria with missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.4.3. Adjusted time to maturity (days) of entries at different locations in the LISN-L during 1992/93.

Entry name	Algeria	India	Iran							
	Khroub	New Delhi	Ardabil	Qazvin	Karaj-1	Karaj-2	Khorramabad	Maragheh	Yosaj	Zanjan
Syrian local large	145	147	119	94	68	198	95	94	102	101
FLIP 90-6L	144	145	114	93	67	192	96	94	93	100
FLIP 91-12L	144	144	135	94	73	197	96	93	90	103
Petrovskaja 6	-	150	134	97	75	204	95	100	118	108
Petrovskaja 4/105	-	147	134	97	81	204	98	106	118	101
Petrovsk Jubilee	-	145	134	97	86	204	101	105	118	106
P. Glauca-Sperma	-	-	137	94	88	-	105	104	118	103
FLIP 92-1L	146	145	117	93	74	192	95	93	91	95
FLIP 92-2L	143	140	114	93	69	192	95	93	93	97
FLIP 92-3L	145	139	111	91	72	192	95	92	91	101
FLIP 92-4L	144	146	111	93	75	191	92	92	93	87
FLIP 92-5L	144	138	109	91	74	191	96	92	98	97
FLIP 92-6L	145	140	114	91	73	194	93	92	91	99
FLIP 92-7L	145	139	121	93	72	194	94	93	91	98
FLIP 92-8L	144	143	119	94	72	194	93	92	91	98
FLIP 92-9L	145	141	115	92	73	191	95	91	90	100
FLIP 92-10L	143	141	110	92	64	191	93	92	91	99
FLIP 92-11L	142	138	114	91	75	192	94	92	88	100
FLIP 92-12L	141	138	116	90	74	192	95	90	88	103
FLIP 92-13L	143	140	111	93	67	189	93	91	88	96
FLIP 92-14L	144	148	123	91	77	192	94	94	93	102
FLIP 92-15L	144	135	117	92	75	193	96	93	95	100
FLIP 93-21L	146	141	116	94	69	194	92	90	91	98
FLIP 93-22L	145	149	114	95	69	193	96	93	98	102
FLIP 93-23L	144	149	113	94	71	192	96	93	90	103
FLIP 93-24L	146	145	116	94	68	193	95	91	93	91
FLIP 93-25L	145	145	119	94	71	194	96	92	98	102
FLIP 93-26L	144	145	119	93	74	195	100	93	90	99
FLIP 93-27L	146	145	117	94	69	195	95	93	95	95
FLIP 93-28L	146	145	118	94	72	193	97	93	98	99
FLIP 93-29L	147	140	119	93	71	193	93	93	93	96
FLIP 93-30L	144	141	113	93	62	192	96	94	93	96
FLIP 93-31L	144	143	111	94	68	192	95	91	93	100
FLIP 93-32L	144	145	110	94	72	193	95	94	98	98
FLIP 93-33L	143	140	111	93	71	190	93	91	88	99
Local check	145	138	117	94	76	201	95	92	95	96
Location mean	**144**	**143**	**118**	**93**	**72**	**194**	**95**	**93**	**96**	**99**
S.E. of Mean	One	1.72	3.67	1.18	3.72	1.54	0.56	2.16	One	3.33
LSD at .05	rep	4.94	10.53	3.45	10.83	4.42	1.62	6.19	rep	NS
C.V. %		1.70	4.41	1.79	7.27	1.12	0.82	3.26		4.75

Cont'd. ...

Table 4.4.3. Cont'd. ...

Entry name	Syria						Turkey		(1)
	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Erzurum	Haymana	**Overall mean**
Syrian local large	162	157	155	159	143	149	97	96	117
FLIP 90-6L	163	157	153	159	141	144	97	92	116
FLIP 91-12L	163	157	154	155	140	145	97	88	117
Petrovskaja 6	166	162	164	168	153	153	95	102	124
Petrovskaja 4/105	165	161	160	167	152	154	92	102	124
Petrovsk Jubilee	166	162	164	161	153	154	94	101	125
P. Glauca-Sperma	165	161	164	167	154	-	97	105	126
FLIP 92-1L	162	157	156	158	140	146	95	91	115
FLIP 92-2L	163	157	154	161	144	144	97	93	116
FLIP 92-3L	163	157	156	161	143	141	97	89	116
FLIP 92-4L	163	157	156	160	141	142	96	90	115
FLIP 92-5L	158	157	156	158	141	141	97	87	115
FLIP 92-6L	158	157	156	157	141	143	94	87	115
FLIP 92-7L	158	157	155	156	143	145	97	91	116
FLIP 92-8L	160	157	155	158	142	144	97	88	115
FLIP 92-9L	163	157	155	157	141	141	94	89	115
FLIP 92-10L	158	157	154	159	141	142	91	88	113
FLIP 92-11L	158	158	155	158	145	140	91	87	115
FLIP 92-12L	158	157	155	155	143	139	93	88	115
FLIP 92-13L	158	157	148	157	141	143	91	86	113
FLIP 92-14L	163	157	156	161	141	143	96	87	117
FLIP 92-15L	163	157	156	161	142	150	97	89	117
FLIP 93-21L	163	157	155	156	142	143	94	89	115
FLIP 93-22L	163	157	154	158	141	145	97	93	116
FLIP 93-23L	163	157	154	157	143	144	97	91	116
FLIP 93-24L	160	157	155	159	143	145	94	90	115
FLIP 93-25L	163	157	154	158	144	146	95	93	117
FLIP 93-26L	163	157	155	159	144	145	91	94	116
FLIP 93-27L	163	157	156	159	144	149	97	93	116
FLIP 93-28L	163	157	155	159	144	146	94	92	117
FLIP 93-29L	166	157	156	163	142	144	96	88	116
FLIP 93-30L	163	157	155	164	142	145	94	89	115
FLIP 93-31L	163	157	153	159	143	143	91	87	115
FLIP 93-32L	158	157	153	158	142	145	96	95	116
FLIP 93-33L	158	157	153	160	138	138	91	88	114
Local check	159	157	151	160	138	143	96	97	
Location mean	**162**	**158**	**155**	**159**	**143**	**144**	**95**	**91**	
S.E. of Mean	0.50	One	1.10	2.19	1.46	1.00	1.38	1.00	
LSD at .05	1.44	rep	3.22	6.39	4.26	2.87	4.02	2.90	
C.V. %	0.44		1.00	1.94	1.45	0.98	2.06	1.54	

(1) Khroub in Algeria, New Delhi in India, Karaj-2 in Iran and Tel Hadya in Syria with missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.4.4. Adjusted plant height (cm) of entries at different locations in the LISN-L during 1992/93.

Entry name	Algeria	India	Iran							
	Khroub	New Delhi	Ardabil	Qazvin	Karaj-1	Karaj-2	Khorramabad	Maragheh	Yosaj	Zanjan
Syrian local large	30	35	23	27	29	22	30	21	24	20
FLIP 90-6L	30	27	24	27	26	20	35	15	27	20
FLIP 91-12L	29	31	22	28	28	20	31	18	27	20
Petrovskaja 6	40	23	22	31	31	33	31	23	26	33
Petrovskaja 4/105	38	35	24	26	28	30	37	28	34	24
Petrovsk Jubilee	40	36	24	27	26	37	30	27	27	27
P. Glauca-Sperma	36	32	22	27	28	-	35	21	26	23
FLIP 92-1L	29	33	24	27	26	21	32	20	30	17
FLIP 92-2L	30	29	22	25	28	20	32	17	25	20
FLIP 92-3L	33	36	21	27	22	19	28	18	26	16
FLIP 92-4L	28	35	25	26	24	19	39	16	25	14
FLIP 92-5L	32	34	23	26	23	20	28	15	24	18
FLIP 92-6L	29	35	22	27	24	21	36	16	25	18
FLIP 92-7L	35	35	23	28	24	20	30	17	22	19
FLIP 92-8L	35	35	25	27	26	21	32	20	24	19
FLIP 92-9L	28	33	23	28	29	20	34	20	25	20
FLIP 92-10L	30	35	24	28	22	19	35	18	23	19
FLIP 92-11L	25	29	20	26	27	21	32	17	30	17
FLIP 92-12L	32	33	23	25	29	20	34	18	25	22
FLIP 92-13L	35	32	23	28	27	20	36	18	29	18
FLIP 92-14L	33	33	24	27	27	23	30	17	32	18
FLIP 92-15L	35	40	23	27	26	23	33	18	26	18
FLIP 93-21L	25	33	21	27	24	21	33	14	26	19
FLIP 93-22L	28	27	27	29	31	25	41	23	25	20
FLIP 93-23L	32	26	28	26	26	20	36	19	22	20
FLIP 93-24L	28	34	24	25	26	24	31	20	31	20
FLIP 93-25L	32	34	20	29	28	22	34	17	28	18
FLIP 93-26L	30	33	26	28	25	24	37	22	26	17
FLIP 93-27L	35	30	22	31	27	23	34	18	28	19
FLIP 93-28L	29	26	24	27	31	22	31	17	25	19
FLIP 93-29L	37	34	24	29	20	25	31	22	28	19
FLIP 93-30L	31	32	23	28	24	24	34	19	25	20
FLIP 93-31L	30	26	21	28	22	20	34	17	23	16
FLIP 93-32L	33	30	26	27	29	21	36	22	28	19
FLIP 93-33L	32	32	22	28	28	21	39	21	27	20
Local check	33	41	29	31	26	31	33	18	30	17
Location mean	**32**	**32**	**23**	**27**	**26**	**22**	**33**	**19**	**27**	**19**
S.E. of Mean	One	3.24	0.62	1.68	0.46	1.53	One	One	One	1.56
LSD at .05	rep	NS	1.78	4.88	1.33	4.39	rep	rep	rep	4.53
C.V. %		14.29	3.76	8.63	2.46	9.66				11.34

Cont'd. ...

Table 4.4.4. Cont'd. ...

Entry name	Italy	Syria						Turkey		Overall mean
	Caltagirone	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Erzurum	Haymana	
Syrian local large	26	29	35	33	26	19	24	27	23	27
FLIP 90-6L	25	27	31	30	24	17	23	22	22	25
FLIP 91-12L	23	28	31	31	27	17	22	25	23	26
Petrovskaja 6	29	23	30	34	28	22	25	24	25	28
Petrovskaja 4/105	28	26	35	40	27	25	23	24	28	29
Petrovsk Jubilee	26	26	41	39	34	24	21	24	24	29
P. Glauca-Sperma	28	25	30	36	38	23	21	23	24	28
FLIP 92-1L	25	28	35	33	27	18	23	24	22	26
FLIP 92-2L	26	25	30	28	22	17	21	26	23	25
FLIP 92-3L	25	28	35	35	26	14	24	26	24	26
FLIP 92-4L	24	31	31	33	29	18	21	29	22	26
FLIP 92-5L	26	23	30	34	23	18	22	24	23	25
FLIP 92-6L	26	25	35	30	25	19	27	24	23	26
FLIP 92-7L	24	27	30	29	24	20	26	25	22	26
FLIP 92-8L	26	25	35	32	27	20	25	22	21	26
FLIP 92-9L	24	27	31	30	22	22	26	27	24	26
FLIP 92-10L	23	25	30	32	23	20	25	20	23	25
FLIP 92-11L	25	26	31	28	27	17	26	24	23	25
FLIP 92-12L	24	27	31	31	30	21	29	25	24	27
FLIP 92-13L	24	26	35	33	20	19	25	20	24	26
FLIP 92-14L	26	27	35	35	27	17	26	26	23	27
FLIP 92-15L	25	26	35	32	32	19	26	25	22	27
FLIP 93-21L	26	26	35	30	24	22	25	28	21	25
FLIP 93-22L	26	26	35	32	25	21	30	24	27	28
FLIP 93-23L	26	28	35	33	26	21	26	21	24	26
FLIP 93-24L	27	31	32	28	25	20	25	26	24	26
FLIP 93-25L	28	28	35	33	25	20	28	20	23	27
FLIP 93-26L	27	29	35	35	29	21	27	27	24	28
FLIP 93-27L	26	27	31	27	29	18	25	21	23	26
FLIP 93-28L	28	30	33	36	29	22	29	23	24	27
FLIP 93-29L	29	29	35	35	36	20	31	24	23	28
FLIP 93-30L	24	27	30	37	33	19	26	25	21	27
FLIP 93-31L	26	27	35	31	29	18	26	22	22	25
FLIP 93-32L	25	27	35	33	30	21	23	25	22	27
FLIP 93-33L	24	28	35	32	30	18	23	24	24	27
Local check	29	30	35	32	30	40	27	26	28	
Location mean	**26**	**27**	**33**	**33**	**27**	**20**	**25**	**24**	**23**	
S.E. of Mean	0.82	1.33	0.64	2.09	4.36	1.53	1.66	1.34	1.04	
LSD at .05	2.37	3.88	1.83	6.08	NS	4.46	4.83	3.91	2.99	
C.V. %	4.54	6.95	2.71	9.08	22.66	10.77	9.37	7.86	6.36	

NS = Not significant at $P \leq 0.05$.

Table 4.4.5. Adjusted seed yield (Y=kg/ha) and rank (R) of entries at different locations in the LISN-L during 1992/93.

Entry name	India		Iran											
	New Delhi		Ardabil		Qazvin		Karaj-1		Karaj-2		Khorramabad		Maragheh	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian local large	348	5	291	34	86	33	160	34	433	29	332	36	425	11
FLIP 90-6L	233	18	1085	13	179	29	636	17	1307	6	726	26	370	16
FLIP 91-12L	200	24	1222	6	385	9	1160	2	387	31	921	17	554	1
Petrovskaja 6	81	35	313	33	130	31	246	32	433	30	571	33	152	36
Petrovskaja 4/105	133	30	491	29	0	35	302	30	133	35	1017	10	212	33
Petrovsk Jubilee	81	34	256	36	11	34	80	36	240	33	886	19	320	23
P. Glauca-Sperma	-	-	277	35	0	36	115	35	-	-	986	13	169	35
FLIP 92-1L	433	1	743	28	222	24	410	28	480	26	689	28	420	12
FLIP 92-2L	200	21	1082	14	303	17	586	20	773	18	815	22	411	14
FLIP 92-3L	233	13	848	22	391	7	674	14	753	20	740	25	263	29
FLIP 92-4L	267	12	1902	1	451	6	962	7	1467	4	1537	1	509	4
FLIP 92-5L	267	10	773	26	331	15	1064	3	633	24	710	27	327	21
FLIP 92-6L	133	31	818	24	467	5	964	6	660	23	1318	4	501	5
FLIP 92-7L	200	20	327	32	142	30	311	29	380	32	742	23	204	34
FLIP 92-8L	233	17	829	23	381	10	1325	1	753	19	1201	7	417	13
FLIP 92-9L	267	8	993	18	374	11	712	13	520	25	1223	5	343	19
FLIP 92-10L	233	14	983	19	265	20	512	25	193	34	1210	6	346	18
FLIP 92-11L	333	6	1090	12	364	12	991	5	800	17	1089	9	483	6
FLIP 92-12L	200	22	897	21	270	19	590	19	713	22	895	18	353	17
FLIP 92-13L	233	16	1021	16	510	4	522	22	727	21	997	11	284	26
FLIP 92-14L	167	26	807	25	207	27	940	8	1020	15	671	29	231	32
FLIP 92-15L	267	9	974	20	234	23	482	26	460	28	612	32	299	24
FLIP 93-21L	367	3	1267	3	516	3	585	21	1127	10	1463	2	325	22
FLIP 93-22L	167	25	1007	17	191	28	650	15	1393	5	502	35	442	9
FLIP 93-23L	233	19	1112	10	127	32	832	10	1100	12	1150	8	257	31
FLIP 93-24L	267	11	1048	15	243	21	259	31	993	16	824	21	273	28
FLIP 93-25L	133	32	428	30	210	25	517	24	467	27	994	12	262	30
FLIP 93-26L	233	15	427	31	293	18	1023	4	1480	3	541	34	277	27
FLIP 93-27L	148	29	1196	7	390	8	624	18	1760	2	943	16	291	25
FLIP 93-28L	167	28	1234	5	209	26	891	9	1020	14	641	30	446	8
FLIP 93-29L	167	27	744	27	361	13	521	23	1180	7	618	31	437	10
FLIP 93-30L	200	23	1105	11	359	14	170	33	1080	13	741	24	341	20
FLIP 93-31L	100	33	1189	8	312	16	647	16	1133	9	874	20	524	2
FLIP 93-32L	348	4	1255	4	241	22	446	27	1153	8	985	15	403	15
FLIP 93-33L	300	7	1117	9	551	2	830	11	1107	11	1348	3	459	7
Local check	400	2	1572	2	628	1	822	12	3360	1	986	14	511	3
Location mean	**228**		**909**		**286**		**627**		**903**		**903**		**357**	
S.E. of Mean	79.49		123.74		91.09		200.51		222.12		219.61		85.66	
LSD at .05	NS		360.45		265.33		584.05		638.43		639.70		NS	
C.V. %	49		19.25		44.97		45.25		34.77		34.41		33.97	
Efficiency	0		140		122		133		0		132		108	
Entry > L. Check	-		0		0		0		0		0		-	

Cont'd. ...

Table 4.4.5. Cont'd. ...

Entry name	Iran				Italy		New Zealand		Syria					
	Yosaj		Zanjan		Caltagirone		Lincoln		Aleppo		Gelline		Heimo	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian local large	400	31	260	33	511	18	787	18	378	33	1517	31	1725	14
FLIP 90-6L	773	16	430	10	604	7	609	26	512	25	2645	15	1359	28
FLIP 91-12L	900	9	268	32	516	17	951	7	449	28	2550	17	1596	19
Petrovskaja 6	27	36	224	35	129	36	834	15	384	31	1128	33	282	36
Petrovskaja 4/105	167	33	356	26	439	29	571	32	140	36	566	35	714	33
Petrovsk Jubilee	127	34	131	36	322	34	629	25	359	34	677	34	574	34
P. Glauca-Sperma	100	35	238	34	192	35	677	22	205	35	417	36	358	35
FLIP 92-1L	500	26	374	21	532	15	640	24	537	22	2454	18	1128	30
FLIP 92-2L	420	29	369	22	568	10	836	14	593	19	2401	19	1494	22
FLIP 92-3L	773	15	360	25	469	25	943	8	798	5	2017	28	2014	7
FLIP 92-4L	1200	3	434	9	370	32	719	21	807	4	4058	1	1879	10
FLIP 92-5L	787	13	419	13	558	13	1103	6	590	20	2253	21	1740	12
FLIP 92-6L	607	24	324	28	511	19	891	10	638	14	3998	2	1673	16
FLIP 92-7L	653	20	409	15	439	28	847	13	380	32	1974	29	1566	20
FLIP 92-8L	1240	1	386	20	603	8	755	19	525	23	3096	8	1404	26
FLIP 92-9L	1053	5	298	31	487	22	573	31	682	9	3244	6	1022	31
FLIP 92-10L	920	8	365	23	398	31	1190	4	521	24	3389	4	980	32
FLIP 92-11L	640	21	388	19	561	11	1317	1	691	7	2237	23	2404	1
FLIP 92-12L	1207	2	394	18	473	24	598	28	663	10	3156	7	1490	23
FLIP 92-13L	873	12	407	16	454	27	576	30	456	27	2752	13	1256	29
FLIP 92-14L	640	22	530	3	519	16	589	29	780	6	2698	14	1897	9
FLIP 92-15L	400	32	532	2	353	33	882	11	435	29	3037	9	1693	15
FLIP 93-21L	893	10	459	6	491	21	1199	3	540	21	3000	11	1535	21
FLIP 93-22L	460	27	312	29	561	12	892	9	656	11	2020	27	2315	4
FLIP 93-23L	1033	6	412	14	844	2	751	20	634	16	3025	10	2092	5
FLIP 93-24L	620	23	487	4	830	3	499	35	631	18	2172	25	1664	17
FLIP 93-25L	427	28	347	27	761	5	1178	5	432	30	1484	32	1793	11
FLIP 93-26L	733	18	312	30	558	14	543	34	909	2	2627	16	2067	6
FLIP 93-27L	407	30	423	12	478	23	555	33	834	3	2175	24	1618	18
FLIP 93-28L	727	19	361	24	802	4	1311	2	637	15	2268	20	2379	2
FLIP 93-29L	520	25	576	1	574	9	602	27	690	8	2248	22	2328	3
FLIP 93-30L	780	14	424	11	438	30	854	12	468	26	2139	26	1969	8
FLIP 93-31L	887	11	438	8	506	20	663	23	650	12	2843	12	1407	25
FLIP 93-32L	740	17	443	7	722	6	806	17	633	17	1680	30	1735	13
FLIP 93-33L	1127	4	405	17	969	1	814	16	649	13	3517	3	1443	24
Local check	967	7	471	5	463	26	389	36	1077	1	3348	5	1395	27
Location mean	**687**		**382**		**528**		**794**		**582**		**2411**		**1555**	
S.E. of Mean	231.73		78.14		126.97		90.88		109.36		323.53		305.35	
LSD at .05	665.17		227.60		369.84		264.72		318.55		928.66		889.43	
C.V. %	47.71		28.90		34.01		16.19		26.56		18.97		27.77	
Efficiency	0		110		138		111		164		0		100	
Entry > L. check	0		0		2		23		0		0		4	

Cont'd. ...

Table 4.4.5. Cont'd. ...

Entry name	Syria						Turkey				(1)	
	Idleb		Izra'a		Tel Hadya		Erzurum		Haymana		Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian local large	1300	8	350	28	1436	21	1037	16	583	10	681	31
FLIP 90-6L	990	20	500	15	889	32	834	27	460	24	800	26
FLIP 91-12L	395	33	350	27	690	33	885	26	391	30	834	22
Petrovskaja 6	1145	12	100	35	1008	31	416	35	184	35	428	32
Petrovskaja 4/105	175	35	100	36	550	34	1109	11	327	33	426	33
Petrovsk Jubilee	925	23	150	33	333	35	691	31	239	34	395	34
P. Glauca-Sperma	90	36	125	34	219	36	302	36	100	36	269	35
FLIP 92-1L	1005	18	550	11	1042	30	1030	17	475	23	750	29
FLIP 92-2L	425	32	475	16	1233	26	954	24	333	32	782	28
FLIP 92-3L	1320	7	425	21	7417	1	991	22	726	7	1245	2
FLIP 92-4L	1990	1	1050	1	1639	14	1470	3	526	15	1265	1
FLIP 92-5L	1570	4	525	13	1578	16	638	33	519	16	911	15
FLIP 92-6L	1300	9	525	14	2080	4	1190	7	489	20	1076	4
FLIP 92-7L	1130	13	200	32	1239	25	524	34	505	17	682	30
FLIP 92-8L	950	22	300	31	2111	3	1182	8	492	19	1012	6
FLIP 92-9L	1290	10	725	7	1478	20	1141	10	483	21	948	11
FLIP 92-10L	720	30	575	9	1506	19	643	32	384	31	877	17
FLIP 92-11L	1080	16	400	22	1417	23	1010	20	531	14	982	10
FLIP 92-12L	1110	14	900	4	2117	2	1066	15	872	2	1003	8
FLIP 92-13L	830	28	450	17	1756	10	713	30	492	18	844	20
FLIP 92-14L	1085	15	300	29	1856	9	1476	2	693	8	937	14
FLIP 92-15L	1635	2	300	30	1317	24	1014	18	552	13	868	19
FLIP 93-21L	955	21	575	10	1539	18	1806	1	391	29	1032	5
FLIP 93-22L	1560	5	850	5	1717	12	1075	14	847	4	944	12
FLIP 93-23L	825	29	800	6	1717	11	1013	19	572	11	1011	7
FLIP 93-24L	865	26	400	23	1422	22	975	23	396	28	800	25
FLIP 93-25L	1420	6	550	12	1161	28	998	21	759	5	807	24
FLIP 93-26L	530	31	450	19	1878	8	1108	12	571	12	873	18
FLIP 93-27L	895	24	350	26	1568	17	724	29	747	6	836	21
FLIP 93-28L	895	25	625	8	1917	7	1101	13	478	22	995	9
FLIP 93-29L	1270	11	375	25	1578	15	1314	5	584	9	902	16
FLIP 93-30L	310	34	425	20	1639	13	926	25	459	25	797	27
FLIP 93-31L	995	19	400	24	1967	6	1254	6	447	26	941	13
FLIP 93-32L	855	27	450	18	1211	27	747	28	413	27	810	23
FLIP 93-33L	1035	17	950	2	1983	5	1424	4	867	3	1146	3
Local check	1610	3	925	3	1061	29	1160	9	914	1		
Location mean	**1013**		**486**		**1591**		**998**		**522**			
S.E. of Mean	380.44		84.08		1055.89		69.80		143.94			
LSD at .05	NS		241.35		NS		200.34		419.27			
C.V. %	53.10		24.46		93.87		9.89		38.98			
Efficiency	0		0		0		0		106			
Entry > L. check	-		0		-		4		0			

(1) New Delhi in India and Karaj-2 in Iran with missing values were excluded from overall mean.
NS = Not significant at $P \leq 0.05$.

Table 4.4.6. The five heaviest seed yielding entries at the individual locations in the LISN-L during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
India	New Delhi	FLIP 92-1L	Local check	FLIP 93-21L	FLIP 93-32L	SLL
Iran	Ardabil	FLIP 92-4L	Local check	FLIP 93-21L	FLIP 93-32L	FLIP 93-28L
Iran	Qazvin	Local check	FLIP 93-33L	FLIP 93-21L	FLIP 92-13L	FLIP 92-6L
Iran	Karaj-1	FLIP 92-8L	FLIP 91-12L	FLIP 92-5L	FLIP 93-26L	FLIP 92-11L
Iran	Karaj-2	Local check	FLIP 93-27L	FLIP 93-26L	FLIP 92-4L	FLIP 93-22L
Iran	Khorramabad	FLIP 92-4L	FLIP 93-21L	FLIP 93-33L	FLIP 92-6L	FLIP 92-9L
Iran	Maragheh	FLIP 91-12L	FLIP 93-31L	Local check	FLIP 92-4L	FLIP 92-6L
Iran	Yosaj	FLIP 92-8L	FLIP 92-12L	FLIP 92-4L	FLIP 93-33L	FLIP 92-9L
Iran	Zanjan	FLIP 93-29L	FLIP 92-15L	FLIP 92-14L	FLIP 93-24L	Local check
Italy	Caltagirone	FLIP 93-33L	FLIP 93-23L	FLIP 93-24L	FLIP 93-28L	FLIP 93-25L
New Zealand	Lincoln	FLIP 92-11L	FLIP 93-28L	FLIP 93-21L	FLIP 92-10L	FLIP 93-25L
Syria	Aleppo	Local check	FLIP 93-26L	FLIP 93-27L	FLIP 92-4L	FLIP 92-3L
Syria	Gelline	FLIP 92-4L	FLIP 92-6L	FLIP 93-33L	FLIP 92-10L	Local check
Syria	Heimo	FLIP 92-11L	FLIP 93-28L	FLIP 93-29L	FLIP 93-22L	FLIP 93-23L
Syria	Idleb	FLIP 92-4L	FLIP 92-15L	Local check	FLIP 92-5L	FLIP 93-22L
Syria	Izra'a	FLIP 92-4L	FLIP 93-33L	Local check	FLIP 92-12L	FLIP 93-22L
Syria	Tel Hadya	FLIP 92-3L	FLIP 92-12L	FLIP 92-8L	FLIP 92-6L	FLIP 93-33L
Turkey	Erzurum	FLIP 93-21L	FLIP 92-14L	FLIP 92-4L	FLIP 93-33L	FLIP 93-29L
Turkey	Haymana	Local check	FLIP 92-12L	FLIP 93-33L	FLIP 93-22L	FLIP 93-25L

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

Material

The Lentil International Screening Nursery-Small Seed comprised 48 test entries and one local check which was to be added by the cooperator. Forty seven test entries in this nursery were developed at ICARDA through hybridization and were selected based on their superior performance at ICARDA sites in Syria and Lebanon.

Methods and Management

The material comprising 48 test entries and one check was sown in a 7x7 simple lattice design in two replications. The suggested plot size was single row 4 m long accomodating 200 plants with between-row spacing of 25 cm.

Twenty four sets of the nursery were supplied to different cooperators in 14 countries but the results were received from 12 locations in 7 countries. The agronomic data received from the cooperators are presented in Table 4.5.1.

Results and Discussion

The entry means over locations ranged from 109 to 116 for time to flowering (Table 4.5.2), 158 to 164 days to time to maturity (Table 4.5.3), and 29 to 36 cm for plant height (Table 4.5.4).

The location mean for seed yield (Table 4.5.5) was highest at Gelline in Syria (2663 kg/ha) and was followed by Heimo in Syria (2087 kg/ha) and Elvas in Portugal (2064 kg/ha). The ANOVA for the experiment revealed that at 3 out of 11 locations reporting seed yield some of the test entries, outyielded the respective local checks by significant margins. The entry means over all locations revealed that FLIP 93-19L was the top yielder with an average yield of 1849 kg/ha and was followed by FLIP 91-21L, FLIP 89-39L, FLIP 89-40L, and FLIP 93-20L with seed yield of 1812, 1798, 1773 and 1741 kg/ha, respectively.

The five heaviest seed yielding entries at different locations are given in Table 4.5.6. The entries FLIP 91-21L and FLIP 93-19L occurred most frequently among the top five heavy yielders.

Table 4.5.1. Agronomic details for LISN-S-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Khroub	23.01.93	23.06.93	17	46	-	-	Kerb + Maloran	Syrie 229
Egypt	Mallawy	09.11.92	25.04.93	36	72	-	2	-	-
Iran	Karaj	NA	NA	NA	NA	NA	NA	NA	NA
Italy	Oristano	24.11.92	10.06.93	-	92	-	-	Pendimethalin	Villalba
Portugal	Elvas	10.12.92	17.06.93	-	60	60	-	Prometryne	L-214
Syria	Aleppo	05.12.92	28.05.93	-	50	-	-	-	Hurani 1
Syria	Gelline	11.12.92	23.05.93	20	50	-	-	-	Hurani 1
Syria	Heimo	05.01.93	14.06.93	-	50	-	-	-	Hurani 1
Syria	Idleb	21.12.92	09.06.93	20	60	-	-	Fusilade	Hurani 1
Syria	Izra'a	19.01.93	25.06.93	-	110	-	-	-	Hurani 1
Syria	Tel Hadya	08.12.92	20.05.93	-	50	-	-	-	Hurani 1
Turkey	Diyarbakir	18.11.92	25.06.93	30	60	-	-	Phostoxine, Fusilade	Yerli Kirmizi

NA = Not available

Table 4.5.2. Adjusted time to flowering (days) of entries at different locations in the LISN-S during 1992/93.

Entry name	Accession	Parentage	Origin	Algeria Khroub	Egypt Mallawy	Iran Karaj	Italy Oristano
Syrian L. small	ILL 4401	-	Syria	96	104	149	134
FLIP 89-29L	ILL 6787	ILL 5582 X ILL 4605	ICARDA	101	102	150	134
FLIP 89-30L	ILL 6788	ILL 99 X ILL 468	ICARDA	99	98	150	136
FLIP 89-31L	ILL 6789	ILL 5588 X ILL 5582	ICARDA	100	103	146	136
FLIP 89-39L	ILL 6797	ILL 23 X 79SH 4901	ICARDA	101	90	147	134
FLIP 89-40L	ILL 6798	ILL 468 X ILL 193	ICARDA	105	106	151	137
FLIP 89-44L	ILL 6802	ILL 784 X ILL 223	ICARDA	97	98	148	135
FLIP 90-32L	ILL 7001	ILL 4407 X ILL 3527	ICARDA	96	104	144	134
FLIP 90-38L	ILL 7007	ILL 788 X ILL 223	ICARDA	99	107	146	134
FLIP 90-39L	ILL 7008	ILL 788 X ILL 223	ICARDA	96	102	143	134
FLIP 91-14L	ILL 7140	ILL 9 X ILL 19	ICARDA	96	104	149	118
FLIP 91-16L	ILL 7142	ILL 9 X ILL 784	ICARDA	96	98	148	137
FLIP 91-21L	ILL 7147	ILL 5676 X ILL 4401	ICARDA	93	102	152	135
FLIP 92-16L	ILL 7181	ILL 5684 X ILL 4401	ICARDA	97	101	143	137
FLIP 92-17L	ILL 7182	ILL 5684 X ILL 4401	ICARDA	95	97	149	136
FLIP 92-18L	ILL 7183	ILL 4354 X (ILL 4605 X ILL 4349)	ICARDA	99	103	149	136
FLIP 92-19L	ILL 7184	ILL 4354 X (ILL 4605 X ILL 4349)	ICARDA	99	100	143	135
FLIP 92-20L	ILL 7185	ILL 4354 X (ILL 4605 X ILL 4349)	ICARDA	96	102	144	134
FLIP 92-21L	ILL 7186	ILL 4354 X ILL 5753	ICARDA	97	91	143	129
FLIP 92-22L	ILL 7187	ILL 5743 X ILL 5588	ICARDA	94	99	149	135
FLIP 92-23L	ILL 7188	ILL 5572 X ILL 4401	ICARDA	99	104	143	134
FLIP 92-24L	ILL 7189	ILL 5572 X ILL 5726	ICARDA	99	103	142	128
FLIP 92-25L	ILL 7190	ILL 5572 X ILL 5883	ICARDA	96	100	143	132
FLIP 92-26L	ILL 7191	ILL 5583 X ILL 5726	ICARDA	96	97	144	128
FLIP 92-27L	ILL 7192	ILL 5588 X ILL 5883	ICARDA	96	103	147	136
FLIP 92-28L	ILL 7193	ILL 5588 X ILL 5883	ICARDA	96	102	146	135
FLIP 92-29L	ILL 7194	ILL 1868 X ILL 5726	ICARDA	95	101	146	132
FLIP 92-30L	ILL 7195	ILL 1868 X ILL 5726	ICARDA	96	99	146	128
FLIP 92-31L	ILL 7196	ILL 1868 X ILL 5726	ICARDA	96	100	147	134
FLIP 92-32L	ILL 7197	ILL 1868 X ILL 5883	ICARDA	96	98	147	133

Cont'd. ...

Table 4.5.2. Cont'd. ...

Entry name	Accession	Parentage	Origin	Algeria Khroub	Egypt Mallawy	Iran Karaj	Italy Oristano
FLIP 92-33L	ILL 7198	ILL 1939 X ILL 975	ICARDA	94	101	141	132
FLIP 92-34L	ILL 7199	ILL 1939 X ILL 5883	ICARDA	95	98	151	131
FLIP 92-35L	ILL 7200	ILL 5690 X ILL 5722	ICARDA	106	78	153	136
FLIP 92-36L	ILL 7201	ILL 5879 X ILL 5714	ICARDA	99	98	146	134
FLIP 92-37L	ILL 7202	ILL 5879 X ILL 5722	ICARDA	99	100	147	134
FLIP 92-38L	ILL 7203	ILL 2578 X ILL 2582	ICARDA	96	88	149	131
FLIP 93-1L	ILL 7502	ILL 5588 X ILL 5883	ICARDA	100	105	146	136
FLIP 93-4L	ILL 7505	ILL 5583 X ILL 5722	ICARDA	96	101	144	133
FLIP 93-5L	ILL 7506	ILL 5583 X ILL 5722	ICARDA	97	103	144	132
FLIP 93-6L	ILL 7507	ILL 468 X ILL 5741	ICARDA	100	101	147	135
FLIP 93-8L	ILL 7509	ILL 5538 X ILL 5673	ICARDA	97	100	149	129
FLIP 93-12L	ILL 7513	ILL 5538 X ILL 5782	ICARDA	95	102	144	134
FLIP 93-14L	ILL 7515	ILL 5538 X ILL 6015	ICARDA	106	106	149	136
FLIP 93-15L	ILL 7516	ILL 5604 X ILL 5779	ICARDA	94	100	143	129
FLIP 93-17L	ILL 7518	ILL 5737 X ILL 6015	ICARDA	106	98	152	137
FLIP 93-19L	ILL 7520	ILL 5883 X ILL 5779	ICARDA	94	99	148	136
FLIP 93-20L	ILL 7521	ILL 5883 X ILL 5779	ICARDA	96	103	149	134
FLIP 93-34L	ILL 7535	ILL 1939 X ILL 6015		95	103	143	134
Local check				93	65	156	150
Location mean				**97**	**99**	**147**	**134**
S.E. of Mean				One	1.85	2.66	0.94
LSD at .05				rep	5.31	NS	2.70
C.V. %					2.64	2.56	1.00

Cont'd. ...

Table 4.5.2. Cont'd. ...

Entry name	Portugal	Syria						Turkey	Overall mean
	Elvas	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Syrian local small	115	124	107	107	116	92	103	-	113
FLIP 89-29L	116	120	108	106	115	94	103	-	114
FLIP 89-30L	115	124	108	109	115	92	105	165	114
FLIP 89-31L	115	124	109	110	116	91	103	167	114
FLIP 89-39L	117	124	106	108	114	91	102	163	112
FLIP 89-40L	116	125	110	110	115	94	106	178	116
FLIP 89-44L	115	124	107	107	117	93	101	163	113
FLIP 90-32L	114	124	104	106	116	92	101	-	112
FLIP 90-38L	116	120	108	111	115	90	103	-	114
FLIP 90-39L	115	124	107	107	115	91	102	-	112
FLIP 91-14L	101	119	103	103	115	93	98	-	109
FLIP 91-16L	111	124	107	104	114	93	103	-	112
FLIP 91-21L	111	124	106	107	116	92	103	-	113
FLIP 92-16L	119	124	109	107	119	93	104	-	114
FLIP 92-17L	118	124	109	107	109	91	103	-	112
FLIP 92-18L	118	124	109	107	117	90	105	-	114
FLIP 92-19L	116	124	108	108	115	92	102	-	113
FLIP 92-20L	117	124	109	108	117	93	103	-	113
FLIP 92-21L	111	120	105	106	116	91	100	-	110
FLIP 92-22L	117	124	108	106	115	94	104	-	113
FLIP 92-23L	117	124	105	108	115	92	101	-	113
FLIP 92-24L	111	124	106	110	119	92	101	-	112
FLIP 92-25L	112	124	105	108	115	90	103	-	111
FLIP 92-26L	108	122	104	104	114	92	99	-	110
FLIP 92-27L	115	124	109	107	116	94	103	-	114
FLIP 92-28L	116	124	108	105	116	91	102	-	113
FLIP 92-29L	112	120	103	106	116	90	100	-	111
FLIP 92-30L	110	120	104	104	117	93	100	-	110
FLIP 92-31L	112	120	104	104	117	92	101	-	111
FLIP 92-32L	114	124	108	109	117	93	104	-	113

Cont'd. ...

Table 4.5.2. Cont'd. ...

Entry name	Portugal	Syria						Turkey	(1)
	Elvas	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	**Overall mean**
FLIP 92-33L	113	124	104	105	116	92	102	-	111
FLIP 92-34L	115	124	107	107	118	92	104	-	113
FLIP 92-35L	117	124	105	113	117	94	104	-	113
FLIP 92-36L	111	124	105	108	115	92	101	-	112
FLIP 92-37L	111	124	105	111	115	93	101	-	113
FLIP 92-38L	108	120	104	103	118	91	99	-	110
FLIP 93-1L	117	124	108	110	114	91	102	167	114
FLIP 93-4L	113	124	105	108	116	92	99	161	112
FLIP 93-5L	111	119	104	105	115	91	99	163	111
FLIP 93-6L	115	124	109	110	115	93	102	167	114
FLIP 93-8L	111	122	106	107	116	92	101	161	112
FLIP 93-12L	113	124	107	106	115	92	101	161	112
FLIP 93-14L	115	125	109	111	116	91	107	168	116
FLIP 93-15L	110	120	104	107	116	92	99	163	110
FLIP 93-17L	118	126	112	113	117	94	107	181	116
FLIP 93-19L	114	124	107	107	115	93	103	168	113
FLIP 93-20L	114	124	107	106	115	92	103	167	113
FLIP 93-34L	111	124	106	105	115	92	103	163	112
Local check	117	124	109	108	117	92	102	176	
Location mean	**114**	**123**	**107**	**107**	**115**	**92**	**102**	**167**	
S.E. of Mean	0.88	0.46	0.90	1.25	0.92	0.92	0.57	1.60	
LSD at .05	2.54	1.31	2.58	3.56	2.63	2.64	1.62	4.78	
C.V. %	1.10	0.53	1.20	1.65	1.13	1.42	0.78	1.36	

(1) Diyarbakir in Turkey with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.5.3. Adjusted time to maturity (days) of entries at different locations in the LISN-S during 1992/93.

Entry name	Algeria	Egypt	Iran	Italy	Portugal	Syria						Turkey	Overall mean
	Khroub	Mallawy	Karaj	Oristano	Elvas	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Syrian local small	141	152	193	183	172	161	154	154	156	140	140	-	159
FLIP 89-29L	140	149	193	183	174	161	154	154	157	146	142	-	159
FLIP 89-30L	142	152	193	183	172	163	154	155	157	140	141	221	159
FLIP 89-31L	143	151	193	183	174	163	154	155	155	141	139	223	159
FLIP 89-39L	144	151	195	186	174	168	154	156	161	142	143	224	161
FLIP 89-40L	141	152	195	183	173	166	156	156	159	142	143	224	161
FLIP 89-44L	141	152	193	184	173	163	157	155	159	139	137	223	159
FLIP 90-32L	143	152	193	183	173	161	154	156	155	142	138	-	159
FLIP 90-38L	143	151	193	183	172	163	157	155	155	139	140	-	159
FLIP 90-39L	143	151	193	184	173	163	154	154	157	141	139	-	159
FLIP 91-14L	143	152	193	183	172	158	154	156	157	141	137	-	159
FLIP 91-16L	144	150	195	184	172	163	154	155	158	141	141	-	160
FLIP 91-21L	139	151	200	183	172	161	154	158	157	142	139	-	160
FLIP 92-16L	143	152	194	183	172	161	154	155	159	139	141	-	160
FLIP 92-17L	141	152	194	185	173	161	154	156	158	144	140	-	160
FLIP 92-18L	141	153	193	184	174	163	154	157	157	142	141	-	160
FLIP 92-19L	144	150	196	183	173	163	157	155	160	141	139	-	160
FLIP 92-20L	142	149	193	183	174	163	157	154	157	139	140	-	159
FLIP 92-21L	144	151	193	183	173	163	154	156	157	144	141	-	160
FLIP 92-22L	144	150	194	186	173	166	157	155	161	144	145	-	161
FLIP 92-23L	143	149	193	182	171	159	154	155	151	140	137	-	158
FLIP 92-24L	141	150	193	183	173	163	157	155	160	143	140	-	160
FLIP 92-25L	141	151	194	183	173	163	154	155	157	141	141	-	159
FLIP 92-26L	143	151	193	183	173	163	154	157	162	141	139	-	160
FLIP 92-27L	140	151	193	185	173	163	154	155	154	147	140	-	160
FLIP 92-28L	140	150	193	186	173	163	154	154	157	140	142	-	159
FLIP 92-29L	144	153	194	183	174	161	154	156	157	144	140	-	160
FLIP 92-30L	141	152	195	183	173	163	156	155	158	143	139	-	160
FLIP 92-31L	143	153	193	183	173	163	154	156	158	139	140	-	160
FLIP 92-32L	143	150	196	183	173	166	154	156	156	142	143	-	160

Cont'd. ...

Table 4.5.3. Cont'd. ...

Entry name	Algeria Khroub	Egypt Mallawy	Iran Karaj	Italy Oristano	Portugal Elvas	Syria Aleppo	Syria Gelline	Syria Heimo	Syria Idleb	Syria Izra'a	Syria Tel Hadya	Turkey Diyarbakir	**Overall mean (1)**
FLIP 92-33L	141	152	193	183	172	161	154	154	159	139	138	-	159
FLIP 92-34L	140	149	193	184	173	163	154	154	159	142	144	-	160
FLIP 92-35L	147	151	204	186	174	166	157	154	164	148	147	-	164
FLIP 92-36L	141	150	196	184	174	166	157	155	159	141	141	-	160
FLIP 92-37L	141	149	197	183	173	163	154	157	161	144	141	-	160
FLIP 92-38L	143	152	194	183	172	163	157	158	159	139	137	-	160
FLIP 93-1L	142	151	194	184	173	163	154	155	159	140	139	223	159
FLIP 93-4L	141	151	197	183	174	163	157	155	158	140	140	226	160
FLIP 93-5L	142	150	196	183	173	163	154	155	159	143	138	227	160
FLIP 93-6L	142	149	196	184	173	163	157	155	165	146	142	227	161
FLIP 93-8L	142	150	193	183	172	163	154	155	162	139	138	224	159
FLIP 93-12L	142	152	193	183	174	163	154	156	153	141	142	222	159
FLIP 93-14L	141	152	193	183	172	161	157	155	150	138	142	225	159
FLIP 93-15L	143	153	194	185	172	158	154	158	154	138	136	224	159
FLIP 93-17L	145	151	193	182	173	166	157	155	160	139	142	223	160
FLIP 93-19L	145	150	193	183	173	163	157	155	162	141	139	227	160
FLIP 93-20L	146	151	193	185	173	163	157	157	165	144	139	227	161
FLIP 93-34L	142	152	195	183	172	161	154	155	156	137	139	225	159
Local check	144	151	200	183	173	163	157	154	157	139	141	226	
Location mean	**142**	**151**	**194**	**184**	**173**	**163**	**155**	**155**	**158**	**141**	**140**	**224**	
S.E. of Mean	One	0.97	1.63	1.06	0.58	One	0.21	0.71	2.22	1.65	0.88	1.35	
LSD at .05	rep	NS	4.63	NS	NS	rep	0.61	2.04	6.36	4.73	2.51	NS	
C.V. %		0.91	1.19	0.81	0.47		0.20	0.65	1.98	1.65	0.88	0.85	

(1) Diyarbakir in Turkey with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.5.4. Adjusted plant height (cm) of entries at different locations in the LISN-S during 1992/93.

Entry name	Algeria	Egypt	Iran	Italy	Portugal	Syria						Turkey	Overall mean
	Khroub	Mallawy	Karaj	Oristano	Elvas	Aleppo	Gelline	Heimo	Idleb	Izra'a	Tel Hadya	Diyarbakir	
Syrian local small	22	63	19	41	26	30	35	37	27	18	28	-	31
FLIP 89-29L	28	64	22	43	32	29	35	38	34	18	26	-	34
FLIP 89-30L	37	54	20	55	30	28	35	34	20	18	28	42	33
FLIP 89-31L	28	59	20	46	31	25	35	35	30	19	27	40	32
FLIP 89-39L	37	59	21	50	31	30	36	41	27	20	27	48	34
FLIP 89-40L	34	58	23	45	29	28	35	42	32	18	29	45	34
FLIP 89-44L	37	58	20	44	32	24	40	38	29	19	28	43	34
FLIP 90-32L	28	67	24	44	29	28	39	36	25	18	27	-	33
FLIP 90-38L	30	67	20	53	27	30	35	37	27	17	25	-	33
FLIP 90-39L	28	64	21	57	28	28	36	41	32	19	28	-	35
FLIP 91-14L	18	59	19	45	26	23	35	30	30	15	21	-	29
FLIP 91-16L	30	67	21	47	29	26	30	37	21	18	26	-	32
FLIP 91-21L	29	72	24	48	30	30	35	37	25	17	28	-	34
FLIP 92-16L	29	68	20	45	27	27	32	40	33	15	25	-	33
FLIP 92-17L	32	62	21	51	28	28	30	40	27	17	26	-	33
FLIP 92-18L	33	61	20	46	28	28	31	36	26	18	25	-	32
FLIP 92-19L	30	64	21	39	26	25	40	37	28	14	23	-	32
FLIP 92-20L	32	63	24	49	28	27	35	37	24	14	23	-	32
FLIP 92-21L	30	65	20	46	30	25	37	42	23	15	22	-	32
FLIP 92-22L	29	63	22	44	27	27	39	40	32	16	23	-	33
FLIP 92-23L	27	56	20	46	27	27	35	31	15	16	21	-	29
FLIP 92-24L	30	68	24	48	32	28	39	39	30	21	26	-	35
FLIP 92-25L	27	61	27	45	27	28	35	37	28	15	26	-	32
FLIP 92-26L	30	62	22	50	28	28	40	39	29	15	28	-	34
FLIP 92-27L	35	59	22	44	31	28	32	37	28	17	24	-	32
FLIP 92-28L	32	55	22	43	28	28	35	34	28	17	26	-	32
FLIP 92-29L	28	64	24	51	26	26	30	38	27	18	26	-	32
FLIP 92-30L	30	65	22	49	28	27	39	39	25	16	26	-	33
FLIP 92-31L	27	60	20	45	30	27	39	37	28	19	28	-	33
FLIP 92-32L	28	55	23	55	28	27	35	39	29	13	29	-	33

Cont'd. ...

Table 4.5.4. Cont'd. ...

Entry name	Algeria Khroub	Egypt Mallawy	Iran Karaj	Italy Oristano	Portugal Elvas	Syria Aleppo	Syria Gelline	Syria Heimo	Syria Idleb	Syria Izra'a	Syria Tel Hadya	Turkey Diyarbakir	**Overall mean** (1)
FLIP 92-33L	28	59	20	52	28	30	35	38	30	18	24	-	33
FLIP 92-34L	30	61	17	50	28	27	40	39	24	16	26	-	32
FLIP 92-35L	37	73	23	50	30	28	35	38	29	14	26	-	35
FLIP 92-36L	30	63	22	42	29	23	40	38	26	14	26	-	32
FLIP 92-37L	31	55	22	41	28	24	35	39	21	16	27	-	31
FLIP 92-38L	28	54	24	45	29	24	39	34	31	18	26	-	32
FLIP 93-1L	32	64	21	48	28	24	35	38	32	16	28	40	33
FLIP 93-4L	28	75	24	47	27	26	40	39	30	15	27	38	34
FLIP 93-5L	25	60	23	44	30	30	40	39	27	16	29	38	33
FLIP 93-6L	32	60	22	48	29	29	35	39	28	17	30	41	33
FLIP 93-8L	22	61	19	51	25	31	35	33	24	17	27	37	31
FLIP 93-12L	28	65	21	39	28	28	39	36	18	15	26	36	31
FLIP 93-14L	29	67	19	49	28	28	40	40	28	16	25	40	34
FLIP 93-15L	25	69	22	41	27	27	30	38	28	15	27	37	32
FLIP 93-17L	29	63	24	47	28	28	31	38	26	15	29	42	33
FLIP 93-19L	32	70	22	54	28	31	45	41	26	20	31	44	36
FLIP 93-20L	29	61	25	57	30	31	36	41	29	20	31	42	35
FLIP 93-34L	35	63	22	50	31	27	35	34	27	12	25	40	33
Local check	33	70	25	52	33	31	35	38	32	19	32	49	
Location mean	**30**	**63**	**22**	**47**	**29**	**27**	**36**	**38**	**27**	**17**	**26**	**41**	
S.E. of Mean	One	4.73	1.90	3.03	1.61	1.56	0.67	2.27	One	1.38	1.39	2.61	
LSD at .05	rep	NS	5.39	8.61	NS	4.48	1.90	6.50	rep	3.96	3.94	NS	
C.V. %		10.66	12.47	9.06	7.94	8.04	2.36	8.52		11.71	7.50	9.00	

(1) Diyarbakir in Turkey with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.5.5. Seed yield (Y = kg/ha) and rank (R) of entries at different locations in the LISN-S during 1992/93.

Entry name	Egypt Mallawy		Iran Karaj		Italy Oristano		Portugal Elvas		Syria Aleppo		Syria Gelline		Syria Heimo		Syria Idleb		Syria Izra'a		Syria Tel Hadya		Turkey Diyarbakir		Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
Syrian local small	1024	41	569	39	844	22	2283	20	1310	6	1689	46	2365	16	1970	17	226	42	2040	11	-	-	1432	28
FLIP 89-29L	1881	10	795	25	547	34	1722	35	1360	3	2582	31	2211	22	1490	34	184	45	1289	44	-	-	1406	32
FLIP 89-30L	786	47	570	38	1058	19	2200	22	935	27	3112	8	1755	38	2015	15	427	16	1112	47	1933	5	1397	33
FLIP 89-31L	1119	37	721	30	1507	7	1775	33	799	39	2445	36	2078	23	2815	1	944	1	2149	8	1633	9	1635	9
FLIP 89-39L	2119	4	641	34	1841	3	2415	15	814	36	3059	10	2242	21	2545	5	410	18	1897	15	1467	11	1798	3
FLIP 89-40L	1738	11	1233	4	1133	16	2594	6	880	31	2757	26	2539	12	1810	22	699	3	2348	3	1933	6	1773	4
FLIP 89-44L	1190	31	356	49	1435	8	1531	41	696	43	3013	13	1658	40	1045	47	314	34	1795	17	1667	8	1303	43
FLIP 90-32L	1619	18	929	19	341	45	1771	34	1058	16	3306	5	2578	11	2160	10	430	15	2094	9	-	-	1629	10
FLIP 90-38L	1952	9	487	46	568	33	1777	32	1336	4	2518	32	1931	32	2045	14	343	31	1982	12	-	-	1494	21
FLIP 90-39L	1619	17	768	28	717	28	1588	38	866	33	2807	23	1964	29	2245	8	437	13	1832	16	-	-	1484	25
FLIP 91-14L	1643	15	392	48	212	48	1317	45	878	32	1160	49	1063	48	1375	37	108	49	713	48	-	-	886	48
FLIP 91-16L	1452	24	613	35	391	42	2440	13	966	24	2496	33	2044	26	1495	33	340	32	1548	32	-	-	1378	35
FLIP 91-21L	833	46	2088	1	1738	4	1592	37	1170	11	2281	39	2993	1	2618	3	564	5	2242	6	-	-	1812	2
FLIP 92-16L	1190	30	877	21	1250	11	1481	44	932	28	1941	45	1818	36	1590	28	475	10	1555	30	-	-	1311	41
FLIP 92-17L	1143	35	783	26	844	23	2360	17	1509	1	3023	12	2059	25	2140	11	374	23	1559	29	-	-	1579	13
FLIP 92-18L	1643	16	712	31	537	36	1824	31	1143	14	2919	18	2425	13	1585	29	522	7	1771	18	-	-	1508	18
FLIP 92-19L	976	43	1073	10	1580	5	1564	39	507	47	2191	41	1661	39	2215	9	425	17	1506	35	-	-	1370	36
FLIP 92-20L	2143	3	1080	9	582	31	2034	27	944	26	2731	28	1762	37	1650	25	364	26	1553	31	-	-	1484	24
FLIP 92-21L	1500	22	699	33	158	49	2358	18	1039	18	2792	25	2289	19	1615	26	355	28	1481	37	-	-	1428	29
FLIP 92-22L	1738	12	1101	7	524	38	1219	48	472	48	2124	42	1225	47	1525	31	143	47	1454	39	-	-	1152	46
FLIP 92-23L	1524	21	532	42	1383	9	1842	30	1135	15	2450	35	1956	30	1170	45	349	30	145	49	-	-	1249	45
FLIP 92-24L	1119	38	534	41	1105	17	2556	7	1315	5	2621	29	1459	42	1985	16	365	25	1652	24	-	-	1471	26
FLIP 92-25L	2071	5	1018	15	352	44	2438	14	1201	10	2878	21	1985	27	1600	27	511	8	1915	14	-	-	1597	12
FLIP 92-26L	1095	39	562	40	1230	13	1842	29	967	23	2945	16	2320	18	1485	35	283	36	1708	23	-	-	1444	27
FLIP 92-27L	1238	28	860	22	530	37	1680	36	1145	13	3147	7	2767	5	2685	2	462	11	2040	10	-	-	1655	7
FLIP 92-28L	1190	33	883	20	1527	6	1544	40	861	34	2889	20	1969	28	1845	20	445	12	2202	7	-	-	1535	15
FLIP 92-29L	905	44	1096	8	490	39	2554	8	980	22	2839	22	1458	43	1830	21	408	19	1240	46	-	-	1380	34
FLIP 92-30L	905	45	822	24	355	43	2956	2	955	25	3001	14	2657	7	2275	7	277	37	1539	33	-	-	1574	14
FLIP 92-31L	714	48	495	45	236	47	2869	3	901	30	3037	11	2622	9	1215	44	361	27	1621	26	-	-	1407	31
FLIP 92-32L	1286	26	1069	11	583	30	2173	24	845	35	2302	38	1872	35	1715	24	236	41	1422	40	-	-	1350	38

Cont'd. ...

Table 4.5.5. Cont'd. ...

Entry name	Egypt Mallawy		Iran Karaj		Italy Oristano		Portugal Elvas		Syria Aleppo		Syria Gelline		Syria Heimo		Syria Idleb		Syria Izra'a		Syria Tel Hadya		Turkey Diyarbakir		Overall mean (1)	
	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 92-33L	2000	6	440	47	1138	15	2202	21	1030	20	2601	30	1923	33	1855	19	397	22	1405	42	-	-	1499	20
FLIP 92-34L	1429	25	579	37	1273	10	2462	11	798	40	2930	17	2736	6	820	48	373	24	1527	34	-	-	1493	22
FLIP 92-35L	1976	7	526	43	579	32	2122	25	436	49	1676	47	1044	49	500	49	245	40	1285	45	-	-	1039	47
FLIP 92-36L	2348	1	1056	13	745	26	2813	5	801	38	2795	24	2626	8	1865	18	308	35	1417	41	-	-	1677	6
FLIP 92-37L	1690	13	1287	3	985	20	2357	19	1154	12	1524	48	1357	46	1250	43	249	39	1636	25	-	-	1349	39
FLIP 92-38L	1548	20	981	17	2353	1	2445	12	512	46	2907	19	1371	45	1310	39	115	48	1376	43	-	-	1492	23
FLIP 93-1L	2286	2	724	29	589	29	1527	42	808	37	2734	27	1654	41	1375	38	193	44	1722	21	2533	2	1361	37
FLIP 93-4L	1262	27	1058	12	404	41	2174	23	930	29	2418	37	1948	31	1255	42	173	46	1466	38	2267	3	1309	42
FLIP 93-5L	1024	42	1165	5	740	27	2112	26	743	42	3278	6	2416	14	1535	30	527	6	1716	22	2667	1	1526	16
FLIP 93-6L	1143	36	829	23	806	25	2366	16	1016	21	3311	4	2857	2	1775	23	399	21	1733	19	1200	13	1624	11
FLIP 93-8L	1548	19	522	44	1240	12	975	49	1258	7	2454	34	2266	20	1305	40	435	14	2263	5	1137	16	1426	30
FLIP 93-12L	1190	32	608	36	1166	14	1298	47	1233	9	1942	44	1908	34	1510	32	218	43	1723	20	1200	14	1280	44
FLIP 93-14L	1452	23	770	27	965	21	1512	43	1242	8	2080	43	1391	44	2100	13	401	20	1573	28	1833	7	1349	40
FLIP 93-15L	1690	14	704	32	824	24	1307	46	693	44	3064	9	2583	10	2315	6	329	33	1500	36	1100	17	1501	19
FLIP 93-17L	1024	40	1023	14	460	40	2543	9	629	45	2243	40	2075	24	2135	12	262	38	2834	1	1433	12	1523	17
FLIP 93-19L	1214	29	951	18	539	35	2491	10	1451	2	3656	1	2364	17	2610	4	920	2	2295	4	1567	10	1849	1
FLIP 93-20L	1152	34	1111	6	1854	2	2003	28	1055	17	3373	3	2850	3	1430	36	634	4	1951	13	1167	15	1741	5
FLIP 93-34L	1952	8	1000	16	1102	18	2840	4	763	41	2991	15	2779	4	1160	46	351	29	1602	27	1967	4	1654	8
Local check	714	49	1324	2	283	46	3273	1	1032	19	3467	2	2397	15	1305	41	494	9	2655	2	517	18		
Location mean	**1429**		**837**		**891**		**2064**		**969**		**2663**		**2087**		**1738**		**384**		**1696**		**1623**			
S.E. of Mean	438.34		261.56		326.90		285.63		231.86		345.05		330.24		483.49		101.36		320.04		One rep			
LSD at .05	NS		750.13		937.50		819.15		NS		989.55		947.09		NS		290.69		917.84					
C.V. %	43.39		44.19		51.91		19.57		33.82		18.32		22.38		39.34		37.36		26.69					
Efficiency	0		104		101		105		107		114		101		0		131		101					
Test > check	-		1		13		0		-		0		0		-		2		0					

(1) Diyarbakir in Turkey with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.5.6. The five heaviest seed yielding entries at the individual locations in the LISN-S during 1992/93.

Country	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Egypt					
Mallawy	FLIP92-36L	FLIP93-1L	FLIP92-20L	FLIP89-39L	FLIP92-25L
Iran					
Karaj	FLIP91-21L	Local check	FLIP92-37L	FLIP89-40L	FLIP93-5L
Italy					
Oristano	FLIP 92-38L	FLIP93-20L	FLIP89-39L	FLIP91-21L	FLIP92-19L
Portugal					
Elvas	Local check	FLIP92-30L	FLIP92-31L	FLIP93-34L	FLIP92-36L
Syria					
Aleppo	FLIP92-17L	FLIP93-19L	FLIP89-29L	FLIP90-38L	FLIP92-24L
Gelline	FLIP93-19L	Local check	FLIP93-20L	FLIP 93-6L	FLIP90-32L
Heimo	FLIP91-21L	FLIP93-6L	FLIP93-20L	FLIP93-34L	FLIP92-27L
Idleb	FLIP89-31L	FLIP92-27L	FLIP91-21L	FLIP 93-19L	FLIP89-39L
Izra'a	FLIP89-31L	FLIP93-19L	FLIP89-40L	FLIP93-20L	FLIP91-21L
Tel Hadya	FLIP93-17L	Local check	FLIP89-40L	FLIP93-19L	FLIP93-8L

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

Material

The Lentil International Screening Nursery - Early (LISN-E) specifically suitable for southern latitudes comprised 35 test entries and a local check, the best local cultivar, which was to be added by the cooperator. All the test entries supplied originated through hybridization at ICARDA, and were selected on the basis of their performance.

Methods and Management

The nursery was grown in a 6x6 lattice design with two replications. The suggested plot size was a single row plot, 4 m long. The cooperators were urged to use the locally recommended agronomic practices for the management of the nursery.

Thirty nine sets of nursery were distributed to cooperators in 17 countries and data were returned from 15 locations in 9 countries. The details of the agronomic practices supplied by the cooperators are given in Table 4.6.1.

Results and Discussion

The location means for entries ranged from 71 to 84 days for time to flowering (Table 4.6.2), 122 to 126 days for time to maturity (Table 4.6.3), and 27 to 34 cm for plant height (Table 4.6.4). The entries FLIP 92-43L, FLIP 88-42L, and FLIP 92-45L took less time to flower. The entries Precoz, FLIP 89-71L, FLIP 91-1L, FLIP 92-52L, and FLIP 93-48L took least time to mature (122 days).

The ANOVA for seed yields based on the design is given in Table 4.6.5. The highest mean yield was recorded at Mallawy in Egypt (2323 kg/ha) and was followed by Ishurdi in Bangladesh (1912 kg/ha), and Tel Hadya in Syria (1561 kg/ha). The LSD estimates revealed that at two out of 14 locations, some of the test entries, outyielded the respective local check by a significant margin. The five heaviest yielding lines across the locations included FLIP 92-50L, FLIP 93-47L, FLIP 93-46L, FLIP 93-44L, and FLIP 93-48L and gave seed yields of 1014, 987, 975, 975, and 948 kg/ha, respectively. The five heaviest yielding entries at individual locations are given in Table 4.6.6.

Table 4.6.1. Agronomic details for LISN-E-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha)			Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
				N	P	K			
Bangladesh	Ishurdi	28.10.92	10.03.93	-	-	-	-	-	Uthfala
Egypt	Mallawy	09.11.92	01.05.93	36	72	-	2	-	-
Ethiopia	Debre Zeit	27.07.93	05.11.93	-	-	-	-	-	EL-142
Ethiopia	Ghinchi	18.08.93	28.12.93	-	-	-	-	-	NEL-358
India	Almora	26.11.92	05.05.93	20	40	-	-	-	VL 4
India	New Delhi	07.11.92	03.04.93	20	46	-	2	Metasystox, Stomp	-
India	Srinagar	17.02.93	12.06.93	30	50	-	-	Dinuron	KMR local
Iran	Ardabil	09.03.93	26.07.93	-	-	-	-	-	Ardabil
Iran	Qazvin	20.03.93	27.07.93	30	50	-	-	-	Qazvin
Iran	Karaj	15.04.93	07.07.93	40	70	-	-	Treflan	Qazvin
Iran	Maragheh	17.04.93	18.07.93	45	50	-	-	-	Ziba
Italy	Caltagirone	05.02.93	12.06.93	-	60	-	-	-	-
Pakistan	Mingora	13.11.93	15.05.94	20	46	-	-	-	Local lentil
Sudan	Hudeiba	12.12.92	NA	43	-	-	9	-	Selaim
Syria	Tel Hadya	08.12.92	20.05.93	-	50	-	-	-	Precoz

NA = Not available.

Table 4.6.2. Adjusted time to flowering (days) of entries at different locations in the LISN-E during 1992/93.

Entry name	Accession	Parentage	Origin	Bangladesh Ishurdi	Egypt Mallawy	Ethiopia Debre Zeit	Ethiopia Ghinchi
FLIP 86-50L	ILL 6036	ILL 4349 X ILL 4605	ICARDA	85	75	48	74
FLIP 88-42L	ILL 6466	ILL 4605 X ILL 5506	ICARDA	70	70	42	72
FLIP 89-71L	ILL 6829	ILL 4407 X ILL 4605	ICARDA	94	89	51	64
FLIP 91-1L	ILL 7127	ILL 5582 X ILL 574	ICARDA	91	75	42	67
FLIP 91-2L	ILL 7128	83S 4676 X ILL 5698	ICARDA	81	72	50	65
FLIP 93-50L	ILL 7551	-	ICARDA	97	78	43	64
FLIP 92-39L	ILL 7204	ILL 5676 X ILL 1800	ICARDA	101	81	53	71
FLIP 92-40L	ILL 7205	ILL 5582 X ILL 5700	ICARDA	102	93	54	76
FLIP 92-41L	ILL 7206	ILL 5582 X ILL 5700	ICARDA	102	97	58	72
FLIP 92-42L	ILL 7207	ILL 5507 X ILL 5698	ICARDA	102	92	44	71
FLIP 92-43L	ILL 7208	ILL 6003 X ILL 5698	ICARDA	59	86	42	59
FLIP 92-44L	ILL 7209	ILL 6003 X ILL 5700	ICARDA	84	74	43	64
FLIP 92-45L	ILL 7210	ILL 6003 X ILL 5745	ICARDA	70	70	51	66
FLIP 92-46L	ILL 7211	ILL 6005 X ILL 5753	ICARDA	101	86	55	80
FLIP 93-51L	ILL 7552	-	ICARDA	97	76	52	70
FLIP 92-48L	ILL 7213	ILL 5583 X ILL 5726	ICARDA	99	83	48	70
FLIP 92-49L	ILL 7214	ILL 5690 X ILL 5673	ICARDA	106	99	56	81
FLIP 92-50L	ILL 7215	ILL 5737 X ILL 5726	ICARDA	95	86	55	82
FLIP 92-51L	ILL 7216	ILL 2578 X ILL 2581	ICARDA	111	101	60	74
FLIP 92-52L	ILL 7217	ILL 3527 X ILL 5732	ICARDA	78	91	48	64
FLIP 92-54L	ILL 7219	ILL 4605 X ILL 2581	ICARDA	81	77	43	68
FLIP 93-36L	ILL 7537	-	ICARDA	84	72	41	60
FLIP 93-37L	ILL 7538	-	ICARDA	83	75	42	67
FLIP 93-38L	ILL 7539	-	ICARDA	102	84	48	67
FLIP 93-39L	ILL 7540	-	ICARDA	83	78	41	68
FLIP 93-40L	ILL 7541	-	ICARDA	86	78	42	63
FLIP 93-41L	ILL 7542	-	ICARDA	99	94	40	63
FLIP 93-42L	ILL 7543	-	ICARDA	102	98	48	73
FLIP 93-43L	ILL 7544	-	ICARDA	97	86	41	64
FLIP 93-44L	ILL 7545	-	ICARDA	99	91	49	68
FLIP 93-45L	ILL 7546	-	ICARDA	100	91	50	67
FLIP 93-46L	ILL 7547	-	ICARDA	101	90	52	67
FLIP 93-47L	ILL 7548	-	ICARDA	99	87	52	67
FLIP 93-48L	ILL 7549	-	ICARDA	85	76	52	73
FLIP 93-49L	ILL 7550	-	ICARDA	83	77	40	65
Local check	-	-	-	58	65	42	68
Location mean				**91**	**83**	**48**	**69**
SE of Mean				1.04	1.71	4.3	3.16
LSD at .05				3.02	4.91	12.3	9.20
C.V. %				1.61	2.92	12.8	6.50

Cont'd. ...

Table 4.6.2. Cont'd. ...

Entry name	India			Iran				Italy	Pakistan	Sudan	Syria	(1)
	Almora	New-Delhi	Srinagar	Ardabil	Qazvin	Karaj	Maragheh	Calta-girone	Mingora	Hudeiba	Tel-Hadya	Overall mean
FLIP 86-50L	98	80	52	67	62	29	61	91	125	63	100	75
FLIP 88-42L	94	88	51	71	63	35	61	88	110	61	99	72
FLIP 89-71L	106	100	50	66	61	32	60	88	121	69	98	77
FLIP 91-1L	94	83	52	66	63	29	60	91	124	64	98	74
FLIP 91-2L	100	86	51	75	67	38	61	91	124	65	101	76
FLIP 93-50L	105	97	50	66	61	29	59	91	126	70	99	76
FLIP 92-39L	105	101	51	66	62	35	60	88	126	69	98	78
FLIP 92-40L	114	104	51	70	60	28	60	88	126	72	99	80
FLIP 92-41L	111	98	52	72	61	30	60	88	128	71	100	81
FLIP 92-42L	115	104	49	72	60	26	60	88	127	72	99	79
FLIP 92-43L	111	76	50	66	59	33	60	89	110	51	99	71
FLIP 92-44L	98	84	51	73	63	27	60	91	109	65	99	73
FLIP 92-45L	115	77	49	66	60	30	59	88	111	55	99	72
FLIP 92-46L	113	101	51	70	63	35	60	88	126	69	100	80
FLIP 93-51L	104	87	51	66	62	34	60	90	124	70	99	76
FLIP 92-48L	106	100	50	72	63	34	59	89	126	71	100	78
FLIP 92-49L	107	108	50	72	63	33	62	89	126	-	100	82
FLIP 92-50L	105	99	51	72	63	28	60	89	125	67	99	79
FLIP 92-51L	114	116	51	70	64	30	60	88	134	78	100	84
FLIP 92-52L	97	78	49	74	65	39	60	88	113	-	99	74
FLIP 92-54L	97	80	52	73	62	30	61	88	122	71	99	74
FLIP 93-36L	103	93	49	64	62	26	61	91	126	70	99	73
FLIP 93-37L	100	100	53	72	62	27	62	94	112	68	100	75
FLIP 93-38L	104	98	51	72	63	28	60	88	124	66	96	78
FLIP 93-39L	105	91	53	66	59	36	60	90	127	65	100	75
FLIP 93-40L	103	94	50	66	58	28	61	88	124	70	99	74
FLIP 93-41L	106	102	52	70	62	35	60	95	126	71	100	79
FLIP 93-42L	116	102	51	67	62	28	60	89	128	79	101	80
FLIP 93-43L	108	100	50	73	62	26	61	93	136	71	99	78
FLIP 93-44L	108	96	50	67	59	33	61	88	128	68	100	78
FLIP 93-45L	111	97	50	72	59	30	60	88	124	65	100	78
FLIP 93-46L	105	94	49	71	59	33	60	88	128	63	99	78
FLIP 93-47L	108	95	50	77	58	32	59	88	128	64	101	79
FLIP 93-48L	100	96	51	73	63	27	59	92	112	70	99	75
FLIP 93-49L	104	95	51	66	61	31	61	91	126	67	100	75
Local check	113	93	51	76	65	37	66	97	124	47	100	
Location mean	**106**	**94**	**51**	**70**	**62**	**31**	**60**	**90**	**123**	**67**	**99**	
SE of Mean	One	3.23	0.46	1.75	1.14	2.19	0.66	1.14	1.20	One	0.81	
LSD at .05	rep	9.26	1.34	5.03	3.28	6.36	1.62	3.28	3.48	rep	2.36	
C.V. %		4.85	1.29	3.56	2.63	9.92	1.33	1.81	1.37		1.15	

(1) Hudeiba in Sudan with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.6.3. Adjusted time to maturity (days) of entries at different locations in the LISN-E during 1992/93.

Entry name	Bangladesh	Egypt	Ethiopia		India	
	Ishurdi	Mallawy	Debre Zeit	Ghinchi	Almora	New Delhi
FLIP 86-50L	-	152	80	126	156	134
FLIP 88-42L	120	150	78	125	156	131
FLIP 89-71L	-	145	72	122	153	135
FLIP 91-1L	-	151	78	121	153	136
FLIP 91-2L	126	150	79	125	153	138
FLIP 93-50L	-	151	79	128	156	141
FLIP 92-39L	-	152	80	124	157	119
FLIP 92-40L	-	152	81	126	159	142
FLIP 92-41L	-	153	88	123	158	140
FLIP 92-42L	-	152	98	122	157	145
FLIP 92-43L	125	151	75	124	157	134
FLIP 92-44L	-	149	79	124	159	137
FLIP 92-45L	124	149	77	126	156	131
FLIP 92-46L	-	151	95	128	159	138
FLIP 93-51L	127	151	82	123	155	128
FLIP 92-48L	-	150	-	124	157	136
FLIP 92-49L	-	151	83	129	154	138
FLIP 92-50L	-	149	90	128	157	142
FLIP 92-51L	-	154	89	128	157	145
FLIP 92-52L	125	147	80	123	155	129
FLIP 92-54L	124	151	76	124	153	130
FLIP 93-36L	128	147	73	125	157	136
FLIP 93-37L	-	149	77	124	153	142
FLIP 93-38L	-	151	80	124	154	137
FLIP 93-39L	120	148	72	126	155	135
FLIP 93-40L	-	148	78	127	156	139
FLIP 93-41L	-	150	76	126	157	139
FLIP 93-42L	-	148	88	127	157	142
FLIP 93-43L	-	150	73	123	159	138
FLIP 93-44L	-	151	80	124	158	136
FLIP 93-45L	-	153	94	122	161	142
FLIP 93-46L	-	151	83	126	155	139
FLIP 93-47L	-	151	84	123	156	141
FLIP 93-48L	-	150	78	123	152	138
FLIP 93-49L	126	150	73	122	154	133
Local check	114	149	76	124	154	134
Location mean	**124**	**150**	**81**	**125**	**156**	**136**
SE of Mean	One	1.15	One	1.27	One	3.94
LSD at .05	rep	3.34	rep	3.69	rep	NS
C.V. %		1.08		1.44		4.09

Cont'd. ...

Table 4.6.3. Cont'd. ...

Entry name	Iran				Pakistan	Syria	(1)
	Ardabil	Qazvin	Karaj	Maragheh	Mingora	Tel Hadya	**Overall mean**
FLIP 86-50L	112	90	71	95	183	139	125
FLIP 88-42L	109	88	70	94	180	137	123
FLIP 89-71L	107	88	69	93	181	135	122
FLIP 91-1L	108	86	65	92	183	135	122
FLIP 91-2L	117	90	71	93	182	138	125
FLIP 93-50L	112	87	69	92	181	138	124
FLIP 92-39L	110	88	74	93	181	136	123
FLIP 92-40L	111	89	68	94	184	139	125
FLIP 92-41L	109	88	68	94	184	138	125
FLIP 92-42L	109	89	68	94	181	139	125
FLIP 92-43L	110	89	70	95	181	137	124
FLIP 92-44L	113	90	67	94	175	138	124
FLIP 92-45L	111	88	70	94	181	136	123
FLIP 92-46L	116	88	74	95	184	139	126
FLIP 93-51L	110	89	74	94	183	139	124
FLIP 92-48L	110	89	73	95	183	138	124
FLIP 92-49L	107	87	73	93	183	136	124
FLIP 92-50L	108	87	65	93	181	138	124
FLIP 92-51L	107	85	64	92	184	136	124
FLIP 92-52L	108	87	73	92	178	137	122
FLIP 92-54L	108	89	67	93	183	137	123
FLIP 93-36L	105	88	69	92	183	132	123
FLIP 93-37L	108	88	72	92	181	137	124
FLIP 93-38L	110	87	67	94	183	138	124
FLIP 93-39L	105	87	75	92	184	134	123
FLIP 93-40L	106	88	65	92	183	134	123
FLIP 93-41L	107	87	75	93	184	135	124
FLIP 93-42L	107	89	66	93	183	138	124
FLIP 93-43L	108	89	65	92	183	135	123
FLIP 93-44L	107	89	74	93	184	138	124
FLIP 93-45L	108	90	66	94	184	139	125
FLIP 93-46L	107	90	70	94	183	141	125
FLIP 93-47L	110	89	72	92	183	142	125
FLIP 93-48L	107	89	67	92	178	136	122
FLIP 93-49L	106	88	70	92	183	136	123
Local check	114	92	72	96	184	137	
Location mean	**109**	**88**	**70**	**93**	**182**	**137**	
SE of Mean	1.19	0.94	3.25	0.56	0.50	0.67	
LSD at .05	3.40	2.72	NS	1.64	1.44	1.95	
C.V. %	1.54	1.50	6.59	0.86	0.38	0.69	

(1) Ishurdi in Bangladesh and Debre Zeit in Ethiopia with missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.6.4. Adjusted plant height (cm) of entries at different locations in the LISN-E during 1992/93.

Entry name	Egypt	Ethiopia		India			Iran
	Mallawy	Debre Zeit	Ghinchi	Almora	New Delhi	Srinagar	Ardabil
FLIP 86-50L	68	29	19	36	39	25	23
FLIP 88-42L	54	26	14	26	33	25	19
FLIP 89-71L	58	19	22	32	43	25	22
FLIP 91-1L	70	29	22	28	30	25	22
FLIP 91-2L	62	26	19	30	35	24	24
FLIP 93-50L	74	31	22	30	34	25	21
FLIP 92-39L	71	31	16	30	40	24	22
FLIP 92-40L	64	30	22	28	31	24	21
FLIP 92-41L	64	28	24	36	31	25	21
FLIP 92-42L	55	31	19	36	28	25	19
FLIP 92-43L	69	27	21	34	36	24	23
FLIP 92-44L	60	24	17	30	27	24	24
FLIP 92-45L	72	30	18	30	31	24	22
FLIP 92-46L	59	30	19	28	31	24	21
FLIP 93-51L	71	29	22	32	24	25	20
FLIP 92-48L	68	-	20	28	35	24	22
FLIP 92-49L	53	31	17	32	37	24	20
FLIP 92-50L	67	39	21	26	31	23	23
FLIP 92-51L	59	25	21	35	32	24	18
FLIP 92-52L	53	27	18	35	32	24	23
FLIP 92-54L	67	23	16	28	31	24	23
FLIP 93-36L	55	24	18	36	33	25	20
FLIP 93-37L	58	22	16	30	32	25	20
FLIP 93-38L	61	32	25	28	29	25	22
FLIP 93-39L	70	20	19	36	29	23	18
FLIP 93-40L	61	26	20	28	34	23	20
FLIP 93-41L	66	23	22	32	36	26	22
FLIP 93-42L	63	30	18	30	34	24	19
FLIP 93-43L	64	24	17	35	32	25	18
FLIP 93-44L	68	29	17	30	37	24	24
FLIP 93-45L	69	35	20	30	40	24	21
FLIP 93-46L	68	33	22	32	40	24	23
FLIP 93-47L	61	29	25	32	38	25	22
FLIP 93-48L	58	22	20	30	33	24	15
FLIP 93-49L	59	24	25	36	36	24	17
Local check	59	24	30	30	43	25	22
Location mean	**63**	**27**	**20**	**30**	**33**	**24**	**21**
SE of Mean	4.13	One	2.08	One	1.41	0.68	1.35
LSD at .05	12.04	rep	6.06	rep	4.05	NS	3.89
C.V. %	9.25		14.62		5.97	3.97	9.25

Cont'd. . . .

Table 4.6.4. Cont'd. ...

Entry name	Iran			Italy	Pakistan	Syria	(1)
	Qazvin	Karaj	Maragheh	Caltagirone	Mingora	Tel Hadya	**Overall mean**
FLIP 86-50L	28	31	22	31	52	29	34
FLIP 88-42L	28	24	19	21	47	25	28
FLIP 89-71L	25	24	14	26	49	22	30
FLIP 91-1L	23	22	14	27	42	26	29
FLIP 91-2L	27	29	19	31	56	28	32
FLIP 93-50L	24	28	18	27	57	27	32
FLIP 92-39L	23	24	18	28	42	27	30
FLIP 92-40L	32	26	19	27	45	31	31
FLIP 92-41L	32	23	18	27	45	28	31
FLIP 92-42L	25	25	14	23	45	26	28
FLIP 92-43L	28	29	18	27	43	25	31
FLIP 92-44L	23	26	19	27	46	24	29
FLIP 92-45L	27	24	18	26	48	26	30
FLIP 92-46L	23	29	20	28	50	26	30
FLIP 93-51L	27	21	18	25	51	27	30
FLIP 92-48L	26	24	18	27	54	30	31
FLIP 92-49L	24	22	15	24	44	25	28
FLIP 92-50L	31	28	20	29	44	26	31
FLIP 92-51L	20	26	13	24	54	20	29
FLIP 92-52L	24	24	19	25	47	26	29
FLIP 92-54L	30	25	18	25	47	26	30
FLIP 93-36L	20	24	15	25	47	21	28
FLIP 93-37L	27	23	13	22	46	23	28
FLIP 93-38L	27	23	16	23	50	24	29
FLIP 93-39L	24	27	15	24	41	24	29
FLIP 93-40L	28	24	16	26	48	25	29
FLIP 93-41L	24	29	17	25	52	26	31
FLIP 93-42L	25	26	15	24	46	28	29
FLIP 93-43L	21	25	13	24	46	20	28
FLIP 93-44L	33	26	20	28	49	27	32
FLIP 93-45L	32	27	16	28	51	27	32
FLIP 93-46L	33	22	18	27	48	25	32
FLIP 93-47L	33	24	17	28	53	29	32
FLIP 93-48L	19	22	15	21	43	24	27
FLIP 93-49L	23	23	15	25	42	24	29
Local check	31	21	18	32	49	26	
Location mean	**26**	**25**	**17**	**26**	**48**	**26**	
SE of Mean	2.58	0.52	1.40	1.40	4.74	1.53	
LSD at .05	7.51	1.49	4.09	4.08	NS	4.45	
C.V. %	13.81	3.00	11.69	7.64	14.04	8.43	

(1) Debre Zeit in Ethiopia with missing value was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.6.5. Adjusted seed yield (Y = kg/ha) and rank (R) of entries at different locations in LISN-E during 1992/93.

Entry name	Bangladesh Ishurdi		Egypt Mallawy		Ethiopia Debre Zeit		Ethiopia Ghinchi		India Almora		India New Delhi		India Srinagar		Iran Ardabil	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86-50L	-	-	2629	11	271	26	249	28	725	21	433	19	464	12	800	18
FLIP 88-42L	1722	7	2066	23	321	23	56	35	290	34	400	21	338	23	414	32
FLIP 89-71L	-	-	2902	7	932	4	605	7	1449	3	650	8	279	27	713	24
FLIP 91-1L	-	-	2176	20	1036	1	740	3	870	10	300	30	380	19	652	25
FLIP 91-2L	1389	10	713	36	373	18	9	36	435	31	486	17	511	7	303	36
FLIP 93-50L	-	-	2521	16	625	11	648	5	1304	6	700	6	924	1	864	16
FLIP 92-39L	-	-	2721	10	503	15	432	14	1304	4	200	35	215	31	746	20
FLIP 92-40L	-	-	1879	26	173	30	415	16	362	32	251	31	160	36	953	9
FLIP 92-41L	-	-	2596	13	142	31	438	13	580	23	200	34	651	3	726	22
FLIP 92-42L	-	-	1999	25	284	25	600	8	725	13	550	13	462	13	900	13
FLIP 92-43L	1333	11	1528	31	1022	3	90	34	725	16	550	15	323	25	823	17
FLIP 92-44L	-	-	1779	28	363	19	103	33	290	33	312	26	194	33	383	33
FLIP 92-45L	1889	5	2071	22	1032	2	388	18	725	20	700	4	363	21	1103	6
FLIP 92-46L	-	-	1745	30	79	33	272	27	435	30	321	25	407	17	568	28
FLIP 93-51L	1444	8	1748	29	424	17	597	9	435	27	300	29	570	5	724	23
FLIP 92-48L	-	-	2874	8	-	-	182	30	435	29	300	27	865	2	877	15
FLIP 92-49L	-	-	2309	17	68	34	377	19	725	17	350	24	390	18	919	10
FLIP 92-50L	-	-	3555	2	891	6	1110	2	1304	7	550	12	477	11	1186	4
FLIP 92-51L	-	-	3235	4	24	35	275	26	435	28	250	32	240	28	482	30
FLIP 92-52L	1444	9	1525	32	561	13	187	29	725	14	600	9	206	32	739	21
FLIP 92-54L	2778	1	1514	33	345	21	149	31	145	36	250	33	164	35	1004	7
FLIP 93-36L	2333	3	1508	34	624	12	415	17	1159	8	800	3	416	16	763	19
FLIP 93-37L	-	-	2176	19	293	24	290	24	725	18	400	20	336	24	628	27
FLIP 93-38L	-	-	1416	35	106	32	692	4	580	24	350	22	488	8	1203	3
FLIP 93-39L	1833	6	2023	24	208	29	280	25	725	19	500	16	478	10	459	31
FLIP 93-40L	-	-	4048	1	868	7	145	32	1449	1	850	2	166	34	877	14
FLIP 93-41L	-	-	2613	12	257	27	339	22	725	15	600	10	533	6	953	8
FLIP 93-42L	-	-	2567	14	325	22	483	12	580	25	900	1	367	20	633	26
FLIP 93-43L	-	-	3085	5	909	5	421	15	580	22	300	28	437	15	484	29
FLIP 93-44L	-	-	2283	18	356	20	535	11	435	26	700	5	438	14	1320	2
FLIP 93-45L	-	-	3051	6	708	9	372	20	725	12	350	23	235	30	910	12
FLIP 93-46L	-	-	2543	15	559	14	613	6	1014	9	450	18	240	29	1110	5
FLIP 93-47L	-	-	2845	9	480	16	591	10	1449	2	550	11	630	4	916	11
FLIP 93-48L	-	-	1806	27	212	28	297	23	290	35	550	14	345	22	336	34
FLIP 93-49L	2556	2	2082	21	823	8	363	21	870	11	150	36	487	9	321	35
Local check	2311	4	3490	3	630	10	1156	1	1304	5	650	7	309	26	1724	1
Location mean	**1912**		**2323**		**481**		**414**		**743**		**465**		**402**		**792**	
SE of Mean	One		436.58		One		141.51		One		18.69		81.49		91.77	
LSD at .05	rep		1271.68		rep		412.19		rep		340.68		237.38		267.32	
C.V. %			26.58				48.31				36.07		28.64		16.39	
Efficiency			102				126				0		102		102	
Entry > L. check			0				0				0		5		0	

Cont'd. ...

Table 4.6.5. Cont'd. ...

Entry name	Iran						Italy		Pakistan		Syria		(1)	
	Qazvin		Karaj		Maragheh		Caltagirone		Mingora		Tel Hadya		Overall mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
FLIP 86-50L	370	21	676	5	333	19	737	3	532	35	1667	17	801	17
FLIP 88-42L	295	27	243	31	267	25	474	12	457	36	1260	28	547	34
FLIP 89-71L	269	28	650	6	213	29	118	27	858	27	1400	24	842	10
FLIP 91-1L	425	11	211	33	270	24	118	28	949	21	1111	31	683	25
FLIP 91-2L	154	33	314	25	173	32	355	16	754	31	1040	32	437	35
FLIP 93-50L	329	26	283	28	407	9	264	22	1085	13	1683	16	918	6
FLIP 92-39L	506	8	687	3	267	26	285	19	853	28	1750	12	831	12
FLIP 92-40L	548	7	472	13	457	4	594	8	682	33	2672	1	787	19
FLIP 92-41L	441	10	259	29	320	20	665	5	1036	17	2028	4	828	13
FLIP 92-42L	611	3	295	26	350	16	267	21	1063	16	1439	23	772	20
FLIP 92-43L	372	20	387	21	313	23	388	15	579	34	1317	25	616	30
FLIP 92-44L	138	34	192	34	260	27	321	17	1391	9	1773	10	595	33
FLIP 92-45L	551	5	484	12	360	15	626	7	1095	12	1667	18	844	9
FLIP 92-46L	390	18	437	16	317	21	576	9	1382	10	1700	15	712	23
FLIP 93-51L	332	25	571	7	453	5	247	24	1508	5	2133	3	802	16
FLIP 92-48L	227	31	491	11	360	14	782	1	1302	11	1733	14	869	8
FLIP 92-49L	382	19	678	4	420	8	321	18	911	23	2244	2	836	11
FLIP 92-50L	390	17	327	24	540	2	279	20	710	32	1739	13	1014	1
FLIP 92-51L	127	35	366	22	153	35	263	23	862	26	1134	29	652	28
FLIP 92-52L	364	23	396	19	340	18	415	13	890	24	1823	8	684	24
FLIP 92-54L	419	13	540	8	427	7	189	25	1391	8	1022	33	601	31
FLIP 93-36L	412	14	360	23	167	33	50	35	1074	15	900	35	669	26
FLIP 93-37L	399	16	436	17	140	36	83	32	948	22	1456	21	668	27
FLIP 93-38L	350	24	803	1	433	6	402	14	1079	14	1656	19	788	18
FLIP 93-39L	422	12	471	14	257	28	87	31	1439	7	1472	20	718	22
FLIP 93-40L	550	6	46	36	193	31	130	26	785	29	1300	27	878	7
FLIP 93-41L	367	22	387	20	347	17	57	34	1011	18	1800	9	811	15
FLIP 93-42L	260	29	115	35	213	30	78	33	1550	4	1122	30	739	21
FLIP 93-43L	227	30	257	30	160	34	0	36	767	30	811	36	627	29
FLIP 93-44L	718	1	746	2	573	1	479	11	1452	6	2022	5	975	4
FLIP 93-45L	456	9	293	27	407	10	683	4	958	20	1311	26	812	14
FLIP 93-46L	662	2	455	15	403	11	648	6	1678	2	1889	7	975	3
FLIP 93-47L	560	4	513	10	380	12	777	2	869	25	1768	11	987	2
FLIP 93-48L	103	36	227	32	360	13	89	30	5534	1	1439	22	948	5
FLIP 93-49L	172	32	411	18	313	22	98	29	974	19	928	34	597	32
Local check	403	15	519	9	520	3	549	10	1578	3	2000	6		
Location mean	**381**		**417**		**330**		**347**		**1166**		**1561**			
SE of Mean	120.80		155.38		72.05		169.56		740.39		177.40			
LSD at .05	351.86		452.59		206.82		493.90		NS		509.22			
C.V. %	44.89		52.76		30.91		69.12		89.78		16.07			
Efficiency	127		120		0		110		101		0			
Entry > L. check	0		0		0		0		-		1			

(1) Debre Zeit in Ethiopia with missing value was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 4.6.6. The five heaviest seed yielding entries at the individual locations in the LISN-E during 1992/93.

Country	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Egypt					
Mallawy	FLIP93-40L	FLIP92-50L	Local check	FLIP92-51L	FLIP93-43L
Ethiopia					
Debre Zeit	FLIP91-1L	FLIP92-45L	FLIP92-43L	FLIP89-71L	FLIP93-43L
Ghinchi	Local check	FLIP92-50L	FLIP91-1L	FLIP93-38L	FLIP93-50L
India					
Almora	FLIP93-40L	FLIP93-47L	FLIP89-71L	FLIP92-39L	Local check
New Delhi	FLIP93-42L	FLIP93-40L	FLIP93-36L	FLIP92-45L	FLIP93-44L
Srinagar	FLIP93-50L	FLIP92-48L	FLIP92-41L	FLIP93-47L	FLIP93-51L
Iran					
Ardabil	Local check	FLIP93-44L	FLIP93-38L	FLIP92-50L	FLIP93-46L
Qazvin	FLIP93-44L	FLIP93-46L	FLIP92-42L	FLIP93-47L	FLIP92-45L
Karaj	FLIP93-38L	FLIP93-44L	FLIP92-39L	FLIP92-49L	FLIP86-50L
Maragheh	FLIP93-44L	FLIP92-50L	Local check	FLIP92-40L	FLIP93-51L
Italy					
Caltagirone	FLIP 92-48L	FLIP93-47L	FLIP86-50L	FLIP93-45L	FLIP92-41L
Pakistan					
Mingora	FLIP 93-48L	FLIP93-46L	Local check	FLIP93-42L	FLIP93-51L
Syria					
Tel Hadya	FLIP92-40L	FLIP92-49L	FLIP93-51L	FLIP92-41L	FLIP93-44L

4.7. LENTIL INTERNATIONAL F_5 NURSERY - (LIF_5N)

There were four different segregating populations nurseries namely, Lentil International F_5 Nurseries - Large (LIF_5N-L), Lentil International F_5 Nurseries - Small (LIF_5N-S), Lentil International F_5 Nurseries - Early (LIF_5N-E) and Lentil International F_5 Nurseries - Cold Tolerant (LIF_5NCT).

Material

The material for LIF_5N-L, LIF_5N-S, and LIF_5N-E, included 14, 12, 10 and 10 populations, respectively, and two checks, one supplied and the other (local check) to be added by the cooperator. These populations were derived from the divergent crosses and were expected to release a wide genetic base upon which the selection can be practiced by the cooperators under their local conditions.

Methods and Management

The augmented block design was suggested. The suggested plot size was 8 rows each 4 m long, accomodating 800 seeds per plot. The between row spacing was suggested to be 25 cm. Fifteen, 12, 14 and 5 nurseries were supplied to cooperators in various countries for LIF_5N-L, LIF_5N-S, LIF_5N-E, and LIF_5N-CT, respectively, but information about selection of individual plants was received back from 4, 6, 3 and 2 cooperators, respectively.

Results and Discussion

The list of entries supplied to cooperators is given in Tables 4.7.1.

Table 4.7.1. Details of different Lentil International F_5 Nurseries conducted during 1992/93.

LIF5N-Large		LIF5N-Small		LIF5N-Early		LIF5N-Cold Tolerance	
Cross No.	Parentage	Cross No.	Parentage	Cross No.	Parentage	Cross No.	Parentage
X89TH162	ILL 6198 X ILL 468	X89TH82	ILL 39 X ILL 2130	X89TH221	ILL 6220 X ILL 5883	X89TH115	ILL 1878 X ILL 467
X89TH164	ILL 6209 X ILL 468	X89TH106	ILL 854 X ILL 5588	X90TH21	ILL 5888 X ILL 4376	X89TH120	ILL 1878 X ILL 5588
X90TH162	ILL 2126 X ILL 6435	X89TH115	ILL 1878 X ILL 467	X90TH52	ILL 2578 X ILL 6024	X89TH124	ILL 4965 X ILL 2130
X90TH170	ILL 4606 X ILL 5845	X89TH120	ILL 1878 X ILL 5588	X90TH53	ILL 2578 X ILL 6025	X90TH98	ILL 4605 X WA8649084
X90TH171	ILL 4606 X ILL 6435	X89TH164	ILL 6209 X ILL 468	X90TH56	ILL 2580 X ILL 1677	X90TH102	ILL 1878 X WA8649014
X90TH180	ILL 6212 X ILL 6435	X89TH204	ILL 4399 X ILL 5722	X90TH58	ILL 2580 X ILL 5748	X90TH218	ILL 1066 X ILL 4400
X90TH181	ILL 5668 X ILL 298	X89TH206	ILL 4399 X ILL 6239	X90TH74	ILL 4405 X ILL 6472	X90TH220	ILL 1066 X ILL 4738
X90TH186	ILL 5704 X ILL 6435	X89TH220	ILL 6220 X ILL 5728	X90TH75	ILL 4605 X ILL 1677	X90TH221	ILL 1066 X ILL 6155
X90TH190	ILL 5876 X ILL 298	X89TH221	ILL 6220 X ILL 5883	X90TH88	ILL 5888 X ILL 1677	X90TH222	ILL 4349 X ILL 4400
X90TH192	ILL 5876 X ILL 6435	X89TH225	ILL 6243 X ILL 5728	X90TH89	ILL 5888 X ILL 3614	X90TH226	ILL 4400 X ILL 4734
X90TH194	ILL 5989 X ILL 5845	X90TH75	ILL 4605 X ILL 1677	ILL 4605	(Argentina)	L. large	ILL 4400 (Syria)
X90TH200	ILL 6199 X ILL 5845	X90TH224	ILL 4349 X ILL 4738	Local check		Local check	
X90TH212	ILL 6431 X ILL 5845	L. small	ILL 4401 (Syria)				
X90TH224	ILL 4349 X ILL 4738	Local check					
L. large	ILL 4400 (Syria)						
Local check							

4.8. LENTIL INTERNATIONAL ASCOCHYTA BLIGHT NURSERY (LIABN)

Material

The LIABN included 19 test entries, one local susceptible check to be supplied by the cooperator and one repeated susceptible check. The test entries have been selected on the basis of their reaction to Ascochyta blight tested at Tel Hadya in Syria and Islamabad in Pakistan.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was one row 4 m long accomodating 200 seeds. The susceptible check was repeatedly sown after every two test entries/rows to serve as an indicator cum spreader row. The cooperators in the Mediterranean region were advised to sow the nursery in the winter season to get high disease pressure. Otherwise the nurseries were managed as per the local agronomic practices. In the absence of natural infestation, the cooperators were advised to do the artificial inoculation of the nursery with the blight disease either by scattering the diseased debris collected from the previous season or by supplementing the natural infection by spraying the spore suspension prepared from the freshly infected plants in the fields. A 1-9 scale was recommended for scoring the disease severity at least at two times, first in the vegetative stage and the second at the podding stage. The scale recommended was 1 = highly resistant; 3 = resistant; 5 = tolerant; 7 = susceptible; and 9 = highly susceptible.

Eleven sets of LIABN were distributed to cooperators in 9 countries, and the data were, however, received for 3 sets from 2 countries.

The Lentil International Ascochyta Blight Nursery was conducted at Merredin in Australia, and Akaki and Ghinchi in Ethiopia. The susceptible check took the rating of 3 and 5 at Merredin and Ghinchi (Table 4.8.1). All other entries were rated between 1 and 3. At Akaki in Ethiopia, however, 7 of the 21 test entries were tolerant (rating $\leq$ 5).

Table 4.8.1. Reaction of lentil entries to Ascochyta blight (1 = highly resistant, 9 = highly susceptible) in LIABN during 1992/93.

Entry Name	Acc. No. (ILL)	Parentage	Origin	Australia	Ethiopia	
				Merredin	Akaki	Ghinchi
ILL 358	358	-	Mexico	3	9	2
ILL 2439	2439	-	India	3	5	3
LENKA	5480	-	Czecoslovakia	3	3	2
78S26013	5588	-	Jordan	3	7	2
78S26052	5604	-	Turkey	3	9	2
FLIP 84-11L	5684	ILL 253 X ILL 470	ICARDA	3	7	2
FLIP 84-43L	5714	ILL 500 X ILL 1719	ICARDA	1	9	2
FLIP 85-55L	5725	ILL 610 X ILL 784	ICARDA	3	5	2
FLIP 85-33L	5871	ILL 176 X ILL 35	ICARDA	3	7	2
FLIP 86-12L	5998	ILL 4349 X ILL 4605	ICARDA	3	5	3
FLIP 88-41L	6465	ILL 4400 X ILL 4605	ICARDA	3	7	2
FLIP 93-7L	7508	ILL 5538 X ILL 5673	ICARDA	3	9	3
FLIP 93-9L	7510	ILL 1939 X ILL 5729	ICARDA	1	7	2
FLIP 93-10L	7511	ILL 1939 X ILL 5779	ICARDA	1	5	2
FLIP 93-11L	7512	ILL 5538 X ILL 5715	ICARDA	3	9	3
FLIP 93-13L	7514	ILL 5538 X ILL 5805	ICARDA	1	5	3
FLIP 93-16L	7517	ILL 5604 X ILL 6015	ICARDA	3	7	2
FLIP 93-18L	7519	ILL 5883 X ILL 5729	ICARDA	3	9	2
FLIP 93-35L	7536	ILL 4380 X ILL 4605	ICARDA	3	7	3
Local check	-	-	-	5	5	3
L 1278 (Susceptible check)	2580	-	India	3	9	5

4.9. LENTIL INTERNATIONAL FUSARIUM WILT NURSERY (LIFWN)

Material

The LIFWN included 6 test entries, one repeated susceptible check and one susceptible local check to be added by the cooperator. The test entries have been selected on the basis of their reaction to Fusarium wilt in Addis Abbaba in Ethiopia and Tel Hadya in Syria.

Methods and Managament

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

Twenty five sets of LIFWN were distributed to cooperators in 14 countries and the data were reported from 6 cooperators from 3 countries. The results reported from different locations are presented in Table 4.9.1.

Bulgaria: At Toshevo in Bulgaria, ILL 6410 took rating of one, and all other entries including the susceptible check took a score of 5.

Nepal: The nursery was conducted at two locations, Khumaltar and Kaski. At Khumaltar, only two entries FLIP 90-7L and FLIP 86-5L were tolerant. At Kaski, however, all entries were susceptible.

Syria: The nursery was grown at Aleppo, Hama and Izra'a. At all the locations there was very little infestation of fusarium wilt and all the entries including the check were scored between 1 and 4.

4.10. LENTIL INTERNATIONAL RUST NURSERY (LIRN)

Materials

The LIRN included 16 test entries, one susceptible check and one repeated susceptible check to be added by the cooperator. The test entries have been selected on tha basis of their reaction to Rust.

Methods and Management

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

Fourteen sets of LIRN were distributed to cooperators in 8 countries and data were reported from 3 cooperators from 3 countries. The results are given in Table 4.10.1.

Bangladesh: The nursery was grown at Ishurdi. The susceptible check was rated at 7. All other entries were tolerant or resistant (rating $\leq$ 5).

Table 4.9.1. Reaction of lentil entries to Fusarium wilt in LIFWN during 1992/93.

Entry Name	Acc. No. (ILL)	Parentage	Origin	Bulgaria	Nepal		Syria		
				Toshevo	Khumaltar	Kaski	Aleppo	Hama	Izraa
FLIP 86-5L	5991	ILL 466 X ILL 212	ICARDA	5	5	9	2	1	3
ILL 6410	6410	-	Bulgaria	1	7	9	1	1	2
FLIP 88-3L	6427	ILL 5506 X ILL 5582	ICARDA	5	9	9	2	1	3
FLIP 90-3L	6972	ILL 28 X ILL 851	ICARDA	5	9	9	1	1	3
FLIP 90-7L	6976	ILL 30 X ILL 851	ICARDA	5	3	9	1	1	2
FLIP 90-36L	7005	ILL 788 X ILL 5588	ICARDA	5	9	9	1	1	4
Local check	-	-	-	5	9	9	1	1	3
FLIP 86-45L (Susceptible check)	6031	ILL 101 X ILL 262	ICARDA	5	9	9	2	1	4

Table 4.10.1. Reaction of lentil entries to rust in LIRN during 1992/93.

Entry Name	Acc. No. (ILL)	Parentage	Origin	Bangladesh Ishurdi	Chile Chillan	India Kanpur
ILL 358	358	-	Mexico	5	1	3
ILL 857	857	-	Algeria	3	1	5
UJL 81-129	5244	-	Jordan	5	1	1
LENKA	5480	-	Czechoslovakia	3	3	1
FLIP 84-112L	5782	ILL 883 X ILL 470	ICARDA	1	1	3
81S15	5883	UJL 197 X ILL 4400	Jordan	3	1	1
FLIP 86-16L	6002	ILL 4349 X ILL 4605	ICARDA	1	1	1
FLIP 86-38L	6024	ILL 262 X ILL 3458	ICARDA	3	1	3
FLIP 87-17L	6207	ILL 8 X ILL 212	ICARDA	3	1	1
FLIP 87-19L	6209	ILL 4349 X ILL 4605	ICARDA	1	1	7
FLIP 87-60L	6250	ILL 28 X ILL 1853	ICARDA	3	1	7
FLIP 87-74L	6264	ILL 4353 X ILL 4400	ICARDA	1	1	3
FLIP 88-32L	6456	ILL 4404 X ILL 4354	ICARDA	3	1	3
FLIP 92-52L	7217	ILL 3527 X ILL 5732	ICARDA	1	1	3
FLIP 93-2L	7503	ILL 2578 X ILL 2582	ICARDA	3	3	1
FLIP 93-3L	7504	ILL 5684 X ILL 5593	ICARDA	1	1	3
Local check	-	-	-	3	3	9
ILL 4401 (Susceptible check)	4401	-	Syria	7	3	9

Chile: All the entries including the susceptible check were scored between 1 and 3.

India: At Kanpur, 14 entries were tolerant (rating ≤ 5), and three were susceptible (rating ≥ 7).

4.11. LENTIL INTERNATIONAL COLD TOLERANCE NURSERY (LICTN)

Material

The LICTN included 14 test entries, one local check and one susceptible repeated check. The test entries have been selected on the basis of their reaction to cold in Italy and Turkey at high elevation.

Methods and Management

The suggested experimental design was randomized complete block with two replications. The suggested plot size was single row each 4 m long accomodating 200 plants. The susceptible check was repeatedly sown after every two test entries/rows to serve as an indicator row. The cooperators in the Mediterranean region were advised to sow the nursery early into the winter to get better expression of cold. Otherwise the nurseries were managed as per the local agronomic practices. It was suggested to record the number of plants germinated before the onset of severe winter.

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

Twenty two sets of LICTN were distributed to cooperators in 13 countries, however, data were received for 7 sets from 5 countries.

Results and Discussion

Out of seven locations returning the data, at two locations namely Tolentino in Italy and Elvas in Portugal, all the entries including the susceptible check were rated between 1 and 5 (Table 4.11.1). At Toshevo in Bulgaria, only one entry, L 121 was tolerant to cold with 3 rating. Ten, 3, 11 and none of the test entries were tolerant to cold at Ardabil (Iran), Sanandaj (Iran), Diyarbakir (Turkey) and Haymana (Turkey), respectively.

Table 4.11.1. Reaction of lentil entries to cold (1 = free, 9 = killed) in LICTN during 1992/93.

Entry Name	Acc. No. (ILL)	Origin	Bulgaria	Iran		Italy	Portugal	Turkey	
			Toshevo	Ardabil	Sanandaj	Tolentino	Elvas	Diyarbakir	Haymana
ILL 52	52	Iraq	9	5	5	1	3	5	9
ILL 323	323	Yugoslavia	9	5	9	1	3	3	9
ILL 465	465	Chile	9	9	7	1	2	5	9
ILL 468	468	Chile	9	5	9	1	1	5	9
ILL 590	590	Turkey	9	7	9	1	3	5	9
ILL 662	662	Turkey	9	3	9	1	2	5	9
ILL 759	759	Iran	7	7	9	1	3	7	9
ILL 780	780	Syria	9	3	7	1	2	3	8
ILL 857	857	Algeria	9	7	7	1	1	7	9
ILL 975	975	Chile	9	5	7	1	1	7	9
L 121	1878	Turkey	3	5	5	1	5	5	7
ILL 1918	1918	Australia	9	7	7	1	3	5	9
SLL	4400	Syria	7	5	7	1	4	5	9
SAZAK'91	7155	Turkey	9	5	7	1	2	3	9
Local check		-	9	5	5	1	2	7	9
L 1278 (Susceptible check)	2580	India	9	9	7	1	3	9	9

5. DRY PEA AND FORAGE LEGUMES

5.1. PEA INTERNATIONAL ADAPTATION TRIAL (PIAT)

Introduction

The main objective of distribution of this trial was to study the adaptation of elite materials developed in various countries in international testing environments especially in West Asia and North Africa region. The cooperators were free to use these materials in their breeding programs or for release as cultivars.

Material

The material for the Pea International Adaptation Trial comprised 23 test entries, and one local check to be supplied by the cooperator. The test entries were selected from the local and regional yield trials based on their superior yield performance.

Methods and Management

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

Sixty seven sets of trial were distributed to cooperators in 39 countries and the results were returned from 29 sets covering 24 countries. The agronomic practices employed at different locations are shown in Table 5.1.1.

Results and Discussion

Mean for time to flowering, time to maturity, plant height, and 100-seed weight for different locations are compiled in Tables 5.1.2, 5.1.3, and 5.1.4, respectively. Time to flowering ranged from 78 days for PS 210688 and PS 510571 to 100 days for K 129. The entry PS 510571 matured earliest in 131 days and K 129 was latest to mature in 149 days.

The plant height data revealed that the entry MG 101831 was the tallest (109 cm) and entries P 210713 and Le 25 were among the shortest (58-60 cm).

The mean seed yield at different locations (Table 5.1.5) revealed that highest seed yield was obtained at Rawdat Harma in Qatar (5457 kg/ha) and was followed by Sebha in Libya (5124 kg/ha) and Makedonia in Greece (4978 kg/ha). The ANOVA of the seed yield revealed that 20, 1, 1, 5, 4, 17, 5, 10, 2, 1, 1, 4, 8, 8 and 16 entries, respectively, at Cochabamba (Bolivia), Toshevo (Bulgaria), Gisozi (Burundi), Athalassa (Cyprus), Holetta (Ethiopia), Kanpur (India), Caltagirone (Italy), Zahra (Libya), Kadainiai (Lithuania), Elvas (Portugal), Rawdat Harma (Qatar), Al-Gassim (Saudi Arabia); Badajoz and Valladolid (Spain), and Tel Hadya in Syria outyielded the respective check by a significant margin. The five heaviest yielders at different locations are given in Table 5.1.6. The entries, Local Selection 1690, Collegian, and MG 102029 occured most frequently among the top five heaviest yielders and were comparatively more stable.

Table 5.1.1. Agronomic details for PIAT-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Bangladesh	Ishurdi	29.11.92	26.02.93	-	-	-	-	-	Ishurdi Local
Bangladesh	Mymensingh	29.11.92	29.03.93	-	60	-	1	Kerb + Igran	Bellman
Bolivia	Cochabamba	15.01.93	10.06.93	18	46	-	3	-	Rovealda
Bulgaria	Toshevo	23.04.93	27.07.93	-	60	-	-	Vastak + Agria 1050, Galant	Auralia
Burundi	Gisozi	16.03.93	12.08.93	10 t/ha manure			-	-	Kyondo
Chile	Chillan	23.07.93	20.12.93	-	90	-	-	-	Botanica-INIA
China	Xining	08.04.93	18.08.93	50	35	-	-	-	Caoyung No. 12
Cyprus	Athalassa	NA	NA	60	60	-	-	-	Cyprus local
Ethiopia	Holetta	16.07.93	05.12.93	25	100	-	-	-	G 22763-2C
Greece	Makedonia	13.01.93	11.06.93	-	30	-	1	-	Olympos (K-129)
India	Kanpur	06.12.93	11.04.94	-	-	-	-	-	-
India	New Delhi	17.11.93	15.04.94	20	40	-	-	Metasystox, Stomp	Rachana
Italy	Caltagirone	06.02.93	02.07.93	-	60	-	-	-	Belinda
Jordan	Maru	28.11.92	2o.05.93	27	69	-	-	Fusilade	-
Jordan	Mushagar	13.12.92	07.06.93	-	-	-	-	Fusilade, Lanat	Local pea
Lebanon	Terbol	01.12.92	20.06.93	-	50	-	-	Kerb + Igran	Lebanese local
Lesotho	Siloe	24.05.93	29.12.93	20	30	-	-	Kerb + Igran	Black eyed Susan
Libya	Sebha	06.12.92	10.05.93	40	150	-	-	-	Horst No.40
Libya	Zahra	21.11.92	01.05.93	30	60	-	-	-	Abu Sheba
Lithuania	Kedainiai	24.04.93	26.07.93	-	60	-	-	Sinazin	Neosipajuscijase
Portugal	Elvas	17.11.92	20.05.93	-	60	60	-	Terbutrine + Propizamide	Solara
Qatar	Rawdat Harma	27.10.92	18.04.93	90	150	-	1/10d	-	NA-99
Saudi Arabia	Al Gassim	11.11.92	30.04.93	50	120	-	35/9mm	-	Oris Pisello Pinto
Spain	Badajoz	12.11.92	05.06.93	-	-	-	-	Prometrine	Solara
Spain	Valladolid	16.11.92	08.07.93	-	60	-	-	Decis, Trifluralin	RV-6
Srilanka	Bandarawela	05.05.93	20.08.93	20	60	-	1	Selicrom/Ambush	Local pea
Syria	Tel Hadya	09.12.92	28.05.93	-	50	-	-	-	Acc. 223
Tunisia	Sousse	04.01.93	22.05.93	NA	NA	NA	NA	-	Lincoln, Dindole
Turkey	Samsun	31.05.93	20.07.93	-	-	-	-	-	Samsun Merkez

NA = Not available

Table 5.1.2. Time to flowering (days) of entries at different locations in the PIAT-93.

Entry Name	Acc.	Origin	Bangladesh		Bolivia	Bulgaria	Burundi
			Ishurdi	Mymensingh	Cochabamba	Toshevo	Gisozi
Syrian Local Aleppo	8	Syria	73	79	59	49	72
Local Sel 1690	21	Syria	73	81	54	47	71
K-129	77	Greece	-	111	64	49	87
MG100446	108	Greece	43	74	45	45	58
MG100726	119	Greece	53	73	53	45	61
MG101197	125	Egypt	64	76	53	52	67
MG101831	141	Ethiopia	71	83	58	52	77
MG102029	149	Netherland	50	74	48	45	64
MG102256	152	Germany	63	73	55	49	68
MG102369	154	Poland	44	74	46	45	58
MG102469	160	U.K.	63	76	54	52	71
MG102702	172	India	64	76	57	47	68
MG102703	173	India	62	77	52	52	77
MG104325	178	Afghanistan	66	74	56	52	68
G22763-2C	182	Ethiopia	59	80	59	52	73
Collegian	216	Australia	63	74	56	46	68
Derrimut	217	Australia	44	72	45	45	60
Early dun	222	Australia	67	80	61	49	76
Le 25	252	India	57	74	53	49	60
PS210713	267	U.S.A.	52	72	48	44	59
PS210688	278	U.S.A.	41	77	41	42	53
Umatilla	281	U.S.A.	44	74	45	45	64
PS510571	291	U.S.A.	43	72	41	42	55
Local Check	-	-	40	71	48	49	69
Location Mean			**56**	**77**	**52**	**48**	**67**
S.E. of Mean			1.24	1.17	1.60	0.94	2.44
L.S.D. at 5%			3.53	3.33	3.81	2.68	6.95
C.V. %			3.8	2.63	4.34	3.42	6.32

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	Chile	China	Cyprus	Ethiopia	Greece	India		Italy
	Chillan	Xining	Athalassa	Holleta	Makedonia	Kanpur	New Delhi	Caltagirone
Syrian Local Aleppo	92	85	105	70	113	32	87	91
Local Sel 1690	92	83	104	71	114	34	88	91
K-129	92	83	114	82	116	31	88	91
MG100446	81	78	94	65	106	-	65	86
MG100726	87	76	94	63	109	31	71	89
MG101197	91	80	100	66	110	31	78	91
MG101831	91	79	100	73	110	29	86	90
MG102029	83	77	96	66	107	34	71	88
MG102256	87	80	98	66	108	31	73	87
MG102369	83	77	95	66	108	30	63	87
MG102469	91	81	101	66	110	31	85	91
MG102702	85	80	100	69	109	29	85	91
MG102703	89	83	101	71	109	29	84	90
MG104325	92	84	99	70	106	30	81	87
G22763-2C	87	83	106	72	111	-	86	90
Collegian	89	84	99	69	107	29	81	87
Derrimut	81	77	94	69	104	31	65	87
Early dun	89	84	103	76	115	34	72	91
Le 25	83	80	95	61	109	32	65	90
PS210713	87	78	98	59	106	31	65	86
PS210688	82	68	91	63	103	30	56	86
Umatilla	87	71	93	65	104	29	61	86
PS510571	82	75	90	63	103	34	55	86
Local Check	85	84	107	67	117	32	72	86
Location Mean	**87**	**80**	**99**	**68**	**109**	**31**	**74**	**89**
S.E. of Mean	0.21	1.93	0.62	0.22	1.30	0.79	0.43	0.63
L.S.D. at 5%	0.61	5.49	1.77	0.61	3.69	2.26	1.22	1.79
C.V. %	0.43	4.20	1.09	0.55	2.06	4.40	1.00	1.23

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	Jordan		Lebanon	Lesotho	Libya		Lithuania	Portugal
	Maru	Mushaggar	Terbol	Siloe	Sebha	Zahra	Kedainiai	Elvas
Syrian Local Aleppo	122	90	149	147	91	90	47	123
Local Sel 1690	122	91	149	147	89	89	47	123
K-129	133	95	143	148	116	101	43	124
MG100446	119	81	134	144	85	86	34	107
MG100726	119	88	135	148	92	88	43	100
MG101197	121	89	143	147	88	88	45	124
MG101831	121	87	144	148	93	95	46	124
MG102029	119	88	143	147	85	88	44	114
MG102256	119	88	136	147	88	85	45	114
MG102369	116	81	134	141	84	84	41	99
MG102469	121	86	144	147	91	90	46	117
MG102702	120	87	136	148	89	87	45	112
MG102703	120	88	140	147	88	87	45	125
MG104325	120	84	135	147	86	90	43	124
G22763-2C	135	92	143	147	91	89	44	123
Collegian	121	82	135	148	86	90	43	123
Derrimut	113	75	133	147	80	87	43	100
Early dun	125	89	140	147	89	92	46	124
Le 25	119	81	135	147	88	84	43	124
PS210713	119	83	135	147	86	89	40	114
PS210688	106	79	129	148	74	84	32	97
Umatilla	116	81	131	148	83	88	41	115
PS510571	106	78	127	148	72	84	30	98
Local Check	117	83	147	147	87	78	47	112
Location Mean	**120**	**85**	**138**	**147**	**88**	**88**	**43**	**115**
S.E. of Mean	3.59	2.31	0.38	1.40	1.36	4.30	0.74	1.46
L.S.D. at 5%	10.20	6.57	1.08	NS	3.86	NS	2.09	4.15
C.V. %	5.20	4.68	0.48	1.65	2.68	8.47	2.99	2.20

Cont'd. ...

Table 5.1.2. Cont'd. ...

Entry Name	Qatar Rawdat Harma	Saudi Arabia Al Gassim	Spain Badajoz	Sri Lanka Bandarawela	Syria Tel Hadya	Tunisia Sousse	Turkey Samsun	**Overall Mean (1)**
Syrian Local Aleppo	90	85	131	55	129	78	70	93
Local Sel 1690	86	84	132	55	129	70	70	92
K-129	137	118	145	60	132	69	66	100
MG100446	49	76	112	55	123	68	66	83
MG100726	59	72	117	55	120	76	67	85
MG101197	71	80	128	60	127	79	69	90
MG101831	90	82	131	58	128	76	69	92
MG102029	53	75	114	58	121	72	66	85
MG102256	70	79	123	55	124	72	69	87
MG102369	52	74	110	60	121	77	67	83
MG102469	75	81	128	55	124	77	69	90
MG102702	72	79	123	58	125	75	68	89
MG102703	76	83	122	55	128	73	69	90
MG104325	73	82	123	55	124	66	68	89
G22763-2C	96	83	131	60	130	74	70	93
Collegian	70	79	124	58	123	67	68	88
Derrimut	60	73	109	55	121	67	66	82
Early dun	86	84	132	55	129	72	70	92
Le 25	65	82	121	55	122	73	67	86
PS210713	65	79	115	57	123	81	66	85
PS210688	48	66	100	55	118	67	67	78
Umatilla	52	82	108	55	120	74	66	83
PS510571	49	66	101	60	112	66	63	78
Local Check	-	72	117	55	125	66	66	
Location Mean	**71**	**80**	**121**	**57**	**124**	**72**	**68**	
S.E. of Mean	3.87	0.85	1.25	0.48	0.51	4.08	0.80	
L.S.D. at 5%	8.17	2.42	3.55	1.35	1.44	NS	2.29	
C.V. %	6.95	1.85	1.79	1.45	0.71	9.78	2.06	

(1) Ishurdi in Bangladesh and Kanpur in India with missing values were excluded from overall mean.
NS = Not significant at $P \leq 0.05$.

Table 5.1.3. Time to maturity (days) of entries at different locations in the PIAT-93.

Entry Name	Bangladesh		Bolivia	Bulgaria	Burundi	Chile	China	Ethiopia	Greece
	Ishurdi	Mymensingh	Cochabamba	Toshevo	Gisozi	Chillan	Xining	Holleta	Makedonia
Syrian Local Aleppo	151	120	112	88	132	145	123	134	149
Local Sel 1690	147	119	112	89	131	145	122	134	149
K-129	-	-	113	87	169	144	121	140	149
MG100446	138	118	88	87	123	141	121	132	149
MG100726	143	118	100	85	121	142	120	132	149
MG101197	143	118	108	88	132	145	123	137	149
MG101831	142	117	112	86	134	145	123	132	149
MG102029	131	119	98	87	119	141	118	130	149
MG102256	145	116	111	87	126	142	123	134	149
MG102369	149	119	95	88	125	141	121	134	149
MG102469	144	120	100	89	130	145	123	135	149
MG102702	138	115	118	88	134	141	121	134	149
MG102703	129	121	103	90	130	145	123	132	149
MG104325	142	121	113	86	119	145	121	130	149
G22763-2C	138	120	105	89	131	143	124	132	149
Collegian	144	120	100	86	121	144	120	132	149
Derrimut	133	120	103	85	122	140	119	130	149
Early dun	148	121	104	86	132	144	122	135	149
Le 25	105	120	102	89	118	140	120	130	149
PS210713	100	113	87	85	117	142	118	120	149
PS210688	121	114	89	85	120	141	119	130	149
Umatilla	130	113	93	84	120	142	120	120	149
PS510571	155	116	98	84	120	140	119	120	149
Local Check	128	114	93	86	131	141	123	134	149
Location Mean	**137**	**118**	**102**	**87**	**127**	**143**	**121**	**131**	**149**
S.E. of Mean	14.37	0.83	3.23	1.05	0.77	0.83	1.42	1.37	
L.S.D. at 5%	NS	2.36	7.71	2.98	2.18	2.36	NS	3.89	
C.V. %	18.20	1.22	4.47	2.09	1.04	1.01	2.03	1.80	

Cont'd. ...

Table 5.1.3. Cont'd. ...

Entry Name	India		Jordan		Lebanon	Lesotho	Libya		Lithuania
	Kanpur	New Delhi	Maru	Mushaggar	Terbol	Siloe	Sebha	Zahra	Kedainiai
Syrian Local Aleppo	125	137	168	127	191	177	139	158	96
Local Sel 1690	123	133	168	129	190	177	142	156	98
K-129	119	141	199	131	186	182	153	178	90
MG100446	-	111	160	127	188	181	134	155	95
MG100726	118	117	166	129	186	172	140	154	95
MG101197	117	127	174	125	191	176	150	156	94
MG101831	117	135	169	129	189	176	143	157	98
MG102029	122	118	163	125	188	177	142	157	95
MG102256	119	123	164	131	187	181	142	156	94
MG102369	122	110	163	127	188	173	140	155	95
MG102469	122	136	174	129	190	177	146	165	98
MG102702	119	134	168	125	187	177	148	155	93
MG102703	119	137	167	130	190	181	138	157	95
MG104325	117	131	167	124	187	177	139	156	92
G22763-2C	-	135	183	129	190	168	140	157	97
Collegian	118	132	174	123	188	172	136	155	89
Derrimut	120	115	161	120	185	173	136	152	87
Early dun	123	123	173	124	187	177	142	157	96
Le 25	121	116	167	126	187	172	142	154	91
PS210713	121	116	164	124	188	176	129	151	90
PS210688	118	111	154	128	185	177	136	155	81
Umatilla	118	109	158	122	189	168	129	151	92
PS510571	118	105	144	122	183	177	132	152	73
Local Check	120	123	163	123	191	173	142	157	92
Location Mean	**120**	**124**	**167**	**126**	**188**	**176**	**140**	**156**	**92**
S.E. of Mean	1.09	0.75	4.40	1.73	0.57	3.75	3.03	1.67	0.99
L.S.D. at 5%	3.12	2.13	12.52	4.93	1.63	NS	8.61	4.75	2.82
C.V. %	1.58	1.04	4.56	2.38	0.53	3.70	3.74	1.85	1.86

Cont'd. ...

Table 5.1.3. Cont'd. ...

Entry Name	Portugal Elvas	Qatar Rawdat	Saudi Arabia Gassim	Spain Badajoz	Sri Lanka Banda-rawela	Syria Tel-Hadya	Tunisia Sousse	Turkey Samsun	**Overall Mean (1)**
Syrian Local Aleppo	188	144	141	203	98	163	156	106	142
Local Sel 1690	188	143	142	199	100	164	148	103	142
K-129	188	167	160	202	107	169	147	96	149
MG100446	183	133	146	188	97	165	146	99	137
MG100726	180	140	140	180	98	164	154	99	138
MG101197	185	142	148	197	97	169	157	105	142
MG101831	183	150	145	199	98	167	154	102	142
MG102029	180	131	141	180	95	162	150	96	137
MG102256	183	153	141	187	97	163	150	104	140
MG102369	183	134	139	185	97	163	155	105	138
MG102469	188	145	149	196	101	168	155	101	143
MG102702	183	152	146	183	95	165	153	107	142
MG102703	183	145	147	197	100	167	151	110	142
MG104325	180	136	137	179	95	160	144	99	138
G22763-2C	188	148	145	201	100	164	152	107	142
Collegian	180	135	139	188	97	161	145	101	138
Derrimut	180	137	138	174	97	161	145	100	135
Early dun	180	144	145	187	103	163	150	105	140
Le 25	183	144	144	188	98	159	151	100	138
PS210713	180	130	144	184	97	153	159	97	135
PS210688	180	132	143	176	88	160	145	99	134
Umatilla	180	128	141	187	90	157	152	90	134
PS510571	180	131	138	175	95	154	144	89	131
Local Check	180	-	146	184	83	167	144	102	
Location Mean	**183**	**141**	**144**	**188**	**97**	**163**	**150**	**101**	
S.E. of Mean	1.56	1.89	0.89	2.03	1.81	1.21	4.08	1.74	
L.S.D. at 5%	4.44	5.38	2.54	5.78	5.14	3.45	NS	4.96	
C.V. %	1.48	2.32	1.08	1.87	3.23	1.29	4.70	2.99	

(1) Ishurdi and Mymensingh in Bangladesh and Kanpur in India with missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 5.1.4. Plant height (cm) of entries at different locations in the PIAT-93.

Entry Name	Bangladesh Ishurdi	Bangladesh Mymen-singh	Bolivia Cocha-bamba	Bulgaria Toshevo	Burundi Gisozi	Chile Chillan	China Xining	Cyprus Atha-lassa	Ethiopia Holleta	Greece Make-donia	Jordan Maru
Syrian Local Aleppo	191	187	86	110	153	133	99	102	132	72	78
Local Sel 1690	210	204	102	114	137	140	99	117	133	75	85
K-129	-	-	59	100	123	95	88	120	120	78	67
MG100446	138	131	73	95	125	113	82	107	113	75	67
MG100726	197	176	87	98	138	132	97	98	131	75	78
MG101197	173	160	97	101	127	133	100	110	130	75	73
MG101831	188	195	106	114	155	135	120	110	136	82	72
MG102029	148	128	81	105	132	113	75	112	121	68	87
MG102256	202	139	89	94	145	117	106	117	139	65	72
MG102369	177	128	96	103	142	125	128	108	139	75	82
MG102469	198	156	92	98	145	140	144	115	132	78	73
MG102702	177	122	83	96	127	112	91	100	126	72	80
MG102703	153	137	76	69	138	132	102	103	120	72	67
MG104325	212	148	94	106	132	107	106	122	139	75	73
G22763-2C	163	153	88	98	148	120	117	113	121	70	70
Collegian	178	158	92	104	133	120	112	107	121	70	70
Derrimut	163	126	84	80	128	92	80	87	119	73	62
Early dun	183	139	93	116	142	120	109	113	137	80	87
Le 25	97	124	38	59	50	62	44	75	84	63	62
PS210713	73	161	39	57	53	52	50	80	61	57	47
PS210688	135	133	77	97	123	92	87	95	125	62	73
Umatilla	168	164	79	102	113	100	95	87	145	60	60
PS510571	141	156	78	84	110	97	89	97	146	72	80
Local Check	153	124	34	49	137	62	130	102	123	75	62
Location Mean	**166**	**150**	**80**	**94**	**127**	**110**	**98**	**104**	**125**	**72**	**72**
S.E. of Mean	12.17	14.75	6.56	8.52	4.73	8.93	8.62	7.18	6.55	6.69	4.53
L.S.D. at 5%	34.69	42.03	15.66	24.25	13.47	25.43	24.53	20.43	18.65	NS	12.89
C.V. %	12.69	17.03	11.61	15.74	6.44	14.06	15.25	11.96	9.10	16.18	10.91

Cont'd. ...

Table 5.1.4. Cont'd. ...

Entry Name	Jordan Mushaggar	Lebanon Terbol	Lesotho Siloe	Libya Sebha	Libya Zahra	Lithuania Kedai-niai	Qatar Rawdat-harma	Spain Bada-joz	Sri Lanka Banda-rawela	Syria Tel-Hadya	Tunisia Sousse	Turkey Samsun	**Overall Mean (1)**
Syrian L. A.	83	84	71	102	104	117	160	88	82	62	76	105	100
Local Sel 1690	77	85	77	108	96	122	160	85	77	62	74	102	101
K-129	73	89	52	102	92	89	90	74	86	38	73	77	85
MG100446	59	81	66	89	96	97	117	75	44	57	93	89	86
MG100726	77	90	64	123	101	93	137	91	74	61	121	105	99
MG101197	70	81	59	125	101	108	165	82	66	53	111	101	98
MG101831	93	92	72	121	105	118	192	104	76	58	125	107	109
MG102029	64	84	47	116	92	78	142	79	65	63	101	94	91
MG102256	67	81	55	109	94	105	125	78	65	63	106	97	95
MG102369	73	82	63	106	102	112	155	72	65	58	103	91	99
MG102469	84	96	69	116	101	132	152	81	91	50	104	92	104
MG102702	79	81	55	101	87	95	133	75	78	65	106	96	92
MG102703	77	83	62	110	94	107	132	76	67	59	113	90	93
MG104325	77	71	58	124	91	95	145	87	91	61	112	101	98
G22763-2C	57	86	68	107	100	117	145	90	81	58	100	90	97
Collegian	83	80	43	103	103	101	167	91	81	64	111	103	98
Derrimut	62	73	43	84	89	77	123	75	76	51	111	85	84
Early dun	88	87	66	110	100	122	133	85	74	62	97	113	102
Le 25	73	50	23	74	72	58	125	48	40	34	82	54	60
PS210713	55	46	39	63	63	55	92	52	48	40	108	55	58
PS210688	62	73	38	87	89	65	123	64	73	59	83	91	83
Umatilla	67	83	40	92	96	88	130	75	69	59	91	82	86
PS510571	59	69	48	81	86	58	115	85	68	57	77	96	83
Local Check	45	55	62	76	66	77	–	48	60	39	100	109	
Location Mean	**71**	**78**	**56**	**101**	**92**	**95**	**137**	**77**	**71**	**56**	**99**	**93**	
S.E. of Mean	8.27	3.16	5.44	7.21	6.92	3.71	13.55	5.71	4.18	2.80	13.80	3.63	
L.S.D. at 5%	23.53	9.00	15.47	20.52	19.68	10.56	38.62	16.26	11.89	7.98	NS	10.34	
C.V. %	20.18	6.98	16.87	12.35	12.96	6.75	17.10	12.78	10.23	8.73	24.11	6.79	

(1) Ishurdi and Mymensingh in Bangladesh with missing values were excluded from overall mean.
NS = Not significant at $P \leq 0.05$.

Table 5.1.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in the PIAT-93.

Entry Name	Bangladesh Ishurdi Y	Bangladesh Ishurdi R	Bangladesh Mymensingh Y	Bangladesh Mymensingh R	Bolivia Cochabamba Y	Bolivia Cochabamba R	Bulgaria Toshevo Y	Bulgaria Toshevo R	Burundi Gisozi Y	Burundi Gisozi R	Chile Chillan Y	Chile Chillan R	China Xining Y	China Xining R	Cyprus Athalassa Y	Cyprus Athalassa R
S.L.A.	1294	13	1463	6	2028	6	2007	10	661	8	3482	6	2963	6	2118	19
L.S. 1690	1006	16	841	10	2615	1	2292	2	675	7	3886	2	3128	4	2403	17
K-129	-	-	-	-	992	20	2035	8	52	24	2565	23	1905	22	1677	23
MG100446	1868	3	2454	2	1108	17	1785	16	584	12	3331	9	2479	13	3024	7
MG100726	1754	5	1697	4	1329	14	2056	7	658	9	2859	18	2033	19	2726	10
MG101197	744	23	978	9	1144	16	1792	15	497	16	2693	21	2338	15	2396	18
MG101831	890	22	522	14	1013	19	1681	20	439	17	3836	4	3190	2	2427	16
MG102029	1819	4	792	11	1366	12	2667	1	918	2	3866	3	1835	23	3125	6
MG102256	892	21	232	20	2091	5	1917	13	763	5	3342	8	1996	20	3358	2
MG102369	1008	15	624	12	1325	15	1938	12	701	6	2853	19	2731	9	1644	24
MG102469	967	19	108	23	1351	13	2097	4	530	14	3148	11	2216	16	2635	12
MG102702	1133	14	248	19	2157	3	1750	19	840	3	2340	24	2584	12	2646	11
MG102703	1416	10	511	15	1478	10	1535	23	825	4	2923	15	2073	17	3142	5
MG104325	1444	9	622	13	2104	4	1667	21	379	20	3075	12	3116	5	2747	9
G22763-2C	937	20	252	18	792	22	2069	5	1038	1	3504	5	2342	14	3198	4
Collegian	1397	11	387	17	1471	11	1778	17	542	13	3321	10	2877	7	3441	1
Derrimut	2181	2	484	16	2253	2	1757	18	625	11	2914	16	2695	10	2094	20
Early dun	987	18	143	22	1103	18	1896	14	341	23	3042	13	3132	3	2625	13
Le 25	1000	17	178	21	922	21	1597	22	377	21	2690	22	1505	24	2451	15
PS210713	1592	6	1346	7	721	23	2007	9	517	15	2799	20	1922	21	3250	3
PS210688	1560	7	1897	3	1729	8	1486	24	438	18	3008	14	3336	1	1934	22
Umatilla	1294	12	1289	8	1648	9	1938	11	431	19	2875	17	2628	11	2608	14
PS510571	1465	8	1500	5	1951	7	2063	6	374	22	3419	7	2055	18	2934	8
Local Check	2243	1	2787	1	644	24	2097	3	645	10	4124	1	2815	8	2083	21
Location Mean	**1343**		**929**		**1472**		**1913**		**577**		**3162**		**2496**		**2612**	
S.E. of Mean	240.36		199.21		126.69		168.55		115.42		256.33		350.38		371.53	
L.S.D. at 5%	685.08		567.80		302.67		479.78		328.54		729.66		997.36		1057.58	
C.V. %	31.00		37.16		12.17		15.26		34.64		14.04		24.32		24.64	
Entry> L. check	0		0		20		1		1		0		0		5	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	Ethiopia Holleta		Greece Makedonia		India Kanpur		India New Delhi		Italy Caltagirone		Jordan Maru		Jordan Mushaggar	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
S.L.A.	4668	2	1857	5	1460	8	2014	20	769	6	762	5	2149	1
L.S. 1690	4774	1	1714	9	1667	2	3139	8	520	19	871	3	1116	20
K-129	2531	21	1524	15	476	21	1181	24	908	2	1265	2	1870	2
MG100446	3569	16	1429	17	-	-	2500	16	609	13	735	7	1140	19
MG100726	4243	8	1190	24	1492	7	9306	2	449	21	476	16	1200	17
MG101197	3431	17	1429	19	1079	12	1597	23	635	12	422	18	1561	9
MG101831	3982	11	1571	13	873	17	2847	13	645	11	694	8	1380	12
MG102029	4178	9	1905	3	1032	13	2118	19	991	1	1265	1	1285	13
MG102256	4432	5	1714	8	1127	11	9340	1	666	10	694	9	952	23
MG102369	3642	15	1762	7	952	15	3646	6	547	17	762	6	1642	6
MG102469	4422	7	1429	18	1381	9	1753	21	766	7	408	19	1737	5
MG102702	3860	13	1476	16	1556	4	2951	10	427	22	340	22	855	24
MG102703	3900	12	1190	23	1540	5	2361	18	559	15	463	17	1211	16
MG104325	4531	4	1667	11	1492	6	3958	5	600	14	490	14	1538	10
G22763-2C	4556	3	1571	12	-	-	2847	12	537	18	272	23	1046	21
Collegian	4026	10	1381	20	1667	3	4722	3	823	3	395	20	1748	4
Derrimut	4425	6	1571	14	1746	1	2951	11	414	23	218	24	1767	3
Early dun	3725	14	1952	2	1000	14	1684	22	686	9	544	11	1613	7
Le 25	2267	22	1286	21	873	16	2951	9	818	4	517	13	1229	15
PS210713	989	24	1810	6	1238	10	4271	4	784	5	527	12	1581	8
PS210688	3140	20	1857	4	714	18	3368	7	558	16	476	15	1016	22
Umatilla	3330	18	1667	10	508	20	2476	17	413	24	639	10	1262	14
PS510571	2175	23	2286	1	468	22	2743	14	714	8	795	4	1407	11
Local Check	3189	19	1286	22	540	19	2708	15	508	20	367	21	1182	18
Location Mean	**3666**		**1605**		**1131**		**3310**		**639**		**600**		**1395**	
S.E. of Mean	440.22		226.09		80.19		1930.97		91.78		235.82		331.90	
L.S.D. at 5%	1253.09		NS		228.86		NS		261.25		NS		NS	
C.V. %	20.80		24.40		12.28		101.00		24.86		68.09		41.20	
Entry> L. check	4		-		17		-		5		-		-	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	Lebanon Terbol		Lesotho Siloe		Libya Sebha		Libya Zahra		Lithuania Kedainiai		Portugal Elvas		Qatar Rawdat Harma	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
S.L.A.	2952	7	2140	3	5486	9	2429	3	2605	16	2021	20	6014	9
L.S. 1690	3508	2	2233	2	5972	4	1992	6	3248	6	2224	18	5958	10
K-129	3143	4	1997	6	3264	24	371	22	3089	8	2385	12	396	23
MG100446	2952	6	1565	19	4931	15	1475	13	2181	21	2958	2	4597	20
MG100726	2468	15	1631	17	5208	13	1569	11	2102	22	2568	7	6257	7
MG101197	2421	17	1797	13	4028	23	2304	5	2384	19	2398	11	4625	19
MG101831	2444	16	2137	4	4722	17	2475	2	3862	1	2758	4	4056	22
MG102029	2889	9	1867	10	6319	1	2558	1	2944	9	2625	6	6361	6
MG102256	2675	14	1906	8	5556	7	1375	14	3408	3	2135	19	6181	8
MG102369	2294	19	1901	9	4653	18	1142	15	2856	10	2279	16	5049	16
MG102469	2810	12	1974	7	4722	16	1025	16	3199	7	2906	3	4743	18
MG102702	2841	10	1297	21	5278	11	1704	10	2635	15	1794	23	5493	12
MG102703	2833	11	1739	11	5694	6	1854	8	2837	11	2250	17	4764	17
MG104325	2921	8	1858	14	5486	10	1533	12	2702	13	2281	15	7417	2
G22763-2C	3111	5	1788	20	5069	14	1963	7	3267	4	2625	5	5167	14
Collegian	3246	3	1458	18	4375	22	2315	4	3254	5	2438	10	6403	5
Derrimut	2413	18	1616	1	5208	12	588	19	2363	20	2440	9	6819	3
Early dun	2810	13	2236	12	5556	8	1775	9	3646	2	3411	1	5125	15
Le 25	2087	22	1813	16	5764	5	542	21	2538	17	1193	24	5201	13
PS210713	1754	24	1682	24	5972	3	108	24	2675	14	2000	21	8049	1
PS210688	2214	20	774	22	4583	20	921	17	1949	23	2484	8	6597	4
Umatilla	2087	23	1282	23	4444	21	217	23	2783	12	1997	22	4569	21
PS510571	2111	21	1228	5	4653	19	742	18	1686	24	2354	13	5681	11
Local Check	5167	1	2018	0	6042	2	575	20	2514	18	2346	14		
Location Mean	**2756**		**1747**		**5124**		**1398**		**2780**		**2370**		**5457**	
S.E. of Mean	882.42		221.35		556.63		355.72		339.24		253.67		623.30	
L.S.D. at 5%	NS		630.08		NS		1012.56		965.65		722.07		1776.53	
C.V. %	55.45		21.94		18.81		44.07		21.13		18.54		19.78	
Entry>L. check	-		0		-		10		2		1		1	

Cont'd. ...

Table 5.1.5. Cont'd. ...

Entry Name	Saudi Arabia Gassim		Spain Badajoz		Spain Valladolid		Sri Lanka Bandarawela		Syria Tel Hadya		Tunisia Sousse		Turkey Samsun		Overall Mean (1)	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
S.L.A.	2238	17	870	22	4233	3	485	10	2924	1	1707	24	1574	1	2429	10
L.S. 1690	1449	24	752	23	4267	2	436	14	2850	2	3642	17	1193	10	2571	5
K-129	3987	9	1706	1	4000	7	41	23	2147	10	2510	22	1014	21	1868	23
MG100446	1805	23	1094	16	3833	10	470	11	1921	18	4644	7	1131	13	2225	18
MG100726	3098	14	1363	7	3500	17	321	18	1776	21	2344	23	1290	5	2462	7
MG101197	3322	13	1098	15	4183	4	248	20	2143	11	4157	13	1419	3	2172	19
MG101831	5300	1	1003	18	3267	21	160	22	2172	8	4463	9	1281	6	2454	8
MG102029	4392	6	1367	6	3650	12	547	7	2585	3	4361	11	915	22	2650	2
MG102256	3573	12	1422	5	3300	20	212	21	1861	20	3831	15	1214	9	2689	1
MG102369	4105	7	1237	10	3900	8	459	12	2214	7	6237	1	1111	15	2409	11
MG102469	5270	2	952	19	3567	14	348	15	2027	16	3267	18	1276	7	2330	13
MG102702	4394	5	1116	14	3367	19	310	19	2426	5	4335	12	1100	17	2320	15
MG102703	3917	10	887	21	3517	16	335	17	2472	4	4526	8	1109	16	2323	14
MG104325	2562	15	1346	8	4417	1	656	6	2380	6	5199	6	1070	18	2604	3
G22763-2C	3730	11	1038	17	3433	18	346	16	2090	15	2819	21	1133	12	2360	12
Collegian	4840	4	1151	13	3550	15	910	1	2129	13	3698	16	1019	20	2589	4
Derrimut	4044	8	1583	3	3600	13	782	4	1946	17	5398	5	904	23	2438	9
Early dun	5014	3	1678	2	4133	6	38	24	2112	14	5515	4	1328	4	2566	6
Le 25	1890	21	1162	12	3250	22	496	8	1345	23	3194	20	1038	19	1928	22
PS210713	2197	18	1279	9	3833	9	485	9	2165	9	4400	10	1215	8	2269	16
PS210688	2081	20	1233	11	4167	5	444	13	2133	12	5519	3	1167	11	2254	17
Umatilla	1838	22	517	24	2750	24	806	3	1889	19	3233	19	786	24	1966	21
PS510571	2386	16	898	20	3683	11	656	5	1720	22	4147	14	1125	14	2153	20
Local Check	2165	19	1563	4	3067	23	825	2	1141	24	5706	2	1530	2		
Location Mean	**3317**		**3686**		**3686**		**451**		**2107**		**4119**		**1164**			
S.E. of Mean	839.32		279.83		279.83		53.68		294.75		879.96		119.37			
L.S.D. at 5%	2389.16		796.56		796.56		152.80		839.02		NS		339.80			
C.V. %	43.83		13.15		13.15		20.63		24.23		37.01		17.76			
Entry >L. check	4		8		8		0		16		-		0			

(1) Ishurdi and Mymensingh in Bangladesh and Kanpur in India with missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 5.1.6. The five heaviest seed yielding entries at the individual locations in the PIAT during 1992/93.

Country	Location	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Bangladesh	Ishurdi	Local check	Derrimut	MG100446	MG102029	MG100726
Bangladesh	Mymensingh	Local check	MG100446	PS210668	MG100726	PS510571
Bolivia	Cochabamaba	L.S. 1690	Derrimut	MG102702	MG104325	MG102256
Bulgaria	Toshevo	MG102029	L.S. 1690	Local check	MG102469	G22763-2C
Burundi	Gisozi	G22763-2C	MG102029	MG102702	MG102703	MG102256
Chile	Chillan	Local check	L.S. 1690	MG102029	MG101831	G22763-2C
China	Xining	PS210688	MG101831	Early dun	L.S. 1690	MG104325
Cyprus	Athalassa	Collegian	MG102256	PS210713	G22763-2C	MG102703
Ethiopia	Holleta	L.S. 1690	S.L.A.	G22763-2C	MG104325	MG102256
Greece	Makedonia	PS510571	Early dun	MG102029	PS210688	S.L.A.
India	Kanpur	Derrimut	L.S. 1690	Collegian	MG102702	MG102703
India	New Delhi	MG102256	MG100726	Collegian	PS210713	MG104325
Italy	Caltagirone	MG102029	K-129	Collegian	Le 25	PS210713
Jordan	Maru	MG102029	K-129	L.S. 1690	FPS510571	S.L.A.
Jordan	Mushaggar	S.L.A.	K-129	Derrimut	Collegian	MG102469
Lebanon	Terbol	Local check	L.S. 1690	Collegian	K-129	G22763-2C
Lesotho	Siloe	Derrimut	L.S. 1690	S.L.A.	MG101831	PS510571
Libya	Sebha	MG102029	Local check	PS210713	L.S. 1690	Le 25
Libya	Zahra	MG102029	MG101831	S.L.A.	Collegian	MG101197
Lithuania	Kedainiai	MG101831	Early dun	MG102256	G22763-2C	Collegian
Portugal	Elvas	Early dun	MG100446	MG102469	MG101831	G22763-2C
Qatar	Rawdat Harma	PS210713	MG104325	Derrimut	PS210668	Collegian
Saudia Arabia	Al Gassim	MG101831	MG102469	Early dun	Collegian	MG102702
Spain	Badajoz	K-129	Early dun	Derrimut	Local check	MG102256
Spain	Valladoloid	MG104325	L.S. 1690	S.L.A.	MG101197	PS210688
Sri Lanka	Bandarawela	Collegian	Local check	Umatilla	Derrimut	PS510571
Syria	Tel Hadya	S.L.A.	L.S. 1690	MG102029	MG102703	MG102702
Tunisia	Sousse	MG102369	Local check	PS210688	Early dun	Derrimut
Turkey	Samsun	S.L.A.	Local check	MG101197	Early dun	MG100726

On the basis of average seed yield over two years for the common entries (Table 5.1.7), Local Selection 1690 ranked number 1 and was followed by Collegian, Derrimut, S.L. Aleppo and PS 210713 with seed yields of 2486, 2483, 2370, 2360, and 2273 kg/ha, respectively.

Table 5.1.7. The mean seed yield (Y=kg/ha) and rank(R) of the common entries in PIAT during 1991/92 and 1992/93.

Entry Name	1991/92		1992/93		Mean	
	Y	R	Y	R	Y	R
S.L. Aleppo	2291	5	2429	5	2360	4
L.S. 1690	2400	1	2571	2	2486	1
MG 101197	1936	8	2172	10	2054	11
MG 102369	1867	11	2409	6	2138	8
MG 102702	2077	7	2320	7	2199	7
Collegian	2377	2	2589	1	2483	2
Derrimut	2301	4	2438	4	2370	3
Early dun	1900	10	2566	3	2233	6
Le 25	2342	3	1928	11	2135	9
PS 210713	2276	6	2269	8	2273	5
PS 210688	1909	9	2254	9	2082	10

The biological yield or biomass of entries were reported from 4 locations (Table 5.1.8). The biomass was highest for Syrian Local Aleppo (5898 kg/ha) and was followed by Local Selection 1690 (5822 kg/ha), K-129 (5280 kg/ha), Early dun (5096 kg/ha) and MG 102469 (4743 kg/ha).

Table 5.1.8. Biological yield (Y=kg/ha) and rank (R) of entries at different locations in the PIAT-93.

Entry Name	Greece Makedonia		Jordan Mushaggar		Lebanon Terbol		Syria Tel Hadya		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R
S.L.A.	6190	3	4701	1	6794	2	5905	1	5898	1
L.S. 1690	5381	7	4285	3	7786	1	5835	2	5822	2
K-129	5667	4	4409	2	6690	3	4352	5	5280	3
MG100446	3952	22	2141	21	5881	9	3665	14	3910	17
MG100726	3286	24	2350	17	4627	19	2960	22	3306	23
MG101197	5190	11	3263	10	5690	10	3571	17	4429	10
MG101831	5619	5	3313	9	5460	15	4010	10	4600	7
MG102029	5381	6	2419	16	6587	4	3965	11	4588	8
MG102256	5143	12	1864	23	5603	13	3583	16	4048	16
MG102369	5238	9	3104	12	4706	17	4188	7	4309	13
MG102469	5286	8	3590	4	6000	7	4097	9	4743	5
MG102702	4333	18	1794	24	5611	12	4677	4	4104	15
MG102703	4095	21	2905	13	5667	11	4869	3	4384	11
MG104325	5238	10	3313	8	5524	14	3306	19	4345	12
G22763-2C	5095	13	3215	11	6159	6	4114	8	4646	6
Collegian	4143	20	3451	6	6381	5	3852	13	4457	9
Derrimut	4905	14	3382	7	5206	16	3532	18	4256	14
Early dun	6714	2	3451	5	5960	8	4257	6	5096	4
Le 25	4476	17	2201	19	4643	18	2358	24	3420	21
PS210713	3952	23	2627	14	3294	23	3639	15	3378	22
PS210688	4571	16	1933	22	4516	22	3956	12	3744	18
Umatilla	4190	19	2201	18	4556	20	3261	20	3552	20
PS510571	4667	15	2534	15	4556	21	2963	21	3680	19
Local Check	6762	1	2141	20	2746	24	2571	23		
Location Mean	**4978**		**2941**		**5443**		**3895**			
S.E. of Mean	773.27		699.14		540.35		526.28			
L.S.D. at 5%	NS		NS		1538.11		1498.08			
C.V. %	26.90		41.17		17.19		23.40			
Entry > L. Check	-		-		22		9			

NS = Not significant at $P \leq 0.05$.

5.2. INTERNATIONAL LATHYRUS ADAPTATION TRIAL (ILAT)

Material

The International Lathyrus Adaptation Trial comprised 23 test entries which were supplied and one local check to be added by the cooperator. The test entries included 13 selections from *Lathyrus sativus* and 10 selections from *Lathyrus cicera*. The test entries were selected on the basis of their superior performance in earlier seasons.

Methods and Management

The suggested trial design was a randomized complete block design with 3 replications. The recommended plot size was four rows, each 4 m long with interrow spacing of 30 cm. Eight hundred seeds per plot were supplied.

Sixty seven sets of the trial were sent to cooperators in 30 countries. The results were, however, returned for 26 trials from 18 countries. The agronomic information received from cooperators is given in Table 5.2.1.

Results and Discussion

The entry means over all locatons for *Lathyrus sativus* varied from 96 to 108 days for time to flowering (Table 5.2.2), 148 to 158 days for time to maturity (Table 5.2.3) and 57 to 71 cm for plant height (Table 5.2.4). On the basis of average over locations, the *Lathyrus sativus* entries yield between 1434 and 2024 kg/ha (Table 5.2.5). The five best seed yielding entries included, IFLA 206 Sel 463, IFLA 199 Sel 452, IFLA 200 Sel 453, IFLA 188 Sel 38 and IFLA 277 Sel 476 with 2024, 1985, 1953, 1916 and 1883 kg/ha, respectively. The highest biomass (Table 5.2.6) was attained for IFLA 273 Sel 481 (6754 kg/ha) and was follwed by IFLA 201 Sel 455 (6246 kg/ha), IFLA 277 Sel 476 (6358 kg/ha), IFLA 200 Sel 453 (6246 kg/ha).

The entry means over all locations for *Lathyrus cicera* varied from 106 to 112 days for days to flowering, 147 to 150 days to maturity, 49 to 59 cm for plant height, 1261 to 1497 kg/ha for seed yield, and 3275 to 4193 kg/ha for biological yield. The five highest seed yielding entries from *Lathyrus cicera* included IFLA 142 Sel 496, IFLA 136 Sel 495, IFLA 536 Local, IFLA 121 Sel 491, and IFLA 119 Sel 489 with seed yields of 1497, 1468, 1433, 1425 and 1385 kg/ha respectively.

In general, the biological yield of entries from *Lathyrus sativus* were more when compared to entries from *Lathyrus cicera*. At Elvas in Portugal, Dirab in Saudi Arabia, and Tokat in Turkey, the biological yields of entries were very high. The entry IFLA 232 Sel 471 (16597 kg/ha) at Elvas (Portugal), IFLA 200 Sel 453 (21181 kg/ha) at Dirab (Saudi Arabia), and IFLA 188 Sel 38 (16019 kg/ha) at Tokat (Turkey) gave very high biological yield (Table 5.2.6).

Table 5.2.1. Agronomic details for ILAT-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Guelma	26.11.92	10.07.93	-	90	-	-	-	V.S. Languedoc
Bulgaria	Toshevo	22.04.93	05.08.93	-	60	-	-	Vastak, Agria 1050, Galant	Strandja
Chile	Valdivia	09.09.93	08.02.94	40	100	50	-	Linuron	Blanco Austral
China	Qinghai	24.04.93	12.10.93	14	35	-	-	-	-
Cyprus	Dromolaxia	20.11.92	29.04.93	70	200	-	-	-	Lathyrus Local
Ethiopia	Holleta	21.07.93	24.12.93	-	-	-	-	-	-
Greece	Makedonia	13.01.93	28.06.93	-	30	-	1	-	Argos (L-121)
India	Kanpur	05.12.92	20.04.93	-	-	-	2	-	Pusa 24
India	New Delhi	06.11.92	12.04.93	-	-	-	1	-	-
Italy	Catania	01.02.93	11.06.93	-	120	-	-	-	-
Italy	Tolentino	15.12.92	09.07.93	-	90	-	-	-	Cicerchia di Spoleto
Jordan	Mushaggar	NA	NA	-	100	-	-	-	*L. sativus*
Jordan	Rabba	04.01.93	02.06.93	-	100	-	-	-	*L. sativus*
Jordan	Ramtha	23.11.92	05.06.93	-	100	-	-	-	*L. sativus*
Lebanon	Kfardan	21.11.92	15.06.93	-	50	-	-	-	*L. sativus* (Acc. 347)
Lebanon	Terbol	01.04.93	22.07.93	-	50	-	-	Kerb + Fortrol	*L. sativus* (Acc. 347)
Libya	Komes	09.12.92	20.06.93	-	50	-	6	-	-
Libya	Zahra	02.12.92	22.05.93	-	50	-	11/9 mm	-	-
Morocco	El Koudia	30.11.92	18.06.93	-	51	34	-	-	-
Portugal	Elvas	13.11.92	21.06.93	-	50	-	-	-	*L. cicera* (Acc. 8617)
Qatar	Rawdat Harma	27.10.92	NA	90	150	-	1/10 days	-	-
Saudi Arabia	Al Gassim	12.11.92	NA	50	120	-	35/9mm	-	Local Commercial
Saudi Arabia	Dirab	08.11.93	25.04.94	50	300	-	-	Linuron + pendimethalin	-
Syria	Breda	18.11.92	15.06.93	-	40	-	-	-	Acc. 347 (Sel.587)
Turkey	Haymana	02.04.93	12.07.93	-	100	-	-	Decis, Linuron	-
Turkey	Tokat	17.03.93	04.08.93	30	30	-	-	Malathion	-

NA = Not Available

Table 5.2.2. Time to flowering (days) of entries at different locations in ILAT during 1992/93.

Entry Name	Selection	Origin	Algeria Guelma	Bulgaria Toshevo	Chile Valdivia	China Qinghai	Cyprus Dromolaxia	Ethiopia Holleta	Greece Makedonia	India Kanpur
A. Lathyrus sativus										
IFLA 347 Sel. Local		ICARDA	127	43	93	68	134	67	97	67
IFLA 3 Sel. 311		ICARDA	132	43	89	66	131	-	98	72
IFLA 170 Sel. 439		ICARDA	140	46	90	72	139	-	104	79
IFLA 205 Sel. 459		ICARDA	138	48	96	82	139	-	104	84
IFLA 232 Sel. 471		ICARDA	140	47	96	72	137	-	103	80
IFLA 178 Sel. 29		ICARDA	145	46	94	77	138	-	104	78
IFLA 188 Sel. 38		ICARDA	140	47	94	74	139	-	103	81
IFLA 199 Sel. 452		ICARDA	153	46	95	77	139	-	105	85
IFLA 200 Sel. 453		ICARDA	138	48	98	77	139	-	103	81
IFLA 201 Sel. 455		ICARDA	153	46	99	81	140	-	110	85
IFLA 206 Sel. 463		ICARDA	143	46	92	76	134	-	103	82
IFLA 277 Sel. 476		ICARDA	145	46	95	74	140	-	103	81
IFLA 273 Sel. 481		ICARDA	153	48	101	82	141	-	108	83
B. Lathyrus cicera										
IFLA 536 Sel. Local		ICARDA	146	54	96	78	138	101	104	90
IFLA 116 Sel. 488		ICARDA	137	53	99	77	132	91	101	91
IFLA 119 Sel. 489		ICARDA	151	53	94	77	130	91	101	89
IFLA 121 Sel. 491		ICARDA	148	54	94	78	131	96	101	91
IFLA 127 Sel. 492		ICARDA	151	53	91	77	141	92	106	91
IFLA 134 Sel. 493		ICARDA	135	53	90	77	131	90	102	91
IFLA 135 Sel. 494		ICARDA	135	53	97	77	132	90	104	91
IFLA 136 Sel. 495		ICARDA	138	53	92	77	130	91	100	91
IFLA 142 Sel. 496		ICARDA	134	53	94	77	130	93	102	91
IFLA 327 Sel. 500		ICARDA	137	53	91	77	131	96	101	92
Local check		-	137	48	95	82	122	-	102	67
Location Mean			**142**	**49**	**94**	**76**	**135**	**91**	**103**	**84**
S.E. of Mean			One	0.28	2.28	0.27	2.35	One	0.95	1.08
L.S.D. at 5%			rep	0.79	6.50	0.78	5.62	rep	2.70	2.57
C.V. %				0.98	4.19	0.62	2.47		1.60	1.82

Cont'd. ...

Table 5.2.2. Cont'd. ...

Accession No. (IFLA)	India	Italy		Jordan			Lebanon		Libya	
	New Delhi	Catania	Tolentino	Mushaggar	Rabba	Ramtha	Kfardan	Terbol	Komes	Zahra
A. Lathyrus sativus										
IFLA 347 Sel. Local	80	88	136	130	62	125	145	46	90	104
IFLA 3 Sel. 311	80	97	136	135	62	130	147	48	91	104
IFLA 170 Sel. 439	82	98	144	146	65	138	154	56	98	104
IFLA 205 Sel. 459	81	98	145	144	65	138	155	56	97	107
IFLA 232 Sel. 471	81	99	143	143	65	132	152	54	96	106
IFLA 178 Sel. 29	81	95	144	140	65	136	152	54	101	107
IFLA 188 Sel. 38	83	97	144	146	65	137	151	54	98	106
IFLA 199 Sel. 452	83	97	145	146	66	135	154	55	101	108
IFLA 200 Sel. 453	83	90	144	146	62	136	153	54	97	103
IFLA 201 Sel. 455	84	99	147	147	66	142	156	57	101	112
IFLA 206 Sel. 463	83	93	144	137	63	133	153	54	95	106
IFLA 277 Sel. 476	83	95	143	137	63	132	152	54	97	106
IFLA 273 Sel. 481	110	100	147	147	67	142	157	58	104	111
B. Lathyrus cicera										
IFLA 536 Sel. Local	127	88	139	140	65	139	149	76	112	115
IFLA 116 Sel. 488	127	90	133	131	62	132	145	67	98	104
IFLA 119 Sel. 489	125	91	132	130	65	126	145	67	97	105
IFLA 121 Sel. 491	125	90	132	130	66	131	145	68	99	105
IFLA 127 Sel. 492	126	90	134	130	65	132	145	72	97	104
IFLA 134 Sel. 493	125	91	133	133	62	137	145	68	99	105
IFLA 135 Sel. 494	124	91	132	133	62	131	145	68	100	105
IFLA 136 Sel. 495	125	91	131	133	62	134	145	65	98	104
IFLA 142 Sel. 496	124	91	133	131	62	131	145	72	99	104
IFLA 327 Sel. 500	124	91	133	132	62	125	145	67	102	105
Local check	76	95	146	132	62	124	145	46	-	116
Location Mean	**101**	**93**	**139**	**137**	**64**	**133**	**149**	**60**	**99**	**106**
S.E. of Mean	2.99	0.61	0.54	3.02	One	0.26	0.53	0.33	1.40	0.86
L.S.D. at 5%	8.52	1.72	1.53	8.61	rep	0.75	1.51	0.94	3.98	2.45
C.V. %	5.14	1.12	0.67	3.81		0.34	0.61	0.95	2.45	1.40

Cont'd. ...

Table 5.2.2. Cont'd. ...

Entry Name	Morocco Al Koudia	Portugal Elvas	Qatar Rawdat Harma	Saudi Arabia Al Gassim	Saudi Arabia Dirab	Syria Breda	Turkey Haymana	Turkey Tokat	(1) Overall Mean
A. Lathyrus sativus									
IFLA 347 Sel. Local	96	134	49	103	49	125	-	65	96
IFLA 3 Sel. 311	98	131	48	95	51	125	-	65	97
IFLA 170 Sel. 439	104	139	50	102	55	133	-	72	103
IFLA 205 Sel. 459	99	144	51	101	57	138	-	72	104
IFLA 232 Sel. 471	105	145	54	104	56	133	-	72	103
IFLA 178 Sel. 29	100	143	56	103	55	133	-	65	102
IFLA 188 Sel. 38	99	144	50	100	55	133	-	72	103
IFLA 199 Sel. 452	99	142	53	102	58	133	-	72	104
IFLA 200 Sel. 453	99	139	51	102	56	133	-	72	102
IFLA 201 Sel. 455	103	151	53	107	58	133	-	72	106
IFLA 206 Sel. 463	99	140	53	101	56	132	-	74	102
IFLA 277 Sel. 476	102	146	51	100	56	129	-	74	102
IFLA 273 Sel. 481	105	151	59	106	62	138	-	73	108
B. Lathyrus cicera									
IFLA 536 Sel. Local	111	136	-	136	109	133	74	83	112
IFLA 116 Sel. 488	112	133	-	116	111	125	72	85	107
IFLA 119 Sel. 489	108	129	-	116	108	125	71	81	106
IFLA 121 Sel. 491	114	144	-	122	111	125	72	86	108
IFLA 127 Sel. 492	110	125	-	116	111	125	72	85	108
IFLA 134 Sel. 493	115	127	-	115	111	125	72	82	107
IFLA 135 Sel. 494	113	127	-	113	114	125	74	81	107
IFLA 136 Sel. 495	109	132	-	116	111	125	72	85	106
IFLA 142 Sel. 496	114	134	-	123	111	125	72	85	107
IFLA 327 Sel. 500	113	133	-	114	112	125	74	83	106
Local check	-	140	-	134	-	125		-	
Location Mean	**106**	**138**	**52**	**110**	**80**	**129**	**73**	**76**	
S.E. of Mean	2.30	4.15	2.14	1.36	0.86	0.60		0.14	
L.S.D. at 5%	6.57	11.81	NS	3.88	2.45	1.70		0.40	
C.V. %	3.78	5.21	7.11	2.14	1.87	0.80		0.32	

(1) Holleta in Ethiopia, Rawdat Harma in Qatar and Haymana in Turkey with missing values were excluded from overall mean. NS = Not significant at $p \leq 0.05$.

Table 5.2.3. Time to maturity (days) of entries at different locations in ILAT during 1992/93.

Entry Name	Bulgaria	Chile	Ethiopia	India	Italy		Jordan			Lebanon
	Toshevo	Valdivia	Holleta	Kanpur	Catania	Tolentino	Mushaggar	Rabba	Ramtha	Kfardan
A. Lathyrus sativus										
IFLA 347 Sel. Local	92	139	146	129	123	187	153	107	181	205
IFLA 3 Sel. 311	92	144	-	121	126	187	151	107	181	208
IFLA 170 Sel. 439	95	147	-	124	129	192	161	107	194	210
IFLA 205 Sel. 459	97	147	-	126	129	192	158	108	194	210
IFLA 232 Sel. 471	94	147	-	127	129	192	157	108	184	212
IFLA 178 Sel. 29	97	147	-	125	128	192	154	108	194	212
IFLA 188 Sel. 38	97	147	-	126	127	192	162	108	194	208
IFLA 199 Sel. 452	97	147	-	126	129	192	164	108	194	208
IFLA 200 Sel. 453	97	147	-	127	125	192	161	107	194	208
IFLA 201 Sel. 455	97	147	-	128	129	192	163	108	194	212
IFLA 206 Sel. 463	97	147	-	126	129	192	164	107	184	207
IFLA 277 Sel. 476	97	147	-	126	128	192	152	107	194	207
IFLA 273 Sel. 481	97	147	-	126	127	192	159	109	194	212
B. Lathyrus cicera										
IFLA 536 Sel. Local	96	139	121	134	125	182	156	106	181	196
IFLA 116 Sel. 488	92	139	119	134	124	182	148	106	169	200
IFLA 119 Sel. 489	93	139	146	135	123	182	150	105	181	198
IFLA 121 Sel. 491	94	139	120	135	123	182	144	105	167	197
IFLA 127 Sel. 492	95	139	120	130	123	182	149	106	181	200
IFLA 134 Sel. 493	95	138	146	135	125	182	155	106	167	197
IFLA 135 Sel. 494	92	139	120	135	123	182	152	106	181	199
IFLA 136 Sel. 495	94	139	120	134	123	182	151	106	176	199
IFLA 142 Sel. 496	96	139	119	136	123	182	145	106	177	197
IFLA 327 Sel. 500	92	139	146	135	125	182	146	106	176	198
Local check	97	142	-	120	129	192	146	104	160	206
Location Mean	**95**	**143**	**129**	**129**	**126**	**187**	**154**	**107**	**183**	**204**
S.E. of Mean	0.70	0.81	One	1.95	1.03	One	3.68	0.25	0.70	0.93
L.S.D. at 5%	1.99	2.30	rep	4.65	2.93	rep	10.47	0.71	2.00	2.65
C.V. %	1.27	0.98		2.14	1.42		4.13	0.40	0.67	0.79

Cont'd. ...

Table 5.2.3. Cont'd. ...

Entry Name	Lebanon Terbol	Libya Komes	Libya Zahra	Morocco Al Koudia	Portugal Elvas	Saudia Arabia Dirab	Syria Breda	Turkey Tokat	(1) Overall Mean
A. Lathyrus sativus									
IFLA 347 Sel. Local	80	152	151	173	211	150	160	118	148
IFLA 3 Sel. 311	80	162	154	178	203	151	160	125	149
IFLA 170 Sel. 439	88	177	169	200	212	155	172	127	156
IFLA 205 Sel. 459	89	177	169	204	214	154	180	135	158
IFLA 232 Sel. 471	88	179	169	208	220	153	168	130	157
IFLA 178 Sel. 29	88	167	163	204	214	150	176	128	156
IFLA 188 Sel. 38	87	177	169	200	220	152	163	128	156
IFLA 199 Sel. 452	88	177	169	204	209	156	181	132	158
IFLA 200 Sel. 453	88	177	169	178	212	160	175	130	156
IFLA 201 Sel. 455	92	177	169	206	220	156	180	132	159
IFLA 206 Sel. 463	88	177	169	178	209	152	166	128	154
IFLA 277 Sel. 476	88	167	169	202	220	151	168	128	156
IFLA 273 Sel. 481	93	177	169	207	220	155	180	130	158
B. Lathyrus cicera									
IFLA 536 Sel. Local	96	169	149	176	203	151	166	123	150
IFLA 116 Sel. 488	89	162	150	175	201	154	160	120	147
IFLA 119 Sel. 489	93	152	148	176	193	152	160	120	147
IFLA 121 Sel. 491	92	151	151	175	206	155	160	120	147
IFLA 127 Sel. 492	94	151	149	175	196	152	160	120	147
IFLA 134 Sel. 493	91	162	150	177	188	156	160	120	147
IFLA 135 Sel. 494	93	150	149	178	192	150	160	120	147
IFLA 136 Sel. 495	91	151	149	175	201	155	160	120	147
IFLA 142 Sel. 496	91	150	149	175	199	152	160	120	147
IFLA 327 Sel. 500	93	151	148	173	199	150	163	120	147
Local check	80	-	169	-	201	-	160	-	
Location Mean	**89**	**165**	**159**	**187**	**207**	**153**	**167**	**125**	
S.E. of Mean	1.06	6.75	1.41	One	6.51	2.61	1.68	2.20	
L.S.D. at 5%	3.00	19.23	4.02	rep	18.52	NS	4.78	6.26	
C.V. %	2.05	7.09	1.54		5.45	2.95	1.75	3.04	

(1) Holleta in Ethiopia with missing values was excluded from overall mean. NS = Not significat at $P \leq 0.05$.

Table 5.2.4. Plant height (cm) of entries at different locations in ILAT during 1992/93.

Entry Name	Algeria	Bulgaria	Chile	China	Cyprus	Greece	India		Jordan		
	Guelma	Toshevo	Valdivia	Qinghai	Dromo-laxia	Makedonia	Kanpur	New-Delhi	Mushaggar	Rabba	Ramtha
A. Lathyrus sativus											
IFLA 347 Sel. Local	88	46	60	59	100	57	40	53	35	47	27
IFLA 3 Sel. 311	92	45	59	113	85	55	59	66	41	39	32
IFLA 170 Sel. 439	108	57	83	115	100	50	50	63	40	39	29
IFLA 205 Sel. 459	110	59	96	129	120	48	66	64	42	40	28
IFLA 232 Sel. 471	113	52	76	117	108	55	54	77	39	38	28
IFLA 178 Sel. 29	100	54	73	94	100	52	56	81	34	40	30
IFLA 188 Sel. 38	105	55	90	145	100	50	64	60	37	38	29
IFLA 199 Sel. 452	103	64	78	52	123	57	71	72	42	37	30
IFLA 200 Sel. 453	100	49	80	105	120	52	59	57	35	36	25
IFLA 201 Sel. 455	120	57	92	120	123	57	73	66	35	38	29
IFLA 206 Sel. 463	97	50	89	134	115	50	67	64	34	39	29
IFLA 277 Sel. 476	107	60	84	130	110	57	54	63	47	36	28
IFLA 273 Sel. 481	108	62	83	135	105	53	72	85	36	40	29
B. Lathyrus cicera											
IFLA 536 Sel. Local	83	40	62	58	93	52	36	62	30	35	25
IFLA 116 Sel. 488	88	42	63	53	103	48	36	74	36	33	28
IFLA 119 Sel. 489	102	44	71	70	93	55	43	72	39	34	31
IFLA 121 Sel. 491	90	39	60	57	118	50	30	67	37	32	30
IFLA 127 Sel. 492	90	43	65	56	93	42	33	69	40	30	30
IFLA 134 Sel. 493	83	41	62	56	110	47	29	66	34	31	27
IFLA 135 Sel. 494	92	50	64	51	98	50	35	77	35	32	29
IFLA 136 Sel. 495	95	45	70	123	108	52	23	78	41	35	30
IFLA 142 Sel. 496	92	40	71	63	110	48	46	69	34	39	28
IFLA 327 Sel. 500	98	43	69	61	95	42	32	70	37	34	30
Local check	78	69	83	115	98	47	59	65	31	37	27
Location Mean	**98**	**50**	**74**	**92**	**105**	**51**	**49**	**68**	**37**	**37**	**29**
S.E. of Mean	9.24	4.54	6.26	1.40	7.83	3.20	6.53	3.46	2.39	1.91	1.83
L.S.D. at 5%	NS	12.93	17.81	3.98	NS	9.12	15.60	9.84	6.79	5.42	NS
C.V. %	16.39	15.66	14.60	2.63	10.54	10.89	18.79	8.78	11.13	9.02	11.13

Cont'd. ...

Table 5.2.4. Cont'd. ...

Entry Name	Lebanon Kfardan	Lebanon Terbol	Libya Komes	Morocco Al Koudia	Portugal Elvas	Qatar Rawdat Harma	Saudi Arabia Dirab	Syria Breda	Turkey Tokat	Overall Mean
A. Lathyrus sativus										
IFLA 347 Sel. Local	52	44	41	28	72	55	114	38	80	57
IFLA 3 Sel. 311	56	46	41	29	75	62	105	57	101	63
IFLA 170 Sel. 439	58	48	43	29	89	55	125	38	111	67
IFLA 205 Sel. 459	58	48	42	30	84	52	121	42	129	70
IFLA 232 Sel. 471	63	52	34	33	101	60	113	40	122	69
IFLA 178 Sel. 29	63	50	31	37	97	57	137	42	121	67
IFLA 188 Sel. 38	52	47	45	29	105	53	107	40	113	68
IFLA 199 Sel. 452	64	52	49	33	93	50	111	40	117	67
IFLA 200 Sel. 453	62	50	52	35	92	57	148	42	117	69
IFLA 201 Sel. 455	52	49	46	33	105	52	121	43	111	71
IFLA 206 Sel. 463	52	60	60	28	96	52	99	40	113	68
IFLA 277 Sel. 476	59	51	44	35	105	57	118	42	109	70
IFLA 273 Sel. 481	66	52	46	31	109	48	76	43	115	70
B. Lathyrus cicera										
IFLA 536 Sel. Local	47	36	46	25	58	25	76	30	52	49
IFLA 116 Sel. 488	61	43	34	22	76	43	95	35	56	53
IFLA 119 Sel. 489	59	48	61	26	69	42	68	37	54	56
IFLA 121 Sel. 491	61	43	28	27	73	38	100	37	55	54
IFLA 127 Sel. 492	59	43	25	35	69	45	87	38	52	52
IFLA 134 Sel. 493	52	49	42	24	75	32	68	37	46	50
IFLA 135 Sel. 494	55	49	36	27	69	40	73	33	47	52
IFLA 136 Sel. 495	63	47	42	32	79	42	92	38	53	59
IFLA 142 Sel. 496	74	40	44	25	68	35	80	33	56	55
IFLA 327 Sel. 500	56	37	32	26	76	37	63	35	49	51
Local check	49	44	-	-	89	-	-	35	-	
Location Mean	**58**	**47**	**42**	**30**	**84**	**47**	**100**	**39**	**86**	
S.E. of Mean	4.55	3.50	10.08	3.26	9.70	4.52	28.68	4.33	4.95	
L.S.D. at 5%	12.96	9.95	NS	NS	27.61	12.87	NS	NS	14.11	
C.V. %	13.62	12.90	41.90	19.12	19.92	16.56	49.73	19.26	9.95	

NS = Not significant at $P \leq 0.05$.

Table 5.2.5. Seed yield (Y=kg/ha) and Rank (R) of entries at different locations in ILAT during 1992/93.

Entry Name	Algeria Guelma		Bulgaria Toshevo		Chile Valdivia		China Qinghai		Cyprus Dromolaxia		Ethiopia Holleta		Greece Makedonia	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Lathyrus sativus														
IFLA 347 Sel. Local	2639	20	604	24	446	24	359	13	1729	23	2554	11	1010	8
IFLA 3 Sel. 311	3264	7	813	18	714	23	-	-	1635	24	-	-	667	22
IFLA 170 Sel. 439	2847	17	2056	9	1397	22	-	-	3068	13	-	-	990	9
IFLA 205 Sel. 459	2431	23	2118	7	1854	17	-	-	3870	4	-	-	895	14
IFLA 232 Sel. 471	2986	13	1799	12	1549	20	-	-	3000	15	-	-	1095	3
IFLA 178 Sel. 29	3194	10	2188	6	1903	15	-	-	3047	14	-	-	686	20
IFLA 188 Sel. 38	2986	14	2049	10	1881	16	-	-	2521	16	-	-	829	17
IFLA 199 Sel. 452	3472	5	2771	1	2486	10	1306	11	4130	3	-	-	1010	7
IFLA 200 Sel. 453	3125	11	2104	8	1965	14	-	-	4500	1	-	-	857	16
IFLA 201 Sel. 455	3958	1	2021	11	1449	21	-	-	3745	6	-	-	1086	4
IFLA 206 Sel. 463	3333	6	2319	3	2389	11	-	-	4193	2	-	-	676	21
IFLA 277 Sel. 476	3056	12	2472	2	1717	18	-	-	3568	7	-	-	829	18
IFLA 273 Sel. 481	2778	18	2201	5	1643	19	-	-	3292	8	-	-	752	19
B. Lathyrus cicera														
IFLA 536 Sel. Local	3194	8	924	15	3397	2	2185	5	2031	22	3581	6	581	24
IFLA 116 Sel. 488	2569	21	757	21	2259	12	2019	6	3271	9	3485	8	581	23
IFLA 119 Sel. 489	3194	9	632	23	3090	5	1842	9	2506	17	4265	1	914	12
IFLA 121 Sel. 491	2639	19	896	16	3270	4	2007	7	3255	10	3400	9	1086	5
IFLA 127 Sel. 492	3889	2	646	22	2730	8	2208	4	2193	21	3489	7	981	10
IFLA 134 Sel. 493	2847	15	1014	14	3079	6	1882	8	3161	12	3779	3	962	11
IFLA 135 Sel. 494	2847	16	1153	13	2203	13	1328	10	2313	19	3745	4	1029	6
IFLA 136 Sel. 495	2049	24	896	17	3344	3	1069	12	3766	5	3792	2	867	15
IFLA 142 Sel. 496	3611	4	813	20	2568	9	6424	1	3193	11	3731	5	1181	2
IFLA 327 Sel. 500	3611	3	813	19	2787	7	2250	3	2490	18	3175	10	905	13
Local check	2500	22	2306	4	3927	1	2396	2	2297	20	-	-	1257	1
Location Mean	**3043**		**1515**		**2252**		**2098**		**3032**		**3545**		**905**	
S.E. of Mean	395.27		223.99		372.27		1414		483.13		One		223.34	
L.S.D. at 5%	NS		637.60		1059.67		NS		1154.23		rep		NS	
C.V. %	22.50		25.61		28.63		116.69		22.53				42.74	
Test > check	-		0		0		-		7				-	

Cont'd. ...

Table 5.2.5. Cont'd. ...

Entry Name	India				Italy				Jordan			
	Kanpur		New Delhi		Catania		Tolentino		Mushaggar		Rabba	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Lathyrus sativus												
IFLA 347 Sel. Local	115	13	2037	6	705	5	2071	15	538	21	2259	1
IFLA 3 Sel. 311	172	11	2083	5	482	16	2511	1	946	9	1409	6
IFLA 170 Sel. 439	407	4	2130	4	587	10	2073	14	881	13	1487	3
IFLA 205 Sel. 459	301	8	1028	12	511	14	1885	17	407	22	1477	4
IFLA 232 Sel. 471	362	5	2213	3	685	7	2304	5	675	19	1215	11
IFLA 178 Sel. 29	608	1	2778	2	724	3	2428	3	1181	5	1319	8
IFLA 188 Sel. 38	427	3	3130	1	815	1	2194	8	887	12	1261	10
IFLA 199 Sel. 452	267	9	1389	8	751	2	2080	13	294	24	1069	13
IFLA 200 Sel. 453	319	7	1250	11	653	8	2281	6	870	14	1023	15
IFLA 201 Sel. 455	342	6	944	13	496	15	2136	11	567	20	1307	9
IFLA 206 Sel. 463	-	-	1269	10	706	4	2322	4	927	11	1406	7
IFLA 277 Sel. 476	226	10	1296	9	650	9	2231	7	839	17	1159	12
IFLA 273 Sel. 481	151	12	528	14	689	6	2101	12	325	23	1585	2
B. Lathyrus cicera												
IFLA 536 Sel. Local	-	-	70	23	519	13	2428	2	1432	3	905	17
IFLA 116 Sel. 488	-	-	137	19	326	20	1841	18	934	10	611	22
IFLA 119 Sel. 489	-	-	143	18	222	23	1545	21	961	8	639	20
IFLA 121 Sel. 491	-	-	83	22	523	12	2024	16	1260	4	631	21
IFLA 127 Sel. 492	-	-	191	17	345	19	1399	23	762	18	550	24
IFLA 134 Sel. 493	-	-	102	21	367	18	1728	19	1010	7	574	23
IFLA 135 Sel. 494	-	-	222	16	386	17	1706	20	857	15	739	18
IFLA 136 Sel. 495	-	-	407	15	183	24	1522	22	1459	2	1028	14
IFLA 142 Sel. 496	-	-	106	20	270	22	2189	9	1039	6	1419	5
IFLA 327 Sel. 500	-	-	39	24	322	21	1333	24	1477	1	717	19
Local check	490	2	1485	7	581	11	2181	10	843	16	996	16
Location Mean	**322**		**1044**		**521**		**2021**		**891**		**1116**	
S.E. of Mean	92.18		230.43		115.33		173.18		113.53		229.07	
L.S.D. at 5%	NS		655.93		328.29		492.97		323.18		652.06	
C.V. %	40.47		38.23		38.35		14.84		22.08		35.55	
Entry > L. check	-		3		0		0		5		1	

Cont'd. ...

Table 5.2.5. Cont'd. ...

Entry Name	Jordan		Lebanon				Libya				Morocco	
	Ramtha		Kfardan		Terbol		Komes		Zahra		Al Koudia	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Lathyrus sativus												
IFLA 347 Sel. Local	1896	5	1646	18	803	14	673	20	509	15	321	22
IFLA 3 Sel. 311	1710	8	2168	11	1034	3	398	22	493	17	261	23
IFLA 170 Sel. 439	1410	14	1684	17	932	7	1269	9	506	16	618	7
IFLA 205 Sel. 459	2061	2	1224	24	918	9	940	13	674	5	722	3
IFLA 232 Sel. 471	1570	10	2532	5	1190	1	1867	3	410	21	724	2
IFLA 178 Sel. 29	2266	1	2114	13	993	6	687	19	701	3	591	9
IFLA 188 Sel. 38	1305	18	1996	14	993	5	2269	1	399	22	581	10
IFLA 199 Sel. 452	2047	3	1353	22	918	8	1355	8	513	14	722	5
IFLA 200 Sel. 453	1269	21	1561	20	1007	4	1790	5	667	6	499	15
IFLA 201 Sel. 455	1651	9	1686	16	850	12	1177	11	399	23	766	1
IFLA 206 Sel. 463	1528	11	1263	23	1102	2	1896	2	561	11	520	13
IFLA 277 Sel. 476	1838	6	1528	21	905	11	1764	6	515	13	619	6
IFLA 273 Sel. 481	1941	4	1583	19	918	10	1855	4	660	7	722	4
B. Lathyrus cicera												
IFLA 536 Sel. Local	1222	23	2397	8	34	24	849	14	413	20	487	16
IFLA 116 Sel. 488	1285	20	2151	12	78	20	706	18	469	18	515	14
IFLA 119 Sel. 489	1461	12	2758	2	54	23	1581	7	465	19	436	20
IFLA 121 Sel. 491	1301	19	3008	1	82	18	751	15	742	2	476	18
IFLA 127 Sel. 492	1313	17	2407	7	85	17	972	12	949	1	536	12
IFLA 134 Sel. 493	1258	22	2193	10	156	16	728	17	623	9	453	19
IFLA 135 Sel. 494	1318	16	2727	3	469	15	599	21	637	8	482	17
IFLA 136 Sel. 495	1113	24	2683	4	80	19	1256	10	549	12	571	11
IFLA 142 Sel. 496	1460	13	2300	9	65	22	730	16	695	4	405	21
IFLA 327 Sel. 500	1341	15	2409	6	72	21	253	23	175	24	598	8
Local check	1766	7	1833	15	837	13	-		603	10	-	
Location Mean	**1555**		**2050**		**607**		**1146**		**555**		**549**	
S.E. of Mean	327.26		270.22		98.87		431.53		160.74		69.32	
L.S.D. at 5%	NS		769.18		281.43		NS		NS		197.59	
C.V. %	36.44		22.83		28.19		65.21		49.82		21.87	
Entry > L. check	-		4		1		-		-		-	

Cont'd. ...

Table 5.2.5. Cont'd. ...

Entry Name	Portugal Elvas		Saudi Arabia Dirab		Syria Breda		Turkey Haymana		Turkey Tokat		(1) Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Lathyrus sativus												
IFLA 347 Sel. Local	3598	18	2722	10	1167	9	-	-	1302	20	1434	15
IFLA 3 Sel. 311	2731	24	2306	13	1128	13	-	-	2302	12	1453	14
IFLA 170 Sel. 439	4149	9	3307	9	1006	19	-	-	3559	5	1798	9
IFLA 205 Sel. 459	3846	15	4477	3	887	22	-	-	3378	7	1780	11
IFLA 232 Sel. 471	4739	2	2624	12	1137	11	-	-	3326	9	1882	6
IFLA 178 Sel. 29	3500	20	3505	8	1213	4	-	-	2480	11	1875	7
IFLA 188 Sel. 38	3915	14	2661	11	1259	3	-	-	4389	1	1916	4
IFLA 199 Sel. 452	4127	10	3899	6	1137	12	-	-	4172	2	1985	2
IFLA 200 Sel. 453	4855	1	4511	2	1019	17	-	-	3263	10	1953	3
IFLA 201 Sel. 455	4007	13	4344	4	870	23	-	-	3582	4	1852	8
IFLA 206 Sel. 463	4251	7	4860	1	1146	10	-	-	3817	3	2024	1
IFLA 277 Sel. 476	4564	4	3699	7	1076	15	-	-	3338	8	1883	5
IFLA 273 Sel. 481	3750	17	4290	5	713	24	-	-	3479	6	1790	10
B. Lathyrus cicera												
IFLA 536 Sel. Local	3133	23	1953	14	998	20	1222	6	1689	14	1433	16
IFLA 116 Sel. 488	4035	11	435	19	894	21	792	10	1369	19	1261	23
IFLA 119 Sel. 489	4290	5	252	22	1391	1	1185	8	1156	21	1385	18
IFLA 121 Sel. 491	3494	22	728	16	1174	8	1085	9	1081	22	1425	17
IFLA 127 Sel. 492	3822	16	157	23	1007	18	1356	3	1422	18	1318	21
IFLA 134 Sel. 493	4014	12	278	21	1181	6	1233	5	1445	17	1359	20
IFLA 135 Sel. 494	4182	8	676	17	1128	14	1220	7	1654	15	1366	19
IFLA 136 Sel. 495	3569	19	1442	15	1037	16	1311	4	1544	16	1468	13
IFLA 142 Sel. 496	4647	3	360	20	1174	7	2678	1	1724	13	1497	12
IFLA 327 Sel. 500	4275	6	479	18	1207	5	1389	2	898	23	1310	22
Local check	3497	21	-	-	1307	2	-		-			
Location Mean	**3958**		**2346**		**1094**		**1347**		**2451**			
S.E. of Mean	512.29		616.24		98.57		490.72		381.42			
L.S.D. at 5%	NS		1756.41		280.58		NS		1087.12			
C.V. %	22.42		45.49		15.61		63.09		26.96			
Entry > L. check	-		13		0		-		12			

(1) Qinghai in China, Holleta in Ethiopia, Kanpur in India, Haymana in Turkey with missing values were excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 5.2.6. Biological yield (Y=kg/ha) and Rank (R) of entries at different locations in ILAT during 1992/93.

Entry Name	Greece		India		Jordan				Lebanon				Libya	
	Makedonia		New Delhi		Mushaggar		Ramtha		Kfardan		Terbol		Komes	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Lathyrus sativus														
IFLA 347 Sel. Local	4524	6	4167	11	1598	21	2737	13	3741	9	2136	13	1627	17
IFLA 3 Sel. 311	2810	23	4340	8	2152	11	3115	6	3519	14	2601	12	1587	18
IFLA 170 Sel. 439	4476	7	5556	3	3993	1	2325	20	3093	20	2735	9	2341	9
IFLA 205 Sel. 459	4476	8	3299	18	2063	15	3247	4	2907	22	2811	8	1984	15
IFLA 232 Sel. 471	4381	11	4861	6	1752	18	2912	9	3407	16	3327	1	2976	5
IFLA 178 Sel. 29	2905	22	5903	2	2358	9	2532	17	4574	1	2844	6	2183	13
IFLA 188 Sel. 38	4429	10	5208	5	2378	8	2903	11	4148	6	2837	7	2659	7
IFLA 199 Sel. 452	4238	13	5382	4	1497	22	3283	3	3648	11	2680	11	2623	8
IFLA 200 Sel. 453	4952	4	3160	19	2150	12	2172	23	3593	13	3252	2	3135	4
IFLA 201 Sel. 455	4667	5	4132	13	1455	24	3762	1	4167	5	2932	5	2659	6
IFLA 206 Sel. 463	3857	15	4514	7	2795	5	2282	21	2685	24	3245	3	2222	11
IFLA 277 Sel. 476	3333	19	4306	10	3580	2	2675	15	3278	19	2707	10	3254	3
IFLA 273 Sel. 481	3190	20	6771	1	1940	16	2908	10	3722	10	3034	4	3651	1
B. Lathyrus cicera														
IFLA 536 Sel. Local	3143	21	2257	24	2390	7	2422	19	4278	3	1252	24	2302	10
IFLA 116 Sel. 488	2762	24	2847	23	1630	20	3062	7	3407	15	1286	21	1587	20
IFLA 119 Sel. 489	4952	3	2951	22	2135	13	2658	16	3778	8	1544	15	3571	2
IFLA 121 Sel. 491	5190	2	2951	21	1890	17	3007	8	3907	7	1361	19	1587	19
IFLA 127 Sel. 492	4190	14	3646	14	1490	23	2868	12	2870	23	1388	18	2103	14
IFLA 134 Sel. 493	3429	18	2951	20	2090	14	2198	22	3296	18	1259	23	1548	21
IFLA 135 Sel. 494	3429	17	3472	16	1723	19	1822	24	4259	4	1272	22	1667	16
IFLA 136 Sel. 495	3571	16	4340	9	3577	3	3168	5	3648	12	1476	17	2183	12
IFLA 142 Sel. 496	4333	12	3299	17	2697	6	2490	18	2963	21	1354	20	1468	22
IFLA 327 Sel. 500	4429	9	3646	15	2948	4	3408	2	3352	17	1494	16	913	23
Local check	6190	1	4167	12	2233	10	2707	14	4426	2	2082	14	-	
Location Mean	**4077**		**4089**		**2271**		**2778**		**3611**		**2204**		**2253**	
S.E. of Mean	906.82		408.70		182.50		463.88		377.70		139.13		638.32	
L.S.D. at 5%	NS		1163.39		519.49		NS		1075.12		396.04		NS	
C.V. %	38.52		17.13		13.92		28.93		18.12		10.93		49.06	
Entry > L. check	-		4		5		-		0		12		-	

Cont'd. ...

Table 5.2.6. Cont'd. ...

Entry Name	Libya Zahra		Portugal Elvas		Saudi Arabia Dirab		Syria Breda		Turkey Haymana		Turkey Tokat		(1) Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Lathyrus sativus														
IFLA 347 Sel. Local	968	5	8194	23	7431	19	2570	18	-	-	7037	13	3894	15
IFLA 3 Sel. 311	873	10	8264	22	9722	15	3011	10	-	-	10370	12	4364	12
IFLA 170 Sel. 439	794	13	14236	10	16806	7	2907	14	-	-	13241	10	6042	6
IFLA 205 Sel. 459	1190	2	15000	7	17153	5	2980	11	-	-	14630	3	5978	8
IFLA 232 Sel. 471	595	20	16597	1	13542	10	3820	1	-	-	13796	6	5997	7
IFLA 178 Sel. 29	873	11	15903	3	14375	9	3087	7	-	-	11852	11	5782	11
IFLA 188 Sel. 38	516	23	15417	6	10694	12	3256	5	-	-	16019	1	5872	10
IFLA 199 Sel. 452	794	14	15417	5	16042	8	3354	3	-	-	14815	2	6148	5
IFLA 200 Sel. 453	913	8	14028	11	21181	1	3172	6	-	-	13241	9	6246	4
IFLA 201 Sel. 455	794	15	15764	4	19375	4	3489	2	-	-	13333	8	6377	2
IFLA 206 Sel. 463	952	7	14931	8	17014	6	3346	4	-	-	13519	7	5947	9
IFLA 277 Sel. 476	952	6	14444	9	20903	3	2974	12	-	-	13889	5	6358	3
IFLA 273 Sel. 481	1032	4	16319	2	21042	2	3085	8	-	-	14352	4	6754	1
B. Lathyrus cicera														
IFLA 536 Sel. Local	865	12	7083	24	5764	22	2639	17	2656	3	4907	15	3275	23
IFLA 116 Sel. 488	659	19	9167	20	8611	16	2476	22	2233	10	4444	18	3495	21
IFLA 119 Sel. 489	571	21	10556	14	8542	17	2806	15	2411	7	3148	22	3934	14
IFLA 121 Sel. 491	1238	1	9306	19	10139	14	2546	19	2422	6	3148	21	3856	16
IFLA 127 Sel. 492	1111	3	9514	18	4931	23	2320	24	2433	5	4630	16	3422	22
IFLA 134 Sel. 493	714	18	9028	21	11667	11	2922	13	2522	4	4352	19	3788	17
IFLA 135 Sel. 494	563	22	10903	12	6910	21	2504	20	2300	9	4259	20	3565	20
IFLA 136 Sel. 495	730	16	9861	17	10417	13	2341	23	2400	8	5000	14	4193	13
IFLA 142 Sel. 496	889	9	10764	13	8125	18	2491	21	5400	1	4537	17	3784	18
IFLA 327 Sel. 500	389	24	10486	15	7014	20	2746	16	3204	2	2593	23	3618	19
Local check	717	17	9931	16	-		3080	9	-		-			
Location Mean	**821**		**12130**		**12495**		**2913**		**2798**		**9179**			
S.E. of Mean	188.20		973.94		1994.44		217.94		983.60		1192.44			
L.S.D. at 5%	NS		2772.35		5684.56		620.38		NS		3398.70			
C.V. %	39.72		13.91		27.65		12.96		60.88		22.50			
Entry > L. check	-		11		10		1		-		13			

(1) Haymana in Turkey with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

5.3. INTERNATIONAL VETCH ADAPTATION TRIAL (IVAT)

Material

The material for the International Vetch Adaptation Trial comprised 23 test entries and one local check to be supplied by the cooperator. The test entries included, 17 selections of *Vicia sativa* and 6 selection of *Vicia narbonensis*. These entries were selected based on their superior yield performance.

Methods and Management

The trial design was a randomized complete block with three replications. The suggested plot size was four rows each 4 m long with an interrow spacing of 30 cm. Sixty two sets of trial were distributed to cooperators in 27 countries. The results were received for 19 trials from 11 countries and are reported. The agronomic practices employed at different locations are given in Table 5.3.1.

Results and Discussion

The entry means over all locatons for *Vicia sativa* varied from 107 to 117 days for time to flowering (Table 5.3.2), 141 to 148 days for time to maturity (Table 5.3.3) and 38 to 57 cm for plant height (Table 5.3.4). On the basis of average over locations the top five entries in *Vicia sativa* included IFVI 384 Sel 2062, IFVI 705 Sel 2556, IFVI 482 Sel 2096, IFVI 2 Sel 1134 and IFVI 7 Sel 1135 with seed yields of 1330, 1279, 1203, 1192, 1190 kg/ha, respectively (Table 5.3.5). The highest biomass (Table 5.3.6) was recorded for IFLA 2 Sel 1134 (3709 kg/ha) and was follwed by IFLA 384 Sel 2062 (3655 kg/ha), IFLA 705 Sel 2556 (3620 kg/ha), IFLA 7 Sel 1136 (3604 kg/ha).

The entry means over all locations for *Vicia narbonensis* varied from 101 to 103 days for time to flowering, 135 to 140 time to maturity, 50 to 60 cm for plant height, 1281 to 1741 kg/ha for seed yield, and 3217 to 4393 kg/ha for biological yield. The entries IFVI 568 Sel 2383, IFVI 577 Sel 2391, IFVI 565 Sel 2380, IFVI 574 Sel 2388, and IFVI 67 Sel Local were the high yielding entries in order of their merit.

In general, the biological yield of entries from *Vicia narbonensis* were more when compared to entries from *Vicia sativa* (Table 5.3.6). The biological yield was highest in *Vicia narbonensis* line IFVI 568 Sel 2383 (4393 kg/ha) and was followed by IFVI 577 Sel 2391 (3801 kg/ha), IFVI 565 Sel 2380 (3712 kg/ha), IFVI 574 Sel 2388 (3433 kg/ha) and IFVI 67 Sel Local (3407 kg/ha).

Table 5.3.1. Agronomic details for IVAT-93 conducted at different locations.

Country	Location	Planting Date	Harvesting Date	Fertilizer (kg/ha) N	P	K	Irri-gation	Insecticide/Fungicide/ Herbicide	Local Check
Algeria	Guelma	26.11.92	11.07.93	-	200	-	-	-	V.S. Languedoc
Cyprus	Dromolaxia	20.11.92	29.04.93	70	200	-	-	-	Local vetch
Italy	Caltagirone	03.02.93	11.07.93	18	20	-	-	-	Local vetch
Italy	Catania	01.02.93	11.06.93	-	120	-	-	-	-
Italy	Tolentino	10.03.93	22.06.93	-	-	-	1	-	*V. sativa*
Jordan	Mushagar	NA	NA	NA	NA	NA	NA	NA	NA
Jordan	Rabba	04.01.93	02.06.93	-	100	-	-	-	*V. sativa*
Jordan	Ramtha	01.12.92	25.05.93	-	100	-	-	-	Local vetch
Lebanon	Kfardan	21.11.92	15.06.93	-	50	-	-	Kerb + Fortrol	*V. sativa* (Acc. 2541)
Lebanon	Terbol	01.04.93	22.07.93	-	50	-	-	Kerb + Fortrol	*V. sativa* (Acc. 2541)
Libya	Komes	09.12.92	19.05.93	-	50	-	6	-	-
Libya	Zahra	02.12.92	22.05.93	-	50	-	11	-	-
Morocco	El Koudia	30.11.92	18.06.93	-	51	34	-	-	Nawal (Acc. 6235)
Portugal	Elvas	13.11.92	14.06.93	-	50	-	-	-	*V. sativa* (Acc. 8616)
Saudi Arabia	Dirab	16.11.92	28.04.93	50	300	-	-	Linuron + Pendimethalin	-
Saudi Arabia	Riyadh	22.11.92	19.06.93	200	150	-	several	-	-
Syria	Tel Hadya	20.12.92	10.07.93	-	40	-	-	Decis, Pirimor	*V. sativa* (Acc. 67/2541)
Turkey	Haymana	01.04.93	18.07.93	-	100	-	-	Decis, Linuron	L-147
Turkey	Tokat	17.03.93	04.08.93	30	30	-	-	Malathion	-

NA = Not Available

Table 5.3.2. Time to flowering (days) of entries at different locations in IVAT during 1992/93.

Entry Name	Origin	Cyprus	Italy			Jordan			Lebanon
		Dromolaxia	Calta-girone	Catania	Tolentino	Mushaggar	Rabba	Ramtha	Kfardan
A. Vicia sativa									
IFVI 2 Sel. 845	ICARDA	139	105	89	67	145	64	135	151
IFVI 2 Sel. 1134	ICARDA	137	105	98	69	145	64	126	154
IFVI 4 Sel. 2057	ICARDA	142	105	96	67	134	64	134	152
IFVI 7 Sel. 1135	ICARDA	141	107	98	64	147	64	132	153
IFVI 7 Sel. 1136	ICARDA	144	105	97	64	138	64	134	155
IFVI 384 Sel. 2062	ICARDA	135	102	96	73	139	63	130	148
IFVI 482 Sel. 2096	ICARDA	146	102	98	72	143	61	136	150
IFVI 507 Sel. 2019	ICARDA	139	102	90	73	131	61	133	152
IFVI 534 Sel. 2065	ICARDA	148	102	100	76	150	62	136	155
IFVI 708 Sel. 2037	ICARDA	141	107	95	76	140	62	129	154
IFVI 709	ICARDA	133	98	88	70	139	61	133	148
IFVI 705 Sel. 2556	ICARDA	149	104	99	73	142	63	133	148
IFVI 716	ICARDA	137	101	91	72	137	62	133	149
IFVI 1331 Sel. 1437	ICARDA	148	112	98	73	150	62	138	157
IFVI 1361 Sel. 1448	ICARDA	145	112	99	79	142	63	131	155
IFVI 1416 Sel. 2557	ICARDA	145	110	97	77	144	63	131	156
IFVI 2541 Sel. Local	ICARDA	140	102	88	72	142	61	137	149
B. Vicia narbonensis									
IFVI 67 Sel. Local	ICARDA	122	95	89	67	130	61	129	148
IFVI 574 Sel. 2388	ICARDA	123	92	87	64	131	61	116	146
IFVI 565 Sel. 2380	ICARDA	122	93	90	63	133	61	118	146
IFVI 573 Sel. 2387	ICARDA	121	93	88	63	133	61	115	165
IFVI 577 Sel. 2391	ICARDA	122	93	88	65	130	61	132	147
IFVI 568 Sel. 2383	ICARDA	122	97	96	66	137	61	123	147
Local check	-	129	104	112	62	137	61	114	145
Location Mean		**136**	**102**	**94**	**69**	**139**	**62**	**129**	**151**
S.E. of Mean		1.33	1.32	0.80	0.52	3.49	0.48	0.76	3.67
L.S.D. at 5%		3.17	3.76	2.29	1.47	9.93	1.36	2.17	NS
C.V. %		1.38	2.23	1.47	1.29	4.34	1.33	1.02	4.21

Cont'd. ...

Table 5.3.2. Cont'd. ...

Entry Name	Lebanon Terbol	Libya Komes	Libya Zahra	Morocco Al Koudia	Portugal Elvas	Saudi Arabia Dirab	Saudi Arabia Riyadh	Syria Tel Hadya	Turkey Haymana	Turkey Tokat	(1) Overall Mean
A. Vicia sativa											
IFVI2Sel 845	57	106	117	118	155	105	124	125	72	76	112
IFVI2Sel 1134	57	107	116	118	154	113	118	118	73	77	111
IFVI4Sel 2057	56	102	116	116	148	102	117	121	73	76	110
IFVI7Sel 1135	52	106	117	115	155	104	123	121	72	73	112
IFVI7Sel 1136	52	107	117	117	155	102	118	124	72	77	112
IFVI384Sel 2062	60	107	115	114	137	112	118	115	73	81	109
IFVI482Sel 2096	62	110	118	118	154	104	118	119	77	82	113
IFVI507Sel 2019	63	106	116	113	141	103	114	121	77	81	109
IFVI534Sel 2065	73	120	130	120	157	-	118	125	78	80	117
IFVI708Sel 2037	75	118	123	123	155	-	118	119	78	80	114
IFVI709	62	104	115	105	137	108	119	113	75	80	107
IFVI705Sel 2556	63	109	118	117	145	120	119	120	78	80	112
IFVI716	63	106	115	107	133	108	120	114	78	80	108
IFVI1331Sel 1437	62	113	112	120	154	110	119	123	73	80	115
IFVI1361Sel 1448	76	122	130	120	157	-	120	129	84	81	117
IFVI1416Sel 2557	-	123	126	128	157	-	117	127	84	79	116
IFVI2541Sel Loc.	63	108	116	111	146	105	128	116	74	81	111
B. Vicia narbonensis											
IFVI67 Sel Loc.	59	98	101	98	134	98	119	109	71	81	103
IFVI574Sel 2388	55	96	99	96	134	88	119	107	70	78	101
IFVI565Sel 2380	57	95	100	97	130	87	125	106	71	77	102
IFVI573Sel 2387	54	95	101	94	132	91	114	106	71	76	102
IFVI577Sel 2391	54	95	101	97	133	88	120	108	71	76	102
IFVI568Sel 2383	55	99	100	100	132	90	118	107	71	76	103
Local check	62	101	117	115	133	-	124	115	76	-	
Location Mean	**61**	**106**	**114**	**111**	**144**	**102**	**119**	**117**		**71**	
S.E. of Mean	0.50	2.05	2.46	2.79	1.15	2.48	3.57	1.52	One	1.55	
L.S.D. at 5%	1.43	5.83	7.01	7.94	3.28	7.12	NS	4.33	rep	4.40	
C.V. %	1.44	3.34	3.74	4.33	1.38	4.21	5.18	2.25		3.76	

(1) Dirab in Saudi Arabia with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 5.3.3. Time to maturity (days) of entries at different locations in IVAT during 1992/93.

Entry Name	Italy			Jordan			Lebanon	Libya	
	Calta-girone	Catania	Tolentino	Mushaggar	Rabba	Ramtha	Kfardan	Komes	Zahra
A. Vicia sativa									
IFVI2Sel 845	126	124	101	159	102	175	204	138	161
IFVI2Sel 1134	127	126	101	157	101	174	203	146	149
IFVI4Sel 2057	127	125	99	154	101	174	201	138	160
IFVI7Sel 1135	127	129	99	157	101	173	205	138	162
IFVI7Sel 1136	127	128	99	153	101	174	205	138	158
IFVI384Sel 2062	125	126	105	151	99	175	201	138	147
IFVI482Sel 2096	128	122	105	160	99	176	205	138	162
IFVI507Sel 2019	128	124	106	151	100	171	204	144	161
IFVI534Sel 2065	127	128	106	161	100	176	205	146	161
IFVI708Sel 2037	126	125	105	149	100	172	205	157	159
IFVI709	122	121	101	152	101	171	199	138	157
IFVI705Sel 2556	126	127	101	154	102	174	203	138	160
IFVI716	122	123	103	153	100	169	201	138	158
IFVI1331Sel 143	128	127	103	159	99	169	205	138	160
IFVI1361Sel 144	127	129	110	155	103	176	199	157	161
IFVI1416Sel 255	126	129	108	157	102	171	202	157	160
IFVI2541Sel Loc.	127	125	103	156	97	174	197	138	157
B. Vicia narbonensis									
IFVI67 Sel Loc.	117	121	106	149	97	174	203	141	151
IFVI574Sel 2388	117	121	103	146	97	156	196	138	144
IFVI565Sel 2380	117	121	102	146	97	158	196	138	150
IFVI573Sel 2387	120	123	102	147	97	171	198	137	146
IFVI577Sel 2391	117	121	104	141	97	161	198	138	146
IFVI568Sel 2383	125	128	105	150	97	169	199	138	146
Local check	127	127	98	148	97	155	196	138	160
Location Mean	**124**	**125**	**103**	**153**	**100**	**170**	**201**	**141**	**156**
S.E. of Mean	1.19	0.83	1.10	2.71	0.24	1.74	1.16	2.09	3.43
L.S.D. at 5%	3.39	2.36	3.13	7.70	0.68	4.96	3.30	5.94	9.75
C.V. %	1.66	1.15	1.85	3.07	0.41	1.77	1.0	2.56	3.81

Cont'd. ...

Table 5.3.3. Cont'd. ...

Entry Name	Morocco Al Koudia	Portugal Elvas	Saudi Arabia Dirab	Saudi Arabia Riyadh	Syria Tel Hadya	Turkey Haymana	Turkey Tokat	(1) Overall Mean
A. Vicia sativa								
IFVI2Sel 845	200	204	157	144	165	97	122	145
IFVI2Sel 1134	198	202	163	146	159	97	122	144
IFVI4Sel 2057	200	198	155	141	161	97	121	143
IFVI7Sel 1135	200	205	159	145	165	96	122	144
IFVI7Sel 1136	200	201	154	138	166	97	125	144
IFVI384Sel 2062	-	188	161	140	161	100	123	141
IFVI482Sel 2096	200	201	155	144	167	99	123	145
IFVI507Sel 2019	200	206	154	135	167	101	130	145
IFVI534Sel 2065	198	209	-	142	168	103	130	147
IFVI708Sel 2037	198	207	-	145	164	103	131	146
IFVI709	-	197	156	144	158	99	120	141
IFVI705Sel 2556	198	202	164	146	159	100	127	144
IFVI716	197	203	156	142	159	99	127	143
IFVI1331Sel 143	200	204	164	140	165	100	129	145
IFVI1361Sel 144	197	209	-	144	168	103	127	148
IFVI1416Sel 255	197	206	-	138	167	103	124	146
IFVI2541Sel Loc.	197	199	155	143	159	99	120	143
B. Vicia narbonensis								
IFVI67 Sel Loc.	171	188	145	139	151	98	113	139
IFVI574Sel 2388	171	188	144	141	145	93	111	135
IFVI565Sel 2380	169	188	145	145	146	93	113	136
IFVI573Sel 2387	171	188	146	138	154	94	113	138
IFVI577Sel 2391	171	188	146	146	150	97	115	137
IFVI568Sel 2383	171	188	145	140	155	98	117	140
Local check	188	188	-	145	157	103	-	
Location Mean	**199**	**198**	**154**	**142**	**160**	**99**	**122**	
S.E. of Mean	One	1.77	1.36	3.64	1.94	0.68	1.96	
L.S.D. at 5%	rep	5.05	3.91	NS	5.51	1.93	5.59	
C.V. %		1.55	1.53	4.44	2.10	1.19	2.79	

(1) Al Koudia in Morocco and Dirab in Saudi Arabia with missing values were excluded from overall mean.
NS = Not significant at $P \leq 0.05$.

Table 5.3.4. Plant height (cm) of entries at different locations in IVAT during 1992/93.

Entry Name	Algeria	Cyprus	Italy		Jordan			Lebanon	
	Guelma	Dromolaxia	Calta-girone	Tolentino	Mushaggar	Rabba	Ramtha	Kfardan	Terbol
A. Vicia sativa									
IFVI2Sel 845	125	50	30	67	39	34	22	57	47
IFVI2Sel 1134	108	60	32	49	37	38	21	63	45
IFVI4Sel 2057	120	63	31	63	42	37	25	79	51
IFVI7Sel 1135	130	55	35	65	47	36	28	82	53
IFVI7Sel 1136	110	60	32	67	35	37	25	74	54
IFVI384Sel 2062	135	60	36	82	46	37	29	56	54
IFVI482Sel 2096	125	43	32	61	41	39	22	67	56
IFVI507Sel 2019	130	60	34	69	37	33	29	69	59
IFVI534Sel 2065	130	35	24	59	38	34	17	54	42
IFVI708Sel 2037	140	43	25	55	29	32	17	50	48
IFVI709	113	40	30	56	34	35	24	52	48
IFVI705Sel 2556	132	55	33	52	43	38	28	74	48
IFVI716	113	40	29	59	38	28	22	43	51
IFVI1331Sel 143	128	30	32	58	38	34	20	65	49
IFVI1361Sel 144	95	50	16	44	23	20	10	38	37
IFVI1416Sel 255	125	60	17	54	26	19	13	41	-
IFVI2541Sel Loc.	102	58	28	46	33	34	23	47	45
B. Vicia narbonensis									
IFVI67 Sel Loc.	137	70	27	60	45	41	28	67	48
IFVI574Sel 2388	132	65	23	56	47	38	25	54	47
IFVI565Sel 2380	133	55	26	53	48	39	28	52	45
IFVI573Sel 2387	107	70	27	56	43	39	29	55	49
IFVI577Sel 2391	133	55	26	62	45	37	31	58	47
IFVI568Sel 2383	132	60	36	68	54	44	32	63	56
Local check	137	40	35	79	39	35	34	71	53
Location Mean	**124**	**53**	**29**	**60**	**39**	**35**	**24**	**60**	**49**
S.E. of Mean	8.47	8.21	1.82	3.56	2.78	1.03	1.98	5.33	2.51
L.S.D. at 5%	24.10	NS	5.19	10.13	7.93	2.94	5.63	15.18	7.16
C.V. %	11.84	21.85	10.90	10.26	12.23	5.11	14.16	15.50	8.84

Cont'd. ...

Table 5.3.4. Cont'd. ...

Entry Name	Libya Komes	Morocco Al Koudia	Portugal Elvas	Saudi Arabia Dirab	Saudi Arabia Riyadh	Syria Tel Hadya	Turkey Tokat	(1) **Overall Mean**
A. Vicia sativa								
IFVI2Sel 845	49	30	69	95	31	22	89	51
IFVI2Sel 1134	36	34	75	109	37	27	99	51
IFVI4Sel 2057	52	43	65	99	33	27	97	55
IFVI7Sel 1135	40	38	75	112	27	27	98	56
IFVI7Sel 1136	45	39	59	101	31	23	112	53
IFVI384Sel 2062	46	31	74	110	34	33	105	57
IFVI482Sel 2096	39	38	89	104	32	23	97	53
IFVI507Sel 2019	53	36	73	107	29	23	90	55
IFVI534Sel 2065	45	32	72	–	28	17	89	48
IFVI708Sel 2037	33	38	71	–	38	23	82	48
IFVI709	33	34	62	91	29	30	84	47
IFVI705Sel 2556	53	37	63	104	28	35	77	53
IFVI716	32	30	57	83	29	20	77	44
IFVI1331Sel 143	38	36	67	105	29	22	83	49
IFVI1361Sel 144	28	33	64	–	34	8	67	38
IFVI1416Sel 255	28	29	61	–	29	11	70	42
IFVI2541Sel Loc.	30	32	54	98	29	30	61	43
B. Vicia narbonensis								
IFVI67 Sel Loc.	35	35	65	49	30	33	87	54
IFVI574Sel 2388	40	34	69	52	31	30	69	51
IFVI565Sel 2380	34	33	75	55	31	30	59	50
IFVI573Sel 2387	37	37	73	44	31	27	68	50
IFVI577Sel 2391	35	32	72	43	35	33	63	51
IFVI568Sel 2383	51	44	80	55	31	43	95	60
Local check	46	40	74	–	28	32	–	
Location Mean	**40**	**35**	**69**	**85**	**31**	**26**	**76**	
S.E. of Mean	5.21	2.49	5.79	4.18	3.14	2.52	4.65	
L.S.D. at 5%	14.83	7.10	16.48	11.99	NS	7.17	13.23	
C.V. %	22.69	12.27	14.52	8.51	17.58	16.64	10.63	

(1) Terbol in Lebanon and Dirab in Saudi Arabia with missing values were excluded from overall mean.
NS = Not significant at $P \leq 0.05$.

Table 5.3.5. Seed yield (Y=kg/ha) and rank (R) of entries at different locations in IVAT during 1992/93.

Entry Name	Algeria		Cyprus		Italy				Jordan			
	Guelma		Dromolaxia		Caltagirone		Tolentino		Mushaggar		Rabba	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Vicia sativa												
IFVI2Sel 845	965	24	1220	7	138	19	2521	14	1127	10	754	11
IFVI2Sel 1134	3596	6	1005	12	223	14	2293	17	1565	2	744	13
IFVI4Sel 2057	1491	21	1053	9	134	20	2875	5	731	19	533	20
IFVI7Sel 1135	3684	5	950	13	250	13	2644	11	898	14	722	14
IFVI7Sel 1136	1754	20	923	14	196	15	3000	3	857	15	583	19
IFVI384Sel 2062	2982	11	1555	1	382	8	2818	7	1110	11	789	10
IFVI482Sel 2096	4737	1	513	19	186	17	2376	16	1134	9	643	16
IFVI507Sel 2019	2895	12	1180	8	195	16	2857	6	519	20	694	15
IFVI534Sel 2065	3509	7	388	20	64	22	1931	20	451	21	628	17
IFVI708Sel 2037	3246	8	370	21	82	21	1625	22	354	22	506	21
IFVI709	3158	9	635	18	505	6	2610	13	763	17	956	9
IFVI705Sel 2556	4649	2	823	15	281	11	2514	15	1332	6	596	18
IFVI716	2193	16	368	22	339	9	1984	18	1004	12	124	24
IFVI1331Sel 143	3772	4	728	16	170	18	2627	12	749	18	987	8
IFVI1361Sel 144	2632	13	235	24	33	24	1310	24	353	23	224	22
IFVI1416Sel 255	1404	23	285	23	47	23	1336	23	292	24	189	23
IFVI2541Sel Loc.	2456	15	1008	11	273	12	1851	21	852	16	744	12
B. Vicia narbonensis												
IFVI67 Sel Loc.	1842	19	1403	4	543	3	1961	19	1350	5	1587	4
IFVI574Sel 2388	2105	17	1243	6	525	4	2716	9	1392	4	1761	2
IFVI565Sel 2380	2632	14	1038	10	672	1	2712	10	1926	1.	1285	5
IFVI573Sel 2387	3070	10	1410	3	482	7	2963	4	1308	7	1109	7
IFVI577Sel 2391	1404	22	1308	5	547	2	2759	8	1189	8	1606	3
IFVI568Sel 2383	2018	18	1435	2	522	5	3337	2	1438	3	2359	1
Local check	3772	3	718	17	304	10	4407	1	965	13	1276	6
Location Mean	**2749**		**908**		**295**		**2501**		**986**		**892**	
S.E. of Mean	951.97		202.38		74.11		188.49		90.08		139.38	
L.S.D. at 5%	NS		483.50		210.94		536.53		256.43		396.74	
C.V. %	59.99		31.53		43.44		13.05		15.83		27.07	
Entry > L. check	-		7		5		0		7		2	

Cont'd. ...

Table 5.3.5. Cont'd. ...

Entry Name	Jordan		Lebanon				Libya				Morocco	
	Ramtha		Kfardan		Terbol		Komes		Zahra		Al Koudia	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Vicia sativa												
IFVI2Sel 845	817	12	1770	17	612	6	282	6	192	18	232	16
IFVI2Sel 1134	699	16	1534	18	551	9	164	10	222	16	223	17
IFVI4Sel 2057	816	13	1960	13	442	12	174	9	298	13	235	15
IFVI7Sel 1135	1064	6	1361	21	544	10	24	21	219	17	327	9
IFVI7Sel 1136	875	9	1458	19	551	8	43	20	57	24	260	11
IFVI384Sel 2062	849	10	2770	7	633	5	113	16	629	6	155	21
IFVI482Sel 2096	663	17	2385	9	218	19	152	12	132	20	255	12
IFVI507Sel 2019	768	14	1843	16	395	14	127	14	253	15	238	14
IFVI534Sel 2065	578	19	1352	22	24	22	17	24	96	22	139	22
IFVI708Sel 2037	342	22	1889	15	239	18	151	13	344	11	164	20
IFVI709	609	18	2227	11	197	20	64	19	596	8	240	13
IFVI705Sel 2556	847	11	2282	10	510	11	153	11	474	10	343	7
IFVI716	433	21	2222	12	150	21	73	18	294	14	88	24
IFVI1331Sel 143	559	20	1415	20	327	16	18	23	128	21	336	8
IFVI1361Sel 144	210	24	1222	24	-	-	93	17	81	23	192	19
IFVI1416Sel 255	269	23	1339	23	-	-	18	22	136	19	136	23
IFVI2541Sel Loc.	744	15	1956	14	245	17	114	15	549	9	222	18
B. Vicia narbonensis												
IFVI67 Sel Loc.	1074	5	2741	8	558	7	235	7	624	7	535	2
IFVI574Sel 2388	941	8	3014	3	735	3	596	3	684	4	441	6
IFVI565Sel 2380	972	7	3338	2	408	13	726	2	913	1	465	4
IFVI573Sel 2387	1220	3	2835	6	796	2	563	4	630	5	448	5
IFVI577Sel 2391	1244	2	2912	4	653	4	496	5	762	3	558	1
IFVI568Sel 2383	1150	4	3500	1	850	1	781	1	855	2	475	3
Local check	1300	1	2893	5	388	15	229	8	315	12	323	10
Location Mean	**793**		**2176**		**456**		**225**		**395**		**293**	
S.E. of Mean	133.29		304.67		78.58		116.29		111.53		52.18	
L.S.D. at 5%	379.42		867.26		224.29		331.02		317.48		148.52	
C.V. %	29.10		24.26		29.87		89.40		48.89		30.86	
Entry > L. check	0		0		6		4		4		3	

Cont'd. ...

Table 5.3.5. Cont'd. ...

Entry Name	Portugal Elvas		Saudi Arabia Riyadh		Syria Tel Hadya		Turkey Haymana		Turkey Tokat		(1) Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Vicia sativa												
IFVI2Sel 845	1732	7	519	10	704	18	867	10	2334	11	1011	15
IFVI2Sel 1134	1543	12	606	8	1137	11	900	7	2614	7	1192	10
IFVI4Sel 2057	1033	23	742	4	1089	14	944	4	2635	6	1009	16
IFVI7Sel 1135	1233	20	595	9	1133	12	922	5	3012	3	1190	11
IFVI7Sel 1136	516	24	386	14	802	16	700	18	2643	4	941	18
IFVI384Sel 2062	1478	16	411	12	1194	9	711	17	3329	2	1330	6
IFVI482Sel 2096	1640	9	441	11	615	20	800	14	2582	8	1203	9
IFVI507Sel 2019	1778	6	613	7	883	15	467	20	2382	9	1106	13
IFVI534Sel 2065	1422	18	306	18	398	21	214	24	1270	21	798	21
IFVI708Sel 2037	1499	14	159	21	678	19	378	22	1330	20	820	20
IFVI709	1465	17	893	2	1181	10	1022	2	1926	17	1178	12
IFVI705Sel 2556	1680	8	399	13	1326	7	678	19	2095	13	1279	8
IFVI716	1309	19	733	5	394	22	733	16	1680	18	873	19
IFVI1331Sel 143	1221	21	260	19	791	17	856	11	2339	10	1060	14
IFVI1361Sel 144	1509	13	88	23	365	24	344	23	1999	16	681	22
IFVI1416Sel 255	1489	15	181	20	383	23	456	21	1010	23	561	23
IFVI2541Sel Loc.	1097	22	1101	1	1119	13	878	9	1041	22	1000	17
B. Vicia narbonenesis												
IFVI67 Sel Loc.	1901	5	363	15	1450	4	822	13	2067	15	1281	7
IFVI574Sel 2388	2652	4	336	16	1513	3	756	15	2088	14	1423	4
IFVI565Sel 2380	2666	3	310	17	1563	2	880	8	1602	19	1481	3
IFVI573Sel 2387	1553	11	126	22	1309	8	838	12	2320	12	1387	5
IFVI577Sel 2391	3209	1	650	6	1441	5	989	3	2639	5	1482	2
IFVI568Sel 2383	3108	2	873	3	1633	1	900	6	3474	1	1741	1
Local check	1560	10	-		1344	6	1200	1	-			
Location Mean	**1679**		**482**		**1019**		**761**		**2192**			
S.E. of Mean	350.03		124.45		136.46		83.92		371.94			
L.S.D. at 5%	996.38		354.74		388.42		238.87		1060.12			
C.V. %	36.11		44.70		23.20		19.11		29.39			
Entry > L. check	4		0		0		0		0			

(1) Terbol in Lebanon with missing values was excluded from overall mean. NS = Not significant at $P \leq 0.05$.

Table 5.3.6. Biological yield (Y=kg/ha) and rank (R) of entries at different locations in IVAT during 1992/93.

Entry Name	Jordan						Lebanon				Libya			
	Mushaggar		Rabba		Ramtha		Kfardan		Terbol		Komes		Zahra	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Vicia sativa														
IFVI2Sel 845	2879	11	2419	9	1928	14	3893	19	2299	5	4537	2	1574	17
IFVI2Sel 1134	4127	2	2720	5	2380	9	3694	20	2156	7	3056	11	1852	11
IFVI4Sel 2057	2597	13	2194	12	2552	7	4640	13	2088	10	4259	3	1667	15
IFVI7Sel 1135	2111	17	2480	8	2574	6	4306	16	2000	14	1944	19	1667	16
IFVI7Sel 1136	3492	4	2331	11	2908	3	4394	15	1959	16	3426	8	1111	23
IFVI384Sel 2062	2960	10	1933	17	2187	10	5315	9	2231	6	2870	12	2778	4
IFVI482Sel 2096	2590	14	2037	15	1733	18	5912	8	1912	17	3519	7	1296	20
IFVI507Sel 2019	1972	18	2043	14	2068	11	4051	17	2014	13	4722	1	1667	13
IFVI534Sel 2065	993	22	1407	21	1878	16	3561	21	1048	22	3611	6	926	24
IFVI708Sel 2037	1535	20	1930	18	1046	22	4815	12	1207	21	2407	15	1481	18
IFVI709	2451	16	2602	7	1506	20	4977	10	1912	18	1667	20	2241	8
IFVI705Sel 2556	3250	8	1574	20	1883	15	4564	14	2054	11	3426	9	1944	10
IFVI716	2510	15	581	23	1467	21	4926	11	1497	20	1389	24	1111	22
IFVI1331Sel 143	1448	21	2672	6	1858	17	3376	22	1980	15	2222	17	1296	21
IFVI1361Sel 144	710	23	874	22	617	24	2556	24	520	23	1667	21	1296	19
IFVI1416Sel 255	463	24	569	24	772	23	3190	23	469	24	1574	23	1667	14
IFVI2541Sel Loc.	1908	19	1776	19	1726	19	3956	18	1517	19	2407	16	2500	7
B. Vicia narbonensis														
IFVI67 Sel Loc.	3389	6	3298	3	2490	8	6796	5	2361	3	1667	22	2593	5
IFVI574Sel 2388	3478	5	3394	2	1999	13	6968	3	2122	9	2685	13	2815	3
IFVI565Sel 2380	4367	1	2389	10	2021	12	7192	2	2041	12	2037	18	3759	2
IFVI573Sel 2387	3150	9	2050	13	2847	4	6107	7	2551	2	3241	10	2222	9
IFVI577Sel 2391	3362	7	2996	4	3069	2	6856	4	2340	4	3704	5	4093	1
IFVI568Sel 2383	3839	3	4459	1	2686	5	7852	1	2973	1	4074	4	2574	6
Local check	2845	12	1967	16	4113	1	6751	6	2150	8	2593	14	1667	12
Location Mean	**2601**		**2196**		**2096**		**5027**		**1892**		**2863**		**1992**	
S.E. of Mean	192.94		300.49		357.92		626.63		183.22		740.20		424.67	
L.S.D. at 5%	549.21		855.34		1018.83		1783.71		521.53		2107.00		1208.84	
C.V. %	12.85		23.70		29.58		21.59		16.78		44.79		36.93	
Test > Check	5		4		0		0		1		1		2	

Cont'd. ...

Table 5.3.6. Cont'd. ...

Entry Name	Portugal Elvas		Saudi Arabia Dirab		Syria Tel Hadya		Turkey Haymana		Turkey Tokat		Overall Mean	
	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R
A. Vicia sativa												
IFVI2Sel 845	6528	8	5660	7	1728	19	1878	16	6176	12	3458	10
IFVI2Sel 1134	5833	16	7369	1	2289	12	2089	10	6941	9	3709	4
IFVI4Sel 2057	5347	19	5033	10	2563	9	2133	9	7980	1	3588	9
IFVI7Sel 1135	6750	6	6639	2	2807	5	2156	8	7820	2	3604	7
IFVI7Sel 1136	4583	24	4824	11	2054	17	1556	19	7196	6	3319	15
IFVI384Sel 2062	5833	15	5888	5	2263	13	2056	11	7541	3	3655	5
IFVI482Sel 2096	6250	12	5597	8	1504	20	2000	14	6924	10	3439	11
IFVI507Sel 2019	7569	3	6394	4	1935	18	1167	24	7491	4	3591	8
IFVI534Sel 2065	6389	10	1900	18	998	22	1213	23	5704	15	2469	20
IFVI708Sel 2037	6528	9	1654	19	2548	10	1333	21	5030	18	2626	19
IFVI709	6042	13	5704	6	2209	14	2311	7	6331	11	3329	14
IFVI705Sel 2556	7778	2	6556	3	2580	8	1756	17	6076	13	3620	6
IFVI716	4583	23	3718	13	1133	21	1911	15	4741	19	2464	21
IFVI1331Sel 143	5833	17	5351	9	2074	16	1744	18	6970	8	3069	17
IFVI1361Sel 144	5972	14	1468	22	854	23	1267	22	7209	5	2084	22
IFVI1416Sel 255	5069	20	1521	21	831	24	1467	20	3763	22	1780	23
IFVI2541Sel Loc.	5694	18	4763	12	2124	15	2033	13	3556	23	2830	18
B. Vicia narbonensis												
IFVI67 Sel Loc.	6250	11	1972	17	3057	2	2344	6	4602	21	3402	13
IFVI574Sel 2388	4931	21	2039	16	2959	3	2056	12	5744	14	3433	12
IFVI565Sel 2380	6597	7	3500	14	3102	1	2933	2	4602	20	3712	3
IFVI573Sel 2387	4861	22	1297	23	2756	6	2489	5	5031	17	3217	16
IFVI577Sel 2391	6875	5	1539	20	2837	4	2576	4	5367	16	3801	2
IFVI568Sel 2383	7778	1	3231	15	2739	7	3409	1	7100	7	4393	1
Local check	7292	4	0	24	2533	11	2920	3	-			
Location Mean	**6132**		**3901**		**2187**		**2033**		**6082**			
S.E. of Mean	775.35		603.39		345.96		319.31		772.35			
L.S.D. at 5%	NS		1717.57		984.77		908.94		2201.34			
C.V. %	21.90		26.79		27.40		27.20		21.99			
Entry > L. check	-		18		0		0		0			

NS = Not significant at $P \leq 0.05$.

APPENDIX I

Distribution of Legume International Nurseries and Trials during 1992/93

Country	CIYT-SP	CIYTW-MR	CIYT-SL1	CIYT-SL2	CIYT-LA	CISN-W	CISN-SP	CISN-SL1	CISN-SL2	CISN-LA	CIF4N-MR	CIF4N-SL	CIABN-A	CIABN-B	CIFWN	CILMN	CICTN	TOTAL
Afghanistan	1	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	5
Algeria	6	10	0	0	0	4	2	0	0	0	2	0	4	3	6	2	2	41
Argentina	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2
Australia	1	1	0	1	1	0	0	0	1	1	0	0	1	0	1	0	0	8
Bahrain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Bhutan	2	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	2	10
Bolivia	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2	4
Bulgaria	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3
Canada	1	0	1	1	1	0	0	1	0	1	0	1	0	1	0	0	0	8
Chile	0	0	0	0	1	1	0	0	1	2	0	0	0	0	1	0	0	6
China	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	3
Colombia	0	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	4
Cyprus	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Egypt	0	1	1	1	0	0	0	0	0	0	1	1	1	0	1	0	0	7
Ethiopia	0	0	2	1	0	0	0	1	3	0	0	2	0	1	1	0	1	12
Greece	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	4
India	1	0	3	6	1	3	0	6	4	0	2	7	1	10	12	0	6	62
Iran	5	1	0	0	0	3	4	0	0	0	1	1	1	1	2	1	3	23
Iraq	1	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	6
Italy	2	5	0	0	0	5	0	0	0	1	3	0	1	2	1	2	2	24
Jordan	0	2	0	0	0	2	2	0	0	0	0	0	2	0	1	0	0	9
Kenya	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0	0	0	5
Kuwait	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lebanon	1	1	0	0	0	0	1	0	0	0	0	0	1	0	0	1	1	6
Libya	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3

Cont'd. ...

APPENDIX I (Cont'd. ...)

Country	CIYT-SP	CIYTW-MR	CIYT-SL1	CIYT-SL2	CIYT-LA	CISN-W	CISN-SP	CISN-SL1	CISN-SL2	CISN-LA	CIF4N-MR	CIF4N-SL	CIABN-A	CIABN-B	CIFWN	CILMN	CICTN	TOTAL
Mexico	0	0	0	0	4	1	0	0	0	2	0	0	0	1	2	0	0	10
Morocco	0	3	0	0	0	2	0	0	0	0	2	0	2	0	1	1	0	11
Nepal	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
New Zealand	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Oman	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Pakistan	0	0	1	1	0	0	0	3	2	0	0	0	0	8	5	0	2	22
Peru	0	0	0	0	2	0	0	0	0	4	0	0	0	0	0	0	0	6
Portugal	0	1	0	0	0	1	0	0	0	0	1	0	1	1	1	0	0	6
Russia	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Saudi Arabia	0	0	2	1	0	0	0	0	1	0	0	1	0	0	1	0	0	6
South Africa	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
Spain	1	4	0	0	1	4	1	0	0	1	3	0	0	1	0	0	1	17
Sri Lanka	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Sudan	0	0	1	1	0	0	0	1	2	0	0	1	0	0	2	0	0	8
Syria	7	8	0	0	0	8	8	0	0	0	3	0	4	0	0	0	2	40
Thailand	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Tunisia	1	1	0	0	1	4	4	0	0	3	1	0	0	3	1	1	0	20
Turkey	7	8	0	0	2	7	7	0	0	1	6	0	6	2	1	4	6	57
USA	0	0	0	0	2	0	0	0	0	1	1	0	0	1	0	0	0	5
Venezuela	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
ICARDA	3	3	1	2	1	3	3	1	2	1	0	0	0	1	0	3	3	27
Total	**46**	**61**	**19**	**19**	**22**	**52**	**36**	**15**	**18**	**21**	**28**	**15**	**29**	**38**	**45**	**15**	**36**	**515**

Cont'd. ...

Country	LIYT-L	LIYT-S	LIYT-E	LISN-L	LISN-S	LISN-E	LIF5N-L	LIF5N-S	LIF5N-CT	LIF5N-E	LICTN	LIABN	LIFWN	LIRN	PIAT	IVAT	ILAT	TOTAL
Afghanistan	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4
Algeria	5	4	1	2	2	0	0	0	0	0	1	0	0	0	3	5	5	28
Argentina	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Australia	2	2	1	1	1	1	1	1	0	0	0	1	0	0	1	2	2	16
Bahrain	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Bangladesh	0	0	0	0	0	1	0	0	0	1	0	0	0	1	3	0	0	6
Bhutan	0	1	2	1	2	2	0	0	0	0	2	0	0	0	1	2	2	15
Bolivia	1	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	5
Brazil	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Bulgaria	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	1	5
Burundi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Canada	1	0	1	2	1	0	0	0	0	0	0	1	0	0	1	0	0	7
Chile	2	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	2	8
China	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
Colombia	0	0	1	0	0	0	1	0	0	0	0	0	1	1	1	1	1	7
Cyprus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
Ecuador	0	0	1	0	0	1	0	0	0	1	1	0	0	0	1	0	2	7
Egypt	2	2	3	2	2	2	1	3	0	1	0	0	1	0	2	0	0	21
Ethiopia	0	0	2	0	0	2	0	1	0	1	1	2	0	1	1	1	2	14
France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Greece	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
India	0	0	2	1	0	6	0	0	0	4	0	2	3	5	5	1	2	31
Iran	7	1	1	9	1	4	3	0	0	0	7	0	0	0	0	3	3	39
Iraq	1	1	0	0	0	0	1	1	0	0	1	1	1	0	1	1	1	10
Italy	3	2	0	1	2	1	0	1	1	0	1	0	0	0	3	4	3	22
Japan	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Jordan	2	0	2	0	0	0	0	0	0	0	1	0	1	0	3	5	5	19
Kuwait	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Cont'd. ...

APPENDIX I (Cont'd. ...)

Country	LIYT-L	LIYT-S	LIYT-E	LISN-L	LISN-S	LISN-E	LIF5N-L	LIF5N-S	LIF5N-CT	LIF5N-E	LICTN	LIABN	LIFWN	LIRN	PIAT	IVAT	ILAT	TOTAL
Lebanon	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	5
Libya	1	4	0	0	0	0	0	0	0	0	0	0	0	0	3	2	3	13
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Mexico	2	2	1	0	0	0	0	0	1	0	0	0	1	0	2	2	2	13
Morocco	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	3	3	12
Nepal	0	0	1	0	0	2	0	0	0	0	0	0	2	0	0	0	0	5
New Zealand	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Oman	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	6
Pakistan	1	0	11	0	1	10	0	1	0	4	0	1	4	3	1	3	3	43
Peru	1	0	0	1	0	0	1	0	0	0	0	0	0	0	3	0	0	6
Portugal	1	1	0	0	1	0	0	0	0	0	1	1	0	0	1	1	1	8
Qatar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Russia	2	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	5
Saudi Arabia	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	2	2	7
South Africa	1	1	3	0	0	0	0	0	0	0	1	0	0	0	2	3	2	13
Spain	1	1	0	0	1	0	0	0	1	0	0	0	0	0	4	1	0	9
Sri Lanka	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
Sudan	0	0	2	0	0	1	0	0	0	1	0	0	1	0	2	0	0	7
Syria	5	5	0	5	5	0	2	2	0	0	0	0	5	0	0	3	3	35
Tunisia	2	1	1	1	0	2	0	0	0	0	0	0	0	0	2	0	0	9
Turkey	3	1	0	2	1	0	2	1	1	0	3	0	0	0	1	4	3	22
UK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
USA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	6
Venezuela	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Yemen	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ICARDA	3	3	2	2	2	1	1	1	1	1	1	1	1	1	2	3	3	29
Total	**55**	**35**	**45**	**33**	**24**	**39**	**15**	**12**	**5**	**14**	**22**	**11**	**25**	**14**	**67**	**62**	**67**	**545**

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APPENDIX III

ICARDA scientists cooperating in the Legume International Testing Program during 1992/93.

1.	Dr. R.S. Malhotra International Trials Scientist
2.	Dr. S.P.S. Beniwal Legume Scientist (Morocco)
3.	Dr. William Erskine Lentil Breeder
4.	Dr. M.T. Mmbaga Chickpea Pathologist
5.	Dr. Ali Abdel Moneim Forage Legumes Breeder
6.	Dr. Mohan C. Saxena Program Leader
7.	Dr. K.B. Singh Principal Chickpea Breeder (ICRISAT)
8.	Dr. Susanne Weigand Legume Entomologist

APPENDIX IV

Geographical Details for the Locations

COUNTRY	LOCATION	LATITUDE	LONGITUDE	ALTITUDE	RAINFALL
ALGERIA	Guelma	36.28N	07.26E	270	641
ALGERIA	Khroub	36.25N	06.67E	640	538
ALGERIA	Oued Smar	36.43N	03.15E	24	533
ARGENTINA	Cordoba	31.19S	64.13W	474	519
AUSTRALIA	Horsham	36.44S	142.01E	200	560
AUSTRALIA	Merredin	31.29S	118.23E	NA	191
BANGLADESH	Ishurdi	24.03N	89.05E	16	13
BANGLADESH	Mymensingh	24.70N	90.00E	18	875
BOLIVIA	Cochabamba	17.21S	66.19W	2584	526
BULGARIA	Toshevo	43.40N	28.02E	236	479
BURUNDI	Busumbura	03.33S	29.40E	2176	1226
CHILE	Casilla-1	35.38S	72.17W	177	407
CHILE	Casilla-2	36.21S	71.55W	217	338
CHILE	Graneros	34.00S	70.00W	479	70
CHILE	Valdivia	39.45S	73.14W	12	685
CHINA	Dingxi	35.32N	104.37E	1920	368
CYPRUS	Athalassa	35.08N	33.24E	142	297
CYPRUS	Dromolaxia	34.52N	33.36E	25	315
ETHIOPIA	Debre Zeit	08.48N	39.38E	1900	323
ETHIOPIA	Ghinchi	09.03N	38.30E	2200	1065
ETHIOPIA	Holleta	09.30N	38.31E	2400	1132
GREECE	Larissa	39.70N	22.50E	70	389
GREECE	Makedonia	40.31N	22.58E	5	325
INDIA	Almora	29.36N	79.40E	1250	528
INDIA	Durgapura	26.49N	75.48E	450	35
INDIA	Kovilangulam	09.31N	77.57E	50	420
INDIA	Navsari	20.57N	72.54E	10	2110
INDIA	New Delhi-1	28.35N	77.12E	228	65
INDIA	New Delhi-2	28.40N	77.10E	NA	54
INDIA	Karewa	34.60N	74.59E	1650	2201
IRAN	Ardabile	38.15N	48.20E	1350	338
IRAN	Gorgan	36.55N	54.20E	15	559
IRAN	Karaj	35.48N	51.20E	1321	233
IRAN	Kermanshah	34.80N	47.26E	1346	531
IRAN	Khorramabad	33.29N	48.22E	1171	689
IRAN	Maragheh	38.18N	46.24E	1750	288
IRAN	Mashhad	36.76N	59.38E	985	220
IRAN	Qazvin	36.15N	50.00E	1280	380
IRAN	Sanandaj	35.43N	48.80E	2100	374
IRAN	Shiraz	29.46N	52.43E	1603	160
IRAN	Yasoj	30.49N	51.41E	1800	1124
IRAN	Zandjan	36.41N	48.97E	1666	257
ITALY	Caltagirone	37.10N	14.30E	350	281
ITALY	Catania	36.90N	05.21E	1023	170
ITALY	Oristano	39.57N	08.39E	14	452
ITALY	Perugia	42.57N	12.22E	164	327
JORDAN	Amman	32.46N	35.47E	790	309
JORDAN	Maru	32.33N	35.51E	580	418

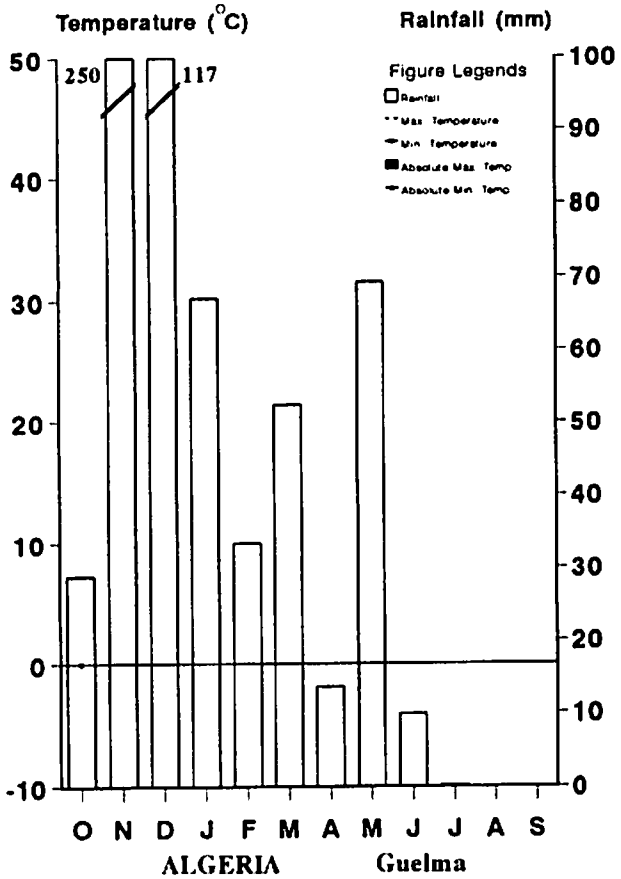
Cont'd. ...

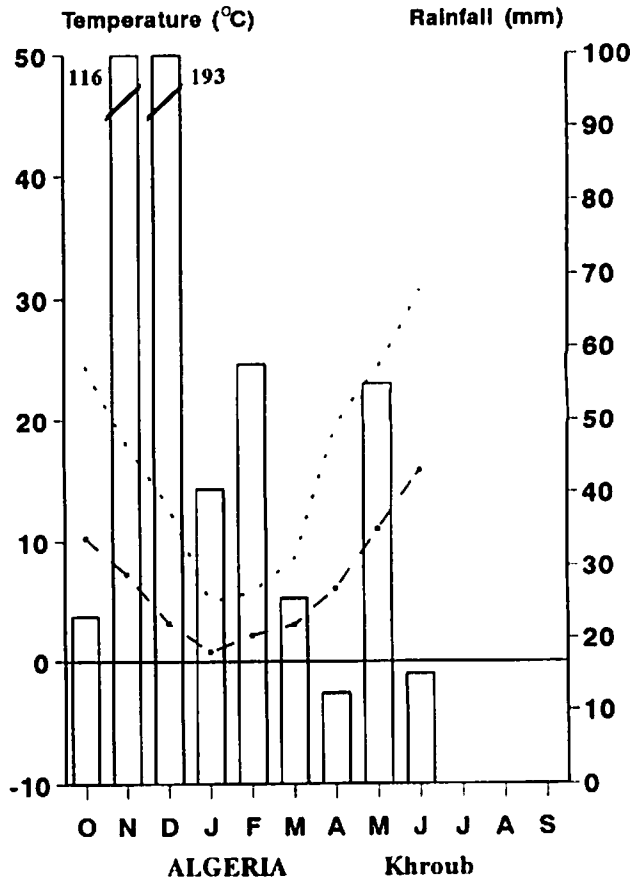
APPENDIX IV (Cont'd. ...)

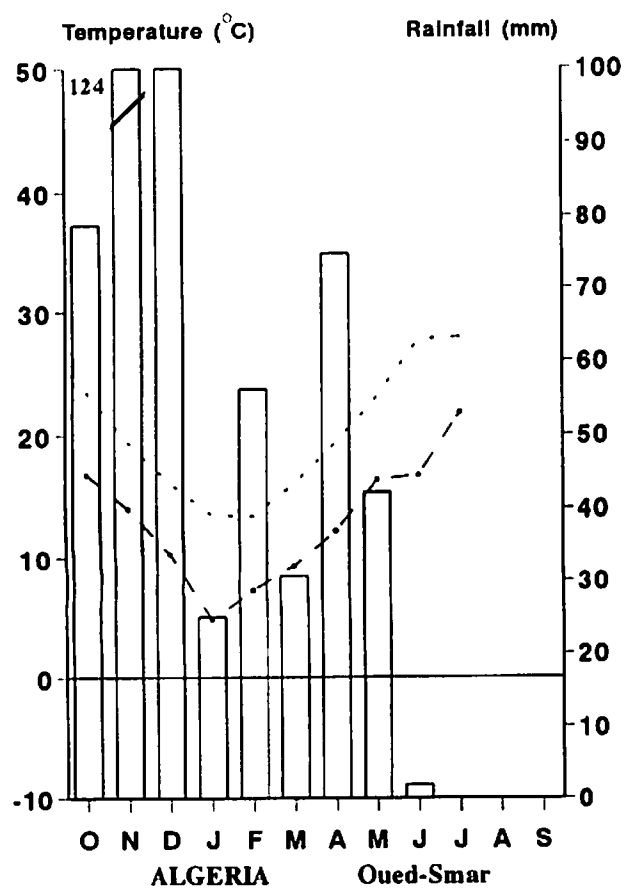
COUNTRY	LOCATION	LATITUDE	LONGITUDE	ALTITUDE	RAINFALL
JORDAN	Rabba	35.45N	31.16E	870	343
JORDAN	Ramtha	30.32N	36.00E	590	202
LEBANON	Kfardan	NA	NA	NA	NA
LEBANON	Terbol	33.49N	35.59E	890	664
LESOTHO	Maseru	29.35S	27.20E	NA	340
LIBYA	El Marj	32.49N	21.54E	641	482
LIBYA	Khomes	32.62N	14.25E	250	152
LIBYA	Sebha	NA	NA	NA	0
LIBYA	Zahra	32.43N	12.63E	62	111
LITHUANIA	Kedainiai	55.00N	23.00E	60	352
MOROCCO	Rabat	34.00N	06.50	100	220
NEPAL	Khumaltar	27.40N	85.20E	1360	NA
NEPAL	Kaski	28.18N	83.49E	1675	2731
NEW ZEALAND	Christchurch	43.30S	172.43E	NA	385
PAKISTAN	Dokri	27.50N	68.10E	NA	14
PAKISTAN	Islamabad(NARC)	33.43N	73.07E	578	271
PAKISTAN	Mingora	34.46N	72.26E	1000	501
PORTUGAL	Elvas	38.53N	07.49W	208	391
QATAR	Rawdat Harma	25.48N	51.18E	50	134
SAUDI ARABIA	Al-Gassim	26.04N	43.59E	724	234
SAUDI ARABIA	Dirab	24.42N	46.00E	600	156
SAUDI ARABIA	Riyadh	26.00N	46.00E	600	19
SPAIN	Badajoz	38.50N	06.40W	237	294
SPAIN	Cordoba	37.49N	04.49W	118	362
SPAIN	Seville	37.32N	05.58W	18	221
SPAIN	Valladolid	41.35N	04.45W	700	314
SRI LANKA	Bandarawela	06.45N	81.00E	1259	416
SUDAN	Hudeiba	17.00N	33.00E	351	NA
SYRIA	Aleppo-TH	36.05N	36.55E	285	276
SYRIA	Al Ghab	36.23N	35.23E	170	697
SYRIA	Breda	35.56N	37.10E	300	283
SYRIA	Gelline	32.50N	36.00E	421	356
SYRIA	Hama	35.08N	36.45E	316	370
SYRIA	Heimo	37.03N	41.13E	452	575
SYRIA	Idleb	36.64N	36.00E	215	285
SYRIA	Izra'a	32.15N	36.15E	575	295
SYRIA	Jableh	35.40N	35.40E	7	827
SYRIA	Jindiress	36.24N	36.44E	210	437
SYRIA	Tel Hadya	36.01N	36.56E	284	290
TUNISIA	Sousse	35.55N	10.34E	11	341
TURKEY	Adana	36.59N	35.18E	20	738
TURKEY	Ankara	39.60N	32.70E	1055	291
TURKEY	Diyarbakir	37.55N	40.12E	660	479
TURKEY	Erzurum	39.55N	41.16E	1850	400
TURKEY	Eskisehir	39.46N	30.31E	789	275
TURKEY	Menemen	38.05N	27.34E	10	466
TURKEY	Samsun-1	41.20N	36.15E	120	165
TURKEY	Samsun-2	40.47N	36.50E	430	217
TURKEY	Tokat	40.18N	36.34E	585	254

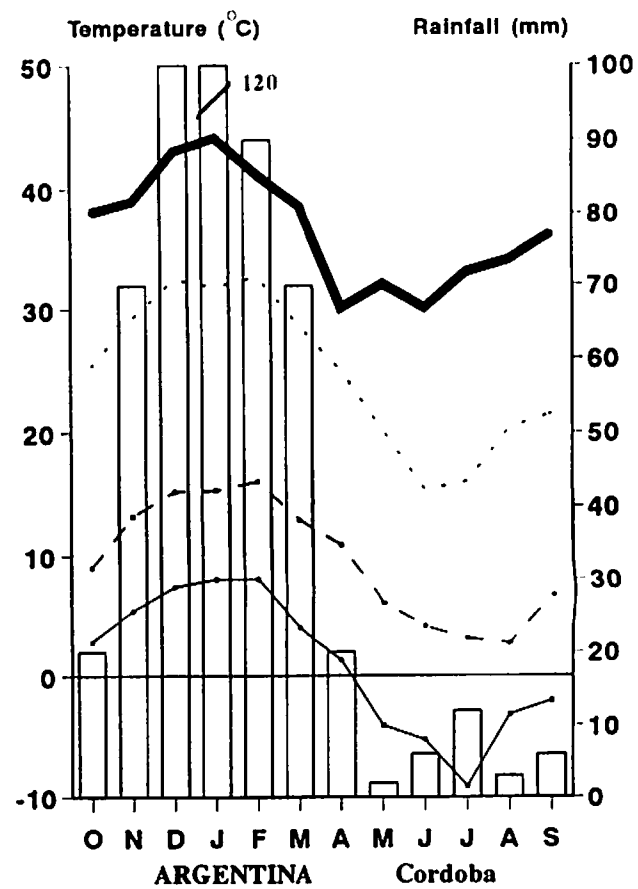
APPENDIX V

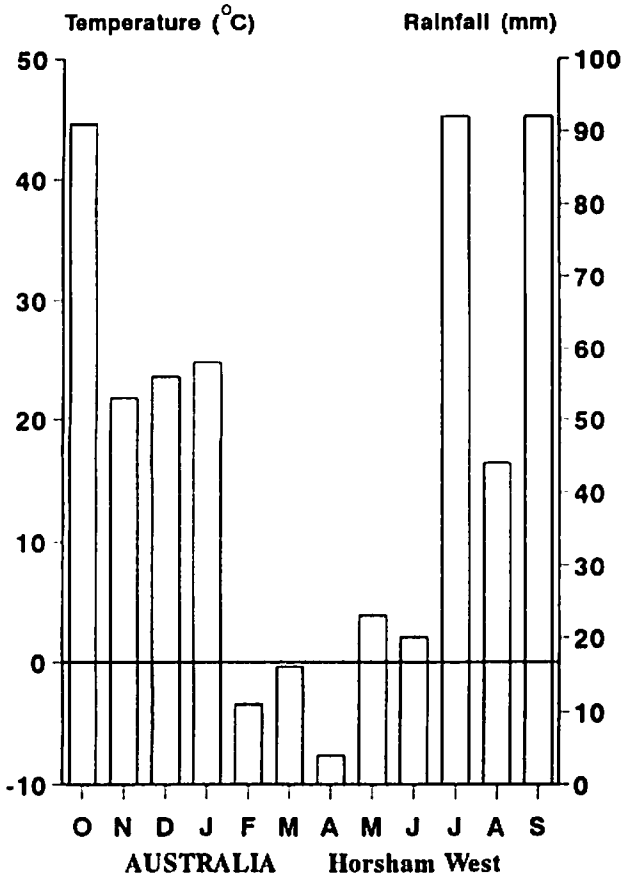
Meteorological Details for the Locations







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30
20
10
0
-10
100
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80
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40
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20
10
0
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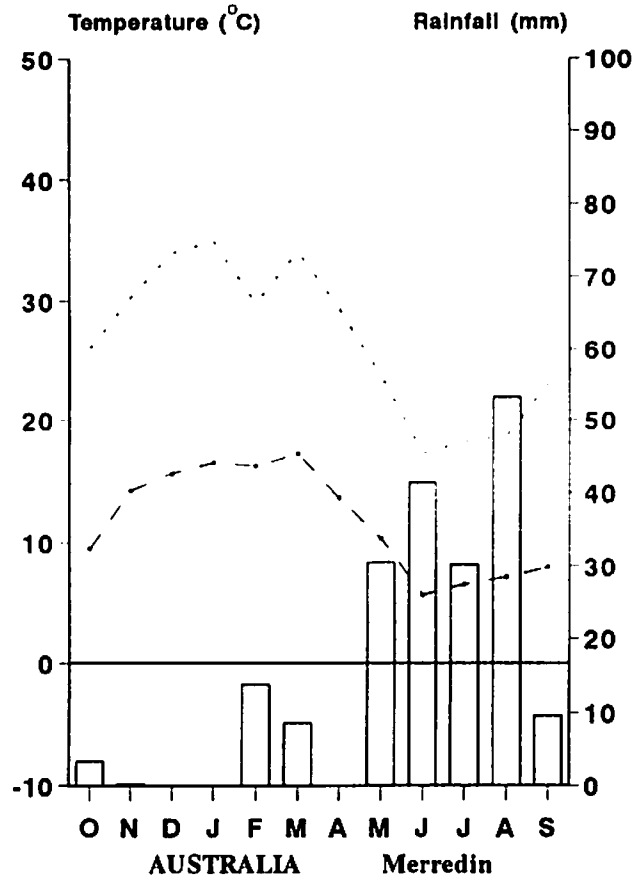
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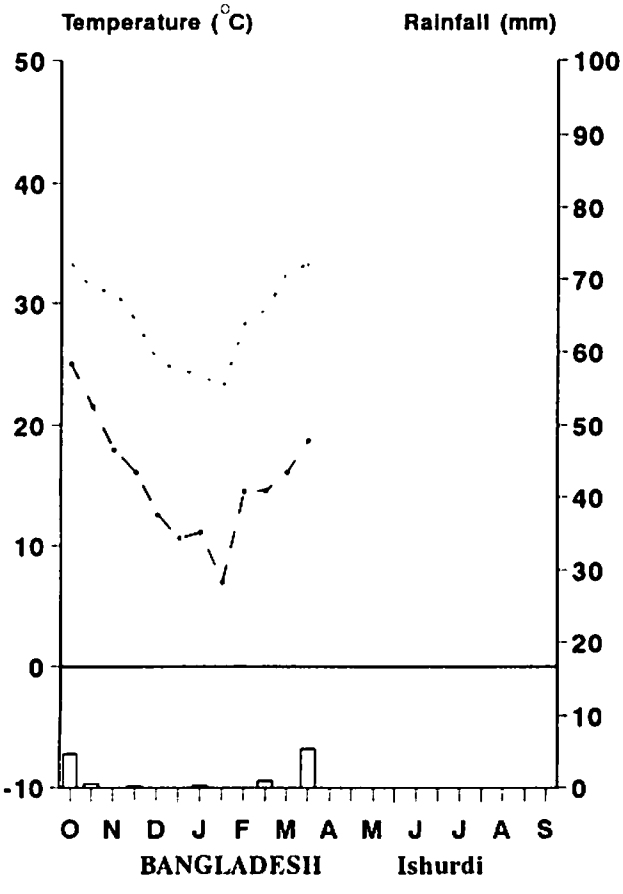
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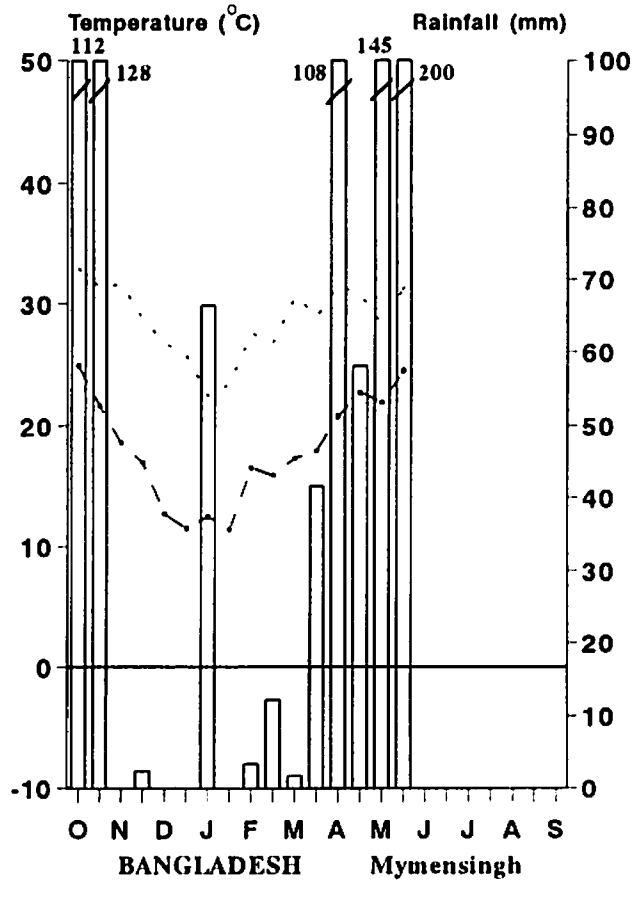
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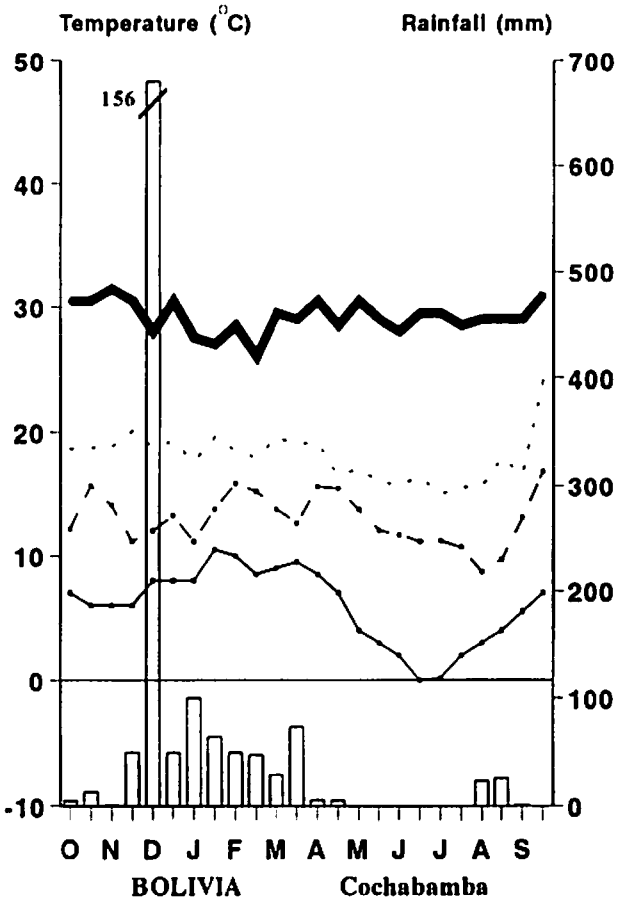
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Rainfall (mm)
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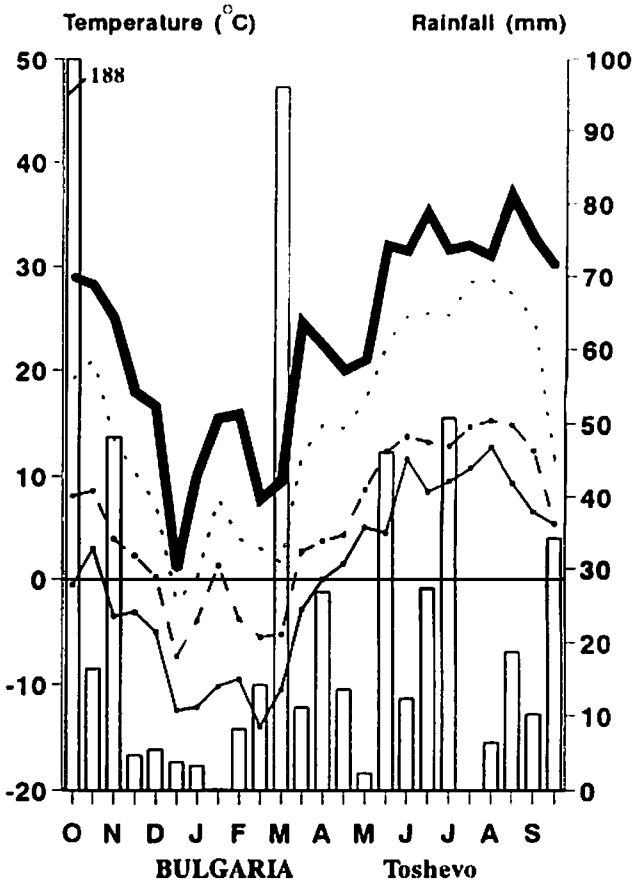
Cochabamba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Rainfall (mm)
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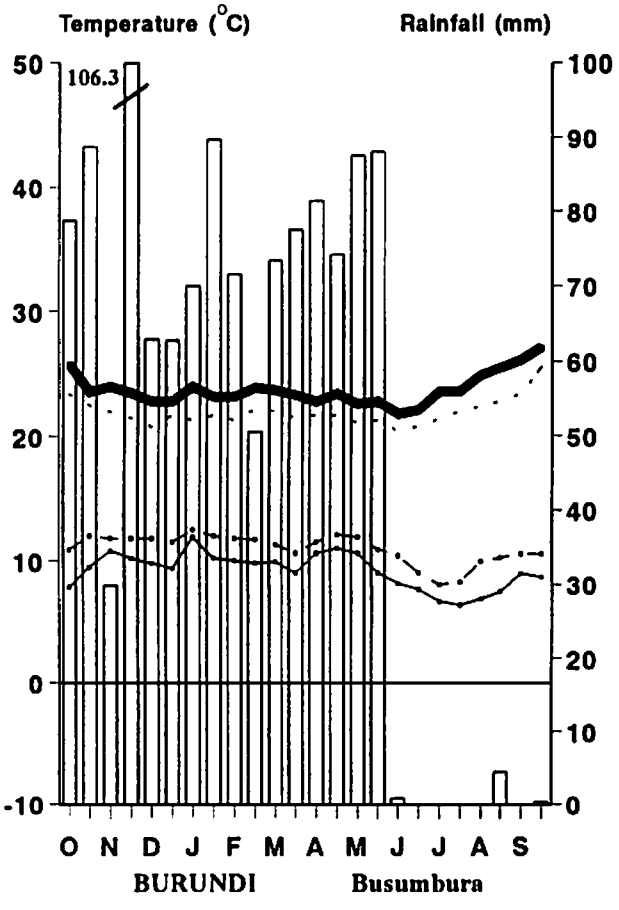
Toshevo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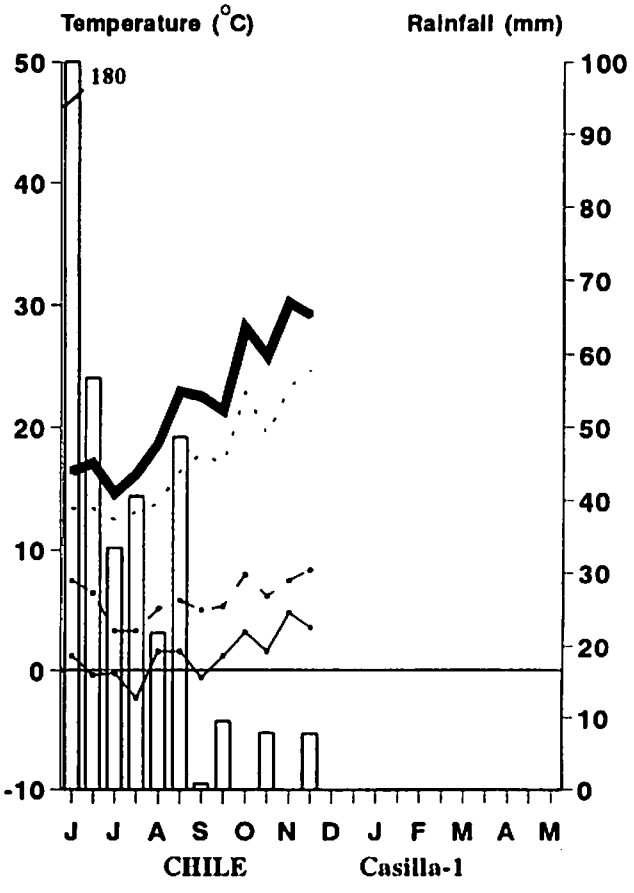
BURUNDI
Busumbura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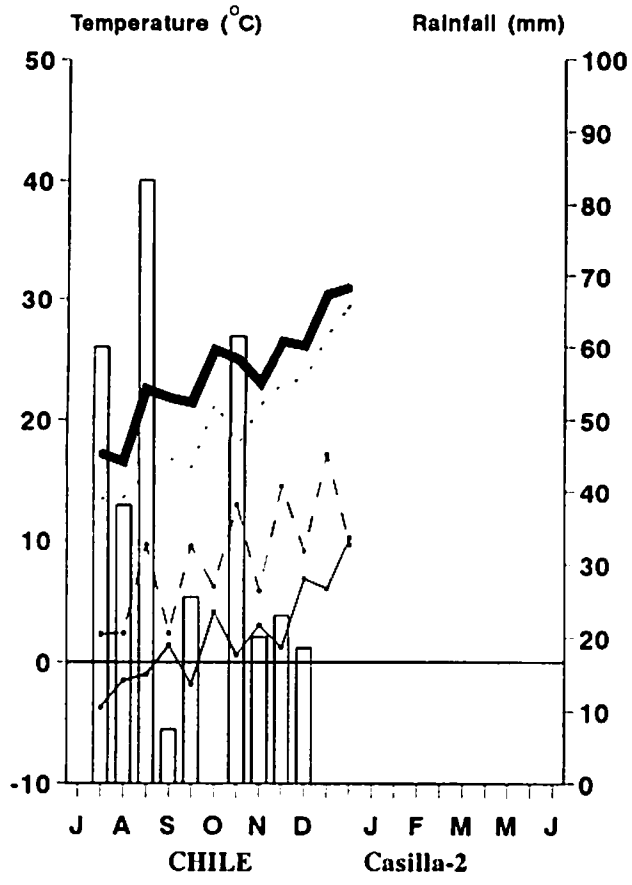
CHILE
Casilla-1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0
-10
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10
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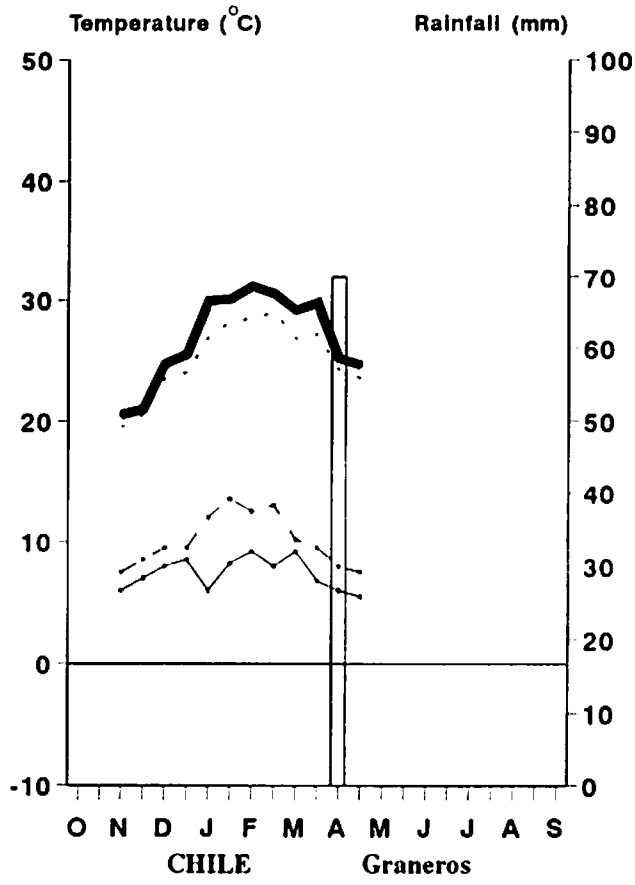
CHILE
Casilla-2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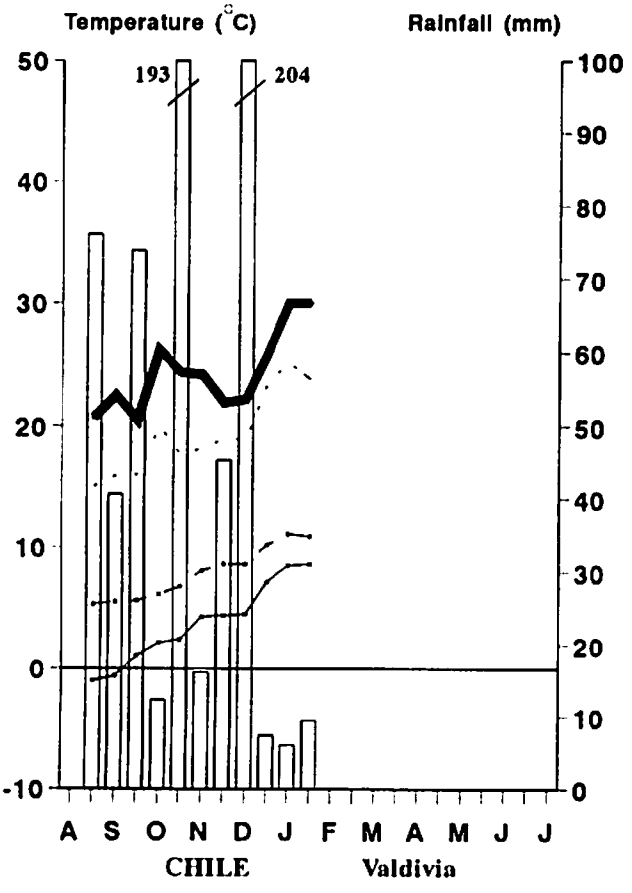
CHILE
Graneros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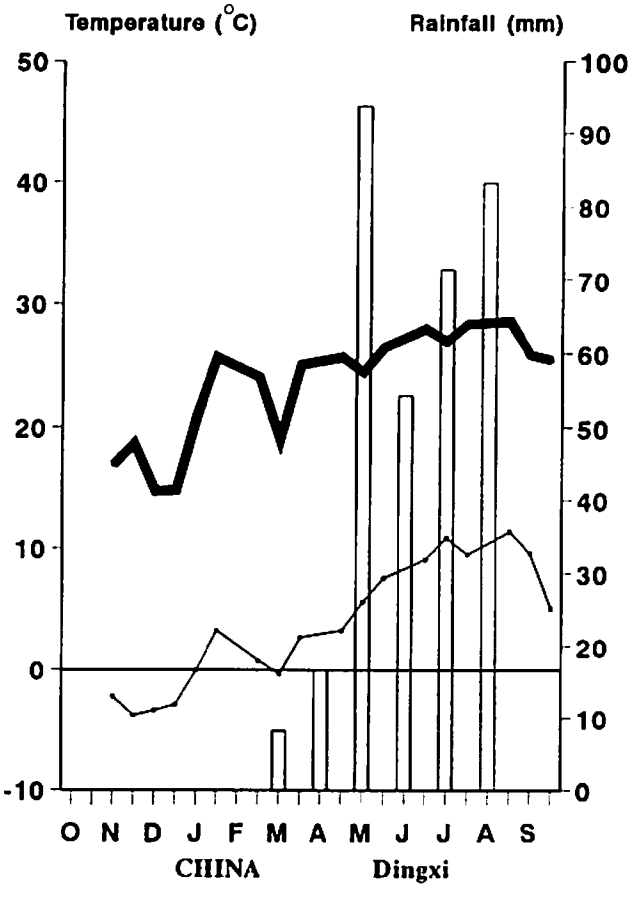
Valdivia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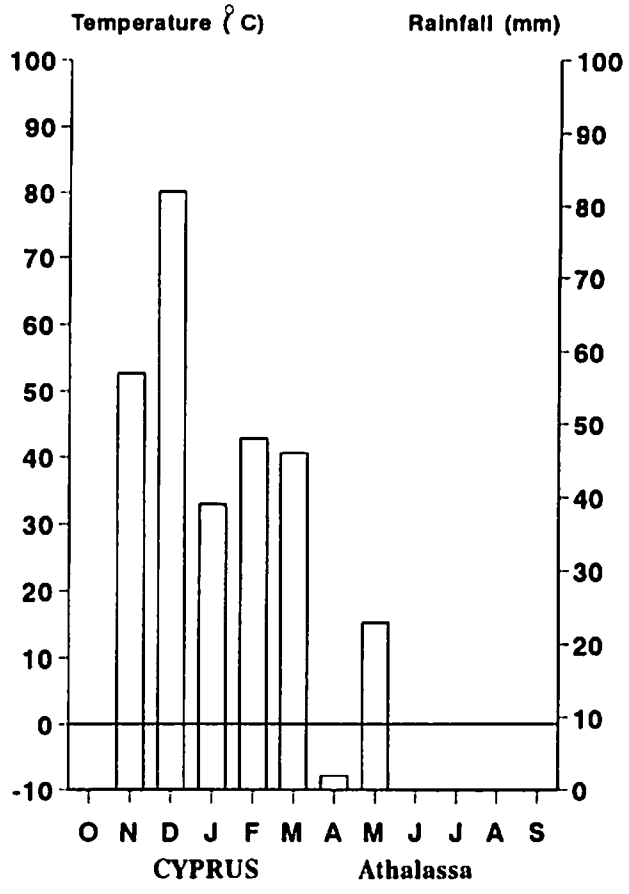
CHINA
Dingxi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Rainfall (mm)
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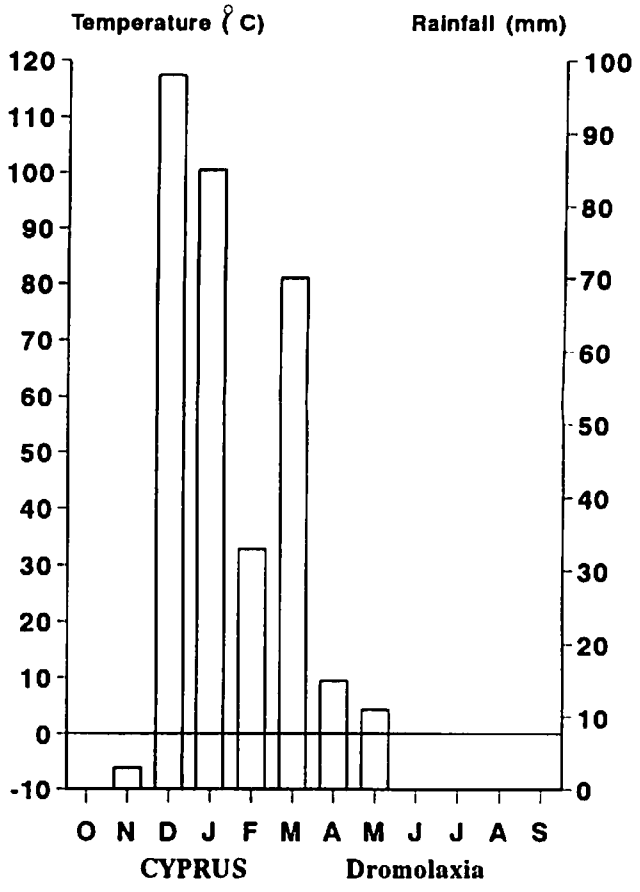
CYPRUS
Athalassa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Rainfall (mm)
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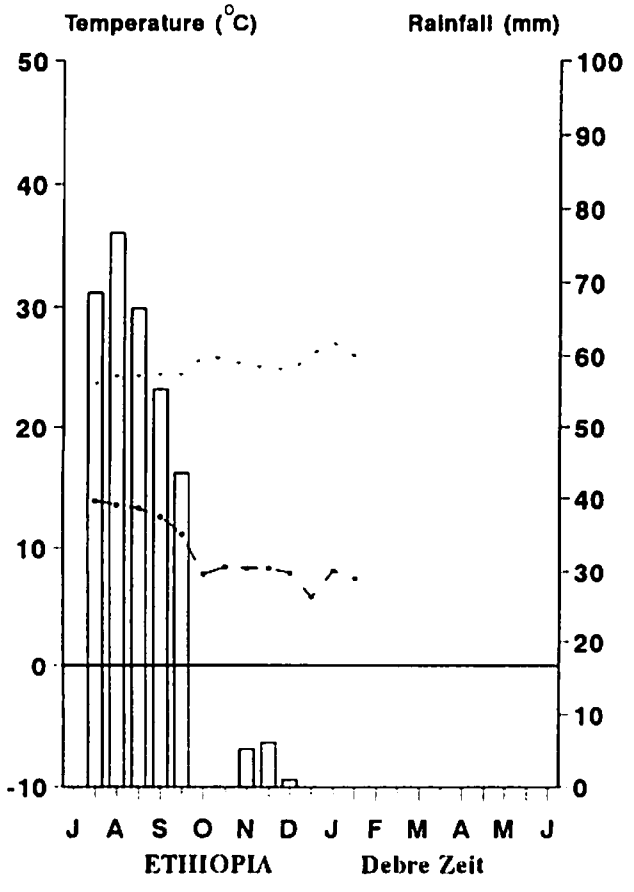
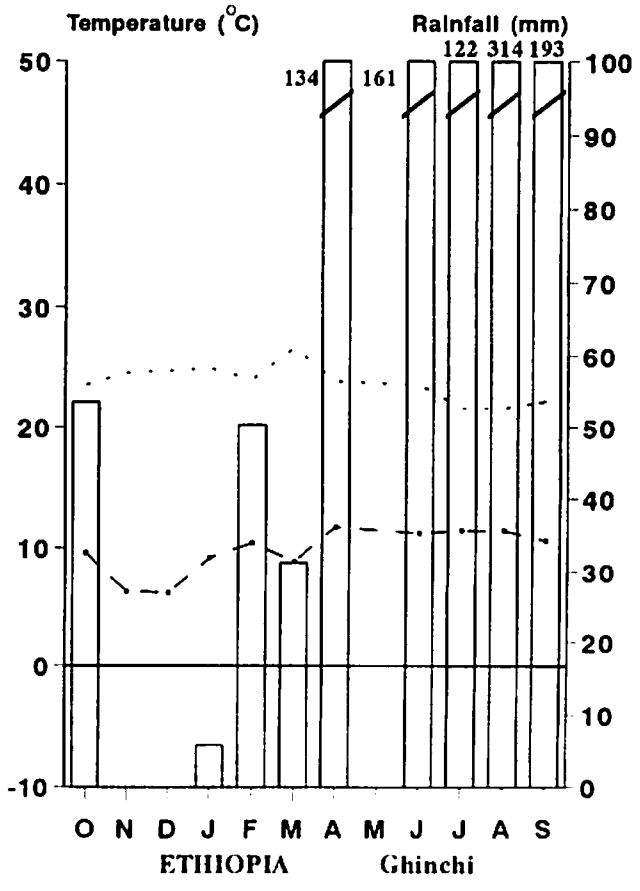
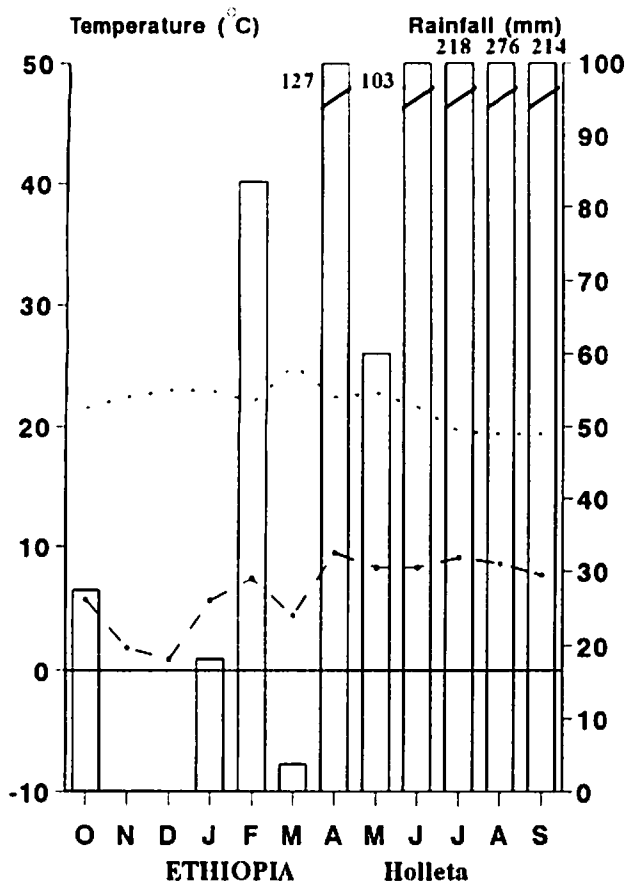
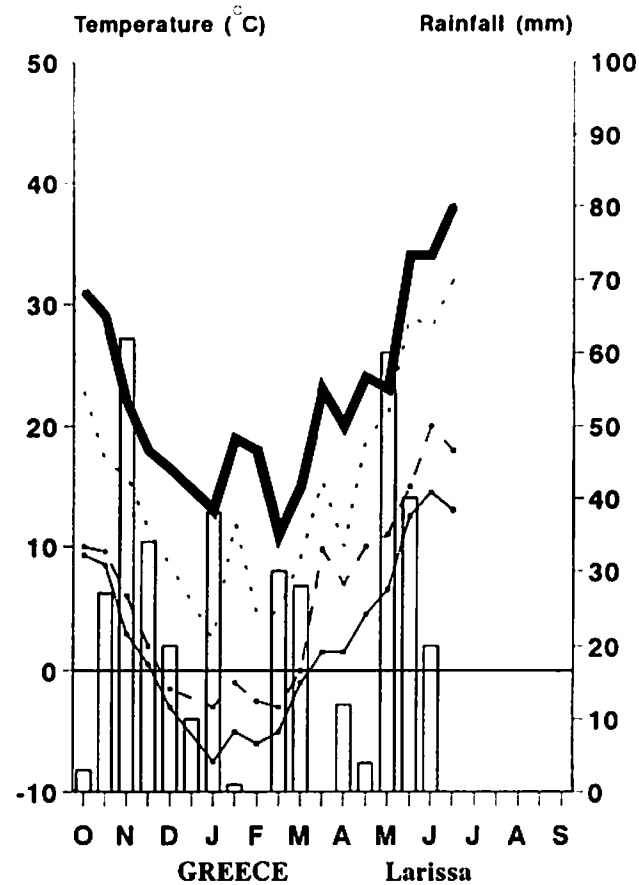
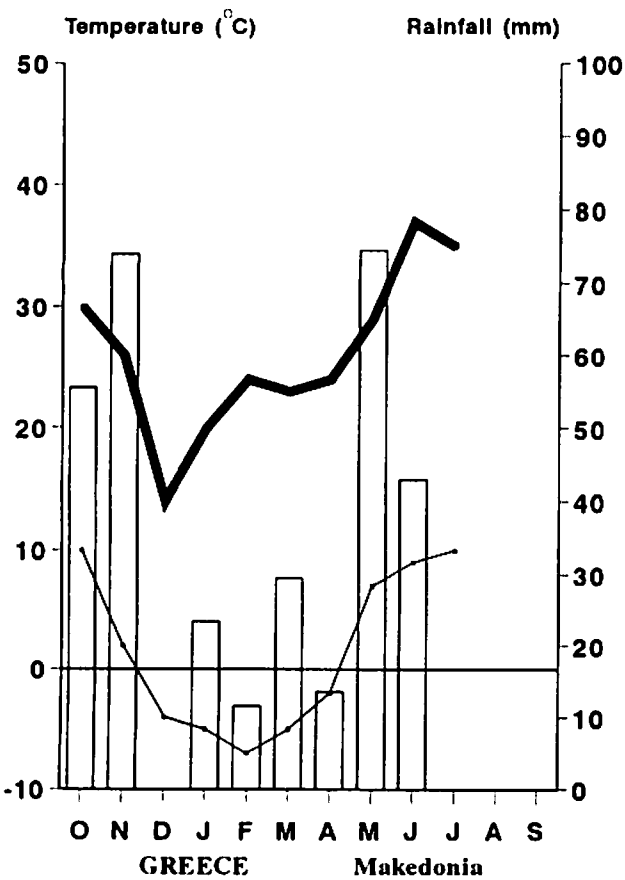
CYPRUS
Dromolaxia

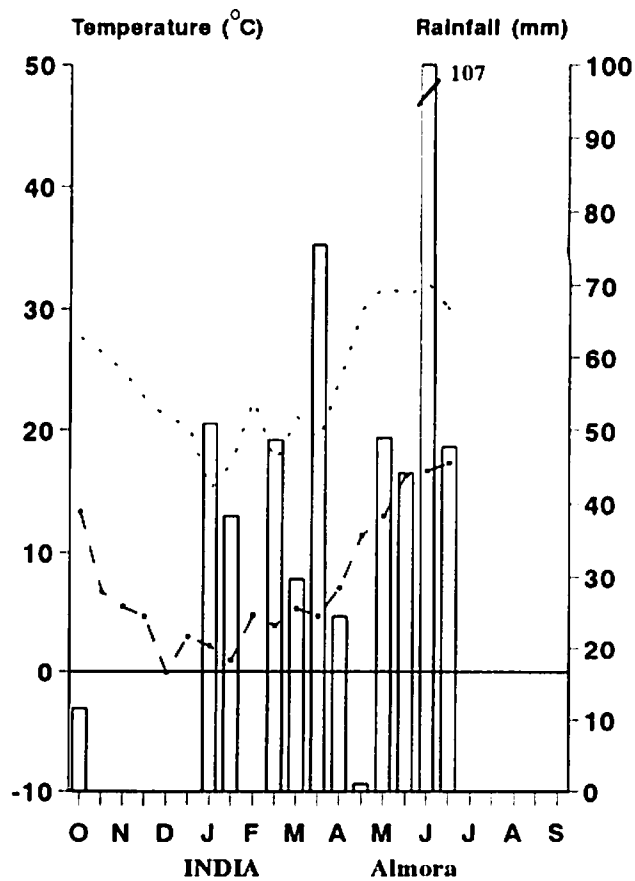

Temperature (°C)
Rainfall (mm)
J A S O N D J F M A M J
ETHIOPIA
Debre Zeit

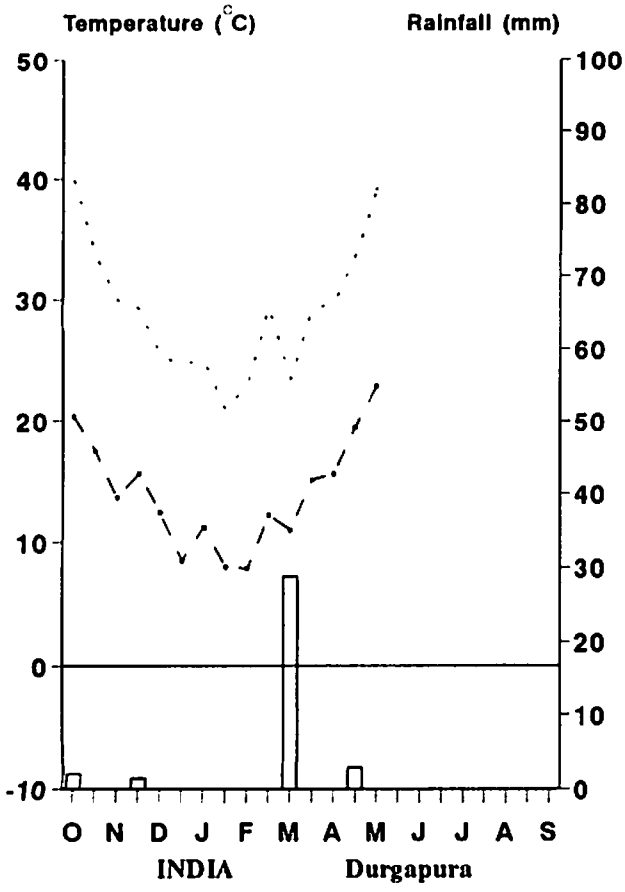

Temperature (°C)
Rainfall (mm)
134
161
122
314
193
O N D J F M A M J J A S
ETHIOPIA
Ghinchi

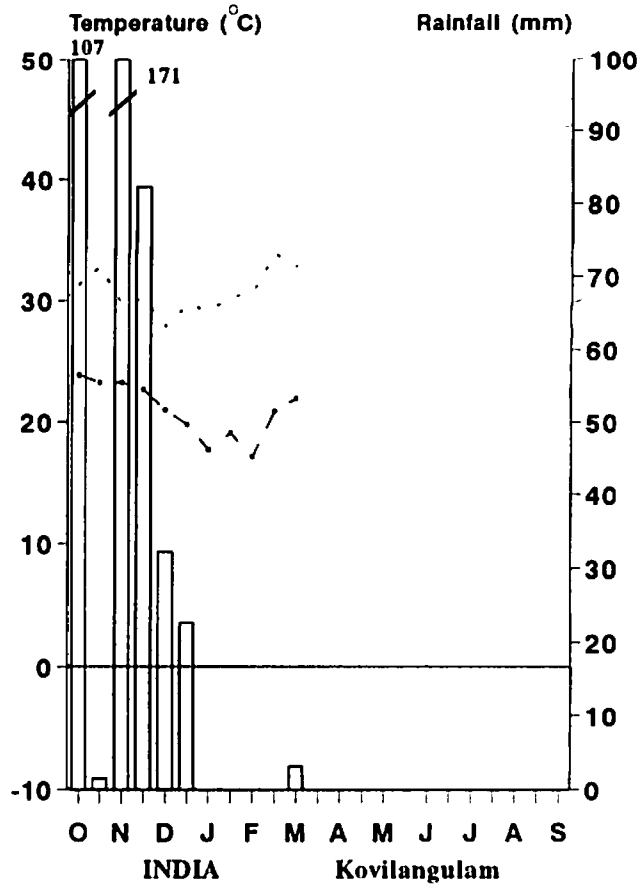

Temperature (°C)
Rainfall (mm)
127
103
218 276 214
O N D J F M A M J J A S
ETHIOPIA Holleta

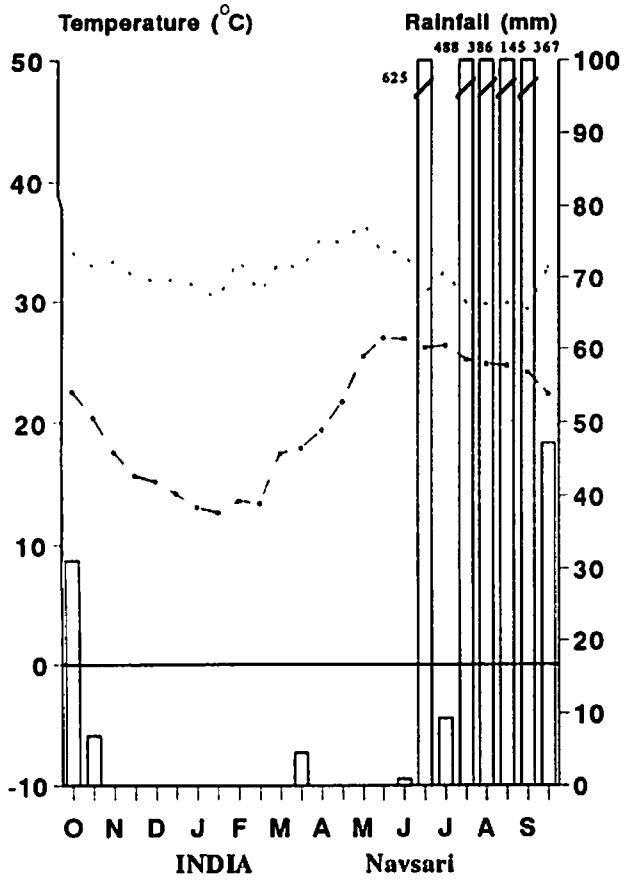

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
GREECE Larissa

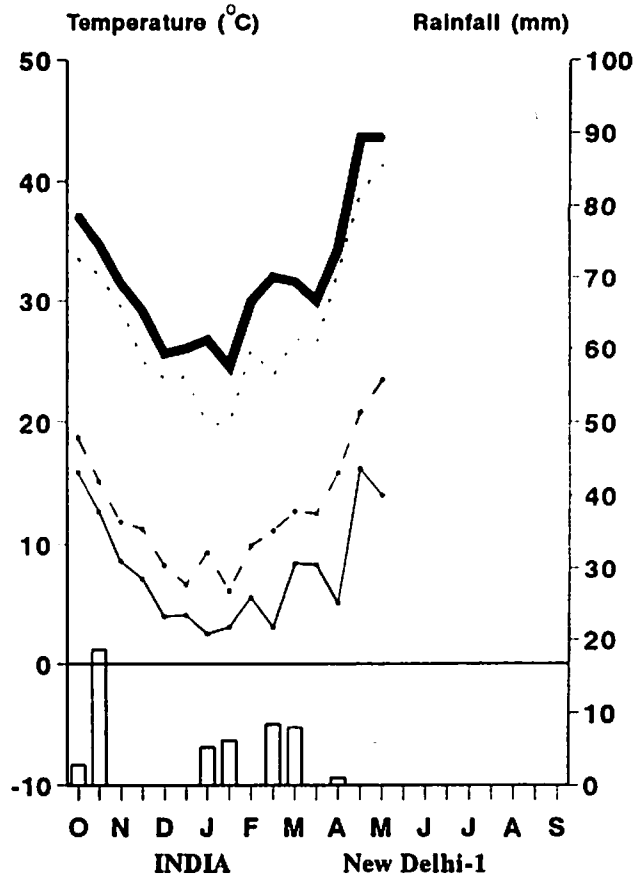

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
GREECE Makedonia

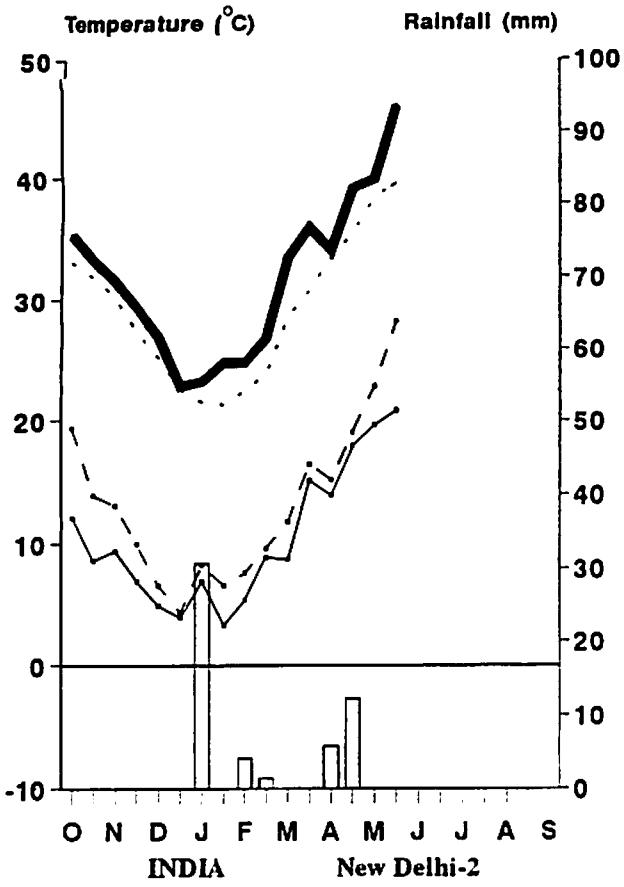

Temperature (°C)
Rainfall (mm)
107
O N D J F M A M J J A S
INDIA Almora

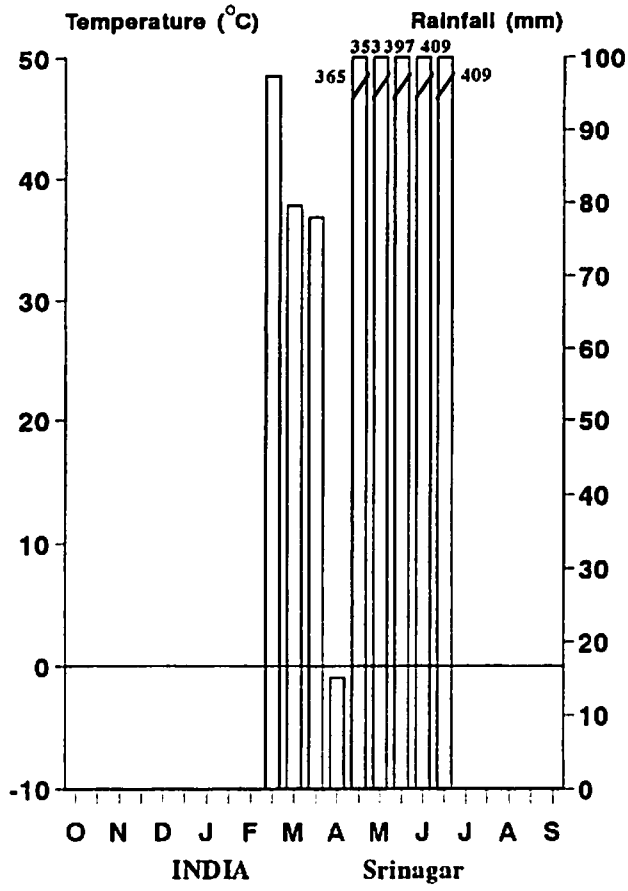

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
INDIA
Durgapura

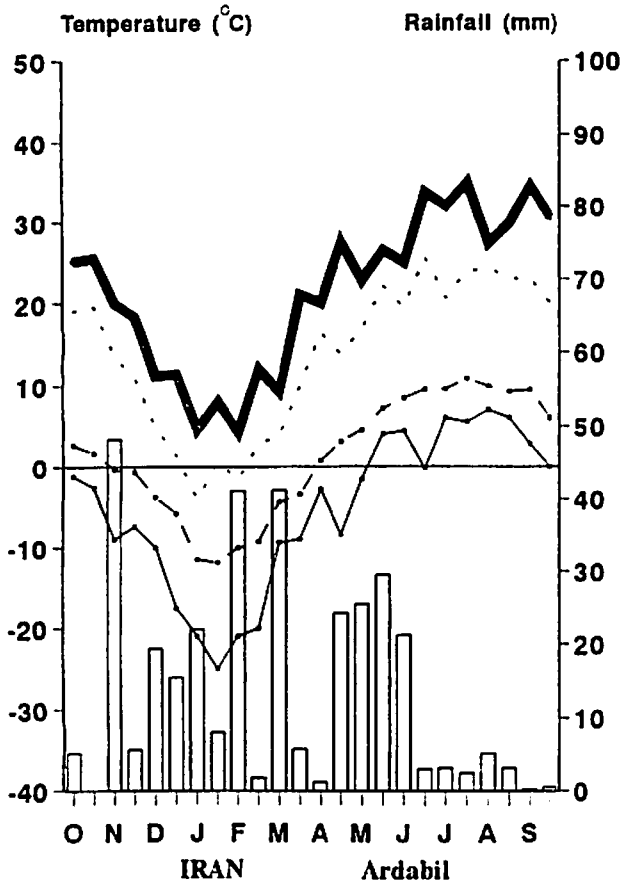

Temperature (°C)
Rainfall (mm)
107
171
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
INDIA
Kovilangulam

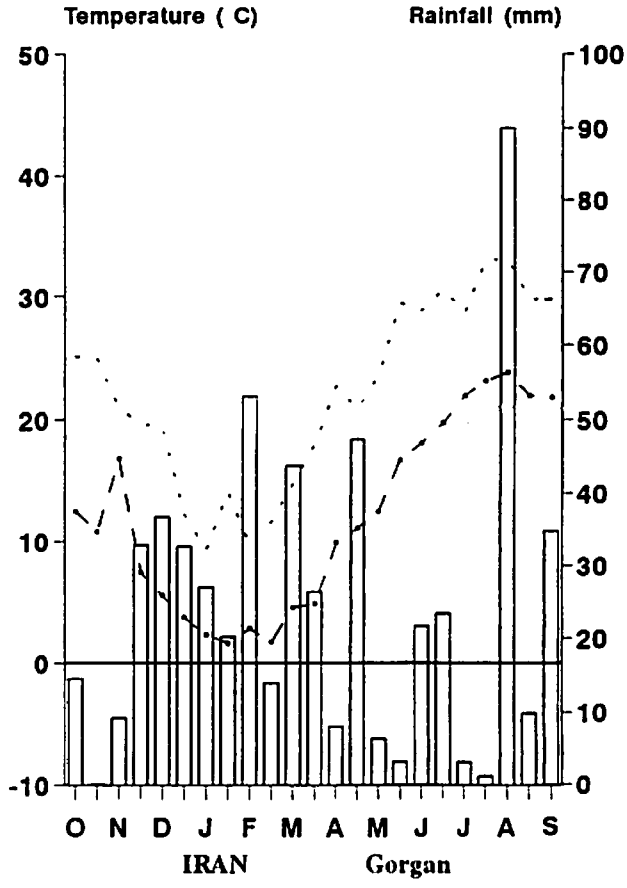

Temperature (°C)
Rainfall (mm)
625
488 386 145 367
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
INDIA
Navsari

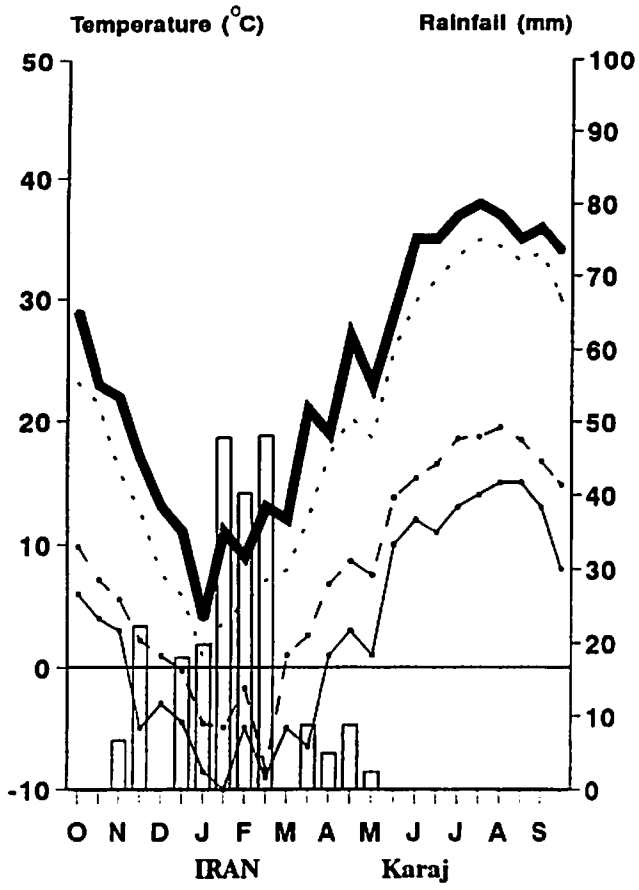

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
INDIA
New Delhi-1

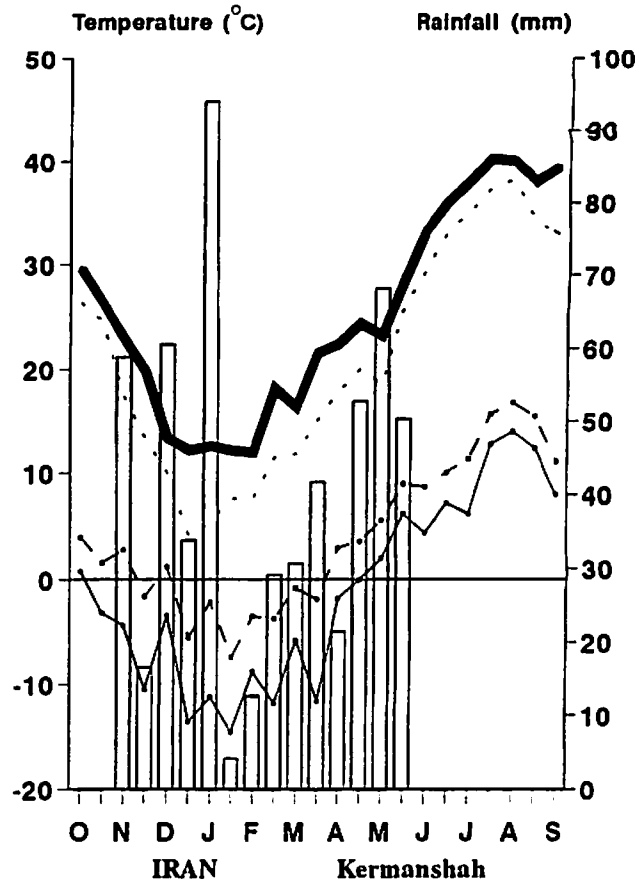

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
INDIA
New Delhi-2

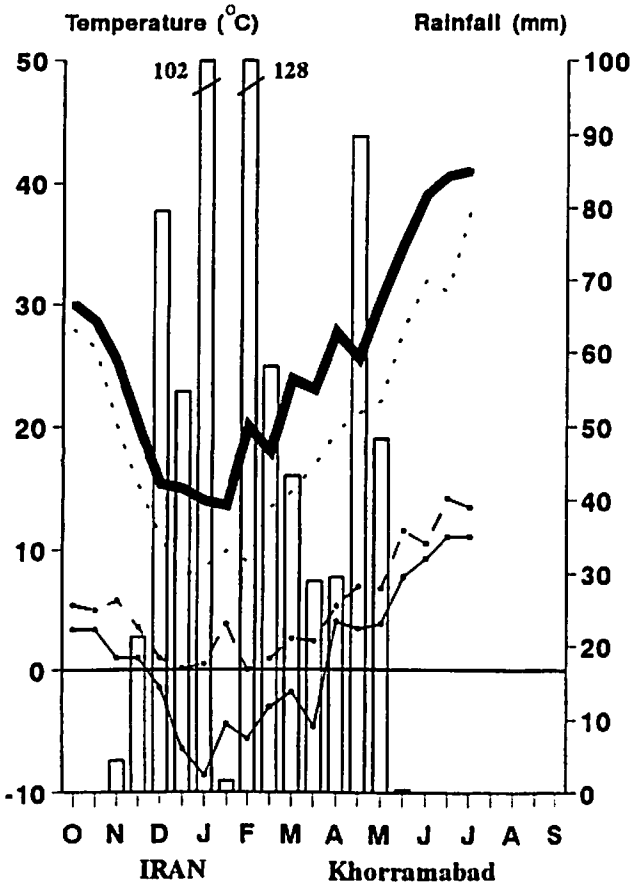

Temperature (°C)
Rainfall (mm)
365
353 397 409
409
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
INDIA
Srinagar

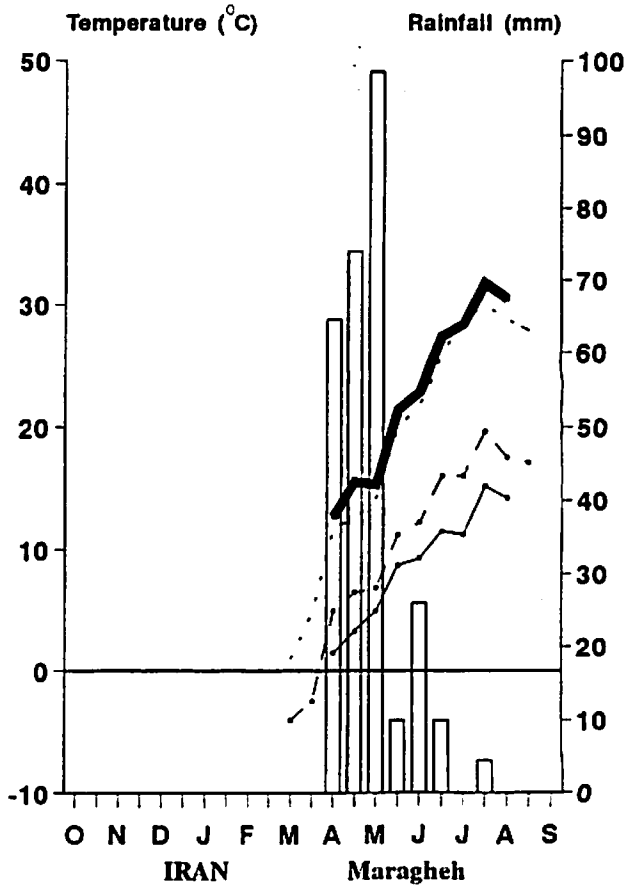

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
-20
-30
-40
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Ardabil

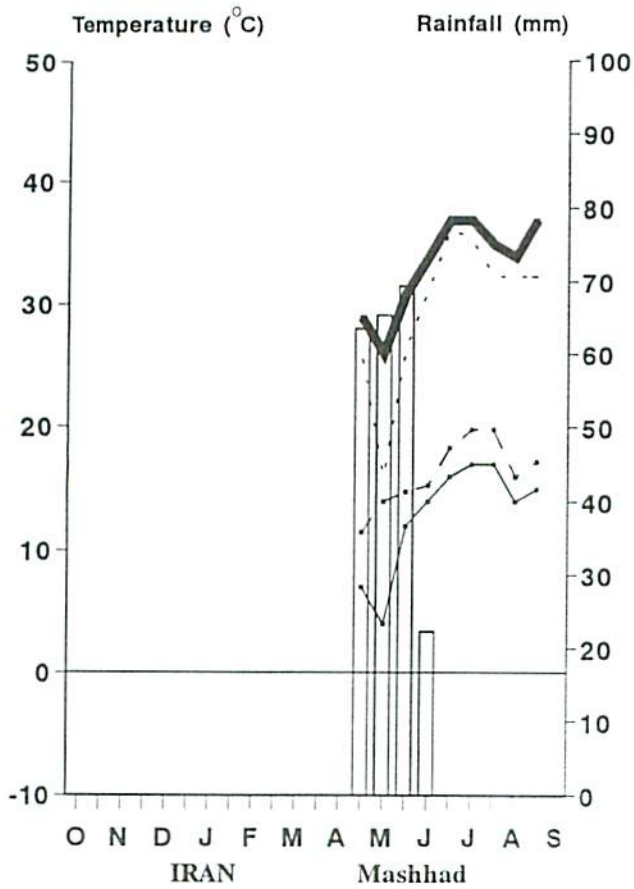

Temperature (C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Gorgan

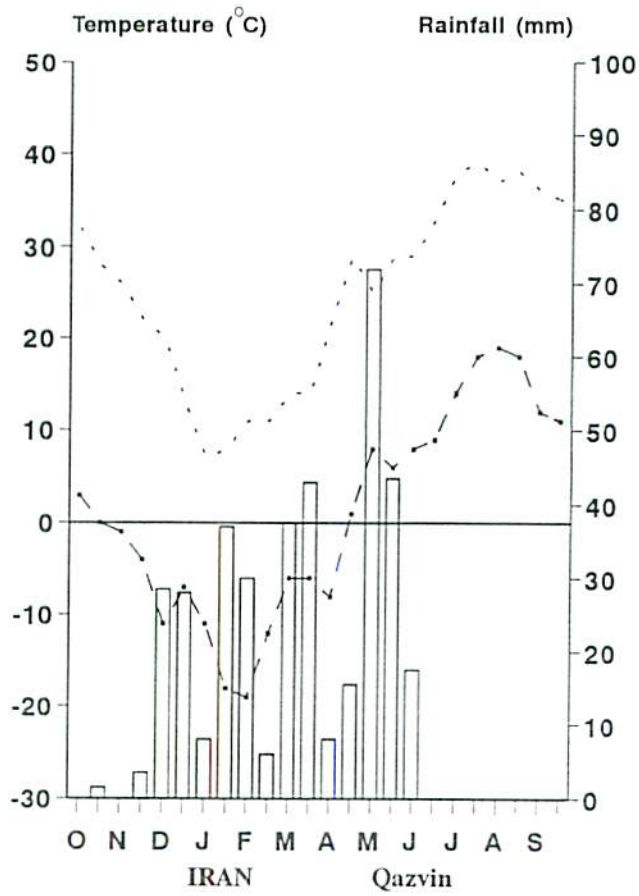

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Karaj

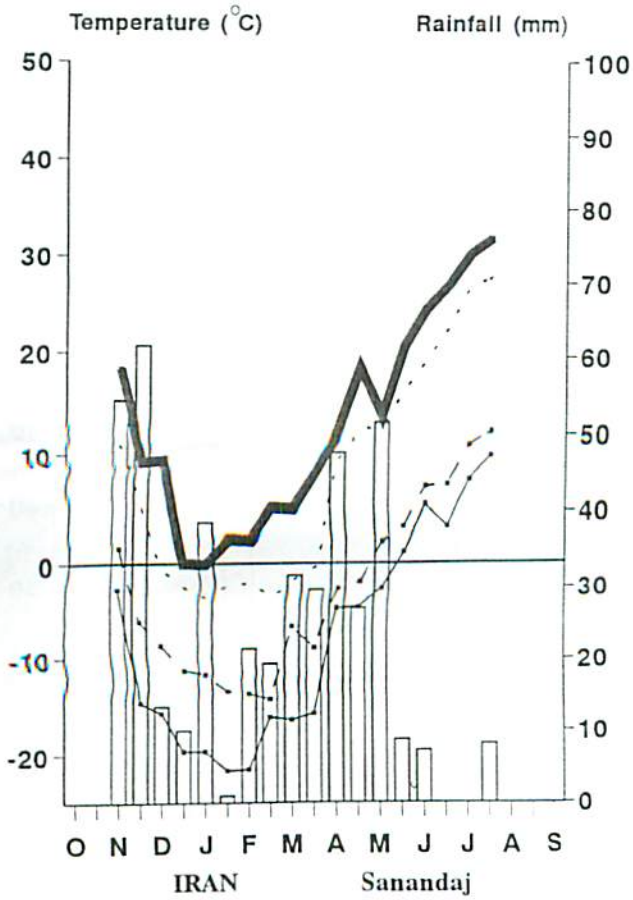

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
-20
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Kermanshah

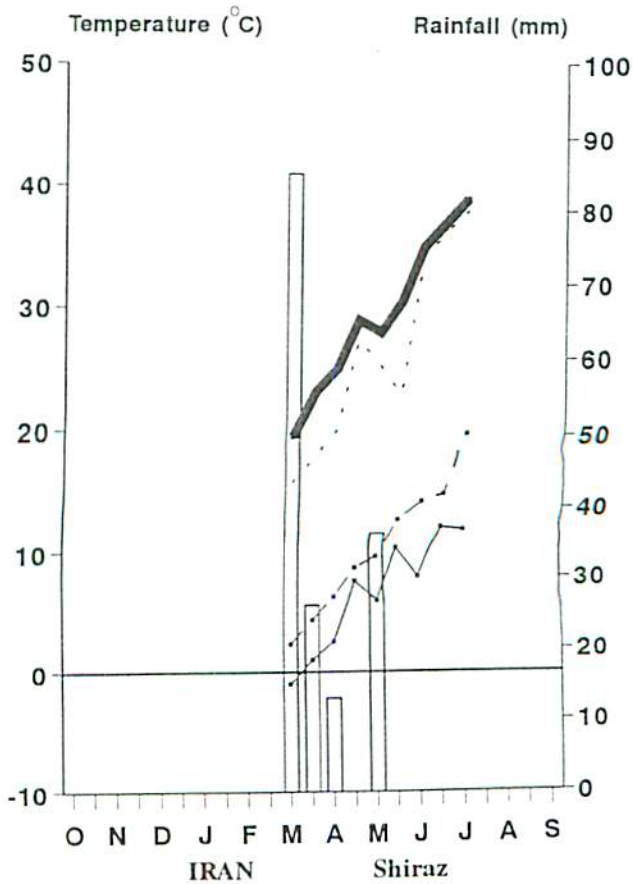

Temperature (°C)
Rainfall (mm)
102
128
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Khorramabad

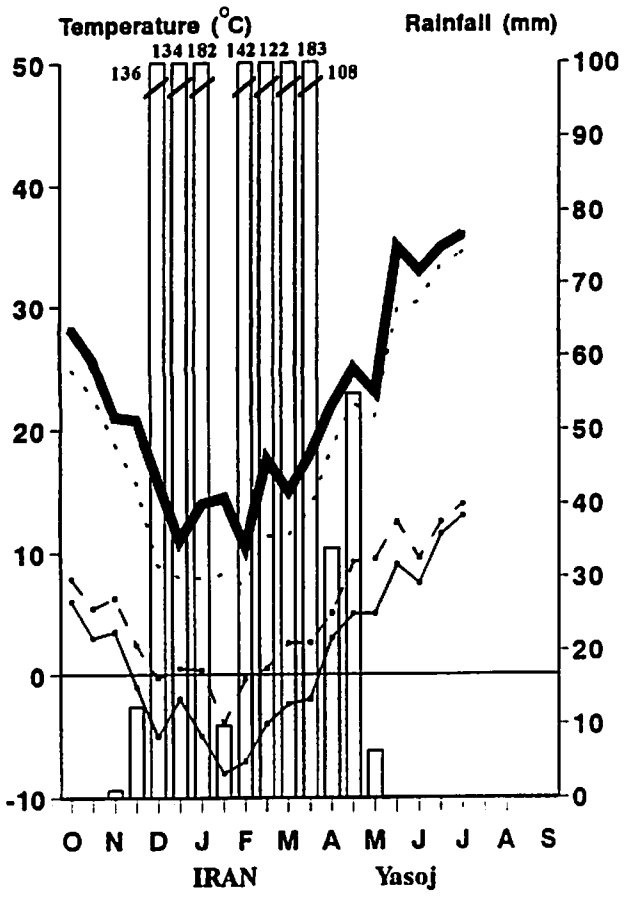

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Maragheh

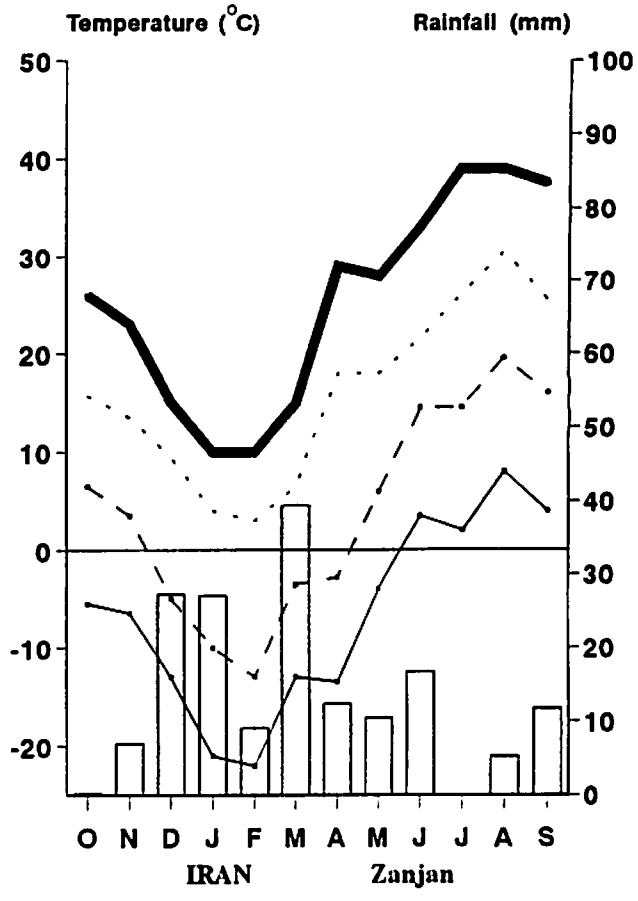

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Mashhad

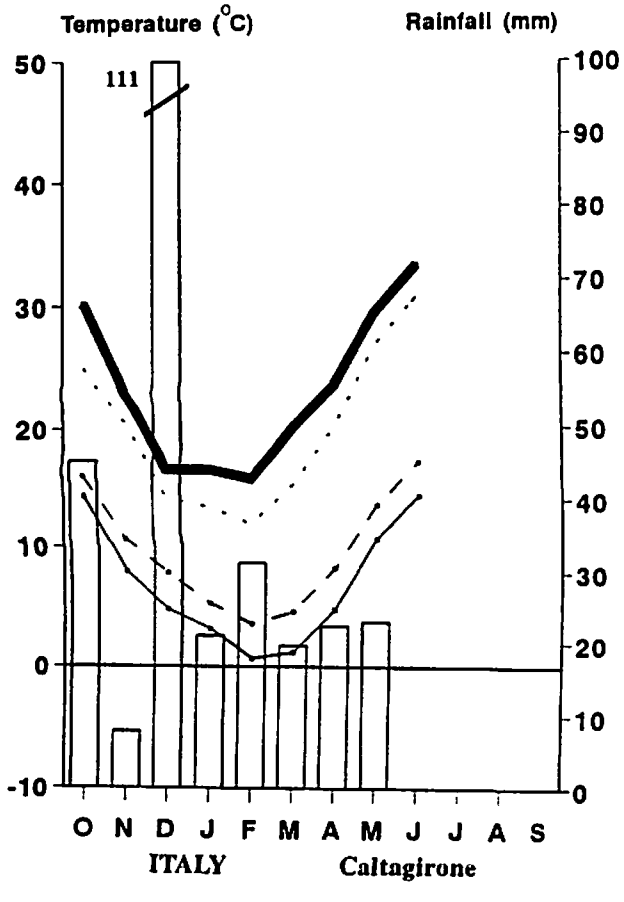

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
-20
-30
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Qazvin

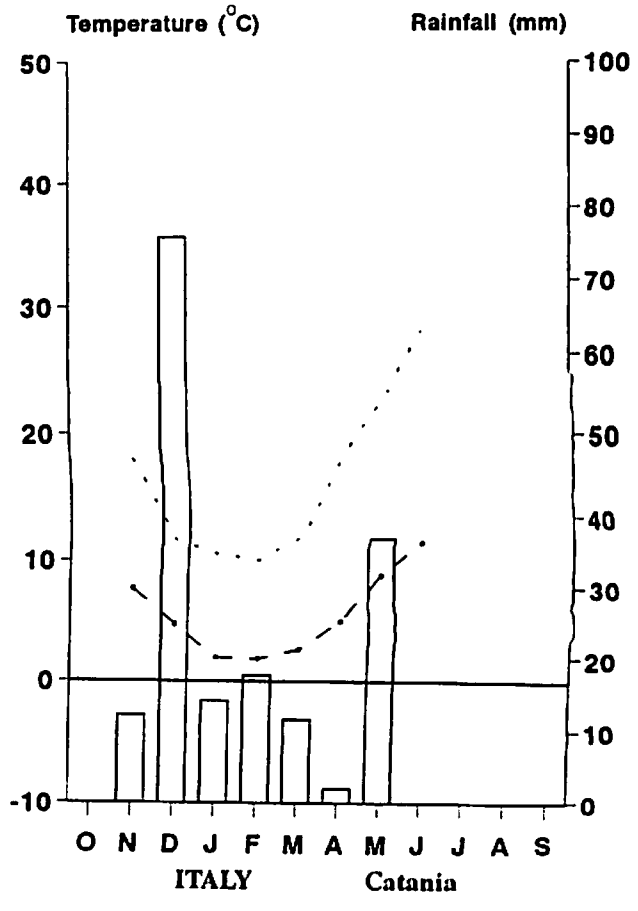

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
-20
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Sanandaj

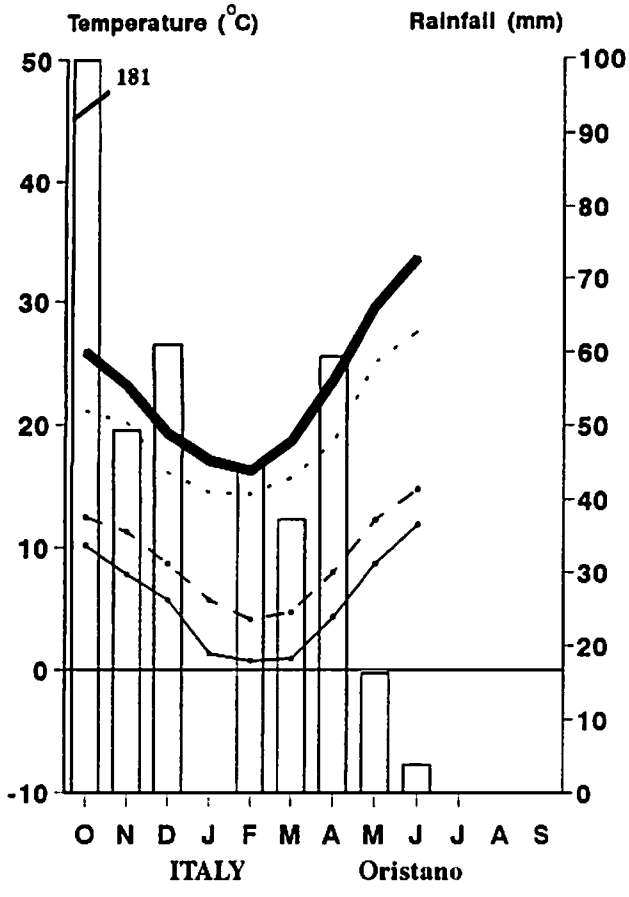

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
IRAN
Shiraz

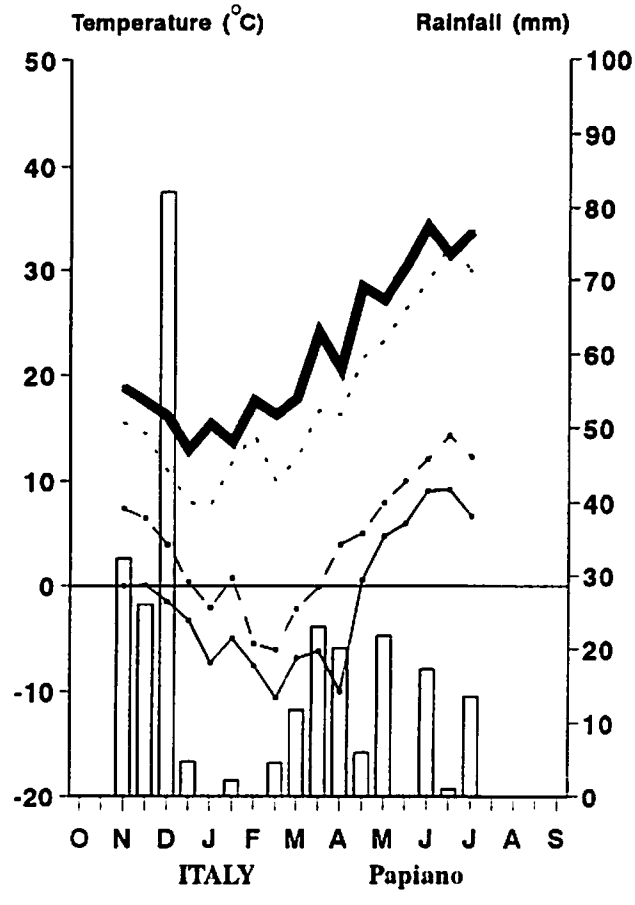

Temperature (°C)
Rainfall (mm)
136
134
182
142
122
183
108
O N D J F M A M J J A S
IRAN
Yasoj

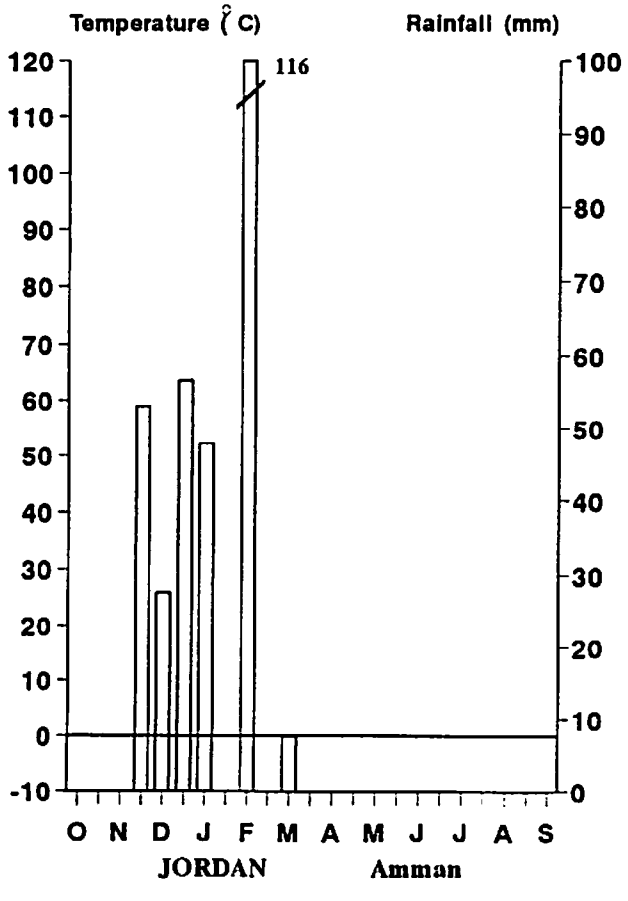

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
IRAN
Zanjan

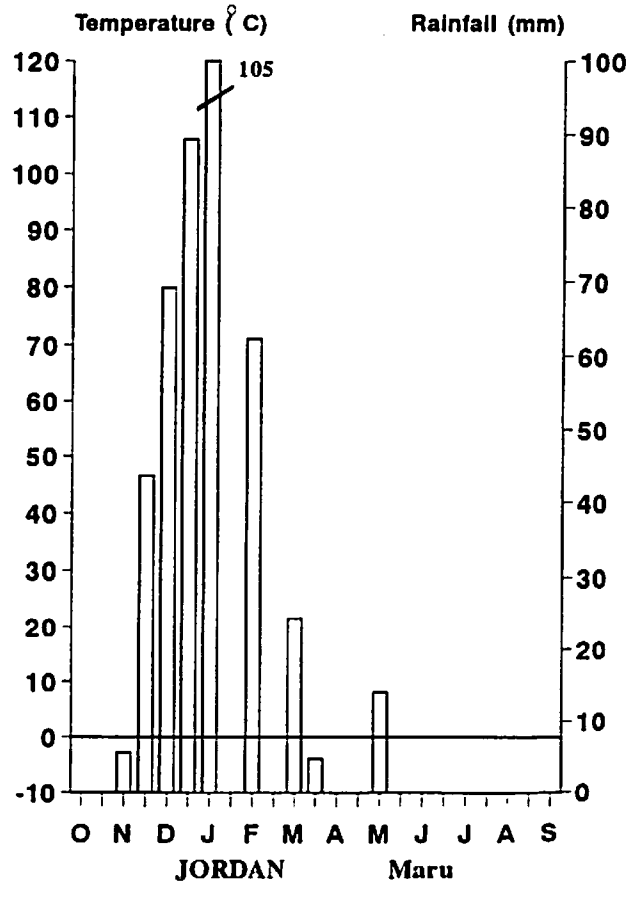

Temperature (°C)
Rainfall (mm)
111
O N D J F M A M J J A S
ITALY
Caltagirone

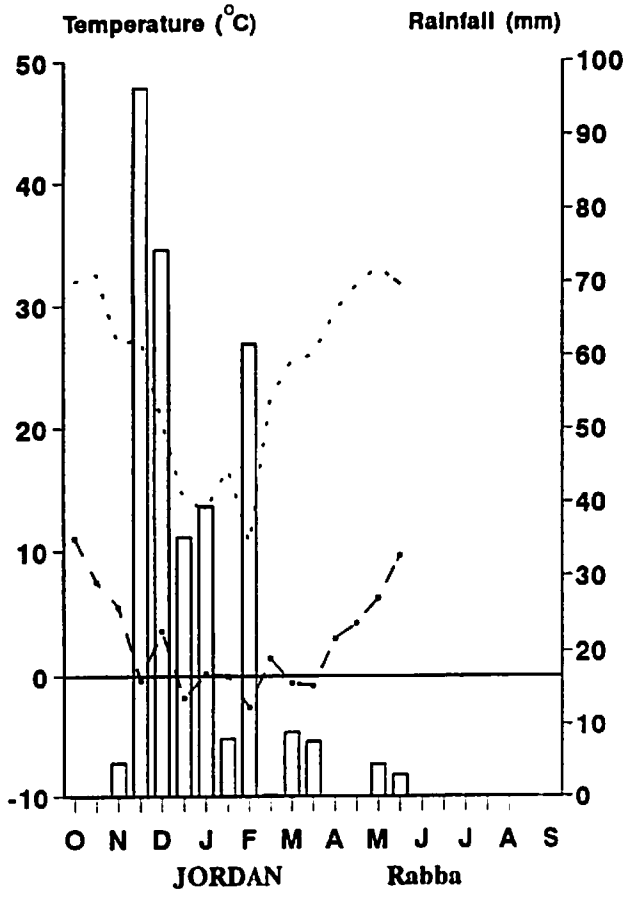

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
ITALY
Catania

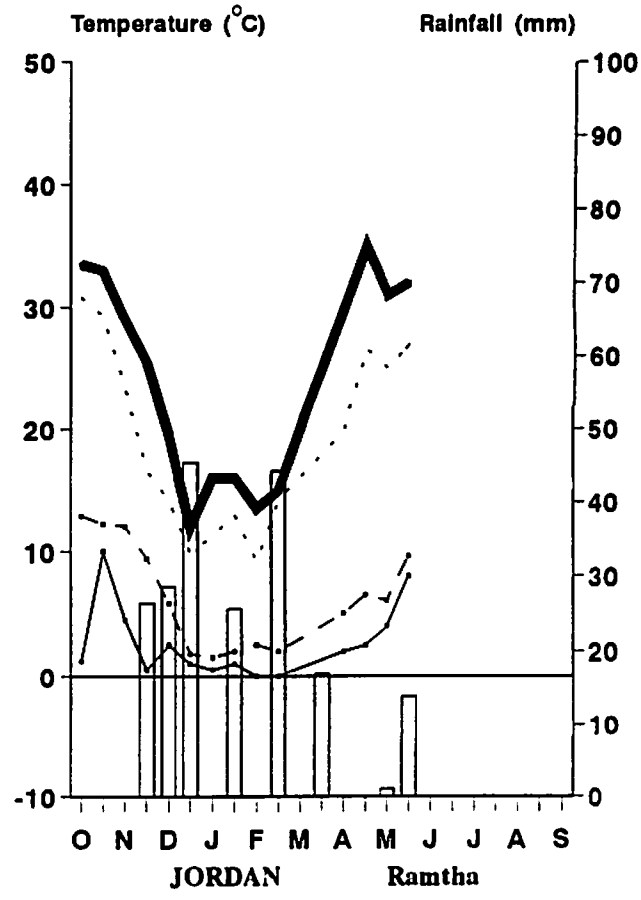

Temperature (°C)
Rainfall (mm)
181
O N D J F M A M J J A S
ITALY
Oristano

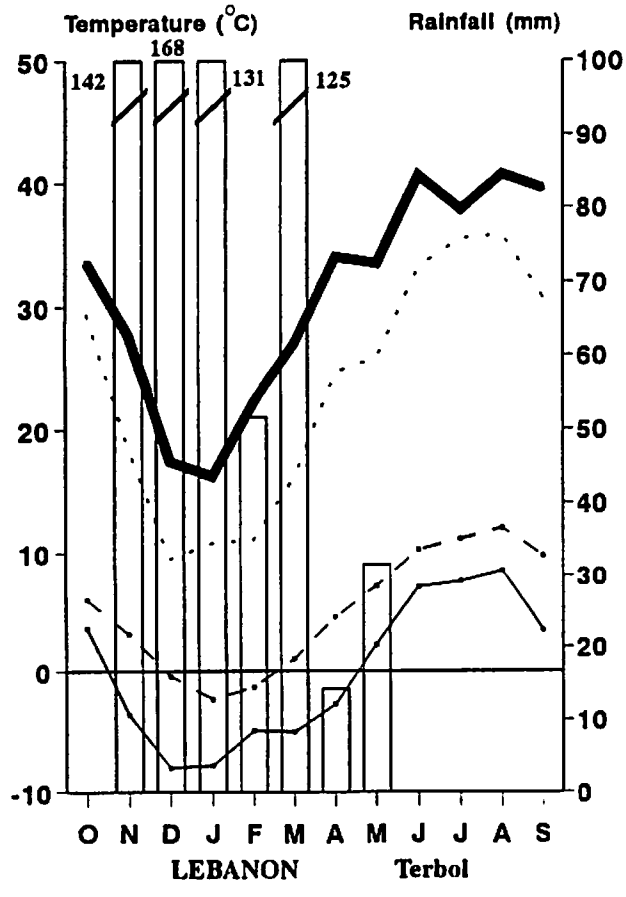

Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
ITALY
Papiano


Temperature (°C)
Rainfall (mm)
116
O N D J F M A M J J A S
JORDAN
Amman


Temperature (°C)
Rainfall (mm)
105
O N D J F M A M J J A S
JORDAN
Maru


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
JORDAN
Rabba


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
JORDAN
Ramtha


Temperature (°C)
Rainfall (mm)
142
168
131
125
50
40
30
20
10
0
-10
100
90
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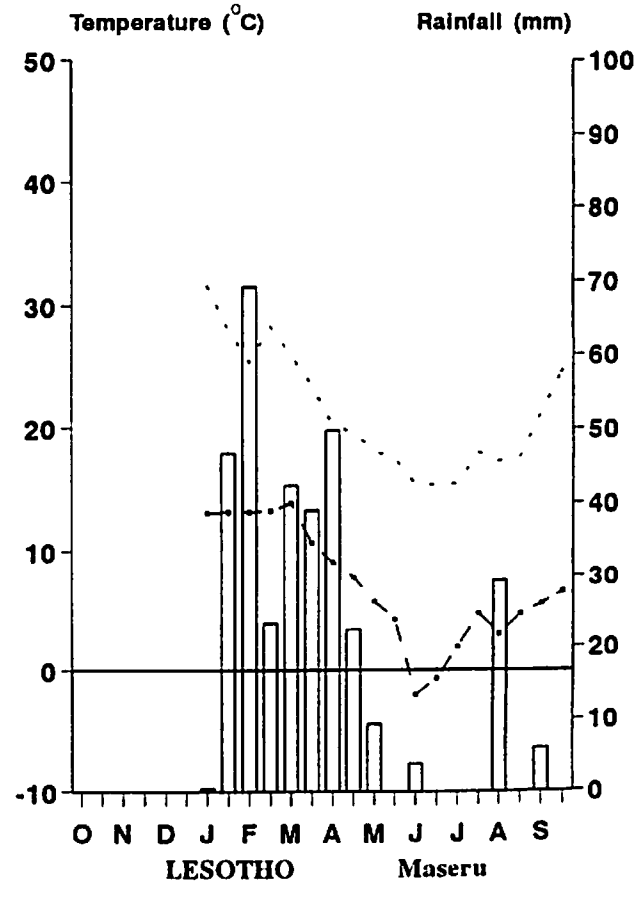
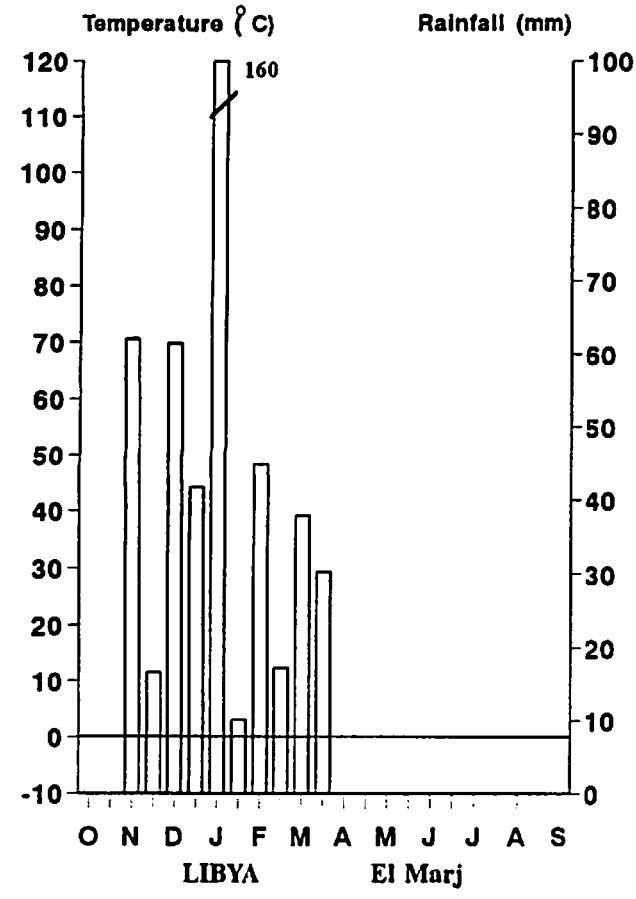
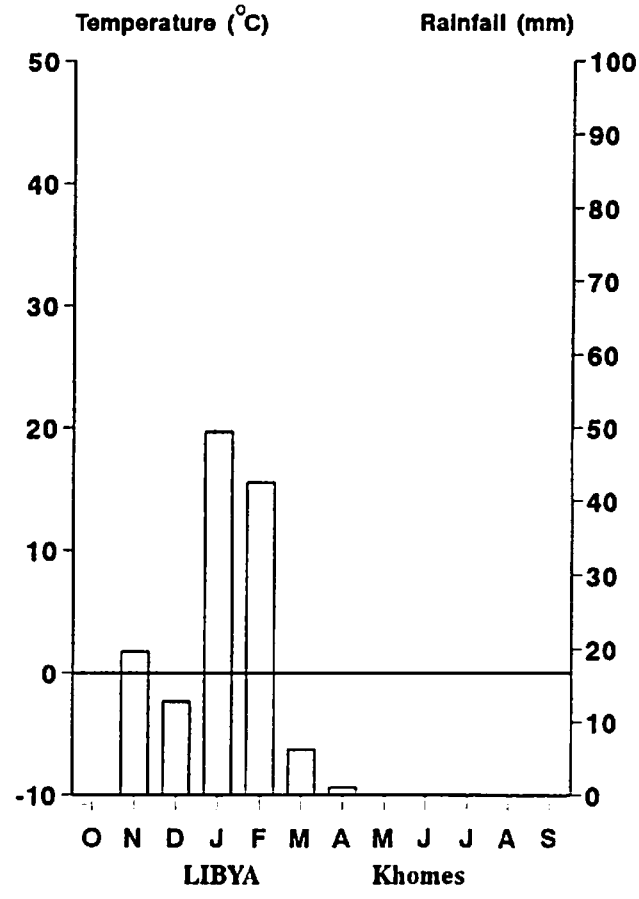
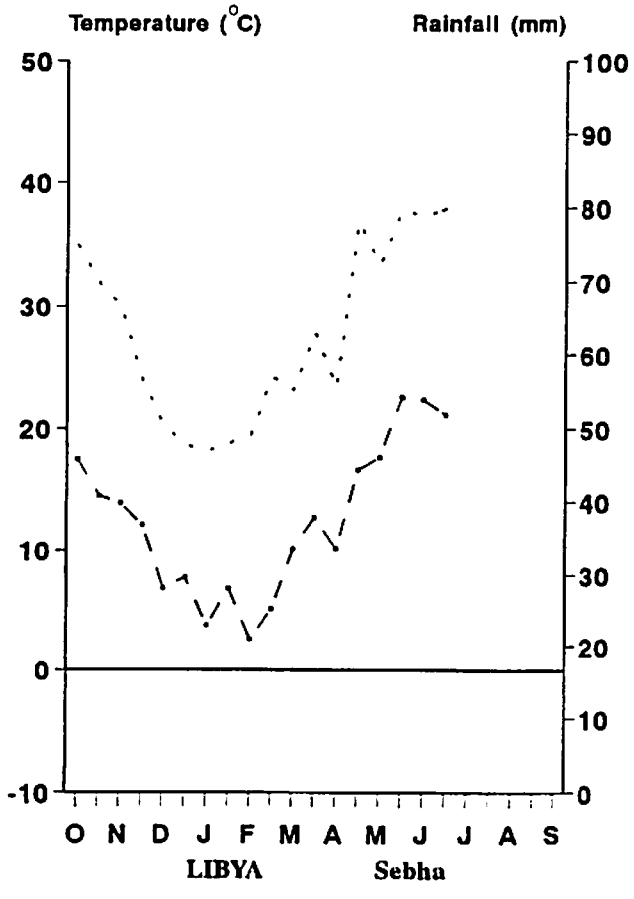
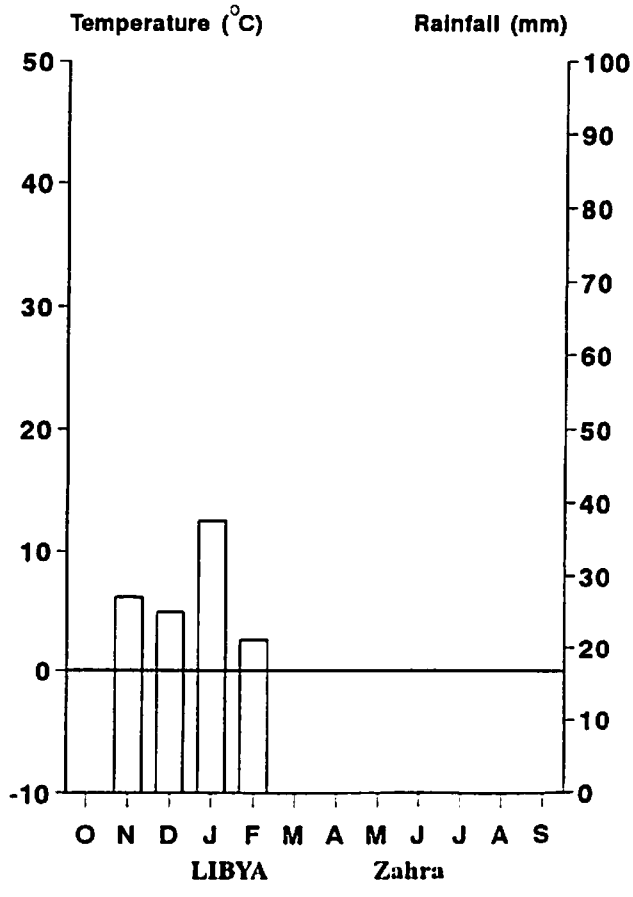
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
LEBANON
Terbol

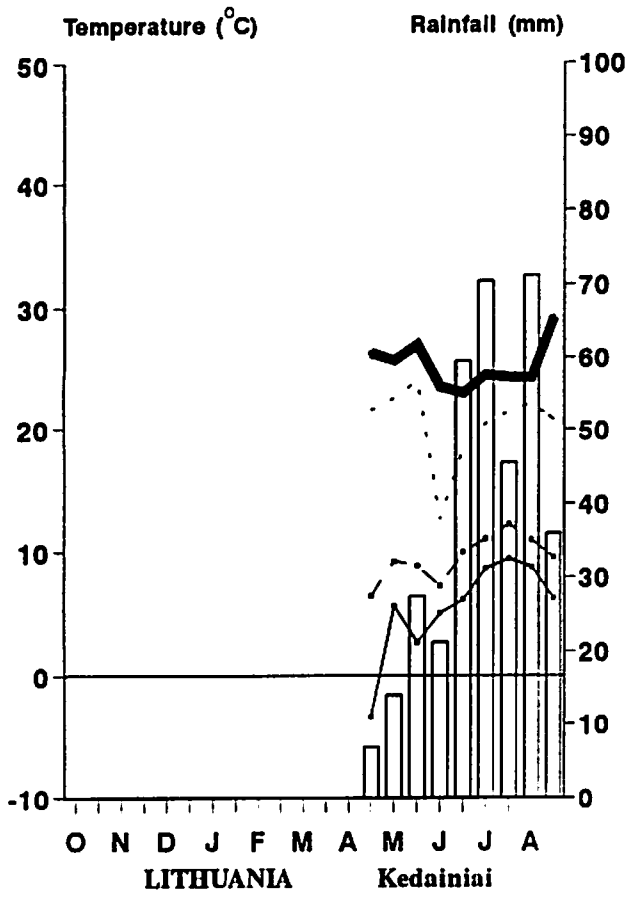

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
LESOTHO
Maseru

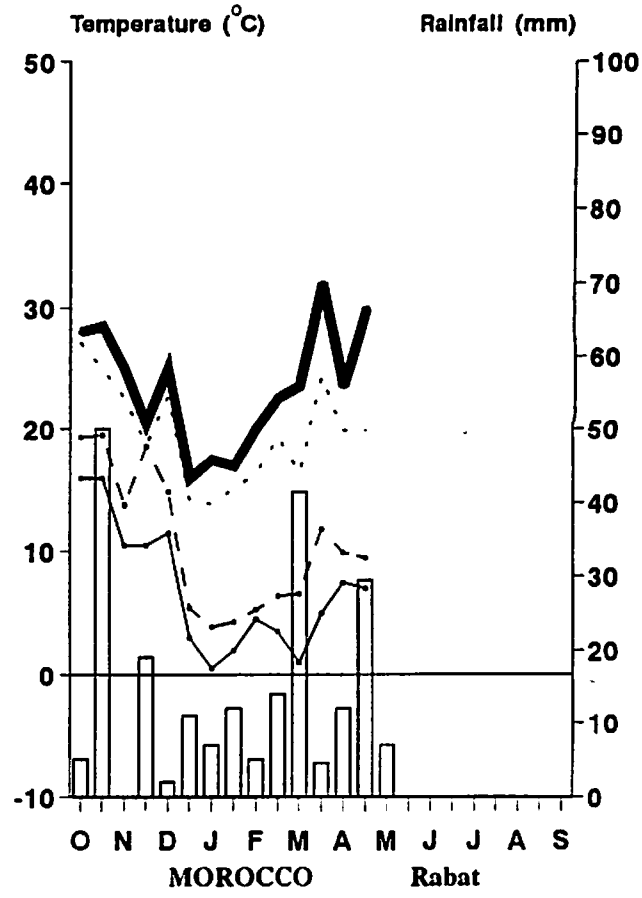

Temperature (°C)
Rainfall (mm)
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
160
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
LIBYA
El Marj

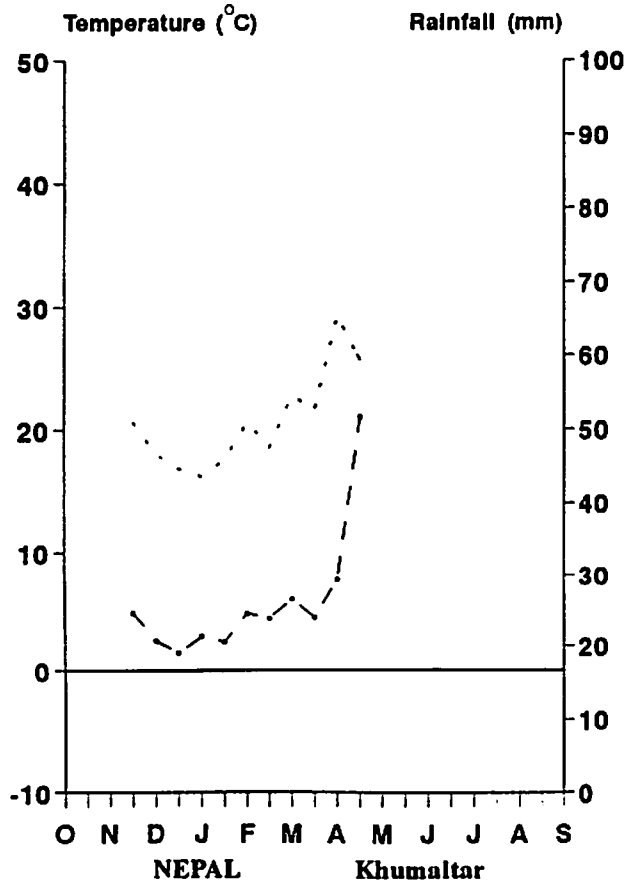

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
LIBYA
Khomes

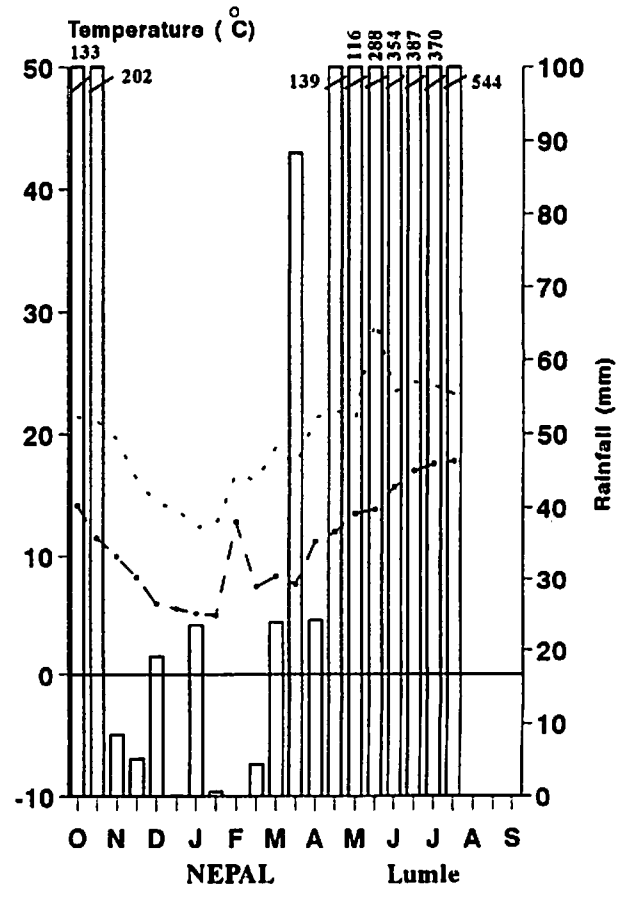

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
LIBYA
Sebha

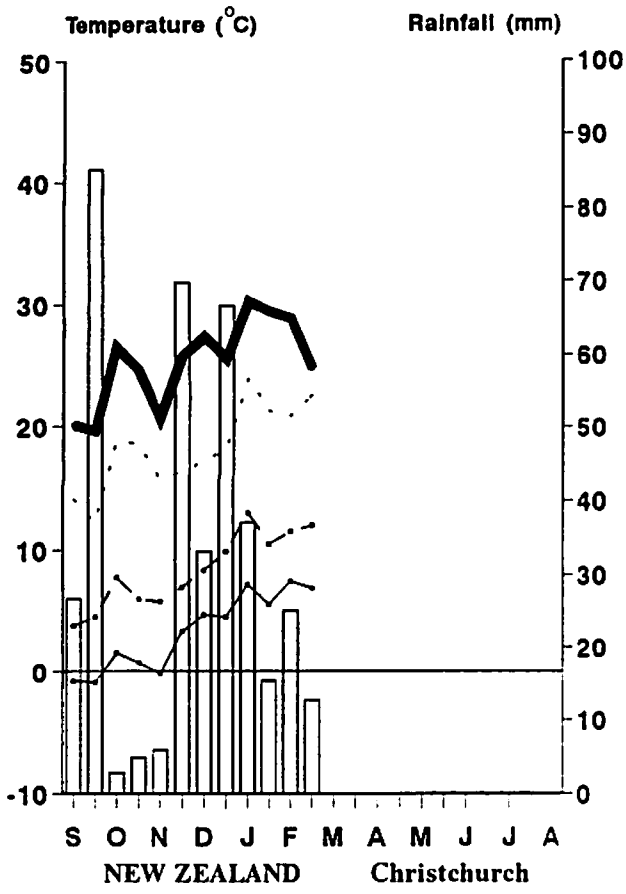

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
LIBYA
Zahra

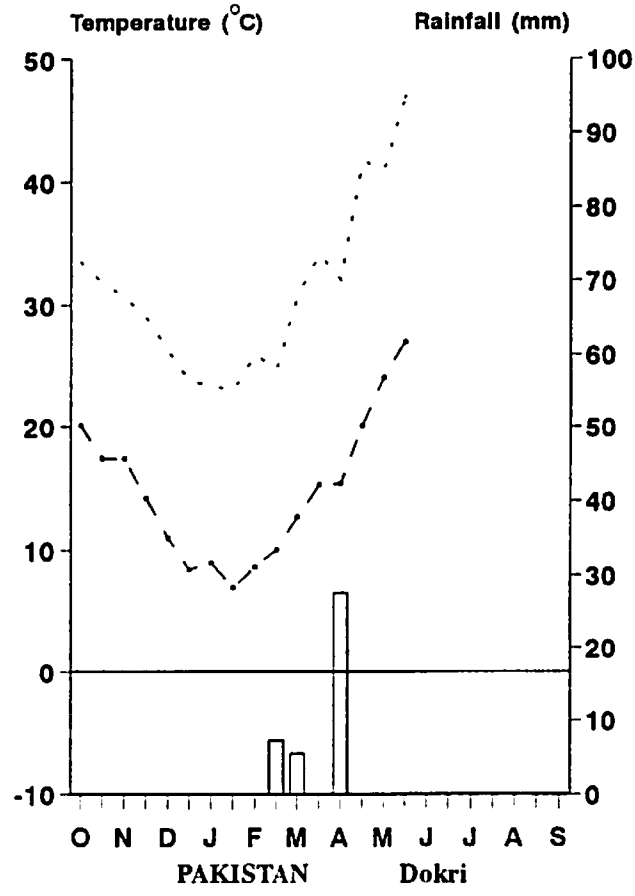

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A
LITHUANIA
Kedainiai

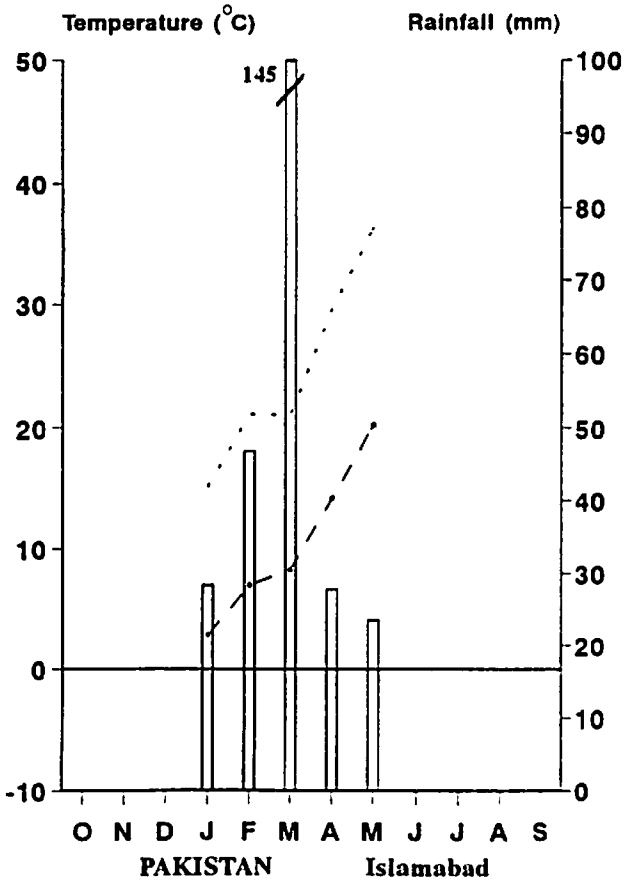

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
MOROCCO
Rabat

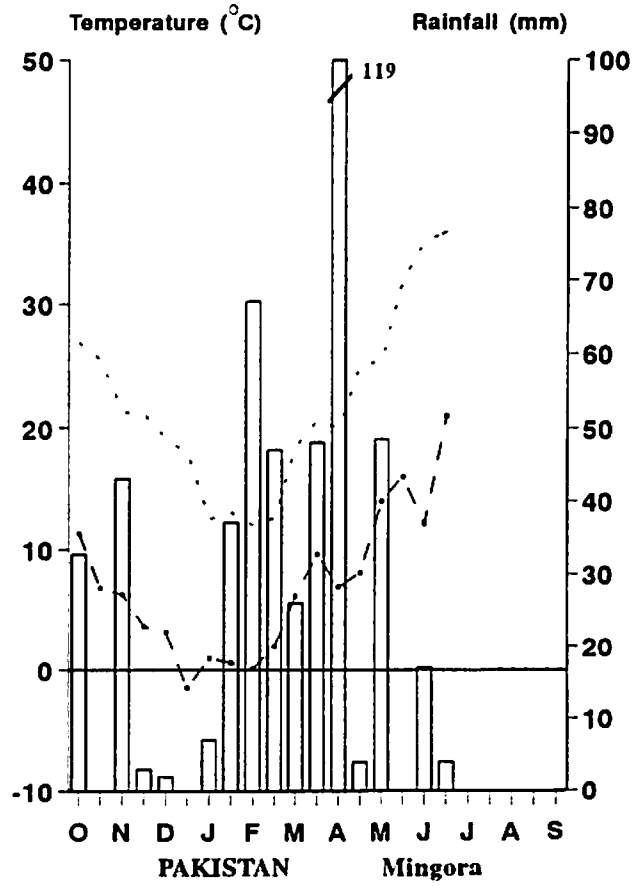

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
NEPAL
Khumaltar

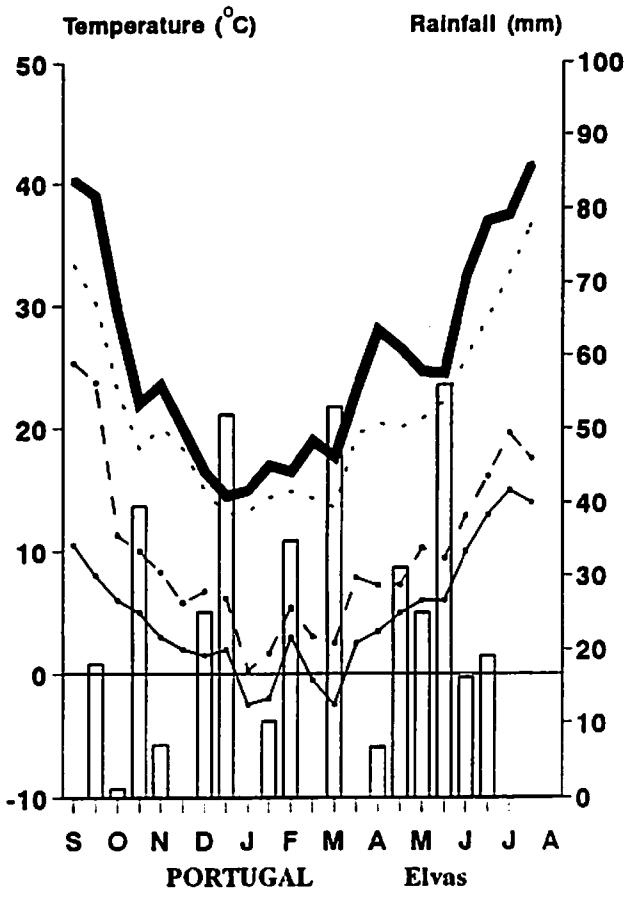

Temperature (°C)
133
202
139
116
288
354
387
370
544
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
NEPAL
Lumle

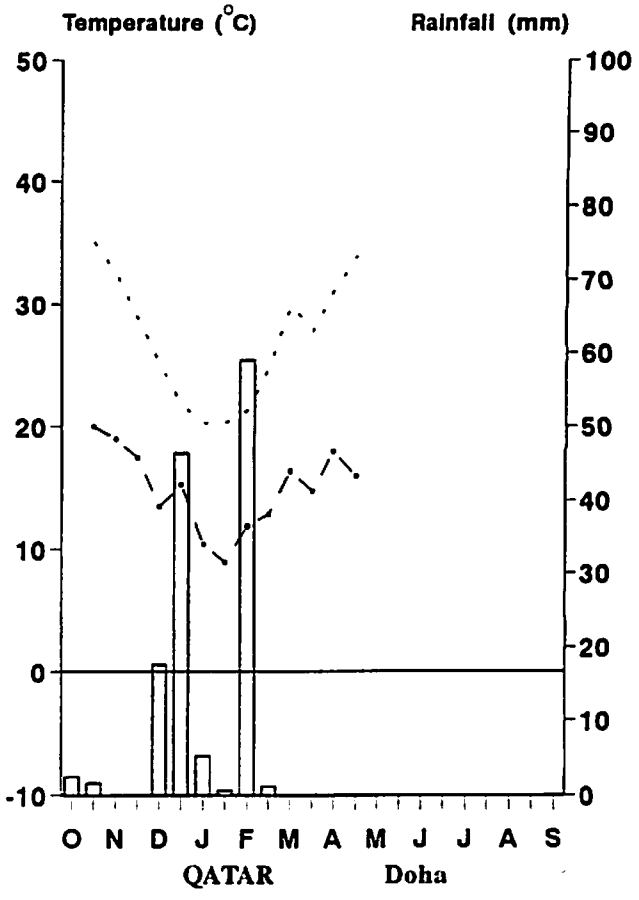

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
S O N D J F M A M J J A
NEW ZEALAND Christchurch

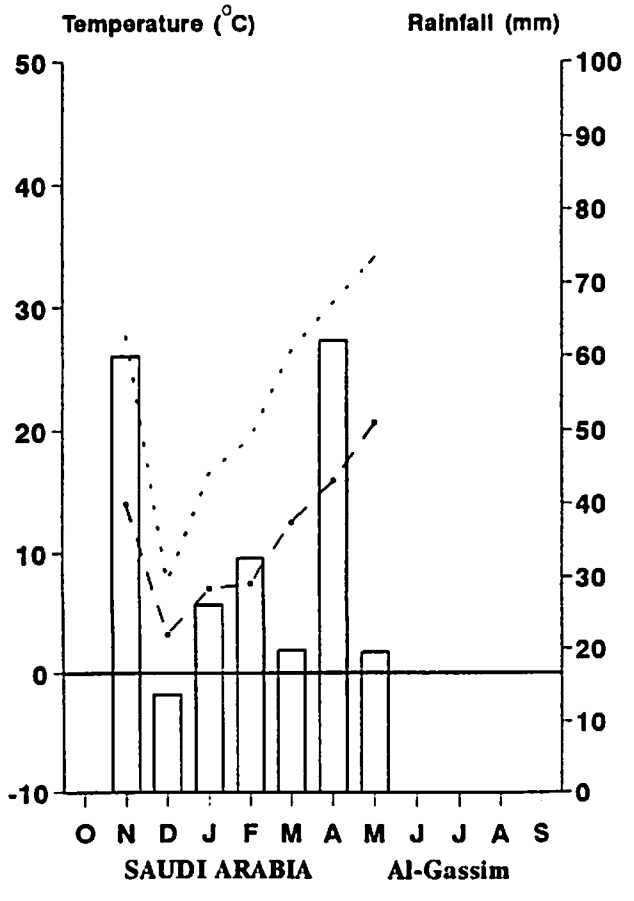

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
PAKISTAN Dokri

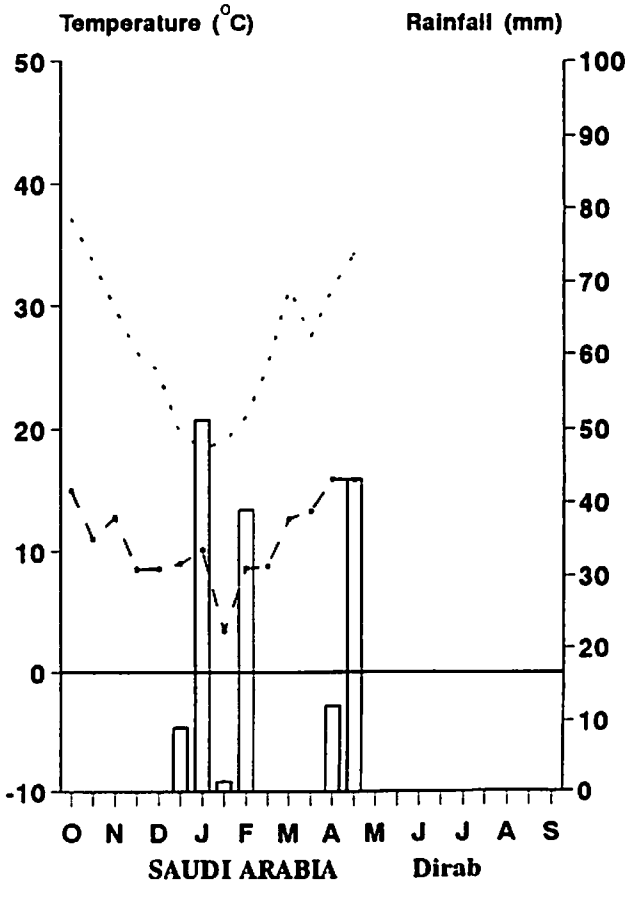

Temperature (°C)
Rainfall (mm)
145
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
PAKISTAN Islamabad

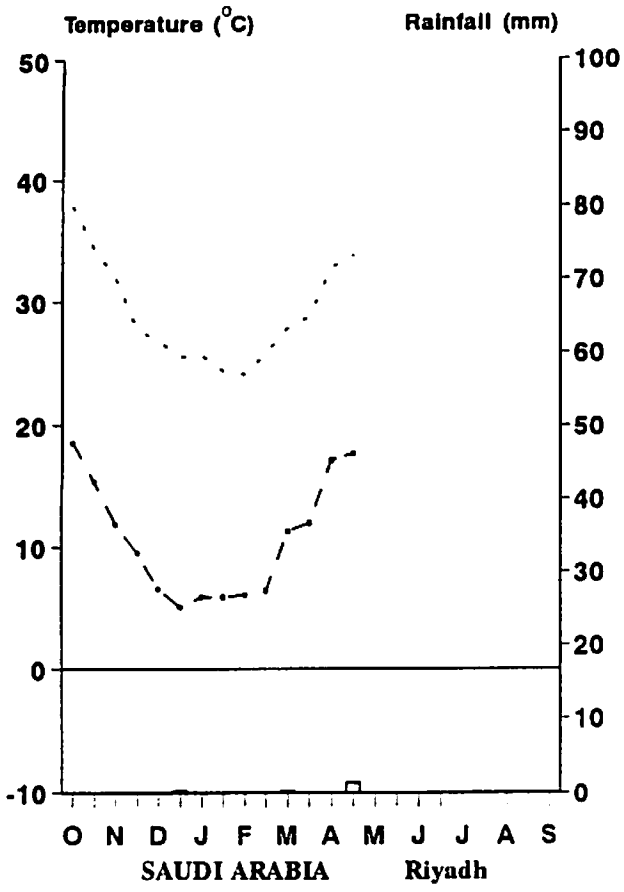

Temperature (°C)
Rainfall (mm)
119
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
PAKISTAN Mingora

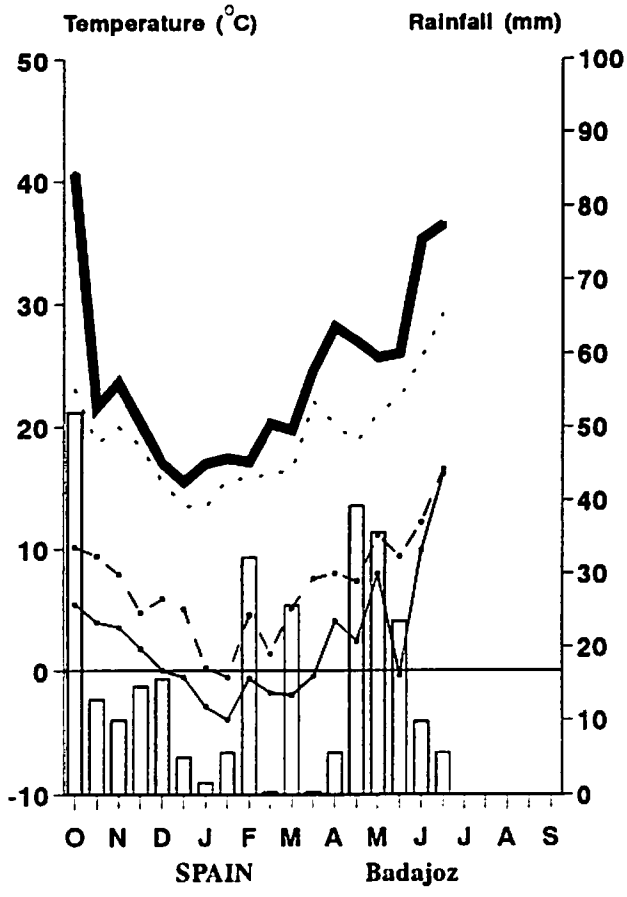

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
S O N D J F M A M J J A
PORTUGAL Elvas

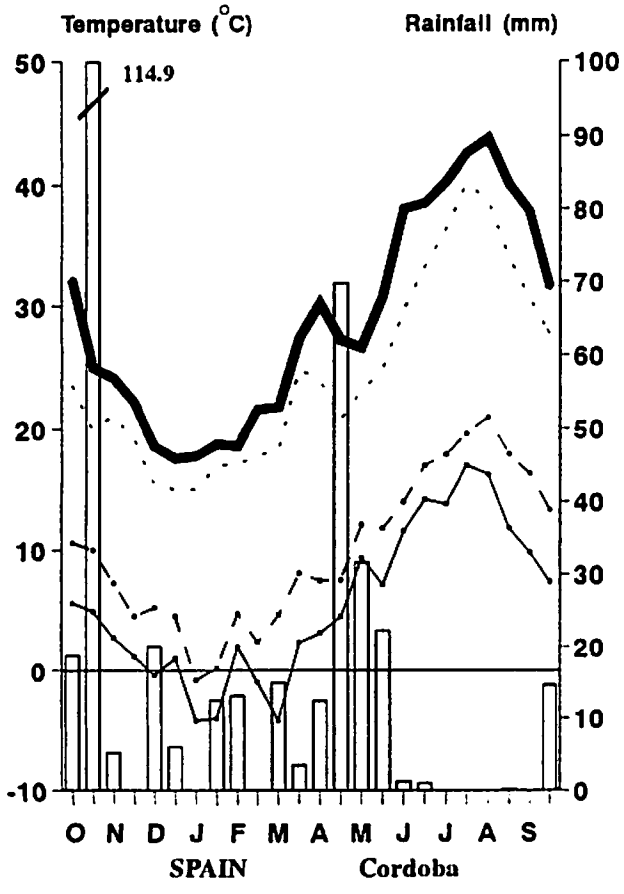

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
QATAR Doha

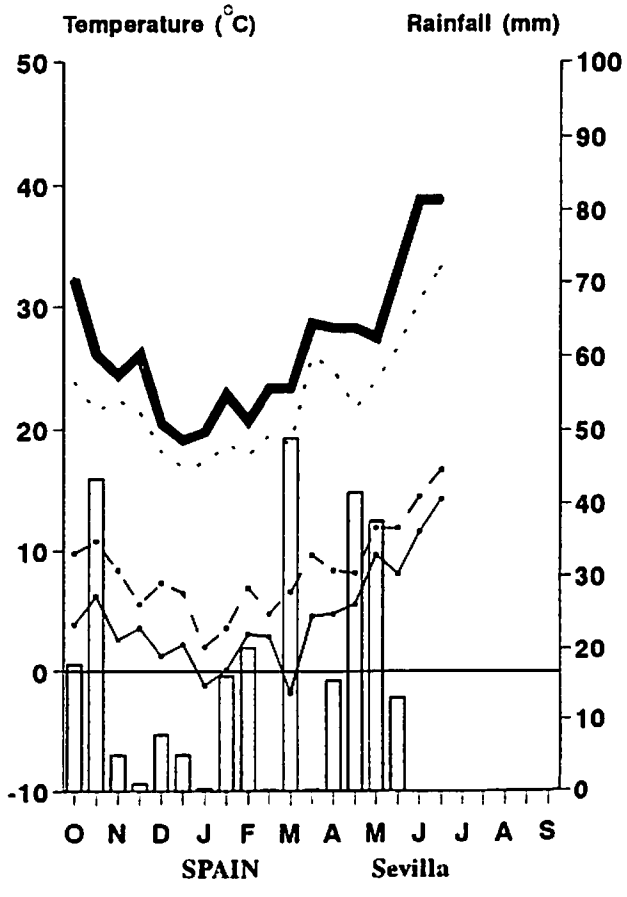

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SAUDI ARABIA Al-Gassim

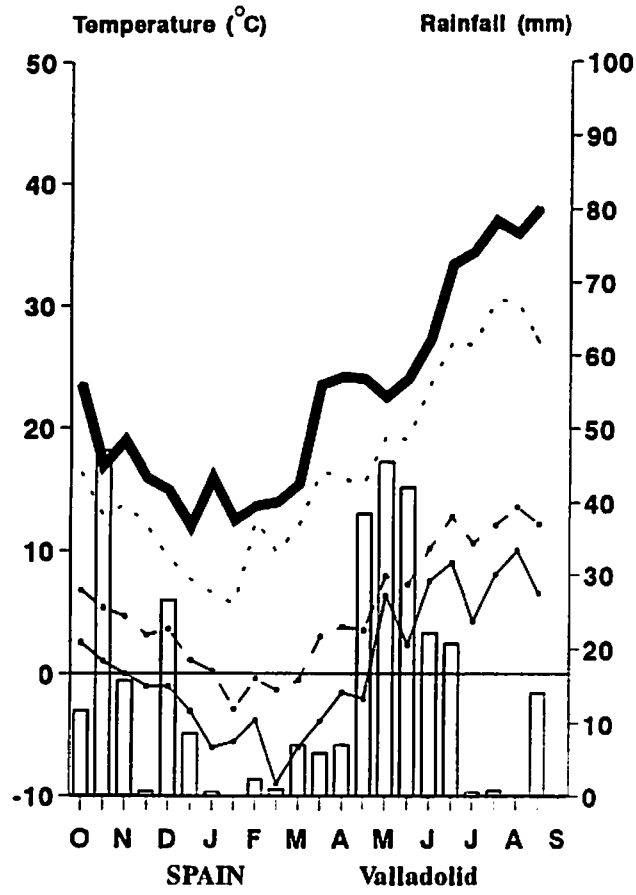

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SAUDI ARABIA Dirab

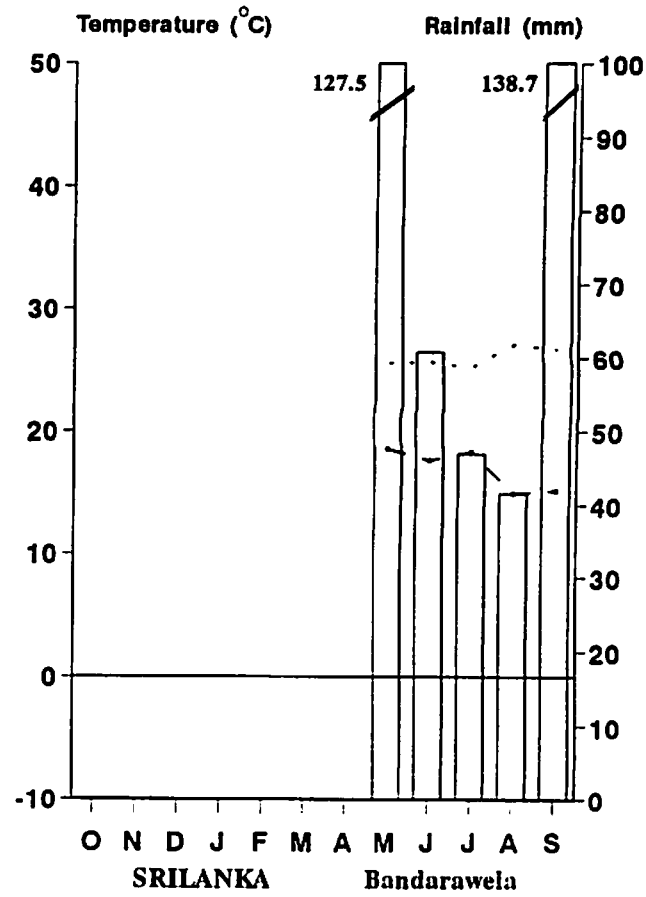

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SAUDI ARABIA
Riyadh

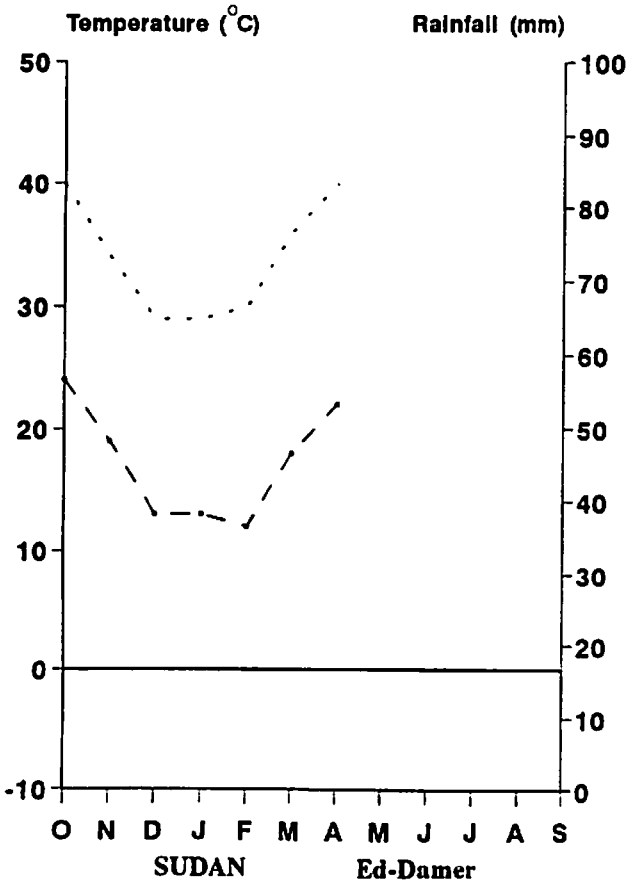

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SPAIN
Badajoz

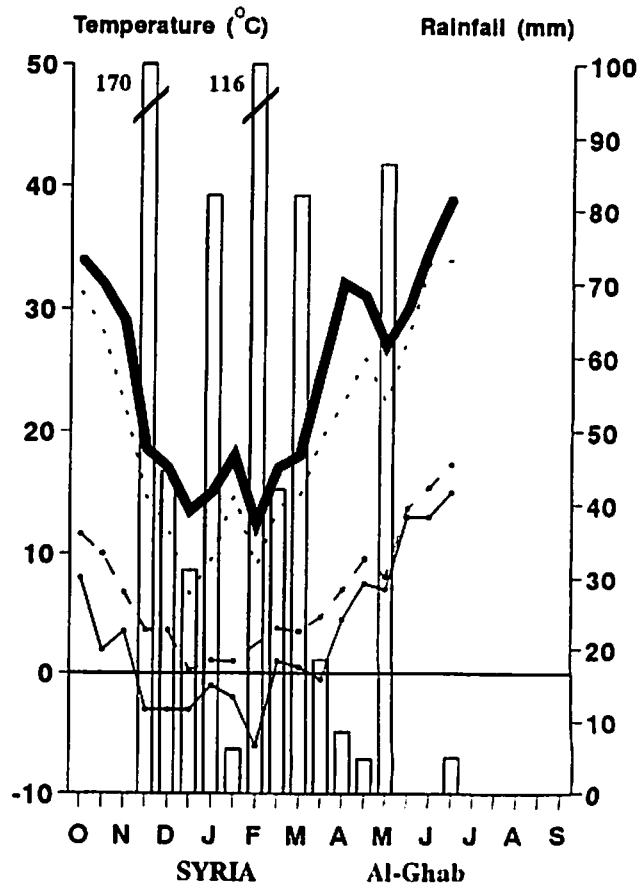

Temperature (°C)
Rainfall (mm)
114.9
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SPAIN
Cordoba

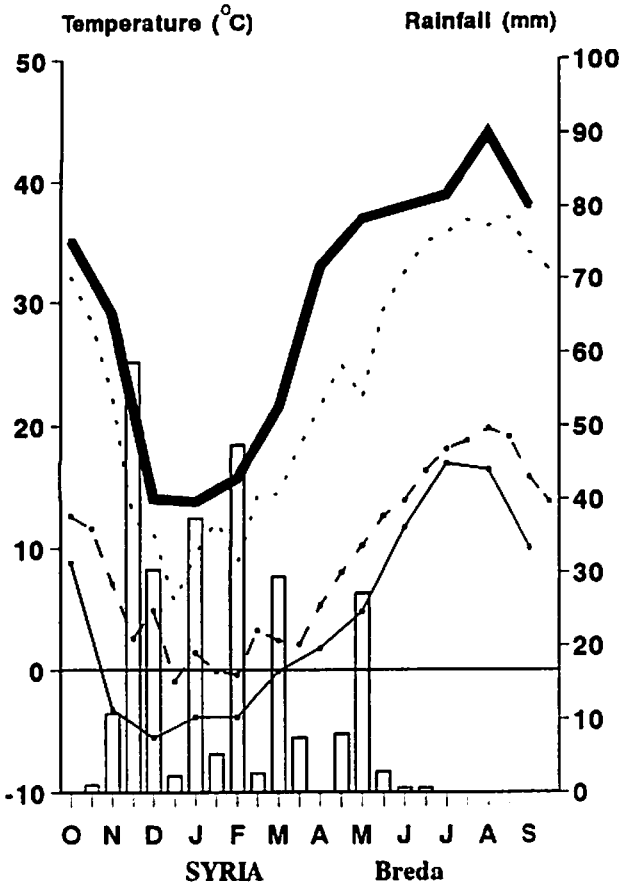

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SPAIN
Sevilla

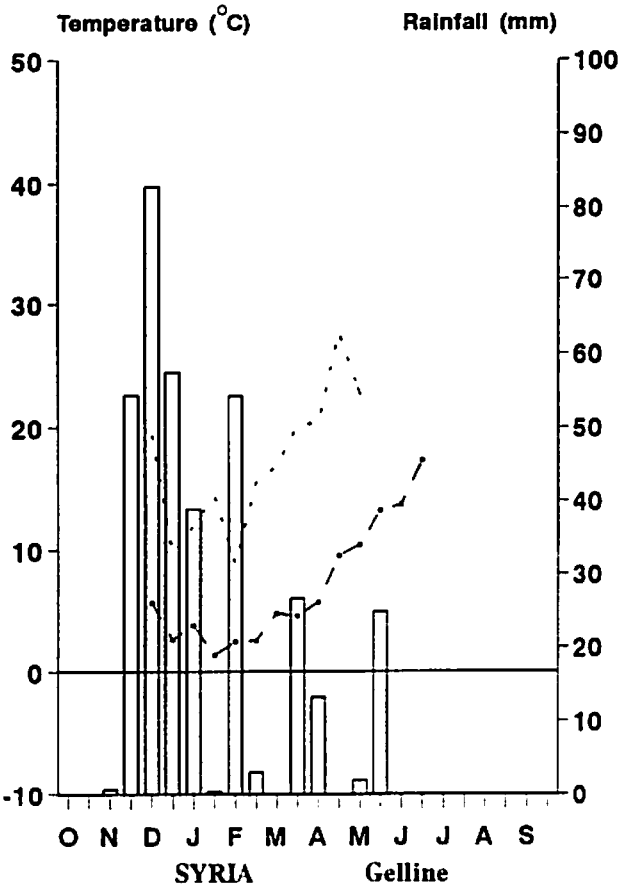

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SPAIN
Valladolid

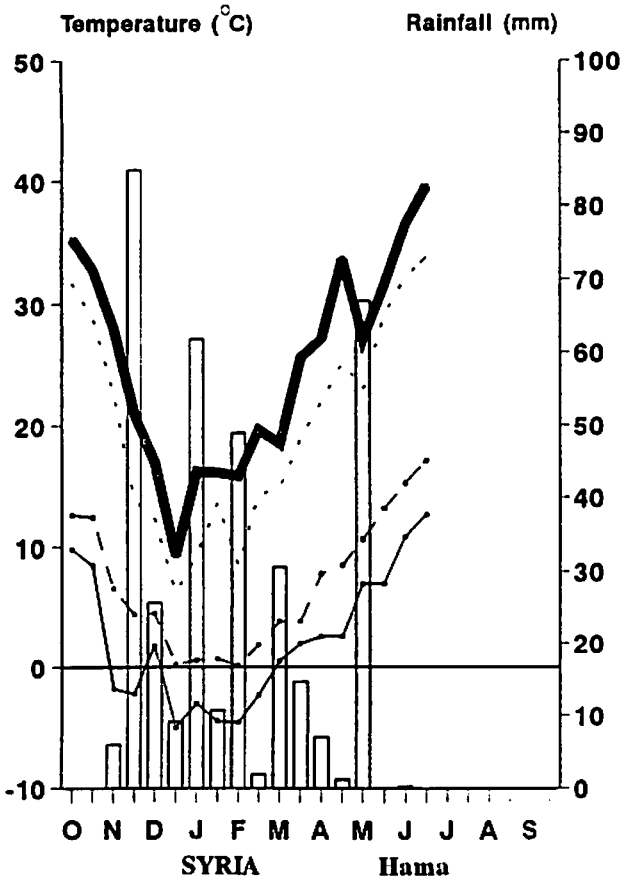

Temperature (°C)
Rainfall (mm)
127.5
138.7
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SRILANKA
Bandarawela

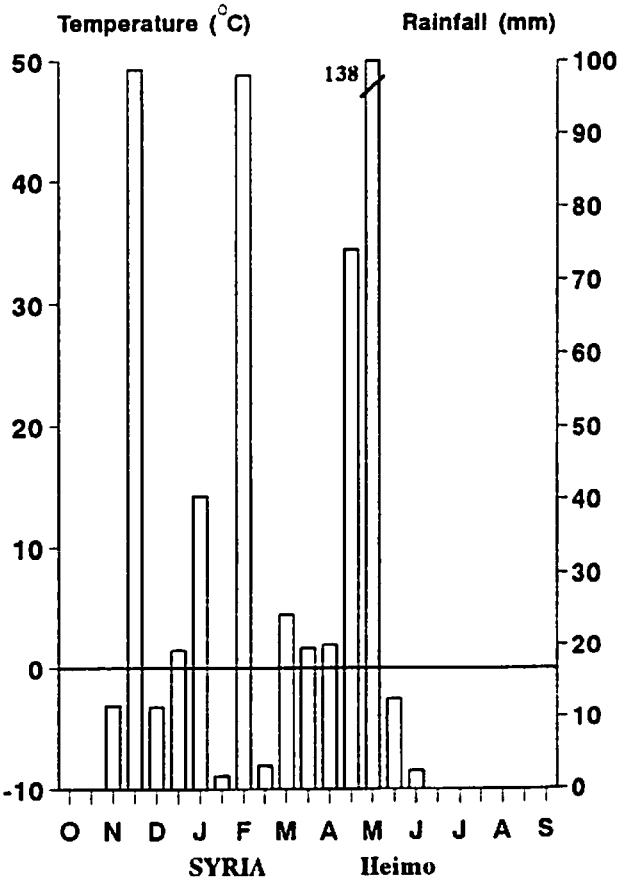

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SUDAN
Ed-Damer

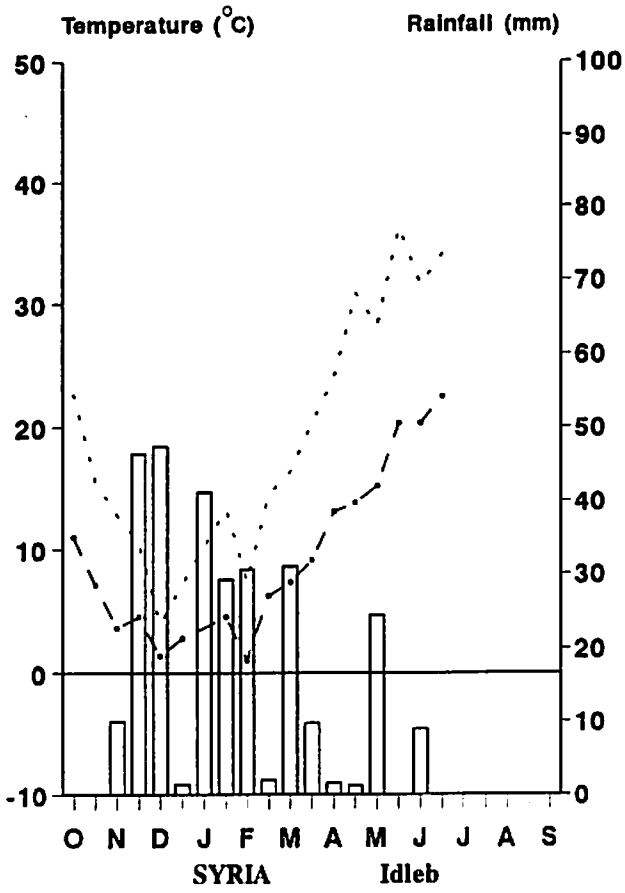

Temperature (°C)
Rainfall (mm)
170
116
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Al-Ghab

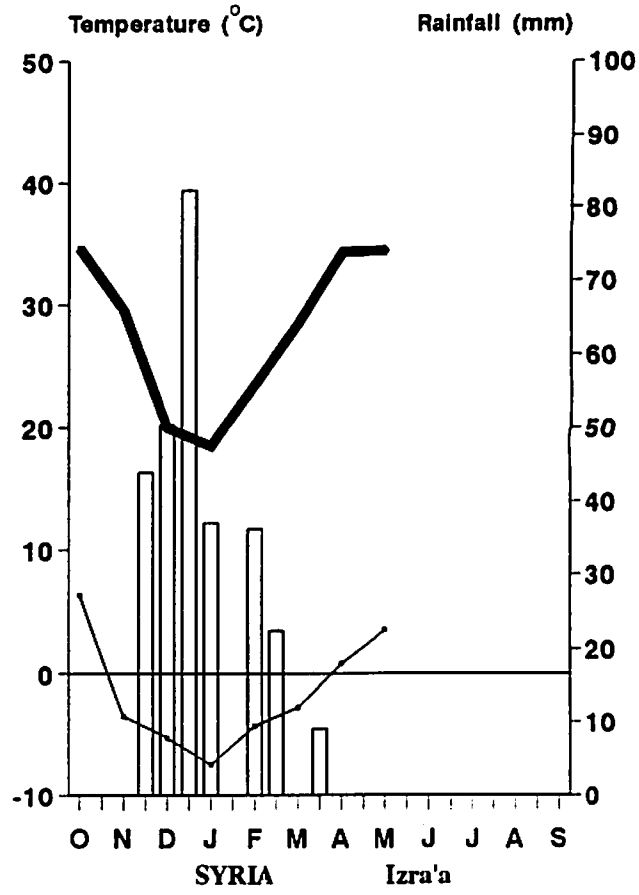

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Breda

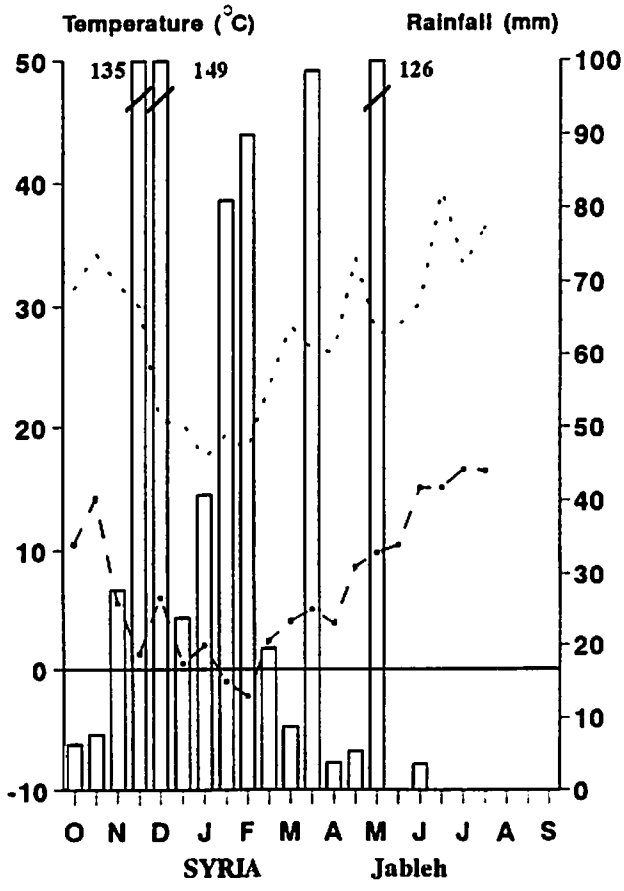

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Gelline

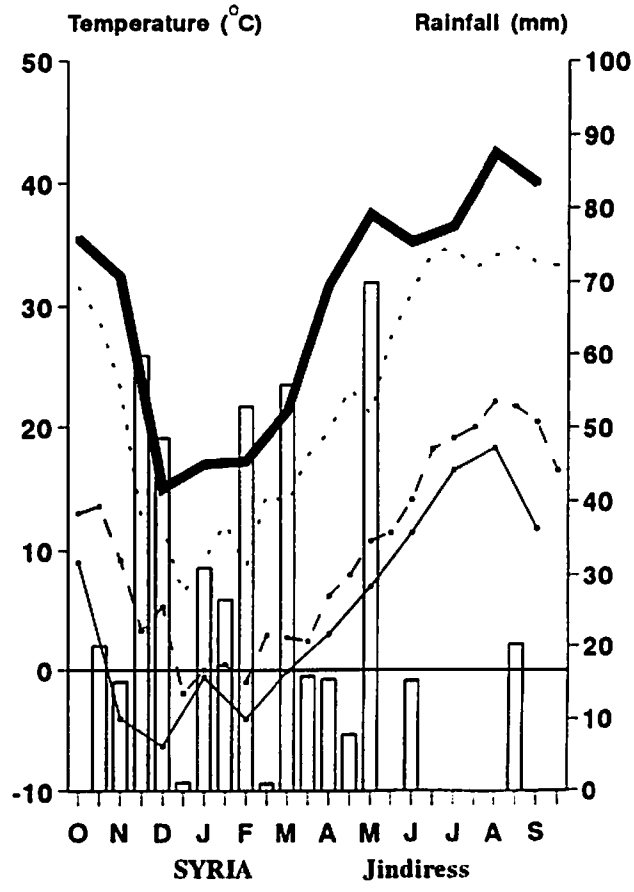

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Hama

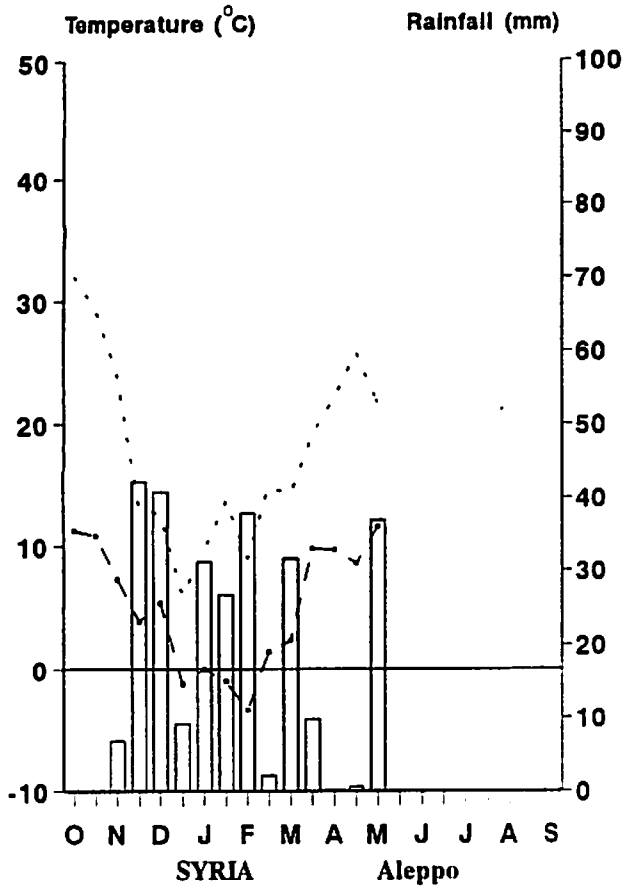

Temperature (°C)
Rainfall (mm)
138
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Heimo

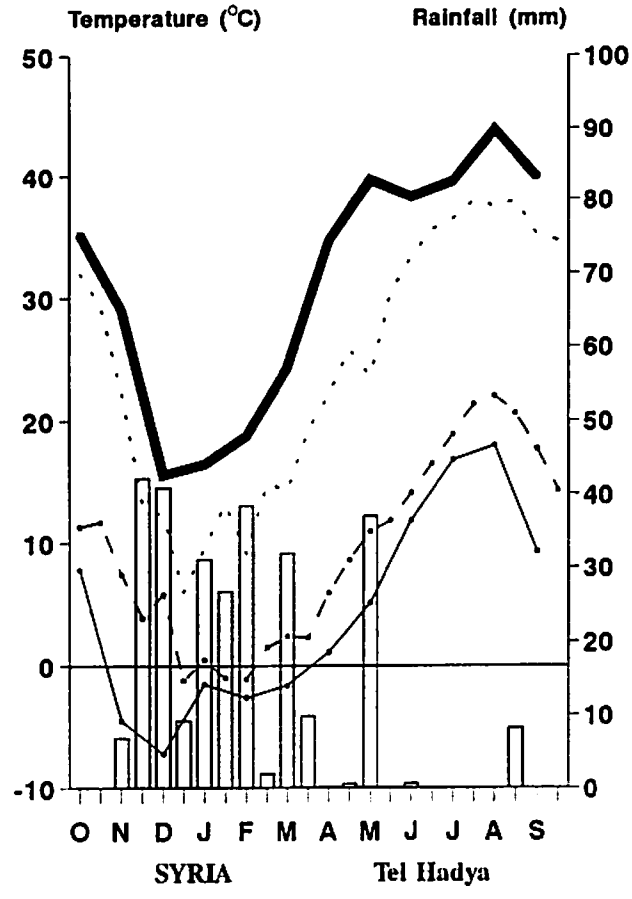

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Idleb

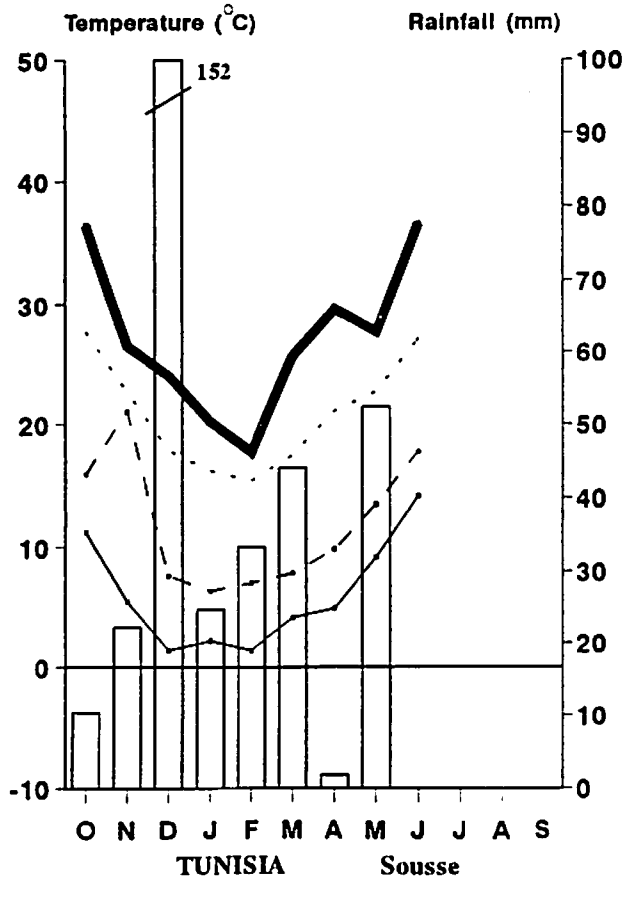

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Izra'a

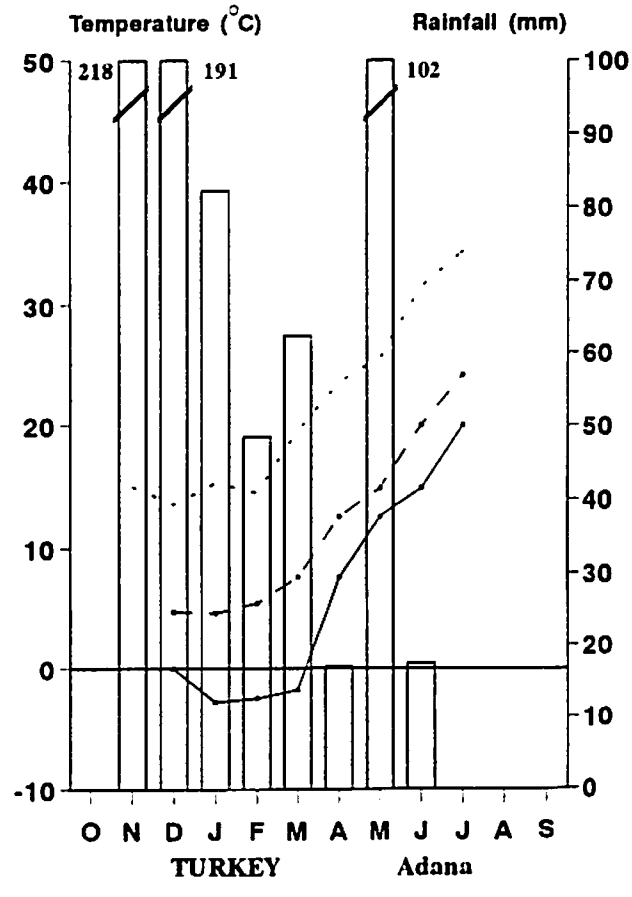

Temperature (°C)
Rainfall (mm)
135
149
126
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Jableh

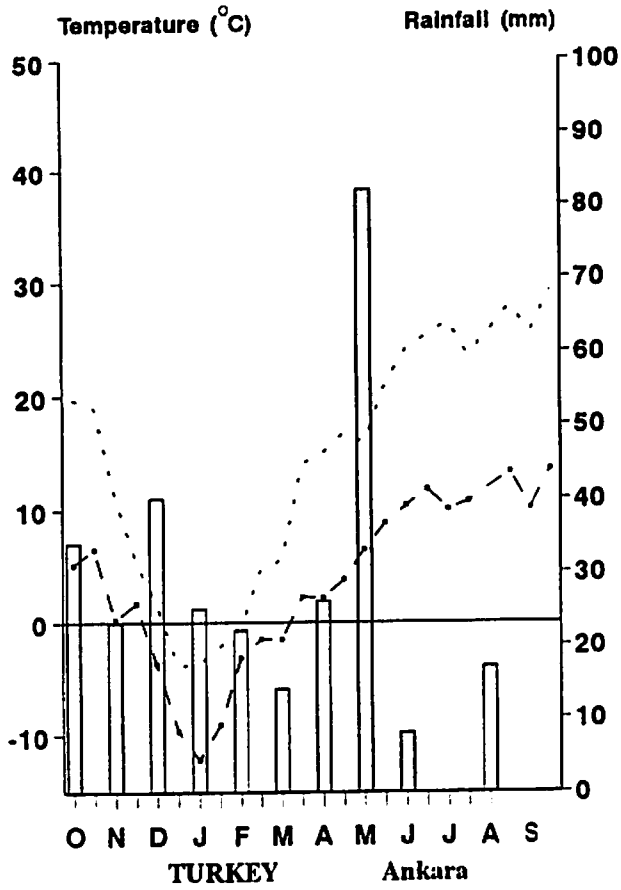

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Jindiress

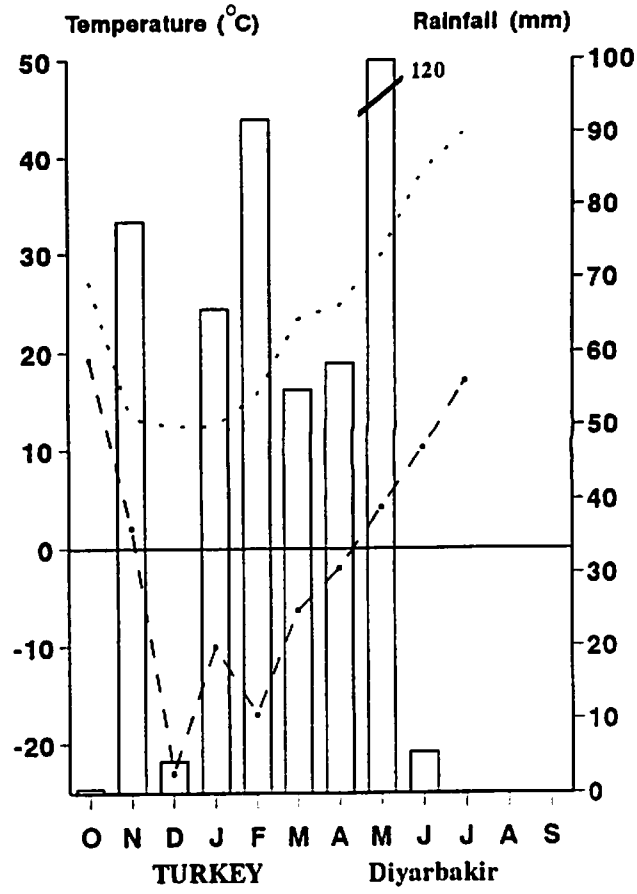

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Aleppo

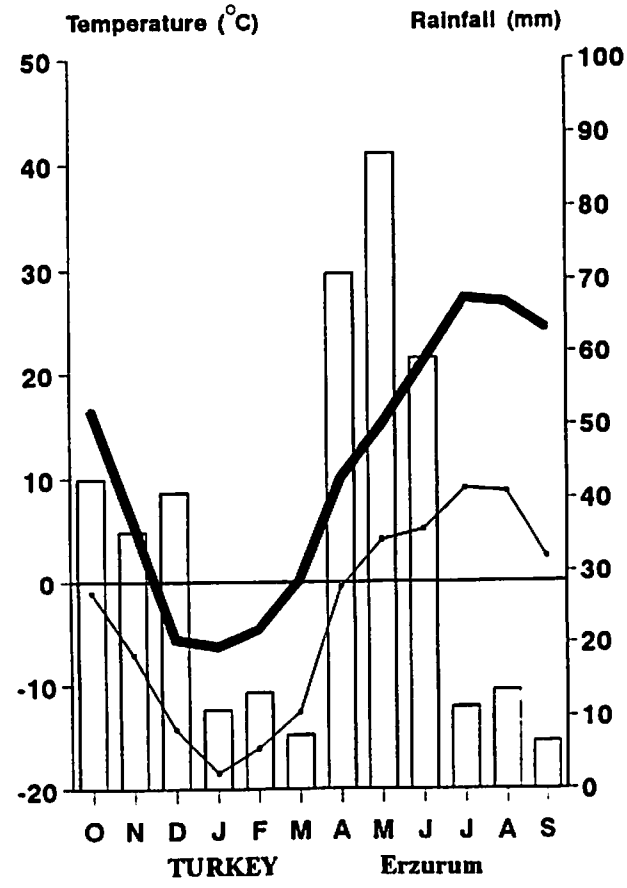

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
SYRIA
Tel Hadya

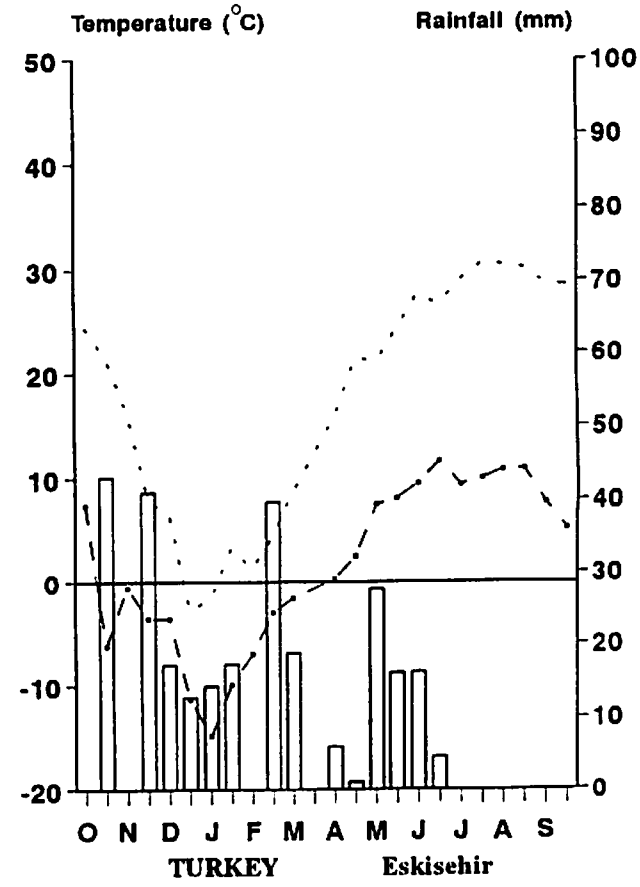

Temperature (°C)
Rainfall (mm)
152
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
TUNISIA
Sousse

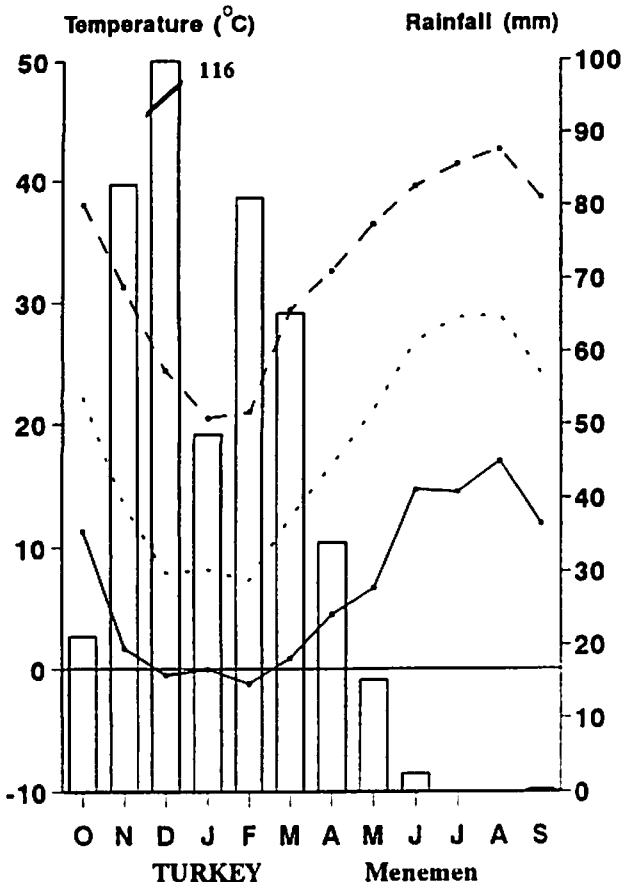

Temperature (°C)
Rainfall (mm)
218
191
102
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
TURKEY
Adana

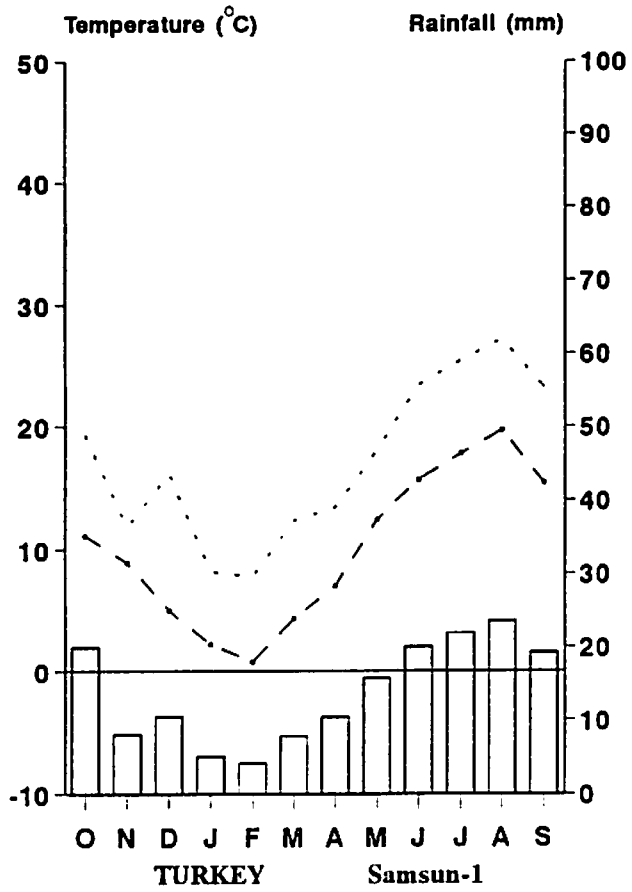

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
TURKEY
Ankara

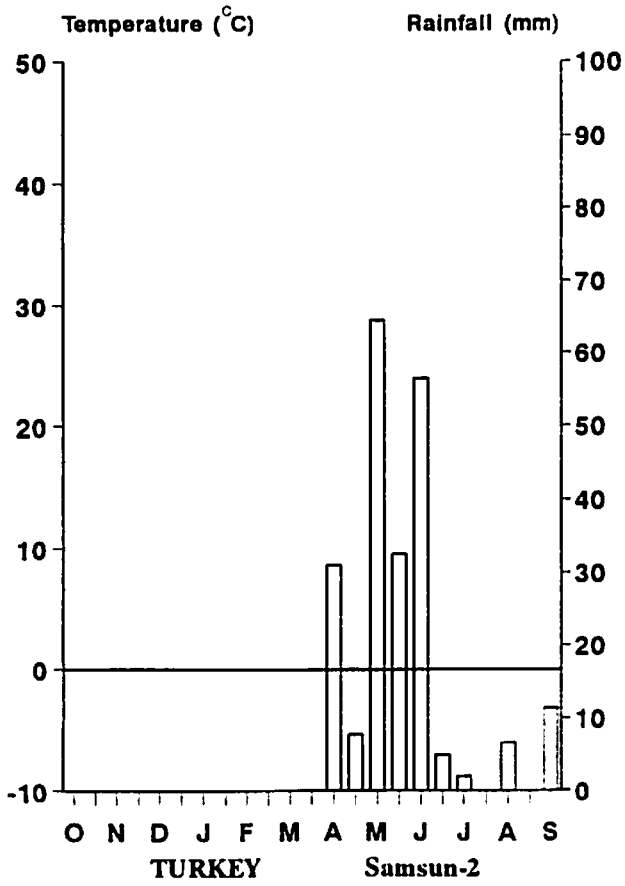

Temperature (°C)
Rainfall (mm)
120
50
40
30
20
10
0
-10
-20
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
TURKEY
Diyarbakir

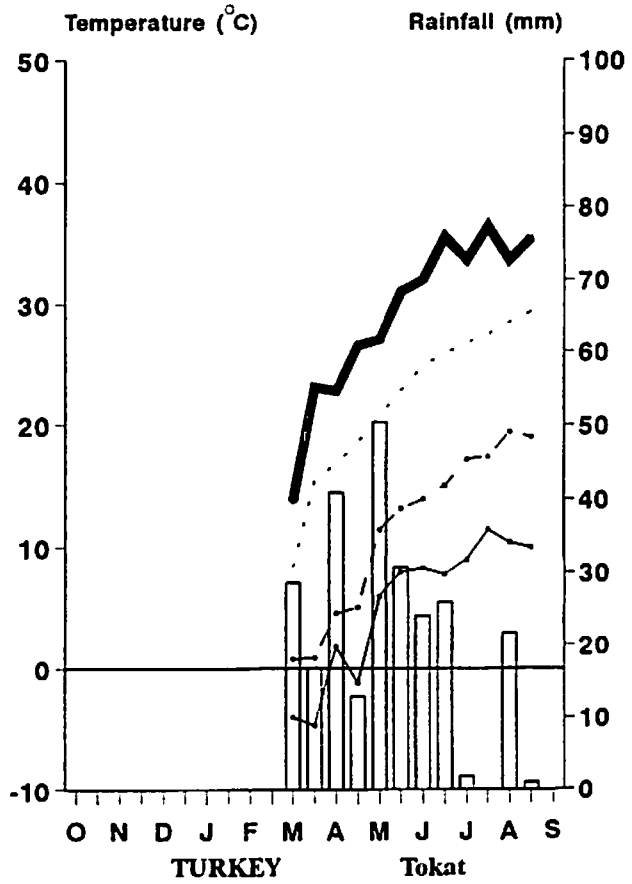

Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
-20
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
TURKEY
Erzurum


Temperature (°C)
Rainfall (mm)
50
40
30
20
10
0
-10
-20
100
90
80
70
60
50
40
30
20
10
0
O N D J F M A M J J A S
TURKEY
Eskisehir


Temperature (°C)
Rainfall (mm)
116
O N D J F M A M J J A S
TURKEY
Menemen


Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
TURKEY
Samsun-1


Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
TURKEY
Samsun-2


Temperature (°C)
Rainfall (mm)
O N D J F M A M J J A S
TURKEY
Tokat