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REPORT OF THE WORK DONE DURING 1984-85 AT HISAR SUB-CENTER

PROJECT PP-brd-1

(Development of Early Maturing Cultivars and Superior Breeding Lines for Grain Production)

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ICRISAT

LOCATION

ICRISAT COOPERATIVE RESEARCH CENTER, H.A.U. HISAR (HARYANA)

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PIGEONPEA BREEDING STAFF AND COOPERATING SCIENTIST ASSOCIATED WITH PROJECT NO. PP-brd-1.

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CONTENTS

PP-brd-1 : DEVELOPMENT OF EARLY MATURING CULTIVARS AND SUPERIOR BREEDING LINES FOR GRAIN PRODUCTION.

OBJECTIVE : To develop high yielding early maturing cultivars with acceptable grain quality suited to use in *pure* stands or with short duration companion crops.

A. INTRODUCTION

The experiments reported here were conducted at ICRISAT Cooperative Research Station, Hisar. The Hisar Station is situated at 29° 10'N latitude, 75° 46'E longitude and at an altitude of 215.2 m. The monthly mean temperatures and rainfall received during 1984 along with long term (1970-83) mean is presented in table 1.1. It was comparatively dry year and the temperatures during kharif were higher than long term mean.

Because of delayed arrival of the monsoon rains (second week of July) and non-availability of canal water for irrigation, sowing of most of the experiments was done in the third week of July. P_2O_5 @ 20 kg/ha (single super phosphate) was applied in the soil before sowing. No other nutrients were added. Seeds were not inoculated with Rhizobium culture. The crop received one insecticidal (Endosulphan) spray to control pod borer. Crossing block was sprayed more than once as and when required.

B. CROSSES MADE :

The objectives, main features of the parents used and the list of crosses made during 1984 is given below:

I. To produce white seeded ICPL 87

Parents - ICPL 87 - Brown seed
ICPL 289 - White seed
ICPL 83023 - White seed

Crosses -

ICPL 87 x ICPL 289

ICPL 87 x ICPL 83023

II. 7 x 7 determinate diallel -

To study genetic parameters for different characters in early maturing determinate background and to generate segregating material for selections.

Parents -

ICPL 316 - Photoinsensitive, short statured, extra-early, having tolerance to SM, PB & W.

ICPL 4 - Well adapted, early, good combiner

ICPL 83009 - Early, large white seeded, PB and W tolerant.

ICPL 289 - White seeded, SM and W tolerant

ICPL 87 - High yielding, widely adpated

ICPL 83016 - Large white seeded, low yielding

ICPL 83024 - Large seeded, resistant to SM, PB and W.

Crosses -

ICPX	840001	ICPL 316	x	ICPL 4
	840002	"	x	ICPL 83009
	840003	"	x	ICPL 289
	840004	"	x	ICPL 87
	840005	"	x	ICPL 83016
	840006	"	x	ICPL 83024
	840007	ICPL 4	x	ICPL 83009
	840008	"	x	ICPL 289
	840009	"	x	ICPL 87
	840010	"	x	ICPL 83016
	840011	"	x	ICPL 83024
	840012	ICPL 83009	x	ICPL 289
	840013	"	x	ICPL 87
	840014	"	x	ICPL 83016
	840015	"	x	ICPL 83024
	840016	ICPL 289	x	ICPL 87
	840017	"	x	ICPL 83016
	840018	"	x	ICPL 83024
	840019	ICPL 87	x	ICPL 83016
	840020	"	x	ICPL 83024
	840021	ICPL 83016	x	ICPL 83024

III. 12 x 12 diallel -

To study genetic paramiters for different characters in combined (DT and NDT) and partitioned diallel and to select (from segregating populations) early maturing, large seeded, disease resistant high yielding lines.

Parents - Determinate:

ICPL 316 - Extra-early, large seed, tolerant to SM, PB and W
ICPL 87 - High yielding, large seed, SM and W tolerant
ICPL 289 - Red flower, large white seed, SM and W tolerant
ICPL 83009- Early, large white seed, PB and W tolerant
ICPL 84023- High yield, early, large seed, SM resistant
ICPL 83024- Very large seed, red flower, SM and W resistant

Indeterminate:

ICPL 288 - Long fruiting branch, cream seed, SM, PB and W tolerant, less susceptible to borer.

ICPL 143 - Red flower, cream seed, SM and W resistant
ICPL 83025 - Wilt resistant
ICPL 84043 - Early maturing, large seed
ICPL 84045 - Early, large white seeds
ICPL 85037 - Extra early maturing

Crosses :

ICPX 840004	ICPL 316	x	ICPL 87
840003	"	x	ICPL 289
840002	"	x	ICPL 83009
840006	"	x	ICPL 83024
840022	"	x	ICPL 84023
840023	"	x	ICPL 288
840024	"	x	ICPL 143
840025	"	x	ICPL 83025
840026	"	x	ICPL 84043
840027	"	x	ICPL 84045
840028	"	x	ICPL 850037
840016	ICPL 87	x	ICPL 289
840013	"	x	ICPL 83009
840020	"	x	ICPL 83024
840029	"	x	ICPL 84023
840030	"	x	ICPL 288

840031	ICPL 87	×	ICPL 143
840032	"	×	ICPL 83025
840033	"	×	ICPL 84043
840034	"	×	ICPL 84045
840035	"	×	ICPL 85037
840012	ICPL 289	×	ICPL 83009
840018	"	×	ICPL 83024
840036	"	×	ICPL 84023
840037	"	×	ICPL 288
840038	"	×	ICPL 143
840039	"	×	ICPL 83025
840040	"	×	ICPL 84043
840041	"	×	ICPL 84045
840042	"	×	ICPL 85037
840015	ICPL 83009	×	ICPL 83024
840043	"	×	ICPL 84023
840044	"	×	ICPL 288
840045	"	×	ICPL 143
840046	"	×	ICPL 83025
840047	"	×	ICPL 84043
840048	"	×	ICPL 84045
840049	"	×	ICPL 85037
840050	ICPL 83024	×	ICPL 84023
840051	"	×	ICPL 288
840052	"	×	ICPL 143
840053	"	×	ICPL 83025
840054	"	×	ICPL 84043
840055	"	×	ICPL 84045
840056	"	×	ICPL 85037
840057	ICPL 84023	×	ICPL 288
840058	"	×	ICPL 143
840059	"	×	ICPL83025
840060	"	×	ICPL 84043
840061	"	×	ICPL 84045
840062	"	×	ICPL 85037
840063	ICPL 288	×	ICPL 143
840064	"	×	ICPL 83025
840065	"	×	ICPL 84043
840066	"	×	ICPL 84045
840067	"	×	ICPL 85037
840068	ICPL 143	×	ICPL 83025
840069	"	×	ICPL 84043
840070	"	×	ICPL 84045
840071	"	×	ICPL 85037

840072	ICPL 83025	x	ICPL 84043
840073	"	x	ICPL 84045
840074	"	x	ICPL 85037
840075	ICPL 84043	x	ICPL 84045
840076	"	x	ICPL 85037
840077	ICPL 84045	x	ICPL 85037

IV. To incorporate insect tolerance:

Parents -

ICPL 316 - A promsing extra early determinate line

ICPL 83009 - A promising early white seeded determinate line

ICPL 143 - A Promising cream seeded indeterminate line

PPE 45-2 - Heliothis pod borer tolerant line

Crosses -

ICPX 840078	ICPL 316	x	PPE-45-2
840079	ICPL 83009	x	"
840080	ICPL 143	x	"

V. Incorporation of resistance in a multiple cross made by HAU

Parents -

Multiple Cross([ICPL-81xAL15]x(EE-76xUPAS 120)x(H77-216xICPL87])

ICPL 316 - Tolerant to SM, PB, W
ICPL 288 - Tolerant to SM, PB, W & Pod borer
ICPL 83009 - Resistant to PB
ICPL 83008 - Resistant to SM

Crosses -

ICPX 840081	Multiple cross(84HP-1542)	x	ICPL 316
840082		x	ICPL 288
840083		x	ICPL 83009
840084		x	ICPL 83008

VI. Inheritance of growth habit

(Inheritance of flower colour, pod colour, seed colour, pod shape etc. can also be worked out)

Parents -

ICPL 83008 - Determinate,yellow flower,green pods,brown seeds
ICPL 83024 - Determinate,orange flower,purple wavy pods,dark brown seeds
ICPL 269 - Semi determinate, YS flower,GPS pods,Cream seeds
ICPL 83032 - Semi-determinate,Red flower,purple curved pods, white seeds
ICPL 143 - Indeterminate,Red flower,GPS pods,Cream seeds
ICPL 161 - Indeterminate,YS flower,GPS pods,Light Brown seeds

Crosses -

ICPX 840085	ICPL 83008	x	ICPL 83024
840086		x	ICPL 269
840087		x	ICPL 83032
840088		x	ICPL 143
840089		x	ICPL 161
840090	ICPL 83024	x	ICPL 269
840091		x	ICPL 83032
840052		x	ICPL 143
840092		x	ICPL 161
840093	ICPL 269	x	ICPL 83032
840094		x	ICPL 143
840095		x	ICPL 161
840096	ICPL 83032	x	ICPL 143
840097		x	ICPL 161
840098	ICPL 143	x	ICPL 161

VII. Inheritance of pod and flower colour:

Parents -

ICPL 83009 Green pods, yellow flower
ICPL 146 Green pods, yellow flower
ICPL 289 GPS pods, Red flower
ICPL 83024 Purple pods, orange flower

740146-B-23-1-H1-HB-HB-H5-HB - Sunred pods, orange flower (84HP 102)

Crosses

ICPX 840099	ICPL 83009	x	ICPL 146
840012	"	x	ICPL 289
840015	"	x	ICPL 83024
840100	"	x	84HP-102

840101	ICPL 146	x	ICPL 289
840102	"	x	ICPL 83024
840103	"	x	84HP-102
840018	ICPL 289	x	ICPL 83024
840104	"	x	84HP-102
840105	ICPL 83024	x	84HP-102

C. BREEDING MATERIALS

1. BULK POPULATIONS :

F_1 : Twenty-seven F_1s were advanced in unreplicated plots of 1 to 4 rows (depending on the available seed) under the cage. This included all the crosses made in 1983, except the ones made for the study of inheritance of the dwarfness. Of 27, three crosses (830007, 830016 and 830035) were rejected. They either looked like selfed female parents or very poor looking.

F_2 : Ten determinate (820001, 820002, 820003, 820004, 820005, 820008, 820009, 820017, 820023 and 820024) and 8 indeterminate (820006, 820007, 820011, 820016, 820018, 820020, 820021 and 820025) F_2 populations were grown in 5 to 10 row plots replicated twice. Every fifth plot consisted of check. ICPL 4 was used as a check for determinate (DT) and H77-216 for indeterminate (NDT) populations. Depending on the performance, maturity and variability, two NDT (820006 and 820011) and 6 DT (820001, 820002, 820004, 820009, 820023 and 820024) population bulks were selected for growing next year. The single pod bulk of these populations were made. From these populations, 53 DT and 54 NDT promising looking single plants were selected for evaluating as SPP's next year.

F_3 : Seven F_3 DT populations along with a check (ICPL 4) were tested in a replicated (three) yield trial. Each plot consisted of 4 meter long 10 rows spaced 50 cms apart. The test was sown on 17 July 1984. The characteristics of the populations tested is summarized in table 1.2. From these populations, 63 promising looking individual plants were selected for evaluating as SPP's next year. Three of these populations (810152, 810136 and 810058) were selected for growing as population bulks next year.

Three DT (810120, 810133 and 810143) and seven indeterminate (810119, 810123, 810145, 810061, 810161, 810165 and 810168) F3 bulk populations were grown in unreplicated 14 meter long 20 rows spaced 50 cms apart for practising individual plant selection. Selections made in these populations is summarized in table 1.3. From these, 256 individual plants (91 DT and 165 NDT) were selected for evaluation as single plant progenies next year. Four promising and variable populations (810061, 810119, 810123 and 810143) were selected for growing their single pod bulks next year.

Under project 19, twenty DT (810054, 810057, 810060, 810062, 810063, 810066, 810068, 810078, 810081, 810082, 810084, 810085, 810086, 810090, 810094, 810095, 810096, 810097, 810098, and 810100) and 19 NDT (810053, 810055) 810056, 810059, 810061, 810064, 810065, 810067, 810079, 810080, 810083, 810087, 810089, 810091, 810093, 810099, 810103, 810104 and 810106) F_3 bulk populations, advanced for one generation in SM nursery at Patancheru (discarding susceptible plants) were grown in 4 row plots replicted twice.

Every fifth plot consisted of check, ICPL 4 for DT and H77-216 for NDT populations. From these, based on performance, maturity and variability 14 DT (810057, 810062, 810063, 810066, 810068, 810078, 810081, 810082, 810084, 810086, 810096, 810097, 810098 and 810100) and 13 NDT (810053, 810055, 810056, 810059, 810061, 810064, 810065, 810083, 810087, 810091, 810093, 810099 and 810106) populations were selected for growing next year as population bulks. In addition, 59 DT and 40 NDT promising looking individual plants were selected from these populations for evaluating as SPP's next year. The details may be presented in the project 19 progress report.

F_4 : Two F_4 bulk populations (800514 and 800528) were grown in unreplicated large plots consisting of 14 meter long 28 rows spaced 50 cm apart. From these 39 promising looking individual plants were selected (table 1.3) for evaluation as SPP's next year.

F_6 : One F_6 bulk population (780321) advanced by SPD bulk method was grown in an unreplicated large plot consisting of 14 meter long 28 rows spaced 50 cm apart. From this, 14 promising looking erly mturing plants were selected (table 1.3) for evaluation as SPP's next year.

84 SMDR Composites

Two sterility mosaic resistant (SMDR) composites made by bulking 100 seed from each of 20 DT (810054, 810057, 810060, 810062, 810063, 810066, 810068, 810078, 810081, 810082, 810084, 810085, 810086, 810090, 810094, 810095, 810096, 810097, 810098 and 810100) and 19 NDT (810053, 810055, 810056, 810059, 810061, 810064, 810065, 810067, 810079, 810080, 810083, 810087, 810089, 810091, 810093, 810099, 810103, 810104, and 810106) populations (separately for DT and NDT) having SM resistant parents and advanced for one generation in SM nursery at Patancheru were grown in isolation. Late maturing plants were removed and the populations were purified for growth habit (DT and NDT).

2. SINGLE PLANT PROGENY EVALUATIONS :

During 1984 kharif, 2112 (848 determinate and 1264 indeterminate) single plant progenies (SPP's) of different generations (F_2 to F_{10}) of 152 crosses were evaluated in unreplicated 2 row plots. Row to row spacing of 50 cm was used. Sowing was done on 14 July 1984. Every fifth plot was planted with checks (ICPL 4 for determinate and H77-216 for indeterminate progenies). Selections made in the single plant progenies is summarized in table 1.4.

A total of 642 (315 determinate and 327 indeterminate) promising looking individual plants were selected for evaluation as SPP's next year. Inaddition, 299 (131 determinate and 168 indeterminate) promising and uniform progeny bulks were selected for replicated yield test next year. Most of these out-yielded the nearest check.

Composite 1 : Eleven progenies derived from Composite 1 were evaluated with close check in unreplicated 2 row plots. From these 11 plants (5 determinate and 6 indeterminate) were selected for evaluation as SPP's (table 1.4). Five progeny bulks (4 determinate and one indeterminate) yielding better than the nearest check and early maturing were selected for replicated yield testing (table 1.4).

QP Lines : Out of 17 progeny bulks derived from lines received from University of Queensland and evaluated at Hisar with close check in unreplicated 2 row plots, 16 were selected for replicated yield testing next year (table 1.4).

Florida bulks : Ninty-one (84 determinate and 7 indeterminate) single plant progenies derived from five bulk populations (24c, 62, 81d, 86 and 90c) received from Florida, USA were grown on 14 July 1984 in unreplicated 2 row plots. Every fifth plot was sown with check (ICPL 4 for determinate and H77-216 for indeterminate). From these 31 promising looking individual plants were selected for evaluation as SPP's and seven high yielding, uniform progeny bulks were selected for replicated yield testing (table 1.4).

D. REPLICATED YIELD TESTS :

1. All India Coordinated Pulse Improvement Project (AICPIP) Tests.

In the AICPIP Kharif Pulses Workshop held at Kanpur (29 May - 2 June 1984), one of the early maturing pigeonpea line ICPL 87 was identified as promising for release in Peninsular India. It was given a nickname 'PRAGATI'. ICPL 87 was also proposed by Marathwada Agricultural University, Parbhani for release in Maharashtra. It also became popular in Gujarat as a dual (vegetable and dry grain) purpose variety.

Two early maturing pigeonpea lines (Pusa Sweta-1 and Pusa Sweta-2) entered in EACT from Delhi were derived from ICRISAT material. Pusa Sweta-1 is from ICPL 143 and Pusa Sweta-2 is from one of the progenies of cross 770007 ((Prabhat x ICP 8504) x ICPL 10).

(a) Extra Early Arhar Coordinated Trial (EXACT) :

Thirteen extra early maturing advanced pigeonpea entries including checks (Prabhat and UPAS 120) were tested in EXACT sown on 19July. The test was laid out in Randomized Block Design with 4 replications. Each plot consisted of 8 rows spaced 30 cm apart. Characteristics of the entries is summarized in table 1.5. ICPL 83006 was the top yielding (2839 kg/ha) followed by ICPL 317 (2667 kg/ha). ICPL 317 was comparatively the largest seeded line having cream colour seeds. First flush of all the extra early lines was damaged by webber (mostly Maruca).

(b) Early Arhar Coordinated Trial (EACT) :

Fourteen early maturing pigeonpea entries including check (UPAS 120) were tested in EACT sown on 19 July. As for EXACT, the EACT was laid out in RBD with four replications. Each plot consisted of 4 meter long 8 rows spaced 30 cm apart. Observations recorded is summarized in table 1.6. ICPL 155 was the highest yielding (2963 kg/ha) followed by ICPL 151 (2917 kg/ha), AL 13 (2681 kg/ha) and ICPL 317 (2602 kg/ha). The grain yield of check (UPAS 120) was 2434 kg/ha. ICPL 151 has cream coloured large seeds. The seed of AL 13 was small and black and purple coloured.

(c) Arhar Coordinated Trial (ACT)-1 :

ACT-1 consisted of 8 entries including check (T-21) tested in 8 row plots. Row to row spacing was 50 cm and plant to plant 20 cm. The trial was sown with 4 replications on 13 July. Characteristics of the entries tested i tabulated in table 1.7. Grain yield obtained from ICPL 186 was the highest (2713 kg/ha) followed by check T-21 (2708 kg/ha). All other entries yielded less than the check.

2. MULTILOCATION TRIALS :

In 1984, following five multilocation trials were constituted:

a) Extra-Early Pigeonpea Adaptation Yield Trial (EXPAY 84)
b) Early Pigeonpea Adaptation Yield Trial - Determinate(EPAY 84 DT).
c) Early Pigeonpea Adaptation Yield Trial - Indeterminate (EPAY 84 NDT).
d) Early Pigeonpea International Trial - Determinate (EPIT 84 DT).
e) Early Pigeonpea International Trial - Indeterminate (EPIT 84 NDT).

Of five, three (EXPAY, EPAY 84DT and EPIT 84NDT) for outside India (inaddition to ICRISAT stations). At Hisar, the trials were sown on 19 July in 5 row plots, replicated thrice. The rows were spaced 30 cm apart.

a) EXPAY84 : Fourteen extra-early determinate pigeonpea entries including check (ICPL 4) were tested in EXPAY. The trial was sent to 14 locations (Hisar, Junagarh, Navgaon, Berthin, Faizabad, Pantnagar, Pusa, Delhi, Gwalior, Patancheru, Powarkheda, Patambi, Derol, and Indore) in India. The results are available from nine locations. Yield and other characteristics of the entries at ICRISAT, Hisar is tabulated in table 1.8. First flush of all the entries was damaged by webber (mostly Maruca). ICPL 83006 was the top yielding (2829 kg/ha) line followed by ICPL 315 (2654 kg/ha), ICPL 83003 (2521 kg/ha) and ICPL 4 (2479 kg/ha).

Grain yield of the entries tested at different locations is summarized in table 1.9. Days taken to flower and mature at different locations is presented in table 1.10. The lines flowered about a week earlier at Patancheru. Time taken to maturity also decreased with the decrease in the latitude (table 1.10). Based on the mean over all the 9 locations, ICPLs 83006, 315 and 83003 out-yielded Check (table 1.9). Of 9 locations tested, ICPL 83006 ranked first at 6 and second at 2 locations.

b) EPAY84DT : This trial consisted of 12 early maturing determinate pigeonpea entries including check (ICPL 4). Performance of entries at ICRISAT, Hisar is summarized in table 1.11. Except an extra-early flowering, short statured and large seeded line, ICPL 83012, all other lines gave higher yield than the check (ICPL 4). Four entries (ICPLs 154, 83022, 289 and 141) yielded more than 3000 kg/ha. All the entries tested had larger seed than ICPL 4.

In addition to Hisar, the trial was sent to 15 locations (Junagarh, Sehore, Berthin, Sriganganagar, Meerut, Pusa, Delhi, Gwalior, Patancheru, Palem, Powarkheda, Pattambi, Derol, Indore and Keonjhar) in India. The results were available from 9 locations. Grain yield and days taken to flower and mature at different locations is summarized in tables 1.12 and 1.13, respectively. Considering the mean over all the locations ICPL 83022 was the highest yielding (2067 kg/ha) followed by ICPL 154 (2054 kg/ha), ICPL 141 (2038 kg/ha), ICPL 146 (2013 kg/ha) and ICPL 312 (1902 kg/ha). ICPLs 154, 146 and 83022 were among the 5 top yielding lines at 6 of the 9 locations. On an average the lines flowered about 10 days earlier at Patancheru as compared to Hisar and matured about a month earlier (table 1.13).

c) EPAY84NDT: In this trial 12 early maturing indeterminate entries including check (H77-216) were evaluated. Yield and other characteristics of the entries tested at Hisar is tabulated in table 1.14. Most of the lines yielded more than 3000 kg/ha. Eight entries out-yielded check (H77-216). ICPL 314 was the top yielding (3879 kg/ha).

The test was supplied to 17 locations (Junagarh, Bhawanipatna, Berthin, Sriganganagar, Faizabad, Pantnagar, Kanpur, Meerut, Pusa, Delhi, Gwalior, Patancheru, Powarkheda, Pattambi, Derol, Indore and Keonjhar) other than Hisar. But the results were reported from only 9 locations. Yield of entries at different locations is summarized in table 1.15 and days to flower and mature in table 1.16, respectively. Based on mean over all the 9 locations ICPL 81 gave the highest yield (2194 kg/ha) followed by check (H77-216). Flowering and maturing behaviour of different lines was similar as in EPAY84DT at different locations.

d) EPIT 84DT : The test consisting of 18 determinate entries including check (ICPL 4) was sent to three countries (El Salvadore, Burma and Argentina) outside India.

In India the test was conducted at the three ICRISAT locations (Hisar, Gwalior and Patancheru). Performance of entries tested at ICRISAT, Hisar is summarized in table 1.17. Twelve entries outyielded check (ICPL 4). ICPL 151 was the top yielding line (3632 kg/ha). Yield of the lines tested at different locations is tabulated in table 1.18. Their flowering and maturity duration is presented in table 1.19. High yield (upto 4839 kg/ha of ICPL 83013) was reported from Argentina. Based on mean over all the 5 locations ICPL 87 gave the highest yield (3109 kg/ha), followed by ICPL 83013 (2986 kg/ha), ICPL 83008 (2671 kg/ha) and ICPL 83023 (2650 kg/ha). Mean days taken to flower by entries at Patancheru and Burma was almost same but at Burma the lines matured about a month later than at Patancheru (table 1.19).

e) EPIT84NDT : Fourteen erly maturing indeterminate pigeonpea lines including check (H77-216) were evaluated in EPIT84NDT at Hisar. The characteristics of the lines tested in tabulated in table 1.20. At Hisar, 8 lines out-yielded check (H77-216). ICPL 83027 was the top yielding (3632 kg/ha) followed by ICPL 83032 (3200 kg/ha).

In addition to Hisar, the test was supplied to Gwalior, Patancheru and Indonesia. The results are available only from Gwalior and Patancheru. Tables 1.21 and 1.22 summarizes the yield and days taken to flowering and maturity at different locations (Hisar, Gwalior and Patancheru), respectively. Considering mean over all the three locations, ICPL 83027 remained the top yielding line (2856 kg/ha) followed by ICPL 186 (2765 kg/ha). As in other tests, the lines flowered 10-15 days earlier and matured 30-40 days earlier at Patancheru as compared to Hisar (table 1.22).

3. PRELIMINARY MULTILOCATION TRIALS:

Promising looking lines from 1983 station trials were reevaluated in following two preliminary mutilocation trials during 1984 at three ICRISAT locations (Hisar, Gwalior and Patancheru).

a) Early Pigeonpea Preliminary Multilocation Trial 1984 - Determinate (EPPMLT 84DT).

b) Early Pigeonpea Preliminary Multilocation Trial 1984 - Indeterminate (EPPMLT 84NDT).

The trials were laidout in randomized block design with four replications. Each plot consisted of 4 meter long 8 rows spaced 30 cms apart. At Hisar, the trials were sown on 17 July, 1984.

a) EPPMLT 84DT : Twenty-four early maturing determinate pigeonpea lines including check (ICPL 4) were tested in this trial. Grain yield and other characteristics of the entries tested at Hisar is summarized in table 1.23.

Five ICPLs (84030, 84023, 84026, 83021 and 83011) yielded more than 3000 kg/ha. First flush of most of the extra early lines flowering in less than 65 days got damaged by webber (mostly Maruca). A black seeded extra early line, ICPL 83018, seemed to be tolerant to Maruca damage.

Performance of the entries at different locations is summarized in table 1.24. At Patancheru, most of the lines flowered 10 days earlier and matured a month earlier than at Hisar (table 1.24). ICPL 84033 was the top yielding line both at Patancheru and Gwalior. On overall mean basis also it turned out to be the highest yielding followed by ICPL 84023 (2627 kg/ha).

b) EPPMLT 84 NDT: This test consisted of 20 indeterminate entries including check(H77-216). The trial was conducted at three ICRISAT locations namely, Hisar, Gwalior,and Patancheru. Characteristics of the entries tested at Hisar is tabulated in table 1.25. Five lines (ICPLs 84052, 84042, 84040, 84056 and 84044) yielded more than 3000 kg/ha. Days taken to flower and mature and grain yield at different locations (Hisar, Patancheru and Gwalior) is summarized in table 1.26. Considering the mean over all the three locations, ICPL 84043 was the top yielding (2244 kg/ha) line followed by H77-216 (2223 kg/ha), ICPL 84040 (2190 kg/ha) and ICPL 84052 (2183 kg/ha). Top 5 ranks (for yield) were attained by different entries at three different locations.

4. ADVANCED LINES STATION TRIALS

During 1984, following eight advanced lines station trials were conducted at Hisar.

Advanced Determinate Lines Trial 1984-1 (ADLT84-1)
Advanced Determinate Lines Trial 1984-2 (ALDT84-2)
Advanced Determinate Lines Trial 1984-3 (ADLT84-3)
Advanced Determinate Lines Trial 1984-4 (ADLT84-4)
Advanced Indeterminate Lines Trial 1984-1 (ANDLT84-1)
Advanced Indeterminate Lines Trial 1984-2 (ANDLT84-2)

Advanced Indeterminate Lines Trial 1984-3 (ANDLT84-3)
Advanced Indeterminate Lines Trial 1984-4 (ANDLT84-4)

Except ADLT84-3 and ANDLT84-2, all the trials consisted of 20 entries including checks (ICPL 4 for ADLT's and H77-216 for ANDLT's). Number of entries in ADLT84-3 and ANDLT 84-2 were 22 including check. The tests were sown on 19 July, 1984 in randomized block design with 3 replications. Each plot consisted of 4 meter long 8 rows spaced 30 cm apart.

a) ADLT84-1: Characteristics of the lines tested in ADLT84-1 at Hisar is tabulated in table 1.27. Eleven lines outyielded the check (ICPL 4). Five entries yielded more than 3000 kg/ha. All the entries had larger seed than ICPL 4.

Considering height, earliness, seed size and yield 8 lines were selected for preliminary multilocation testing next year and were alloted new ICPL numbers (table 1.27). In addition, five lines were selected for retesting in station trials next year to confirm their performance.

b) ADLT84-2: Fifteen of the 20 lines tested outyielded check (table 1.28). Majority of the lines gave yield of more than 3000 kg/ha. Three lines were selected for the allotment of new ICPL numbers and for inclusion in the preliminary multilocation trial next year. ICPL 4 was the smallest seeded entry in the trial. Eight lines were selected for reevaluating their yield performance in ADLT's next year.

c) ADLT84-3: This trial consisted of 22 entries including check (ICPL 4). The characteristics of the lines tested at Hisar is summarized in table 1.29. Sixteen lines outyielded check. Seven entries yielded more than 3000 kg/ha. Three of these were selected for preliminary multilocation testing next year and were alloted new ICPL numbers. In addition, five lines were selected for reevaluating their performance next year in advanced lines station trials. All the entries had larger seed than the check.

d) ADLT84-4 : Observations recorded on the entries tested in this trial at Hisar is tabulated in table 1.30. Top two entries were selected for preliminary multilocation testing next year and were alloted new ICPL numbers. In addition five entries were selected for reevaluation in station trials next year.

e) ANDLT84-1: Charateristics of the indeterminate lines tested in ANDLT84-1 at Hisar is given table 1.31. Of 20 lines tested, 9 yielded more than the check (H77-216). Ten lines were selected for preliminary multilocation testing next year and were alloted new ICPL numbers. In addition, four lines were selected for retesting in station trial next year.

f) ANDLT84-2: Twenty-two entries including check were included in this test. Observations recorded on these entries at Hisar is tabulated in table 1.32.

In all 7 entries were selected for further evaluation next year. Two of these for preliminary multilocation testing and five for ANDLT. The lines selected for preliminary multilocation testing were alloted new ICPL numbers.

g) ANDLT84-3: Yield and other characteristics of the lines tested at Hisar is summarized in table 1.33. Eight lines outyielded check (H77-216) and four lines outyielded both H77-216 and also ICPL 6 (a T 21 line). Four lines were selected for preliminary multilocation testing next year and were allotd new ICPL numbers. In addition, three entries were selected for retesting in ANDLT next year.

h) ANDLT84-4: Characteristics of the entries tested at Hisar is summarized in table 1.34. Seven entries yielding more than 3000 kg/ha outyielded both H77-216 and ICPL 6. Four were selected for preliminary multilocation testing and were alloted new ICPL numbers. Seven lines were selected for retesting in ANDLT next year.

5. EVALUATION OF PROMISING LINES IN LATE PLANTING :

In 1984, 20 determinate and 20 indeterminate lines including checks (ICPLs 4 and 87 for determinate and H77-216 for indeterminate) were evaluated in two separte yield trials sown late on 19 July 1984. The tests were laid out in randomized block design with 3 replications. Ten rows, 4 m long spaced 20 cms apart constituted the plot. Grain yield and other characteristics of the lines tested is summarized in tables 1.35 and 1.36 respectively for detrminate and indeterminate lines tests. Growth expressed as plant height was more than normally expected. Yield levels obtained both by determinate and indeterminate entries were similar to normal sowings. Among the determinates, ICPL 317 was the top yielding (2731 kg/ha) followed by ICPL 151 (2703 kg/ha) and ICPL 83006 (2674) and among the indeterminates, ICPL 81 was the highest yielding (2679 kg/ha) followed by ICPL 269 (2639 kg/ha).

E. SCREENING FOR DISEASE RESISTANCE :

1. Disease Resistant/Tolerant Lines Yield Trials :

Early maturing promising advanced pigeonpea lines showing resistant ($\leq$ 10% disease) or tolerant (11-30% disease) disease reaction to any one of the three major pigeonpea disease (sterility mosaic, Phytophthora blight and wilt) in 1981 and 1982 disease nurseries at Patancheru were tested for their yield performance in following four replicated yield trials at Hisar.

a. Disease Resistant Determinate Advanced Lines Test (DRDTALT)
b. Disease Tolerant Determinate Advanced Lines Test (DTDTALT)
c. Sterility Mosaic Disease Resistant Advanced Lines Test(SMDRALT)

d. Disease Tolerant Indeterminate Advanced Lines Test (DTNDTALT)

a. DRDTALT: Twenty advanced early maturing determinate pigeonpea lines showing resistance (upto 10% disease) to any one of the three major pigeonpea diseases (Sterility Mosaic, Phytophthora blight and wilt) in disease nursery at Patancheru during 1981 and/or 1982 were evaluated for their yield performance along with checks (ICPL 4 and ICPL 151) in a replicated (three) yield trial. The test was planted on 17 July 1984. Each plot consissted of 4 meter long 8 rows spaced 30 cm apart. The characteristics of the lines tested is summarized in table 1.37.

ICPL 151 was the top yielding (3071 kg/ha) followed by ICPL 289 (2978 kg/ha), ICPL 84023 (2973 kg/ha) and ICPL 83008 (2886 kg/ha). In 1984 sterility mosaic nursery at Patancheru, 14 of the 22 entries showed less than 10% sterility mosaic (table 1.37).

b. DTDTALT: This test also consisted of 22 entries. Lines showing some tolerance to any one of the three major pigeonpea diseases were inclued in this test to evaluate for their yield performance. The yield and other characteristics of the lines tested is summarized in Table 1.38. Their reaction to sterility mosaic in sterility mosaic nursery at Patancheru is also tabulated in table 1.38. Of 22 entries, 15 showed less than 10% sterility moaic. ICPL 155 was the top yielding (3256 kg/ha) followed by ICPL 83022 (3189 kg/ha) and ICPL 287 (3143 kg/ha).

c. SMDRALT: Eighteen early maturing pigeonpea lines purified in sterility mosaic nursery at Patancheru for two or more generations were tested for their yield performance in a replicated (two) yield trial along with two checks (ICPL 4 and ICPL 87). The test was sown on 19 July 1984. Plot size consisted of 4 m long 4 rows spaced 30 cms apart. The yield and other characteristics of the lines is summarized in table 1.39. In 1984 sterility mosaic nursery at Patancheru, all the 18 lines (except checks) tested showed complete resistance to sterility mosaic (table 1.39). Four lines (yielding 3148 to 3796 kg/ha) outyielded both the checks (table 1.39).

d. DTNDTALT: Seven early maturing indeterminate pigeonpea lines showing resistance or some degree of tolerance to any one of the three major pigeonpea diseases and a check (H77-216) was tested for their yield performance in a replicated (three) yield trial. The trial was sown on 19 July 1984. Each plot consisted of 4 meter long 8 rows spaced 30 cm apart. The characteristics of the lines tested along with their reaction to sterility mosaic in sterility mosaic nursery at Patancheru is given in table 1.40. Ten lines yielded more than the check, H77-216 (table 1.40). ICPL 292 was the top yielding line (3230 kg/ha) followed by ICPL 83027 (3194 kg/ha) and ICPL 83025 (3174 kg/ha).

2. Screening of Advanced Lines in Disease Nurseries:

Multiple Disease Nursery (MDN):

Thirty-three promising early maturing pigeonpea lines were screened in MDN. Because of low Sterility Mosaic incidence, SM reaction of the lines was confirmed in Pot Screening. ICPL 83024 showed resistance or tolerance to all the three diseases. ICPLs 83, 83027 and 83032 showed resistance or tolerance to Phytophthora blight and wilt.

Wilt Nursery (WN) :

Of 40 promising lines screened, 15 showed resistant or tolerant reaction to wilt viz: ICPL 83, 87, 155, 177, 83024 and EWR-1, EWR-2 etc.

Sterility Mosaic Nursery (SMN) :

All the 382 lines included in different replicated yield trials at Hisar were screened for sterility mosaic in SMN at Patancheru. Of 382, 116 had less than 10% SM. Thirty of these showed no SM infection e.g. ICPLs 83, 86, 146, 166, 269, 83007, 83008, 83023, 83024, 84018, 84019, 84022, 84023, 84035, 84038, 85003, and 85059 etc. In addtion 146 SM resistant lines were retested. Most of these were found to be resistant ($\leq$ 10% SM).

F. MAINTENANCE AND PURIFICATION OF LINES AND CULTIVARS :

Baigani Pure Lines Trial :

Seven pure lines derived from cultivar Baigani and their bulk was yield tested along with Baigani check. The test was sown on 19 July 1984. Each plot consisted of 4 m long 4 rows spaced 30 cm apart. The characteristics of the entries tested is summarized in table 1.41. The highest yielding line was alloted new ICPL numbers (ICPL 85074) and was selected as a Baigani line for further maintenance and utilization.

Thirteen determinate (ICPLs 4, 83, 87, 141, 151, 155, 312, 315, 316, 317, 83006, 83008 and 83011) and eight indeterminate (ICPLs 1, 81, 143, 161, 186, 269, 314 and 83027) promising early maturing pigeonpea lines were included in the maintenance program. For this 50 to 100 single plant progenies (SPP) of most of these ICPLs were grown in unreplicated plots. The lines were sown on 13 July 1984. Row to row spacing of 50 cm was used. From each ICPL, about 150 single plants in uniform and true to type SPP's were selfed to continue the maintenance. The open pollinated bulk seed was collected for supplying to cooperators on request.

F. MISCELLANEOUS OBSERVATIONS/STUDIES

1. Line Mixtures (Diallel) Test -

In the segregating populations of the cross between a determinate and an indeterminate line, the expression of determinate plants usually get suppressed by the indeterminate plants. This results in the elimination of even desirable determinate plants. Therefore, to know that how much the plant characters get affected in the mixtures of different proportions of determinate and indeterminate lines, a test was conducted during 1984 kharif at Hisar.

Seed from four lines, two determinate (ICPL 87 and 151) and two indeterminate lines (ICPL 161 and H77-216) were mixed in different proportions (25-75, 50-50 and 75-25, per cents) as indicated in Table 1.42 in all possible combinations by count. The trial was planted in RBD with three replications on 17 July 1984. Four meter long 8 rows spaced 50 cm apart constituted a plot. Distance between plants within row was 10 cms. In each plot, data on 12 competetive random plants were recorded for growth habit, days taken to flower, days taken to mature, plant height (cm), number of pods per plant and grain yield per plant (g). Mean characteristics of determinate and indeterminate plants for each treatment (entry) is summarized in Table 1.42 and 1.43.

Mean data indicated that there is no significant change in plant height and days taken to flower and mature both for determinate and indeterminate plants in different line mixtures as compared to parental lines (Table 1.42 and Table 1.43). Number of pods and grain yield per plant were same for DT-DT and NDT-NDT line mixtures. But in DT-NDT line mixtures, the number of pods and grain yield per plant decreased both in determinate and indeterminate plants with the increasing proportion of indeterminate plants from 25 to 75 per cent (Table 1.43). The decrease in determinate plants is due to suppression by indeterminate plants and in indeterminate plants is due to increased competetion between indeterminate plants.

The data is being analyzed statistically and shall be reported later.

2. RELATIONSHIP BETWEEN SEED SIZE AND SEED WEIGHT -

During recording of 100 see weight character for different early maturing ICPL lines and station trial entries, it was observed that there are lines looking small seeded by having more 100 seed weight and vice versa. Therefore, to confirm this observation, 100 seed weight of 118 ICPL lines was recorded. These lines were then grouped in to 19 groups, each group consisting of the lines with same 100 seed weight. To relate the seed weight with seed size, the amout (ml) of water replaced by each ICPL line was measured by putting the seeds (100) in the 100

al measuring cylinder containing measured amount of water. The difference of the water level in the measuring cylinder after and before putting the seeds was considered as the amount of water replaced by 100 seeds of that particular ICPL line. The observations recorded are summarized in Table 1.44 and graphically presented in Fig. 1.1. Normally, it seems that there is positive relationship between seed weight and the amount of water replaced (seed size). But certainly there are lines having different densities i.e. smaller seeds weighing more and vice versa. This is indicated by within seed weight group variabilityfor the amount of water replaced. Even across the groups there are lines replacing same amount of water but weighing differently (Fig. 1.1).

3. EXTENT OF DAMAGE DONE BY WEBBERS (MOSTLY MARUCA) -

In 1983 first flush of most of the extra early maturing lines got severely damaged by Webbers (mostly Maruca) (Fig. 1.2). Therefore, to know the extent of damage caused by webbers, a preliminary experiment was planned in consultation with Dr. S. Sithanantham. The treatments were applied and data was collected with the help of Mr. Gugen Ram, Field Assistant (Pulse Entomology). The experiment was conducted with susceptible extra-earlyy maturing line ICPL 316 in RBD with two replications. Following three treatments were applied:

T1 : Sprayed with monocrotophos weekly
T2 : Hand removal of webber larvae
T3 : Unsprayed control

The test was sown on 14 July, 1984. Each plot consisted of 4 m long 4 rows spaced 50 cm apart. Observations on 5 random competetive plants were recorded for plant height and number of pods per plant.

The observaitons are summarized in Table 1.45. In general, there was no difference in T2 and T3. It may be because of late removal of larvae and/or incomplete removals. Plant height was more in Webber damaged treatments (T2 and T3). It is because damage of flowers may have resulted in further growth to produce more flowers. Both number of pods per plant and grain yield of first flush was drastically reduced in unsprayed treatments (Table 1.45). Yield obtained in sprayed treatment was 3 fold more than the unsprayed control. No doubt the increase in yield is not only due to control of webbers but also due to control of other pests such as Heliothis. But webber is also contributing significantly in reducing the yield. A further well planned experiment should be carried out by entomologists to know the extent of damage caused by webbers.

Table 1.1 : Monthly Mean Temperature (o_C) and rainfall (mm) during 1984 at Hisar.

Month	Mean (1970-83)			1984		
	Temperature(o_C)		Rainfall (mm)	Temperature(o_C)		Rainfall (mm)
	Maximum	Minimum		Maximum	Minimum	
January	20.3	4.4	12.1	19.6	2.6	1.0
February	22.6	6.8	24.7	21.6	5.1	12.8
March	28.4	10.2	15.1	31.5	11.3	-
April	36.2	16.5	16.0	35.2	18.6	-
May	39.7	20.9	32.5	43.8	23.3	-
June	40.1	24.1	38.4	41.7	29.2	5.6
July	36.0	24.1	148.8	36.0	26.1	88.6
August	34.3	21.6	124.9	34.9	25.4	191.6
September	34.9	19.3	47.0	34.0	22.2	44.4
October	31.6	13.9	3.6	33.5	14.1	1.0
November	28.3	9.1	8.6	27.8	9.3	-
December	23.0	4.7	5.2	24.2	5.3	-
	Total		476.9			345.0

Table 1.2 : Characteristics of entries in F3 DT Population Test grown at ICRISAT, Hisar during 1984 rainy season.

Entry No.	Pedigree	Days to Flower	Days to Mature	Plant Height (cm)	Seed/ Pod	100 Seed wt(g)	Plant Stand	Grain Yield (kg/ha)	Var. Score (1-9)	Plant Selected
7	ICPI 81152(ICPL-179 x 76115-H137-HB-HB	67	134	162	3.5	8.5	252	2306	7	14
5	ICPI 81135(80576(7B333-1 x 77007-4-4)] x ICPL 267	74	128	166	3.5	8.4	230	2225	5	12
2	ICPI 81136(80542(ICPL-87 x 74068 Prog)] x 77324-2-2-2-HB	76	134	169	3.4	7.9	194	2164	7	4
6	ICPI 81088(ICPL-87 x 73047)	76	138	164	3.6	9.6	258	2155	5	7
8	ICPI 81134(80543(ICPL-87 x 74065)] x ICPL 267	67	136	151	3.1	8.1	260	2153	3	9
1	ICPL 4	74	123	162	3.4	5.8	207	2146	1	-
4	ICPI 81134(80543) x ICPL 267	67	138	156	3.3	8.4	281	2125	5	-
9	ICPI 81153(ICPL-267 x 76115)-H137-HB-HB	74	134	150	3.3	8.8	248	2100	9	12
3	ICPI 81058(80543(ICPL-87 x 74065 Prog)] x Pant-A3-P3	75	132	179	3.2	8.3	212	2009	7	5
	SEm ±	0.2	2.5	4.9	0.25	0.14	21.4	119.7		
	Mean	72.2	133.0	162.0	3.36	8.19	237.9	2153.5		
	CV %	0.5	3.2	5.2	12.99	3.00	15.6	9.6		

Table 1.3 : Summary of selections made in early maturing pigeonpea populations during 1984 kharif at Hisar.

Crosses	Gen.	Individual Plants Selected		
		DT	NDT	Total
810120-HB-HB	F3	13	1	14
810133-HB-HB	F3	31	-	31
810143-HB-HB	F3	21	-	21
810061-HB-HB	F3	9	34	43
810119-HB-HB	F3	3	71	74
810123-HB-HB	F3	-	13	13
810145-HB-HB	F3	12	9	21
810161-HB-HB	F3	-	13	13
810165-HB-HB	F3	-	10	10
810168-HB-HB	F3	2	14	16
800514-HB-HB-HB	F4	-	21	21
800528-HB-HB-HB	F4	1	17	18
780321-HB-HB-HB -HB-HB	F6	-	14	14
	Total	92	217	309

Table 1.4 : Summary of selections in early maturing pigeonpea SPPs during 1984 kharif at Hisar.

Generation	No.of Crosses	No.of SPPs evaluated	No. of SPP bulks selected		No.of Individual plants selected	
			DT	NDT	DT	NDT
F3	41	624	26	45	104	87
F4	64	1027	67	92	146	200
F5	13	195	25	18	17	20
F6	28	234	9	11	46	18
F7	2	12	2	1	-	1
F8	1	8	2	1	2	1
F9	1	2	-	-	-	-
F10	2	10	-	5	-	-
Comp. 1	-	11	4	1	5	6
GP lines	-	17	16	-	-	-
Florida bulks	-	91	7	-	30	1

Table 1.5 : Performance of advanced extra-early maturing pigeonpea lines in the ICRISAT during 1984 kharif at Hisar.

Lines	Growth Habit	Seed Color[a]	Days to Flower	Days to Maturity	Plant Height (cm)	Seeds/ Pod	100 Seed wt(g)	Plant Stand/ Plot	Plant Stand (m2)	Yield per plot	(kg) per ha.
ICPL 8306	DT	B	67	134*	168	3.2	8.0	105	16.2	1.84	2839
ICPL 317	DT	C	72	137*	164	3.3	9.2	102	15.7	1.73	2667
H77-11	DT	B	68	131*	175	3.1	7.7	101	15.6	1.70	2620
ICPL 4	DT	B	68	126*	174	3.2	6.3	118	18.2	1.69	2608
H81-1	DT	B	68	127*	170	2.6	6.4	95	14.7	1.65	2546
UPAS 120	NDT	B	88	140	223	3.4	7.5	98	15.1	1.54	2381
T-89	NDT	B	72	126	200	3.1	8.5	118	18.2	1.51	2332
ICPL 8304	DT	B	58	128*	121	2.9	8.3	123	18.9	1.51	2327
TAT-10	NDT	B	80	128	208	3.4	8.2	122	18.8	1.46	2252
Prabhat	DT	B	71	130*	170	3.3	6.4	102	15.7	1.41	2179
AL-1	DT	B	69	132*	175	3.3	6.6	108	16.7	1.38	2130
DL-82	NDT	B	83	140	224	3.1	7.9	110	17.0	1.33	2045
H76-44	DT	B	68	134*	168	2.7	6.7	129	19.9	1.31	2014
$\bar{X}$			72	132	180	3.1	7.5	11.0		1.54	2380
SEm $\pm$			1.5	-	5.0	0.21	0.23	13.1		0.14	210.7
CV %			2.9	-	3.9	9.5	4.3	16.9		12.53	12.5
CD 5%			3.0	-	10.2	0.42	0.46	26.5		0.28	425.7

* = Maturity of second flush. First flush (maturing in about 100 days) damaged by Maruca

a = Seed color : B = Brown; C = Cream

Table 1.6 : Performance of advanced early maturing pigeonpea lines in the EACT during 1984 kharif at Hisar.

Lines	Growth Habit	Seed Color +	Days to Flower	Days to Maturity	Plant Height (cm)	Seeds/ Pod	100 Seed wt(g)	Plant Stand/ Plot	Plant Stand (m2)	Yield per plot	(kg) per ha.
ICPL 155	DT	B	81	147	183	3.7	8.2	81	12.5	1.92	2963
ICPL 151	DT	C	77	134	160	3.6	12.6	72	11.1	1.89	2917
AL-13	NDT	Bl+P	78	129	200	3.5	7.7	86	13.3	1.74	2681
ICPL 317	DT	C	77	135	160	3.8	8.9	53	8.2	1.69	2602
NBD-110	NDT	B	79	137	210	3.2	7.7	78	12.0	1.64	2532
AL-57	NDT	B	80	135	203	3.3	7.3	81	12.5	1.59	2458
UPAS 120	NDT	B	85	142	215	3.3	7.5	77	11.9	1.58	2434
Pusa Sweta-1	NDT	C	77	135	183	3.6	7.7	60	9.3	1.57	2427
Pusa-33	NDT	B	84	143	206	3.4	7.2	95	14.7	1.56	2409
ICPL 315	DT	B	77	136	175	2.9	8.1	71	11.0	1.52	2346
AL-56	NDT	B	80	138	211	3.2	7.2	97	15.0	1.52	2339
MTH-6	DT	C	88	147	188	3.5	10.6	55	8.5	1.47	2269
Pusa Sweta-2	DT	W	80	147	185	3.7	12.0	52	8.0	1.28	1969
Pusa 78	NDT	B	77	135	206	3.4	7.4	70	10.8	1.23	1903
	$\bar{X}$		80	138	192	3.4	8.6	73		1.59	2446
	SEm ±		0.5	2.4	6.0	0.20	0.33	11.0		0.16	247.6
	CV %		0.9	2.4	4.4	8.0	5.42	21.0		14.32	14.32
	CD	5%	1.1	4.8	12.4	0.40	0.66	22.2		0.32	500.2

+ = Seed Color - B = Brown; C= Cream; Bl = Black; P = Purple; W = White

Table 1.7 : Performance of advanced early maturing pigeonpea lines in the ACT-1 during 1984 kharif at Hisar.

Lines	Growth Habit	Seed Color[a]	Days to Flower	Days to Maturity	Plant Height (cm)	Seeds/ Pod	100 Seed wt(g)	Plant Stand/ Plot	Plant Stand (m2)	Yield per plot	(kg) per ha.
ICPL 186	NDT	B	88	147	198	4.0	9.0	157	14.5	2.93	2713
T-21	NDT	B	95	157	231	3.4	8.3	167	15.5	2.92	2708
NTH-7	NDT	B	89	156	221	3.6	7.5	180	16.7	2.92	2699
Pusa 86	NDT	B	89	152	206	3.7	8.4	167	15.5	2.57	2381
Corg-4	NDT	B	98	163	208	3.1	8.7	147	13.6	1.77	1640
Corg-5	NDT	B	100	165	233	3.3	9.0	125	11.6	1.55	1433
Phule T-14	NDT	B	99	165	228	3.5	10.1	150	13.9	1.06	982
Phule T-20	NDT	C	96	162	230	3.6	9.4	139	12.9	1.02	947
	X		94	158	219	3.5	8.8	154		2.09	1938
	SEm ±		0.8	2.5	8.6	0.19	0.27	11.7		0.13	120.9
	CV %		1.3	2.2	5.5	7.61	4.32	10.8		8.82	8.82
	CD 5%		1.8	5.1	17.8	0.39	0.56	24.3		0.27	251.5

a = Seed Colour : B = Brown; C = Cream

Table 1.8 : Performance of extra-early determinate pigeonpea lines in EXPRY-84 during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature[a]	Seeds/ Pod	100 Seed wt(g)	Seed Color[b]	Plant Stand	Grain Yield (kg/ha)	% insect damage	% SM[c]	Webber[d] damage (1-9)
ICPL 83006	153	68	137	3.7	7.3	B	104	2829	19	12	3
ICPL 315	177	78	138	3.6	6.8	B	102	2654	22	17	3
ICPL 83003	152	65	137	3.4	6.9	B	111	2521	17	17	5
ICPL 4	167	75	135	3.2	5.6	B	108	2479	21	15	3
ICPL 83001	145	68	136	3.3	6.5	B	107	2253	30	16	5
ICPL 83004	133	59	143	3.3	8.4	B	109	2037	24	7	7
ICPL 316	123	55	143	3.2	8.8	B	97	1831	26	8	9
ICPL 83007	122	54	145	3.3	8.0	B	111	1770	24	0	7
ICPL 83005	127	55	143	3.0	7.2	B	94	1759	27	12	7
ICPL 268	145	60	147	3.1	7.6	B	120	1759	18	23	7
ICPL 83002	127	55	143	3.1	7.8	B	116	1749	31	6	9
ICPL 287	127	64	147	3.1	7.9	B	114	1646	22	8	9
ICPL 179	118	55	147	3.1	8.2	B	113	1440	23	16	7
ICPL 313	123	57	142	3.1	8.0	LB	99	1430	17	22	9
$\bar{x}$	138	62	142	3.2	7.5		107	2011	23		
SEm ±	3.8	1.0	2.4	0.17	0.18		6.8	141	2.9		
CV %	5	3	3	9	4		11	12	22		

a = Maturity of second flush, first flush damaged by webber (mostly Maruca)

b = Brown; LB = Light brown

c = Data from 1984 Sterility Mosaic nursery at Patancheru

d = Webber (mostly Maruca) damage score on 1 to 9 scale (1 as free and 9 as severe)

Table 1.9 : Grain yield (kg/ha) of extra-early determinate pigeonpea lines in EXPAY-84 at different locations during 1984 kharif[a].

Lines	ICRISAT Hisar	Patancheru[b] I	Patancheru[b] II	Patancheru[b] Total	Gwalior[b] I	Gwalior[b] II	Gwalior[b] Total	Delhi	Junagarh	Derol	Berthin	Indore	Pusa[c]	Mean
ICPL 83006	2829(1)	1082	799	1881(2)	2086	1355	3441(1)	3213(1)	824	3179(1)	3077(1)	1585(2)	1746(1)	2419(1)
ICPL 315	2654(2)	1054	728	1782(4)	2096	585	2681	2933(3)	828(5)	1584	2900(2)	1545(3)	1534(3)	2059(2)
ICPL 83003	2521(3)	855	500	1355	1588	1179	2767	1711	682	2222	2904(3)	1457(5)	1693(2)	1932(4)
ICPL 4	2479(4)	741	350	1091	1725	526	2251	2578	687	2237(5)	2812(5)	1546(4)	1270	1883(5)
ICPL 83001	2253(5)	727	386	1113	1735	526	2261	2564	687	2623(2)	2307	1304	1270	1820
ICPL 83004	2037	684	178	862	1969	439	2408	3156(2)	906(3)	2191	2771	1054	1111	1833
ICPL 316	1831	855	441	1296	1881	634	2515	2822(4)	926(2)	1749	2099	854	1164	1695
ICPL 83007	1770	983	680	1663	1998	867	2865(4)	1658	804	1872	2080	1382	847	1660
ICPL 83005	1759	1239	758	1997(1)	1988	887	2875(3)	1862	848(4)	2104	2298	1104	900	1750
ICPL 268	1759	1168	657	1825(3)	1959	897	2856(5)	2444	789	2448(3)	2886(4)	1590(1)	1111	1967(3)
ICPL 83002	1749	741	264	1005	1920	595	2515	2520	789	1934	2419	1102	1481(4)	1724
ICPL 287	1646	1054	682	1736(5)	2027	643	2670	2733(5)	736	1723	2173	1190	900	1723
ICPL 179	1440	1040	565	1605	2134	770	2904(2)	1911	814	2078	2122	1262	1164	1700
ICPL 313	1430	911	396	1307	2027	624	2651	2373	941(1)	2299(4)	2247	850	1323(5)	1713
$\bar{x}$	2011	938	527	1465	1938	752	2690	2463	804	2160	2519	1273	1251	
SEm ±	141	79	67	-	125	123	-	139	30	188	265	40	172	
CV %	12	14	22	-	11	28	-	10	6	15	18	10	24	

a = ( ) Rank at a particular location

b = Two harvests; I = First harvest; II = Second harvest

c = Pre-rabi

Table 1.10 : Days to taken to flower and mature by EEPAV-84 entries at different locations during 1984 kharif.

Lines	Days taken to flower							Days taken to mature						
	Misar	Dualior	Patan-chera	Juna-garh	Darol	Darthin	Mean	Misar[a]	Dualior	Patan-chera	Juna-garh	Darol	Darthin	Mean
ICPL 83006	68	81	60	69	64	65	68	137	130	101	119	107	156	125
ICPL 315	70	82	60	72	70	81	74	138	126	101	121	103	158	124
ICPL 83003	65	71	57	68	61	71	66	137	122	90	119	99	146	119
ICPL 4	75	78	59	71	70	78	72	135	121	94	120	98	137	117
ICPL 83001	68	79	57	68	62	74	68	136	123	90	114	96	142	117
ICPL 83004	59	77	55	60	56	61	61	143	122	85	112	94	144	117
ICPL 316	55	76	56	60	56	63	61	143	125	85	111	100	148	119
ICPL 83007	54	72	57	60	58	62	60	145	123	90	111	100	144	119
ICPL 83005	55	70	56	60	57	61	60	143	120	90	111	98	144	118
ICPL 268	60	77	58	62	60	66	64	147	127	102	113	102	151	124
ICPL 83002	55	70	52	60	56	59	59	143	123	85	113	94	146	117
ICPL 287	64	79	58	58	62	65	64	147	130	98	111	100	156	124
ICPL 179	55	76	58	60	56	60	61	147	122	88	111	89	146	117
ICPL 313	57	76	53	59	57	60	60	142	125	92	111	102	144	119
$\bar{x}$	62	76	57	63	60	66		142	124	92	114	99	147	
SEm ±	1.0	2.1	0.5	0.5	1.0	2.5		2.4	1.4	2.2	0.5	1.5	3.0	
CV %	3	5	2	1	3	7		3	2	4	1	3	4	

a = Maturity of second flush, first flush damaged by webber (mostly Maruca)

Table 1.11 : Performance of early determinate pigeonpea lines in EPAY-84 DT during 1984 kharif at Hisar

Lines	Plant Height (cm)	Flower Color[a]	Days to Flower	Days to Mature	Seeds/ Pod	100 Seed wt(g)	Seed Color[b]	Plant Stand	Grain Yield (kg/ha)	% insect damage	% SM[c]
ICPL 154	192	Y	80	148	3.0	9.7	B	66	3909	18	9
ICPL 83022	158	Ys	70	143	3.6	9.1	B	62	3519	9	21
ICPL 289	142	R	73	153	3.7	10.8	C	38	3447	9	4
ICPL 141	183	R	76	137	3.6	8.2	B	45	3066	24	4
ICPL 312	165	R	74	147	4.2	11.8	C	53	2963	29	4
ICPL 83017	157	Rs	74	143	3.8	9.4	Bs	48	2706	9	21
ICPL 83009	167	Y	78	159	3.2	11.3	C	38	2685	14	58
ICPL 94	177	Y	74	139	3.6	9.4	B	46	2675	34	4
ICPL 146	170	Y	76	159	3.4	10.1	B	55	2562	20	0
ICPL 83020	148	R	72	156	3.4	11.6	B	45	2397	29	3
ICPL 4	175	Ys	70	127	3.4	5.9	B	66	2305	25	15
ICPL 83012	133	Ys	63	142	3.3	9.0	B	45	1749	26	18
$\bar{X}$	164		73	146	3.5	9.7		51	2832	21	
SEm ±	5		1.1	1.7	0.15	0.17		4.7	204	4	
CV %	5		3	2	7	3		16	12	33	

a = Flower Colour : Ys = Yellow with streaks; Y = Yellow; R = Red; Rs = Red with streaks

b = Seed Colour : B = Brown; C = Cream; Bs = Brown with streaks

c = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.12 : Grain yield (kg/ha) of early determinate pigeonpea lines in EPVT-84 at different locations during 1984 kharif[a].

Lines	ICRISAT Hisar	Patancheru[b] I	Patancheru[b] II	Patancheru[b] Total	Gwalior[b] I	Gwalior[b] II	Gwalior[b] Total	Delhi	Sehore	Junagarh	Dural	Berthin	Pusa[c]	Mean
ICPL 154	3909(1)	1477	567	2044(5)	1354	702	2056	3191(2)	536	945(4)	1593	2840(1)	1376(4)	2054(2)
ICPL 83022	3519(2)	1243	569	1812	2027	819	2846(3)	3285(1)	853(2)	965(3)	1826(4)	2173	1323	2067(1)
ICPL 289	3447(3)	789	428	1217	1715	429	2144	2827(5)	341	1121(1)	1352	1983	1005	1715
ICPL 141	3066(4)	1213	646	1859	1647	692	2339	3178(3)	658	789	2873(2)	2687(2)	1693(2)	2038(3)
ICPL 312	2963(5)	1535	842	2377(2)	2271	712	2983(1)	2996(4)	551	945(5)	1262	1877	1164	1902(5)
ICPL 83017	2706	1287	756	2053(4)	1374	653	2027	2335	478	1080(2)	1533	1937	1058	1690
ICPL 83009	2685	1652	775	2427(1)	1959	575	2534	2551	1033(1)	936	1335	2168	1005	1853
ICPL 94	2675	1404	633	2037	1979	897	2876(2)	2369	721(3)	848	942	2279(5)	1323	1785
ICPL 146	2562	1579	722	2301(3)	1881	790	2671(5)	2622	692(4)	809	2437(1)	2433(4)	1587(3)	2013(4)
ICPL 83020	2397	804	477	1281	1520	741	2261	2609	522	872	1829(5)	1714	953	1604
ICPL 4	2305	1257	683	1940	1881	448	2329	2284	565	775	2030(3)	2558(3)	1376(4)	1795
ICPL 83012	1749	936	537	1473	2154	643	2797(4)	1840	653	872	1164	2210	1852(1)	1623
$\bar{x}$	2832	1265	636	1901	1814	675	2489	2674	634	913	1615	2232	1310	
SEm ±	204	131	96	-	264	92	-	152	97	38	218	267	135	
CV %	13	18	26	-	25	24	-	10	27	7	23	21	18	

a = ( ) Rank at a particular location

b = Two harvests; I = First harvest; II = Second harvest

c = Pre-rabi

Table 1.13 : Days to taken to flower and mature by EPAT-84 BT entries at different locations during 1984 kharif.

Lines	Days taken to flower								Days taken to mature							
	Darthin	Hisar	Gwalior	Patancheru	Sehore	Junagarh	Dorsi	Mean	Darthin	Hisar	Gwalior	Patancheru	Sehore	Junagarh	Dorsi	Mean
ICPL 154	86	80	91	65	99	84	72	82	178	148	137	117	170	131	126	144
ICPL 83022	65	70	87	60	92	73	69	74	154	143	132	102	176	107	121	133
ICPL 289	76	73	84	61	90	80	70	76	144	153	127	102	179	126	115	135
ICPL 141	85	76	91	65	92	84	71	81	148	137	129	109	177	120	118	134
ICPL 312	88	74	91	62	93	81	73	80	177	147	138	106	175	119	127	141
ICPL 83017	70	74	84	62	94	79	72	76	154	143	127	100	169	119	122	133
ICPL 83009	71	78	86	63	94	82	71	78	159	159	131	108	173	130	122	140
ICPL 94	78	74	87	62	95	81	72	78	176	139	135	105	177	119	124	139
ICPL 146	81	76	92	63	96	82	71	80	173	159	139	115	151	132	129	142
ICPL 83020	74	72	82	62	86	77	71	75	148	156	126	103	164	112	120	133
ICPL 4	73	70	71	59	89	81	69	73	131	127	119	95	173	107	99	121
ICPL 83012	57	63	76	58	92	73	62	69	138	142	124	97	166	110	114	127
$\bar{x}$	75	73	85	62	93	80	70	-	156	146	130	105	171	119	120	
SEm ±	2.1	1.1	1.8	0.6	1.9	0.5	0.6	-	4.0	1.7	1.7	1.2	6.9	0.4	1.4	
CV %	5	3	4	2	4	1	2	-	4	2	2	2	7	1	2	

Table 1.14 : Performance of early indeterminate pigeonpea lines in EPAV-84 NBT during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Flower Color[a]	Days to Flower	Days to Mature	Seeds/ Pod	100 Seed wt(g)	Seed Color[b]	Plant Stand	Grain Yield (kg/ha)	% insect damage	% SM[c]
ICPL 314	180	O	81	131	3.9	8.3	B	60	3879	30	37
ICPL 269	173	Y	82	138	3.7	10.3	C	53	3693	25	0
ICPL 83029	195	Y	81	140	3.8	10.1	C	50	3621	31	17
ICPL 83030	188	Y	78	137	3.6	8.6	B	64	3601	31	3
ICPL 83025	193	Y	77	136	3.4	7.8	B	51	3591	19	15
ICPL 81	195	Y	73	131	3.4	7.3	B	67	3529	17	51
ICPL 288	240	Ys	84	153	3.5	8.1	C	48	3261	31	9
ICPL 83028	202	Y	80	138	3.9	7.7	B	48	3251	31	23
H77-216	213	Y	76	139	3.3	7.4	B	61	3117	29	55
ICPL 292	235	Ys	82	145	3.4	9.1	B	53	3117	28	45
ICPL 143	182	Rs	78	134	3.8	7.8	C	51	2942	22	11
ICPL 149	222	Y	88	150	3.5	6.9	B	58	2747	27	35
$\bar{X}$	201		80	139	3.6	8.3		55	3362	27	
SEm ±	8.5		1.1	2.8	0.17	0.17		7.2	339	5.0	
CV %	7		2	4	8	4		22	17	33	

a = Flower Colour : O = Orange; Y = Yellow; Ys = Yellow with streaks; Rs = Red with streaks;

b = Seed Colour : B = Brown; C = Cream;

c = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.15 : Grain yield (kg/ha) of early indeterminate pigeonpea lines in EPHV-84 HDT at different locations during 1984 kharif[a].

Lines	ICRISAT							Delhi	Junagarh	Borel	Barthin	Indore	Pusa[c]	Mean
	Hisar	Patancheru[b]			Gwalior[b]									
		I	II	Total	I	II	Total							
ICPL 314	3879(1)	1140	187	1327	1384	965	2349	2200	731	1363	1387	2008(3)	1429	1852
ICPL 269	3693(2)	1447	374	1821(4)	1686	653	2339	1533	989(3)	1135	1751	1671	688	1675
ICPL 83029	3621(3)	1272	470	1741	1813	1179	2992(4)	2378(3)	911	2690(1)	1484	1792	1587(5)	2047(4)
ICPL 83030	3601(4)	892	268	1160	2008	945	2953	2445(1)	936(4)	1952	1470	2067(2)	1799(1)	2043(5)
ICPL 83025	3591(5)	1184	215	1399	1452	692	2144	2333(5)	687	2097(5)	1921(4)	1692	1481	1927
ICPL 81	3529	1199	358	1557	2144	429	2573	2422(2)	906	1823	2936(2)	2362(1)	1640(3)	2194(1)
ICPL 288	3261	1447	608	2055(2)	1959	809	2768	1200	897	2388(3)	721	1867(5)	1587	1860
ICPL 83028	3251	1506	494	2000(3)	1813	1179	2992(5)	1933	1257(1)	2202(4)	1851(5)	1875	1481	2093(3)
H77-21a	3117	1184	526	1710	2125	877	3002(3)	2289	936(5)	1955	3009(1)	1700	1693(2)	2157(2)
ICPL 292	3117	1433	779	2212(1)	2154	1238	3392(1)	2000	1048(2)	2069	1484	950	1270	1949
ICPL 142	2942	877	346	1223	1774	448	2339	2356(4)	585	1481	2229(3)	2008(4)	952	1790
ICPL 149	2747	1374	392	1766(5)	2057	1043	3100(2)	1511	819	2538(2)	797	1712	1640(4)	1848
$\bar{x}$	3382	1246	419	1665	1840	795	2635	2050	892	1974	1753	1809	1437	
SEa ±	339	141	59	-	157	130	-	136	50	214	245	60	174	
CV %	17	20	24	-	15	28	-	11	10	19	24	11	21	

a = ( ) Rank at a particular location

b = Two harvests: I = First harvest; II = Second harvest

c = Pre-rabi

Table 1.16 : Days to taken to flower and eature by EPAV-84 HBT entries at different locations during 1984 kharif.

Lines	Days taken to flower						Days taken to eature					
	Berthin	Hisar	Juna-garh	Derol	Patan-cheru	Mean	Berthin	Hisar	Juna-garh	Derol	Patan-cheru	Mean
ICPL 314	118	81	88	77	65	86	193	131	120	118	115	135
ICPL 269	118	82	95	76	67	88	192	138	125	122	115	138
ICPL 83029	119	81	89	85	65	88	193	140	126	146	117	144
ICPL 83030	118	78	86	70	58	82	195	137	119	112	102	133
ICPL 83025	102	77	82	70	59	78	190	136	107	104	107	129
ICPL 81	95	73	81	70	59	76	185	131	107	103	105	126
ICPL 288	118	84	94	87	72	91	196	153	125	148	132	151
ICPL 83028	109	80	85	71	62	81	192	138	122	112	115	136
MTT-216	102	76	85	70	59	78	192	139	121	103	105	132
ICPL 292	119	82	89	74	65	86	196	145	122	118	120	140
ICPL 140	119	78	88	74	60	84	184	134	119	117	103	131
ICPL 147	132	88	95	81	71	93	195	150	126	128	123	144
X	114	80	88	75	64		192	139	120	119	113	
SEm ±	3.3	1.1	0.4	0.9	0.6		2.2	2.8	0.4	0.9	1.5	
CV %	5	2	1	2	1		2	4	1	1	2	

Table 1.17 : Performance of early determinate pigeonpea lines in EPIT-84 DT during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 Seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% insect damage	% SM[b]
ICPL 151	162	73	139	3.7	10.5	C	54	3632	28	3
ICPL 141	173	75	131	3.7	7.7	B	66	3549	22	4
ICPL 317	167	72	143	3.6	8.8	C	58	3416	14	19
ICPL 312	168	76	147	3.8	11.5	C	54	3035	38	4
ICPL 83008	183	84	148	3.5	10.8	DB	66	2932	43	0
ICPL 83015	148	62	129	3.9	9.4	DB	54	2891	24	8
ICPL 87	168	81	148	3.8	10.6	B	47	2685	34	19
ICPL 94	170	79	143	3.7	8.9	B	53	2665	40	4
ICPL 315	177	73	137	3.4	7.9	B	56	2654	35	17
ICPL 289	152	72	148	3.6	11.3	C	49	2613	12	4
ICPL 83013	165	81	148	3.9	10.0	C	49	2593	40	8
ICPL 83010	167	78	148	4.4	10.4	C	50	2531	65	8
ICPL 4	170	71	131	3.4	6.2	B	67	2418	19	15
ICPL 148	177	84	147	3.6	8.7	B	52	2294	22	9
ICPL 83023	180	88	148	4.8	10.9	C	51	2222	43	0
ICPL 267	163	62	147	3.3	7.9	B	50	2212	20	7
ICPL 83024	188	83	148	3.7	15.1	DB	39	1986	48	0
ICPL 316	118	60	145	3.2	9.4	B	57	1883	27	9
X	166	75	143	3.7	9.8		54	2670	32	
SEm ±	3.2	1.3	2.1	0.17	0.26		5.6	244	4.7	
CV %	3	3	3	8	5		18	16	25	

a = Seed Colour : B = Brown; C = Cream; DB = Dark Brown

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.18 : Grain yield (kg/ha) of early determinate pigeonpea lines in EPIT-84 BT during 1984 at different locations[a].

Lines	ICRISAT									
	Hisar	Patancheru[b]			Gwalior[b]			Burea (Yezin)	Argentina (Salto)	Mean
		I	II	Total	I	II	Total			
ICPL 151	3632(1)	1301	997	2298	2329	458	2787(3)	2043	2875	2727(3)
ICPL 141	3549(2)	1111	849	1960	1998	653	2651(4)	2255(4)	2429	2569
ICPL 317	3416(3)	1228	675	1903	1374	185	1560	1294	3428	2320
ICPL 312	3035(4)	1082	817	1899	2408	390	2798(2)	2109(5)	2714	2511
ICPL 83008	2932(5)	1360	826	2186	1667	390	2057	3180(1)	3000	2671(4)
ICPL 83015	2891	862	402	1264	926	497	1423	1185	2786	1910
ICPL 87	2685	1798	1145	2943(3)	2904	731	3635(1)	1641	4639(2)	3109(1)
ICPL 94	2665	1170	768	1938	1569	624	2193	2354(3)	2732	2376
ICPL 315	2654	862	471	1333	2154	429	2583(5)	1722	2714	2201
ICPL 289	2613	1199	794	1993	1998	448	2446	1378	3286	2343
ICPL 83013	2593	1433	1567	3000(1)	1511	575	2086	2412(2)	4839(1)	2986(2)
ICPL 83010	2531	1535	1256	2791(4)	1179	448	1627	1619	4393(3)	2592
ICPL 4	2418	790	249	1039	1667	273	1940	1660	2554	1922
ICPL 146	2294	1506	1035	2541(5)	1589	877	2466	1766	3928(5)	2599
ICPL 83033	2222	1462	1531	2993(2)	1092	1014	2106	1663	4268(4)	2650(5)
ICPL 287	2212	921	541	1462	1677	341	1979	1754	3125	2106
ICPL 83024	1986	1901	423	2324	1140	565	1705	1667	3667	2258
ICPL 316	1852	667	266	933	2096	400	2496	1247	2607	1837
$\bar{x}$	2678	1234	812	2046	1735	517	2252	1830	3340	
SEm ±	244	169	179	-	297	175	-	446	406	
CV %	16	24	30	-	30	59	-	49	28	

a = ( ) Rank at a particular location

b = Two harvests: I = First flush; II = Second flush

Table 1.19 : Days to taken to flower and mature by EPIT-84 BT entries at different locations during 1984 kharif.

Lines	Days taken to flower					Days taken to mature				
	Hisar	Gwalior	Patancheru	Dureau	Mean	Hisar	Gwalior	Patancheru	Dureau	Mean
ICPL 151	73	93	63	62	73	139	134	105	140	129
ICPL 141	75	94	65	65	75	131	135	108	140	128
ICPL 317	72	92	62	62	72	143	134	105	143	131
ICPL 312	76	119	61	63	80	147	144	103	141	134
ICPL 83006	84	101	64	68	79	148	149	110	137	136
ICPL 83015	62	66	59	52	65	129	121	98	133	120
ICPL 87	81	107	65	66	79	148	140	113	138	135
ICPL 94	79	95	64	66	76	143	143	110	139	134
ICPL 315	72	89	58	55	69	137	126	99	131	123
ICPL 289	72	89	60	56	69	148	128	102	132	127
ICPL 83013	81	100	76	64	79	148	151	117	141	139
ICPL 83010	76	101	68	64	78	148	142	128	141	140
ICPL 4	71	84	60	53	67	131	126	97	131	121
ICPL 148	84	105	66	63	79	147	151	111	141	137
ICPL 83027	89	111	73	73	86	148	153	130	140	143
ICPL 287	62	84	57	49	63	147	126	95	130	124
ICPL 83024	83	104	73	65	81	148	152	120	141	140
ICPL 31e	60	78	53	50	60	145	123	90	131	122
X	75	96	63	61	-	143	138	108	137	
SEm ±	1.7	0.6	0.7	0.8	-	2.1	3.3	2.0	1.1	
CV %	7	12	2	3	-	3	4	3	2	

Table 1.20 : Performance of early indeterminate pigeonpea lines in EPIT-84 MST during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 Seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% insect damage	% SM[b]
ICPL 83027	218	75	145	3.7	9.8	B	56	3632	40	9
ICPL 83032	232	90	153	5.4	7.6	W	52	3200	23	3
ICPL 161	203	87	155	4.2	9.1	B	51	2767	47	9
ICPL 81	215	75	130	3.4	7.5	B	64	2695	25	51
ICPL 1	197	80	143	3.7	7.8	B	36	2479	25	57
ICPL 83026	220	79	145	3.8	8.9	B	51	2449	60	23
ICPL 269	190	83	148	4.2	10.2	C	43	2407	37	0
ICPL 314	220	83	148	4.1	8.4	B	52	2325	47	37
H77-216	227	79	137	3.5	7.4	B	47	2222	25	55
ICPL 292	228	81	155	4.3	9.3	B	42	1996	41	45
ICPL 186	234	89	156	4.3	9.6	B	61	1996	28	12
ICPL 149	237	91	155	4.4	6.9	B	44	1965	42	35
ICPL 288	220	91	155	4.9	8.2	C	49	1811	59	9
ICPL 83031	202	83	145	3.8	8.6	B	41	1770	38	12
$\bar{X}$	217	83	146	4.1	8.5		49	2408	38	
SEm ±	8.0	0.7	3.1	0.3	0.16		6.9	178	7.3	
CV %	6	2	4	13	3		24	13	33	

a = Seed Colour : B = Brown; W = White; C = Cream

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.21 : Grain yield (kg/ha) of early indeterminate pigeonpea lines in EPIT-84 NDT during 1984 at different locations[a].

Lines	Hisar	Patancheru[b]			Gwalior[b]			Mean
		I	II	Total	I	II	Total	
ICPL 83027	3632(1)	1228	648	1876	2427	634	3061(3)	2856(1)
ICPL 83032	3200(2)	1418	421	1839	1891	429	2320	2453(4)
ICPL 161	2767(3)	1754	633	2387(3)	1336	741	2077	2410(5)
ICPL 81	2695(4)	980	377	1357	2242	643	2885(5)	2312
ICPL 1	2479(5)	1549	694	2243(5)	1822	400	2222	2315
ICPL 83026	2449	943	563	1506	2018	234	2252	2069
ICPL 269	2407	1374	372	1746	1637	214	1851	2001
ICPL 314	2325	1141	655	1796	2280	692	2972(4)	2364
H77-216	2222	1184	673	1857	2573	1170	3743(1)	2607(3)
ICPL 292	1996	1462	602	2064	2505	1101	2606	2222
ICPL 186	1996	1623	703	2926(1)	2310	1062	3372(2)	2765(2)
ICPL 149	1965	1784	540	2324(4)	1433	682	2115	2135
ICPL 288	1811	1813	780	2593(2)	1345	712	2057	2154
ICPL 83031	1770	1272	517	1789	1852	604	2456	2005
$\bar{x}$	2408	1395	586	1981	1976	666	2642	
SEm ±	178	229	86	-	462	165		
CV %	13	28	25	-	40	43		

( ) = ( ) Rank at a particular location

[a] = Two harvests - I = First Harvest, II = Second Harvest

Table 1.22 Days taken to flower and mature by EPIT 84NDT entries during 1984 at different locations.

Lines	Days to Flower				Days to Mature			
	Hisar	Gwalior	Patancheru	Mean	Hisar	Gwalior	Patancheru	Mean
ICPL 83027	75	90	60	75	145	132	102	126
ICPL 83032	90	114	76	93	153	157	125	145
ICPL 161	87	111	61	86	155	144	107	135
ICPL 81	75	87	59	74	130	122	98	117
ICPL 1	80	101	62	81	143	132	108	128
ICPL 83026	79	100	59	79	145	125	97	122
ICPL 269	83	106	66	85	148	143	117	136
ICPL 314	83	106	60	83	148	136	102	129
H77-216	79	93	60	77	137	141	102	127
ICPL 292	81	108	62	84	155	139	112	135
ICPL 186	89	111	63	88	156	144	113	138
ICPL 149	91	114	73	93	155	140	122	139
ICPL 288	91	110	78	93	155	144	132	144
ICPL 83031	83	110	65	86	145	134	113	131
$\bar{X}$	83	104	64	-	148	138	111	
SEm $\pm$	0.7	1.8	0.7	-	3.0	4.4	1.6	
CV %	2	3	2	-	4	6	3	

Table 1.23 : Performance of early determinate pigeonpea lines in EPPMLT 84DT during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt (g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% insect damage	% SM[b]
ICPL 84030	179	76	134	3.2	8.6	B	184	3407	37	24
ICPL 84023	170	77	140	3.5	8.9	B	186	3356	36	0
ICPL 84026	164	69	135	3.4	9.1	C	168	3283	30	12
ICPL 83021	167	83	138	4.0	9.6	W	182	3148	28	63
ICPL 83011	162	66	139	3.6	11.5	C	165	3052	33	6
ICPL 84032	174	76	135	3.3	10.1	C	167	2951	32	3
ICPL 84031	164	76	145	3.2	10.3	B	154	2805	34	12
ICPL 83016	165	74	135	3.9	8.3	W	172	2758	33	11
ICPL 87	171	85	153	3.7	10.9	B	149	2662	35	19
ICPL 83018	139	62	117	3.5	9.7	Bl.	160	2658	34	8
ICPL 84024	180	59	135	3.7	8.9	B	175	2654	29	9
ICPL 84033	174	78	141	3.1	8.8	B	173	2639	32	9
ICPL 84027	171	62	130	3.4	[illegible]	B	150	2612	24	20
ICPL 4	171	66	122	3.3	6.3	B	195	2604	17	15
ICPL 84020	154	56	118	3.3	[illegible]	B	170	2546	30	15
ICPL 84025	171	83	137	3.9	9.2	B	128	2529	45	10
ICPL 84021	169	76	141	3.4	9.1	B	142	2411	39	6
ICPL 84028	156	71	146	3.4	9.7	B	167	2400	22	12
ICPL 83014	160	67	128	3.8	[illegible]	B	147	2342	27	6
ICPL 84019	125	55	129	3.1	8.5	B	173	2114	31	0
ICPL 84015	139	56	120	3.2	[illegible]	B	150	2052	30	0
ICPL 84029	184	74	151	3.3	[illegible]	B	149	1966	33	20
ICPL 84022	155	72	152	2.9	11.1	C	131	1773	21	0
ICPL 83019	151	66	137	[illegible]	11.5	B	165	1269	34	13
$\bar{x}$	164	72	135	3.4	9.6	-	162	2564	31	
SEm ±	2.7	0.4	1.9	0.07	0.14	-	[illegible]	159	4.5	
CV %	3	1	2	10	2	-	[illegible]	12	29	

a = Seed Colour : B = Brown; C = Cream; W = White; Bl. = Black

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.24 : Days to Flower, Mature and Grain Yield of EPPMLT 84BT entries during 1984 at different locations[a].

Entry	Days to Flower			Days to Mature			Grain Yield (Kg/ha)						
	Hisar	Gwalior	Patancheru	Hisar	Gwalior	Patancheru	Hisar	Patancheru[b]			Gwalior[b]			Mean
								I	II	Total	I	II	Total	
ICPL 84030	76	94	64	134	127	107	3407(1)	1521	548	2069	1938	392	2330	2602(4)
ICPL 84023	77	102	63	140	142	103	3356(2)	1506	487	1993	2034	499	2533	2627(2)
ICPL 84026	69	96	63	135	126	105	3283(3)	1477	474	1951	1985	428	2413	2549(5)
ICPL 83021	83	100	65	138	132	109	3148(4)	1667	381	2048	2210	428	2638(4)	2611(3)
ICPL 83011	66	98	62	139	128	102	3052(5)	1374	687	2061	1628	351	1979	2364
ICPL 84032	76	101	64	135	136	103	2951	1433	730	2163	1664	214	1878	2331
ICPL 84031	76	91	62	145	130	107	2805	1301	405	1706	2451	611	3062(2)	2524
ICPL 83016	74	99	63	135	132	107	2758	1769	601	2370(3)	1938	482	2420	2516
ICPL 87	85	106	64	153	144	115	2662	1491	658	2149(5)	2061	559	2620(5)	2477
ICPL 83018	62	75	57	117	124	95	2658	980	244	1224	949	156	1105	1662
ICPL 84024	69	92	64	135	123	110	2654	1330	522	1852	1725	241	1966	2157
ICPL 84033	78	105	69	141	143	118	2639	2281	623	2904(1)	2673	433	3106(1)	2883(1)
ICPL 84027	62	93	57	130	126	97	2612	1126	526	1652	2267	513	2780	2348
ICPL 4	66	90	58	122	123	97	2604	1316	309	1625	1464	450	1914	2048
ICPL 84020	56	76	58	118	120	98	2546	921	456	1377	1456	126	1582	1835
ICPL 84025	83	103	66	137	139	113	2539	1711	497	2208(4)	2130	422	2552	2433
ICPL 84021	76	89	57	141	125	100	2411	1403	652	2055	1409	485	1894	2120
ICPL 84028	71	99	56	146	138	100	2400	1199	443	1642	1733	140	1873	1972
ICPL 83014	67	88	57	128	121	93	2342	716	381	1097	1455	370	1825	1755
ICPL 84019	55	71	53	129	122	90	2114	614	420	1034	1670	419	2089	1746
ICPL 84018	56	79	57	120	125	100	2052	1170	528	1698	1212	222	1434	1728
ICPL 84029	74	100	62	151	134	108	1906	1681	740	2421(2)	1898	441	2339	2222
ICPL 84022	76	88	60	152	128	100	1373	1067	532	1599	2136	567	2703(3)	1892
ICPL 83019	66	83	56	137	127	97	1269	818	408	1226	1779	228	2007	1501
$\bar{X}$	71	92	61	136	130	103	2564	1328	511	1839	1828	382	2210	
SEa ±	0.4	2.3	0.9	1.9	2.0	2.0	159	127	86	-	275	91		
CV %	1	5	3	3	3	3	12	17	29	-	30	48		

a = ( ) Rank at a particular location

b = Two harvests - I = First Harvest; II = Second Harvest

Table 1.23 : Performance of early indeterminate pigeonpea lines in EPPMLT 84UBT during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% insect damage	% SM[b]
ICPL 84052	203	84	137	3.6	8.4	B	162	3237	31	41
ICPL 84042	200	80	131	3.4	8.3	B	160	3194	42	42
ICPL 84040	203	80	133	3.5	7.3	B	162	3179	25	15
ICPL 84056	199	84	141	3.2	8.6	B	145	3125	52	90
ICPL 84044	194	82	135	4.0	10.9	C	147	3013	51	3
ICPL 84041	214	80	133	3.1	7.5	B	161	2890	24	17
ICPL 84059	223	86	136	3.6	9.1	B	147	2874	36	54
ICPL 84058	214	85	141	4.2	9.6	B	152	2867	47	26
ICPL 84043	222	80	130	3.3	8.6	B	167	2847	30	34
ICPL 84054	206	85	141	3.7	8.9	C	128	2797	30	57
ICPL 84048	211	85	137	3.5	8.6	B	155	2778	50	6
ICPL 84049	204	87	142	3.8	7.0	B	176	2755	42	37
ICPL 84051	200	84	136	3.4	9.2	B	153	2620	38	36
ICPL 84045	209	85	145	3.6	10.6	C	152	2573	33	26
ICPL 84047	208	84	132	3.3	7.4	B	172	2523	41	56
H77-216	210	83	137	3.4	7.0	B	183	2492	30	55
ICPL 84055	224	84	142	3.7	9.3	B	153	2434	44	4
ICPL 84050	207	86	145	3.3	7.1	C	141	2323	41	30
ICPL 84053	214	89	148	3.6	8.6	B	157	2072	32	62
ICPL 84046	218	86	141	3.5	7.2	B	159	2064	43	56
$\bar{x}$	209	84	138	3.5	8.5	-	156	2733	38	
SEm ±	5.1	0.7	2.5	0.14	0.23	-	8.5	136	5.2	
CV %	5	2	4	8	5	-	11	10	28	

a = Seed Colour : B = Brown; C = Cream

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.26 : Days to Flower, Nature and Grain Yield of EPPMLT 84BBT entries during 1984 at different locations[a].

Entry	Days to Flower			Days to Nature			Grain Yield (Kg/ha)						
	Hisar	Patancheru	Gualior	Hisar	Patancheru	Gualior	Hisar	Patancheru[b]			Gualior[b]			Mean
								I	II	Total	I	II	Total	
ICPL 84052	84	60	102	137	103	130	3237(1)	1477	504	1981	1138	192	1330	2183(4)
ICPL 84042	80	58	96	131	100	122	3194(2)	1301	447	1748	1324	148	1472	2138
ICPL 84040	80	58	97	133	100	128	3179(3)	1396	718	2114	828	450	1278	2190(3)
ICPL 84056	84	64	104	141	112	148	3125(4)	1696	437	2133	926	129	1055	2104
ICPL 84044	82	59	103	135	100	134	3013(5)	1155	676	1831	1215	99	1314	2053
ICPL 84041	80	60	95	133	100	120	2890	1403	759	2162	1140	258	1398	2150
ICPL 84059	86	63	103	136	112	130	2874	1579	380	1959	1165	321	1486	2106
ICPL 84058	85	61	108	141	107	148	2867	1301	617	1918	1554	200	1754(3)	2180(5)
ICPL 84043	80	58	90	130	100	125	2847	1331	529	1860	1598	428	2026(2)	2244(1)
ICPL 84054	85	60	104	141	103	133	2797	1170	493	1663	716	277	993	1818
ICPL 84048	85	60	106	137	100	146	2778	1477	574	2051	1072	472	1544(5)	2124
ICPL 84049	87	67	114	142	117	139	2755	1784	642	2426(4)	710	211	921	2034
ICPL 84051	84	61	105	136	103	138	2620	1374	569	1943	806	329	1135	1899
ICPL 84045	85	59	101	145	100	141	2573	1784	722	2506(3)	1072	233	1305	2128
ICPL 84047	84	59	108	132	102	145	2523	1521	725	2246(5)	691	365	1056	1942
H77-216	83	59	98	137	100	129	2492	1382	598	1980	1798	400	2198(1)	2223(2)
ICPL 84055	84	60	97	142	100	126	2434	1126	577	1703	1176	318	1494	1877
ICPL 84050	86	66	106	145	102	141	2323	1564	501	2065	1305	359	1664(4)	2017
ICPL 84053	89	69	115	148	125	150	2072	2120	1122	3242(1)	441	260	701	2005
ICPL 84046	86	61	107	141	105	141	2064	1974	815	2789(2)	858	173	1031	1961
X	84	61	103	138	105	136	2733	1495	620	2115	1077	281	1358	
SEm ±	0.7	0.7	2.0	2.5	1.9	3.7	136	143	118	-	345	81		
CV %	2	2	4	4	3	5	10	16	33	-	64	57		

a = ( ) Mean at a particular location

b = Two harvests : I = First harvest; II = Second harvest

Table 1.27 : Characteristics of the early maturing pigeonpea lines in ARLT84-1 during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% SM[b]	New ICPLs
ICPL 83-M1-MB-MB	157	68	136	3.3	10.8	W	125	3318	20	85012
79236-MB-M14-M1-MB	161	68	124	3.0	9.6	W	142	3174	18	85015
80500-MB-M11-MB	137	64	132	3.4	10.4	B	160	3122	13	
78377-MB-M4-M2-MB-MB	157	70	122	3.6	8.8	B	150	3025	9	85011
80582-MB-MB-M2-MB	154	64	132	3.1	8.8	B	115	3025	44	85013
80500-MB-M38-MB	162	66	130	3.2	10.3	B	117	2860	46	
80551-B*-M2-M1-MB	166	62	131	3.1	9.8	B	85	2809	7	
76115-M114-M7-M1-MB -MB-MB	171	71	132	3.4	7.9	B	158	2752	15	
ICPL 189-M1-M1-MB	162	67	136	3.4	9.5	B	122	2747	36	
CBTLB 2	162	57	130	3.1	8.2	B	142	2634	75	
80542-MB-M2-MB	154	65	137	2.8	11.0	B	136	2567	10	
ICPL 4	173	73	122	3.4	6.0	B	148	2562	15	
CBTLB 1	150	59	123	3.3	7.7	B	148	2474	37	
Comp.1-M21-MB-MB-MB-MB	138	56	127	3.3	8.1	B	144	2407	37	
76115-M108-M10-M2-MB-MB	165	64	126	3.5	8.0	W	152	2330	11	
80514-MB-M2-MB	172	73	101	3.1	9.6	B	123	1960	29	85024
80541-MB-M7-MB	115	55	112	3.2	9.4	B	123	1821	12	
80541-MB-M10-MB	138	55	132	3.3	9.1	B	148	1698	37	85010
ICPL 179-M1-M4-MB-MB	120	55	118	3.3	9.1	B	99	1569	56	85009
80500-MB-M46-MB	123	56	136	3.6	10.0	B	106	1502	33	85014
$\bar{X}$	152	63	127	3.3	9.1		132	2518		
SEm ±	5.1	1.8	2.9	0.24	0.23		10.4	145		
CV %	6	5	4	13	4		14	10		

a = Seed Colour : B = Brown; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.28 : Characteristics of the early maturing pigeonpea lines in ABLTB4-2 during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% SM[b]	New ICPLs
80538-MB-MB-MB	183	74	130	3.3	8.2	B	149	3539	7	85016
80560-MB-M3-MB	178	77	131	4.3	10.7	W	115	3380	18	
80542-B*-M1-M1-MB	148	77	134	3.6	10.1	B	136	3246	10	85017
79243-MB-M16-M5-MB	183	80	129	4.9	9.8	W	126	3215	0	85018
80515-MB-M4-MB	175	73	125	3.7	11.3	B	168	3189	11	
80538-MB-M1-MB	140	69	122	3.1	8.4	B	155	3174	12	
79223-MB-MB-M1-MB	173	73	127	3.9	9.3	B	140	3169	3	
ICPL 84037	168	82	130	4.5	10.4	W	78	3169	17	
80520-MB-M1-MB	163	75	137	3.2	9.4	B	138	3122	4	
ICPL 151-M1-MB-MB	168	75	127	3.6	11.2	C	120	3107	6	
74092-B-52-1-MB-112-MB-M1-MB	172	75	128	3.6	8.6	W	105	3097	17	
77007-M3-M1-MB-MB	148	72	127	3.3	10.6	C	115	3030	25	
75013-1-B-M1-M2-M5*-MB-MB	151	73	139	3.2	10.7	W	87	2989	0	
79243-MB-M16-MB-MB	178	80	128	4.5	9.9	W	105	2948	3	
78377-MB-M1*-M1-MB-MB	168	71	133	3.6	10.5	B	126	2891	0	
ICPL 4	168	72	119	3.0	5.8	B	184	2834	15	
ICPL 146-M1-MB-MB	143	72	135	3.1	11.1	W	125	2803	0	
77007-M4-M2-M2-MB-MB-MB	165	73	128	4.2	9.6	W	93	2659	23	
80542-MB-M5-MB	148	72	137	3.4	9.4	B	163	2500	6	
80561-MB-M1-MB	173	73	130	4.3	10.1	B	137	2443	34	
$\bar{X}$	165	74	130	3.7	9.8	-	128	3025		
SEm ±	4.6	0.9	2.2	0.24	0.28	-	12.2	221		
CV %	5	2	3	11	5	-	16	13		

a = Seed Colour : B = Brown; C = Cream; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.29 : Characteristics of the early maturing pigeonpea lines in ARLT84-3 during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% SM[b]	New ICPLs
79243-MB-M16-M1-MB	181	82	147	5.0	11.0	W	104	3741	4	
77007-M6-M1-MB-MB-MB	173	80	143	4.5	10.2	B	150	3358	5	85020
79243-MB-M17-M3-MB	169	81	147	5.1	11.0	W	100	3340	12	85021
78354-MB-M4-M1-MB-MB	140	67	127	3.2	9.1	B	100	3296	3	85019
ICPL 84035	172	83	148	4.9	11.3	W	111	3086	0	
ICPL 86	163	78	127	3.8	8.5	B	115	3043	0	
74092 LM-86	185	80	145	4.0	8.9	B	130	3000	-	
80551-MB-M3-MB	170	76	138	3.9	8.8	B	141	2827	3	
80539-MB-M3-MB	160	75	137	3.5	8.4	B	94	2753	9	
79243-MB-M12-M3-MB	185	79	140	5.0	10.4	W	103	2741	5	
79237-MB-M15-M1-MB	166	79	145	3.7	9.1	B	131	2698	6	
74092-8-102-2-MB-MB-M1 -MB-MB-MB	153	80	148	3.6	8.1	B	108	2673	0	
QP 228-M1-M1-MB	176	80	150	4.8	9.9	W	100	2605	0	
74092 LM-CS	162	75	137	3.8	10.1	C	124	2599	-	
79237-MB-M11-M11-MB	162	77	136	3.4	8.7	W	120	2506	3	
76115-M151-M7-M3-MB-MB	138	85	147	4.3	8.8	B	91	2340	4	
ICPL 4	163	73	124	3.3	6.2	B	124	2290	17	
79237-MB-M2-M1-MB	175	82	150	4.2	11.2	B	110	2253	0	
ICPL 84036	169	83	147	4.7	10.2	W	75	2241	4	
78319-MB-M7-M1-MB-MB	163	76	135	3.7	8.1	W	99	2148	10	
79234-MB-M1-MB-MB	162	78	150	4.0	10.3	B	81	1679	19	
80586-MB-M1-MB	141	75	147	4.4	11.2	W	104	1049	7	
$\bar{x}$	164	78	141	4.1	9.5	-	110	2648		
SEm ±	7.4	1.3	3.1	0.33	0.24	-	10.2	280		
CV %	8	3	4	14	4	-	16	18		

a = Seed Colour : B = Brown; C = Cream; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.30 : Characteristics of the early maturing pigeonpea lines in ABLTN4-4 during 1984 kharif at Hisar

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% SM[b]	New ICPLs
78348-MB-M11-M1-MB-MB	160	67	139	3.3	8.0	B	126	3164	11	85022
76115-M151-M7-M4-B-M1-M1-MB	165	88	139	4.4	8.5	C	72	2485	80	85023
ICPL 84038	163	85	139	4.8	10.3	W	65	2477	0	
78350-MB-MB-M10-MB-MB	150	76	137	3.0	8.5	B	77	2423	10	
ICPL 84039	158	87	140	4.3	10.4	W	85	2176	14	
80525-MB-M2-MB	168	84	143	3.7	9.1	B	68	2114	6	
79236-MB-M15-MB-MB	163	80	129	3.4	8.1	B	80	1975	25	
ICPL 87	133	83	139	3.3	9.9	B	134	1906	19	
76115-MB-M112-11-MB-MB -MB-MB	155	85	137	3.9	8.6	B	85	1759	4	
Comp.1-M12-M1-MB-MB	150	79	127	2.8	8.0	B	117	1682	6	
78354-MB-M2-M1-MB-MB	158	80	140	3.2	9.2	W	62	1590	21	
ICPL 4	158	73	114	3.4	5.4	B	72	1566	15	
76052-211-10-M3-M2-M2-MB-MB	130	80	131	3.4	9.4	C	66	146	0	
78376-MB-M6-MB-MB-MB	158	80	127	2.5	7.9	B	43	1373	11	
80600-MB-M3-MB	148	87	134	3.7	10.1	C	32	1127	0	
78380-MB-MB-M20-MB-MB	178	84	137	2.7	10.2	W	38	965	11	
70237-MB-M5-MB-MB	153	84	132	3.4	8.0	W	56	818	11	
79237-MB-M15-MB-MB	145	85	131	2.6	8.6	B	74	625	11	
77324-2-2-M2-MB-MB•-MB•	180	98	181	2.9	5.6	B	53	579	0	
Comp.1-M12-M2-MB-MB	140	86	137	2.7	7.6	B	52	548	6	
$\bar{x}$	155	83	136	3.4	8.6		73	1636		
SEm ±	12.9	2.7	2.6	0.24	0.30		16.7	583		
CV %	12	5	3	10	5		32	50		

a = Seed Colour : B = Brown; C = Cream; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.31 : Characteristics of the early maturing pigeonpea lines in AHBLTB4-1 during 1984 kharif at Hisar

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% SM[b]	New ICPLs
80498-MB-M17-MB	200	74	124	3.5	7.1	B	176	3426	59	85043
80515-MB-M4-MB	207	75	121	3.3	6.9	B	149	3354	27	85039
Comp.1-M3-MB-MB-MB	202	71	127	3.8	9.1	B	161	3266	37	85035
80494-MB-M15-MB	212	73	127	3.6	7.1	B	150	3230	64	
80(Ganganagar)-12-MB-=MB-MB	197	79	128	3.2	7.2	B	153	3066	28	
78342-MB-MB-M3-MB-MB	210	76	136	4.0	9.4	W	145	3045	56	85040
80584-MB-M4-MB	205	81	137	3.5	8.0	B	159	2963	17	
80541-MB-M3-MB	200	82	136	3.8	9.6	W	170	2917	11	85036
80511-MB-M3-MB	207	75	130	3.3	7.1	B	146	2814	37	85038
M77-216	205	79	136	3.3	7.2	B	150	2778	55	
80494-MB-M13-MB	203	79	128	4.1	7.2	B	154	2654	23	85042
ICPL 81-60-10-M1-MB-MB	218	94	137	3.2	10.1	B	140	2608	25	85034
CNDTLB-3	205	75	131	4.0	8.4	B	152	2551	23	
80536-MB-M1-MB	213	72	136	3.7	8.4	B	127	2443	41	85041
80497-MB-MB-MB	205	73	138	3.6	7.2	B	115	2371	41	
74068-1-34-B-M1-B0-M1-MB	190	64	119	3.2	8.4	B	138	2315	52	85037
79238-MB-M19-MB-MB	192	78	134	3.7	8.7	B	149	2243	9	
80545-MB-M12-MB	200	78	135	3.4	9.5	B	141	2197	36	
80494-MB-M3-MB	195	81	133	3.1	7.9	B	175	2171	22	
80500-MB-M27-MB	205	77	133	3.5	8.8	W	142	1898	27	
$\bar{x}$	203	77	131	3.5	8.2	-	150	2715		
SEa ±	5.0	1.3	1.8	0.19	0.21	-	10.5	175		
CV %	4	3	2	9	4	-	12	11		

a = Seed Colour : B = Brown; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.32 : Characteristics of the early maturing pigeonpea lines in AMBLTB4-2 during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	I SM[b]	New ICPLs
80513-MB-M4-MB	215	83	140	3.4	7.8	B	158	3302	62	
Comp.1-M5-M1-MB-MB	206	80	134	3.4	7.6	B	154	3292	33	85044
80500-MB-M15-MB	207	84	141	3.3	9.1	W	180	3148	100	85045
79221-MB-M1-M11-MB	226	84	137	3.4	8.2	B	158	2953	94	
79224-MB-M15-MB-MB	202	80	134	3.5	7.7	B	162	2623	48	
80600-MB-M5-MB	209	86	144	3.3	8.0	B	153	2577	62	
80532-MB-M1-MB	213	86	139	3.8	7.9	B	147	2577	50	
H77-216	217	84	135	3.2	7.1	B	176	2495	55	
80524-MB-M5-MB	201	82	137	3.3	6.6	B	154	2464	71	
80(Sanganagar)-12-M1-MB-MB	213	81	135	3.4	7.2	B	157	2382	47	
80494-MB-M19-MB	217	85	139	3.7	7.3	B	165	2320	100	
74078 LM-BS	210	86	137	3.2	7.7	B	176	2315	-	
CNDTLB-4	217	82	140	3.4	8.9	B	131	2269	20	
80600-MB-M3-MB	202	86	144	3.2	8.1	B	171	2227	100	
78322-MB-M1-M1-M1-MB	203	85	139	3.7	9.2	B	173	2212	100	
80530-MB-M1-MB	204	86	141	3.2	7.0	B	176	2197	67	
78321-MB-MB-M6-MB-MB	223	83	139	3.6	9.7	B	137	2114	79	
74078 LM-CS	200	86	133	4.1	7.2	W	131	2114	-	
78321-MB-M3-M1-MB-MB	195	85	140	3.4	7.7	B	142	2032	43	
79225-MB-MB-M6-MB-MB	200	83	143	3.3	8.9	B	141	2027	61	
80604-MB-MB-M9-MB	211	86	143	3.7	10.4	B	133	1914	100	
80586-MB-MB-M3-MB	195	86	141	3.7	9.3	W	164	1703	56	
$\bar{X}$	208	84	139	3.5	8.1		156	2421		
SEa ±	5.9	0.9	2.3	0.19	0.2		10	180		
CV %	5	2	3	10	5		11	13		

a = Seed Colour : B = Brown; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.33: Characteristics of the early maturing pigeonpea lines in AHBLTD4-3 during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	% SM[b]	New ICPLs
79238-MB-M22-MB-MB	203	84	139	3.6	7.4	B	135	3449	100	85046
80530-MB-M1-MB	183	84	138	3.5	6.2	B	116	3295	93	
79235-MB-M13-MB-MB	213	89	147	3.3	8.7	W	178	3164	18	85048
80572-MB-M11-MB	210	92	152	3.9	10.4	W	139	3133	54	85049
ICPL 6	220	92	154	3.6	8.1	B	158	2886	100	
78326-MB-M2-M1-MB-MB	198	87	143	4.1	9.3	B	99	2855	67	
78321-MB-MB-M10-MB-MB	210	84	143	4.0	8.8	B	142	2801	10	
79239-MB-M11-MB-MB	215	85	145	3.9	9.5	B	143	2639	32	85047
H77-216	205	84	138	3.5	7.3	B	140	2577	55	
78378-MB-MB-M12-MB-MB	213	90	149	4.0	7.8	B	152	2531	100	
80491-MB-M1-MB	183	88	148	3.8	8.9	LB	148	2454	28	
80515-MB-M4-MB	203	88	145	3.9	8.2	B	153	2377	100	
78379-MB-MB-M3-MB-MB	200	83	140	3.5	7.6	B	162	2338	100	
80494-MB-M1-MB	190	89	145	4.1	7.9	B	130	1937	77	
78322-MB-M1-M3-MB-MB	210	89	147	3.8	9.1	W	146	1921	31	
80500-MB-M2?-MB	208	89	149	3.4	8.9	W	165	1906	20	
78319-MB-M2-M1-MB-MB	189	85	146	4.2	9.6	B	68	1574	24	
76322-MB-MB-MB-MB-MB	203	84	145	3.9	9.2	B	115	1312	30	
80578-MB-M1-MB	205	88	147	4.2	8.4	B	103	1273	56	
79225-MB-M5-MB-MB	215	93	154	3.5	9.3	B	165	1157	44	
X	203	87	146	3.8	8.5		138	2379		
SEm ±	7.7	0.9	2.0	0.17	0.18		13	214		
CV %	5	1.4	2	6	3		13	13		

a = Seed Colour : B = Brown; LB = Light Brown; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.34: Characteristics of the early maturing pigeonpea lines in AHBLTB4-4 during 1984 kharif at Hisar.

Lines	Plant Height (cm)	Days to Flower	Days to Mature	Seeds/ Pod	100 seed wt(g)	Seed Color[a]	Plant Stand	Grain Yield (kg/ha)	I SM[b]	New ICPLs
80493-MB-M2-MB	193	79	145	4.3	7.9	W	105	3920	16	85052
78327-MB-M5-M4-M1-MB	180	81	140	3.2	9.7	B	111	3403	20	
80535-MB-M1-MB	165	79	130	3.3	7.6	B	90	3395	40	
78326-MB-M14-M5-MB-MB	178	84	150	3.3	9.1	B	96	3302	41	
78326-MB-M10-M1-MB-MB	155	82	139	3.8	11.5	B	123	3156	8	85050
78320-MB-M11-M1-MB-MB	175	88	143	3.7	10.6	B	97	3102	3	85051
80507-MB-M1-MB	145	85	139	3.4	7.7	B	64	3086	40	
ICPL 6	185	88	145	3.6	8.1	B	129	3025	12	
H77-216	180	79	139	3.3	7.3	B	101	2917	55	
78319-MB-MB-M4-MB-MB	160	81	138	3.6	9.9	B	47	2909	23	
ICPL 84057	190	91	145	4.4	11.2	W	45	2793	55	
78341-MB-M2-M1-MB-MB	148	80	140	4.2	8.8	W	64	2593	18	
78326-MB-MB-MB-M7-MB	125	81	145	3.2	10.3	B	75	2585	35	
76115-MB-M237-MB-M2-MB-MB	193	90	144	4.3	8.9	W	64	2554	59	
79239-MB-M30-M1-MB	165	80	132	3.3	8.9	B	88	2546	13	
78379-MB-MB-M6-MB-MB	143	81	140	3.5	8.4	W	98	2546	55	
78322-MB-M11-M2-M1-MB	165	85	143	4.1	10.0	W	85	2369	4	85053
ICPL 95	170	93	148	3.8	8.5	B	49	2230	84	
80544-MB-M1-MB	155	82	140	3.2	7.2	B	81	1975	36	
80512-MB-M2-MB	163	88	135	3.5	9.3	W	69	1674	4	
$\bar{X}$	166	84	141	3.6	9.0		84	2804		
SEM ±	11.9	1.3	3.0	0.23	0.26		10	295		
CV %	10	2	3	9	4		16	15		

a = Seed Colour : B = Brown; W = White

b = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.35 : Characteristics of entries in Evaluation of DT Advanced Lines Test in Late planting at ICRISAT, Hisar during rainy season 1984.

Entry	Pedigree	Days to Flower	Days to Mature	Plant Height (cm)	Seeds/ Pod	100 seed wt (g)	Plant stand	Grain Yield (kg/ha)
14	ICPL 317	74	143	153	3.4	8.8	162	2731
6	ICPL 151	77	145	161	3.1	11.2	210	2703
17	ICPL 8306	66	146	159	2.8	8.0	202	2674
12	ICPL 315	74	139	172	3.1	7.8	204	2523
15	ICPL 8301	65	137	158	3.4	7.5	167	2471
3	ICPL 94	79	151	172	3.5	10.1	176	2413
10	ICPL 289	71	150	151	2.9	11.0	155	2332
2	ICPL 87	82	139	156	3.7	10.7	154	2332
4	ICPL 141	80	147	173	3.0	8.7	190	2292
11	ICPL 312	79	149	167	3.5	11.2	151	2286
16	ICPL 8304	55	140	132	2.7	8.7	221	2135
1	ICPL 4	73	132	167	2.7	6.3	188	2101
19	ICPL 8317	71	148	162	3.4	9.7	191	2089
7	ICPL 154	79	151	174	2.5	10.1	193	2072
18	ICPL 8309	77	149	173	2.6	11.5	183	1927
5	ICPL 146	81	151	163	2.9	10.7	230	1875
8	ICPL 179	55	148	117	2.9	9.0	194	1852
9	ICPL 287	68	149	147	2.7	8.8	255	1586
13	ICPL 316	55	143	126	3.0	9.3	203	1574
20	ICPL 8324	85	151	185	3.1	16.8	107	1453
	SE	1.6	3.1	3.9	0.19	0.19	17.8	230.9
	Mean	72.3	145.4	158.3	3.05	9.80	186.7	2171.0
	CV %	3.9	3.7	4.3	10.79	3.30	16.5	18.4

Table 1.36 : Characteristics of entries in Evaluation of NDT Advanced Lines Test in Late planting grown at ICRISAT, Hisar during rainy season 1984.

Entry	Pedigree	Days to Flower	Days to Mature	Plant Height (cm)	Seeds/ Pod	100 seed wt(g)	Plant stand	Grain Yield (kg/ha)
2	ICPL 81	78	135	205	3.3	7.7	177	2679
6	ICPL 269	87	146	194	4.0	10.1	202	2639
10	ICPL 8325	79	140	200	3.8	8.7	157	2367
12	ICPL 8328	83	145	202	3.8	8.2	211	2367
18	ICPL 84046	87	149	232	3.8	7.8	193	2245
16	ICPL 84044	82	143	212	4.2	12.2	219	2182
20	ICPL 84048	84	147	220	3.2	9.7	183	2124
19	ICPL 84047	80	147	223	3.1	7.7	183	2083
14	ICPL 8330	80	140	208	3.5	8.5	173	2072
15	ICPL 84040	79	143	197	3.3	8.4	170	1939
8	ICPL 292	84	144	218	3.3	9.6	179	1892
11	ICPL 8326	79	143	215	3.6	9.2	197	1863
17	ICPL 84045	83	145	219	3.7	11.6	174	1834
3	ICPL 143	81	143	193	3.6	8.4	198	1748
1	H77-216	80	143	209	3.0	7.8	213	1748
9	ICPL 314	87	143	210	3.4	9.0	213	1725
7	ICPL 288	90	147	235	3.5	8.3	169	1470
13	ICPL 8329	85	148	216	3.6	10.6	205	1400
5	ICPL 161	89	147	214	3.6	10.0	192	1389
4	ICPL 149	98	146	226	3.3	7.4	189	1152
	SE	1.1	2.0	6.1	0.16	0.14	19.9	164.4
	Mean	83.8	144.4	212.4	3.53	9.03	189.9	1945.9
	CV %	2.2	2.5	5.0	7.84	2.61	18.1	14.6

Table 1.37 : Characteristics of entries in Disease Resistant Determinate Advanced Lines Test (DRDTALT) during 1984 kharif at Hisar.

Entries	% Disease[a]			Plant Height (cm)	Days to Flower	Days to Mature	Seed/ Pod	100 Seed wt(g)	Plant Stand	Grain Yield (kg/ha)	Seed Color[b]	% SM[c]	New ICPL Nos.
	SM	PB	W										
ICPL 151	67	-	5	153	69	125	4.1	10.1	180	3071	C	3	
ICPL 289	0	-	40(6)	145	76	133	3.7	10.4	145	2978	W	4	
ICPL 84023	0	-	-	161	76	130	3.9	8.0	176	2973	B	0	
ICPL 83008	0(0)	(0)	5	177	83	143	3.7	10.7	172	2886	B	0	
ICPL 87	29	-	6(4)	156	83	137	4.1	10.4	138	2685	B	19	
ICPL 4	-	-	-	170	74	119	3.4	6.2	175	2459	B	15	
ICPL 146	3(5)	-	-	168	76	137	4.0	9.6	154	2423	B	0	
74092-B-59-1-M1-B*-M1-M1-MB-MB	0	-	-	173	80	132	3.9	8.5	161	2418	W	23	85001
74205-B-104-M1-B*-M1-M3-MB-MB-MB	0(0)	-	-	175	86	137	3.6	9.8	145	2320	W	7	85002
ICPL 83024	0(0)	-	0	185	86	152	3.6	14.7	128	2315	DB	0	
ICPL 177	-	-	7	170	76	124	3.9	7.0	160	2289	B	52	
ICPL 268	-	6	0(15)	155	74	124	3.3	7.9	169	2289	B	23	
ICPL 83002	(0)	(0)	(10)	169	61	111	3.1	7.7	149	2269	B	6	
ICPL 176	0	-	-	161	80	128	3.0	8.0	179	3238	B	46	
Comp.1-MB-M21-MB-MB-MB	-	-	5	118	63	113	3.4	8.6	157	2058	B	51	
ICPL 169	0	-	-	161	76	141	3.4	9.5	158	2052	B	59	
ICPL 145	0	-	-	147	76	131	3.5	9.2	112	2047	B	3	
74205-B-104-1-B*-M1-M3-MB-MB-MB	3	-	10	180	83	142	3.6	9.5	128	1780	W	0	
ICPL 83007	-	-	(5)	114	61	113	3.3	8.6	146	1734	B	7	
ICPL 166	0	-	-	159	83	143	3.1	9.6	124	1728	B	0	
ICPL 83	0	-	0	172	76	130	3.0	8.0	145	1610	B	0	
75080-3-B-M2-B*-M1-M4-M2-MB-MB	0	-	(5)	158	83	134	3.0	7.8	147	1538	B	3	
$\bar{x}$				158	76	131	3.5	9.1	152	2280			
SEm ±				5.2	0.1	2.9	0.2	0.25	11.9	142			
CV %				6	2	4	10	5	13	11			

a = 1982 disease reaction; SM = Sterility Mosaic; PB = Phytophthora Blight; W = Wilt; ( ) = 1981 data;

b = Seed Colour : B = Brown; W = White; C = Cream; DB = Dark Brown;

c = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.38 : Characteristics of entries in Disease Tolerant Determinate Advanced Lines Trial (DTDTALT) during 1984 - kharif at Hisar.

Entries	% Disease[a]			Plant Height (cm)	Days to Flower	Days to Mature	Seed/ Pod	100 Seed wt(g)	Seed Color[b]	Plant Stand	Grain Yield (kg/ha)	% SM[c]	New ICPL Nos.
	SM	PB	W										
ICPL 155	7	-	32(0)	185	83	136	4.2	8.4	B	137	3256	21	
ICPL 83022	21	-	-	162	68	130	3.7	9.3	B	120	3189	21	
ICPL 207	-	(5)	21	132	60	120	3.2	7.7	B	134	3143	8	
ICPL 154	9	-	10	176	82	137	3.2	8.8	B	116	3143	9	
78377-HB-HB-HB-HB-HB	10	-	-	163	74	136	3.4	9.4	B	154	3143	0	85003
ICPL 83010	-	(0)	18	166	77	129	4.9	10.1	W	127	3066	8	
ICPL 83009	-	(0)	(20)	175	74	132	3.5	11.1	W	117	3050	58	
ICPL 141	15	-	-	173	78	123	3.2	7.9	B	118	3040	4	
ICPL 94	23	-	-	176	76	124	3.7	8.9	B	160	3040	4	
ICPL 312	50	-	-	171	77	133	3.9	11.8	W	117	2994	4	
ICPL 83004	-	-	(8)	127	60	114	3.0	8.1	B	138	2968	7	
ICPL 84025	23	-	-	175	78	128	4.2	8.4	B	98	2908	10	
ICPL 84019	-	-	9	123	58	117	3.1	7.6	B	107	2932	9	
ICPL 148	-	-	18	165	80	130	4.0	8.8	B	128	2932	0	
ICPL 84018	10	-	-	138	60	121	3.5	9.7	B	119	2901	0	
ICPL 83020	23	-	-	141	70	134	2.9	11.4	B	88	2891	3	
ICPL 87	29	-	6(4)	155	78	127	3.7	10.2	B	151	2865	19	
ICPL 315	10	-	-	177	75	122	3.4	7.1	B	139	2788	12	
ICPL 83005	-	-	(8)	120	59	115	3.1	7.6	B	127	2783	18	
ICPL 4	-	-	-	173	71	119	3.2	5.4	B	130	2685	15	
7e115-HB-H108-H10-H2-HB-HB-HB	10	-	-	163	70	122	3.7	7.6	W	119	2248	3	
7414e-B-81-1-HB-H1-HB-H5-HB-HB	14(7)	-	-	182	80	125	3.3	10.2	C	148	1903	0	
$\bar{x}$				160	72	126	3.6	8.9		127	2905		
SEm ±				3.7	1.4	2.8	0.19	0.22		13	204		
CV %				4	3	4	9	4		18	12		

a = 1982 disease reaction; SM = Sterility Mosaic; PB = Phytophthora Blight; W = Wilt; ( ) = 1981 data;

b = Seed Colour : B = Brown; W = White; C = Cream;

c = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.39 : Characteristics of entries in SM Disease Resistant Advanced Lines Test grown at ICRISAT, Hisar - rainy season 1984.

Entry No.	Pedigree	Days to Flower	Days to Mature	Plant Height (cm)	Seeds/ Pod	100 seed wt(g)	Plant Stand	Grain Yield (kg/ha)	I SM[a]	New ICPLs
17	ICPL 155-SB⊕-SB⊕	81	145	178	4.7	8.1	29	3796	0	
3	ICPI 75080-39-B-46-B⊕-B1-MB-MB-S1⊕-SB⊕-SB⊕	73	145	153	3.8	9.1	47	3750	0	85005
10	ICPL 169-S2⊕-SB⊕-SB⊕	83	145	178	4.6	9.6	24	3634	0	
9	ICPI 74092-B-27-B-H1-B⊕-H2-H4-MB-S2⊕	88	159	201	4.6	10.8	39	3148	3	85006
20	ICPL 87 (C)	82	155	155	4.6	10.6	35	2894	19	
6	ICPL 146-S2⊕-SB⊕-SB⊕	79	145	165	4.1	10.8	29	2894	0	
18	P 4201-SB⊕-SB⊕	83	159	183	4.8	11.0	27	2662	0	85008
15	P 1562-SB⊕-SB⊕	74	145	149	4.8	10.3	26	2477	0	
16	E 4144-SB⊕-SB⊕	79	129	179	4.4	9.2	32	2431	0	
11	ICPI 74205-1-104-H1-B⊕-SB⊕-SB⊕	82	159	180	3.5	11.1	23	2384	0	
4	Comp.1-1DT-H4-H1-B⊕-MB-MB-S1⊕-SB⊕-SB⊕-S2⊕-SB⊕-SB⊕	78	157	188	3.5	8.5	37	2245	0	
19	ICPL 4(C)	81	127	170	3.5	6.2	29	2245	15	
13	E 923-SB⊕-SB⊕	99	158	248	3.3	9.0	28	2222	0	
14	P 1395-SB⊕-SB⊕	71	145	168	4.5	8.6	29	2199	0	
1	ICPI 74146-DTB-23-1-HIIIDT-B⊕-B-B-S1⊕-SB⊕-SB⊕	84	159	189	3.4	15.1	39	2014	2	85004
8	ICPL 145-S2⊕-SB⊕-SB⊕	82	159	180	4.7	11.4	35	1898	0	
5	ICPI74092-B-38-1-H10B-MB-MB-MB-S1⊕-SB⊕-SB⊕-S2⊕-SB⊕	76	159	158	3.4	9.9	32	1806	0	
2	ICPI 75080-39-B-46-B⊕-B1-MB-MB-S1⊕-SB⊕-SB⊕	96	158	188	3.7	10.0	28	1204	0	
7	ICPL 166-S1⊕-SB⊕-SB⊕	79	158	170	3.6	9.4	31	1019	0	
12	ICPI 74146-DTB-23-SB⊕-SB⊕	84	159	181	4.1	14.1	15	903	0	85007
	SE	2.2	0.8	6.9	0.41	0.36	4.1	363.8		
	Mean	81.2	151.2	177.8	4.09	10.15	30.4	2391.2		
	CV I	3.8	0.7	5.5	14.02	5.07	19.0	21.5		

a = Data from 1984 Sterility Mosaic Nursery at Patancheru

Table 1.40 : Characteristics of entries in Disease/Tolerant indeterminate Advanced Lines Test grown at ICRISAT, Misar - rainy season - 1984.

Entry No.	Pedigree	Days to Flower	Days to Mature	Plant Height (cm)	Seeds/ Pod	100 Seed wt (g)	Plant Stand	Grain Yield (kg/ha)	1982 Disease Reaction[a] SM	PB	W	% SM (1984)
10	ICPL 292	82	145	217	3.5	8.9	92	3230	50	-	-	46
14	ICPL 8327	81	137	210	3.9	10.2	96	3194	10	-	-	9
13	ICPL 8325	74	138	212	3.6	8.3	85	3174	35	(39)	0(8)	15
7	ICPL 189	85	144	207	3.4	8.1	93	3164	35	-	-	77
15	ICPL 8332	89	148	237	3.9	7.7	97	3056	0	-	-	3
12	ICPL 314	81	139	195	3.9	8.0	95	2978	48	-	54	37
6	ICPL 186	82	142	228	3.6	8.9	85	2953	-	-	22	14
16	ICPI 75080-36-8-H2-HB0-H1-H4 -H3-HB-HB-HB	74	134	215	3.5	7.6	113	2937	18	-	-	12
5	ICPL 161	79	144	208	3.9	9.7	111	2819	-	(5)	-	9
8	ICPL 269	81	142	180	3.9	10.4	94	2773	8	-	21	0
1	H77-216	79	137	210	3.5	7.5	80	2670	-	-	-	55
9	ICPL 288	93	145	238	3.7	7.9	91	2644	3	(13)	25(10)	9
3	ICPL 143	80	132	183	3.8	7.7	103	2613	57	-	(10)	11
17	ICPI 74146-B-18-H1-B0-HB-H5 -HB-HB-HB	89	144	235	4.2	7.5	40	2454	0	-	12	8
2	ICPL 95	97	147	220	3.6	9.0	71	2238	-	-	(4)	100
4	ICPL 149	92	145	228	3.6	7.2	99	1852	-	(4)	-	70
18	ICPI 75001-2B-B-HB0-H2-H1- H2-B0HB-HB-HB	93	148	240	3.2	8.7	58	1759	17	-	-	12
11	ICPL 294	89	148	212	3.2	8.5	75	1698	-	(6)	12(45)	75
	SE	0.7	2.7	7.5	0.15	0.19	8.4	210.4				
	Mean	84.4	142.1	215.3	3.66	8.44	87.7	2678.0				
	CV %	1.4	3.3	6.1	6.93	3.81	16.5	13.6				

a = Data from 1982 disease nursery; ( ) = 1981 data; SM = Sterility Mosaic; PB = Phytophthora Blight; W = Wilt

Table 1.41 : Characteristics of entries in Baigani Pure Lines Trial grown at ICRISAT, Hisar, rainy season 1984.

Entry No.	Pedigree	Days to Flower	Days to Mature	Plant Height (cm)	Seeds/ Pod	100 seed wt(g)	Plant Stand	Grain Yield (kg/ha)	
8	Baigani-H6-H40-H30-H60-H70-HB	82	127	208	3.6	10.7	30	2778	ICPL 85074
9	Bulk of 2 to 8 entries	82	127	208	3.9	10.5	31	2654	
3	Baigani-H6-H40-H40-H1-H10-HB	80	127	198	3.9	10.6	23	2500	
2	Baigani-H6-H40-H30-H5-H2-HB	80	127	210	3.6	10.8	21	2438	
4	Baigani-H6-H40-H40-H1-H20-HB	80	127	212	3.4	10.5	40	2361	
5	Baigani-H6-H40-H40-H30-H10-HB	82	127	208	3.7	10.8	24	2299	
6	Baigani-H10-H10-H40-H10-H20-HB	80	127	205	3.7	10.6	17	2068	
1	Baigani Bulk	80	127	215	3.6	10.8	19	1929	
7	Baigani-H10-H10-H40-H10-H50-HB	80	127	206	3.4	10.9	18	1667	
	SE	0.0	0.0	5.0	0.12	0.15	4.2	188.8	
	Mean	80.7	127.0	207.9	3.64	10.70	24.7	2299.4	
	CV %	0.0	0.0	4.1	5.70	2.44	29.7	14.2	

Table 1.42 : Effect of line mixtures on different plant characteristics during 1984 K at Hisar.

Entries	Days to Flower		Days to Mature		Plant Height(cm)		No. of pods/plant		Grain Yild (g/plant)	
	DT	NDT	DT	NDT	DT	NDT	DT	NDT	DT	NDT
100% ICPL 151 (DT)	71	-	131	-	149	-	98	-	29.8	-
75% ICPL 151+25% ICPL 87	70	-	127	-	144	-	103	-	29.1	-
75% ICPL 151+25% ICPL 161	66	79	125	127	145	203	69	137	22.1	41.5
75% ICPL 151+25% H77-216	70	74	126	124	145	192	86	175	26.7	35.9
50% ICPL 151+50% ICPL 87	70	-	131	-	144	-	79	-	24.5	-
50% ICPL 151+50% ICPL 161	71	82	132	129	147	205	69	136	19.5	39.8
50% ICPL 151+50% H77-216	71	77	130	125	144	204	59	143	19.2	32.8
25% ICPL 151+75% ICPL 87	73	-	134	-	143	-	92	-	22.4	-
25% ICPL 151+75% ICPL 161	68	81	131	130	144	208	60	102	17.1	25.9
25% ICPL 151+75% H77-216	65	75	128	126	145	195	67	129	22.7	26.6
100% ICPL 87 (DT)	77	-	146	-	146	-	83	-	18.5	-
75% ICPL 87+25% ICPL 151	73	-	134	-	143	-	92	-	22.4	-
75% ICPL 87+25% ICPL 161	77	81	135	132	137	205	66	164	16.8	48.4
75% ICPL 87+25% H77-216	75	76	134	125	140	195	84	180	22.0	42.4
50% ICPL 87+50% ICPL 151	70	-	131	-	144	-	79	-	24.5	-
50% ICPL 87+50% ICPL 161	75	80	138	131	142	214	51	139	10.0	38.1
50% ICPL 87+50% H77-216	73	76	136	126	138	201	67	159	13.7	34.5
25% ICPL 87+75% ICPL 151	70	-	127	-	144	-	103	-	29.1	-
25% ICPL 87+75% ICPL 161	73	81	136	130	142	212	30	101	5.6	26.5
25% ICPL 87+75% H77-216	76	76	140	127	141	203	53	135	8.5	28.3
100% ICPL 161 (NDT)	-	81	-	132	-	210	-	107	-	27.8
75% ICPL 161+25% H77-216	-	79	-	128	-	205	-	108	-	31.1
50% ICPL 161+50% H77-216	-	78	-	129	-	201	-	142	-	29.0
25% ICPL 161+75% H77-216	-	77	-	127	-	200	-	135	-	28.7
100% H77-216 (NDT)	-	76	-	126	-	201	-	135	-	28.2

Table 1.43 : Mean effect of line mixtures on plant characteristics during 1984 K at Niger.

Line mixtures	Days to Flower		Days to Mature		Plant Height(cm)		No. of pods/plant		Grain Yild (g/plant)	
	DT	MDT	DT	MDT	DT	MDT	DT	MDT	DT	MDT
Lines -										
Determinate (DT)	74	-	139	-	148	-	91	-	24.2	-
Indeterminate (MDT)	-	79	-	129	-	206	-	121	-	28.0
Mixtures -										
DT-DT:										
25-75	72	-	131	-	144	-	98	-	25.8	-
50-50	70	-	131	-	144	-	79	-	24.5	-
DT-MDT :										
25-75	71	78	134	128	143	205	56	117	13	27
50-50	73	79	134	128	143	206	62	144	16	36
75-25	71	76	130	127	142	199	76	164	22	42
MDT-MDT :										
25-75	-	76	-	128	-	203	-	122	-	29.9
50-50	-	78	-	129	-	201	-	142	-	29.0

Table 1.44 : Amount (ml) of water replaced by lines of different seed size (1984 K at Hisar).

Lines	Water Replaced(ml)
1. 6.8 g/100 seeds -	
ICPL 83	6.0
ICPL 147	5.3
ICPL 182	5.0
ICPL 83006	5.0
SEm + -	0.16
CV %	5.3
2. 7.6 g/100 seeds -	
ICPL 150	6.0
ICPL 164	6.3
ICPL 177	6.0
ICPL 189	6.0
ICPL 293	6.7
SEm + -	0.35
CV %	9.8
3. 7.8 g/100 seeds -	
ICPL 89	6.7
ICPL 141	6.0
ICPL 149	6.0
ICPL 83005	6.3
ICPL 83028	6.3
ICPL 84041	6.0
ICPL 84046	6.0
ICPL 84080	5.7
SEm + -	0.24
CV %	6.7

Lines	Water Replaced(ml)
4. 8.0 g/100 seeds -	
ICPL 86	6.3
ICPL 165	6.3
ICPL 267	6.7
ICPL 315	6.3
ICPL 83001	6.0
ICPL 83004	6.0
ICPL 83031	6.0
ICPL 84026	6.0
ICPL 84050	6.0
ICPL 84075	6.0
SEm ±	0.22
CV %	6.1
5. 8.2 g/100 seeds -	
ICPL 155	7.7
ICPL 187	7.0
ICPL 288	6.7
ICPL 317	7.0
ICPL 83003	6.3
ICPL 83025	6.3
ICPL 84077	6.3
SEm ±	0.30
CV %	7.7
6. 8.6 g/100 seeds -	
ICPL 92	7.0
ICPL 95	6.0
ICPL 146	6.0
ICPL 154	6.3
ICPL 169	7.0
ICPL 173	7.0
ICPL 314	6.0
ICPL 316	7.0
ICPL 83002	7.0
ICPL 83016	6.3
ICPL 83027	7.0
ICPL 84048	6.3
SEm ±	0.16
CV %	4.3

Lines	Water Replaced(ml)
7. 8.8 g/100 seeds -	
ICPL 185	7.0
ICPL 268	7.0
ICPL 294	7.0
ICPL 83007	7.0
ICPL 83021	7.0
ICPL 84023	6.3
SEm ±	0.13
CV %	3.2
8. 9.0 g/100 seeds -	
ICPL 91	7.7
ICPL 145	6.7
ICPL 176	6.7
ICPL 180	7.0
ICPL 292	6.7
ICPL 83030	7.0
ICPL 84019	7.0
ICPL 84020	6.7
ICPL 84030	7.0
ICPL 84042	7.0
SEm ±	0.24
CV %	6.1
9. 9.2 g/100 seeds -	
ICPL 174	7.7
ICPL 188	7.0
ICPL 287	7.0
ICPL 313	7.0
ICPL 84053	7.0
SEm ±	0.15
CV %	3.7

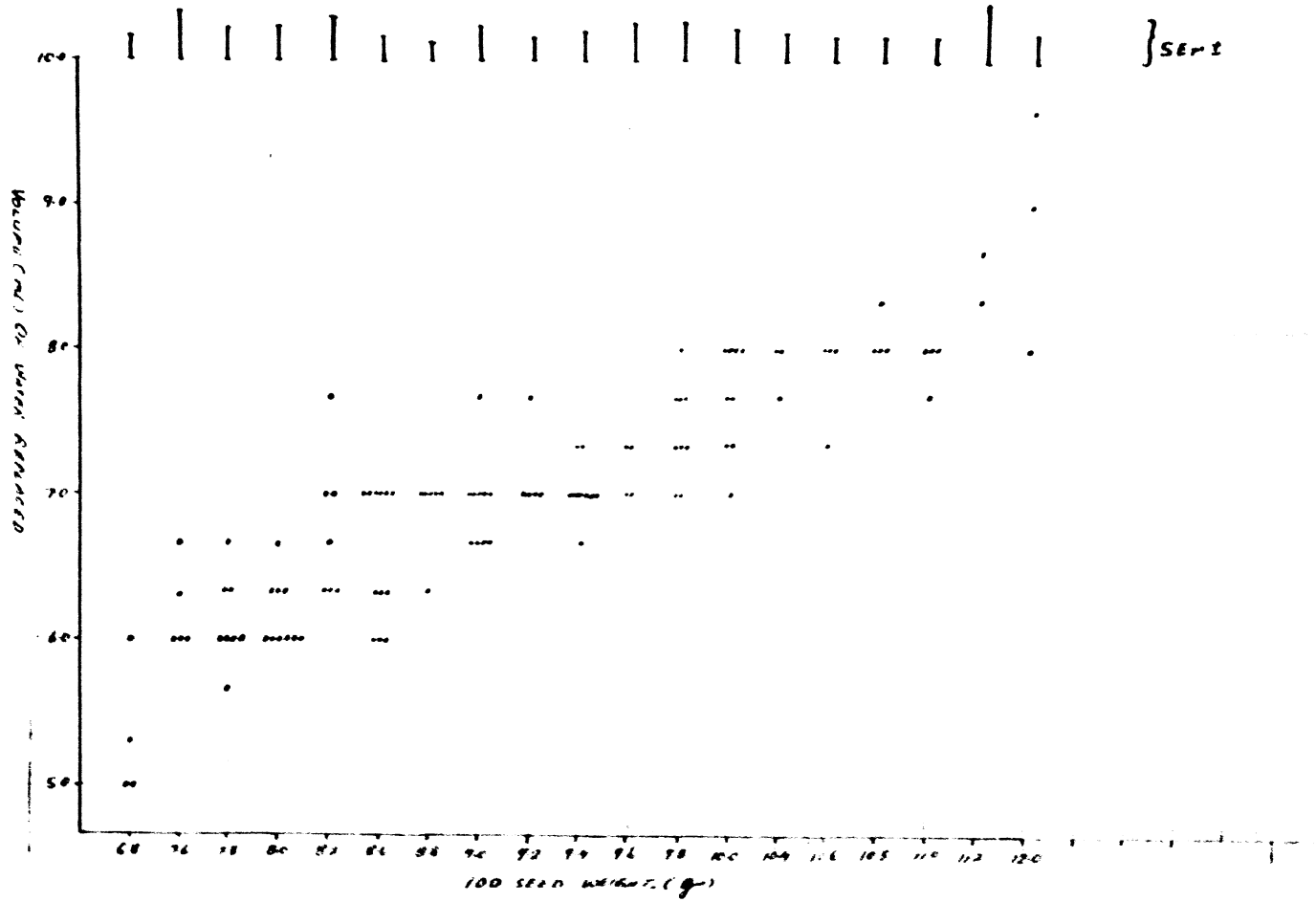
Lines	Water Replaced(ml)
10. 9.4 g/100 seeds -	
ICPL 94	7.0
ICPL 158	7.0
ICPL 171	7.3
ICPL 290	7.0
ICPL 83022	7.3
ICPL 83026	7.0
ICPL 84024	6.7
ICPL 84052	7.0
ICPL 84056	7.0
SEm ±	0.20
CV %	4.9
11. 9.6 g/100 seeds -	
ICPL 160	7.3
ICPL 166	7.0
ICPL 168	7.3
ICPL 84058	7.0
SEm ±	0.25
CV %	6.1
12. 9.8 g/100 seeds -	
ICPL 140	7.7
ICPL 179	7.0
ICPL 186	7.7
ICPL 83015	7.3
ICPL 83018	8.0
ICPL 83029	7.7
ICPL 84033	7.0
ICPL 84043	7.3
ICPL 84054	7.3
SEm ±	0.28
CV %	6.6

Lines	Water Replaced(ml)
13. 10.0 g/100 seeds -	
ICPL 144	7.7
ICPL 161	7.0
ICPL 175	7.7
ICPL 289	7.3
ICPL 83013	8.0
ICPL 83014	8.0
ICPL 83017	8.0
ICPL 84031	8.0
ICPL 84051	7.3
SEm + -	0.22
CV %	5.0
14. 10.4 g/100 seeds -	
ICPL 8	7.7
ICPL 184	8.0
ICPL 83012	8.0
SEm + -	0.19
CV %	4.2
15. 10.6 g/100 seeds -	
ICPL 151	8.0
ICPL 84028	8.0
ICPL 84036	8.0
ICPL 84059	7.3
SEm + -	0.16
CV %	3.6
16. 10.8 g/100 seeds -	
ICPL 170	8.0
ICPL 269	8.0
ICPL 8311	8.0
ICPL 84027	8.3
SEm + -	0.16
CV %	1.0

Lines	Water Replaced(ml)
17. 11.0 g/100 seeds -	
ICPL 83008	8.0
ICPL 84032	7.7
ICPL 84039	8.0
ICPL 84045	8.0
SEm + -	0.16
CV %	3.4
18. 11.2 g/100 seeds -	
ICPL 87	8.3
ICPL 83010	8.7
SEm + -	0.47
CV %	9.6
19. 12.0 g/100 seeds -	
ICPL 312	8.0
ICPL 83020	9.7
ICPL 84022	9.0
SEm + -	0.19
CV %	3.7

Table 1.45 : Webber (Maruca sp.) damage in a susceptible line ICPL 316 during 1984 kharif at Hisar.

Treatments	Plant Height (cm)	No.of pods/ Plant	Plant Stand/ Plot	Grain Yield (kg/ha)
T1 : Sprayed Weekly	98.5	119.5	33.5	1883
T2 : Hand removal of larvae	112.0	25.5	28.0	608
T3 : Unsprayed (Control)	106.5	31.0	29.0	592
SEm ±	0.76	1.26	2.75	64.9
CV %	1.6	3.0	12.9	8.9


SET 1
100
90
80
70
60
50
VOLUME (ml) OF WATER REPLACED
100 SEED WEIGHT (g)