

RP 03706

FIELD PLANS AND LAYOUTS OF EXPERIMENTS
1986 RAINY SEASON

పంటలు

GROUNDNUT PATHOLOGY



ICRISAT

LEGUMES PROGRAM

International Crops Research Institute for the
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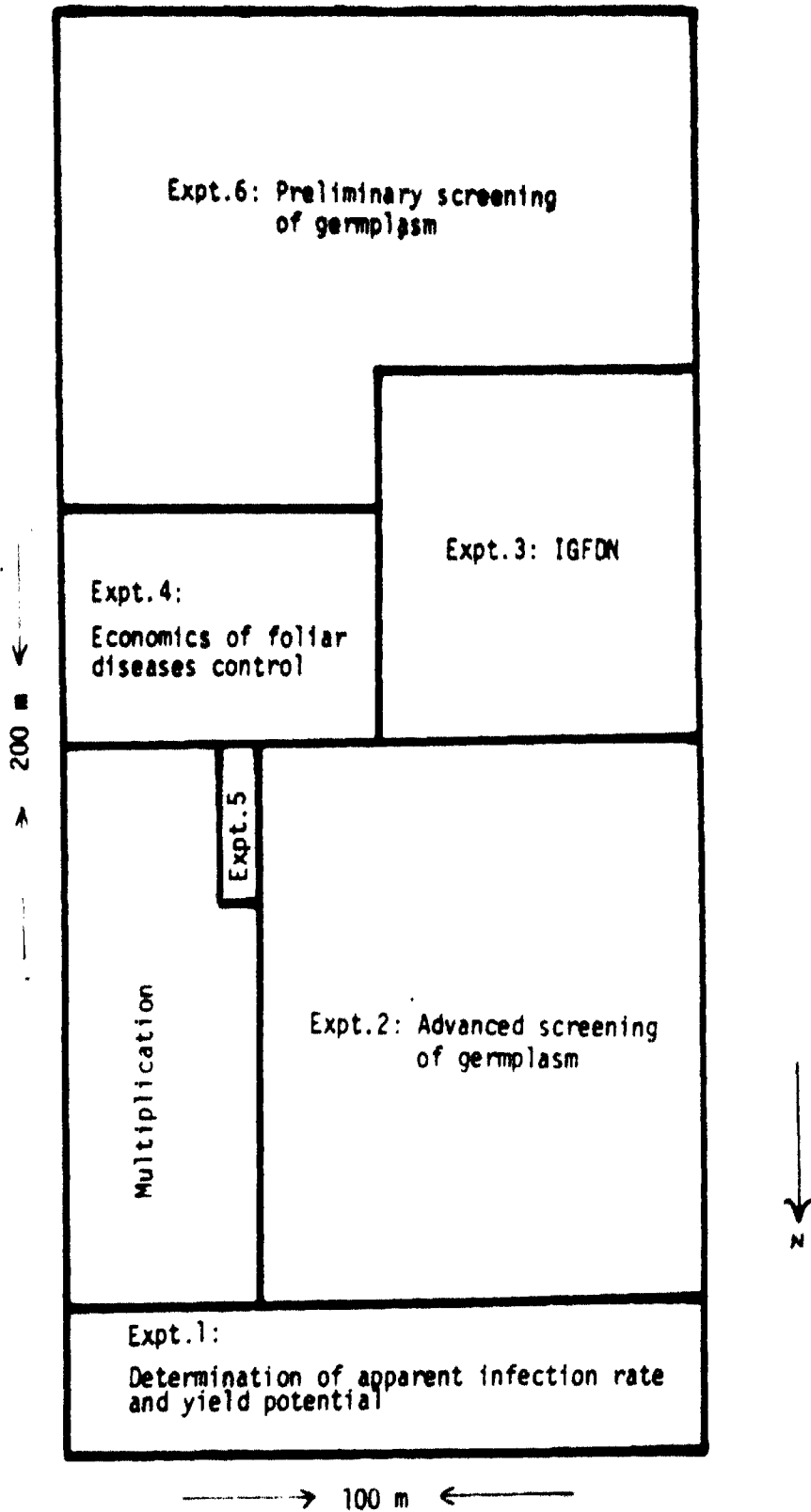
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1986 RAINY SEASON FIELD TRIALS

FOLIAR DISEASES

RP 11 B



**DETERMINATION OF APPARENT INFECTION RATE (r), AREA UNDER DISEASE
PROGRESS CURVE (AUDPC) FOR RUST AND LATE LEAF SPOT DISEASES,
AND YIELD POTENTIAL OF SOME ADVANCED GENERATION BREEDING LINES**

EXPERIMENT NO. : 1

PROJECT NO. : G-101 (85) IC

OBJECTIVES : To determine the rate of rust and late leaf spot development and to measure the yield potential of some advanced generation breeding lines developed at ICRISAT Center using fungicides of selective action against rust and late leaf spot diseases.

SITE AND FIELD : ICRISAT Center, Patancheru, RP 11 B

SEED PREPARATION AND SOWING : Seeds were treated with Thiran @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing on 1.2 m flat beds with a row to row distance of 30 cm.

DATE OF SOWING : 25 June 1986

DESIGN : Split Plot Design with 4 replications.

PLOT SIZE : 1.2 m width X 9 m length

NUMBER ENTRIES : 10 (see next page)

FUNGICIDE TREATMENT : 1. Chlorothalonil @ 1.33 kg/ha
2. Bavistin @ 494.2 g/ha
3. Calixin @ 150 ml/ha

each in 500 L of water/ha.
Check plots sprayed with 500 L of water/ha.

FERTILIZER : 60 kg/ha P2O5 at land preparation;
gypsum @ 400 kg/ha at pegging.

CROP PROTECTION : Insecticides as required

IRRIGATION : As and when required.

OBSERVATIONS : 1) Assessment of rust and leaf spots damage at 15-day interval until

harvest.

- 2) **Pod rot incidence and severity
it at harvest.**
- 3) **Final stand count.**
- 4) **Yield of pods and haulms.**
- 5) **Shelling percentages.**
- 6) **Assessment of quality characters.**

DETERMINATION OF APPARENT INFECTION RATE (I), AREA UNDER DISEASE
PROGRESS CURVE (AUDPC) FOR EARLY AND LATE LEAF SPOT DISEASES,
AND YIELD POTENTIAL OF SOME ADVANCED GENERATION BREEDING LINES

FIELD LAYOUT:

REP I				REP II				REP III				REP IV			
9	2	1	9	7	7	9	9	5	2	3	7	10	5	5	3
2	1	3	7	8	2	6	7	7	10	9	5	8	4	1	6
10	5	8	3	9	9	1	8	6	7	8	3	7	2	3	7
8	6	2	2	3	4	4	10	1	8	6	6	3	6	2	10
7	10	5	10	6	5	2	4	2	9	7	8	1	9	4	4
6	7	7	6	4	1	3	6	4	5	10	4	9	1	6	2
1	9	4	5	2	10	8	1	8	4	1	1	2	8	10	8
4	3	6	8	5	3	5	5	10	3	5	2	4	3	8	5
3	8	10	4	10	8	10	3	3	6	4	9	6	7	9	1
5	4	9	1	1	6	7	2	9	1	2	10	5	10	7	9
BA	VA	CA	CB	VA	CB	BA	CA	VA	BA	CA	CB	BA	VA	CB	CA

DETERMINATION OF APPARENT INFECTION RATE (r), AREA UNDER DISEASE
PROGRESS CURVE (AUDPC) FOR RUST AND LATE LEAF SPOT DISEASES,
AND YIELD POTENTIAL OF SOME ADVANCED GENERATION BREEDING LINES

LIST OF ENTRIES:

S.No.	Entry
1	ICG(PDRS)-4
2	CGC 4018
3	ICG(PDRS)-10
4	ICG(PDRS)-23
5	ICG(PDRS)-43
6	ICG(PDRS)-1
7	ICGS 11
8	JL 24
9	HYQ(CG)-49
10	HYQ(CG)-13

**ADVANCED SCREENING OF GROUNDNUT GERPLASM FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES**

	: 2
PROJECT NO.	: G-101 (85) IC
OBJECTIVE	: To screen germplasm accessions for resistance to rust and late leaf spot diseases.
SITE AND FIELD	: ICRISAT Center, Patancheru, RP 11 B
SEED PREPARATION AND SOVING	: Seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing along 60 cm wide ridges.
DATE OF SOVING	: 25 June 1986
DESIGN	: 14 X 14 Tripple lattice with 3 replication.
PLOT SIZE	: 1.2 m width X 4 m length (An "infector row" is arranged after every two test rows).
NUMBER OF ENTRIES	: 196 (see next page)
FERTILIZER	: 60 kg/ha P2O5 at land preparation; gypsum @ 400 kg/ha at pegging.
CROP PROTECTION	: Insecticides as required
IRRIGATION	: Protective furrow irrigation. Sprinkler irrigation, if necessary, to enhance disease development.
INOCULATION	: Potted spreader plants infected with rust were transplanted in the center of each infector row. Crop debris (from previous rainy season) heavily infected with late leaf spot was also placed along the infector rows.
OBSERVATIONS	: 1) Assessment of rust and leaf spots damage at pod setting and at maturity. 2) Final stand count. 3) Yield of pods and haulms. 4) Shelling percentages.

List of reentry:

Entry No.	Identity	Entry No.	Identity	Entry No.	Identity	Entry No.	Identity	Entry No.	Identity
1	2947	41	10069	81	10030	121	10933	161	11075
2	4226	42	10071	82	10081	122	10934	162	11080
3	4790	43	10072	83	10067	123	10935	163	11088
4	5002	44	10073	84	10069	124	10936	164	11104
5	5043	45	10074	85	10070	125	10937	165	11105
6	5045	46	10075	86	10071	126	10939	166	11106
7	5728	47	10476	87	10072	127	10940	167	11108
8	5934	48	10478	88	10073	128	10941	168	11127
9	6135	49	10489	89	10074	129	10942	169	11137
10	6284	50	10491	90	10075	130	10943	170	11138
11	6349	51	10504	91	10076	131	10944	171	11162
12	6709	52	10515	92	10077	132	10945	172	11178
13	6744	53	10516	93	10079	133	10946	173	11179
14	6902	54	10534	94	10080	134	10948	174	11181
15	7443	55	10607	95	10082	135	10949	175	11182
16	7878	56	10612	96	10083	136	10951	176	11183
17	7891	57	10613	97	10084	137	10954	177	11184
18	8044	58	10635	98	10088	138	10959	178	11185
19	8261	59	10756	99	10089	139	10960	179	11186
20	8305	60	10820	100	10091	140	10962	180	11187
21	8324	61	10822	101	10094	141	10963	181	PI 270806
22	8339	62	10823	102	10900	142	10964	182	PI 390593
23	10020	63	10828	103	10901	143	10965	183	PI 390593
24	10021	64	10831	104	10903	144	10966	184	NC Ac 15993
25	10025	65	10832	105	10904	145	10969	185	NC Ac 927
26	10029	66	10833	106	10907	146	10970	186	Krap St 16
27	10035	67	10834	107	10912	147	10971	187	M 13
28	10038	68	10835	108	10915	148	10973	188	NC Ac 17133-RP
29	10042	69	10836	109	10917	149	10974	189	PI 259747
30	10047	70	10840	110	10918	150	10975	190	PI 405132
31	10049	71	10841	111	10919	151	10977	191	PI 393646
32	10052	72	10843	112	10920	152	10978	192	EC 76446 (292)
33	10053	73	10845	113	10921	153	10979	193	RMP 91
34	10054	74	10848	114	10923	154	10980	194	PI 393641
35	10055	75	10849	115	10924	155	10981	195	THV 2
36	10056	76	10852	116	10925	156	11004	196	Robot 33-1
37	10058	77	10853	117	10927	157	11066		
38	10059	78	10854	118	10928	158	11068		
39	10063	79	10856	119	10931	159	11072		
40	10065	80	10857	120	10932	160	11073		

Layout plan for 14 X 14 LatticeReplication I

057	075	024	012	006	187	196	176	138	079	106	008	072	139
010	177	148	016	133	156	098	124	107	059	055	155	127	128
019	169	121	109	046	120	093	017	015	011	088	161	067	181
020	043	192	141	190	119	143	113	131	110	135	045	101	083
037	066	053	146	144	172	179	063	064	152	026	114	160	188
102	004	033	018	061	165	035	118	028	129	140	084	074	194
191	186	058	153	049	034	073	173	009	174	163	023	050	048
038	005	123	116	076	080	001	158	069	095	014	042	040	031
081	130	132	056	122	103	112	178	180	175	096	164	092	189
065	070	002	029	147	117	071	013	052	171	068	136	090	085
044	062	003	091	182	170	167	025	021	060	087	183	039	149
115	134	126	125	054	030	111	108	022	097	105	150	100	086
162	041	137	159	145	078	007	168	036	151	027	082	094	104
047	089	157	077	142	193	195	051	184	185	154	099	032	166

Replication II

002	110	193	147	183	152	006	155	046	076	102	034	022	122
039	049	001	187	027	099	029	098	180	119	172	011	115	194
063	059	094	093	175	167	074	038	135	157	040	111	117	196
100	031	121	016	079	065	189	032	064	023	060	131	104	165
186	184	132	071	168	028	019	062	144	113	048	125	008	177
145	143	095	129	164	066	126	170	051	161	072	171	148	174
159	097	120	075	101	118	136	044	080	107	056	047	073	037
061	158	083	036	025	142	058	176	108	013	130	015	124	188
112	150	192	123	033	169	024	007	021	005	179	156	089	090
087	146	043	009	012	055	154	042	052	137	067	092	004	086
003	190	069	134	127	114	035	173	057	151	017	081	002	195
026	128	181	191	163	139	091	162	077	178	070	141	105	084
078	096	030	133	050	116	185	085	109	182	053	140	020	106
166	041	160	018	088	054	010	138	068	014	103	153	149	045

Replication III

147	095	027	073	096	059	043	077	064	018	025	024	011	125
165	067	083	172	107	195	167	008	085	007	174	191	027	103
129	108	012	026	019	117	001	089	151	010	110	056	23	182
192	037	155	011	032	050	062	130	074	134	139	052	148	
169	153	099	162	013	031	183	113	057	086	066	133	118	175
120	158	143	029	009	157	100	152	127	091	028	078	138	111
093	106	101	144	042	128	173	170	054	065	082	180	142	033
072	034	063	116	177	002	021	105	061	121	159	092	119	166
114	020	046	176	084	123	049	164	184	111	016	137	149	136
035	186	060	005	098	193	036	097	171	196	178	109	146	045
041	132	040	161	003	090	141	079	115	047	053	058	055	102
122	190	140	104	160	071	080	087	051	181	187	150	038	124
148	068	006	194	154	015	135	069	030	163	189	044	179	168
088	076	131	126	185	039	094	156	188	048	081	070	075	004

INTERNATIONAL GROUNDNUT POLIAR DISEASES NURSERY (IGFDN):ICRISAT LOCATION

- PROJECT NO. : 3
- PROJECT NO. : G-101 (85) IC
- OBJECTIVE : To test the stability and durability of rust and late leaf spot resistant genotypes identified/assembled at ICRISAT Center through multilocal testing worldwide.
- SITE AND FIELD : ICRISAT Center, Patancheru, RP 11 B
- SEED PREPARATION AND SOVING : Seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing along 60 cm wide ridges.
- DATE OF SOVING : 25 June 1986
- DESIGN : 10 X 10 Tripple lattice with 3 replication.
- PLOT SIZE : 1.2 m width X 4 m length (An "infector row" is arranged after every two test rows).
- NUMBER ENTRIES : 100 (see next page)
- FERTILIZER : 60 kg/ha P2O5 at land preparation; gypsum @ 400 kg/ha at pegging.
- CROP PROTECTION : Insecticides as required.
- IRRIGATION : Protective furrow irrigation. Sprinkler irrigation, if required, to enhance disease development.
- INOCULATION : Potted spreader plants infected with rust were transplanted in the center of each infector row. Crop debris (from previous rainy season) heavily infected with late leaf spot was also placed along the infector rows.
- OBSERVATIONS : 1) Assessment of rust and leaf spots damage at pod setting and at maturity.
2) Final stand count.
3) Yield of pods and haulms.
4) Shelling percentages.

LIST OF ENTRIES.

Entry No.	Identity	Entry No.	Identity	Entry No.	Identity
1	7132	41	10062	81	NC Ac 15999
2	7291	42	10064(A)	82	NC Ac 17142
3	7296	43	10064(B)	83	NC Ac 17502
4	7320	44	10067	84	NC Ac 17129
5	7340	45	10068	85	NC Ac 17130
6	7393	46	10070	86	NC Ac 15989
7	7421	47	PI 390595	87	NC Ac 17132
8	7406	48	PI 270806	88	NC Ac 17135
9	7433	49	PI 215496	89	NC Ac 17133-87
10	7680	50	PI 314817	90	NC Ac 17124
11	7621	51	PI 407454	91	NC Ac 927
12	7628	52	PI 393641	92	PI 414332
13	7630	53	PI 350680	93	ROBOT 33-1
14	7712	54	PI 393646	94	TW 2
15	8298	55	PI 393531	95	J 11
16	9185(A)	56	PI 405132	96	JL 24
17	9294	57	PI 390593	97	ICGS 11
18	10000	58	PI 393527-B	98	M 13
19	10010	59	PI 414331	99	10040
20	10011	60	PI 393643	100	315608
21	10014	61	PI 298115		
22	10016(A)	62	PI 259747		
23	10022(A)	63	PI 381622		
24	10022(B)	64	PI 341879		
25	10023	65	PI 393517		
26	10024	66	PI 393516		
27	10028	67	PI 393526		
28	10030(A)	68	PI 315608		
29	10030(B)	69	EC 76446(292)		
30	10031	70	EC 76446(SP)		
31	10032	71	C.No. 45		
32	10034	72	USA 63		
33	10037	73	Krap.St 16		
34	10039	74	RMP 12		
35	10045	75	RMP 91		
36	10046	76	NC 3033		
37	10048	77	NC Ac 1301		
38	10051	78	NC Ac 17090		
39	10057	79	NC Ac 17506		
40	11061	80	NC Ac 17127		

Lay out plan for 10 X 10 Tripple Lattice

REPLICATION I.

89	20	86	35	76	47	80	85	97	95
34	48	07	88	91	77	60	92	70	05
98	71	02	45	40	14	54	39	19	49
46	83	23	06	27	36	72	63	99	10
65	22	53	26	37	62	87	93	04	55
29	82	38	44	24	68	11	41	90	52
78	59	64	81	13	74	69	25	96	01
67	12	84	17	51	94	18	30	33	31
28	50	42	75	66	57	32	56	61	03
100	79	16	09	58	21	73	08	15	43

REPLICATION II.

93	01	79	42	19	46	20	44	84	05
53	28	70	25	40	15	52	67	35	72
89	61	29	88	63	96	18	87	49	08
31	39	47	04	50	100	36	92	82	81
37	60	17	14	09	38	80	78	32	83
75	99	97	51	34	13	98	43	68	55
07	74	76	41	71	66	06	65	94	58
86	91	45	27	22	11	56	16	64	12
33	48	59	10	03	62	95	54	24	73
02	85	21	69	90	26	30	77	23	57

REPLICATION III.

61	43	94	62	35	60	81	46	11	02
26	74	38	16	75	19	33	36	70	89
49	82	53	79	64	99	95	07	17	57
96	66	72	47	05	51	22	90	73	14
83	58	18	20	45	77	55	25	24	50
04	10	34	15	71	69	29	84	86	32
63	40	37	76	44	21	12	03	92	13
23	91	65	80	08	28	54	68	31	01
30	56	09	97	93	39	52	59	88	06
98	100	85	87	78	48	27	67	41	42

ECONOMICS OF POLIAR DISEASES CONTROL

- EXPERIMENT NO.** : 4
- PROJECT NO.** : G-101 (85) IC
- OBJECTIVE** : To investigate the economics of control of rust and late leaf spot diseases by use of resistant cultivars and of fungicide application.
- SITE AND FIELD** : A) ICRISAT Center, Patancheru.
Field RP 11B : High input area
Field RM 17B : Low input area
- B) Three locations in farmers' fields at:
1. Dokur : 1
 2. Dokur : 2
 3. Gopannapalli : 3
- of Mahaboobnagar District, Andhra Pradesh.
- SEED PREPARATION AND SOWING** : Seeds were treated with Thiran @ 3 g/kg seed just before sowing.
- At ICRISAT Center:
Seed were sown singly at 10 cm spacing along 60 cm wide ridges.
- In farmer's fields:
Seeds were sown singly at approximately 10 cm spacing on the flat. Row to row distance is approximately 30 cm
- DATE OF SOWING** : A) RP 11B : 25 June 1986
B) RM 17B : 11 July 1986
C) Farmer's fields : 24 July 1986
- DESIGN** : Randomized Block Design with 4 replications.
- PLOT SIZE** : A) At ICRISAT Center : 3.6 m width X 9 m length
B) Farmer's fields : 4 m length X 4 m width.
- FERTILIZER** : At ICRISAT Center:
High input : 60 kg/ha of P205 and

gypsum @ 400 kg/ha at
pegging.

Low input : 20 kg/ha of P205

Farmer's fields:

Farmyard manure (quantity varied
from field to field).

TREATMENTS

A. Cultivars.

1. JL 74
2. Local
3. J 11
4. ICG(PDRS)-10
5. ICG(PDRS)-18

B. Spray.

1. A mixture of Bavistin
(250 g in 500 L of water/ha)
and Dithane M 45
(1 kg in 500 L of water/ha)
(as recommended by AICORPO)
2. Water (check)

CROP PROTECTION

: At ICRISAT Center:

Insecticidal protection in high
input area as and when required.
No plant protection measures in
low input area.

Farmers field:

No Insecticidal protection.

IRRIGATION

: Furrow irrigation in RP 11B,
when required. No irrigation in
other locations.

OBSERVATIONS

- 1) Assessment of rust and leaf spots
damage at harvest.
- 2) Final stand count.
- 3) Yield of pods and haulms.
- 4) Shelling percentages.
- 5) Economic evaluation and market
acceptance tests.
- 6) Quality assessment of yields.
- 7) Aflatoxin estimation.

Economics of foliar diseases control

List of cultivars:

S.No.	Cultivar	Fungicide	No fungicide
1.	JL 24		F
2.	Local	B	G
3.	J 11		H
4.	ICG(FDRS)-10		
5.	ICG(FDRS)-18		

Field layout:

High input area RP 11 B.

REP I		REP II		REP III		REP IV	
B	I	I	C	I	A	C	J
A	J	H	A	G	E	B	G
D	G	J	D	F	C	E	F
C	H	F	B	J	D	D	H
E	F	G	E	H	B	A	I

Field layout:

Low input area RM 17 B.

REP I		REP II	
B	I	I	C
A	J	H	A
D	G	J	D
C	H	F	B
E	F	G	E

REP III		REP IV	
I	A	C	J
G	E	B	G
F	C	E	F
J	D	D	H
H	B	A	I

Layout in farmers fields:

REP I	REP II		REP III		REP IV		
B	I	I	C	I	A	C	J
A	J	H	A	G	E	B	G
D	G	J	D	F	C	E	F
C	H	F	B	J	D	D	H
E	F	G	E	H	B	A	I

SCREENING OF DROUGHT TOLERANT BREEDING AND GERmplasm ACCSSIONS

FOR RESISTANCE TO POLIAR DISEASES

- EXPERIMENT NO. : 5
- PROJECT NO. : G-101 (85) IC
- OBJECTIVE : To screen drought tolerant germplasm and breeding accessions for resistance to rust and late leaf spot diseases.
- SITE AND FIELD : ICRISAT Center, Patancheru, RP 11 B
- SEED PREPARATION AND SOVING : Seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing along 60 cm wide ridges.
- DATE OF SOVING : 25 June 1986
- DESIGN : Randomised Block Design with 2 replications.
- PLOT SIZE : 4 m long single rows.
- NUMBER OF ENTRIES : 28 (see next page)
- FERTILIZER : 60 kg/ha P2O5 at land preparation; gypsum @ 400 kg/ha at pegging.
- CROP PROTECTION : Insecticides as required
- IRRIGATION : Protective furrow irrigation. Sprinkler irrigation, if necessary, to enhance disease development.
- INOCULATION : Potted spreader plants infected with rust were transplanted in the center of each infector row. Crop debris (from orevious rainy season) heavily infected with late leaf spot was also placed along the infector rows.
- OBSERVATIONS : 1) Assessment of rust and leaf spots damage at pod setting and at maturity.

SCREENING OF DROUGHT TOLERANT BREEDING AND GERMPLASM ACCESSIONS
FOR RESISTANCE TO FOLIAR DISEASES

List of entries

S.No.	GNP. No.	Cross	Identity
1.	410	TMV 2 X NC AC 17142	
2.	741	Faizapur 1-5 X NC Ac 17090	ICG(FDRS)-64
3.	886	Comet X BC 76446 (292)	GB(FDS)-51
4.	895	NC Ac 400 X NC Ac 17090	GB(FDS)-29
5.	898	148-7-4-2-312-B X PI 259747	GB(FDS)-34
6.	901	Jh-60 X PI 259747	ICG(FDRS)-60
7.	903	Tifspan X NC Ac 17090	ICG(FDRS)-25
8.	922	OG 69-6-1 X PI 259747	ICG(FDRS)-53
9.	925	Ah-6279 X PI 259747	GB(FDS)-68
10.	926	Dh 3-20 X PI 259747	GB(FDS)-69
11.	943	NC Ac 17 X NC Ac 17090	ICG(FDRS)-54
12.	972	OG 69-6-1 X NC Ac 17090	GB(FDRS)-126
13.	973	NC Ac 2768 X NC Ac 17090	ICG(FDRS)-55
14.	988	Comet X NC Ac 17090	GB(FDS)-143
15.	991	NG-268 X NC Ac 17090	GB(FDS)-147
16.	993	SM-1 X BC 76446 (292)	ICG(FDRS)-31
17.	1002	Comet X NC Ac 17090	GB(FDS)-158
18.	1013	PSB-7-2 X NC Ac 17090	GB(FDS)-170
19.	1014	TMV 10 X PI 259747	GB(FDS)-171
20.	1020	G-37 X NC Ac 17090	ICG(FDRS)-56
21.	1046	NC Ac 1107 X NC Ac 17090	ICG(FDRS)-57
22.	1052	Tifspan X NC Ac 17090	GB(FDS)-212
23.	1056	148-7-4-3-12-B X NC Ac 17090	GB(FDS)-216
24.	1058	HG-1 X NC Ac 17090	ICG(FDRS)-58
25.	1065	Jh-335 X NC Ac 17090	ICG(FDRS)-59
26.	1072	G-37 X BC 76446 (292)	ICG(FDRS)-24
27.	1080	Goldin-1 X PI 407454	GB(FDS)-243
28.	1082	Robut 33-1 X PI 298115	GB(FDS)-246

SCREENING OF DROUGHT TOLERANT BREEDING AND GERMLASH ACCESSIONS
FOR RESISTANCE TO POLIAR DISEASES

Field Layout

REP I	REP II
20	19
16	21
28	17
14	22
18	28
27	24
17	1
1	3
6	23
15	27
26	4
2	26
19	18
21	25
23	5
3	8
13	9
22	2
4	16
9	6
5	11
7	7
12	20
24	13
8	10
11	14
25	12
10	15

**PRELIMINARY SCREENING OF GERMPLASM FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES**

EXPERIMENT NO. : 6

PROJECT NO. : G-101 (85) IC

OBJECTIVE : To screen germplasm for resistance to rust and late leaf spot diseases.

SITE AND FIELD : ICRISAT Center, Patancheru, RP 11 B

SEED PREPARATION AND SOWING : Seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing along 60 cm wide ridges.

DATE OF SOWING : 25 June 1986

DESIGN : Unreplicated plots

PLOT SIZE : 4 m length single rows

NUMBER OF ACCESSIONS : 2060 (see next page)

FERTILIZER : 60 kg/ha P205 at land preparation; gypsum @ 400 kg/ha at pegging.

CROP PROTECTION : Insecticides as required.

IRRIGATION : Protective furrow irrigation. Sprinkler irrigation, if necessary, to enhance disease development.

OBSERVATIONS : 1) Scoring for rust and leaf spots on a 9-point scale at maturity.

PRELIMINARY SCREENING OF GERMPLOASMS FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES

List of germplasm accessions: ICG Nos.

209	4024	5998	6849	6919	6982
211	4026	6000	6850	6920	6983
212	4455	6001	6867	6921	6988
239	4027	6002	6868	6924	6993
1708	4777	6004	6869	6926	7000
1767	4768	6005	6870	6927	7014
2310	4778	6006	6871	6929	7015
2324	4783	6007	6866	6930	7016
2326	4785	6008	6872	6933	7017
2327	5788	6013	6873	6933	7018
2329	5676	6014	6875	6936	7019
2331	5677	6015	6876	6937	Range IV
2333	5716	6017	6877	6941	7021
2336	5717	6043	6878	6942	7022
2343	5718	6044	6881	6943	7023
2344	5719	6045	6883	6944	7024
2346	5722	6046	6884	6945	7025
2349	5724	6047	6886	6947	7026
2350	5725	6048	6887	6948	7027
2351	5929	6049	Range II	6949	7028
2352	5950	6051	6888	6950	7029
2354	5954	6053	6891	6951	7030
2356	5955	6058	6893	6952	7031
2359	5964	6259	6894	6954	7032
2366	5965	6353	6895	6958	7034
2367	5967	6896	6961	6961	7035
2370	5968	6671	6897	6963	7036
2371	Range II	6682	6898	6965	7037
2373	5969	6785	6999	6967	7038
2375	5972	6717	6900	6968	7039
2376	5983	6769	6901	6969	7040
2377	5985	6798	6902	6970	7041
2398	5986	6799	6903	6971	7042
2399	5987	6800	6904	6972	7043
2401	5990	6801	6910	6975	7044
2400	5990	6802	6915	6977	7045
3665	5995	6845	6916	6980	7046
4017	5997	6848	6917	6981	7047

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**PRELIMINARY SCREENING OF GERMLASM FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES**

List of germplasm accessions: ICG Nos. (continued/-)

7048	Range V	7133	7187	7234	7299
7049	7086	7134	7188	7236	7290
7050	7087	7135	7189	7238	7292
7051	7088	7136	7190	7239	7293
7052	7089	7137	7191	7241	7294
7053	7090	7138	7192	7242	7297
7054	7094	7139	7193	7243	7298
7055	7095	7140	7194	7244	7299
7056	7097	7141	7196	7245	7300
7057	7098	7142	7197	7246	7303
7058	7099	7143	7198	7247	7304
7059	7100	7144	7199	7248	7305
7060	7102	7145	7200	7249	7306
7061	7103	7146	7201	Range VII	7307
7062	7104	7147	7203	7250	7308
7063	7105	7148	7204	7252	7309
7064	7106	7149	7205	7254	7310
7065	7107	7150	7206	7255	7312
7066	7108	7151	7207	7257	7313
7067	7109	7152	7211	7258	7314
7068	7110	7153	7212	7259	7316
7069	7111	7155	7213	7260	7317
7070	7112	7156	7214	7264	7318
7071	7113	7157	7215	7265	7319
7072	7114	7158	7216	7266	7321
7073	7115	7159	7208	7267	7323
7074	7116	7160	7209	7268	7329
7075	7118	Range VI	7210	7271	7332
7076	7120	7161	7218	7272	7333
7077	7121	7162	7219	7273	7334
7078	7122	7163	7221	7274	7335
7079	7123	7165	7222	7277	7336
7080	7124	7166	7224	7278	7337
7081	7125	7167	7225	7279	7338
7082	7126	7168	7226	7281	7342
7083	7127	7169	7227	7282	7345
7084	7128	7170	7228	7283	7346
7085	7129	7171	7229	7284	7347
7091	7130	7173	7230	7285	7349
7092	7131	7174	7231	7286	7350
7093	7132	7186	7233	7288	

**PRELIMINARY SCREENING OF GERMPLASM FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES**

List of germplasm accessions: ICG Nos. (continued/-)

RangeVIII	7401	7452	7502	7706	RangeXI
7352	7402	7453	7503	7707	7767
7354	7403	7454	7504	7078	7768
7455	7404	7455	7506	7710	7770
7356	7405	7456	7507	7711	7771
7357	7407	7457	7619	7713	7772
7358	7409	7458	7621	7716	7774
7360	7410	7459	7622	7717	7777
7361	7412	7460	7623	7718	7785
7363	7413	7461	7624	7719	7786
7364	7414	7462	7625	7720	7787
7365	7415	7463	7626	7721	7788
7366	7418	7464	7627	7722	7789
7367	7421	7465	Range X	7724	7792
7368	7422	7466	7632	7726	7793
7369	7423	7467	7658	7727	7794
7390	7424	7468	7660	7728	7798
7371	7425	7469	7661	7729	7799
7372	7426	7470	7663	7730	7801
7373	7427	7473	7664	7731	7802
7374	7428	7474	7667	7736	7806
7375	7429	7476	7668	7737	7808
7376	7431	7478	7671	7739	7811
7377	7432	7479	7669	7740	7812
7378	7434	7480	7674	7741	7817
7379	7436	7481	7675	7742	7818
7380	7437	7482	7678	7743	7822
7381	Range IX	7485	7682	7744	7891
7382	7438	7486	7683	7745	7905
7383	7439	7487	7684	7747	7906
7385	7440	7488	7686	7748	7907
7386	7441	7490	7688	7749	7912
7388	7442	7491	7692	7750	7915
7389	7444	7492	7694	7752	7918
7391	7445	7493	7695	7753	7920
7392	7446	7494	7699	7755	7921
7393	7447	7496	7701	7756	7922
7394	7448	7497	7702	7757	7924
7395	7449	7499	7703	7758	7925
7397	7450	7500	7704	7764	7926
7399	7451	7501	7705		7927

PRELIMINARY SCREENING OF GERMPASM FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES

List of germplasm accessions: ICG Nos. (continued/-)

7929	9639	9679	9723	8006	8070
7930	9640	9680	9724	8007	8071
7931	9641	9681	9725	8009	8072
7933	9642	9682	9726	8011	8073
7935	9643	9683	9727	8013	8076
7940	9644	9684	9728	8015	8078
7941	9645	9685	9729	8016	8079
7942	9646	9686	9730	8017	8080
7944	9647	9687	9731	8018	8081
7946	9648	9688	9732	8019	8083
7948	9649	9689	IR	8020	8084
7949	9650	9690	7965	8021	8085
7950	9651	9691	7966	8022	8086
7951	9652	9692	7967	8023	8087
7952	9653	9693	7969	8025	8088
7953	9654	9694	7970	8026	8089
7954	9655	9695	7971	8028	8090
7955	9656	9696	7972	8029	8092
7956	9657	9697	7974	8031	8093
7957	9658	9698	7975	8032	8095
7958	9659	9700	7976	8034	8096
7959	9660	9701	7977	8035	8097
7961	9661	9702	7978	8037	8098
7964	9662	9703	7979	8038	8101
IR	9663	9704	7980	8042	8102
9621	9664	9705	7981	8045	8103
9622	9665	9706	7983	8046	8105
9623	9666	9707	7984	8047	8106
9624	9667	9708	7986	8048	8107
9633	9668	9709	7988	8049	8108
9635	9669	9710	7991	8050	8110
9636	9670	9711	7994	8051	8111
9634	9671	9712	7994	8052	8113
9637	9672	9713	7996	8053	8114
9638	9673	9714	7997	8055	8115
9625	9674	9715	7998	Range X111	8116
9627	9675	9716	8000	8056	8117
9628	9676	9718	8001	8058	8119
9639	Range X11	9719	8002	8059	8120
9630	9677	9720	8003	8061	8121
9631	9678	9721	8004	8062	8217
9632		9722	8005	8065	8218

PRELIMINARY SCREENING OF GERMPLOSM FOR RESISTANCE TORUST AND LATE LEAF SPOT DISEASESList of germplasm accessions: ICG Nos. (continued/-)

8219	9756	9802	9847	8297	9020
8220	9757	9803	9849	8299	9012
8221	9758	9804	9851	8300	9022
8222	9759	9805	9852	8302	RANGE XIV
8223	9760	9806	9853	8304	9023
8224	9761	9807	9854	8306	9024
8225	9762	9808	9855	8307	9025
8228	9763	9809	9856	8308	9026
8229	9764	9810	9859	8310	9027
8230	9765	9812	9860	8312	9029
8231	9767	9813	9861	8313	9030
8233	9768	9815	9862	8314	9031
8234	9769	9816	9863	8315	9034
8238	9770	9818	9864	8317	9035
8239	9771	9819	9865	8318	9036
8242	9772	9821	IR	8319	9037
8243	9773	9822	8248	8320	9038
8246	9774	9823	8249	8321	9039
8247	9975	9824	8250	8322	9040
IR	9776	9825	8251	8977	9041
9733	9777	9826	8259	8978	9043
9734	9778	9827	8260	8979	9045
9735	9779	9828	8262	8980	9046
9736	9780	9829	8264	8981	9047
9738	9781	9830	8265	8982	9050
9739	9782	9831	8266	8983	9051
9740	9783	9832	8268	8984	9052
9741	9784	9834	8269	8987	9053
9742	9785	9835	8271	8988	9054
9744	9786	9836	8277	8993	9055
9743	9787	9837	8281	8994	9056
9745	9788	9838	8284	8997	9059
9746	9789	9839	8285	9002	9060
9747	9790	9840	8289	9003	9061
9748	9791	9841	8291	9007	9062
9750	9793	9842	8292	9008	9064
9752	9794	9843	8293	9011	9065
9753	9797	9844	8294	9013	9066
9754	9799	9845	8295	9015	9070
9755	9801	9846	8296	9016	9071

PRELIMINARY SCREENING OF GERMPASM FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES

List of germplasm accessions: ICG Nos. (continued/-)

9072	9878	10651	10505	10420	9925
9073	9879	10608	10498	10419	9926
9075	9880	10605	10497	10416	9927
9076	9881	10604	10496	10415	9928
9077	9882	10603	10495	10413	9929
9078	9884	10602	10494	10412	9930
9079	9885	10600	10488	10411	9931
9080	9887	10599	10487	10410	9932
9081	9888	10597	10486	10409	9936
9082	9889	10596	10485	10408	9937
9083	9890	10595	10484	10407	9938
9084	9891	10590	10482	10406	9939
9085	9893	10589	10480	10400	9940
9086	9894	10586	10479	10499	9941
9087	9895	10585	10475	10398	9943
9088	9896	10580	10471	10396	9944
9089	9897	10578	10468	10395	9946
9091	9898	10576	10467	10394	9947
9092	9899	10572	10465	10393	9949
9093	9900	10571	10460	10389	9950
9094	9901	10570	10457	10386	9951
9095	9902	10547	10456	10385	9952
9096	9903	10546	10454	10383	9953
9100	9904	10543	10453	10380	9954
9101	9905	10542	10452	10375	9956
9103	9906	10541	10451	10374	9958
9104	9909	10540	10450	10371	9961
9105	9910	10539	10449	10368	9962
9106	9912	10538	10448	10367	9963
9107	9914	10536	10447	10366	9964
IR	9915	10535	10446	10364	9965
9866	9919	10526	10441	10363	9966
9867	9920	10533	10440	10361	9967
9868	9921	10532	10433	10355	9972
9869	9922	10530	10431	10354	9973
9870	9923	10528	10430	10353	9974
9871	9924	10527	10438	10352	9975
9872	RANGE XVI	10552	10426	10351	9976
9873	ICGS 11	10518	10425	ECONOMICS	9980
9875	ICGS 11	10514	10424	IR	9982
9876	ICGS 11	10510	10423	IR	9983
9877	10660	10506	10421		9984

**PRELIMINARY SCREENING OF GERMPLEASE FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES**

List of germplasm accessions: ICC Nos. (continued/-)

9985	9162	9234	9269	10094	11003
9986	9164	9225	9270	10095	11002
IR	9165	9226	9271	10096	10999
9108	9168	9228	9272	10097	10998
9109	9169	9229	9273	10100	10997
9110	9171	9230	9274	10102	10996
9111	9173	9231	9275	10103	10995
9112	9177	9232	9276	10104	10994
9113	9178	9233	9277	10105	10993
9114	9180	9234	9278	10107	10992
9115	9181	9235	9280	10110	10991
9119	9182	9237	9281	10112	10990
9120	9184	9239	9282	10120	10989
9121	9186	9240	9284	10115	10988
9122	9188	9241	9285	10123	10987
9123	9189	9243	9286	10126	10947
9124	9190	9244	9287	10127	10929
9125	9194	9245	9288	10129	10906
9126	9195	9246	9289	10131	10905
9127	9196	9247	9290	10132	10887
9128	9197	9248	9291	10133	10886
9129	9198	9249	9292	10136	10821
9130	9199	9250	9293	10138	10817
9131	9201	9251	9296	10139	10816
9132	9202	9252	9298	10141	10814
9133	9203	9253	IR	10142	10813
9134	9204	9255	9987	10143	10810
9136	9205	9256	9988	10145	10807
9137	9207	9257	10078	10146	10804
9138	9206	9258	10079	10147	10801
9142	9208	9259	10080	10149	10800
9144	RANGE XVII	9260	10081	10150	10796
9145	9209	9261	10082	IR	10795
9148	9211	9262	10083	IR	10793
9213	9263	10084	ECONOMICS	10791	
9154	9264	10085	11014	10785	
9155	9219	9265	10088	11013	10783
9156	9220	9266	10090	11011	10779
9157	9222	9267	10091	11010	10776
9159	9223	9268	10092	11009	10775

**PRELIMINARY SCREENING OF GERMPLEASE FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES**

List of germplasm accessions: ICG Nos. (continued/-)

10770	10712	RANGE XIX	9441	9491	10245
10769	10711	9397	9442	9492	10246
10767	10710	9398	9444	9493	10247
10766	10709	9399	9445	9494	10248
10765	10708	9400	9446	9496	10250
10763	10707	9401	9447	9497	10251
10761	10706	9402	9448	9498	10252
10760	10705	9403	9449	9508	10253
10758	10704	9404	9450	9509	10254
10755	10703	9405	9451	9510	10255
10753	10702	9406	9454	9511	10257
10752	10701	9407	9455	9512	10260
10751	10700	9408	9456	9513	10261
10750	10699	9409	9457	9514	10262
10747	10698	9410	9458	9515	10265
10746	10696	9411	9460	IR	10266
10745	10695	9412	9461	10219	10267
10744	10691	9413	9462	10220	10269
10743	10689	9414	9463	10221	10270
10740	10688	9415	9465	10222	10273
10739	10687	9416	9466	10223	10274
10737	10686	9417	9467	10224	10275
10734	10685	9418	9472	10225	
10732	10684	9421	9473	10226	
10731	10683	9422	9474	10227	
10730	10682	9423	9481	10228	
10729	10681	9424	9482	10229	
10728	10680	9425	9483	10230	
10727	10679	9426	9485	10231	
10726	10678	9428	9486	10232	
10725	10677	9429	9475	10233	
10724	10675	9431	9476	10235	
10723	10665	9432	9477	10236	
10722	10661	9434	9478	10237	
10715	ICGS 11	9435	9479	10238	
10721	ICGS 11	9436	9480	10239	
10718	ICGS 11	9437	9487	10240	
10717		9438	9488	10242	
10716		9439	9489	10243	
10714		9440	9490	10244	

PRELIMINARY SCREENING OF GERMPHASM FOR RESISTANCE TO
RUST AND LATE LEAF SPOT DISEASES

List of germplasm accessions: ICG Nos. (continued/-)

11200	11028
11199	11024
11198	11025
11197	11027
11196	11023
11194	11022
11193	11021
11191	11020
11158	11019
11157	11018
11155	11017
11151	11016
11150	
11149	
11148	
11102	
11103	
11099	
11097	
11095	
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11031	

EVALUATION OF METHODS OF SCREENING OF GERMPASM FOR RESISTANCE TO**LEAF SPOT**

EXPERIMENT NO.	: 7
PROJECT NO.	: G-101 (85) IC
OBJECTIVE	: To develop methods for screening of germplasm for resistance to early leaf spot.
SITE AND FIELD	: ICRISAT Center, Patancheru, RCW 1 isolation field.
SEED PREPARATION AND SOVING	: Seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing along 75 cm wide ridges.
DATE OF SOVING	: 14 July 1986
DESIGN	: Randomized Block Design with 5 replications.
PLOT SIZE	: 1.5 m width X 4 m length [An "infecter row" (PI 259747) is arranged after every two test rows].
NUMBER ENTRIES	: 10 (see next page)
FERTILIZER	: 60 kg/ha P205 at land preparation; gypsum @ 400 kg/ha at pegging.
CROP PROTECTION	: Insecticides as required. Calixin (@ 150 mL in 500 L of water/ha) at 10-day interval to control rust.
IRRIGATION	: Protective furrow irrigation. Sprinkler irrigation, if necessary, to enhance disease development.
INOCULATION	: Potted spreader plants infected with early leaf spot were transplanted in the center of each infecter row. Infecter rows were also inoculated with conidial suspensions of early leaf spot pathogen.
OBSERVATION	: 1) Assessment of early leaf spot disease severity at regular intervals.

ISOLATION PLOT
RCW 1



bridge

EVALUATION OF METHODS OF SCREENING OF GERMPLOSH FOR RESISTANCE TO
EARLY LEAF SPOT

List of genotypes

1. PI 381622
2. C.No. 45-23
3. PI 259747
4. PI 270806
5. PI 393516
6. TMV 2
7. PI 393527-B
8. NC Ac 17090
9. NC 3033
10. NC Ac 17133

Field layout:

7	1	9		6	8		10	4	5
5	8	4					9	2	3
10	6	1		8			5	9	7
7	4	8		10				1	6
1	1		4				8	9	10

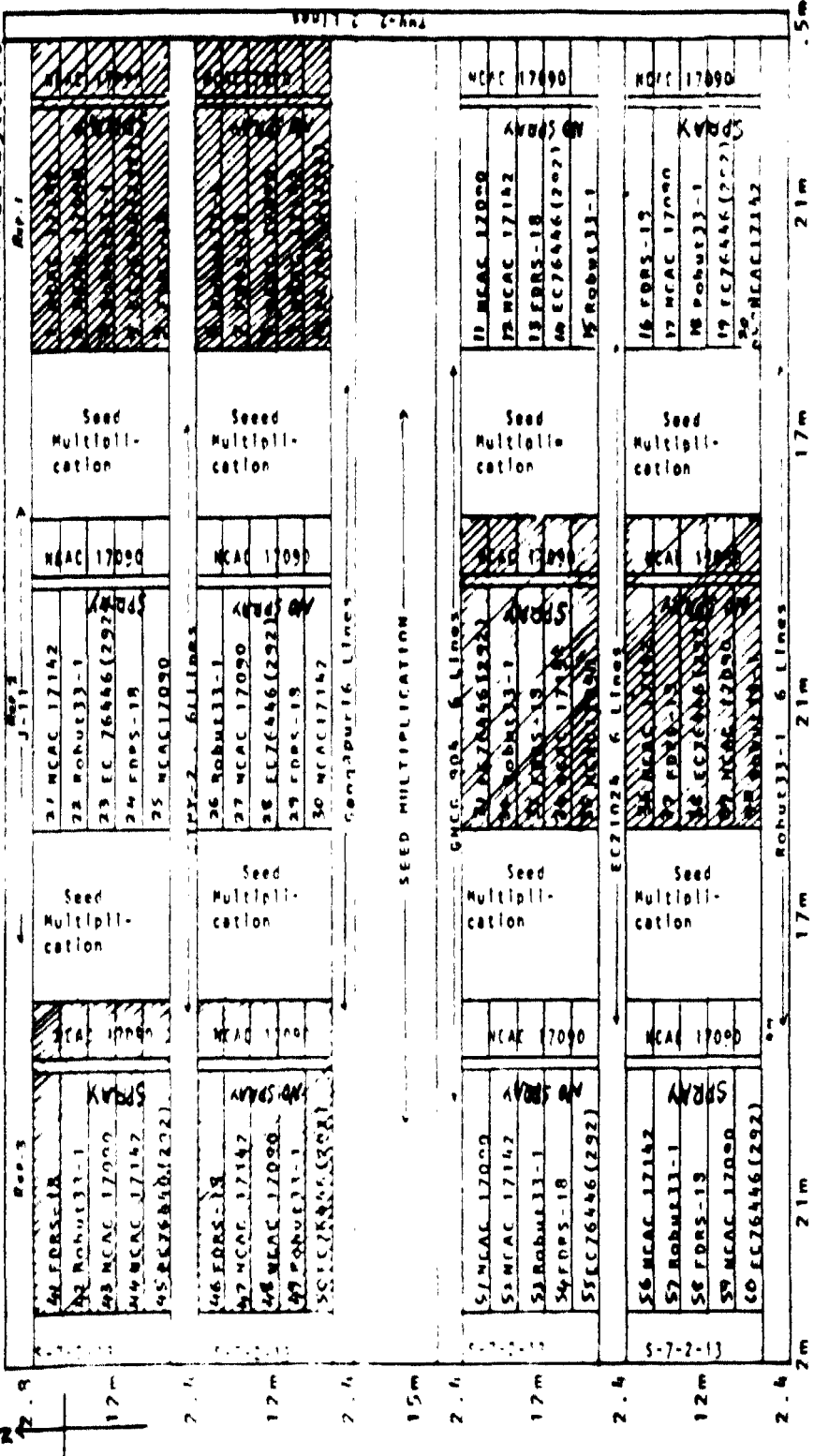
PHOTOPERIOD X DISEASE INTERACTION

- EXPERIMENT NO.** : 8
- PROJECT NO.** : G-101 (85) IC
- OBJECTIVES** : To study photoperiod effects in groundnuts in relation to disease expression and adaptation for yield stability.
- SITE AND FIELD** : ICRISAT Center, Patancheru, RP 3 C
- SEED PREPARATION AND SOVING** : Seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing on flat with a row to row distance of 30 cm.
- DATE OF SOVING** : 29 June 1986
- DESIGN** : Split-Split Plot Design with 3 replications.
- PLOT SIZE** : 7 rows of 16.5 m length
- TREATMENTS** : I. Genotypes:
 1. ICG(PDRS)-18
 2. NC Ac 17090
 3. NC Ac 17142
 4. Robut 33-1
 5. EC 76446(292)
- II. Light:
 1. Extended photoperiod
 2. Normal photoperiod
- III. Fungicide treatment:
 Chlorothalonil @ 1.33 kg/ha
 in 500 L of water/ha.
 Check plots sprayed with 500 L of water/ha.
- FERTILIZER** : 40 kg/ha P2O5 at land preparation; gypsum @ 400 kg/ha at pegging.
- CROP PROTECTION** : Insecticides as required
- IRRIGATION** : As and when required.
- OBSERVATIONS** : 1) Assessment of rust and leaf spots damage at 15-day interval until harvest.

- 2) Growth analysis
- 3) Final stand count.
- 4) Yield of pots and haulms.
- 5) Shelling percentages.

PHOTOPTRIO X DISEASE X GENOTYPE EXPERIME

KHARIF 1986 BP3 C
Sowing Date: 26.6.96
RAIN FALL: 29.6.R6



MIXED GENOTYPE TRIAL

- EXPERIMENT NO.** : 9
- PROJECT NO.** : G-101 (85) IC
- OBJECTIVES** : To study the intergenotype interaction in relation to resistance to rust and late leaf spot diseases and yield advantages in groundnut.
- SITE AND FIELD** : ICRISAT Center, Patancheru, RP 3 C
- SEED PREPARATION AND SOVING** : Seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing on flat with a row to row distance of 30 cm.
- DATE OF SOVING** : 29 June 1986
- DESIGN** : Split Plot Design with 4 replications.
- PLOT SIZE** : 4 rows of 11.5 m length
- TREATMENTS** : I. Genotype combinations:
 1. THV 2
 2. Gangapuri
 3. ICG(PDRS)-18
 4. ICG(PDRS)-11
 5. THV 2/Gangapuri
 6. THV 2/ICG(PDRS)-18
 7. THV 2/ICG(PDRS)-11
 8. Gangapuri/ICG(PDRS)-18
 9. Gangapuri/ICG(PDRS)-11
 10. ICG(PDRS)-18/ICG(PDRS)-11
- II. Spray:
 Chlorothalonil @ 1.33 kg/ha in 500 L of water/ha.
 Check plots sprayed with 500 L of water/ha.
- FERTILIZER** : 40 kg/ha P2O5 at land preparation; gypsum @ 400 kg/ha at pegging.
- CROP PROTECTION** : Insecticides as required
- IRRIGATION** : As and when required.

OBSERVATIONS

- 1) Assessment of rust and leaf spots damage at 90 and 110 days after sowing.
- 2) Final stand count.
- 3) Yield of pods and haulms.
- 4) Shelling percentages.

EFFECT OF INTERCROPPING ON FOLIAR DISEASES OF GROUNDNUT

- EXPERIMENT NO.** : 10
- PROJECT NO.** : G-101 (85) IC
- OBJECTIVES** : To measure the microclimate of groundnut and millet, and in groundnut-millet intercrop stand; to relate spore dispersal and groundnut foliar diseases development to microclimate; and to quantify losses in crop yield in terms of damage to leaf area and to changes in canopy photosynthesis.
- SITE AND FIELD** : ICRISAT Center, Patancheru, RP 4 B
- SEED PREPARATION AND SOWING** : Groundnut seeds were treated with Thiram @ 3 g/kg seed just before sowing. Seeds were sown singly at 10 cm spacing on flat with a row to row distance of 30 cm. Millet was sown at 15 cm spacing on flat with a row to row distance 30 cm.
- DATE OF SOWING** : 7 July 1986
- DESIGN** : Randomised Block Design with 3 replications.
- PLOT SIZE** : 30 m x 12 m
- TREATMENTS** : I. Cropping systems:
 1. Sole groundnut (Robut 33-1)
 2. Sole millet (BK 560)
 3. Groundnut intercropped with millet (1 millet row for every 3 rows of groundnut).
 II. Spray treatment:
 Groundnut sprayed with chlorothalonil @ 1.33 kg/ha in 500 L of water/ha.
 Check plots sprayed with 500 L of water/ha.
- FERTILIZER** : Basal 18 N, 46 P2O5 (100 kg/ha DAP) to both crops. Top dressing 62 N (135 kg/ha urea) to millet only.
- CROP PROTECTION** : Insecticides as required

IRRIGATION

: None

OBSERVATIONS

- 1) Microclimate measurements;
 - A) Temperature
 - B) Solar radiation
 - C) Soil moisture
 - D) Leaf temperature
 - E) Soil temperature
 - F) Wind speed
 - G) Relative humidity
 - H) Duration of leaf wetness
- 2) Date of emergence.
- 3) Days to flower.
- 4) Assessment of rust and leaf spots development at 15 day interval until harvest.
- 5) Quantification of conidia of groundnut foliar pathogens in the air.
- 6) Yield of groundnut and millet.
- 7) Yield components.

EFFECT OF INTERCROPPING ON GROUNDNUT FOLIAR DISEASES
1986 RAINY SEASON RP4 B

Replication I

SGS 1	SM 2	MGS 3	SGUS 4	MGUS 5
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Replication II

SGUS 6	SGS 7	MGUS 8	SM 9	MGS 10
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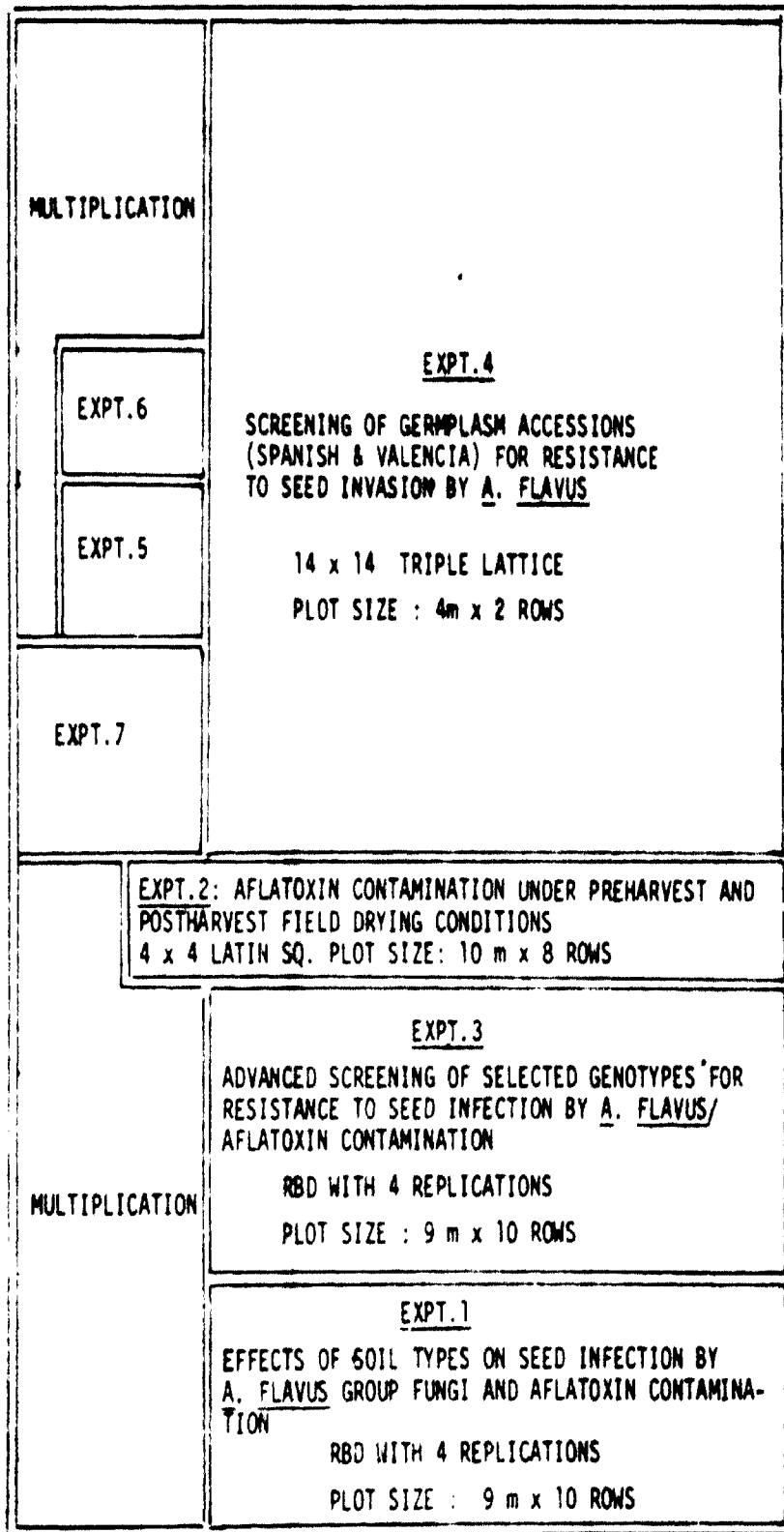
Replication III

SM 11	MGS 12	SGS 13	SGUS 14	MGUS 15
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- SM = Sole millet
 SGS = Sole groundnut sprayed
 SGUS = Sole groundnut unsprayed
 MGS = Millet/groundnut intercrop sprayed
 MGUS = Millet/groundnut intercrop unsprayed



SOIL-BORNE DISEASES & AFLATOXIN
FIELD LAYOUT RCE 23



D.V.O.

R O A D

**EFFECTS OF SOIL TYPES ON SEED INFECTION BY ASPERGILLUS FLAVUS
GROUP FUNGI AND AFLATOXIN CONTAMINATION OF GROUNDNUT GENOTYPES**

EXPERIMENT No.	:	1
PROJECT No.	:	G-102 (85) IC
OBJECTIVES	:	To examine soil types in relation to <u>A. flavus</u> infection of seeds and aflatoxin contamination of groundnut genotypes.
SITE	:	ICRISAT Center Farm
SOILTYPES AND FIELDS	:	1. Red soil : Field RCW 17 A 2. Red soil : Field RM 14 C 3. Light sandy loam: Field RCE 23 4. Black soil: Field RBS 1 D
LAYOUT	:	RBD with 4 replications
PLOT SIZE	:	9 m x 10 rows (rows 30 cm apart)
SOILING DETAILS	:	Seeds were sown singly at 10 cm spacing in rows, 30 cm apart.
DATE OF SOILING	:	17 June 1986
PESTICIDES	:	Insecticides to give research protection.
FERTILIZER	:	P205 40 kg/ha (applied at the time of land preparation)
TREATMENTS	:	<u>Genotypes: 8</u> A. J 11 B. JL 24 C. Ah 7223 D. UF 71513 E. TMV ? F. PI 337394 F G. EC 76446 (292) H. NC Ac 17090
OBSERVATIONS	:	1. Record seed infection by <u>A. flavus</u> at harvest. 2. Check for occurrence of aflatoxins in seeds of genotypes at harvest.

G-PATH-10 : EXPT.1
FIELD LAYOUT RCE 23

G	D	A	H	E	F	C	B
25	26	27	28	29	30	31	32
H	C	A	E	F	G	B	D
17	18	19	20	21	22	23	24
F	D	E	A	B	C	H	G
9	10	11	12	13	14	15	16
B	C	D	E	F	G	F	H
1	2	3	4	5	6	7	8

RCAI

G-PATH-10 : EXPT.1
FIELD LAYOUT ROW 17 A

H 57	A 58	B 59	G 60	C 61	D 62	F 63	E 64
F 49	C 50	A 51	D 52	H 53	E 54	B 55	G 56
H 41	F 42	C 43	B 44	A 45	D 46	G 47	E 48
D 33	G 34	A 35	H 36	C 37	F 38	E 39	B 40

R O A D

G-PATH-10 : EXPT. 1

FIELD LAYOUT N0 14 C

C	F	E	A	G	D	B	H
88	89	91	92	93	94	95	96
F	D	A	C	E	H	B	G
97	98	83	84	85	86	87	88
F	A	E	C	D	B	H	G
73	74	75	76	77	78	79	80
B	C	F	G	A	D	E	H
65	66	67	68	69	70	71	72

R O A D

G-PATH-10 : EXPT.1
FIELD LAYOUT BUS 1 D

B	H	E	G	C	D	F	A
121	122	123	124	125	126	127	128
A	B	G	F	C	E	D	H
113	114	115	116	117	118	119	120
C	E	H	B	F	A	D	G
105	106	107	108	109	110	111	112
G	C	B	D	H	F	E	A
97	98	99	100	101	102	103	104

R O A D

AFATOXIN CONTAMINATION UNDER PREHARVEST AND POSTHARVEST FIELD

- EXPERIMENT No** : 2
- PROJECT No** : G-102 (85) IC
- OBJECTIVES** :
1. To investigate the time of seed infection by Aspergillus flavus and aflatoxin contamination under different agroecological conditions.
 2. To test varietal resistance to A. flavus
- SITE AND FIELD** :
1. ICRISAT Center Farm, Field RCE 23
 2. Marathwada Agricultural University, Latur
 3. National Research Center for Groundnut, Junagadh.
 4. Tamil Nadu Agricultural University, Regional Agricultural Research Station, Vriddhachalam.
 5. University of Agricultural Sciences, Regional Research Station, Dharwad
 6. Agricultural Research Station, Dargapura
 7. JNKVV, Regional Agricultural Research Station, Tikamgarh
 8. Regional Oilseeds Research Station, Kadiri
- LAYOUT** : 4 x 4 Latin square design
- PLOT SIZE** : 10 m x 8 rows
(rows 30 cm apart)
- SOWING DETAILS** : Seeds were sown singly at 10 cm spacing in rows, 30 cm apart.
- DATE OF SOWING** : 23 June 1986
- PESTICIDES** : Insecticides to give research protection
- FERTILIZER** : P205 40 kg/ha (applied at the time of land preparation)

- TREATMENTS** : Cultivars: 4
- A. J11
 - B. Ah 7223
 - C. Local cultivar
 - D. JL 24
- OBSERVATIONS** :
- 1) At harvest
 - a) Moisture content of seeds
 - b) Record seed infection by A. flavus group fungi
 - c) Check for occurrence of aflatoxins in seeds of genotypes
 - 2) After 3 days windrow drying
 - a) Moisture content of seeds
 - b) Record seed infection by A. flavus group fungi.
 - c) Check for occurrence of aflatoxins in seeds of genotypes.

G-PATH-10 : EXPT. 2
FIELD LAYOUT RCE 23

—
N

13	14	15	16
9	10	11	12
5	6	7	8
1	2	3	4

ROAD

**SCREENING OF SELECTED GENOTYPES FOR RESISTANCE TO SEED INFECTION
BY ASPERGILLUS FLAVUS AND AFLATOXIN CONTAMINATION; ADV
SCREENING TRIAL-1**

EXPERIMENT No : 3

PROJECT No : G-102 (85) 1C

OBJECTIVES : Screening of selected genotypes for resistance to seed infection by A. flavus and aflatoxin contamination under different agroecological conditions.

SITE AND FIELD : 1. ICRISAT Center Farm, Field RCB 23
2. ICRISAT Dry farming Research Station, Anantapur.

LAYOUT : RBD with 4 replications

PLOT SIZE : 9 m x 10 rows (rows 30 cm apart)

SOVING DETAILS : Seeds were sown singly at 10 cm spacing in rows, 30 cm apart.

DATE OF SOVING : 23 June 1986

: Insecticides to give research protection.

FERTILIZER : P2O5 40 kg/ha (applied at the time of land preparation)

: Genotypes: 9

A. J 11
B. NC Ac 17090
C. U 4-47-7
D. Exotic-6
E. Ah 7223
F. C 55-437
G. PI 337394 P
H. UF 71513
I. JL 24

1) Record seed infection by A. flavus at harvest

2) Check for occurrence of aflatoxins in seeds of groundnut genotypes at harvest.



**6-PATH-10 : EXPT. 3
FIELD LAYOUT RCE 23**

28	H	I	C	E	B	F	A	D	G
		29	30	31	32	33	34	35	36
19	A	E	H	G	B	I	F	C	D
		20	21	22	23	24	25	26	27
10		G	I	H	A	E	D	B	F
		11	12	13	14	15	16	17	18
1	C	G	B	H	I	D	A	F	E
		2	3	4	5	6	7	8	9

ROAD



---PATH-10: EXPT. 3
FIELD LAYOUT ANARRA FOR 15 N

63	D	A	F	B	E	C	I	H
64	C	F	I	B	G	H	E	A
65	B	D	E	A	H	I	G	C
66	F	A	D	I	H	B	G	C
67	D	F	I	B	G	H	E	A
68	C	F	I	B	G	H	E	A
69	B	D	E	A	H	I	G	C
70	F	A	D	I	H	B	G	C
71	D	F	I	B	G	H	E	A
72	B	D	E	A	H	I	G	C

ROAD

SCREENING OF GROUNDNUT GERMPASM ACCESSIONS (SPANISH & VALENCIA)
FOR RESISTANCE TO SEED INVASION BY ASPERGILLUS FLAVUS GROUP OF FUNGI

EXPERIMENT No : 4

PROJECT No : G-102 (85) 1C

OBJECTIVES : Screening of spanish and Valencia genotypes for resistance to seed invasion by A. flavus group of fungi.

SITE AND FIELD : ICRISAT Center Farm, Field RCE 23

LAYOUT : 14 x 14 Triple Lattice with 2 systematic checks after every 7 entries.

PLOT SIZE : 4 m x 2 rows
(rows 30 cm apart)

SOWING DETAILS : Seeds were sown singly at 10 cm spacing in rows, 30 cm apart.

DATE OF SOWING : 23 June 1986

PESTICIDES : Insecticides to give research protection.

FERTILIZER : P205 40 kg/ha (applied at the time of land preparation)

TREATMENTS : 196 spanish and valencia genotypes (list given in the following pages).
 Checks: 1. J11 (Resistant)
 2. JL 24 (Susceptible)

OSERVATIONS : 1) Record seed infection by A. flavus group of fungi and also by other fungi.

LIST OF GENOTYPES:

S.No.	ICG No.
1	1908
2	2716
3	3527
4	5204
5	5258
6	5260
7	5274
8	5296
9	5609
10	5701
11	6280
12	6595
13	6997
14	7299
15	7308
16	7333
17	7364
18	7366
19	7373
20	7375
21	7382
22	7892
23	7418
24	7457
25	7497
26	7502
27	7509
28	7516
29	7518
30	7519
31	7521
32	7524
33	7528
34	7529
35	7531
36	7533
37	7535
38	7536
39	7538
40	7546
41	7548
42	7549
43	7551
44	7552
45	7557
46	7562
47	7564
48	7567
49	7571
50	7572

S.No.	ICG No.
51	7576
52	7577
53	7586
54	7589
55	7595
56	7598
57	7610
58	7631
59	7656
60	7660
61	7707
62	7790
63	7792
64	7793
65	7831
66	7881
67	7896
68	7897
69	7905
70	7930
71	7970
72	7979
73	8002
74	8003
75	8004
76	8090
77	8260
78	8360
79	8517
80	8525
81	8595
82	8621
83	8750
84	8751
85	8831
86	8851
87	9032
88	9034
89	9149
90	9176
91	9195
92	9250
93	9361
94	9382
95	9437
96	9538
97	9562
98	9574
99	9579
100	9580
101	9581
102	9582

S. No.	ICG No.
103	9585
104	9591
105	9601
106	9603
107	9604
108	9610
109	9614
110	9624
111	9627
112	9631
113	9633
114	9635
115	9644
116	9645
117	9662
118	9673
119	9674
120	9705
121	9707
122	9755
123	9761
124	9765
125	9786
126	9791
127	9799
128	9804
129	9806
130	9809
131	9820
132	9831
133	9853
134	9887
135	9928
136	9996
137	10013
138	10020
139	10021
140	10025
141	10029
142	10030
143	10032
144	10036
145	10038
146	10041
147	10042
148	10047
149	10048
150	10049
151	10054
152	10057
153	10060
154	10061

S.No.	ICG No.
155	10067
156	10069
157	10073
158	10074
159	10079
160	10081
161	10095
162	10098
163	10122
164	10138
165	10143
166	10145
167	10147
168	10352
169	10361
170	10450
171	10567
172	10703
173	10751
174	10760
175	10918
176	10927
177	10928
178	10937
179	10954
180	10963
181	10965
182	10966
183	10969
184	10973
185	10975
186	10977
187	11108
188	11182
189	11205
190	11206
191	11220
192	11227
193	11232
194	11234
195	11248
196	11281
197	11311
198	JL 24

**SCREENING OF SELECTED GENOTYPES FOR RESISTANCE TO SEED INFECTION
BY ASPERGILLUS FLAVUS: ADVANCED SCREENING TRIAL-2**

EXPERIMENT No : 5

PROJECT No : G-102 (85) 1 C

OBJECTIVES : To screen selected genotypes for resistance to seed infection by A. flavus

SITE AND FIELD : ICRISAT Center Farm, Field RCE 23

LAYOUT : RBD with 3 replications

PLOT SIZE : 4 m x 2 rows (rows 30 cm apart)

SOVING DETAILS : Seeds were sown singly at 10 cm spacing in rows, 30 cm apart.

DATE OF SOVING : 24 June 1986

PESTICIDES : Insecticide to give research protection.

FERTILIZER : P205 40 kg/ha (applied at the time of land preparation)

TREATMENTS

Genotypes: 24

A. ICG 1326
B. ICG 1436
C. ICG 1720
D. ICG 1811
E. ICG 2359
F. ICG 3241
G. ICG 3251
H. ICG 3263
I. ICG 3336
J. ICG 3660
K. ICG 3700
L. ICG 4106
M. ICG 4562
N. ICG 4681
O. ICG 4749
P. ICG 7101
O. ICG 7633
R. ICG 8631
S. GNP 104
T. ICGS(E) 119
U. ICG 2716
V. ICG 1697
W. JL 24
X. TMV 2

OSERVATIONS

1) Recrod seed infection by A. flavus group of fungi and also by other fungi.

G-PATH-10 : EXPT. 5
FIELD LAYOUT RCE 23



49	C	U	K	L	D	A	S	V	I	N	T	P	H	R	B	Q	J	M	M	F	X	G	O	E
50	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	
25	G	N	H	U	C	B	M	F	O	I	E	D	J	A	X	Q	M	S	R	P	T	V	K	L
26	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
1	E	T	L	I	O	A	C	U	K	P	S	F	R	B	M	V	M	H	Q	D	N	J	G	X
2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

SCREENING OF CONFECTIONERY GROUNDNUT LINES FOR RESISTANCE TO SEED INFECTION BY ASPERGILLUS FLAVUS GROUP OF FUNGI

EXPERIMENT No	:	6
PROJECT No	:	G-102(85) 1C
OBJECTIVES	:	To screen confectionery groundnut lines for resistance to seed infection by <u>A. flavus</u> group of fungi and aflatoxin contamination.
SITE AND FIELD	:	ICRISAT Center Farm, Field RCE 23
LAYOUT	:	RBD with 3 replications
PLOT SIZE	:	4 m x 2 (rows 30 cm apart)
SOING DETAILS	:	Seeds were sown singly at 10 spacing in rows, 30 cm apart.
DATE OF SOING	:	24 June 1986
PESTICIDES	:	Insecticides to give research protection.
FERTILIZER	:	P205 40 kg/ha (applied at the time of land preparation)
TREATMENTS	:	Genotypes: 20 A. ICGV-86024 B. ICGV-86025 C. ICGV-86026 D. ICGV-86027 E. ICGV-86028 F. HYQ (CG) S-10 G. HYQ (CG) S-11 H. HYQ (CG) S-12 I. HYQ (CG) S-13 J. HYQ (CG) S-14 K. HYQ (CG) S-15 L. HYQ (CG) S-16 M. HYQ (CG) S-18 N. HYQ (CG) S-19 O. HYQ (CG) S-20 P. HYQ (CG) S-21 Q. 83/40-7 R. 83/221 S. 1110 T. 2241
OBSERVATIONS	:	1) Record seed infection by <u>A. flavus</u> group of fungi and also by other fungi. 2) Check for occurrence of aflatoxins in groundnut genotypes.

G-PATH-10: EXPT.6
FIELD LAYOUT RCE 23



O	J	G	M	K	A	B	H	Q	T	E	S	R	L	P	I	N	F	D	C
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
C	P	E	J	Q	S	I	D	L	B	A	G	H	R	T	M	F	O	N	K
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
A	I	C	F	O	N	P	B	E	D	M	L	K	J	H	G	R	Q	T	S
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

INFLUENCE OF ENVIRONMENTAL CONDITIONS ON AFLATOXIN CONTAMINATION OF GROUNDNUT

EXPERIMENT No	:	7
PROJECT No	:	G-102(85) 1C
OBJECTIVES	:	To investigate the effects of environmental conditions on seed infection by fungi and aflatoxin contamination of groundnut.
SITE AND FIELD	:	1. ICRISAT Center Farm, Field RCE 23 2. ICRISAT Center Farm, Field BUS 1 D 3. ICRISAT Dry Farming Research Station, Anantapur
LAYOUT	:	RBD with 4 replications
PLOT SIZE	:	9 m x 8 rows (rows 30 cm apart)
SOVING DETAILS	:	Seeds were sown singly at 10 cm spacing in rows, 30 cm apart.
PESTICIDES	:	Insecticide to give research protection
FERTILIZER	:	P205 40 kg/ha (applied at the time of land preparation)
TREATMENTS	:	1. Sowing dates: 2 1) 24 June 1986 2) 18 July 1986 2. Cultivars : 2 A. J 11 B. JL 24
OSERVATIONS	:	1. Record infection by <u>Aspergillus flavus</u> and other fungi and aflatoxin contamination of seeds at harvest and also after 3 days vindow drying. 2. Record geocarposphere soil-temperature and soil moisture during pod development.

G-PATH-10: EXPT. 7
 FIELD LAYOUT BUS 1 D

N

	A	A	B	A
	16	14	12	10
	B	B	A	B
	15	13	11	9

11nd PLANTING

P O M U

1st PLANTING

INVESTIGATIONS ON PEANUT MOTTLE VIRUS DISEASE

EXPERIMENT No : 1

PROJECT NO : G-106 (85) IC

OBJECTIVES : To screen groundnut germplasm and breeding lines for resistance to peanut mottle virus (PMV); to assess yield losses from PMV attack, and to test for non-seed transmission.

SITE AND FIELD : ICRISAT, Pafancheru, RP 7 C

TREATMENTS : 1. For resistance screening 216
One row inoculated with PMV.
One row intreated as check.

2. Screening of breeding lines
(Advanced selections crosses
with NC Ac 2240 tolerant to PMV).

FERTILIZERS : Single super phosphate (40 kg P2O5/ha)

SPACING : Row to row 75 cm; within row 15 cm

TOTAL AREA : 1 ha

DATE OF SOVING : June 19, 1985

PLANT PROTECTION : Research

OBSERVATIONS : 1. Record and tag all PMV infected plants at two week intervals.

2. For resistance and tolerance screening trials, yield and shelling percentage from inoculated and untreated rows to be taken.

3. For non-seed transmission all kernels from infected plants would be tested by ELISA. It usually ranges between 1000-2000 for each genotype.

SCREENING FOR RESISTANCE TO PEANUT MOTTLE VIRUS
 RAINY SEASON 1986. RP7 'C'



X	TMV-2	
IX	TMV-2	
VIII MIS	MIS	MIS
VII	NST	
VI SBL	NST	
V	GSR	SBL
IV	GSR	
III	GSR	
II	GSR	
I	ICGS-11	TMV-2

← 100 M ←

ROAD

9M

ROAD

- GSR = General screening for resistance
- SBL = Screening of breeding lines (Advanced selections, crosses with NC Ac 2240 tolerant to PMV)
- NST = Tests on non-seed transmission lines
- MIS = Multiplication of important seed material