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Field Studies for Varietal Resistance in Pigeonpea to Podfly, *Melanagromyza obtusa* Mall

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Pigeonpea is attacked by many insect pests, of which the podfly, *Melanagromyza obtusa* Mall is an important pest and it causes considerable damage to the crop (Ahmad, 1938; Gangrade, 1963; Kapadia and Talati, 1983). The maggots of podfly feed on seeds inside the green pods and make unfit for human consumption as well as for seed purpose. The maggots of podfly damage the pods in a range of 29 to 100 per cent in Shahdal (Gangrade, 1963), 30.1 to 49.6 per cent in Raipur (Chandrakar, *et al.* 1981) and 37.9 to 60.0 per cent in Gujarat (Kapadia and Talati, 1983). The losses in yield of pigeonpea due to podfly was recorded 11.25 per cent in Punjab (Agarwal, *et al.* 1985).

The extra early and early maturing varieties of pigeonpea are more suitable for cultivation in Gujarat State. Thus, looking to the importance of podfly in pigeonpea, fourty five improved genotypes belongs to extra early and early maturing group of pigeonpea were, therefore, tested in the present investigation for their resistance to podfly under field conditions. Each selected genotypes was planted (30 cm apart) in a plot size of 0.9 x 5 m during *kharif* 1984 and 1986 at Pulse Research Station, Junagadh. For observations, five plants were selected from central row randomly in each variety. All the pods of five plants were counted according to their damage characteristics and percentages pods and grains damaged by podfly were recorded at harvest and grades

TABLE 1

Susceptibility grades of different pigeonpea varieties on the basis of per cent grain damaged.

Grade	*Designation*	*Per cent grain damaged*
0	Immune	0
I	Highly resistant	Below 2
II	Resistant	2.1 — 5
III	Medium	5.1 — 15
IV	Susceptible	15.1 — 40
V	Highly susceptible	Above 40

were given for their susceptibility on the basis of per cent grain damage (Table 1). The plotwise yield data were also recorded. The average percentage of pods and grains damaged by podfly and grain yield/ha for the year 1984 and 1986 are presented in Table 2.

TABLE 2

Incidence of podfly and yield (kg/ha) of various genotypes of pigeonpea during 1984 and 1986.

No.	*Genotypes*	*Mean per cent pods damaged due to podfly*	*Mean per cent grain damaged by podfly*	*Grain yield (kg/ha)*
	1. Extra early maturity group (Less than 110 days)			
1.	AL 1	8.34	6.17	800
2.	AL 15	3.56	2.82	583
3.	DL 82	13.18	12.03	641
4.	H 76-57	6.77	5.43	641
5.	H 76-65	9.70	6.90	712
6.	ICPL 4	9.20	6.50	550
7.	ICPL 267	8.82	11.03	474
8.	H 76-20	9.15	7.24	675
9.	ICPL 87	8.87	8.60	733
10.	ICPL 155	9.13	7.21	800
11.	ICPL 315	10.04	8.43	550
12.	AL 13	2.84	2.10	533
13.	AL 56	7.92	8.07	816
14.	AL 57	7.92	8.30	666
15.	MTH 6	10.76	6.84	708
16.	ICPL 8301	5.81	3.90	441
17.	ICPL 8302	9.82	8.49	496
18.	ICPL 8303	15.85	12.88	673
19.	ICPL 8304	6.81	5.27	549
20.	ICPL 8306	14.90	12.25	550
21.	ICPL 8307	17.52	12.30	463
22.	ICPL 179	11.22	10.65	558
23.	TAT 10	5.97	4.84	900
24.	UPAS 120	3.39	1.88	1225
25.	PUSA 78-1	12.34	7.49	925

1.	2.	3.	4.	5.
26.	PUSA 78	8.17	5.87	716
27.	PUSA 33	5.79	4.25	858
28.	ICPL 161	7.39	5.69	734
29.	ICPL 317	7.11	4.08	583
30.	Pusa Swata 1	9.15	6.53	550
31.	Pusa Swata 2	11.43	9.12	592
32.	Prabhat	6.54	5.48	666
33.	ICPL 268	8.09	6.33	600
	2. Early maturity group (110 - 130 days)			
34.	MTH 3	7.83	7.16	891
35.	Pusa ageti	12.21	6.67	658
36.	TT 6	11.79	8.19	583
37.	ICPL 150	7.98	5.00	750
38.	Pusa 85	9.66	3.34	716
39.	CORG 4	7.54	4.48	1300
40.	CORG 5	7.46	4.23	1250
41.	T 21	9.97	6.18	1083
42.	ICPL 186	9.87	6.84	1100
43.	Phule T 14	10.33	6.49	1050
44.	MA 128-2	18.33	10.30	616
45.	77123	16.05	9.95	525

The pigeonpea varieties exhibited wide difference in their susceptibility to podfly, *M. obtusa*. Out of 45 varieties examined for resistance, none showed immunity; variety UPAS 120 exhibited high resistance and recorded 1.88 per cent grain damage by podfly. The percentage pod damage was also low (3.39%) in UPAS 120 due to unfavourable condition. However, in this variety there was pod damage to the extent of 45 per cent in Rajasthan (Pandey, *et al.*, 1984). The high resistance may be due to cumulative effect of non preference, antibiosis and tolerance (Painter, 1951). The varieties AL 15, AL 13, ICPL 8301, TAT 10 and Pusa 33 were also relatively resistant and there was low infestation in grains in these varieties to the extent of 2.82, 2.10, 3.90, 4.84 and 4.25 per cent respectively. All other varieties showed medium resistance to the infestation of podfly and indicated 5.0 per cent to 12.88 per cent grain damage. The variety DL 82, ICPL

8306, ICPL 8307, ICPL 179 and MA 128-2 were highly infested by podfly from the point of view of per cent pod damage and per cent grain damaged in both the maturity groups.

Out of 45 tested varieties, UPAS 120 graded as highly resistant to podfly and it also gave high grain yield (1225 kg/ha). The varieties CORG 4, CORG 5, T 21, ICPL 186 and Phule T 14 were recorded high yield giving 1300, 1250, 1083, 1100 and 1050 kg/ha, respectively. The results indicated good possibilities of selection for resistance against this pest by screening larger number of varieties in pigeonpea.

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