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Field Evaluation of some Brinjal Varieties for Resistance to Insect Pests and Disease in North Gujarat Conditions

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The approach of developing multiresistant crop varieties is highly essential because it is inexpensive in long run and would avoid problems of pesticide hazards. Resistance can be identified by collecting samples from different localities and testing them for their resistance to pests and diseases. The present study was conducted to assess the resistance of some brinjal varieties to pests and diseases under North Gujarat agroclimatic conditions.

The experiment was conducted at Sardar Krushinagar during 1983-84. Twelve brinjal varieties (Table 1) were laid out in randomized block design with four replications. Net plot size was 4.5m x 3.0m. The nymphal and/adult populations of sucking pests were recorded on three leaves at different hights of each of the 5 tagged plants selected at random from each of the plots. The population counts were taken at an interval of one week starting after five weeks of transplanting till the last picking. The damage caused by shoot-and-fruit borer, *Leucinodes orbonalis* Guen. to shoots was also recorded at an interval of one week starting five weeks after transplanting till fruit formation by counting the total number of shoots and the number infested from all the 24 plants in the net plot. When bearing started, observations were recorded on the basis of number and weight of healthy and infested fruits at each picking. The little leaf incidence was recorded by observing all the 24 plants in the net plot at weekly interval starting after 5 weeks of transplanting till the last picking. Yield data were recorded. The data were analysed and are presented in Table 1.

Overall populations of aphid, *Aphis gossypii* G. jassid, *Amrasca biguttula biguttula* I., thrip, *Hercothrips indicus* B., whitefly, *Bemisia tabaci* G. on brinjal varieties G.B.1, Selection-1, G.B.6 and Selection-4 were significantly low than on the rest of the varieties (Table 1). Thus, these four brinjal varieties were found moderately tolerant to sucking pests, whereas, Doli-5, pusa kranti and chaklashi doli were found highly susceptible to sucking pests. The present finding on resistance of selection-1 to jassid is in agreement with Bindra and Mahal (1981).

The shoots of G.B. 1 and Ravaidi were significantly more damaged by *L. orbonalis* as compared to rest of the varieties. Whereas, Chaklashi doli was moderately damaged. Considering the infestation of *L. orbonalis* to fruits, varieties selection-1, Selection-4, Junagadh oblong and Junagadh long were found significantly less susceptible. Whereas, varieties G.B.1, Doli-5, Chaklashi doli and Pusa purple cluster were heavily damaged by the shoot and fruit borer. Pusa Kranti, Pusa purple long and Pusa purple cluster which are found moderately tolerant

TABLE 1

Yield in relation to varietal resistance in various brinjal varieties against aphid, jassid, thrip, whitefly, shoot and fruit borer and little leaf disease (Kharif-1983).

Sr. No.	Varieties	Total pest population observed per leaf during life of the crop					Per cent infested		Per cent little leaf infested plants.	Yield q/ha
		Aphid	Jassid	Thrip	Whitefly	Shoots	Fruits			
							Number basis	Weight basis		
1	2	3	4	5	6	7	8	9	10	11
1.	G.B.-6	7.10* (50.41)**	5.99 (35.88)	3.39 (11.49)	5.46 (29.81)	25.71+ (18.71)++	16.45 (8.01)	19.34 (10.95)	1.30	216.59
2.	Pusa purple long	8.89 (79.03)	6.66 (44.36)	5.79 (33.52)	8.13 (66.10)	25.84 (19.00)	16.00 (7.67)	17.50 (9.12)	0.00	195.84
3.	Pusa purple cluster	8.28 (68.56)	8.44 (71.23)	3.58 (12.82)	7.51 (56.40)	25.51 (21.31)	17.60 (9.20)	19.38 (11.01)	0.00	149.17
4.	Pusa Kranti	9.11 (82.99)	8.84 (78.55)	3.53 (12.46)	10.33 (106.71)	25.89 (19.01)	15.49 (7.12)	17.47 (9.00)	1.78	237.99
5.	G.B.-1	6.04 (36.48)	3.72 (13.84)	2.38 (5.66)	4.41 (19.45)	45.09 (50.12)	19.26 (10.89)	19.94 (11.62)	3.45	153.33
6.	Junagadh long	8.74 (76.39)	7.38 (54.46)	3.76 (14.14)	7.09 (50.27)	31.65 (27.52)	13.82 (5.70)	15.46 (7.12)	2.22	124.30
7.	Selection-1	6.88 (47.33)	4.63 (21.44)	2.11 (4.45)	5.76 (33.18)	30.28 (25.42)	11.95 (4.30)	13.67 (5.51)	1.10	184.81
8.	Junagadh oblong	9.02 (81.36)	8.28 (68.56)	4.57 (19.28)	7.89 (62.25)	28.93 (23.40)	13.73 (5.62)	15.67 (7.23)	1.08	233.73
9.	Ravaidi	8.49 (72.08)	7.51 (56.10)	3.67 (13.47)	9.13 (83.36)	41.28 (41.51)	15.71 (7.32)	16.79 (8.32)	0.00	233.43
10.	Selection-4	7.89 (63.68)	6.32 (39.94)	4.96 (24.60)	3.75 (14.06)	27.77 (21.71)	12.14 (4.41)	13.29 (5.23)	0.00	328.60

1	2	3	4	5	6	7	8	9	10	11
11.	Chaklashi doli	8.99 (80.82)	8.60 (73.96)	5.42 (29.38)	9.85 (97.02)	34.82 (32.60)	18.17 (9.71)	19.57 (11.21)	0.00	210.30
12.	Doli-5	9.60 (92.16)	9.98 (99.60)	6.00 (36.00)	10.41 (108.37)	31.05 (26.60)	18.18 (9.72)	20.56 (12.31)	0.00	221.22
	S.Em. ±	0.17	0.16	0.20	0.14	2.04	0.85	0.82	-	19.76
	C.D. at 5%	0.47	0.45	0.57	0.39	5.85	2.43	2.45	-	56.90
	C.V. %	3.99	4.34	9.79	3.62	13.11	10.75	9.38	-	19.05

* $\sqrt{x}$ transformation.

** Figures in parentheses are retransformed values.

+ Arcsin percentage transformation.

++ Figures in parentheses are retransformed values.

against *L. orbonalis* also reported relatively resistant by Mote (1981), Mehto and Lall (1981) and Nathani (1981) respectively.

Pusa purple long, pusa purple cluster, selection-4, Ravaidi, Chaklashi doli and Doli-5 were found to be completely free from the little leaf disease. Whereas, G.B.1 had highest (3.45 per cent) infestation, which was followed by Junagadh long (2.22 per cent), Pusa Kranti (1.78 per cent), Selection-1 (1.10 per cent) and Junagadh oblong (1.08 per cent).

The damage yield relationship has been clearly observed in a brinjal variety Selection-4 which had lowest pests and disease incidence and yielded significantly higher (328.60 q/ha) fruit yield as compared to other varieties. It was followed by Pusa Kranti, Junagadh oblong, Ravaidi, Doli-5, G.B. 6, Chaklashi doli, Pusa purple long and Selection-1. Varieties G.B.1, Pusa purple cluster and Junagadh long yielded significantly lower fruit yield than rest of the tested varieties.

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