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Field Evaluation of Some Brinjal Varieties for Resistance to Insect Pests and Little Leaf Disease

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ABSTRACT

Studies carried out on resistance to insect pests and disease in various brinjal varieties at Gujarat Agricultural University, Campus Anand during *kharif* 1992 to 1994 revealed low susceptibility of Suphal to *Bemisia tabaci* G. and Punjab Barsati to *Leucinodes orbonalis* G. Gujarat Brinjal Hybrid-1 (ABH-1) and Chaklasi Doli were proved higher marketable fruit yielder than Suphal, Punjab Barsati, GB-6, Ravedi, Round-14 and Long-13.

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INTROUDCTION

Brinjal (*Solanum melongena* Linnaeus) is the most popular and principal vegetable crop grown throughout the year in India. In Gujarat it is cultivated in 15500 hectares with porduction of 233000 metric tonnes (Gill and Tomar 1991). Such an important vegetable crop is found infested with 14 pests in Gujarat (Patel *et al.,* 1970). The approach of developing multiresistant crop variety is highly essential because it is inexpensive in long run and would avoid problem of pesticide hazards. In view of this experiment were conducted to screen out the resistant/tolerant brinjal varieties to insect pests and little leaf disease at Gujarat Agricultural University, Campus Anand during *kharif* 1992 to 1994.

MATERIALS AND METHODS

Field experiment were conducted in randomised block design with three replications. The plot size was 4.2 x 3.6 m. The row to row and plant to plant spacing was 90 and 60 cm respectively. Ten brinjal varieties (Table 1) were evaluated for their relative resistance to aphid (*Aphis gossypii* (G), jassid (*Amrasca biguttula biguttula Ishida*), white fly (*Bemisia tabaci* Genn.), shoot and fruit borer (*Leucinodes orbonalis* Guen.) and little leaf disease. The nymphal and adult populations of sucking pests were recorded on three leaves at different heights of each of five tagged plants selected at random from each of the plots. The population counts were made at an interval of one week starting after four weeks of transplanting of brinjal seedlings till the last picking of fruits. The damage caused

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TABLE 1

Susceptibility of various brinjal varieties to insect pests and little leaf disease (1992 to 1994 pooled).

Variety	Av. No. per leaf*			Damage (%) of** L. orbonalis		Plant (%) infected with little leaf disease	Marketable fruit yield (q/ha)
	Aphid	Jassid	White Fly	Shoot	Fruit		
Suphal	1.53 (2.61)	1.10 (0.97)	0.93 (0.38)	13.52 (5.87)	25.32 (18.52)	34.26 (35.35)	45.65
Long-13	1.49 (2.19)	1.07 (0.67)	0.96 (0.46)	6.92 (1.93)	20.32 (12.14)	41.83 (46.44)	56.05
Round-14	1.56 (2.39)	0.99 (0.52)	1.06 (0.69)	10.73 (4.19)	19.66 (11.52)	41.71 (43.87)	56.39
Punjab Barsati	1.36 (1.66)	0.95 (0.40)	1.09 (0.76)	7.70 (2.31)	11.56 (4.18)	42.35 (45.98)	68.70
ABH-1	1.70 (2.98)	0.99 (0.52)	1.23 (1.17)	9.08 (2.89)	16.34 (8.12)	32.34 (27.82)	112.19
ABH-2	1.39 (1.89)	0.97 (0.49)	1.23 (1.17)	8.30 (2.66)	18.56 (10.33)	32.55 (31.99)	103.62
GB-6	1.35 (1.56)	0.96 (0.43)	1.17 (0.96)	8.67 (3.01)	17.77 (9.42)	32.57 (31.17)	78.12
Doli-5	1.34 (1.60)	0.90 (0.44)	1.22 (1.11)	8.96 (2.98)	15.21 (6.93)	32.22 (29.72)	105.30
Chaklasi Doli	1.37 (1.61)	1.02 (0.93)	1.20 (1.06)	10.07 (3.50)	15.47 (7.18)	25.22 (20.24)	121.76
Ravedi	1.25 (1.26)	0.94 (0.36)	1.06 (0.69)	10.41 (4.79)	13.89 (5.82)	39.06 (43.43)	46.51
S. Em.	0.11	0.04	0.07	1.07	1.11	3.71	13.10
C. D.	NS	NS	0.19	3.18	3.31	NS	38.92
C. V. %	19.69	7.64	11.64	13.39	12.30	10.83	24.10

* $\sqrt{x + 0.5}$ transformed values.

** Arcsin transformed values.

Figures in parentheses are original values.

by *L. orbonalis* to shoots was also recorded at weekly interval starting from four weeks after transplanting till fruit formation by counting the total number of shoots and the number of withered shoots in the entire plot. The fruit damage by *L. orbonalis* was recorded by counting number of healthy and damaged fruits at each picking. The little leaf incidence was recorded by observing all the plants of each plot at weekly interval starting after six

weeks of transplanting till the last picking. Yield data of marketable fruit for each variety was recorded during each picking. The data were subjected to analysis of variance.

RESULTS AND DISCUSSION

Aphid and jassid

Among the ten brinjal varieties none could show superiority in resistance to insect pests and all were found equally susceptible to aphid (*A. gossypii*), jassid (*A. biguttula biguttula*) and little leaf disease.

Whitefly

The plants of brinjal Suphal and Long-13 were found to have significantly lower whitefly (*B. tabaci*) population than the other varieties tested. Higher population of whiteflies was recorded on GB-6, Chaklasi Doli, Doli-5, ABH-1 (Gujarat Brinjal Hybrid-1) and ABH-2 (Anand Brinjal Hybrid-2), which were considered as susceptible varieties against the attak of whitefly. However, Ravedi, Punjab Barsati and Round-14 were found moderately susceptible.

Shoot and fruit borer

The shoots of Long-13 were found to have significantly low infestation of *L. orbonalis* in comparison to shoots of Suphal, whereas rest of the varieties had almost equal shoot damage by shoot borer. The highest shoot damage was found on Suphal.

The fruits of Punjab Barsati showed least susceptibility to *L. orbonalis* and exhibited superiority to rest of the brinjal varieties except Ravedi by yielding higher number of healthy fruits. Ravedi had lower infestation of *L. orbonalis* in fruits than GB-6, ABH-2, Round-14, Long-13 and Suphal. However, Doli-5, Chaklasi Doli and ABH-1 had almost equal fruit damage as Ravedi and GB-6. Suphal had highest fruit damage followed by Long-13 and Round-14.

Yield

ABH-1 and Chaklasi Doli gave higher marketable fruit yield than all the varieties tested except Doli-5 and ABH-2 which showed equal yield potentiality.

Thus, the results indicated that Suphal which was found less susceptible to white fly had higher susceptibility to *L. orbonalis*. Likewise Long-13 showed low susceptibility to whitefly and shoot damage by *L. orbonalis* but had higher susceptibility of fruits to *L. orbonalis*. Punjab Barsati showed low susceptibility in fruit damage in comparison to Chaklasi Doli but due to its low yield potentiality it could give considerably lower marketable fruit yield than Chaklasi Doli. ABH-1 and Chaklasi Doli remained superior among the tested brinjal varieties except Doli-5 and ABH-2 by giving higher marketable fruit yield. Jyani *et al.*, (1995) have also reported higher marketable fruit yield potentiality of Chaklasi Doli and Doli-5 eventhough they were found susceptible to *B. tabaci*.

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