

A Case Study :

## Breeding for shoot and fruit borer resistance in brinjal

M. PRABHU, A. RAMESH KUMAR AND V. PONNUSWAMI

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**B**rinjal or eggplant (*Solanum melongena* L.) is native of India and is extensively grown in all South East Asian countries. It is highly productive and usually finds its place as poor man's vegetable. Several biotic and abiotic factors contribute to losses in production. Among the biotic stress factors that hamper the production of brinjal, the shoot and fruit borer (*Leucinodes orbonalis* Guen.) is the most serious one, which occurs throughout the year at all the stages of crop growth. The loss caused by this deleterious pest was reported to be around 54 to 60 per cent (Krishnaiah, 1980). Chemical control of shoot and fruit borer may reduce the pest attack to a greater extent, but it causes adverse effects on environment and human health. Compared to the productivity of brinjal in other countries (300 t ha<sup>-1</sup>), Indian level is very low (15.8 t ha<sup>-1</sup>). The main reason for high yield in other countries is utilization of F<sub>1</sub> hybrids. The hybrid vigour will be the highest in the F<sub>1</sub> hybrids, which serve as a means to increase yield. Combining high yield and resistance to shoot and fruit borer would be a welcome feature. Before initiating any breeding programme, one must have enough information about the ways and means by which the resistance can be exploited.

### *Incidence of borer in brinjal genotypes:*

The marketable yield is one of the important parameters a breeder should take into account while breeding for resistance to biotic and abiotic stresses. This decides the profit to the grower and in brinjal, marketable yield is highly influenced by fruit borer infestation. Lesser the fruit borer incidence better would be the marketable yield. Even if

some types may have better yield potential, the marketable yield would come down, if the infestation of fruits by borer is more. At the same time, in certain types even if the total yield is higher, if the borer infestation per cent is lesser and then it will result in increased marketable yield. The genotype PBr 129-5 recorded the lowest borer (23.4 per cent) infestation (Sharma, 1994). Grewal and Singh (1995) reported that the fruit borer infestation was high (61.00 per cent) in Punjab Chamkila and low in SM 17-4 (26.98 per cent). The lowest fruit borer attack of 19.20 per cent was observed in 88006-2, while the highest value of 38.54 per cent was in White Egg Round (Nazir *et al.*, 1995). Ghosh and Senapati (2001) evaluated six brinjal cultivars, of which PK 123 and Pant were found to be the least susceptible to the borer. Ananthalakshmi (2001) observed that among the lines, the borer incidence ranged from 35.70 per cent in APAU Bagmathi to 55.00 per cent in EP 65, while among the testers, it varied from 48.90 per cent in Surya to 56.55 per cent in Arka Nidhi. Asati *et al.* (2002) found that the borer infestation ranged from 20.11 to 51.96 per cent in different varieties. The average percentage of infestation for the total pickings ranged from 33.65 to 53.02 per cent among cultivars. Pusa Purple Round showed the lowest infestation of 33.65 per cent. APAU Bagmathi recorded the highest shoot borer infestation (12.57 per cent), while EP 65 had the lowest (7.50 per cent) in the parents. The varieties Arka Kusumakar and SM -10 showed less shoot damage (3.28 to 4.01 per cent), while the varieties Unnati, Daftari, Black Round and Pusa Purple Round had higher shoot damage (8.15 to 12.71 per cent). Varieties Arka Kusumakar, Pant Rituraj, Neelum Long, Pusa Kranti and Pusa Purple Long were less infested (18.33 to 35.47 per cent)

See end of the article for authors' affiliations

Correspondence to:

**A. RAMESHKUMAR**  
Department of  
Horticulture, Horticultural  
College and Research  
Institute, Tamil Nadu  
Agricultural University,  
COIMBATORE (T.N.)  
INDIA

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