

7. HIGHLIGHTS

1. Among the 41 brinjal germplasms screened for the first time under agroclimatic conditions of terai during 1991-92 and 1992-93, Nishchindipur Local, Nurki, Shyamla Dhepa, Navkiran, Kalo Dhepa, IR-8-Baramasi, Banaras Long Purple, BB₁ and Murshidabad Local, showed fair resistance against the key pest, *Leucinodes orbonalis* Guen as a shoot borer as well as a fruit borer.
2. Baramasi, a newly selected cultivar from the terai region proved to be the best yielder (6.91 kg/pl) followed by Kalo Dhepa (6.79 kg/pl).
3. Considering parameters like yield, farmers choice, marketability and relative susceptibility, Kalo Dhepa and Shyamla Dhepa, two newly selected variety, from the exclusive climate of Darjeeling foothills along with Navkiran may be recommended for profitable cultivation without any obligation of pestcidal use.
4. Based on multiple resistance criteria against the borer, jassid, aphid and spotted leaf beetle - the 4 major pests of brinjal - Shyamla Dhepa, Kalo Dhepa, Improved Muktakeshi, Banaras Long Purple and BB₁ may be used for the purpose of further breeding or may be adopted in integrated pest management.

5. Analysis of variance clearly indicated wide range of variability for all the vegetative, reproductive and susceptibility characters under question.

6. Correlation and Path coefficient analysis

Marketable yield/pl was found to be significantly correlated with number of secondary branches/pl both at phenotypic and genotypic level during both the years of study because of its direct effects on the yield attributes.

Total yield was found to be directly correlated with number of marketable fruits which has very high positive direct effect on yield.

Percent yield loss showed significant positive correlation with infested fruit/pl and larvae/ft at genotypic level which has shown direct effect on the susceptibility to fruit and shoot borer.

Hence, number of secondary branches/pl, number of fruits/pl, infested fruit/pl and larvae/ft characters along with others has to be given due emphasis while selecting genotypes for breeding.

7. Genetic divergence

The 41 genotypes of brinjal were grouped into 4 divergent clusters. Resistance and high yielding ability found to be inherited from the crosses between two most divergent cluster. Examination of the characters mean for 21 traits studied clearly indicated that geographical distribution and spatial distribution of clusters were not necessarily related.

8. Alternatively under IPM pesticides like, endosulfan and cypermethrin, and the systemic insecticides, dimethoate may be recommended for controlling *L. orbonalis* as shoot and fruit borer.

9. Spraying of agrochemicals influenced significantly the growth and yield of egg plant. Synthetic pyrethroid cypermethrin 25 EC proved the best in this regard. Considering cost benefit ratio, cypermethrin 10 EC (1:44) and dimethoate (1:41) may be recommended as most promising and economically viable pesticides.
10. Subsequent screening for the borer with selected six cultivars during 1993-94-95 on the basis of infested to healthy fruit weight indicated the degree of resistance as Kalo Dhepa > Navkiran > Banaras Long Purple > Banaras Giant White > Krishna > R-14.
11. Navkiran, in general, showed multiple resistance against the 4 major pests viz. borer, jassid, aphid and spotted leaf beetle. Banaras Long Purple was also found resistance against the borer with moderate tolerance to the jassid and aphid.
12. The Resistant cultivars of brinjal combined with minimum dosage of pesticides like carbofuran (@ 750 a.i./ha) followed by single spray of endosulfan (@ 525 g. a.i./ha) may be recommended under IPM, specially in the Darjeeling Terai.
13. Performance of six selected parents and their thirty F₁ hybrid showed inheritance and heterosis of some resistant characters along with good amount of yield attributes from among the parents of divergent clusters. Considering all aspects of yield, farmers choice and insect-pest resistance Banaras Long Purple, Navkiran, and Kalo Dhepa varieties from among the 41 parents and BGW × Krishna, R-14 × Navkiran and KD × R-14 hybrids from among the 30 hybrids screened under field condition may be recommended for profitable cultivation even without any obligation of pesticidal treatments.