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Short Communication

Economic losses caused by brinjal shoot and fruit borer, *Leucinodes orbonalis* Guen (Lep.: Pyralidae)

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Brinjal has been a stable vegetable in our diet since ancient time and being grown in all cropping seasons round the year. It has several vernacular names viz., egg plant, aubergine, baingan badone, kausi, vangi, vazhuthana (Yawalkar, 1985). Brinjal is highly productive and usually find its place as the poor man's crop. It is rich source of minerals (calcium, magnesium, phosphorus, sodium, potassium, chlorine, iron etc.), vitamins and also has some medicinal importance (Choudhary, 1967). In production and productivity, India stands second in the world after China. The total area under cultivation of this crop in our country is 6.12 lack hectares with an annual production of 105.63 lack tones with a productivity of 17.3 Mt / ha. In Rajasthan, it is grown in an area of 5560 hectare with an annual production of 0.22 lack tones with a 3.941 Mt/ ha productivity (Anonymous, 2010). It is generally grown in all districts of Rajasthan during summer and rainy seasons. The brinjal crop is attacked by a number of insect pests right from germination to harvesting, namely, jassids, *Amrasca biguttula biguttula* (Ishida); whitefly, *Bemisia tabaci* (Genn.); aphid, *Aphis gossypii* Glover; lace wing bug, *Urentius sentis* Distant; Hadda beetal, *Henosepilachna vigintioctopunctata* (Fab.), shoot and fruit borer, *Leucinodes orbonalis* Guen.; and stem borer, *Euzophera perticella* Rag.

Among major insect pests of brinja , the brinjal shoot and fruit borer. *L. orbonalis* has become a serious pest around Jobner (Jat, 2001). Crop losses due to shoot and fruit borer have been reported to the tune of 20.89 per cent in various parts of India only. Varma *et al*. (2009) conducted a field experiment for two years at Allahabad (UP) and reported that the damaged fruits and fruit weight loss in brinjal crop due to *L. orbonalis* varied from 3.76 to 45.45 per cent and 3.00 to 67.71 per cent in 1st year and 5.71 to 44.26 per cent and 3.00 to 51.33 per cent in 2nd year, respectively.

No systematic work has been carried out to estimate the extent of losses caused by brinjal shoot and fruit borer under the local environment of Jobner. The present investigations were, therefore, undertaken to estimated the loss caused by brinjal shoot and fruit borer, *Leucinodes orbonalis* Guen.

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Preparation of nursery bed and sowing of seeds

One raised nursery bed of 3.0 m x 0.15 m in size was prepared for raising seedling of brinjal. The seeds of variety 'Pusa Purple Round' were sown in one bed on 16th June, 2010. The seeds were sown in shallow furrows by dropping the seed at 1-2 cm depth. Before sowing, the seeds were treated with 0.02 per cent Thiram to check the infection of damping off. A thin layer of well rotten manure and fine soil were applied to cover the seeds. Regular watering, hoeing, weeding, plant protection measures, etc. were done from time to time. The seedlings were ready for transplanting within five weeks of sowing.

Layout of experiment in field

The losses on brinjal due to shoot and fruit borer were estimated by comparing the pest losses due to the pest under protected and unprotected conditions. For estimating the losses , a field experiment was laid out in a paired plot design with variety Pusa Purple Round in field with a spacing of 60 x 50 cm in 100 sq m area each in protected and unprotected conditions following all the recommended package and practices. The protected plots were sprayed with Endosulfan 35 EC @ 0.05% solution (Anonymous, 2004), while unprotected plots were left without spraying insecticides.

Methods of observation

Numbers of healthy and wilted shoots / plant as well as damaged and healthy fruits were recorded at weekly interval on randomly selected 50 plants in both protected and unprotected plots till harvesting of the crop. Yield of each plot was recorded at the time of harvesting.

Interpretation of data

The data on per cent shoot damage as well as fruit damage were subjected to angular transformation before analysis of variance. To interpret the result of crop loss inflicted by incidence of shoot and fruit borer on brinjal, paired't' test was applied.

The avoidable loss and increase in yield of fruits

Brinjal has been a stable vegetable in our diet since ancient time and being grown in all cropping seasons round the year. It has several vernacular names viz., egg plant, aubergine, baingan badone, kausi, vangi, vazhuthana (Yawalkar, 1985). Brinjal is highly productive and usually find its place as the poor man's crop. It is rich source of minerals (calcium, magnesium, phosphorus, sodium, potassium, chlorine, iron etc.), vitamins and also has some medicinal importance (Choudhary, 1967). In production and productivity, India stands second in the world after China. The total area under cultivation of this crop in our country is 6.12 lack hectares with an annual production of 105.63 lack tones with a productivity of 17.3 Mt / ha. In Rajasthan, it is grown in an area of 5560 hectare with an annual production of 0.22 lack tones with a 3.941 Mt/ ha productivity (Anonymous, 2010). It is generally grown in all districts of Rajasthan during summer and rainy seasons. The brinjal crop is attacked by a number of insect pests right from germination to harvesting, namely, jassids, *Amrasca biguttula biguttula* (Ishida); whitefly, *Bemisia tabaci* (Genn.); aphid, *Aphis gossypii* Glover; lace wing bug, *Urentius sentis* Distant; Hadda beetal, *Henosepilachna vigintioctopunctata* (Fab.), shoot and fruit borer, *Leucinodes orbonalis* Guen.; and stem borer, *Euzophera perticella* Rag.

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Table 1. Estimation of loss caused by brinjal shoot and fruit borer, *Leucinodes orbinalis* Guen. on brinjal crop in 2010

S.No.	Group	Average shoot infestation (%)	Average fruit infestation (%)	Yield (q / ha)	Increase in yield over control (%)	Avoidable loss (%)
1.	Treated Plot	2.23 (8.52)	5.07 (12.98)	253.2	50.71	33.65
2.	Untreated Plot	29.89 (33.14)	53.91 (47.24)	168	-	-
	Cal. t value Tab. t value	144.4 2.01	172.15 2.01			

*Values given in parentheses are angular transformed values

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