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RESEARCH ARTICLE

Field efficacy of different modules prepared by using combination of biopesticides and synthetic insecticides against okra shoot and fruit borer

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ABSTRACT

The yield data on marketable fruits recorded in various treatments revealed that highest yield of 36.56 q/ha was recorded in module M_9 (cypermethrin 10 EC 0.005 per cent followed by NSKE 5 per cent followed by custard apple leaf extract 10 ml aqueous solution L^{-1}) followed by module M_5 (deltamethrin 0.09 per cent, followed by Neemazal 4ml L^{-1} followed by soapnut 10 ml aqueous solution L^{-1}) (36.29 q/ha), followed by module M_8 (Profenofos 50 EC 0.05 %, followed by NSKE 5 % then garlic and chilli extracts 10 ml aqueous solution $^{-1}$) (36.11 q/ha), followed by M_4 (endosulfan 35 EC (0.06%) followed by *B thuringiensis* var. *kurstaki* @ 1.5 g L^{-1} followed by custard apple leaf extract 10 ml aqueous solution L^{-1} (35.72 q/ha) and M_3 (endosulfan 35 EC (0.06%) followed by *B thuringiensis* var. *kurstaki* @ 1.5 g L^{-1} followed by Serni leaf extract 10 ml aqueous solution L^{-1}) (35.06 q/ha) which were at par with module M_9.

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INTRODUCTION

Okra [*Abelmoschus esculentus* (Linn.) Moench] is one of the most important vegetables grown in tropical and sub-tropical parts of the world. It belongs to the family Malvaceae. Okra is subjected to the attack of as many as 72 insects and non-insect pests in the country (Rawat and Saha, 1973).The okra shoot and fruit borer caterpillar initially bores the growing shoot and later on the buds and fruits. It feeds on internal contents. In case of severe infestation, complete fruit is deshaped, hollowed and filled with humus like excreta. The pest directly affects green fruit yield as well as seed yield on maturity. It inflicts qualitative and quantitative losses in seed yield. Kadam (1993) reported that, shoot and fruit borer alone causes 66.28, 46.45 and 69.04 per cent loss in fruit yield in crops sown in summer, *Kharif* and *Rabi* seasons, respectively with an average loss of 60.69 per cent in absence of plant protection umbrella.

Application of insecticides is generally practiced by the farmers for higher gains, but its injudicious use has created many problems. Sole reliance on chemical control leads to problems of pesticide resistance, resurgence of minor pests, pesticide residues, destruction of beneficial fauna and environmental pollution. Under such circumstances, the use of botanical insecticides in pest management is considered as ecologically viable proposition which overcome the above mentioned problems (Adilakshmi *et al.,* 2008). Though some primary work has been done on recording the pests infesting okra in Konkan region and their control by various ways, the work on the use of ecofriendly methods has not been properly studied so far. Also with the increasing emphasis from the environmentalists to apprehend the use of chemical pesticides, the present study was undertaken.