

Bioefficacy of new pesticides against bollworm complex of cotton (*Gossypium* spp.)

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ABSTRACT

An investigation was undertaken with an objective to evaluate bioefficacy of new pesticides viz., lambda-cyhalothrin 5 EC, spinosad 45 SC, indoxacarb 14.5 SC, profenofos 50 EC, Dipel 8L (B.t formulation) along with endosulfan 35 EC and NSKE 5% against bollworms of cotton. Three sprays of insecticide treatments were given at an interval of 20 days by initiating the first 45 days after sowing. All the insecticides were found effective against bollworms of cotton. Among the insecticide treatments lambda-cyhalothrin 5 EC @ 100 g a.i/ha was found most effective against cotton bollworms in which square and green boll damage was observed in the range of 8.49 to 10.22 and 10.12 to 12.42 per cent, respectively as against maximum in untreated control (24.90 to 27.11 and 26.80 to 29.23, respectively) in all three sprays. The minimum locule damage of 11.92 per cent was recorded in the same treatment. However, this treatment was at par with indoxacarb 14.5 SC @ 75 g a.i/ha, spinosad 45 SC @ 75 g a.i/ha and profenofos 50 EC @ 1000 g a.i/ha. All the insecticide treatments recorded significantly higher seed cotton yield in the range of 1371 to 1931 kg/ha as against 968 kg/ha in untreated control. New pesticides viz., lambda-cyhalothrin 5 EC, indoxacarb 14.5 SC, spinosad 45 SC and profenofos 50 EC were found highly effective against cotton bollworms.

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Cotton is one of the most important cash crop of India, which account for about 50% of total fibre consumption of the world, while cotton is the second largest source of edible oil after soyabean. Introduction of high yielding cultivars has increased the pest problems on cotton. In the vegetative phase, the crop is attacked by sucking pest, where as squaring stage onwards, the bollworm complex viz., the spotted bollworm (*Earias vittella* Fab. and *Earias insulana* Boisd.), pink bollworm (*Pectinophora gossypiella* Saund.) and American bollworm (*Helicoverpa armigera* Hub.) poses a serious threat to cotton cultivation. American bollworm damages 12.60 % squares, 4.5 % flowers and 2.8 % bolls per plant and *Earias spp.* causes 40 % losses in cotton yield (Veeresh, 1980). Pink bollworm causes about 50 % loss in yield (Atwal, 1986). Bollworm complex constituting spotted bollworm, American bollworm and Pink bollworm are the most serious and destructive pests of cotton causing 60-70 per cent loss in seed cotton yield (Joshi *et al.*, 1967 and Sohi, 1964). By considering the threat of this pest, the present investigation was undertaken to study bio-efficacy of new pesticides against boll worm complex of cotton.

MATERIALS AND METHODS

An experiment was conducted on the high yield cotton cultivar NHH-44 during summer, 2004-05 at central

campus farm, Mahatma Phule Krishi Vidyapeeth, Rahuri. Randomized Block Design with three replications and eight treatments was adopted. The net plot size was 5.40 x 2.70 with 90 x 90 cm plant spacing. Three applications of insecticides sprays were given at an interval three weeks starting from 45 days after sowing with the help of knapsack sprayer. The observation on bollworm infestation in fruiting bodies (squares and green bolls) and in locules were recorded at harvest and percentage of infestation was worked out. Finally yield of seed cotton of all pickings in the plots treated with various treatments were recorded in kg/ha. The data were subjected to statistical analysis.

RESULTS AND DISCUSSION

All insecticides were found significantly superior over untreated control in reducing the squares and green bolls damage due bollworm complex of cotton as presented in Table 1. The treatment with lambda-cyhalothrin 5EC @ 100 g a.i /ha proved significantly superior with lowest square damage and green boll damage of 9.72 and 11.76 per cent, respectively. This treatment however, was at par with indoxacarb 14.5 SC @ 75 g a.i /ha, spinosad 45 SC 75 g a.i /ha and profenofos 50 EC 1000 g a.i /ha which recorded 10.62, 10.69, and 11.23 per cent square damage and 12.62, 12.88, and 13.42 per cent green boll damage, respectively. Lambda-cyhalothrin 5EC @ 100 g