

Efficacy of newer insect growth regulators and insecticides against Cotton

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SUMMARY

A field experiment was conducted for comparing the efficacy of newer IGRs and insecticides with each other against cotton bollworms during Kharif 2002-2003 at Dr. PDKV, Akola. The results revealed that spinosad 45 SC @ 50 g a.i./ha (4.19%), betacyfluthrin 2.5 EC @ 12.5 g a.i./ha (4.64%) and indoxacarb 14.5 SC @ 50 g a.i./ha (4.71%) were found the most effective in reducing bollworm damage. Whereas, least locule damage (5.16%), highest yield (8.91 q/ha) and highest cost benefit ratio (1:6.51) was recorded in betacyfluthrin 2.5 EC @ 12.5 g a.i./ha. Amongst IGRs and ready mix formulations the most effective treatments against bollworm were novaluron 5 EC @ 100 g a.i./ha(6.52%) & cypermethrin + chlorpyrifos @ 550 g a.i./ha(5.05%), respectively.

Key words : Cotton bollworm, Chemical control, IGRs, ICBR.

Cotton is the major agricultural crop as well as basic resource for thousands of consumer and industrial product manufactured in India and plays an important role in national economy; both in rural and urban sector. India ranks first in acreage and third in global cotton production, but productivity is merely 324 kg. Lint/ha as compared to 974 kg/ha of china and 752 kg/ha in USA. Cotton is an important commercial crop of Maharashtra, but the scenario of Maharashtra is unsatisfactory, with the productivity of only 134 kg/ha (Anonymous, 2002).

Among the several factors contributing to low productivity, the major one appears from the damage caused by the insect pests. Cotton is attacked by various insect-pests right from sowing till the harvest. But the bollworm complex which include American bollworm (*Helicoverpa armigera* Hub.), Spotted bollworm (*Earias vittella*) and Pink bollworm (*Pectinophora gossypiella*) are difficult to manage due to their internal feeding and cause as much as 44 per cent damage to cotton (Dhawan *et al.*, 1988). More than 50 per cent of insecticides are being used for the management of bollworms which leads to the problem of resistance, resurgence, residue and destruction of beneficial insect fauna of cotton ecosystem.

To overcome these problems, now a days the newer insecticidal groups, viz, IGRs, naturalites and insecticidal mixtures are used for bollworm control (Dandale *et al.*, 2001; Dhawan, 1998). Therefore the present investigation was undertaken to compare the efficacy of newer IGRs and insecticides with each other against cotton bollworms in Vidharbha region of Maharashtra.

MATERIALS AND METHODS

Field investigation was carried out during Kharif

season of 2002-2003 at the Research farm of Department of Entomology, Dr. Panjabrao Deshmukh Agril. University, Akola (M.S.). The experiment was laid out in a randomised block design with ten treatments comprised of three IGRs, two ready mix formulations, three newer insecticides, one conventional insecticide and untreated control each replicated thrice. Cotton variety PKV Hy-2 was sown in a plot of 4.5 x 4.8 m with inter and intra row spacing of 90 x 60 cm, respectively. Agronomic practices recommended for the region were followed for raising the crop. The first spray of respective treatments was initiated as soon as the pest population exceeded the five per cent level of infestation (ETL) and repeated at 15 days interval. A total of three round of sprays were given.

Observations were recorded on the incidence of bollworm complex in green fruiting bodies (squares, flowers and bolls) and locule damage basis on five randomly selected plants in each plot. The bad seed cotton and the seed cotton yield was recorded separately from each plot and converted to hectare basis. From the seed cotton yield and cost of treatments incurred in the application, the cost benefit ratio was worked out. Thus the data obtained were statistically analysed for interpretation after necessary transformation.

RESULTS AND DISCUSSION

Pooled data of three sprayings (Table 1) revealed that all the insecticide treated plots were recorded significantly less bollworm incidence and higher yield of seed cotton as compared to untreated control.

Among the insecticides, minimum incidence of bollworm was recorded in spinosad 45 SC @ 50 g a.i./ha (4.19%) which was found at par with betacyfluthrin 2.5 EC

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