Research Paper :

A study on organophosphate resistance frequencies in *Helicoverpa armigera*

Y.T. JADHAV, R.V. KANASE, D.S. THAWARE AND B.A. SHINDE

International Journal of Plant Protection, Vol. 4 No. 1 (April, 2011) : 27-29

See end of the article for authors' affiliations

Correspondence to :
B.A. SHINDE
Department of Agronomy, Ratnai College of Agriculture, Akluj, SOLAPUR (M.S.) INDIA
Email:banduashinde@gmail.com

SUMMARY

An experimental result showed that organophosphate resistance frequencies were unexpected despite meagre use of organophosphate compounds for management of *H. armigera*. The resistance studies revealed that profenofos 0.1ug did not show any resistance level throughout the season, while quinalphos 0.75ug and Chlorpyriphos 1.0ug per larvae showed low to moderate resistance. Monocrotophos 1.0ug per larvae showed constant moderate to high resistance throughout the season.

Jadhav, Y.T., Kanase, R.V., Thaware, D.S. and Shinde, B.A. (2011). A study on Organophosphate resistance frequencies in *Helicoverpa armigera*. *Internat. J. Pl. Protec.*, **4**(1): 27-29.

Key words : *Helicoverpa armigera*, Organophosphate, Resistance

Received : ***August, 2010***
Accepted : ***October, 2010***

Helicoverpa armigera Hubner, a polyphagous and cosmopolitan pest has been reported to damage more than 200 plant species, causing an estimated annual crop loss to around Rs.2,000 crores despite the use of insecticide chemicals worth about Rs.500 crores (Pawar, 1998).

In recent years, *H. armigera* has developed resistance to certain molecules in all the established chemical groups of insecticides available to Indian farmer's. (Armes *et al.*, 1992). The important mechanisms of organophosphate resistance may be due to target-site resistance involving decreased sensitivity to acetyl-cholinesterase to inhibition (Brown *et al.*, 1996;Harold and Ottea,1997).

Hence, realizing the need to understand the levels of resistance and to develop comprehensive strategies for organophosphate resistance management in important pest such as *H. armigera*, an experimental study was conducted during the cropping season of 2005-06.

MATERIALS AND METHODS

An experimental research work was conducted in the laboratory of Department of Entomology, during 2005-06 in Randomized Block Design comprising of four main treatments of quinalphos 0.75ug, profenofos 0.1ug, monocrotophos 1.0ug and chlorpyriphos 1.0ug on *H. armigera* larvae. Initially nearly 10,000 eggs and 6,000 larvae of H. *armigera* were collected from various host plants like cotton, red gram, chickpea, *Lagascea mollis* from nearby farmer's field. The collected eggs were disinfected with 0.02% sodium hypochlorite and then transferred into multicellular trays containing chickpea based semi synthetic diet (Armes *et al.*, 1992). The second instar larvae were later transferred individually into multicellular trays to avoid cannibalism. When the larvae attained age of third instar weighing 30-40mg body weight, they were applied the dose of 1ul on dorsal prothorax by using Hamilton micro-applicator. Control was taken by applying larvae with acetone only. All the rearing procedures were carried out at temperature of 27 ± 2^{0}C, relative humidity of 78 ± 2 per cent and photo period of approximately 13:11 Light: Dark hours regime. Larval mortality was observed after every 24 hours upto 7 days.