

## Insecticidal activity of neem derivatives against okra fruit borer *Helicoverpa armigera* Hubner

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### ABSTRACT

Insecticidal activity of neem oil 0.5, 1.0 and 2.0%, neem cake extract 1.0, 3.0 and 5.0% along with monocrotophos 0.05% was evaluated against fourth instar larvae of *Helicoverpa armigera* under laboratory conditions. Of all the test solutions, neem oil at 2.0% showed maximum larval mortality, followed by neem cake extract and monocrotophos 0.05%. An increase in the concentration of the test solutions resulted in an increase in the rate of larval mortality.

**Key words :** *Helicoverpa armigera*, Neem derivatives, Insecticidal, Mortality

### INTRODUCTION

With the current thrust on sustainable agriculture and organic farming, the use of botanical products as pesticides has acquired greater significance. Implementation of environmentally friendly agricultural practices is essential to the preservation of the quality of life on earth. This has evoked a search for eco-friendly and indigenous botanical pesticides. Among so many plants investigated, the Indian tree, *Azadirachta indica* A.Juss is a promising source of botanical insecticides (Chandele, 2003). Neem extracts make the ideal insect control for impoverished farmers worldwide by providing a safe, inexpensive and very effective insect control for both ends of the agricultural spectrum. Biopesticides made from neem are biodegradable, non-toxic, eco-friendly and have no residual effect on agriculture produce. This concept has the bearing upon the present investigation that evaluates the bioefficacy of neem derivatives on okra fruit borer, *Helicoverpa armigera* Hubner.

During the last decades, apart from the chemistry of the neem compounds, considerable progress has been achieved regarding their biological activities (Kausik *et al.*, 2002).

The growing accumulation of research works clearly demonstrates that neem derioil was first observed by Patrick *et al.* (1987). Larvicidal effect of neem oil was also earlier reported by Brar *et al.* (1994) and Thara *et al.* (2008) on *Earias vittella*, Shanmugapriyan and Kingsley (2001) and Murugesan and Murugesh (2008) on *Epilachna vigintioctopunctata*, Sahayaraj and Gabriel Paulraj (2001) on *Helicoverpa armigera*, Revathi and Kingsley (2008) on *Pericallia ricini* and

Kavitha *et al.* (2008) on *Leucinodes orbonalis*. This consideration was behind the present study in selecting the larval stage to evaluate the effect of neem derivatives on cotton boll worm *Helicoverpa armigera* Hubner. *H. armigera* is a polyphagous pest reported to damage 181 species of host plants belonging to 45 families (Sachan, 1992). Okra, *Abelmoschus esculentus* is one of the main vegetable crop of Erode district, Tamilnadu, India. When the crop is month old, the larvae of *H. armigera* bore into the flowers and fruits, cause severe yield losses and the quality of the fruits also get affected.

### MATERIALS AND METHODS

The laboratory culture of *H. armigera* was initiated from the eggs collected from fields at Uppukkadu of Erode district, Tamilnadu. As recommended by Bhatt and Patel (2001), the insects were reared in the laboratory at 28 ± 2° C on a diet of okra. The collected eggs were placed in a well ventilated plastic container and okra fruits were provided to newly hatched larvae. The laboratory reared fourth instar larvae were used for the present investigation to evaluate the insecticidal efficacy of neem derivatives.

Efficacy of neem oil at 0.5, 1.0 and 2.0%, neem cake extract 1.0, 3.0 and 5.0% along with monocrotophos 0.05% were bioassayed against fourth instar larvae of *H. armigera*. Fresh okra fruits were treated with neem test extracts and monocrotophos at various concentrations. Untreated control was also maintained. Treated fruits were placed in plastic trough and 20 fourth instar larvae were introduced in each trough and covered with muslin cloth. Five replicates were maintained for all concentrations and the number of dead larvae was

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