

NATURAL GRAIN PROTECTANTS: GROWTH REGULATORY EFFECTS OF NEEM (*AZADIRACHTA INDICA*) SEED OIL ON THE RICE MOTH, *CORCYRA CEPHALONICA* (STANTON)

A. M. T. M. Amarakoon, M. M. S. C. Karunaratne

Department of Zoology, University of Sri Jayewardenepura, Sri Lanka
thilini.madhu21@gmail.com

Corcyra cephalonica (Lepidoptera: Pyralidae) is considered a major pest of stored cereals and cereal commodities that causes substantial loss in quality and quantity. Growth regulators are found to be one of the best sources of protection against insect pest attack, affecting the oviposition, egg hatchability and adult emergence. The present study was thus carried out to assess the growth regulatory effects of neem seed oil against *C. cephalonica*, in the search for a more environmentally sound and an effective approach in stored grain protection.

To evaluate the growth regulatory effects, five different concentrations of neem oil in n-hexane (0.5, 1.0, 2.0, 3.0 and 4.0%v/v) were tested. Oviposition deterrence, egg hatch inhibition and adult emergence were used as indices of growth regulation. All bioassays were carried out under ambient laboratory conditions ($29\pm 2^{\circ}\text{C}$ and $84\pm 2\%$ RH). A single-choice and a dual-choice bioassay were used where the number of eggs laid on neem oil treated and untreated surfaces by mated female moths was taken as a measure of oviposition deterrence. Inhibition of egg hatching was evaluated by recording the number of hatched eggs exposed to different oil treatments for 3 hours. Adult emergence was determined by recording the number of adults emerging from 15-17d old larvae fed on neem oil treated food medium.

The results revealed that oviposition deterrent effect increased with the increase of oil concentration. The lowest number of eggs indicating the highest deterrence (24.6 ± 4.9) was observed at the highest concentration (4.0%v/v) when compared with the control (203.1 ± 7.1). The results of egg hatch inhibition also showed that the highest concentration was the most effective, indicating 100% ovicidal property of the oil. Similarly, neem oil has evoked 100% reduction in adult emergence at the highest concentration. Neem oil has also induced physiological disturbances leading to growth abnormalities in the adults. The incidence of inhibition in the development was most prominent at higher doses and abnormal forms of adults exhibited varying degrees of wing deformities. The overall results of the study demonstrate a high possibility of utilizing neem oil as a protectant for sustainable insect pest management in stored grains.

Keywords: *Azadirachta indica*, Neem oil, *Corcyra cephalonica*, Growth regulatory effects