Comparative effects of neem and certain species of *Annona* on the cowpea beetle, *Callosobruchus chinensis*

M M S C Karunarathne* and W S Wanniarachchi

Department of Zoology University of Sri Jayewardenepura, Nugegoda

The cowpea beetle, *Callosobruchus chinensis* is considered as one of the most important storage pests of grain legumes. Seed infestation causes weight and quality losses that lead to the reduction of commercial and nutritive value of the grains. Most farmers depend heavily on insecticides for the control of this pest. Recent concerns for the effect of synthetic chemical insecticides on the environment and the human health have provided the impetus for the use of botanical protectants.

Experiments were conducted under laboratory conditions to investigate the effect of *Annona squamosa, A. muricata, A. reticulata, A. glabra, A. cherimola* and *Azadirachta indica* against *C. chinensis* infesting cowpea *Vigna unguiculata* (Walp). In the present study, methanol extracts of the plant seeds (1.5, 4.5 and 7.5 g/L) were compared to evaluate the oviposition, hatchability and repellent effect on adults. Cowpea seeds treated with each plant extract were tested in a bioassay apparatus, which consists of 8 Petri dishes (5 g/Petri dish). For each test, 150 beetles were used.

Observations with all the plant extracts except for *A.glabra* and *A.muricata* revealed that the number of eggs laid by the female on seeds significantly decreased ($p=0.05$) with the increase of concentration of plant extract while the highest reduction was observed with *A.squamosa* at 7.5 g/L. Egg hatchability was also reduced similarly with the increase of concentration. The highest adverse effect on egg hatchability (0.0%) was observed with *A.squamosa* with the highest concentration. All of the plant extracts tested including neem, elicited a highly significant repellent effect on adults. The maximum repellent activity was found on seeds treated with *A.muricata* and *A. indica* whereas the lowest activity was observed in *A.reticulata,* which was not significantly different ($p=0.05$) from that of the control.

According to the observations, all the plants selected for the study, especially *A.squamosa* showed definite potential as grain protectants against the cowpea beetle. However, further studies are essential for the identification of active compounds and their effects on the target insect as well as non-target organisms, before recommendations are made.

Tel: 011 2804515