ID: 602

Lethal and sublethal effects of neem leaves extract (*Azadirachta indica)* against pink hibiscus mealy bug (*Maconellicoccus hirsutus*) (Hemiptera: Psudococcidae)

Muhammad Salim

[1]Department of Plant Protection, Faculty of Crop Protection Sciences, The University of Agriculture, Peshawar, Pakistan.

Abstract

Maconellicoccus hirsutus, commonly known as the pink hibiscus mealybug, is a polyphagous insect pest with a global presence, posing significant economic and ecological threats to a wide range of host plants. This study evaluated the lethal and sub lethal effects of neem (*Azadirachta indica*) leaves extract against *Maconellicoccus hirsutus* under laboratory conditions. Adult female's *M. hirsutus* were treated with dilutions of neem leaves and the greatest mortality (54%) was observed at 5% neem leaves extract after 72 hours, while no mortality was recorded in the control after 72 hours. The LC_{50} value of 4.85 ppm of the neem leaves extract was calculated for female adult of *M. hirsutus* after 72 hours of exposer and was further tested on the fresh eggs and nymphs of *M. hirsutus*. Contact exposing of the eggs and nymphs to neem leaves extract significantly reduced the % hatch rate of *M. hirsutus* eggs (45.23%) and caused significantly high mortality of the nymph (62.22%) after 72 hours as compared with the control. The sub-lethal effect of the neem leaves extracts on the female adult of *M. hirsutus* showed that the insects treated with 5% neem leaves extract concentration had significantly lower values of finite rate of increase *(λ)* (1.09±0.004 day^{-1}), intrinsic rate of increase (*r)* (0.08±0.004 day^{-1}) and net reproductive rate (R_o) (32.56±4.75 eggs/female) as compared with the population treated with lower neem leaves concentrations. Similarly, the age-stage specific life expectancy (e_{xj}) and age specific reproductive value (v_{xj}) of *M. hirsutus* were recorded lower when treated with 5% neem leaves extract as compared to other treatments. This study revealed that neem leaves extracts are highly effective in reducing *M. hirsutus* infestation and can be used in mealybug IPM programs.

Key Words: *Neem, Maconellicoccus hirsutus, Age-stage two sex Life table, Hibiscus, Hemiptera*