

Mortality of *Chrysoperla carnea* (Stephens) (Neuroptera: Chrysopidae) after exposure to some insecticides; laboratory studies

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Abstract

Eight Insecticides viz. diafenthiuron, buprofezin, thiodicarb, imidacloprid, carbosulfan, methamidophos, acetamiprid, thiamethoxam were tested for their toxicity against predator *Chrysoperla carnea* (Stephens) through leaf dip bioassay method under laboratory conditions. Insecticides were applied at three levels of concentration i.e., low (C1), recommended (C2), high (C3) in a completely randomized manner. Low (C1) and recommended (C2) concentrations of diafenthiuron and buprofezin were found harmless while high concentration of both insecticides was found slightly harmful after 24 hours exposure. Thiodicarb was harmless at lower concentration (C1) but slightly harmful at recommended (C2) and higher (C3) concentrations. Acetamiprid and thiamethoxam were moderately harmful at lower concentration (C1) whereas were toxic at recommended and higher concentrations. All insecticides, at all concentrations were found toxic after 48 hours except buprofezin and thiodicarb. Pupation rates were lowest (0.00 %) in the acetamiprid and highest (71.7 %) in the buprofezin treatment

Key words: *Chrysoperla carnea*, leaf dip bioassay, mortality, selective insecticides

Introduction

Presence and role of natural enemy in orchards, field crops and vegetables have been studied (DEAN and STERLING 1992) to reduce the use of insecticides and environmental pollution. *Chrysoperla carnea* (Stephens) has received much attention as a potential biological control agent because of its geographical distribution (NEW 1975), its tolerance to some insecticide (HASSAN *et al.* 1985) and its relative ease of mass production.

Chrysoperla carnea is predominant species of green lacewing. *C. carnea* has green cylindrical body, transparent wings with light green veins, long filiform antennae, golden eyes and stalked eggs that offer protection from predation (PEDIGO 1989). Larvae of *C. carnea* is polyphagous, voracious feeder of cotton aphid, *Aphis gossypii* Glover; corn earworm, *Helicoverpa zea* (Boddie) (LINGREN *et al.* 1968); Colorado potato beetle, *Leptinotarsa decemlineata* (Say) (NORLUND *et al.* 1991). Effectiveness of *C. carnea* as a biological control agent has been demonstrated in a field crops, orchards, green house (HAGLEY and MILES 1987).

In spite of all these preciousness *C. carnea* with many other beneficial organisms have almost eliminated from field due to frequent use of non- selective insecticides. Scientist all over the world are now condemning use of synthetic, organic insecticides.

