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Relative Toxicity of Different Fungicides Against Larvae of Green Lacewing, *Chrysoperla carnea* (Chrysopidae: Neuroptera)

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Abstract

Laboratory experiments were carried out to study the toxicity level of some fungicides against *Chrysoperla carnea* (Stephens) larvae. Recommended concentrations of Carbendazim 50 WP, Mancozeb 80 WP and Ridomil 68 WP and water (control) were applied through leaf dip method in Petri plates. *C. carnea* larvae of 1st, 2nd and 3rd instars were exposed to these fungicides treated leaves in Petri plates. Results indicated that all fungicides were safer to all larval stages of *C. carnea* after 24, 48 and 72 hrs. Highest mortality was observed in Ridomil treated larvae. It caused 4.44 % mortality of 1st and 3rd instars larvae after 24 and 72 hrs. Maximum pupation rate (89.32 %) was recorded in Mancozeb treated 2nd instar larvae. Adult emergence was 95-97 % in all treatments. The longevity of adults of *C. carnea* was nearly similar (49-50 days) for all treatments. The maximum fecundity (950 eggs) was observed in adults, where larvae were treated with water, whereas minimum (897 eggs) was found in treatment where larvae were exposed to Ridomil. Fungicides had no toxic effect on larvae of *C. carnea* at any stage and found safer according to IOBC classification for measuring toxicity.

Key words: *Chrysoperla carnea*, fungicides, toxicity

Introduction

Green lacewing, *Chrysoperla carnea* (Stephens), is a voracious and generalist predator of many soft bodies insect pests and has worldwide distributions (Geetha and Swamiappan 1998, New 1975, Zeleny 1984). The daily feeding potential of larvae is 100-120 eggs of lepidoteran pests (Gautam and Gupta 1998). Effectiveness of *C. carnea* as biological control agent has been demonstrated in field crops, orchards and in green houses (Hagley and Miles 1987). Conservation of natural fauna either through selective use of pesticides or by other means has been the main criteria for integrated plant protection. Many insecticides have been found moderately to very harmful to the larvae of *Chrysoperla carnea* in the field (Vogt 1994). Mathirajan and Regupathy (2002) in an experiment observed that test concentrations of thiamethoxam, imidacloprid and methyl-o-demeton had no adverse effects on egg hatchability and lower egg mortality of *C. carnea* as compared to water, whereas the larval mortality ranged from 10 to 48.7 %. Paulian (1998) tested the activity of 28 pesticides in the laboratory on *C. carnea*. He stated that insecto-fungicides mixtures, generally for cereal seed treatment such as Difenoconazol + Lindane, Tirametox 90 PTS, Tebuconazol + Lindane, Gamavit 85 PSu, Supercarb T 80 PSu, Procarb L, Trialin showed medium toxicity at usual rates, whereas

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