

Effect of Biopesticides and IGR to Egg Parasite *Trichogramma chilonis* Ishii (Hymenoptera : Trichogrammatidae)

JYOTI D. PAREET AND K. BASAVANAGOUD

Department of Plant Pathology, University of Agricultural Sciences
 Dharwad, Karnataka, India

Abstract

Studies on the toxicity of microbial origin insecticide, IGR and chemical insecticides were undertaken against egg parasitoid of *Trichogramma chilonis* in laboratory condition. Among the different treatments, Btk 5% WP at 2 ml per liter (92) and emamectin benzoate 5 SG at 0.2 ml per liter (88.69) found to be safer followed by avermectin 1.9 EC at 0.5 ml per liter (87.30) and diafenthiron 50 WP at 1 g per liter (85.43), spinosad 45 SC at 0.1 ml per liter found to be slightly toxic as it recorded less of (76.15) adult emergence.

Key words : Egg parasite, *Trichogramma chilonis* Ishii, Biopesticides, IGR.

Trichogramma chilonis Ishii is a potential egg parasitoid used in integrated pest management program. Continuous and indiscriminate use of synthetic chemicals in plant protection has resulted in toxicity to non-target beneficial organisms. Realizing the adverse effects of chemical insecticides, attention is now diverted in favor of non-chemical methods of pest management. The safety of biopesticide and IGR to non-target organisms over conventional pesticides has already been reported by several scientists (1,2).

Methods

The parasitized trichocards were obtained from parasitoid breeding laboratory, Bailhongal. Trichocards were cut into small pieces of 2.5 cm size for easy distribution of the parasitoid. Only known number (80) of parasitized *Carcyra cephalonica* eggs were allowed to remain on each card by puncturing the extra eggs with the help of needle.

The trichocards containing 80 parasitized eggs were stapled to the lower surface of brinjal leaves at the center of the plots in the morning hours before spraying. After 24 hours of sprays, these cards collected, labelled and kept in clean sterilized petridishes in laboratory for the emergence of the parasitoids. After five days, the number of adults emerged from each trichocards was recorded with the help of microscope. Later, the per cent adult emergence in each treatment was worked out and the per

cent values were subjected to arcsine transformation and the data were statistically analyzed.

Results and Discussion

The per cent adult emergence of *T. chilonis* in different treatments ranged from 46.63 to 95.65. Btk

Table 1. Effect of new molecules of insecticides of microbial origin on *Trichogramma chilonis* adult emergence. Means followed by same alphabet do not differ significantly by DMRT at 5%. Figures in parentheses are arc sin transformed values.

Treatments	Conc (%)	Dose (ml/l)	Mean per cent adult emergence
T ₁ Spinosad 45 SC	0.0045	0.1	76.15d (60.80)
T ₂ Emamectin benzoate 5 SG	0.001	0.2	88.69bc (70.30)
T ₃ Avermectin 1.9 EC	0.00095	0.5	87.30c (69.13)
T ₄ <i>Bacillus thuringiensis</i> var Kurstaki 5% WP 2ml/l	0.01	2	92.15b (73.89)
T ₅ Diafenthiron 50 WP	0.05	1 g	85.43c (67.52)
T ₆ RPP (Quinalphos 25 EC)	0.05	2	46.63e (43.05)
T ₇ Untreated check	-	-	95.65a (78.15)
CV (%)	-	-	3.54
SE ±	-	-	1.334
CD at 5%	-	-	4.11

and emamectin benzoate were highly safer to the parasitoid by recording maximum of 92.15 and 88.69% adult emergence respectively both being at par with each other. Avermectin (87.30%) and diafenthiuron (85.43%) were the next best treatments by recording more than 85% parasitoid emergence. Quinolphos 25 EC (RPP) was detrimental by recording least per cent adult emergence of 46.63 which was significantly inferior to all other treatments.

The present findings are in line with Srinivasan and Sunder Babu (3) and Boomathi et al. (4) reported the safety of Btk to *Trichogramma* spp. and emamectin benzoate reported by Sultana and Rami Horowitz (5). In the present study spinosad 0.00045% was moderately safe by recording 76.15% adult emergence. Pratiksha Tawar et al. (6) reported the moderate safety of spinosad 0.15% to *T. chilonis* which agrees with the present findings. However, Boomathi et al. (4) reported that spinosad at 75g a. i./ ha was not safe to the parasitoid as it recorded poor *Trichogramma* adult emergence which contradicts the present findings, which is due to the variation in the concentration of spinosad used in present study. Blackwell Synergy (7) reported the toxicity of quinolphos to *Trichogramma chilonis* parasitoid which supports the present findings.

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