Effect of azadirachtin and rotenone on Trichogramma papilionis (Hymenoptera: Trichogrammatidae)

ABSTRACT

The effect of two botanical insecticides- azadirachtin (Neemix 4.5 EC) and rotenone (Rotenone 6.6 EC) were investigated against adult and preimaginal stages (larvae and pupae) of hymenopterans egg parasitoid Trichogramma papilionis compared with synthetic insecticide- cypermethrin (Cyper 5.5 EC) by the three different application approaches. Three doses i.e., the recommended dose (RD), its half and its quarter of the insecticides were used. The result demonstrates that cypermethrin was highly toxic and yielded 100% adult mortality with 100% reduction in parasitism for all the tested concentrations. Rotenone was also highly toxic and yielded 100% adult mortality with 100% reduction in parasitism at RD and 0.5 RD; while it was slightly toxic and yielded 63.31% adult mortality with 42.93% reduction in parasitism at 0.25 RD. Azadirachtin was the least toxic and harmless that gave only 13.33% mortality with 15.62% reduction in parasitism of T. papilionis at 0.5 RD. When T. papilionis was evaluated for the side effects of cypermethrin-treated eggs by allowing the adults to oviposit on cypermethrin-treated eggs, cypermethrin was harmful and performed 100% reduction in parasitism at RD. When adult T. papilionis was exposed to rotenone and azadirachtin-treated eggs with all concentrations, they were slightly harmful at RD with 65.43% and 48.21% reduction in parasitism, respectively. This concludes that synthetic pyrethroids might be replaceable by azadirachtin and it might also be the most suitable insecticide in IPM strategies for suppression of insect pest with minimum impact on the egg parasitoid.

Keyword: Agriculture; Botanicals; Egg parasitoid; Environment; IPM; Parasitism