

**STUDIES ON THE EFFECT OF INSECTICIDES ON THE
POPULATION DYNAMICS OF WHITEFLIES AND THEIR
PARASITIDS ON BRINJAL PLANTS**



UMARAJINI SIVASUBRAMANIAM



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**FACULTY OF AGRICULTURE
EASTERN UNIVERSITY
SRI LANKA**

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ABSTRACT

The integrated control concept emphasizes the importance of both chemical and biological control for pest suppression in agricultural systems. In this study, the effect of four insecticides viz. acetamiprid, imidachlopid, deltamethrin and dimethoate on whitefly (*Bemisia tabaci*) population and their native parasitoids were evaluated on brinjal plants at the Agronomy farm, Eastern University of Sri Lanka. Insecticides were sprayed twice at 14 days interval during the experimental period. The whitefly population level, encompassing adult and nymph stages and percentage parasitism were monitored at weekly intervals from a day prior to spraying to 14 days after second spraying. The parasitoids, *Encarsia cibcensis* Loez Avila and *Eretmocerus californicus* were collected from the research site. Among the collected parasitoids, *Encarsia cibcensis* Loez Avila were more abundant than *Eretmocerus californicus* at the research site. Imidachlopid was significantly ($P < 0.05$) reduced the whitefly adult population over control at 14 days after the first spraying. However, overall whitefly adult and nymph populations were not significantly ($P > 0.05$) reduced on any of the insecticide treated plants when compared to those found on the control plants. Imidachlopid and acetamiprid were significantly ($P < 0.05$) better than the other insecticides; deltamethrin and dimethoate against *Bemisia tabaci* adult and nymph populations, where the lower overall mean numbers of whitefly adults and nymphs per leaf were recorded. Moreover, the recorded mean percentage parasitism varied widely among the treatments over the study period as 30.42% to 65.33% in acetamiprid, 32% to 56.67% in imidachlopid, 12.22% to 28.2% in deltamethrin, 23.86% to 32.61% in dimethoate and 43.33% to 54.57% in control. Results of this study suggest that acetamiprid could be used in an integrated control program of *Bemisia tabaci* on brinjal without affecting the activity of the associated parasitoids with *Bemisia tabaci*.

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