

ASSESSMENT OF HYMENOPTERAN PARASITOID DIVERSITY IN LEGUME ECO-SYSTEM

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Legume vegetable ecosystems are receiving heavy doses of insecticides to manage their insect pests. This practice has created many problems associated with human health, and environmental pollution; thus, it demands an alternative strategy. Biological control through natural enemy conservation is a suitable option; hence, the objective of this study was to examine the parasitoid diversity and abundance in legume vegetable ecosystems in Kandy area. Weekly samples of eggs of blue bean butterfly *Lampides boeticus*, leaf eating caterpillar *Spodoptera litura* were collected in organically grown common bean and long bean fields at Thalathuoya and a field at Alawatugoda which were cultivated under general farmer practices with application of insecticides. Field collected eggs were individually reared in plastic vials in the laboratory until emergence of host or parasitoid adults. In addition, adult parasitoids were sampled using sweep nets. Parasitoid adults were identified up to the family level using morphological characters, taxonomic keys, published literature, pictures and photographs available in online sources. The data on parasitoid abundance were analyzed using chi-square test and Shannon index. Three egg parasitoids were identified. *Trichogramma chilonis* was identified as an egg parasitoid species from spodopteran eggs. The level of parasitism was 2.02 %. Egg parasitoid species of the genus *Telenominae* was also found attacking spodopteran eggs and the level of parasitism was 35.38 %. Another egg parasitoid of the family, Scelionidae was found attacking *L. boeticus* eggs at the parasitism level of 1.19 %. Parasitoid adults collected in the field using sweep nets belonged to four superfamilies and thirteen families of the Order Hymenoptera. Throughout the research period superfamily Chalcidoidea (41 %), superfamily Platigastroidea (45 %) and superfamily Ichneumonidea (14 %) showed higher availability in legume fields and they belong to the families Pteromalidae, Chalcididae, Eulophidae, Trichogrammatidae, Eupelmidae, Eurytomidae, Scelionidae, Platygastriidae, Braconidae, Ichneumonidae, Ormyridae, Mymaridae and Dipridae. Throughout the research period, Scelionidae (40 %) Trichogrammatidae (13 %) and Braconidae (12 %) were the common parasitoids in legume ecosystems. Parasitoid abundance at superfamily level was not significantly different with respect to the two sampling locations. This may be associated with the similarities of the sampling locations such as crop combinations, geographical similarities, and climate similarities and also the samples were collected in the morning in both sites. There was a significant difference among parasitoid families between two locations ($\chi^2= 25.929$, df = 12.000, $p < 0.05$). The numbers of parasitoids collected in different sampling dates did not show a significant difference at superfamily or family levels. In the parasitoid collection, 24 morpho species were found. Species diversity at Thalathuoya was significantly higher than that of at Alawatugoda. Shannon index at Thalathuoya and Alawatugoda were 2.71 and 2.69, respectively. Chalcidoidea diversity was high in the organic eco-system while Ichneumonidea diversity was high in the conventionally managed sites. These results indicate the existence of rich parasitoid diversity in our legume vegetable fields. Conserving these parasitoids in agroecosystems would be a potential strategy to manage the pest populations.