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Insect diversity and abundance in vegetation in conventional and pesticide free mixed vegetable ecosystems

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Assessing the insect diversity and abundance in vegetation in conventional and pesticide free mixed vegetable fields were the objectives of this study. Three fields with low country vegetables that were under conventional management and three fields under pesticide free management were repeatedly sampled using sweep nets to collect insects in the vegetation. Collected insects were processed and identified up to taxonomic families. The data were compared using contingency tables.

Insects collected in pesticide free and conventional agroecosystems belonged to nine Insect Orders: Coleoptera, Diptera, Heteroptera, Homoptera, Hymenoptera, Lepidoptera, Odonata, Orthoptera and Thysanoptera. Total number of adult insects collected in conventionally managed sampling sites was higher (566) than that of pesticide free fields (324). Numbers of insects belonging to these orders were significantly different between pesticide free and conventional agroecosystems (χ^2=56 df=8 P<0.01). Numbers of insects belonging to different taxonomic orders were significantly different among the study sites Dodangolla, Doluwa and Mahailluppullama which were managed as conventional vegetable fields (χ^2=118 df=16 P<0.01). A similar difference was found among the sites Peradeniya, Dodangolla and Mahailluppullama which were managed as pesticide free mix vegetable fields (χ^2=67 df=16 P<0.01). The insects collected in all study sites of pesticide free fields belonged to 45 taxonomic families while the insects collected in conventional fields belonged to 44 taxonomic families. The insects collected in all study sites under pesticide free cultivation belonged to 25 phytophagous families, 8 predatory families and 9 parasitoid families. In conventionally managed fields, there were 26 phytophagous families, 11 predatory families and 10 parasitoid families. In both cultivation systems, Family Cicadellidae and Aphididae dominated in terms of insect abundance. It appears that conventionally managed vegetable ecosystem supports the abundance of insects, but majority of them are phytophagous insects. In the sites under pesticide free cultivation had more individuals of parasitoids compare to the conventional sites, which indicate the promotion of parasitoid populations perhaps due to low selection pressure of agrochemicals. Differences of diversity among sampling locations could be associated with the differences of agro-ecological zones.

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