ISSN: 1391-8796
Abstracts of Presentations
1st Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
January 22-23, 2014

Comparison of soil-dwelling insect fauna in eco-friendly versus conventional home gardens at selected localities in Hambanthota District

K.S. Hemachandra*[1], B.P.U.R. Bandara[2], W.A.P. Weerakkody[1], J.K.S. Wasantha[2], U.G.A.I. Sirisena[3], T.D.C. Priyadarshani[1] and J.M. Soorasena[4]

[1]*Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka*
[2]*New Environment Resources Alliance (NewERA), Godawaya Temple Road, Ambalantota, Sri Lanka*
[3] *Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka*
[4]*Swedish Cooperative Council, Kaduwela Road, Battaramulla, Colombo, Sri Lanka*

Soil-dwelling insects are a major component of the soil ecosystem and play a key role in nutrient recycling and natural suppression of insect populations. Advanced technology and extensive synthetic inputs such as pesticides and fertilizers used in agriculture exert negative impact on biodiversity. The soil insects associated with agricultural and natural fields have been poorly studied locally; therefore, present study was conducted to compare the soil-dwelling insect fauna in conventional and eco-friendly home gardens located in Kumaragama, Katuwanayaya and Elisonkanda in the Hambanthota District. In each village, insect fauna were sampled using pitfall traps from four fields each in eco-friendly home gardens and in conventional home gardens, and species abundance, species richness and species diversity were compared among locations and between two management systems. A total of 2433 individuals were collected, belonging to six orders and 15 families. Insect abundance was significantly higher in eco-friendly home gardens (χ^2=18.61, df=5, P<0.001) compared to conventional home gardens. Significant difference in insect abundance among different orders was also observed (χ^2=18.612, df=5, P<0.001), where in both systems, order Hymenoptera was the most abundant group followed by Coleoptera, Orthoptera and Hemiptera. Species richness (S) was high in eco-friendly home gardens (S=40) than conventional home gardens (S=37). Diversity of ground dwelling insects was much higher in eco-friendly home gardens: Coleoptera (Diversity index, H'=0.48), Hemiptera (H'=0.32), Orthoptera (H'=0.26), Hymenoptera (H'=0.31) and Dermaptera (H'=0.19). Insect abundance was also significantly different among the three villages (χ^2= 88.24, df=2, p<0.001) and highest insect abundance was recorded in Kumaragama (N=666). It was revealed that there is a general trend of promoting ground-dwelling insects in eco-friendly home gardens possibly due to the effects of management practices.

Key words: Biodiversity, ground-dwelling insects, Hambanthota, home gardens

* kshema@pdn.ac.lk