D-66 Composition and community structure of insects in a paddy field ecosystem

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A study of the insect fauna associated with an irrigated paddy field ecosystem was carried out at 2 sites at Batalagoda during 4 paddy cycles. The species composition and the community structure of the insect fauna based on food habits and habitat occupation were determined. The paddy field vegetation, water and soil were sampled for insects using a sweep net/quadrate, dipper and a soil corer, respectively.

A total of 187 species of insects belonging to 86 families in 16 orders were recorded. The order Lepidoptera included the largest number of species (40), followed by Hymenoptera (35), Hemiptera (32), Coleoptera (25), Diptera (22), Odonata (11), Orthoptera (10), Collembola (2), Ephemeroptera (2) and 6 other Orders each with a single species. The guilds based on food habits were dominated by phytophagous insect species (47%), followed by predators (33%) and parasitoids (10%). The balance consisted of scavengers/detritivores/decomposers. Vegetation harboured the highest percentage of insect species (67%), followed by water (21%) and soil (12%).

Half of the insect species (52%) were confined to one of the above habitats while the rest were associated with a combination of habitats based on the mode of life of the adults and larvae. From the nursery stage upto the latter part of the reproductive stage of the paddy cycle, there was a progressive increase in the species composition and community structure of insects. Draining of water during the grain maturity stage led to the dissappearance of aquatic insects, and to the appearance of soil inhabiting forms from the vegetation and the surrounding areas. The transient nature of the paddy field ecosystem in terms of vegetation cover and ecological phases thus determine the composition of insects in this ecosystem.

Financial assistance by NARESA (Research grant RG/95/B/4) is acknowledged.