Faunal species richness within the various phases of rice cultivation in organic and inorganic based rice fields in the Matara District

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The southwestern region of Sri Lanka (which contains both natural as well as manmade ecosystems) is one of the biologically richest regions in the world today. A considerable land area of this region is under paddy cultivation and therefore is an important land use type to be considered. Rice fields comprise a rich mosaic of rapidly changing ecotones, harbouring a rich biological diversity. Therefore, a considerable variation of faunal diversity is expected within these different habitats. The objective of this study is to compare the faunal species richness that exists in an organically and inorganically grown rice field in the wet zone of Sri Lanka. The study was carried out in an irrigated rice field eco-system at Komangoda in Thihagoda D/S division of Matara district. An organic (OF) and inorganic/chemical (CF) based rice field (1 ha each) was selected and studied over 4 consecutive cultivation cycles with reference to the four cultivation phases of rice. The selected taxa of invertebrates and vertebrates were sampled at fortnightly intervals accordingly, 50 day time sampling sessions and 17 night time sampling sessions were conducted during the entire study period. Both rice fields showed similar species richness except for annelids, which were represented by a higher number of species in the organic field. Only minor variations were observed with respect to number of species within the two habitats among annelids (11 in OF & 3 in CF), insects (103 in OF & 102 in CF) and mammals (11 in OF & 10 in CF). There was no significant difference between the number of invertebrate and vertebrate species recorded in OF (at $P \geq 0.05$) as well as in CF. Further, there were no significant differences (at $P \geq 0.05$) between the invertebrates in the two rice fields as well as between the vertebrates in the two rice fields. Majority of the vertebrates consisted of birds (58.06%, 54 species in OF and 58.70%, 54 species in CF), followed by reptiles (15.05%, 14 species in OF and 15.23%, 14 species in CF). A majority of the invertebrates consisted of arthropods (89.76%, 114 species in OF and 95.76%, 113 species in CF), dominated by insects (81.10%, 103 species in OF and 86.44%, 102 species in CF). When the four cultivation phases are considered invertebrates generally show a high species richness during the vegetative and ripening phase while the lowest richness was recorded during the reproductive phase. In the case of vertebrates the species richness increased from vegetative to fallowing phase except for fish, which were restricted to the aquatic phase.