

Diversity and abundance of phytophage hemiptera in an irrigated rice ecosystem of Tamil Nadu, India

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A total of 24 taxa of phytophage hemipterans were recorded in weeded and partially weeded rice ecosystems during *kharif* 2001. Among them, thirteen taxa viz., *Brevennis rehi* (Lindinger), *Hysteroneura setariae* (Thomas), *Nilaparvata lugens* (Stal), *Nepotettix virescens* (Distant), *Cofana spectra* (Distant), *Recilia dorsalis* (Motsch.), *Sogatella furcifera* (Horvath), *Nezara viridula* (Lin.), *Dolycoris indicus* (Stal.), *Menida histrio* Fab., *Scotinophara lurida* (Burmeister), *Leptocorisa acuta* (Thunberg) and *L. oratorius* (Fabricius) showed greater abundance in weeded rice ecosystem, while rest of the species of phytophage hemipterans exhibited more abundance only in partially weeded plots. The diversity of delphacids had perfect similarity throughout the season. During tillering and flowering stages of the crop, cicadellids, pentatomids and red spotted bug exhibited greater diversity (= less similarity). Earhead bugs showed higher diversity during flowering and dough stages. Aphid exhibited perfect similarity in the first and second week, and was absent from the third week to seventh week. A Total of 18 weed species acted as alternate hosts for polyphagous phytophage hemipterans were recorded in partially weeded plot. Of them, *Cyperus iria*, *C. diformis*, *C. rotundus*, *Echinochloa colonum*, *E. crus-galli*, *Ipomea aquatica* and *Marsilea quadrifolia* were dominant.

Key words: Diversity, similarity, relative abundance, weed plants, weeded rice ecosystem, partially weeded rice ecosystem, hemipteran insects.

INTRODUCTION

Several species of leafhoppers and planthoppers are serious pest of rice crop. Many species of Auchenorrhyncha are found commonly in rice fields in south east Asia (Claridge and Wilson, 1981). The more damaging species are the green leafhoppers, *Nephotettix* spp., the zig zag leafhopper, *Recilia dorsalis* (Motschulsky), the brown planthopper, *Nilaparvata lugens* (Stal), the white backed planthopper, *Sogatella furcifera* (Horvath) and the rice delphacid, *Tagosodes* (= *Sogatodes*) *orizicolis* (Muir). Among several *Nephotettix* species, three are important, *N. cincticeps* (Uhler) is distributed in temperate area, *N. virescens* (Distant) and *N. nigropictus* (Stal) are distributed in temperate and tropical asian rice growing area (Pathak and Khan, 1991). Gunathilagaraj and Ganesh Kumar (1997) recorded more than 20 species of planthoppers on rice in worldwide. The most important rice bugs in the sub tropical and tropical rice areas belong to the genus *Leptocorisa*. The lowland rice crops of Asia are dominated by *L. oratorius* (Fab.) (Pathak and Khan, 1991). The rice stink bug, *L. acuta* (Thunberg) was found in both dry and wet seasons in India (Gupta and Maheswari, 1971). Two species of pentatomid bugs were

identified by the Zoological Survey of India, Calcutta as *Dolycoris indicus* Stal and *D. baccarum* Linn. In rice ecosystem, *Scotinophara coarctata* (Walker) appeared in South Palawan, Philippines in 1982. The outbreak of the black bug was recorded in 1978 and 1979 in Indonesia and Malaysia, respectively (Dale, 1994). The rusty plum aphid, *Hysteroneuro setariae* (Thomas) feeds on unripened grains of rice (Garg and Sethi, 1979). In Tamil Nadu, the inventory, abundance and diversity of phytophage hemipterans between weeded and partially weeded rice ecosystems had not been studied earlier. Hence, the present investigation to study the check list, abundance and diversity of phytophage hemipterans was taken up in an irrigated rice ecosystem of Tamil Nadu.

MATERIALS AND METHODS

A field trial was conducted in irrigated rice ecosystem at the wetlands of Agricultural College and Research Institute, Madurai, Tamil Nadu during *kharif* 2000. Four ruling rice varieties viz., MDU 5, ADT 36, ADT 39 and ADT 43 were used and each variety was replicated into two treatments namely weeded plot (all the weeds removed) and partially weeded plot (10 weeds allowed/m² with rice plants). The size of the experimental plot