

Arthropod density in a weed ecosystem maintained around a rice field of Tamil Nadu

M. KANDIBANE

Department of Agril. Entomology and Nematology, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, PUDUCHERRY, (U.T.) INDIA

(Accepted : June, 2008)

Three field experiments were conducted during *kharif* and *rabi* 2000 and *kharif* 2001 to study the diversity of arthropods on weeds maintained around a rice ecosystem. The study revealed that phytophagous insects of weeds constituted about half of the population of all arthropods. Among the sucking hemipterans, brown planthopper (BPH) was the dominant species of insect, followed by white backed planthopper (WBPH) from the first week to fourth week (tillering stage) in all the three seasons. But, the occurrence of WBPH was absent through out *rabi* 2000. Green leafhoppers and ear head bugs were dominant, followed by red spotted bugs from the fifth week to the last week. Short horned grasshoppers occurred in all the three seasons and expressed the dominance to the extent of 0.79, 1.05 and 1.25 individuals in *kharif* and *rabi* 2000 and *kharif* 2001, respectively. All the lepidopteran insects showed less abundance compared to hemipteran insects during *kharif* 2000 and *kharif* 2001. However, Spodoptera, sphingid and pierid butterfly were absent through out *rabi* 2000. The coleopteran insects *viz.*, blue beetle and pumpkin beetle were recorded. The blue beetle occurred in all the seasons and the pumpkin beetle showed very less abundance and occurred only in the last few weeks. The phytophage dipteran insects showed less abundance in the three seasons. The five groups of natural enemies *viz.*, Orthoptera, Odonata, Hemiptera, Coleoptera and Hymenoptera were recorded. In Odonata, dragonfly was dominant during *kharif* 2000, where as damselfly was dominant during *rabi* 2000 and *kharif* 2001. But, the occurrence of dragonfly was absent during *rabi* 2000. Predatory mirid bugs expressed more abundance in the three seasons. The coleopteran predators *viz.*, ground beetle and coccinellid beetle occurred through out all the three seasons and showed less abundance. Spiders recorded > 0.60 individuals in the three seasons. In the parasitic hymenopterans, ichneumonfly, braconids, and bethylids recorded more abundance in the three seasons. A Total of 18 weed species acted as alternate hosts for polyphagous phytophage insects were recorded in partially weeded plot. Of them, *Cyperus iria*, *C. diformis*, *C. rotundus*, *Echinochloa colonum*, *E. crus – galli*, *Ipomea aquatica* and *Marsilia quadrifolia* were dominant.

Key words : Orthoptera, Hemiptera, Diptera, Lepidoptera, Thysanoptera, Odonata, Coleoptera, Hymenoptera, Density, Weed plants.

INTRODUCTION

Weed plants on rice field bunds and around rice fields' support as boosts for natural enemies by providing pollen and nectar for their survival. They also act as alternate host for several phytophage insects, which are commonly pests of rice. A total of fifty two weed species belonging to 15 families occurring in the rice ecosystem were identified. (Zaheruddeen and Prakasa Rao, 1983). About 40 different species of weed plants have been reported as food or host plants of gundhi bugs. In rice fields gundhi bugs survive in some of weed plants till the rice crop comes to flower when they migrate to rice panicles. The alternate food plants of gundhi bug found in the rice ecosystem were *Paspalum scrobiculatum*, *Panicum annulatum*, *P. repens*, *Echinochloa colonum*, *Setaria glauca*, *E. crus-galli*, *E. miliaceae*, *Cyperus haspan* and *C. iria* (Kalode *et al.*, 1969).

The rice bug, *Leptocorisa oratorius* was detected feeding on graminaceous weeds, and laboratory trails on the insect's survival on *P. repens*, *P. maximum*, *P. punctatum*, *E. crus-galli*, *E. colonum*, *Alloteropsis ciminia*, *Axonopus affinis*, *Chloris barbata*, *Bracharia mutica*, *B. miliiformis*, *Bothriochloa pertusa*, *Elusine indica*, *Dicanthelium clandestinum* weeds gave positive results (Alam, 1989). Of 52 weed species tested along with the cultivated rice *Oryza sativa* Linn. as standard, a graminaceous weed *Leptochloa panicoids* Weight supported larval life and growth of yellow stem borer *Scirpophaga incertulas* (Walker) (Zaheruddeen and Prakasa Rao, 1983).

Rice hispa beetles sometime infested weed hosts like *C. rotundus*, *Panicum ciliaris*, *Digitaria setigera*, *E. colonum*, *E. crus-galli*, *E. indica* and *Leersia hexandra* (Razzaque and Karim, 1989).

Leaf folder (*Cnaphalocrocis medinalis*) was found