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Abundance Dynamics of Selected Arthropods in Relationship with Rice Plant Growth, Pests and their Natural Enemies

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Abstract

The cultivation of tropical Asian rice, which may have originated 9,000 years ago, represents an agricultural ecosystem of unrivalled ecological complexity. However, this crop is heavily infested with various pests. These pests have been reported to cause > 80 % damage to rice crop. The control strategies of these pests mainly rely on the application of chemical insecticides. However, indiscriminate use of chemical pesticides has led to health as well as environmental hazards and increasing the cost of cultivation. These studies were conducted in the major irrigated tropical rice fields of Leyte, Philippines. We have observed that abundance of various species of arthropod pests including leaf hoppers (Cicadellidae; *Nephotettix* species and others), plant hoppers (Delphacidae), bugs (Pentatomidae, *Scotinophara coarctata* and Coreidae), Coleoptera (mainly Chrysomelidae) and grasshoppers (Acrididae and Tettigoniidae), their natural enemies includes dragonflies (Anisoptera), damselflies (Zygoptera), ladybird beetles (Coccinellidae) and spiders (Araneae) were highly associated with various stages of the crop growth. In chemical treated site, maximum number of pest population was observed during the early tillering stage and remain present during the whole duration of the crop. Coreidae and Alydidae infested rice simultaneously, and remained abundant together, while Delphacids pests were noticed fare abundance in early stage of the crop. Spiders and Coccinellidae found more during tillering stage to milking stage. However in untreated site Cicadellidae pest was found more abundant during the tillering stage, high number of Alydidae, Coreidae were recorded during the milking and maturity stage of the crop. These results also give correlation as when the pest population developed; the predator population soon became abundant. On average pests found with more abundance than the predators.

Keywords: Abundance, pests, Philippines, population dynamics, predators, rice, spiders