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THE EFFECT OF HABITAT MODIFICATION ON PADDY VARIETY IR 64 FIELD WITH TRAP CROP APPLICATION USING LEMON GRASS (*Andropogon nardus*) AND WITHOUT TRAP CROP APPLICATION TOWARDS THE COMPOTITION, ABUNDANCE, AND DIVERSITY OF ARTHROPODS

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ABSTRACT

The trap crop technique relies on the attraction of insect pests to plantings other than the main crop. Application using of lemon grass for Habitat modification on paddy field can alter species composition and community structure including Arthropods from insect groups. The lemon grass was planted 20 day before main crop (paddy variety IR 64). This study was conducted in Pasuruan, East Java. Samples were taken using sweep net on vegetative paddy phase, generative paddy phase and ripening paddy phase. Sampling periods from Desember 2012 to March 2013. Each sample was sorted and identified to the family and morphospecies or species. Samples are identified in Zoological laboratory on department of biology, ITS. Study on Arthropoda diversity at different habitats by comparing the species richness is useful for determining ecological indicators at each habitat. The arthropods caught were then classified into some classes: pest (herbivore), natural enemy (parasitoid and predator), and other arthropods. After that, the Species Diversity Index was determined using its Shannon-Wiener Index (H'), Evenness (e), and Species Similarity Index (IS). The compotition of arthropods were classes from herbivore, predator, parasitoid and detritivore. The sum of H' is higher on paddy field with trap crop application than paddy field without trap crop application. Indicate that a stable relationship could be maintained between rice insect pests and their arthropod natural enemies.

Key words : Habitat modification, Trap crop, Arthropods, compotition, abundance, diversity

INTRODUCTION

Trapping plants serve as alternative host plants preferred by pest Arthopoda to provide food or put eggs compared with the plant's core. Use of trap plants included in the push-pull strategy which is one of the techniques of pest control that is principled on non-toxic control component, so that it can be integrated with other methods that can suppress the development of pest populations. This strategy may also increase natural enemies, especially the role of Parasitoids and predators (Effendi, 2009).

Plants of the genus Andropogon is pretty much used as a trap crop for crop plants herbaceous and has other functions, namely to prevent erosion on agricultural lands. On the research of Klein (2012), genus Andropogon can refuse and lose the population of insects in the family pentatomidae. While in research Van den Berg *et al.* (2000) plant Vetiver (*Andropogon zizanioides*) is a plant repellen for insects that have potential as a trap crop plant push-pull strategy to concentrate the oviposition of *Chilo partellus* (spotted stalk borer) away from plants core is corn thereby reducing this pests. Based on studies of Amalia, (2012), one of the natural ingredients that are potentially to be used as a trap crop is to plant lemon grass (*Andropogon nardus*) that is able to attract flies. In addition, *Andropogon nardus* has repellent (refused) aphids, grasshoppers and mites. In this study used Lemongrass scented plant application (*Andropogon nardus*) as the application of trap crop in applying

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IPM ecologically. As for the method of planting trap crop used as perimeter trap cropping which is useful as a protector of the pests that may come from multiple or unknown direction.

The issue will be discussed in this research is how the influence of habitat modification in land of rice varieties with modified IR 64 trap crop using lemon grass (*Andropogon nardus*) of composition, abundance, and diversity of arthropods and without modifications to the trap crop.

MATERIALS AND METHODS

This research will be carried out for 4 months (December 2012 - March 2013). This research will be done on rice cultivation in the village of Pasuruan Regency, Subdistrict Purwosari Pandaan. Location used the land with 2 difference of land management systems, i.e. with modification of habitat trap crop using lemon grass (*Andropogon nardus*) and land without modification of habitat trap crop (control).

The tools used in this study i.e. sweep net, yellow, wood tray buffer, sample bottles, syringes, styrofoam, plastic, cotton crackle, needle, paper labels, stationery, petri dish, brush, sprayer bottle and a stereo microscope.

The land was used in this research is measuring 7x10 meters. The land used was three land control plots and three land plots with habitat modification trap crop using lemon grass (*Andropogon nardus*). Trap crop planted with the perimeter planting lemon grass (*Andropogon nardus*) 20 days before planting crops planted it then core perimeter core crops of rice varieties IR64 as much as 25% of the plant population nucleus (Litsinger, 1994).

Sampling is done using a sweep net or nets swinging. Swinging conical nets, the mouth of the net is made of a circular wire with a diameter of 30 cm and nets made of muslin. How to use a sweep net by going 10 steps to center paddy fields and then hold the ends of the sweep net with tight and the tip of the circle touching plants in front, then sweep net swung up number 8. Arthropod sampling is performed periodically every 10 HST (Days after planting). Uptake for this method is done once every decision in the morning at 06.00 PM-10.00 pm. Sweep net method used on the vegetative phase (10-60 HST), reproductive (70-80 HST) and ripening phase (90-100 HST) (Rachmawaty, 2012).

RESULTS AND DISCUSSION

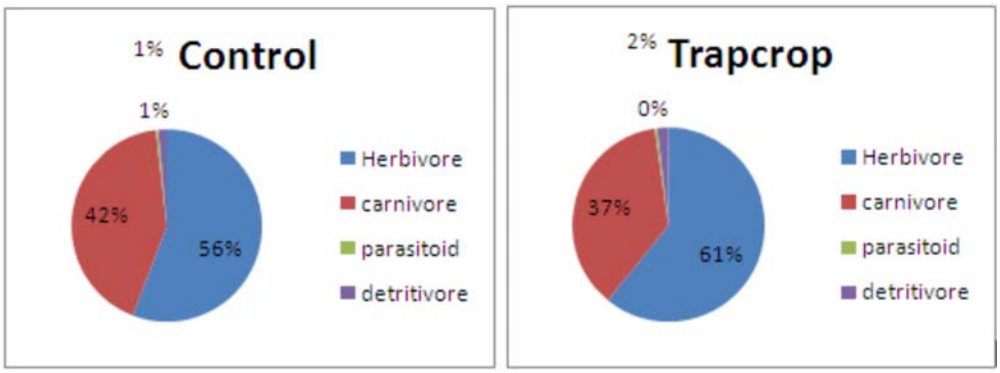

Fig. 1: The compotition of functional role on vegetative phase.

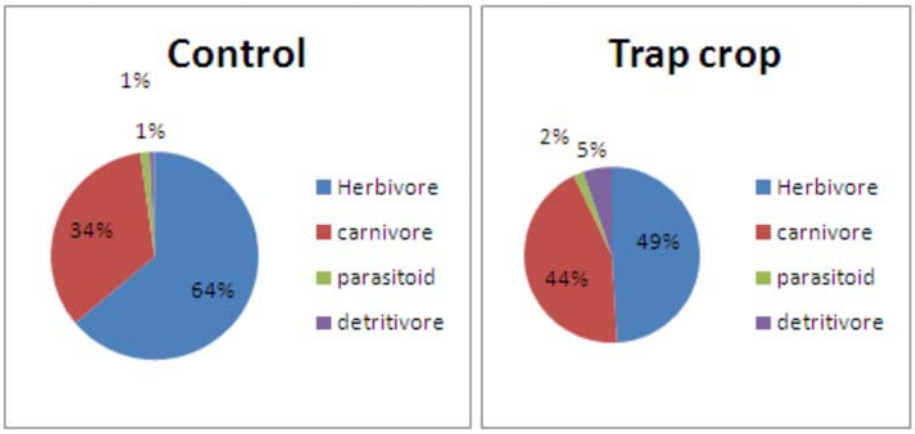

Fig. 2: The compotition of functional role on generative phase.

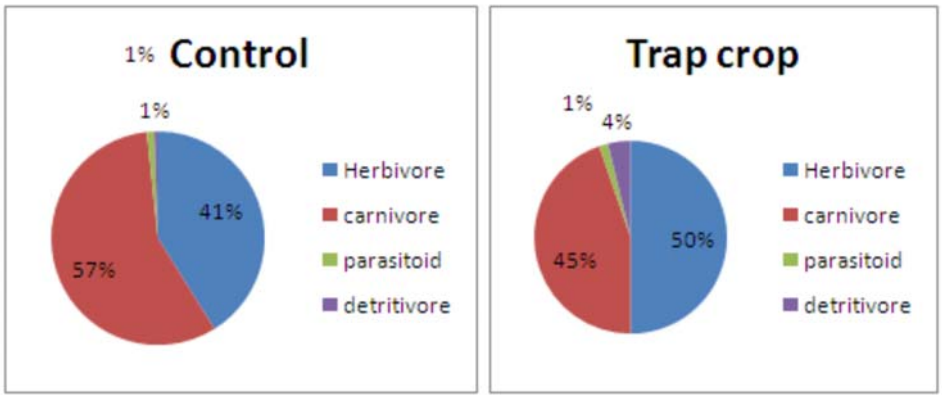

Fig. 3: The compotition of functional role on ripening phase.

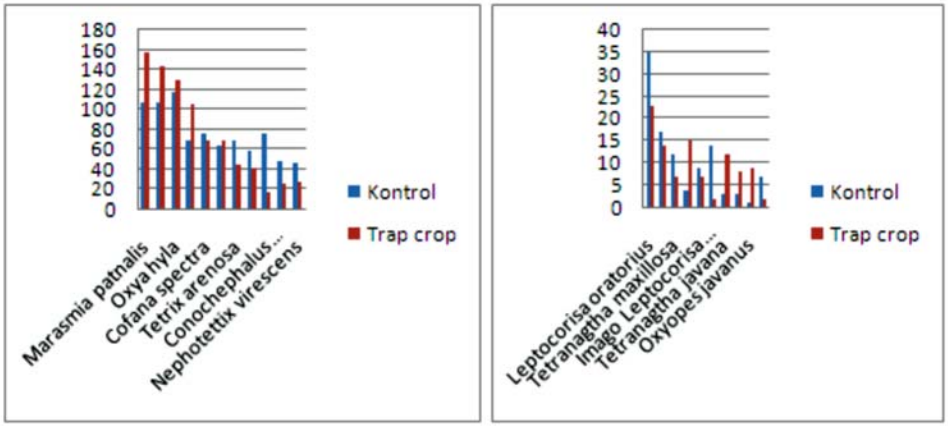

Fig. 3: The compotition species on vegetative and ripening phase.

Tab. 1: The result of diversity indeks (H') and richness index (E).

	vegetative phase		generative phase		repening phase	
	Control	Trap crop	Control	Trap crop	Control	Trap crop
H'	3,07026	2,760735	2,803658	3,078214	2,693805	2,79951
E	0,437276	0,417277	0,56573	0,614336	0,505606	0,556514

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