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NATURAL ENEMIES UNDER DIPTERA AND HEMIPTERA ORDERS IN ALFALFA FIELDS IN SOUTHEASTERN ANATOLIA

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Original scientific paper

Studies were implemented in the Southeastern Anatolia Region in Şanlıurfa, Akçakale and Mardin, Kızıltepe province between the years 2006 and 2007. At the end of the study, 10 species belonging to the Syrphidae family from the order Diptera, 2 species belonging to the Lygaeidae family, 3 species belonging to the Miridae family, and 6 species belonging to the Anthocoridae family from the order Hemiptera were detected. The number of species was 21 in total. Cotton and corn are grown in the area as mono-culture. This reduces the number of natural enemies. It has be seen that increase in alfalfa cultivation area can increase the number of natural enemies.

Keywords: *Southeast Anatolia Region, Alfalfa, Natural enemies, Hemiptera, Diptera*

1 Introduction

Alfalfa fields harbor numerous natural enemies. They act as hosts for natural enemies and provide them with alternative food sources. Therefore, alfalfa can be cultivated with the purpose of increasing the number of natural enemies at their location [1]. [2]have stated that natural enemies are more abundant in alfalfa fields as compared to other fields. While parasitizing by *Heliothis zea* in cotton fields was 5%, the same was found 72% in alfalfa fields. [3]reported in their study that natural enemies are more abundant in alfalfa fields as compared to cotton fields. Alfalfa fields host predators. While monoculture decreases the number of natural enemies, cultivation of alfalfa in such areas will increase the number of natural enemies [4]. Predators in alfalfa fields can also feed on other species in other fields [5]. More than one predator species exists in alfalfa fields. Diversity of natural enemy species is also greater in alfalfa fields. In a study, 30 species of Arenea and 14 species of Coccinelid were found in alfalfa fields [6,7]. Alfalfa is a flowering plant. Flowering plants increase the number of predators as they provide nectar and pollen [8]. Syrphids are general predators and feed on Homopters and are named as aphidophagous predators. Some of the species can also feed on Lepidopteraus larvae [9]. They are the natural enemies of Aphids. Larvae of many species are predators. Adults however, feed on nectar and pollen [10] Syrphids are natural enemies of insects. They are attracted by flowering plants [11]. Numerous predators exist in Anthocoridae, Miridae and Lygaeidae families under the Hemiptera order. These predators can feed on many pests found in nature. Species belonging to the Anthocoridae family are predators and their hunts include the insects and other species of Arthropoda [11, 12]. It has been reported that the natural enemies of Anthocoridae and Miridae feed on Psyllid and 21 species have been detected. [13]. Miridae and Anthocoridae feed on pear pests [14] Some Orius species feed on Thrips [16, 17] Some Anthocoridae species can be used as predators against cabbage pests [18].

2 Material and Methods

Studies were carried out in Kızıltepe District of Mardin Province and Akçakale District of Şanlıurfa Province within the years 2006 and 2007. Studies were commenced in April, in which clover plant starts growing, and were continued till September and October. Sweep nets were used to catch predators. Twenty-five sweep nets were used in several locations in each field and specimens thus caught were taken into polyethylene bags. Then, these bags were brought to the laboratory within ice boxes. Specimens brought to the laboratory were placed in deep freezer to kill the specimens. Specimens were labeled and were sent to the relevant specialist for identification.

3 Results and Discussion

As a result of the studies, 10 species belonging to the Syrphidae family in the Diptera order were detected in alfalfa fields and 2 species belonging to the Lygaeidae family, 3 species belonging to the Miridae family, and 6 species belonging to the Anthocoridae family in the Hemiptera order were detected. The species detected are given in Table 1. Cotton and corn are cultivated as monocultures in the area in the recent year. This can result in a decrease in the number of natural enemies. Monoculture reduces the number of natural enemies. Cultivating alfalfa in such areas can increase the number of natural enemies. [4]has found in their study 1.5 to 7.1 folds more predators in alfalfa fields as compared to cotton fields. In other studies on alfalfa fields in the area, 10 species of Arenea and 14 species of Coccinelid have been detected [6, 7]. Flowering plants increase the numbers of predators as they provide nectar and pollen. Alfalfa plant is a flowering plant and can increase the numbers of natural enemies where it is found [8, 1]. Syrphids are general predators and feed on Homopters, and they are named as aphidophagous predators. Some species can also feed on Lepidopteraus larvae [9]. Syrphids are natural enemies of insects, and are attracted by flowering plants [11]. Most of the species belonging to the Anthocoridae family are predators, and their hunts include insects and other Arthropoda species [12]. Natural enemies of the Anthocoridae and Miridae families can feed on Psyllids [14, 19] Some Orius species, however, can feed on thrips [16, 17]. Twenty-one species in total have been determined belonging to Diptera and Hemiptera orders in alfalfa fields. Most of these species feed on several pests as their natural

enemies. It is seen that number of natural enemies will increase with the increasing clover cultivation fields in the area. Therefore, alfalfa cultivation must be encouraged in the area. Incentives must be provided for farmers cultivating clover.

Table 1. Natural enemies of Diptera and Hemiptera

Diptera	**Syrphidae**	*Episyrphus balteatus* (De Geer)
		Sphaerophoria turkmenica Bankowska
		Eupeodes corollae (F.)
		Paragus bicolor (F.)
		Eristalinus megacephalus (Rossi)
		Syritta pipiens (L.)
		Sphaerophoria rueppelli (Wiedemann)
		Eristalis arbustorum (L.)
		Ischiodon scutellaris (F.)
		Paragus quadrifasciatus Meigen
Hemiptera	**Lygaeidae**	*Piocoris erythrocephalus* Cherot
		Geocoris megacephalus Cherot
	Miridae	*Deraeocoris pallens* Cherot
		Zanchius breviceps Matocq
		Campylomma diversicornis (Reuter)
	Anthocoridae	*Orius vicinus* (Ribaut)
		Orius niger (Wolff, 1811)
		Orius lindbergi (Lindberg)
		Orius minutus (Linnaeus)
		Orius laevigatus(Linnaeus)
		Orius sp.
		Orius albidipennis (Reuther)

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