

RESEARCH ON THE USEFUL ENTOMOFAUNA OF SOME VEGETABLE CROPS IN SOUTHERN OF OLTENIA

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ABSTRACT

Vegetable cultivation important for both the national and agricultural economy, being an important segment that must be preserved and developed, vegetable crops benefiting from attention both technically and scientifically.

Useful insects are very sensitive and vulnerable, so their disappearance could lead to the destruction of the balance between the different biosystems in agrobiocenoses.

The role of this paper is to provide a high input of scientific data on useful entomofauna.

Research was carried out in the private station in the locality of Bratovoiești and three methods of collecting the entomofauna were used, namely: Barber type ground trap, the tapping method, and the method of capture with the help of the entomological net.

All entomofauna collected from the vegetable ecosystem was subjected to detailed analyses on the systematic group to which each species belongs.

The abundance of the useful species collected are classified by order, so that the largest share is observed in the Coleoptera order, which totals a number of 10 species, and the Hymenoptera with only 3 species.

INTRODUCTION

Worldwide, in recent years, there has been a significant increase in areas cultivated with vegetable plants in protected areas such as solariums and greenhouses.

Useful fauna is a type of natural biological control, being represented by animal organisms that help fight crop pests naturally.

Research on useful entomofauna found in vegetable crops was done by Roman and Neamțu, 2000, Costache et al. 2002, Georgescu et al., 2003, Tălmăciu M., et al., 2004, Rotari Elena, et al., 2011, etc.

The entomofauna that was collected from the vegetable ecosystem

was subjected to detailed analyses regarding the systematic group to which each species belongs.

The researches were made in Dolj County, in the Private Station from Bratovoiești commune, a locality with large areas where vegetable plants are grown.

Useful insects are of interest because they play a role in keeping harmful populations below an economic damage threshold, with useful species being vulnerable and sensitive to pesticides.

This paper aims to bring a contribution of scientific data that were obtained after conducting research on the useful entomofauna in vegetable crops in southern Oltenia.

The research was carried out in Bratovoiești commune - Dolj county.

In 2020, three methods were used to collect the entomofauna, namely: the tapping method, and the method of capture and the Barber type ground trap method.

Samples were collected periodically both depending on the collection method and the course of the crop vegetation period.

For the study, 6 traps were used on a row of plants from the edge inwards in a straight line, at a distance of 20 m from the edge and 8 meters between the traps in a row. For the Barber method, boxes made of plastic with a volume of 500 ml, a height of 8 cm and a diameter of 10 cm, and the fixing liquid was a salt solution with a concentration of 25%.

The collected material was brought to the entomology laboratory within the Faculty of Horticulture and was determined with the help of specialized determinants: Stănoiu and Năstase 1998, Chimișliu, 2002 and 2005, etc.

The species were grouped by families and orders, and the useful species were selected from the total number of selected species.

RESULTS AND DISCUSSIONS

In 2020, the results obtained from the vegetable crops regarding the entomofauna from Bratovoiești commune, have a total of 63 harmful and useful species belonging to the *Insecta* class, in total being a number of 573 specimens that were collected.

The systematic classification of insects included 10 orders, namely:

Odonata order, *Orthoptera* order, *Thysanoptera* order, *Heteroptera* order, *Homoptera* order, *Mecoptera* order, *Hymenoptera* order, *Coleoptera* order, *Lepidoptera* order and *Diptera* order.

From the data obtained from the entomofauna collected from vegetable crops from Bratovoiești commune, it appears that the largest share is 38% and is held by the *Coleoptera* order, followed by the *Lepidoptera* order (20%), the *Orthoptera* order and *Hymenoptera* order by 10%, the *Diptera* order with 7%, *Heteroptera* and *Homoptera* orders with 4% each, *Odonata* order with 3%, the last places being occupied by the *Mecoptera* and *Thysanoptera* orders with 2% each. (Fig.1)

The collected entomofauna includes 38 harmful species, 13 useful species and 11 indifferent species, however, they can be harmful for plants from spontaneous flora or for other cultivated plants.

Following the analysis of the number of useful species collected from the Bratovoiești area, it can be observed that the 13 species belong to two orders and three families as follows: the *Hymenoptera* Order with the *Apidae* family and the *Coleoptera* order with the *Coccinellidae* and *Carabidae* families . (Table 1)

From Table 1 it can be seen that the *Coleoptera* order has the largest share totalling a number of 11 species and the *Hymenoptera* order has only 2 species. (Fig.2)

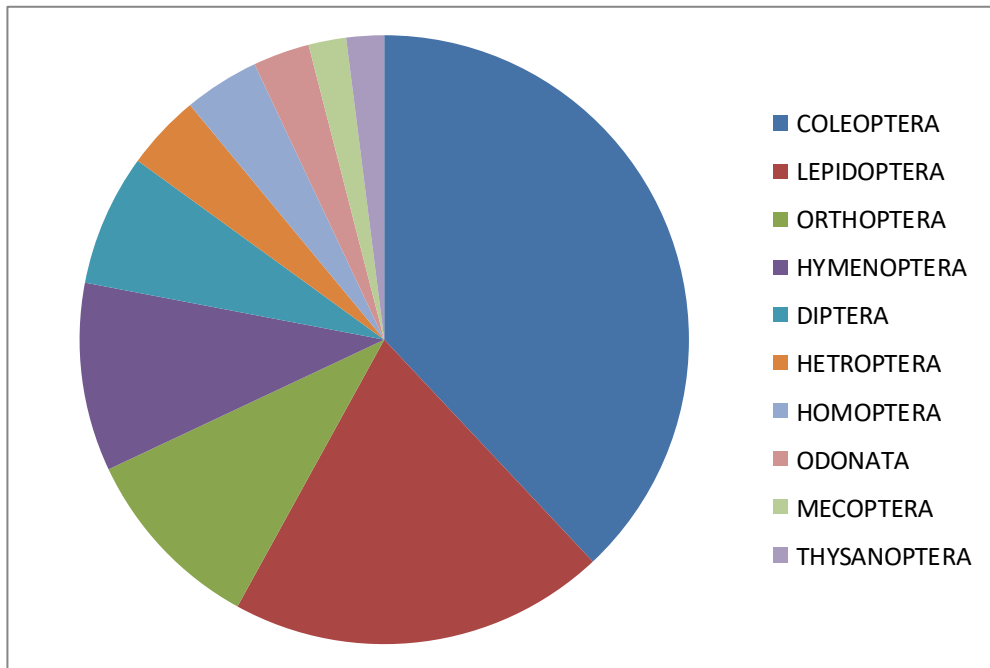


Fig. 1. The structure of the entomofauna collected from some vegetable crops in Bratovoiești Station - Dolj

Table 1

The structure of useful species collected from some vegetable crops in 2020 (Bratovoiești Station - Dolj County)

No.	Order	Famiy	Species	Abundance
1.	Hymenoptera	Apidae	<i>Apis melifera L.</i>	8
			<i>Bumbus terrestris</i>	11
2.	Coleoptera	Coccinellidae	<i>Adalia bipunctata</i>	9
			<i>Coccinella septempunctata</i>	11
			<i>Adonia variegata</i>	9
			<i>Coccinella 12-punctata</i>	7
		Carabidae	<i>Carabus violaceus</i>	15
			<i>Calosoma sycophanta</i>	5
			<i>Carabus cancellatus</i>	6
			<i>Carabus ulrichi</i>	11
			<i>Pterostichus nigera</i>	11
			<i>Harpalus affinis Schrank</i>	15
		<i>Amara crenata</i>	11	

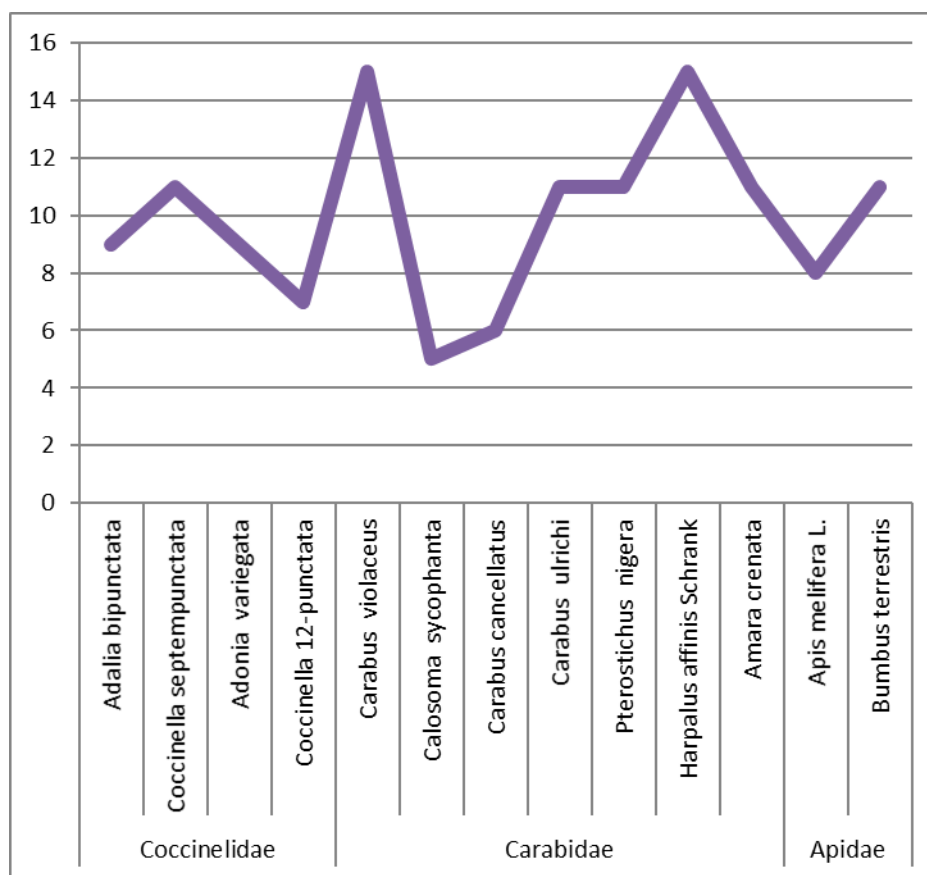


Fig. 2 The structure of the useful species collected belongs to the 3 identified families from some vegetable crops from the Bratovoiești area - Dolj county

The highest number of specimens collected was found in the species *Harpalus affinis Schrank* and *Carabus violaceus* (15), then *Carabus ulrichi*, *Amara crenata*, *Bombus terrestris*, *Pterostichus nigera* and *Coccinella septempunctata* species (each with 11 species) (Fig. 3).

A lower number of individuals was found in the *Adonia variegata*, *Adalia bipunctata* and *Apis mellifera L* species.

The lowest number of individuals collected is found in *Calosoma sycophanta* with a number of 5 individuals.

The *Apidae* family has only two species, namely *Apis mellifera L* and

Bombus terrestris, both species totalling 19 individuals.

The analysis of the data regarding the abundance of useful species that were included in the *Coleoptera – Carabidae* order, family showed that the largest share had the *Carabus violaceus* and *Harpalus affinis Schrank* species, each with 15 individuals, followed by the species *Carabus ulrichi*, *Pterostichus nigera* and *Amara crenata* with 11 individuals each, on the last places being the *Calosoma sycophanta* and *Carabus cancellatus* species. (Fig.3).

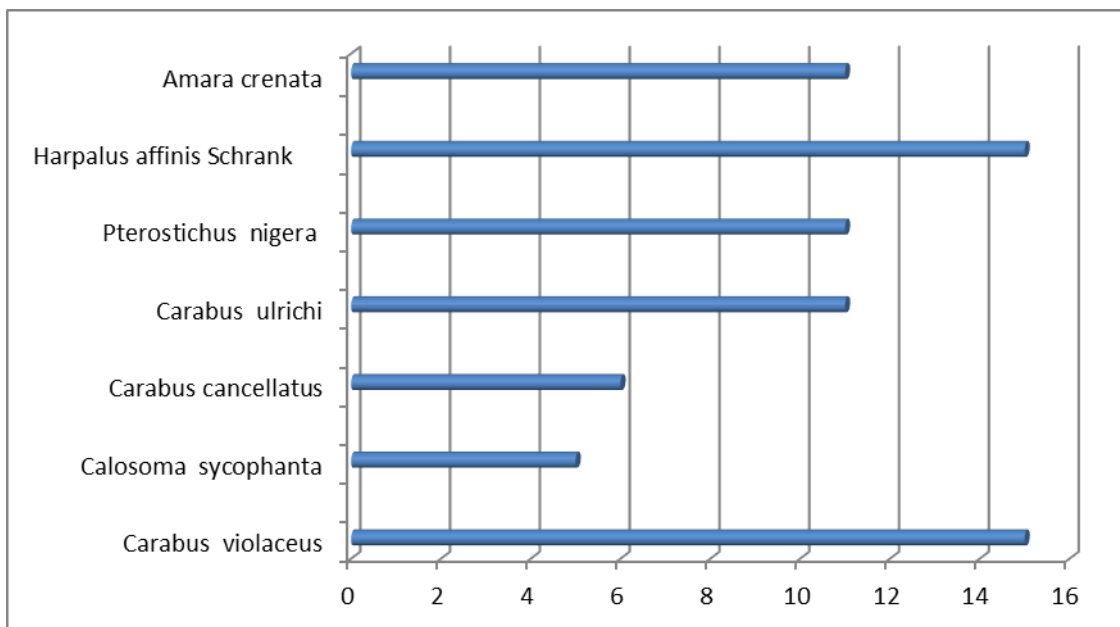


Fig. 3 The structure of the useful species collected and included in the Carabidae family from some vegetable crops from the Bratovoiești area - Dolj county

The *Coccinellidae* family presented a number of three useful species collected from vegetable crops and the largest share was in the *Coccinella septempunctat* species with 11

individuals, followed by the *Adalia bipunctata* and *Adonia variegata* species with 9 individuals, and *Coccinella 12-punctata* has 7 individuals. (Fig.4)

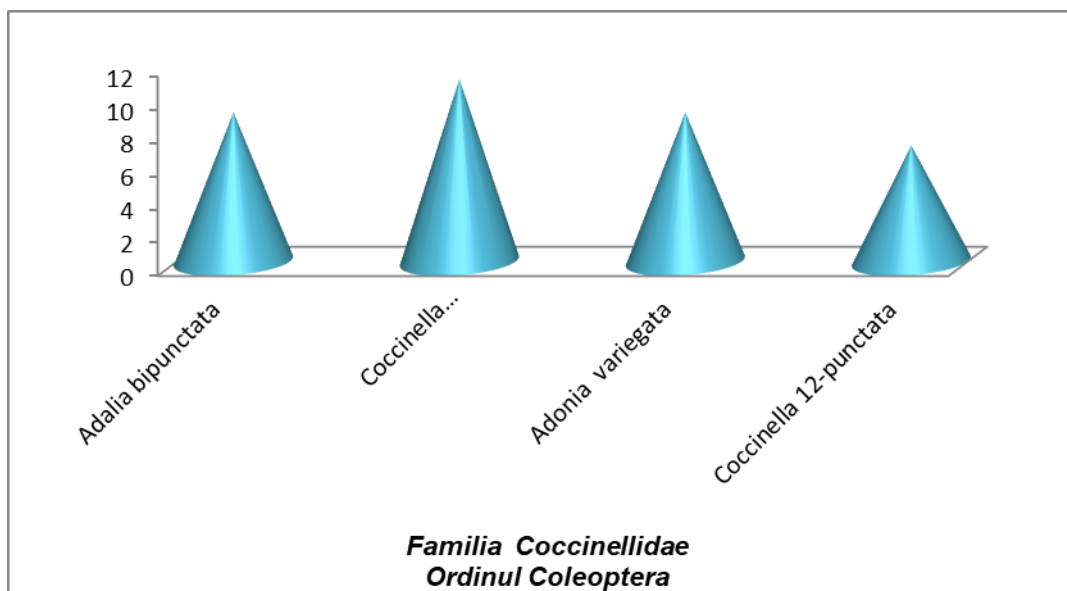


Fig. 4 The structure of the useful species collected and included in the Coccinellidae family from some vegetable crops from the Bratovoiești area - Dolj county

CONCLUSIONS

Useful entomofauna serves as indicators for solving problems or as mathematical models of the dynamics of animals of economic interest.

Following the collections of some vegetable crops from the private station Bratovoiești - Dolj, useful species were identified that systematically belong to two orders with 3 families, namely: *Coleoptera* order with two families (*Coccinellidae* and *Carabidae*) and *Hymenoptera* order with *Apidae* family, all summing up a number of 13 species.

The *Harpalus affinis* Schrank and *Carabus violaceus* species had the largest share, each species having a number of 15 individuals and belonging to the *Carabidae* family.

The *Coccinellidae* family had three species, of which *Coccinella septempunctata* with a number of 11 individuals, on the last place being the *Coccinella 12-punctata* species.

The two species (*Apis mellifera* L and *Bombus terrestris*) of the *Apidae* family had 8 and 11 individuals, respectively.

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