

ASPECTS REGARDING THE EPIGEE ENTOMOFAUNA EXISTING IN SOME AGRICULTURAL CROPS IN 2019

ASPECTE PRIVIND ENTOMOFAUNA EPIGEE EXISTENTĂ ÎN UNELE CULTURI AGRICOLE ÎN 2019

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Abstract. Observations were made in 2019 in apple tree plantations, corn crops and cabbage crops belonging to the Vasile Adamachi farm, Iasi, Iasi County. The purpose of the paper was to compare the entomofauna by a number of 3 different crops as well as agroecosystem technology and conditions. The material was harvested using Barber soil traps from June until September inclusive. The collected material was cleaned of vegetal remains and was then prepared for identification at insect level. The analysis of the collected material shows that the specimens collected belong to the Hexapoda Class, with several orders of insects and the Arachnida Class, the Aranea order. Most of them belong to the Insecta class. The orders to which the species are collected are: Coleoptera, Heteroptera, Hymenoptera, Diptera, all of the Hexapoda class. Regarding the abundance of entomofauna on crops, it is found that most of the catches belonged to the cabbage crop where they were collected (126) followed by the apple orchard (123) and then the maize crop (107).

Key words: entomofauna; epigenous; Agricultural crops; dynamics

Rezumat. Observațiile au fost făcute în anul 2019 într-o livada de mări, o cultură de porumb și o cultură de varză aparținând fermei Vasile Adamachi, Iași, județul Iași. Scopul lucrării a fost de a compara entomofauna unui număr de 3 culturi diferite, precum și tehnologia și condițiile agroecosistemelor. Materialul a fost recoltat folosind capcane de sol Barber din iunie până în septembrie inclusiv. Materialul colectat a fost curățat de resturi vegetale și a fost apoi pregătit pentru identificare la nivelul insectelor. Analiza materialului colectat arată că exemplarele colectate aparțin clasei Hexapoda, cu mai multe ordine de insecte și clasa Arachnida, ordinul Aranea. Majoritatea aparțin clasei Insecta. Ordinele la care sunt colectate speciile sunt: Coleoptera, Heteroptera, Hymenoptera, Diptera, toate din clasa Hexapoda. În ceea ce privește abundența entomofaunei pe culturi, se constată că majoritatea capturilor aparținut culturii de varză unde au fost colectate (126) urmate de livada de măr (123) și apoi de cultura de porumb (107).

Cuvinte cheie: entomofauna epigee, culturi agricole, dinamică.

INTRODUCTION

Apple tree plantations, corn crops and cabbage crops occupy important areas in the country but also in the eastern part of the country, namely eastern Moldova.

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These agricultural species under study have an extremely high number of plant organisms and adverse animal species that cause them damage (Amzăr, 2000; Cârdei, 2006).

Percher has compiled a list of 80 diseases, caused by viruses, mycoplasmas, bacteria, fungi and physiological imbalances; 64 insect and mite species, as well as 8 nematode species and at least 2 rodent species are added. In this last situation, culture is impossible without sustained concerns about preventing and combating them, in order to reduce the losses, to obtain high, constant and quality crops.

Fighting must be in line with the new ecological concept of integrated combat, which consists of a system of regulation of pest populations, taking into account the specific flight and the dynamics of pests and zoophytes, using harmoniously all methods Combating (agrofitotechnical, physico-mechanical, biological and chemical) to keep pest density or attack at a level that does not produce harvest losses.

This paper presents the results of researches on the epigeon entomofauna existing in the apple, corn and cabbage crops of the Vasile Adamachi farm in Iasi, Iasi County.

MATERIAL AND METHOD

The material was harvested using Barber soil traps from 3 crops, as follows: apple, corn and cabbage crops. Five traps were used in each crop, and samples were harvested from June to September inclusive, at intervals between the date of trapping on 30.05.2016, and the first collection was done on 03.06.2019. The distance between traps per row was about 5 m. There were 5 traps for each crop: apple, corn, cabbage, so a total of 15 traps. 15 collections were made on the following dates: 03.06; 07.06.; 13.06; 20.06; 30.06; 05.07; 09.07; 14.07; 20.07; 25.07; 01.08; 07.08; 14.08; 07.09; 13.0.

The soil traps type Barber are plastic boxes with a volume of 500 ml which are placed in the ground. The barking of the boxes has been done with care so that the edge of the trap is perfectly level at the ground and the insects easily to enter (Andrici, 2015; Tălmăci, 2016).

In the Barber soil traps, water and liquid detergent for dishes were used as a fixative liquid. The fixative fluid has a great influence on the effectiveness of the traps and must possess good preservative qualities to prevent the maceration of the captured individuals.

By locating at least 5 traps, it is possible to collect all species of species to establish the biotope dominance.

At each collection, the contents of each box were placed on a sieve doubled by a gauze bead to separate the insects from the fixative liquid.

The gauze with each sample was placed in labeled jars. The label contains the following information: stationary, culture, collection date and trap number. In order to preserve insect elasticity and to anesthetize the living ones, medicinal spirits have been used. After each collection, the trap was reintroduced into the soil and the fixative liquid was replaced (Perju, 2004; Tălmăci, 2016)

The collected material was brought to the laboratory, and the insects were determined and inventoried.

RESULTS AND DISCUSSIONS

The situation of the collections in 2019 was the following:

In the apple plantations (tab. 1), the 15 collections were harvested 123 samples belonging to a number of six orders, namely: *Coleoptera*, *Lepidoptera*, *Diptera*, *Hymenoptera* and *Heteroptera*, all belonging to the Hexapoda class, and *Arachnida* belonging to class Aranea. The best represented were the *Coleoptera* orders, with 72 samples and *the Diptera*, with 38 samples. The orders *Aranea* and *Heteroptera* had one sample.

The situation of the collections in 2019 was the following:

For the corn crop (tab. 2), the 126 samples belonging to the 8 orders were harvested: *Coleoptera*, *Lepidoptera*, *Diptera*, *Hymenoptera*, *Heteroptera* and *Orthoptera*, all belonging to the *Hexapoda* class and the orders *Aranea* and *Acari* belonging to the *Arachnida* class. The best represented were *Coleoptera* orders, with 45 samples, *Hymenoptera*, with 381 samples and *Diptera*, with 29 samples. The *Aranea* and *Acari* orders had 2 samples collected, and the *Heteroptera* order had one sample.

The situation of the collections in 2020 was the following:

In the cabbage crops (tab. 3), 107 samples were collected from 7 orders, as follows *Coleoptera*, *Lepidoptera*, *Diptera*, *Hymenoptera*, *Heteroptera* and *Orthoptera*, all belonging to the *Hexapoda* class and the *Aranea* order of the *Arachnida* class. The best represented were *Coleoptera* orders, with 43 samples and *Hymenoptera*, with 38 samples. The *Aranea* orders had one sample.

Table 1

The collected entomofauna from apple culture by the Barber soil trap method in the Adamachi stationary in 2019

No.	Order	Harvesting number															Total of samples
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	
1	Coleoptera	8	10	2	4	4	3	5	8	7	3	-	4	10	2	2	72
2	Lepidoptera	1	1	-	-	-	-	1	-	-	-	-	1	-	1	-	5
3	Diptera	1	2	1	1	-	-	-	1	2	8	5	6	5	2	4	38
4	Aranea	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
5	Hymenoptera	-	1	1	-	-	-	-	-	-	-	1	-	-	3	-	6
6	Heteroptera	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Total order and samples		10	14	4	5	4	3	6	10	9	12	6	11	15	8	6	123

Table 2

The collected entomofauna from corn crop by the Barber soil trap method in the Adamachi stationary in 2019

No.	Order	Harvesting number															Total of samples
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	
1	Coleptera	3	-	3	-	4	4	7	3	4	3	2	5	2	2	3	45
2	Lepidoptera	1	-	1	-	1	1	-	2	1	-	-	-	1	-	1	9
3	Diptera	-	2	-	-	5	10	-	-	4	-	1	1	2	1	3	29
4	Aranea	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
5	Hymenoptera	-	1	-	-	-	-	1	8	-	8	5	2	1	1	4	31
6	Heteroptera	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
7	Orthoptera	-	-	-	-	-	-	-	-	-	-	-	-	6	1	-	7
8	Acari	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	2
Total order and samples		3	4	-	-	10	15	8	13	10	12	8	8	13	5	11	126

Table 3

The collected entomofauna from cabbage crops by the Barber soil trap method in the Adamachi stationary in 2019

No.	Order	Harvesting number															Total of samples
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	VIII	XIV	XV	
1	Coleoptera	5	1	4	-	-	-	2	3	4	2	3	6	8	1	4	43
2	Lepidoptera	1	-	-	-	-	1	2	-	-	1	2	-	-	-	-	7
3	Diptera	1	2	1	2	-	2	-	3	-	-	1	1	-	1	2	16
4	Aranea	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
5	Hymenoptera	-	5	-	14	-	-	-	6	-	-	-	1	-	3	3	32
6	Heteroptera	-	-	-	1	-	-	-	1	-	1	-	1	-	-	-	4
7	Orthoptera	-	-	-	-	-	-	-	3	-	-	-	1	-	-	-	4
	Total order and samples	7	8	5	17	-	5	15	7	5	6	10	8	5	9	107	

The collected entomofauna through the period of research

No.	Order	Culture/no. of samples			Total	% of total
		apple	corn	cabbage		
1	Coleoptera	72	45	43	160	44.94
2	Diptera	38	29	16	83	23.31
3	Lepidoptera	5	9	7	21	5.89
4	Orthoptera	-	7	4	11	3.08
5	Araneae	-	2	1	3	0.85
6	Hymenoptera	6	31	32	69	19.38
7	Heteroptera	1	1	4	6	1.70
8	Acari	1	2	-	3	0.85
TOTAL		123	126	107	356	100.0

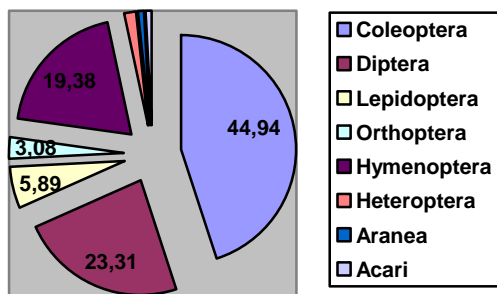


Fig. 1 Graphical representation of the weight of each order in the collected entomofauna

CONCLUSIONS

The researches were carried out in two stations in Iasi county on the entomofauna of the fruit tree, ecological, corn and white cabbage crops ecosystems.

The study tracked the abundance of the epigeic fauna belonging to the orders *Coleoptera*, *Heteroptera*, *Hymenoptera*, *Diptera*, all of the Hexapoda class.

Regarding the abundance of entomofauna on crops, it is found that most of the cabbage crops were collected (107) followed by apple crops (123) and then corn cultures (126).

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