OBSERVATIONS ON THE EXISTING ENTOMOFAUNA IN SOME VEGETABLE CROPS FROM THE MATCA AREA, GALATI COUNTY

OBSERVAȚII PRIVIND ENTOMOFAUNA EXISTENTĂ ÎN UNELE CULTURI LEGUMICOLE DIN ZONA MATCA, JUD. GALAȚI

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Abstract.
The material was collected using Barber soil traps in 2023 and 2024, during the month of August. The collections were carried out at three different times: at the beginning of August, in the middle of the month, and at the end of August, resulting in a total of three sampling sessions. A 2,5% NaCl solution was used inside the traps to kill and preserve the captured specimens. The insect fauna collected includes representatives of several orders: Coleoptera, Hymenoptera, Orthoptera, Heteroptera, Diptera, and Lepidoptera. Specimens belonging to Coleoptera, Orthoptera, Heteroptera, and Hymenoptera were identified to the species level. The most abundant group was the Hymenoptera (ants), followed by the Coleoptera. These results reflect both the diversity and relative dominance of soil-dwelling insect communities during the sampling period and provide a useful basis for future ecological analysis and comparison between the two consecutive years.
Key words: cabbage crop, Barber trap, atrhropods

Rezumat.
Colectarea materialului s-a făcut cu ajutorul capcanelor de sol de tip barber in anul 2023 si 2024, pe parcursul lunii august intr-o cultură de varza. Colectarile s-au facut la inceputul lunii august, la jumatatea lunii și la sfarsitul lunii august, în total trei recoltari. În capcanele de sol, pentru omorarea speciilor colectate s-a utilizat o solutie de NaCl, în concentratie de 2,5%. Speciile de insecte colectate apartin la mai multe grupe si anume: coleoptere, himenoptere, ortoptere, heteroptere diptere și lepidoptere. Coleopterele, ortopterele, heteropterele și himenopterele au fost determinate până la nivel de specie. Cel mai mare număr de exemplare colectate le-au avut himenopterele (furnicile), urmate de coleoptere. Aceste rezultate reflectă atât diversitatea, cât și dominanța relativă a comunităților de

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insecte care trăiesc în sol în timpul perioadei de eșantionare și oferă o bază utilă pentru analize ecologice viitoare și comparații între cei doi ani consecutivi.

Cuvinte cheie: cultura de varza.

INTRODUCTION

The study of entomofauna associated with vegetable crops is an essential element in underpinning modern plant protection strategies, especially in the context of intensification of production systems and increasing pressure exerted by pests on agroecosystems. In Romania, regions with a tradition in horticulture, such as Matca (Galați County), frequently face significant variations in faunal composition, due to both climatic factors and the technological particularities of each crop [Popescu, 2019]. Identifying the species present and assessing their abundance are essential steps for understanding population dynamics and for developing integrated, sustainable and efficient control methods [Ionescu and Văcaru, 2017].

Matca is one of the most important vegetable basins in Romania, characterized by extensive areas of solariums and fields, where tomatoes, peppers and cucumbers are predominantly grown. The microclimatic conditions generated by the protected structures favour the development of complex entomological communities, including both phytophagous species with high economic potential—such as *Tuta absoluta*, *Trialeurodes vaporariorum* or *Aphis gossypii* as well as useful species, predators or parasitoids, involved in natural biological regulation [Marcu et al., 2021]. The analysis of the structure of the entomofauna in these agroecosystems allows not only the understanding of local ecological processes, but also the application of appropriate plant protection measures, adapted to the specifics of the area [Stan and Munteanu, 2020]. In this context, the present work aims to highlight the entomological diversity present in the main vegetable crops in the Matca area, Galați county, through direct observation of the species, their frequency and seasonal dynamics. The results obtained contribute to completing the database on the entomofauna specific to the horticultural regions of southeastern Romania and provide useful information for improving integrated pest management programs.

MATERIAL AND METHOD

Research was initiated with the aim of identifying useful and harmful entomofauna in cabbage crops within the stationary of Matca locality, Galati county.

In order to carry out research on the arthropod entomofauna of the culture under study, the biological material was collected in 2023 and 2024 in the field planted with cabbage seedlings. To carry out the experience, the working method aimed at using the Barber soil trap method. (fig.1)

Barber soil traps are 500 ml plastic boxes that have a diameter of 10 cm and a height of 8 cm. A detergent solution in water at a concentration of 16% was placed in these traps. The traps were buried at ground level. The pits were made with a spade,

and the traps were carefully buried so that the edge of the trap was at ground level so that the insects could easily enter them [Ionescu and Apetrei, 1988].

Fig.1. Entomofauna collected using Barber soil traps

The traps were installed at a distance of approximately 5 m between them and 6 traps were installed in two rows, each year from the beginning of May and operated until the end of August.

A fixing liquid (2.5% NaCl solution) was introduced into the Barber soil traps. The fixing liquid has an influence on the effectiveness of the traps, being a good preservative to prevent maceration of the collected individuals. [Talmaciu et al., 2008,2022] Establishing the dominance of a biotope can be achieved by placing a minimum of 10 traps to collect all categories of species. The number of Barber soil traps used was established depending on the collection and culture site in order to obtain real information. The contents of each box were placed on a gauze sieve in order to separate the insects from the fixing liquid. The gauze with each sample was placed in labelled bags, the label having the following information: the station, the culture, the date of collection and the trap number. In order to preserve the elasticity of the insects and to "anesthetize" the live ones, sanitary alcohol was used [Tudorache et al., 2019]. After each collection, the traps were reintroduced into the soil, the fixative liquid being replaced. The collected material was brought to the laboratory, and the insects were determined and inventoried.

RESULTS AND DISCUSSIONS

In 2023, discussions regarding the taxa collected, by harvests are presented as follows (tab. 1).

At harvest I, arthropods belonging to 7 taxa were collected, namely: *Gryllotalpa gryllotalpa*, arachnids, ants, *Pseudophonus pubescens*, *Formicomus pedestri*s, diptera and *Harpalus aeneus*.

The most specimens, 120, were from ants.

At harvest II, 48 specimens of arthropods were collected, belonging to the following taxa: ants, arachnids, *Pseudophonus pubescens*, *Formicomus pedestris*,

Drasterius bimaculatus, *Pyrrhocoris apterus*, *Dolichus halensis*, diptera, *Gryllotalpa gryllotalpa*, *Harpalus calceatus* and lepidoptera.

The most specimens, 16, were from the species *Pseudophonus pubescens*.

At the 3rd harvest, 76 specimens belonging to 16 taxa were collected, namely: arachnids, diptera, *Formicomus pedestris*, *Phyllotreta punctulata*, *Drasterius bimaculatus*, *Pseudophonus pubescens*, ants, *Micilus murinus*, *Aphthona euphorbiae*, *Formicomus gracilis*, hymenoptera, *Pseudophonus griseus*, *Pyrrhocoris apterus*, lepidoptera, *Gryllotalpa gryllotalpa* and *Blaps mortisaga*.

The most specimens were from ants.

Table 1

The structure of invertebrate taxa that were collected from the cabbage crop, Mtca, year 2023- Barber

No.	Name of taxon	Trap no....						Total
		1	**2**	**3**	**4**	**5**	**6**	
Ist Harvest- 03.08.2023								
1.	*Gryllotalpa gryllotalpa*	1	2	-	1	1	-	5
2.	Arahnide	2	2	3	1	-	-	8
3.	Ants	26	3	2	12	2	74	120
4.	*Pseudophonus pubescens*	1	4	1	2	1	-	9
5.	*Formicomus pedestris*	2	-	1	3	1	-	7
6.	Dipters	-	-	1	-	-	-	1
7.	*Harpalus aeneus*	-	-	1	-	-	-	1
7 taxons		**32**	**11**	**9**	**20**	**5**	**74**	**151**
IInd Harvest - 13.08.2023								
1.	Ants	3	1	-	-	-	2	6
2.	Spiders	1	2	1	3	4	-	11
3.	*Pseudophonus pubescens*	3	3	-	10	-	-	16
4.	*Formicomus pedestris*	2	-	-	-	-	-	2
5.	*Drasterius bimaculatus*	1	-	-	-	-	-	2
6.	*Pyrrhocoris apterus*	-	-	1	-	-	-	1
7.	Dipters	-	-	-	2	1	1	4
8.	*Gryllotalpa gryllotalpa*	-	-	-	1	-	-	1
9.	*Dolichus halensis*	-	-	-	2	-	-	2
10.	*Harpalus calceatus*	-	-	-	3	-	-	3
11.	Lepidopters	-	-	-	-	-	1	1
11 taxons		**10**	**6**	**2**	**21**	**5**	**4**	**48**
IIIrd Harvest - 23.08.2023								
1.	Spiders	1	2	-	1	-	2	6
2.	Dipters	3	1	-	-	-	-	4
3.	*Drasterius bimaculatus*	2	-	-	-	-	1	3
4.	*Formicomus pedestris*	1	2	7	2	2	-	14
5.	*Phyllotreta punctulata*	1	-	-	-	2	-	3
6.	Ants	-	8	2	3	-	5	18
7.	*Pseudophonus pubescens*	-	4	4	2	1	3	14
8.	*Micilus murinus*	-	1	-	-	-	-	1
9.	*Aphthona euphorbiae*	-	-	1	-	3	-	4

No.	Name of taxon	Trap no....						Total
		1	2	3	4	5	6	
10.	*Formicomus gracilis*	-	-	1	-	3	-	4
11.	Hymenoptere	1	-	-	-	-	-	1
12.	*Pseudophonus griseus*	-	-	-	2	-	-	2
13.	*Pyrrhocoris apterus*	-	-	-	-	1	-	1
14.	Lepidoptere	-	-	-	-	-	1	1
15.	*Gryllotalpa gryllotalpa*	-	-	-	-	-	1	1
16.	*Blaps mortisaga*	-	-	-	-	-	1	1
16 taxons		**9**	**19**	**14**	**11**	**9**	**14**	**76**

In total, in 2023, during the 3 harvests (tab. 2), 275 arthropod specimens belonging to 19 taxa were collected.

The largest number of specimens was from ants (144), followed by the species *Pseudophonus pubescens* (39 specimens), arachnids (25 specimens) and *Formicomus pedestris* (23 specimens).

A total of 4 taxa had only one specimen each. These were: *Harpalus aeneus*, *Micilus murinus*, hymenoptera and *Blaps mortisaga*.

Table 2

The structure of invertebrate taxa that were collected from the cabbage crop, Matca, year 2023- Barber

No.	Name of taxons	Harvest no...			TOTAL
		I	II	III	
1.	*Gryllotalpa gryllotalpa*	5	1	1	7
2.	Spiders	8	11	6	25
3.	Ants	120	6	18	144
4.	*Pseudophonus pubescens*	9	16	14	39
5.	*Formicomus pedestris*	7	2	14	23
6.	Dipteres	1	1	4	6
7.	*Harpalus aeneus*	1	-	-	1
8.	*Drasterius bimaculatus*	-	1	3	4
9.	*Pyrrhocoris apterus*	-	1	1	2
10.	*Dolichus halensis*	-	2	-	2
11.	*Harpalus calceatus*	-	3	-	3
12.	Lepidopters	-	1	1	2
13.	*Phyllotreta punctulata*	-	-	3	3
14.	*Micilus murinus*	-	-	1	1
15.	*Aphthona euphorbiae*	-	-	2	2
16.	*Formicomus gracilis*	-	-	4	4
17.	Hymenopters	-	-	1	1
18.	*Pseudophonus griseus*	-	-	2	2
19.	*Blaps mortisaga*	-	-	1	1
TOTAL		**151**	**45**	**76**	**275**

In 2024, the situation regarding the taxa collected, by harvests is presented as follows (tab. 3):

At the first harvest, 68 specimens of arthropods belonging to a number of 8 taxa were collected, these being arachnids, ants, *Pseudophonus pubescens*, *Phyllotreta atra*, diptera, lepidoptera, *Gryllotalpa gryllotalpa* and *Harpalus distinguendu*s.

The most specimens (80) were from ants.

At the third harvest, 47 specimens of arthropods belonging to 6 taxa were collected, as follows: lepidoptera, arachnids, *Pseudophonus pubescens*, lepidoptera, ants and *Ophonus puncticollis*.

The most specimens (120) were from ants.

Table 3

Structure of invertebrate taxa that were collected from the cabbage crop, Matca, year 2024 – Barber traps

No.	Name of taxa	Trap number...						Total
		1	2	3	4	5	6	
Ist Harvest - 03.08.2024								
1.	Spiders	2	2	2	-	-	-	6
2.	Ants	2	-	4	-	-	-	6
3.	*Pseudophonus pubescens*	2	2	-	3	3	-	10
4.	*Phyllotreta atra*	12	-	12	11	-	-	35
5.	*Formicomus pedestris*	2	-	-	2	-	-	4
6.	*Gryllotalpa gryllotalpa*	-	2	1	1	1	-	5
7.	*Pyrrhocoris apterus*	-	-	-	1	-	-	1
8.	*Ophonus obscurus*	-	-	-	-	1	-	1
8 taxons		**20**	**6**	**19**	**18**	**5**	**0**	**68**
IInd Harvest - 13.08.2024								
1.	Spiders	1	-	1	-	3	1	6
2.	Ants	1	8	-	4	67	-	80
3.	*Pseudophonus pubescens*	1	3	2	3	2	1	12
4.	*Phyllotreta atra*	1	3	-	-	-	-	4
5.	Dipters	-	1	-	-	-	-	1
6.	Lepidopters	-	-	-	1	-	-	1
7.	*Gryllotalpa gryllotalpa*	-	-	-	-	-	1	1
8.	*Harpalus distinguendus*	-	-	-	-	-	1	1
8 taxons		**4**	**15**	**3**	**8**	**72**	**4**	**106**
IIIrd Harvest - 23.08.2024								
1.	Lepidopters	1	-	-	-	-	-	1
2.	Spiders	1	-	2	2	1	1	7
3.	*Pseudophonus pubescens*	4	5	-	1	-	1	11
4.	Ants	-	-	-	23	2	1	26
5.	*Ophonus punticolis*	-	-	-	-	-	1	1
5 taxons		**6**	**5**	**2**	**26**	**3**	**4**	**46**

In total, in 2024, during the 3 harvests (tab. 4), 221 arthropod specimens belonging to 12 taxa were collected.

The most specimens were ants (112 specimens), followed by *Phyllotreta atra* (34 specimens), *Pseudophonus pubescens* (33 specimens) and arachnids (19 specimens).

Table 4

The structure of invertebrate taxa that were collected from the cabbage crop, Matca, year 2024 – Barber

No.	Name of taxon	Harvest no.....			TOTAL
		I	II	III	
1.	Spider	6	6	7	19
2.	Ants	6	80	26	112
3.	*Pseudophonus pubescens*	10	12	11	33
4.	*Phyllotreta atra*	35	4	-	39
5.	*Formicomus pedestris*	4	-	-	4
6.	*Phyrrocoris apterus*	1	-	-	1
7.	*Ophonus obscurus*	1	-	-	1
8.	Dipters	-	1	-	1
9.	Lepidopters	-	1	1	2
10.	*Gryllotalpa gryllotalpa*	5	1	1	7
11.	*Harpalus distinguendus*	-	1	-	1
12.	*Ophonus puncticolis*	-	-	1	1
12 taxons		**68**	**106**	**47**	**221**

CONCLUSIONS

In 2023, 275 arthropod specimens belonging to 14 taxa were collected, while in 2024, 221 specimens belonging to 12 taxa were collected.

The most numerous arthropods collected in 2023 were: ants (144 specimens), *Pseudophonus pubescens* (39 specimens), arachnids (25 specimens) and *Formicomus pedestris* (23 specimens).

In 2024, the most numerous arthropods collected were: ants (112 specimens), *Phyllotreta atra* (39 specimens), *Pseudophonus pubescens* (33 specimens), arachnids (19 specimens).

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