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**BIODIVERSITY OF SOME GROUPS OF INVERTEBRATES  
IN THE AGROECOSYSTEM OF LAVENDER CULTIVATION**

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**ABSTRACT**

*Biodiversity, together with vulnerability and resilience, are the main descriptors of the sustainability of agricultural systems.*

*In turn, biodiversity can be measured by a series of indicators: frequency, relative abundance, dominance, constancy, fidelity and fairness.*

*The present paper aimed at qualitative and quantitative analysis of invertebrate species in the teaching field of the Faculty of Natural Sciences and Agricultural Sciences, Ovidius University, Constanța and the agricultural farm in Saraiu, Constanța County.*

*In the period 2019-2021, the objectives of the faunal research were achieved by analyzing the state of the lavender culture agroecosystem and specifying the groups of invertebrates, in order to some conservation and protection measures.*

**INTRODUCTION**

Biodiversity highlights the variety of forms in which life presents itself (Bavaru A. et al. 2007).

In an agricultural ecosystem, diversity is represented by the number of species and the main processes with implications in the productivity of agricultural plants (Șchiopu D., et al.2002).

In the terrestrial environment, biodiversity is influenced by the spatial heterogeneity of biotopes and the stability of abiotic environment conditions (Botnariuc N. et al. 1982)

At the level of agroecosystems, due to the mismanagement of the means of agricultural production by humans, there is a significant reduction of biodiversity (Godeanu S.P., 2013).

**MATERIAL AND METHODS**

This study was carried out within the teaching field of the Faculty of Natural Sciences and Agricultural Sciences, "Ovidius" University of Constanța and the agricultural farm in Saraiu.

We performed observations and measurements on biological diversity during 2019-2021, and subsequently processed, compared and interpreted the data.

Starting with the observation that the number of taxa varies from one area to another, we chose for experimentation the agroecosystem of lavender culture in the two lots cultivated in ecological system.

The materials we used to conduct the research were:

- metric frame
- microscope
- crystallizer
- tweezers
- entomological needles
- roulette
- stakes for delimiting the test surfaces
- jars
- formalin
- camera
- determinant for invertebrates

For the inventory of invertebrates, we installed traps in the studied agroecosystems and we identified and counted the collected organisms.

In each examined perimeter we installed 3 traps for invertebrates, and at an interval of 15 days we replaced the traps, we identified and counted the invertebrates on large taxonomic groups.

For data processing we calculated the following indicators: abundance, dominance and ecological diversity.

The objectives of the study carried out in the teaching field of the Faculty of Natural Sciences and Agricultural Sciences, "Ovidius" University were the following:

- identification of the groups of invertebrates that make up the lavender crop agroecosystem,
- study of the living conditions of plants and animals,
- studying the relationships between organisms and between them and their environment.

The data obtained were used to characterize the ecological agricultural system as a living environment for the different types of organisms encountered.

## RESULTS AND DISCUSSIONS

In most agricultural ecosystems, in the surface soil layer, and in the litter, there is a community of organisms with an important role in ensuring the stability of agroecosystems.

The results were obtained by the method of observation, by sounding with traps for groups of invertebrates.

The biological material collected was preserved in sanitary alcohol, sorted and determined on the two analyzed areas.

During the years 2019-2021, in lavender crops, 1318 invertebrate specimens were identified. The most common species of insects belong to hymenoptera, 979 specimens ( table 1).

Table 1  
Abundance and dominance of invertebrate species in culture of lavender, didactic field „Ovidius” University of Constanța

Taxonomic group	Abundance	Dominance (%)
Diptera	89	6,75
Hymenoptera	979	74,27
Miriapoda	57	4,32

Coleoptera	94	7,13
Orthoptera	16	1,21
Araneae	33	2,50
Gastropoda	32	2,42
Oligochaeta	10	0,75
Dermaptera	8	0,60

As for the epigeal fauna, the surface beetles and spiders were the most abundant predators caught in traps (table 1).

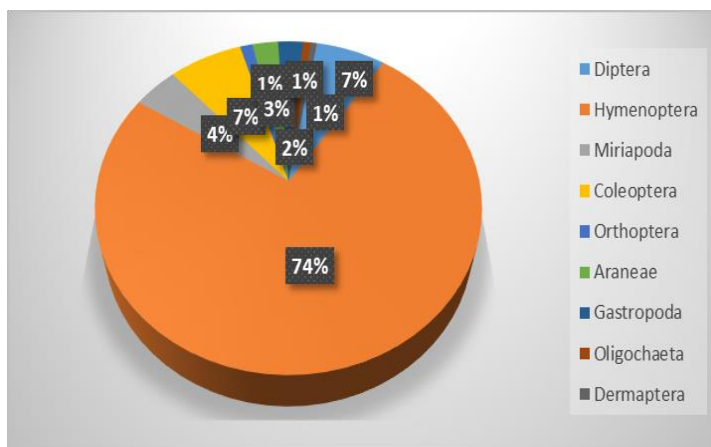


Figure 1 Qualitative composition in the teaching field  
Ovidius University Constanta

In the agrobiocenosis of lavender culture, the most numerous proved to be hymenoptera, followed by coleoptera and dipterans (figure 1).

Table 2

Abundance and dominance of invertebrate species in culture of lavender,  
agricultural farm from Saraiu, Constanța

Taxonomic group	Abundance	Dominance (%)
Diptera	67	8,50
Hymenoptera	542	68,78
Coleoptera	81	10,27
Orthoptera	15	1,90
Araneae	49	6,21
Gastropoda	27	3,42
Homoptera	7	0,88

Following the observations made at the agricultural farm from Saraiu locality, Constanța county, we identified seven groups of invertebrates that are part of the biocenosis of the lavender culture (table 2).

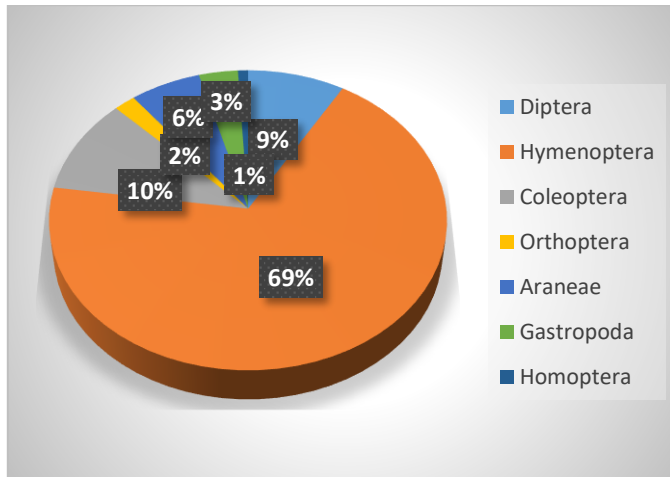


Figure 2 Qualitative composition in culture lavender, agricultural farm in Saraiu

Taking fully into account the insect fauna encountered in the agroecosystem of the lavender culture, it is found that the most numerous were the hymenoptera here as well, 542 specimens (figure 2).

### CONCLUSIONS

Lavender culture within the teaching field of the Faculty of Natural Sciences and Agricultural Sciences, has the highest abundance of Oligochaetes, species beneficial to soil health. The relatively small number of individuals in this group indicates the low soil fertility on which the analyzed crop is located.

The two lavender crops have differences in the structure of biocenosis, both qualitatively and quantitatively due to the various configurations of the elements of climatic factors.

Based on the above and mentioned above, we can conclude that organic lavender cultivation is a balanced ecosystem, characterized by high soil health, associated with high biological diversity, as energy losses are low.

### REFERENCES

- Bavaru A., et al. 2007. Biodiversitatea și ocrotirea naturii. Edit. Academiei Române, București, pp. 15-17.
- Botnariuc N., et al., 1982. Ecologie. Edit. Didactică și Pedagogică, București, pp. 121-125.
- Godeanu S. P., 2013. Ecologia aplicată. Edit. Academiei Române, București, pp. 50-51
- Șchiopu D., et al., 2002. Ecologie și protecția mediului. Edit. Ion Ionescu de la Brad, Iași, pp 277-278.