

## ASPECTS REGARDING THE EPIGEE ENTOMOFAUNE EXISTING IN SOME AGRICULTURAL CROPS

**MIHAI TĂLMACIU, VALENTIN TUDORACHE, NELA TĂLMACIU, MONICA HEREA**

**keywords:** *entomofauna; epigenous; Agricultural crops; dynamics.*

### ABSTRACT

*Observations were made in 2016 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 cabbage crops were collected (126) followed by apple crops (123) and then corn cultures (107).*

### 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.

These agricultural species under study have an extremely high number of plant organisms and adverse animal species that cause them damage (Amzăr V, 2000, Cârdei E. 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 (agrofitechnical, 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 03.06.2016. 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: 03.06.2016; 07.06.2016; 13.06.2016; 20.06.2016; 30.06.2016; 05.07.2016; 09.07.2016; 14.07.2016; 20.07.2016; 25.07.2016; 01.08.2016; 07.08.2016; 14.08.2016; 07.09.2016; 13.09.2016.

Barber type traps are plastic boxes with a volume of 500 ml which are buried 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 C. 2015, Tălmăciu M. 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 T., 2004, Tălmăciu M. 2016)

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



**Fig. 1 Soil trap type Barber (original)**



**Fig. 2 Entomofauna collected by the Barber soil trap (original)**

## **RESULTS AND DISCUSSIONS**

The collection of biological material was carried out in the following data: 03.06.2016; 07.06.2016; 13.06.2016; 20.06.2016; 30.06.2016; 05.07.2016; 09.07.2016; 14.07.2016; 20.07.2016; 25.07.2016; 01.08.2016; 07.08.2016; 14.08.2016; 07.09.2016; 13.09.2016.

The situation of the collections was the following:

In the apple culture (Table 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.

**Table 1**

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

| 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                |
| <b>Total order and samples</b> |             | 10                | 14 | 4   | 5  | 4 | 3  | 6   | 10   | 9  | 12 | 6  | 11  | 15   | 8   | 6  | <b>123</b>       |

In the crop of corn (Table 2), 107 samples were collected from 7 orders, namely 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 32 samples. The Aranea orders had one sample.

**Table 2**

**The collected entomofauna from corn culture by the Barber soil trap method in the Adamachi stationary**

| No.                            | Order       | Harvesting number |    |     |    |   |    |     |      |    |   |    |     |      |     |    | Total of samples |
|--------------------------------|-------------|-------------------|----|-----|----|---|----|-----|------|----|---|----|-----|------|-----|----|------------------|
|                                |             | I                 | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | XIII | 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                |
| <b>Total order and samples</b> |             | 7                 | 8  | 5   | 17 | - | -  | 5   | 15   | 7  | 5 | 6  | 10  | 8    | 5   | 9  | <b>107</b>       |

For the cabbage culture (Table 3), the 126 collections 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 31 samples and Diptera, with 29 samples. The Aranea and Acari orders had 2 samples collected, and the Heteroptera order had one sample.

**Table 3**

**The collected entomofauna from cabbage culture by the Barber soil trap method in the Adamachi stationary**

| 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                |
| <b>Total order and samples</b> |             |                   | 3  | 4   | -  | 10 | 15 | 8   | 13   | 10 | 12 | 8  | 8   | 13   | 5   | 11 | <b>126</b>       |

Table 4

The collected entomofauna through the three cultures in 2016

| No.          | Order       | Culture/no. of samples |            |            | Total      | % of total   |
|--------------|-------------|------------------------|------------|------------|------------|--------------|
|              |             | apple                  | corn       | cabbage    |            |              |
| 1            | Coleoptera  | 72                     | 43         | 45         | 160        | 44,94        |
| 2            | Diptera     | 38                     | 16         | 29         | 83         | 23,31        |
| 3            | Lepidoptera | 5                      | 7          | 9          | 21         | 5,89         |
| 4            | Orthoptera  | -                      | 4          | 7          | 11         | 3,08         |
| 5            | Araneae     | -                      | 1          | 2          | 3          | 0,85         |
| 6            | Hymenoptera | 6                      | 32         | 31         | 69         | 19,38        |
| 7            | Heteroptera | 1                      | 4          | 1          | 6          | 1,70         |
| 8            | Acari       | 1                      | -          | 2          | 3          | 0,85         |
| <b>TOTAL</b> |             | <b>123</b>             | <b>107</b> | <b>126</b> | <b>356</b> | <b>100,0</b> |

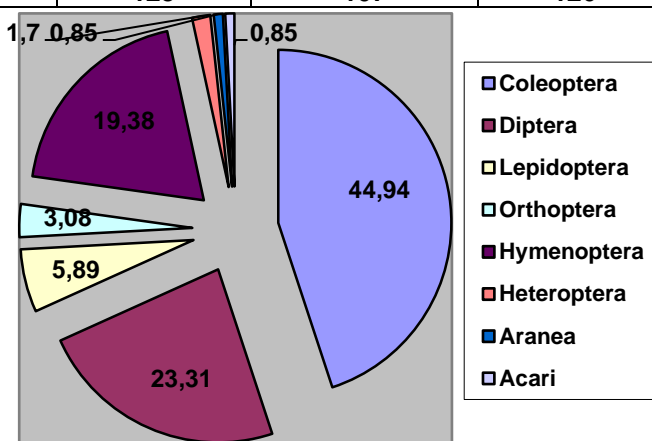


Fig. 1. – Graphical representation of the weight of each order in the collected entomofauna

### 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 epigee 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 (126) followed by apple crops (123) and then corn cultures (107).

### BIBLIOGRAPHY

1. Amzăr Valentina, Branîște N., 2000 – *Cultura mărului*. Editura Gee, București.
2. Andrici C., Tălmăciu M., Nela Tălmăciu, Monica Herea 2015- *Aspects to knowledge of existing invertebrates fauna in corn cultures*, Analele Universității din Craiova, Ed. Universitaria Craiova, vol. XX (LVI), pag. 329-332,
3. Cârdei E., Corneanu G., Humă Ramona, 2007 – *Rezultate tehnologice și economice în cultura mărului*. Lucrări științifice, vol , seria Horticultură, Editura „Ion Ionescu de la Brad”, Iași.
4. PERJU T., 2004 – *Dăunătorii din principalele agroecosisteme și combaterea lor integrată* – Editura Pereș Cluj Napoca
5. Tălmăciu M. Mocanu Ionela, Herea Monica, Tălmăciu Nela, Manole Liliana, 2016- *Observation on invertebrate fauna encountered in some agricultural crops*, Global Illuminators, Full Paper Proceeding NDMRP, vol. 2, 2016 p 119-129, I