

CONTRIBUTIONS TO THE KNOWLEDGE OF COCCINELID SPECIES (COLEOPTERA - COCCINELIDAE) FROM APPLE, CORN AND CABBAGE CROPS

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Abstract

The observations were made in 2020 in cabbage and corn crops as well as in some apple plantations in two stationary. In the Ezareni stationary belonging to the Didactic Station of USV Iasi, the experimental plots were selected for the corn culture, and in the Vasile Adamachi farm belonging to the Iasi Didactic Station, traps were placed in the cabbage crop as well as in the apple orchard.

To collect the biological material, the soil traps- type Barber, were used the wet type traps in which was used a 20% NaCl solution.

From the collected material, the species of coccinellids were selected and determined with the help of Reitter, Gâdei P., etc. determinants book, or source of internet sites.

The most frequently collected coccinellid species were: *Coccinella septempunctata*, *Propylea quatordecimpunctata*, *Harmonia axyridis*, *Hippodamia variegata*.

Key words: cabbage, corn, apple, Barber traps, coccinellids

INTRODUCTION

One of the orders with the most predators that have a major importance in the reduction of pests is the *Coleoptera* order. This order has about 250000 species, a lot of these being very dangerous for the agricultural crops (Moglan Veronica, 1997). The most important predators from this order belong to the following families: *Cicindelidae*, *Carabidae*, *Cantharidae* and *Coccinellidae*.

The *Coccinellidae* family has species of round or oval species, almost hemispherical, with spots on the wings with color spots and contrasting patterns. The most species of *Coccinellidae* are beneficial predators which prefer the aphids as main feed.

According to the author (Andriev Sorina, 2004), there are more than 5000 species all around the world. The most representative species of the *Coccinellidae* Reitter, Gâdei P., Bobarnac, determinants book. The situation of regarding time to the material collection was as follows: 3.06;

family are: *Coccinella 7-punctata*, *Coccinella hieroglyphica*, *Adalia variegata*, *Adalia bipunctata*, *Hippodamia variegata*, *Calvia decemguttata*, *Harmonia axyridis*, *Propylaea quatordecimpunctata*.

MATERIALS AND METHODS

The species of coccinellids were collected from corn crops, cabbage and from an apple orchard, all belonging to the Didactic Station of USV Iasi, from Iasi county.

To collect them, were used the Barber traps, of the wet type, using a 20% NaCl solution inside the trap. Collections of biological material were made periodically, from June to August, at intervals of about 4-7 days (Tălmăciu Mihai, 2017).

From the collected material, the species of coccinellids were selected which were then identified with the help of the determinants

7.06; 13.06; 20.06; 30.06; 5.07; 9.07; 14.07; 20.07; 25.07; 1.08; 7.08; 14.08; 21.08.

RESULTS AND DISCUSSIONS

In the apple orchards, the structure and abundance of the collected coccinellid species are presented as follows (tab.1):

- a total of 275 samples of coccinellids belonging to a number of 7 species were collected. The species with the highest number of samples were: *Coccinella septempunctata* with 117 samples, *Adalia bipunctata* and *Propylaea quatordecimpunctata* with 52 samples each. The species *Nephus quadrimaculatus* had the smallest number of specimens collected, 3 samples.

Compared to the other species of coleopterans collected (tab.2), a total of

362, of which 275 are coccinellids, which represents over 75%.

In the corn crops, the situation regarding the species of coccinellids collected is presented as follows (tab.3):

- a number of 301 samples belonging to a number of 10 species of coccinellids were collected. The species with the largest number of samples collected were: *Coccinella septempunctata* with 128 samples, *Adalia bipunctata* with 62 samples and *Propylaea quatordecimpunctata* with 36 samples.

Table 1. The structure of coccinellids collected by the Barber trap method –Adamachi-apple

No.	Name of species	Samples
1.	<i>Coccinella septempunctata</i>	117
2.	<i>Adalia bipunctata</i>	52
3.	<i>Coccinella 10-punctata</i>	19
4.	<i>Harmonia axyridis</i>	18
5.	<i>Hippodamia variegata</i>	14
6.	<i>Nephus quadrimaculatus</i>	3
7.	<i>Propylaea quatordecimpunctata</i>	52
TOTAL SPECIES =7		275

Table 2. Coccinellidae entomofauna on total Barber harvests depending on the number of Coleopters - apple

Species of coccinellids	No. of sampl.	Total coccinellids	Total coleopters	% of total coleopters	No of harvest
<i>Coccinella septempunctata</i>	117	275	362	75,97%	15
<i>Propylaea quatordecimguttata</i>	52				
<i>Adalia bipunctata</i>	52				
<i>Coccinella 10-punctata</i>	19				
<i>Harmonia axyridis</i>	18				
<i>Hippodamia variegata</i>	14				
<i>Nephus quadrimaculatus</i>	3				
TOTAL=7 species	275				

The species *Coccinella hieroglyphica*, *Calvia decemguttata* with 9 samples each and the species *Coccinella 10-punctata var. subpunctata* with 3 samples had the lowest number of samples collected.

Compared to the other species of coleopters, the situation is as follows (tab. 4):

Of the total collected coleopters, 540, a number of 301 are coccinellid species, which represents over 55% of the total.

Table 3. The structure of the collected coccinellids by the Barber trap method -Adamachi-corn

No.	Name of species	No. of samples
1.	<i>Coccinella septempunctata</i>	128
2.	<i>Coccinella var.5-punctata</i>	10
3.	<i>Coccinella 10-punctata</i>	18
4.	<i>Coccinella 10-punctata var.subpunctata</i>	3
5.	<i>Adalia bipunctata</i>	62
6.	<i>Coccinella hieroglyphica</i>	9
7.	<i>Calvia decemguttata</i>	9
8.	<i>Adonia variegata</i>	14
9.	<i>Harmonia axyridis</i>	12
10.	<i>Propylaea quatordecim.</i>	36
TOTAL SPECIES=10		301

Table 4. Coccinellidae entomofauna on total harvests depending on the number of coleopters- corn

Species of coccinellids	No. of samples	Total coccinellids	Total coleopters	% of total coleopters	No of harvest
Coccinella septempunctata	128	301	540	55,74%	15
Adalia bipunctata	62				
Propylea quatordecimpunctata	36				
Coccinella 10-punctata	18				
Adonia variegata	14				
Harmonia axyridis	12				
Coccinella var 5 punctata	10				
Coccinella hieroglyphica	9				
Calvia decemguttata	9				
Coccinella 10-punctata var subpunctata	3				
TOTAL=10 species	301				

In the cabbage culture, the situation of the collected coccinellid species is presented as follows (tab. 5):

- a number of 409 samples belonging to a number of 8 species of coccinellids were collected. The species with the largest number of samples collected were: *Coccinella septempunctata* with 112 samples, *Adalia bipunctata* with 87 samples, *Harmonia axyridis* with a number of 76 samples and *Propylaea quatordecimpunctata* with 74 samples. The species *Calvia decemguttata* and *Hippodamia variegata* had the lowest number of samples collected with 5 samples each.

Compared to the other species of coleopters, the situation is as follows (tab. 6):

From the total of 649 samples of collected coleopters, a number of 409 were

coccinellids, which represents over 63% of the total.

Table 5. The structure of coccinellids collected by the Barber trap method -cabbage

No.	Name of species	No. of samples
1.	<i>Coccinella septempunctata</i>	122
2.	<i>Adalia bipunctata</i>	87
3.	<i>Harmonia axyridis</i>	76
4.	<i>Propylaea quatordecimpunctata</i>	74
5.	<i>Coccinella 10-punctata</i>	31
6.	<i>Coccinella 10-punctata var.subpunctata</i>	9
7.	<i>Calvia decemguttata</i>	5
8.	<i>Hippodamia variegata</i>	5
TOTAL=8 species		409

Table 6. The Coccinellidae entomofauna on total harvests depending to the number of coleopters-cabbage

Species of coccinelids	No. of sampl.	Total coccinelids	Total coleopters	% of total coleopters	No. of harvest
<i>Coccinella septempunctata</i>	122	409	649	63.02%	15
<i>Adalia bipunctata</i>	87				
<i>Harmonia axyridis</i>	76				
<i>Propylaea quatordecimpunctata</i>	74				
<i>Coccinella 10-punctata</i>	31				
<i>Coccinella 10-punctata var.subpunctata</i>	9				
<i>Calvia decemguttata</i>	5				
<i>Hippodamia variegata</i>	5				
TOTAL=8 species	409				

CONCLUSIONS.

With the help of traps type Barber, in 2020 the structure and abundance of the coccinellid species was monitored in three agricultural crops: corn and cabbage crops and apple orchards. The largest number of species, 10, were collected from the apple orchard and the corn crop, while 8 species of coccinellids were collected from the cabbage crops. Regarding the number of coccinellid samples collected, the largest number of 409 was collected from the cabbage crop, and the lowest number of coccinellids, 275, was collected from the apple orchard.

Of the total species of collected coleopters, the species of coccinellids represented over 50%, the situation being the following:

- in the apple orchards, coccinellids represented over 75%;
- in corn crops, coccinellids represented over 55%;
- in cabbage crops, coccinellids represented over 63%.

The species of coccinellids most frequently collected in the 3 crops were: *Coccinella septempunctata* which also had the largest number of samples collected, *Adalia bipunctata*, *Propylaea quatordecimpunctata*, *Coccinella 10-*

punctata var.subpunctata and *Harmonia axyridis* all 4 species have were collected from the 3 cultures.

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