

STUDIES ON THE STRUCTURE, DYNAMICS AND ABUNDANCE OF THE COLEOPTERS IN A SWEET CHERRY AND SOUR CHERRY ORCHARDS

STUDII ASUPRA STRUCTURII, DINAMICI ȘI A ABUNDENȚEI COLEOPTERELOR DINTR-O PLANTAȚIE DE CIREȘ ȘI VIȘIN

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Abstract. Research on entomofauna of beetles were made in plantations of sweet cherry and sour cherry farm Loturi Service Delești, and Farm Vasile Adamachi from 2019. Gathering material was made using traps soil type Barber and beating method. Installation of the traps type Barber was in mid May and they worked until late August. Beating method samples were taken were the sudden shaking of two branches with a length of 30-50 cm from 10 trees. Each time sampling was done in five trees remained stable and marked distinctive signs the beginning of the season and five random trees chosen. Sampling was done twice a month during May to September.

Key words: Coleoptera, sweet and sour cherry, Barber traps, beating method

Rezumat. Cercetările privind entomofauna speciilor de coleoptere au fost realizate într-o plantație de cireș și vișin ce aparține fermei Loturi Service Delești și fermei Vasile Adamachi în anul 2019. Materialul biologic a fost colectat folosind metoda filetariei și metoda capcanelor de tip Barber ce au fost instalate la mijlocul lunii mai și au funcționat până la sfârșitul lunii august. S-au luat probe și cu ajutorul metodei frapașului unde au fost scuturate brusc câte două ramuri cu o lungime de 30-50 cm de la 10 pomi. De fiecare dată prelevarea de probe a fost realizată din cinci pomi ce au rămas stabili și au fost marcați cu semne distinctive la începutul sezonului și cinci pomi aleși aleatoriu. Prelevarea de probe s-a făcut de două ori pe lună în perioada mai-septembrie.

Cuvinte cheie: Coleoptera, cireș și vișin, capcane de tip Barber, metoda frapașului

INTRODUCTION

The fruit tree growing are of major importance in economic terms. Fruit trees growing is one of the most popular foods is essential in producing an adequate food rations.

Although measures are taken in our sweet cherry and sour cherry orchards harmful operates several highly damaging species, including species of beetles: *Sciaphobus squalidus* Gyll., *Melolontha melolontha* L., *Agriotes spp.*

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Are also species of predatory beetles, which can populate the tree ecosystems such as species of *Carabus*, *Calosoma*, *Pterostichus*, *Brachynus*., etc. Ideally, some species (predators and harmful) to be in balance so as not to produce pest damage.

This paper presents the results of researches on the epigeos entomofauna existing in the sweet and sour cherry orchards of the Vasile Adamachi farm in Iasi, Iasi County and SC Loturi Service SRL Delești, Vaslui country.

MATERIAL AND METHOD

Research on entomofauna of beetles were made in plantations of sweet cherry and sour cherry farm Loturi Service Delești, and Farm Vasile Adamachi from 2019.

Gathering material was made using traps soil type Barber and beating method (Talmaciu *et al.*, 2001).

Installation traps type Barber was applied in mid of May and they worked until late of September.

The beating method samples were taken were the sudden shaking of two branches with a length of 30-50 cm from 10 trees. Each time sampling was done in five trees remained stable and marked distinctive signs the beginning of the season and five random trees chosen (Talmaciu *et al.*, 2003).

Sampling was done twice a month during May to September.

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

RESULTS AND DISCUSSIONS

Investigations are made for the first time this year, in 2019, and will continue to establish a structure of coleopteran beetles in this area by the number of chemical treatments applied by default and depending on the degree of pollution.

Of material collected species of beetles were selected, which were then determined (Chatened du Gaetan, 1990).

Overall in 2019, in the sweet cherry and sour cherry orchards in Iasi stationary were identified 165 specimens, belonging to a total of 40 species (tab. 1). The harvest situation is as follows:

Take the collection dated 18.05, collected a total of 57 samples belonging to 18 species. Species collected were: *Cymindis humeralis* Fourc. (22 samples); *Otiorynchus ovatus* L. (6 samples), *Harpalus calceatus* Duft. (6 samples), *Omius rotundus* F. (5 samples), *Apion apricans* Herbst. (4 samples); *Psylliodes chrysocephala* L. (4 samples); *Cryptophilus obliterated* Rtt. (4 samples); *Brachynus crepitans* L. (1 samples) *Carabus coriaceus* L.(3 samples) *Harpalus distinguendus* Duft. (2 samples), *Harpalus aeneus* L.(2 samples), *Calathus fuscipes*. Goeze. (2 samples), *Orchesia micans* Panzer. (2 samples) and other species are represented by only one samples.

Harvesting II dated 05.06, were collected four specimens of beetles belonging to the following nine species for example *Carabus violaceus* L. (2 samples), and *Calathus fuscipes* Goeze. (2 samples).

Harvesting III dated 22.06, were collected 36 samples beetles belonging to 17 species, we noted: *Pterostichus niger* Schall., *Omius rotundus* F. *Harpalus calceatus* Duft., *Dermestes lanarius* L.

Harvesting IV from 15.07.2009, were collected 12 samples, belonging to six species: *Leptinotarsa decemlineata* Say., *Omius rotundus* F., and *Mordella fasciata* F. (one sample).

The collection V dated 28.07, were collected 28 samples of beetles belonging to 10 species: *Mordella fasciata* F.; *Omius rotundus* F., and *Barypeithes araneiformis* Schrank., *Phyllotreta vittula* Red. and species *Longitarsus tabidus* F. and *Ennearthron cornutum* Gyll. were represented by one single sample.

The collection of VI dated 18.08, were collected 14 samples beetles belonging to seven species: *Mordella fasciata* F.(1 sample)., *Calathus fuscipes* Goeze. (4 samples); *Longitarsus tabidus* F. (3 samples), *Harpalus distinguendus* Duft. (2 samples) with 2 samples each species are represented *Phyllotreta vittula* Redt. and *Baryplithes araneiformis* F., *Mordella fasciata* F.and *Lagria hirta* L. species were represented by one single sample.

Follow the structure and dynamics of species of soil beetles collected in the Barber traps (Chatened du Gaetan, 1990; Panin, 1951) in cherry and sour cherry plantations belonging Farm SC. Loturi Service SRL Delești-Vaslui situation is as follows (tab. 2):

Take the collection, dated at 18.05, were collected 30 samples from a number of beetles belonging to 11 species. The largest number of samples was the *Dermestes linarius* Illig. (6 samples) and also the lowest number of samples was the major species *Cymindis humeralis* Fourc. , and *Panageus crux-masjor* L.

Harvesting II, dated 29.05, have been collected in all 23 samples of beetles belonging to a total of 9 species. The largest number of samples (3) and species (6) were collected in the trap no. 6. other traps were between one and three samples belonging to 1, 2 or 3 samples.

Table1

Structure and dynamics of species of Coleopters, collected in traps in sweet cherry and sour cherry groves belonging Farm Vasile Adamachi Iasi

No.	Name of species	Number of stamps / harvesting					
		I	II	III	IV	V	VI
1.	<i>Cymindis humeralis</i> Fourc.	20	0	2	0	0	0
2.	<i>Opatrum sabulosum</i> L.	1	0	0	0	0	0
3.	<i>Otiorynchus ovatus</i> L.	3	1	0	1	0	0
4.	<i>Omius rotundus</i> F.	5	4	2	3	3	0
5.	<i>Phyllodrepa melanocephala</i>	1	0	0	0	0	0
6.	<i>Harpalus distinguendus</i>	2	0	2	0	0	2
7.	<i>Silpha obscura</i> L.	0	1	0	0	0	0

8.	<i>Harpalus calceatus</i> Duft.	5	1	0	5	6	0
9.	<i>Cryptophilus obliteratus</i> Rtt.	0	4	0	0	0	0
10.	<i>Psylliodes chrysocephala</i> L.	1	0	1	0	2	2
11.	<i>Dermestes lanarius</i> Illig.	1	0	10	0	1	0
12.	<i>Bembidion lampros</i> Herbst.	1	0	0	0	0	0
13.	<i>Apion apricans</i> Herbst.	4	0	0	0	0	0
14.	<i>Carabus violaceus</i> L.	0	2	0	0	0	0
15.	<i>Orchestia minor</i> Walk.	1	0	0	0	0	0
16.	<i>Harpalus aeneus</i> L.	2	0	2	0	0	0
17.	<i>Calathus fuscipes</i> Goeze.	2	2	0	0	0	4
18.	<i>Orchesia micans</i> Panz.	2	0	0	0	0	0
19.	<i>Carabus coriaceus</i> L.	3	0	0	0	0	0
20.	<i>Halyzia 14guttata</i> L.	0	2	1	0	0	0
21.	<i>Sitona inops</i> Gyll.	1	0	0	0	0	0
22.	<i>Brachysomus hirtus</i> Boh.	0	0	0	1	0	0
23.	<i>Harpalus tardus</i> Panz.	2	0	2	0	0	0
24.	<i>Pseudophonus rufipes</i> Mull.	0	0	1	0	0	0
25.	<i>Polystichus connexus</i> Fourc.	0	0	1	0	0	0
26.	<i>Otiorynchus raucus</i> F.	0	0	3	0	0	0
27.	<i>Amara aenea</i> DeGeer.	0	1	1	0	0	0
28.	<i>Amara ovata</i> F.	0	0	2	0	0	0
29.	<i>Pterostichus niger</i> Schall.	0	0	2	0	2	0
30.	<i>Combocerus glaber</i> Schall.	0	0	1	0	0	0
31.	<i>Licinus casideus</i> L.	0	0	1	0	0	0
32.	<i>Leptinotarsa decemlineata</i>	0	0	2	1	0	1
33.	<i>Lagria hirta</i> L.	0	0	0	0	0	1
34.	<i>Barylithes araneiformis</i>	0	0	0	0	2	0
35.	<i>Longitarsus tabidus</i> F.	0	0	0	0	1	3
36.	<i>Phyllotreta vittula</i> Redt.	0	0	0	0	2	0
37.	<i>Mordella fasciata</i> f.	0	0	0	1	8	1
38.	<i>Ennearthron cornutum</i> Gyll.	0	0	0	0	1	0
Total		57	18	36	12	28	14

Harvesting III, dated 22.06, were collected 57 samples from a number of beetles belonging to 15 species. The largest number of samples was the *Dermestes lanarius* Illig. (21 samples) and also the lowest number of samples was the *Curculio nucum* L. and *Psylliodes chrysocephala* L.

Harvesting the IV, dated 06.07, have been collected in all 10 samples of beetles belonging to a total of 6 samples, as follows: *Dermestes lardarius* L., *Carabus violaceus* L., *Dermestes lanarius* Illig., *Melighetes aeneus* F. were represented by 2 samples each, and *Harpalus punctifolius* L., *Cymindis vaporariorum* L. were represented by one single sample.

Will the collection of 15.07, have been collected in all 8 samples of beetles belonging to a number of 4 species.

At the VI harvest, dated 28.07, have been collected in all 20 samples of beetles belonging to a number of 3 species and *Carabus violaceus* L. was seconded by a number of 17 samples.

Structure and dynamics of the species of coleopters collected in soil traps belonging farm SC. Loturi Service SRL Delești Vaslui

No	Name of species	Number of staples / harvesting					
		I	II	III	IV	V	VI
1.	<i>Omius rotundus</i> F.	2	0	0	0	0	0
2.	<i>Cantharis fusca</i> L.	3	0	0	0	0	0
3.	<i>Harpalus calceatus</i> Duft.	3	3	0	0	0	0
4.	<i>Otiorhynchus raucus</i> F.	0	3	2	0	0	0
5.	<i>Harpalus tardus</i> Panz.	2	2	0	0	0	0
6.	<i>Panageus crux major</i> L.	1	0	0	0	0	0
7.	<i>Adalia bipunctata</i> L.	2	0	0	0	0	0
8.	<i>Opatrum sabulosum</i> L.	3	0	0	0	0	0
9.	<i>Dermestes lanarius</i> Illig.	6	5	21	2	1	1
10.	<i>Phyllotreta nemorum</i> L.	2	0	0	0	0	0
11.	<i>Harpalus distinguendus</i> Duft.	0	0	2	0	0	0
12.	<i>Cymindis humeralis</i> Fourc.	1	0	0	0	0	0
13.	<i>Otiorhynchus ovatus</i> L.	2	0	0	0	0	0
14.	<i>Omius rotundatus</i> F.	0	3	0	0	0	0
15.	<i>Curculio nucum</i> L.	0	0	1	0	0	0
16.	<i>Harpalus calceatus</i> Duft.	0	2	8	0	0	0
17.	<i>Amara aenea</i> DeGeer.	2	1	4	0	0	0
18.	<i>Amara fasciata</i> F.	0	1	0	0	0	0
19.	<i>Harpalus pubescens</i> Mull.	0	0	2	0	0	0
20.	<i>Coccinella 7 punctata</i> L.	0	5	0	0	0	0
21.	<i>Psylliodes chrysocephala</i> L.	0	2	2	0	0	0
22.	<i>Harpalus azureus</i> F.	0	0	3	0	0	0
23.	<i>Brachinus crepitans</i> L.	0	0	2	0	0	0
24.	<i>Carabus coriaceus</i> L.	0	0	3	0	0	0
25.	<i>Harpalus tardus</i> Panz.	0	0	0	0	1	0
26.	<i>Carabus griseus</i> Panz.	0	0	0	0	0	1
27.	<i>Carabus violaceus</i> L.	1	1	4	2	4	15
28.	<i>Harpalus aeneus</i> F.	0	0	3	0	0	0
29.	<i>Meligetes aeneus</i> F.	0	0	0	2	0	0
30.	<i>Propylaea quatuordecimpunctata</i>	0	0	0	0	0	2
31.	<i>Dermestes lardarius</i> L.	0	0	0	2	0	0
32.	<i>Harpalus punctifolius</i> L.	0	0	0	1	0	0
33.	<i>Cymindis vaporariorum</i> L.	0	0	0	1	0	0
34.	<i>Longitarsus tabidus</i> F.	0	0	0	0	2	0
Total		30	23	57	10	8	19

Research of entomofauna on tree crown was made of sweet cherry and sour cherry groves of the farm Vasile Adamachi Iasi. The situation of samples (tab. 3) were we use beating is as follows (Chatened du Gaetan, 1990; Panin, 1951; Rogojanu and Perju, 1979)

The first harvest, dated 06.05, were collected 27 samples belonging to 7 species. The largest number of samples we recorded the species *Otiorhynchus ovatus* L.(20).

Harvesting II, dated 05.06, have been a single species *Cartodere elongata* with 3 samples.

Table 3

Situation on number of samples for the species of coleopters in the beating method of sweet cherry and sour cherry orchards belonging Farm Vasile Adamachi Iasi

No.	Name of species	Number of stamples/ harvesting							
		I	II	III	IV	V	VI	VIII	
1.	<i>Cartodere elongata</i> Thom	1	3	0	6	2	0	0	
2.	<i>Psylliodes chalconerus</i> Ko	0	0	0	2	0	0	0	
3.	<i>Apion longirostre</i> Olivier	1	0	0	0	0	0	0	
4.	<i>Stethorus punctillum</i>	1	0	0	0	0	0	5	
5.	<i>Cymindis humeralis</i> Fourc	0	0	0	0	0	0	0	
6.	<i>Otiorhynchus ovatus</i> L.	11	0	0	1	0	4	0	
7.	<i>Coccinella 7punctata</i> L.	2	0	0	0	0	0	0	
8.	<i>Longitarsus jacobae</i>	0	0	0	1	0	0	1	
9.	<i>Psylliodes chrysocephala</i> L.	1	0	0	0	0	0	0	
10.	<i>Phyllotreta vittula</i> Red.	0	0	0	0	0	0	0	
11.	<i>Apion varipes</i> Germ.	1	0	0	0	0	0	0	
Total		27	3	0	10	2	4	6	

Harvesting III, dated 18.06, did not have a sample of the beetle.

Harvesting IV dated 02.06, I caught a total of 10 species of beetles, the species with the highest number of samples (6) is *Cartodere elongata*.

Harvesting V dated 14.07, I caught only two samples of the *Cartodere elongata*.

At the VI harvest, dated 28.07, did not have a sample of the beetle.

Harvesting VII dated 18.08, I caught four species of beetles total number of eight samples.

Harvesting VIII dated 07.09 has been a total of 6samples belonging to two species of beetles.

Research of entomofauna on the orchards was made of sweet cherry and sour cherry groves of the SC. Loturi Service Delești Vaslui.

The situation of samples were we use beating is as follows Following 9 harvesting we collected a total of 108 samples of beetles (tab. 4).

Table 4

Situation on the species and number of samples collected use beating in the orchards belonging SC. Loturi Service Delești Vaslui

No	Name of species	Number of stamples / harvesting							
		I	II	III	IV	V	VI	VII	VIII
1.	<i>Phyllotreta armoracie</i> Koch.	0	0	0	0	2	0	0	0
2.	<i>Stethorus punctillum</i> Weise.	2	0	12	0	0	7	9	25
3.	<i>Longitarsus apicalis</i> Beck.	0	2	3	0	2	0	1	0
4.	<i>Anthonomus varians</i> Payk.	0	0	0	0	0	0	1	0
5.	<i>Cartodere elongata</i> Th.	1	3	0	0	1	0	0	0
6.	<i>Coccinella bipunctata</i> L.	0	0	1	0	0	0	0	0

7.	<i>Otiorrhynchus ovatus</i> L.	2	0	0	0	0	0	0	0
8.	<i>Ceuthorrhynchus sulcicollis</i>	0	0	1	0	0	0	0	0
9.	<i>Apion nigritarse</i> Kir.	1	0	0	0	0	0	0	0
10.	<i>Longitarsus atricillus</i> Gyll.	0	0	0	0	0	0	6	0
11.	<i>Apion viciae</i> Kir.	1	0	0	0	0	0	0	0
12.	<i>Athorus rufus</i> Gyll.	0	0	0	0	2	0	0	0
13.	<i>Apion atomarium</i> Kir.	0	5	4	0	1	0	0	0
14.	<i>Longitarsus anchusae</i> Payk.	0	0	0	0	0	0	0	1
15.	<i>Halyzia 14 gutata</i> L.	0	0	1	0	0	0	0	0
16.	<i>Coccinella 7punctata</i> L.	0	1	0	0	1	1	3	4
17.	<i>Longitarsus jacobaeae</i>	0	0	0	0	0	0	0	2
18.	<i>Psylliodes chrysocephala</i> L.	0	0	0	0	0	0	1	3
Total		7	11	22	0	9	8	21	35

The first harvest, dated 06.05, were collected 27 samples belonging to 5 species. The total number of the coleopters samples we recorded it was 7.

Harvesting II, dated 05.06, we have been 4 species of coleopters with 11 samples.

Harvesting III, dated 18.06 were collected 22 samples belonging to 6 species of coleopters.

Harvesting IV dated 02.06, no specimens belonging to the beetle species were collected.

Harvesting V dated 14.07, I caught only 6 species of coleopters with 8 samples.

At the VI harvest, dated 28.07, were collected 8 samples belonging to 6 species with 22 samples.

Harvesting VII dated 18.08, I caught 6 species of beetles and the total number were 21 samples.

Harvesting VIII dated 07.09 has been a total of 35 samples belonging to 5 species of beetles.

CONCLUSIONS

In 2019, in sweet and sour cherry orchards were collected using soil traps type Barber was collected 317 samples of beetles, belonging to 40 species, of which the largest number of samples were: *Carabus violaceus* L., *Harpalus calceatus* Duft., *Amara aenea* Geer, *Calathus fuscipes* Goeze., *Dermestes linarius* Illig., *Cymindis humeralis* Fourc., *Otiorrhynchus ovatus* L., *Mordella fasciata* F.

The largest number of samples (165) was collected using soil traps in sweet cherry and sour cherry groves belonging farm Vasile Adamachi, Iasi

The sweet cherry and sour cherry orchards from SC Loturi Service Delești-Vaslui was collected using soil traps a number of 152 samples of beetles belonging to 32 species.

In 2019, the groves of sweet and sour cherry were made bimonthly by beating in the period from May to September.

Following collection of the entomological material used beating method in sweet cherry and sour cherry groves belonging Farm Vasile Adamachi Iasi we totaled number of 56 samples of beetles of which: *Otiorynchus ovatus* L., *Stethourus punctilum* Weisse., *Cartodere elongata* Thomson, *Longitarsus jacobae* Waterhouse, *Coccinella 7 punctata* L., and plantations belonging to SC Loturi Service Delești-Vaslui have made a total of 108 samples of beetles of which: *Stethourus punctilum* Weisse., *Longitarsus atricillus* Payk., *Longitarsus apicalis* Beck., *Coccinella 7 punctata* L., *Otiorynchus ovatus* L., *Apion atomarium* Kirby.

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