

RESEARCH ON THE ENTOMOFAUNA STRUCTURE OF INVERTEBRATES BELONGING TO A PLUM ORCHARDS OF FRUIT TREES STATIONARY FROM IAȘI

CERCETĂRI CU PRIVIRE LA STRUCTURA ENTOMOFAUNEI DE
NEVERTEBRATE APARTINÂND UNEI PLANTAȚII POMICOLE DE
PRUN DIN BAZINUL POMICOL IAȘI

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Abstract: *In this paper, we bring new contributions to the knowledge of invertebrate species in a plum plantation fruit growing in the Bârnova county from Iași. Harvesting the material was made between May and September throughout the research period, use to traps type Barber. The biological material collected were identified and determined all species collected. Throughout the period of observations were collected a total of 1397 of pests and useful samples, so 2013 were collected 317 belonging to a number of 33 species in 2014 were collected 338 belonging to a number of 33 species and 2015 were collected 742 specimens belonging to 37 species numbers.*

Analyzing the collected material it was found that the most commonly collected species were Carabus coriaceus L., Pseudophonus rufipes Mull., Opatrum sabulosum L., Phyllotreta vittula F., Phyllotreta nemorum L., Formicomus pedestri, Harpalus distinguendus Duft., Tomoxia bigutatta, Hymenoptera, Gastropoda and Orthoptera.

Key words: *invertebrate species, traps type Barber, plum.*

Rezumat: *În lucrarea de față se aduc noi contribuții la cunoașterea speciilor de nevertebrate dintr-o plantație pomicolă de prun din comuna Bârnova din jud. Iași. Colectarea materialului s-a făcut în perioada mai- septembrie, pe tot parcursul perioadei de cercetare, cu ajutorul capcanelor de tip Barber. Din materialul biologic colectat, au fost inventariate și determinate toate speciile colectate. Pe întreaga perioadă de observații, au fost colectate un număr de 503 exemplare de insecte dăunătoare și utile, astfel în anul 2013 au fost colectate 317 aparținând la un număr de 33 de specii, în anul 2014 au fost colectate 338 aparținând la un număr de 33 de specii, iar în anul 2015 au fost colectate 742 de exemplare aparținând la un număr de 37 de specii. Analizând materialul colectat s-a constatat că, speciile cel mai frecvent colectate au fost: Carabus coriaceus L., Pseudophonus rufipes Mull., Opatrum sabulosum L., Phyllotreta vittula F., Phyllotreta nemorum L., Formicomus pedestri Rossi, Harpalus distinguendus Duft., Tomoxia bigutatta, Himenoptere (viespi), Gastropode (melci), Orthoptere (lăcuste), Orthoptere (Gryllus).*

Cuvinte cheie: *speciile de nevertebrate, capcane de tip Barber, prun.*

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INTRODUCTION

The plum culture intensification in Europe took place in the eighteenth century that it is assumed that the same conditions it has developed more in the Romanian countries.

In the intensive orchards was observed that it may produce abundant and constant in the first years, with pronounced adaptability to various climatic zones, is rustic and sturdy enough, without the need of pollinators in particular.

The pest and disease control is a vital segment in plum culture technology. Failure to follow this technological links may compromise the total production in that year, and in coming years.

MATERIAL AND METHOD

The collection was done using soil traps type Barber in each of the 3 years of observations from May to September in a plum plantation at Stanley variety, Pietrarie stationary.

We can use it as a trap pot of soil to 400 or 800 ml pot which are buried in the ground up to the top so that it is level with the superficial layer of the soil. Above pot setting a cap designed to protect trap rainfall penetration inside.

Location traps may be in line at equal distances between them, diagonally, or evenly over the entire research.

They have used plastic boxes with a volume of 500 ml, having a diameter of 10 cm and a height of 8 cm, and the fixing liquid was used as a solution of formalin in a concentration of 4% (Fig. 1) (Talmaciu, 2004, Talmaciu, 2001).



Fig.1. Soil trap type Barber

In studied stationary, they were placed by 6 traps on two rows, installed from from the margin to the inside in a straight line at a distance of 10 m between rows and 6-8 m between traps to row. At harvest contents of the box was placed on a sieve and collected material was collected in bags of mull and then was brought into the lab, separate traps, whichever is all collected species. The research are made to continue in 2012 and 2013 to establish a structure of parasitic and predatory insect species, and useful depending on the parking surveys were conducted and by default depending on the degree of pollution. They were determined and inventoried.

RESULTS AND DISCUSSIONS

The summary of results obtained in Pietrarie stationary in 2013.

In 2013, in Pietrarie stationary (Table 1) were collected a total of 49 species with a total of 733 samples. Of the 50 species collected, a total of 14 species were common in the two years. They were: *Dermestes lanarius*, *Heteroptera* (bedbugs), *Polydrosus sericeus* Schall, *Homoptera* (cycads), *Harpalus distinguendus*, *Hymenoptera* (wasps), *Harpalus calceatus* Duft., *Anisodactylus binotatus* F., *Ontophagus ovatus*, *Homoptera* (aphids), *Calathus fuscipes* and *Carabus coriaceus*. The specie with the largest number of samples collected were: *Araneida* 103 samples, *Hymenoptera* (wasps) with 100 samples, *Ontophagus ovatus* and *Hymenoptera* (bees) with 88 samples *Orthoptera* and *Gastropoda* each with 78 samples, *Homoptera* (cycads) 62 samples, *Anisodactylus binotatus* F 57 samples *Opatrum sabulosum* and *Hymenoptera* (ants) with the 39 copies *Pseudophonus rufipes*, *Galeruca pomonae* and *Orthoptera* (*Gryllus*) with every 37 samples, *Heteroptera* (bedbugs) 35 samples, *Carabus scabriusculus* with 33 samples each, *Harpalus calceatus* Duft 31 samples, *Diptera* (adults) with 29 samples, *Polydrosus sericeus* Schall. 26 samples, *Homoptera* (aphids) and *Lepidoptera* (larvae) with 24 samples, *Tomoxia biguttata* 23 samples, *Dermestes lanarius* with 20 samples, (Chatened du Gaetan, 1990, Panin I., 1951). The other species had between 1 and 19 samples.

The structure, dynamics and abundance of species collected of research period 2013-2015 in Pietrarie stationary

Table 1

The structure research species collected inresearch period from Petrarie stationary

No.	Name of species	Pietrarie stationary/ Stanley variety			Total number
		2013	2014	2015	
1.	<i>Dermestes lanarius</i>	18	-	2	20
2.	<i>Heteroptera</i> (bedbugs)	30	2	3	35
3.	<i>Polydrosus sericeus</i> Schall	13	4	9	26
4.	<i>Coccinella septempunctata</i>		-	5	5
5.	<i>Homoptera</i> (cycads)	12	6	44	62
6.	<i>Polydrosus amoenus</i> Schall	12	-	-	12
7.	<i>Tomoxia biguttata</i>	8	-	15	23
8.	<i>Amara aenea</i>		12	6	18
9.	<i>Harpalus distinguendus</i>	14	15	28	57
10.	<i>Hymenoptera</i> (wasps)	1	31	68	100

LUCRĂRI ȘTIINȚIFICE SERIA HORTICULTURĂ, vol. 58(2) / 2015, U.S.A.M.V. IAȘI

11.	<i>Necrophorus vespillo L.</i>	2	-	-	2
12.	<i>Harpalus calceatus</i>	9	5	17	31
13.	<i>Armadillidium vulgare</i>	9	-	-	9
14.	<i>Anisodactylus binotatus F.</i>	27	14	16	57
15.	<i>Galeruca pomonae</i>		5	32	37
16.	<i>Stomodes gyriscollis</i>	3	-	-	3
17.	<i>Anisodactylus signatus</i>		6	-	6
18.	<i>Ontophagus ovatus</i>	55	6	27	88
19.	<i>Carabus scabriusculus</i>	6	-	27	33
20.	<i>Ontophagus taurus</i>	15	-	-	15
21.	<i>Silpha obscura</i>	3	-	-	3
22.	<i>Hister purpurascens</i>	9	-	-	9
23.	Homoptera(aphids)	2	2	20	24
24.	<i>Coccinella 14 punctata</i>	6	-	3	9
25.	<i>Ceuthorrhynchus crucifer</i>	5	-	-	5
26.	<i>Calathus fuscipes</i>	6	3	3	12
27.	<i>Pseudophonus rufipes Mull.</i>	8	29	-	37
28.	<i>Blaps lutifera</i>	2	-	-	2
29.	<i>Opatrum sabulosum</i>	3	-	36	39
30.	<i>Calopus serraticornis</i>	4	-	-	4
31.	<i>Carabus coriaceus L.</i>	4	3	3	10
32.	<i>Pseudophonus griseus</i>	15	3	-	18
33.	<i>Notiophilus palustris</i>	2	-	-	2
34.	<i>Obera oculata</i>	1	-	-	1
35.	<i>Ptosima 11 maculata</i>	3	-	-	3
36.	<i>Ontophagus semicornis</i>	8	-	-	8
37.	<i>Dorcadion fulvum</i>	8	-	-	8
38.	Himenoptere albine		17	71	88
39.	Ortoptere (lacusta)		24	54	78
40.	Araneida		28	75	103
41.	<i>Galeruca tanacetii</i>		6	-	6
42.	Lepidoptere larve		10	14	24
43.	Diptere (adults)		12	17	29
44.	Ortoptera		14	23	37
45.	Himenoptere (ants)		23	16	39
46.	Lepidoptere (adults)		2	8	10
47.	<i>Silpha obscura</i>		12	-	12
48.	Gastropoda		15	63	78
49.	<i>Phyllotreta vittula</i>		5	-	5
50.	<i>Podagrica fuscicornis</i>		9	3	12
51.	<i>Dibolia nitida</i>		3	-	3
52.	<i>Mordella aculeata</i>		4	-	4
53.	Colembola		3		3
54.	Coleoptere (larva)		6	3	9
55.	<i>Agabus affinis</i>			3	3
56.	<i>Anatis ocellata</i>			9	9
57.	Diptere larve			16	16
58.	<i>Dermestes lardarius</i>			10	10
59.	<i>Copis lunaris</i>			5	5
60.	<i>Cantharis fusca</i>			5	5
Total 60 species		323	339	759	1421

In the research period (2013-2015) were collected 1421 samples belonging to 60 species. The highest number of collected samples was recorded in 2015 with the 795 samples and copies lowest number was recorded in 2013 (323).

In 2014, were collected 339 samples.

A total of 12 species were collected during the three years of research, they were *Dermestes lanarius*, *Heteroptera* (bugs), *Polydrosus sericeus*, *Homoptera* (cycads), *Harpalus distinguendus*, *Hymenoptera* (wasps), *Harpalus calceatus*, *Anisodactylus binotatus*, *Ontophagus ovatus*, *Homoptera* (aphids), *Carabus coriaceus* and *Calathus fuscipes*.

A total number of 27 species (Rogojanu V., Perju T., 1979) were collected in a single year as: *Coccinella 7punctata*, *Polydrosus amoenus*, *Necrophorus vespilo*, *Armadillidium vulgare*, *Stomodes gyrosicollis*, *Anisodactylus signatus*, *Ontophagus taurus*, *Silpha obscura*, *Hister purpurascens*, *Blaps lutifera*, *Obera oculata*, *Phyllotreta vittula*, *Mordella aculeata*, *Agabus affinis*, *Dermestes lardarius*, *Copis lunaris* and *Cantharis fusca*.

The number of species and collected samples in research period of Stanley variety (Table 2)

In 2013 was collected from Pietrarie Stanley variety stationary 323 samples belonging to a number of 33 species;

In 2014 the number of samples collected from the Stanley variety from Pietrarie stationary was 339 samples belonging to 33 species numbers;

In 2015 the total samples collected was the 759 samples at Stanley variety from the Pietrarie stationary and belong to 36 species.

Table 2

The number of species and collected samples during the period of observations

Harvested year	Pietrărie Stanley	
	No. of samples	No. of species
2013	323	33
2014	339	33
2015	759	36
Total	1421	

In total in the Pietrarie stationary at Stanley variety in research during were collected 1421 insect samples belonging to useful and harmful entomofauna of plum plantations.

CONCLUSIONS

1. In the Pietrarie stationary was studied using soil traps type Barber invertebrate fauna belonging to different classes and phyla, most collected species belonging to the class Hexapoda (insects);

2. The collection of biological material has been made in each of the three years 2013, 2014, 2015 throughout the growing season (May to September), sampling being made at intervals contained in most cases between 10 and 20 days

3. The method of biological material collecting was the method of the soil traps type Barber to identify to determine the structure and dynamics of epigenous entomofauna plum orchards.

4. The investigations was conducted in the PIETRARIE stationary at Stanley variety were collected in total 1421 samples. In 2013 was collected 323 samples belonging to 33 species. In 2014 the total number of 339 samples have belonged to a number of 33 species. In 2015 we recorded a total of 759 samples belonging of 36 species.

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REFERENCES

1. **Chatened du Gaetan, 1990** - *Guide des Coleopteres d'Europe*. Délacrois et Niestlé, Paris.
2. **Panin I., 1951** - *Determinatorul Coleoptelor dăunătoare și folositoare din R.P.R.* Editura de Stat, București.
3. **Rogojanu V., Perju T., 1979** - *Determinator pentru recunoașterea dăunătorilor plantelor cultivate*. Editura Ceres, Bucuresti
4. **Talmaciu M., Georgescu T., Talmaciu Nela., 2004** - *Observații privind structura, dinamica și abundența speciilor de coleoptere colectate în condițiile fermei V. Adamachi aparținând S. D. Iași*. Rezumat, Simpozionul Științific Internațional , „Resursele de mediu și dezvoltarea durabilă,, Oradea,
5. **Talmaciu Nela, Talmaciu M., Georgescu T., Filipescu C., 2001**– *Contribuții la cunoașterea speciilor de coleoptere epigee din plantațiile de prun, în condițiile S.D. Iași*. *Lucrări științifice*, vol. 44, seria Horticultură, U.Ș.A.M.V. Iași.