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RESEARCH ON THE ENTOMOFAUNA STRUCTURE OF COLEOPTERS FROM APPLE TREE PLANTATIONS ACCORDING TO THE GROWING AREA AND IN THE CLIMATE CHANGE CONTEXT

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Abstract

The investigations were carried out in 2 statonaries, in 2 stages that took place during the years 2010 to 2011 and 2018 to 2019 in two apple treeorchards, belonging to SC Service SRL Delesti County of Vaslui, and the Didactic- Farm Vasile Adamachi of the Iasi country. The collection of the biological material has been carried out using soil traps Barber type, during the period May to August, seven harvests were carried out each year when the salt solution was completed or replaced, and the samples taken have been labeled and brought to the laboratory for the determination. The collected material has been cleaned of plant debris and then prepared for identification and of all specimens only the species of coleopterers which were then determined to the species level and then listed. From the analysis of the collected material it appears that the collected specimens belonging to the Hexapoda class, the Coleoptera order of which the larger ones are: Opatrum sabulosum., Omias rotundatus , Coccinella 7punctata , Brachysomus hirtus, Meligetes maurus, Otiorrhynchus pinastri, Polydrosus flavipes.

Key words*: entomofauna, Coleoptera, soil traps type Barber, climate change.*

INTRODUCTION

Culture of the fruit tree apple is the most widely known and widespread in temperate climate areas, and apples are the first in terms of both production volume, quality - food value and demand on the market (Talmaciu et al., 1996).

The apple culture is very old; pomological descriptions, as well as cultural practices, we meet in the writings of many scholars with about. 2000-3000 years before Christ (Saffo, Hippocratic, Teofrast), but also later (Cato, Varo, Columella, Pliniu The Old, etc.). The high ecological plastness of this species has allowed a wide geographical spread of the many varieties formed or created in the most diverse areas of the world.

However, the modern culture of the fruit tree apple, by default, has led to an increase in the use of pesticides, fertilizers and other active chemical substances, whose shortcomings we know well. In this context, environmental pollution by pesticides and fertilizers, fruit cultivation occupies one of the main places. (Talmaciu et al., 2006; 2007).

Global attitudes toward the environment and human health are becoming increasingly apparent, sustainable exploitation of natural resources and, in particular, agriculture as an essential factor in environmental change. (Varvara et al., 1981)

MATERIALS AND METHODS

Insects of the Coleoptera order are considered to be one of the main groups of insects which are recommended for the indication of soil type, vegetation and environmental chemism.

Local climatic conditions have a direct influence on their biology and ecology.

The sampling was carried out using Barber traps with a diameter of 10 cm and a height of 8 cm and a 25% salt solution (NaCl) was used as a fixer (Figure 1).

At the station under study, six traps were placed on a row of trees from the edge inwards in a straight line at a distance of 20 m from the edge and between traps 6 to 8 m in a row. The collection took place once a month during the growing season (june, july, august).

Figure 1. The Barber trap placed in the ecosystem

Samples of the biological material collected were labeled with: sample number, date of collection, and stationary. The samples thus labeled have been kept free from sunlight and transported to the laboratory for analysis and determination.

The soil trap type Barber method was used in the research orchards of apple on the Vasile Adamachi teaching farm in Iasi country and at the S.C. Loturi Service SRL, in the Delesti, Vaslui country, from june to September, to establish the structure and dynamics of the entomophasic epigee fauna, determined / identified using yhe books of determinations (Chatened du Gaetan, 1990; Panin I., 1951; Reitter E., 1908; Rogojanu V et al., 1979) and other sources on the internet.

RESULTS AND DISCUSSIONS

Due to their geographical position, the counties of Iasi and Vaslui have a rather pronounced continental climate integration into the land of climatical of high hills.

Apart from its geographical location and relief, the climate is also relevant to other factors, given the solar radiation and the general circulation of anticyclonal air masses that channel air currents.

The amount of solar radiation at the ground level is quite high having a particular influence on the air temperature, the average value being 8.3°C.

Due to the physical-geographical particularities the general nature of the climate in the Moldovian region represents differences characterized by high temperature jumps from summer to winter, but also daily allowances.

The main climatic characteristics of the year 2018-2019 recorded at Vasile Adamachi stationary

The characteristics of the climate for Iasi county registered at Vasile Adamachi meteorological station in the period 2010-2011 will be made by analyzing its basic elements: temperature, precipitation and relative humidity of the air. Thus, the annual average temperature in the area is 8.9°C with a peak in 2011, in August 21.5°C and in January 2010 the minimum of -4.0°C. Average annual rainfall is 500.5 mm in 2010 and 399.8 mm in 2011, but they are spread out unevenly and meet the water requirements of growing plants at the limit.

Table 1. The main climatic characteristics of 2010-2011 at the meteostation located at Vasile Adamachi, Iasi stationary

Month	Average temperature (C°)		Precipitație (mm)		Average relative humidity (%)	
	2010	2011	2010	2011	2010	2011
January	-4.0	-2.2	15.8	8.6	87	81
February	-2.7	-1.4	24.4	19.4	90	79
March	1.3	7.3	25.4	28.6	73	72
April	8.5	10.0	53.5	24.8	76	62
May	14.0	16.2	46.2	30.2	68	62
June	17.3	17.6	68.1	83.6	72	63
July	18.7	21.1	85.7	26.2	75	62
August	18.1	21.5	85.6	100.6	70	63
September	14.1	16.8	35.4	30.0	67	66
Octomber	8.6	8.7	20.1	10.4	83	73
November	3.2	2.2	9.3	1.4	84	78
December	-1.2	-0.1	30.7	36.0	82	82
Date /year	7.9	9.8	500.5	399.8	77.25	70.25

Over the period 2018-2019 from a thermal point of view, Monthly average values ranging from -3.7 to 25.41°C were recorded, which can render 2018 quite warm. The rainfall regime, throughout 2018, had a rainfall of 287.6 l/m^2, which shows a very large deficit.

Table 2. The main climatic characteristics of 2018-2019 at the station located at Vasile Adamachi, Iasi stationary

Month	Average temperature (C°)		Precipitație (mm)		Average relative humidity (%)	
	2018	2019	2018	2019	2018	2019
January	-1.0	-0.74	23.8	33.2	81.2	86.9
February	-3.7	5.12	9.4	41.2	79.0	49.84
March	1.7	5.34	11.4	1.0	72.1	65.25
April	9.53	12.05	15.9	20.6	77.53	64.9
May	13.0	14.62	9.2	3.5	62.9	74.23
June	19.8	19.92	62.1	21.1	73.15	78.38
July	19.17	21.75	38.7	26.2	69.53	65.92
August	25.41	20.16	38.6	43.2	65.47	69.2
September	17.1	20.26	16.4	13.0	56.1	17.62
Octomber	7.68	6.5	18.1	44.2	73.0	34.65
November	2.5	2.63	30.3	43	78.0	87.38
December	-2.21	-1.3	13.7	31.1	82.12	80.1
Date /year	9.08	10.52	287.6	321.3	72.5	64.53

In 2019 the annual average temperature in the area is 10.52°C with a maximum in July of 21.7°C and a minimum in January of -1.3°C. The average annual rainfall is 321.3 mm, but it is spread out unevenly throughout the year, which makes the crop of horticultural crops seriously affected.
Air humidity is expressed as the absolute maximum in November at 87.38% and the minimum in September at 17.62% and the average of the two years of research is 68.52%.

The main climatic characteristics of the year 2010-2011 recorded at Delesti stationary

In Vaslui county, in the summer months, the average temperatures recorded in the air were higher than normal, with the summer of 2010 being warm. The maximum temperature was recorded in August (monthly average of 22.8°C in air) and the minimum temperature recorded in January 2010 was -5°C.

Table 3. The main climatic characteristics of 2010-2011 in Delesti stationary

Month	Average temperature (C°)		Precipitație (mm)		Average relative humidity (%)	
	2010	2011	2010	2011	2010	2011
January	-5.0	-4.0	26.7	18.1	85	81
February	-2.1	-2.7	24.9	22.7	81	81
March	3.4	1.3	29.2	64.0	73	73
April	8.7	8.5	46.6	78.4	68	61
May	16.5	14.0	61.4	47.8	66	60
June	20.4	17.3	82.5	49.0	70	59
July	21.8	18.6	83.8	67.6	71	62
August	22.8	19.1	62.7	24.0	70	56
September	16.5	14.1	61.1	26.6	74	62
Octomber	9.2	8.6	38.9	64.2	79	68
November	5.2	3.2	30.8	37.0	83	83
December	1.9	-1.2	31.0	47.2	86	82
Date /year	9.94	8.06	579.5	546.6	76	69

September was warmer than normal, with an average air temperature of 16.5°C in 2010 and 14.1°C in 2011.
The annual average temperature was 9.94°C, in 2010 1.8°C higher than the annual average in 2011 when the temperature was 8.06°C.
The rainfall in the period 2010-2011 was unevenly spread, thus being months when very small quantities were recorded, well below the normal values, as they were in january, february and november.
Under these conditions, relative air humidity values were much lower than multi-annual averages, between 56 and 86%.
The main climatic characteristics of 2018-2019 at the Delesti stationary

The average annual temperature recorded in the area between 2018-2019 was 8.9°C in 2018 and 9.6°C in 2019 with a peak in July of 21°C and a minimum in January of -5.9°C. The average annual rainfall is 399.8 mm but they are distributed unevenly, in other areas reaching an average of 511.6 mm, satisfying the water needs of the crop plants.
Air humidity is expressed as the absolute maximum in February at 90% and the minimum in September at 67%.

Table 4. The main climatic characteristics of 2018-2019 in Delesti stationary

Month	Average temperature (C°)		Precipitație (mm)		Average relative humidity (%)	
	2018	2019	2018	2019	2018	2019
January	-5.9	-2.2	65.2	8.6	87	61
February	-1.3	-1.4	51.6	19.4	90	89
March	1.8	7.3	100.9	28.6	73	76
April	10.9	10.0	46.6	24.8	76	68
May	15.7	16.2	53.5	30.2	68	53
June	17.9	17.1	44.0	83.6	72	79
July	18.7	21.0	66.9	26.2	75	57
August	18.9	20.5	26.2	100.6	70	81
September	13.5	16.8	63.2	30.0	67	55
Octomber	8.9	8.7	11.2	10.4	63	26
November	6.3	2.2	17.9	36.0	54	44
December	0.5	-0.1	66.1	1.4	82	39
Date /year	8.9	9.6	613.3	399.8	73.08	60.66

Analyzing the climate, we note that the territory is in a continental climate with the highest air temperature range of 26.9°C. The annual amount of precipitation varying between 400-600 mm.

Results with regard to the structure, abundance and type of the Coleopters fauna collected from the two stationary in the research period.

In the stationary under study, were placed six traps on a row of trees from the edge inwards in a straight line at a distance of 20 m from the edge and between traps 6 to 8 m in a row.
The plastic pots have been used to do this, with a volume of 500 ml, with 10 cm in diameter and 9-10 cm in height, and it was used as a fixer a solution of salt with 25% concentration.
The situation of the collections in the period **2010-2011, located at Vasile Adamachi, Iasi stationary,** is presented in Table 5.
Thus, after identification of the 507 specimens, it were registered 20 species, belonging to several families of the choleopters.
The species with the highest number of specimens collected were: *Harpalus distinguendus*

with 146 specimens, *Otiorrhynchus raucus* with 71 specimens, *Calathus fuscipes* with 48 specimens, *Opatrum sabulosum* with 32 specimens, *Omias rotundatus* with 17 specimens, *Coccinella 7punctata* with 9 specimens, *Brachysomus hirtus* with 9 specimens, *Meligetes maurus* with 7 specimens, and *Polydrosus flavipes* with 4 specimens. A number of 38 identified species had between 1 and 3 specimens collected.

After diet, 18 species have predatory behavior (Pd), which falls into the group of useful species (U) and 27 species are phytopiophage, thus being considered as harmful species (D). Also, of the total specimens collected, 100 specimens (73%) belong to the harmful entomofauna and only 37 (27%) specimens belong to the useful entomofauna.

Table 5. Structure, dynamics, abundance and type of the coleopter fauna collected from the Iasi stationary in 2010-2011

No	Name of species	Dates/ No. of samples						Total	Type of fauna
		2010			2011				
		V	VI	VII	V	VI	VII		
1.	Amara crenata Dejean	-	-	2	-	2	1	5	Pd
2.	Amara familiaris Duft.	11	-	5	9	1	2	28	Pd
3.	Amara similata Gyll.	2	-	-	-	3	-	5	Pd
4.	Anisodactylus signatus Paz	1	-	16	1	7	7	32	Pd
5.	Attagemus unicolor	-	-	5	1	2	2	10	D
6.	Brachynus crepitans L.	15	-	4	-	4	7	30	D
7.	Brachysomus hirtus	-	-	-	-	8	11	19	D
8.	Calathus fuscipes Goeze	1	-	12	1	13	21	48	Pd
9.	Carabus besseri Fischer	4	-	3	1	-	1	9	Pd
10.	Carabus cancellatus Illyg	1	1	2	1	1	1	7	Pd
11.	Carabus coriaceus L	2	-	5	1	2	2	12	Pd
12.	Coccinella 7punctata	-	-	2	-	11	1	14	Pd
13.	Dermestes laniarius	-	7	2	-	2		11	Pd
14.	Harpalus distinguendus Duft	35	27	31	3	28	22	146	Pd
15.	Harpalus tardus Panz.	-	3	3	-	1	1	8	Pd
16.	Microlestes maurus Strm	7		2	2		1	12	D
17.	Otiorrhynchus raucus	-	13	22	9	20	7	71	D
18.	Pterostichus niger Schall	2	-	-	-	3	8	13	Pd
19.	Notiophilus palustris Duft.	-	4	5	-	1	9	19	D
20.	Zabrus tenebrioides Goeze.	-	2	-	4	2	-	8	D
Number of species/Total		81	57	121	33	111	104	507	159D=31,36% 348U=68,64%

Pd- predator species D- harmful species U- useful entomofauna

The situation of the collections in the period **2018-2019, located at Vasile Adamachi, Iasi stationary**, is presented in Table 6.

Table 6. Structure, dynamics, abundance and type of the Coleopter fauna collected from the Vasile Adamachi, Iasi stationary in 2018-2019

No	Name of species	Dates/ No. of samples						Total	Type of fauna
		2018			2019				
		V	VI	VII	V	VI	VII		
1.	Abax carinatus Duft	1	2	-	-	3	1	7	Pd
2.	Amara crenata Dejean	-	-	2	-	-	1	3	Pd
3.	Amara similata Gyll.	2	-	-	-	-	-	2	Pd
4.	Amara familiaris Duft.	28	2	5	7	1	1	44	Pd
5.	Anisodactylus signatus Paz	1	-	16	1	7	7	32	Pd
6.	Brachynus crepitans L.	18	-	7	-	4	14	43	D
7.	Calathus ambiguus Payk.	-	-	2	-	12	1	15	Pd
8.	Calathus fuscipes Goeze	1	-	-	10	39	29	79	Pd
9.	Carabus besseri Fischer	4	-	3	1	-	-	8	Pd
10.	Carabus cancellatus Illyg	1	1	2	-	-	-	4	Pd
11.	Carabus coriaceus L	14	1	5	2	22	24	68	Pd
12.	Carabus scabrisculus Ol	-	-	-	-	8	13	21	Pd
13.	Dolichus chalensis Schal.	-	2	-	2	-	-	4	Pd
14.	Harpalus calceatus Duft	-	-	-	-	1	1	2	Pd
15.	Harpalus distinguendus Duft	33	31	46	-	25	10	145	Pd
16.	Harpalus tardus Panz.	-	3	-	-	1	1	5	Pd
17.	Leistus ferrugineus L	-	-	-	1	-	-	1	Pd
18.	Nebria picicornis F	7	-	2	-	2	-	11	D
19.	Otiorrhynchus raucus	7	8	2	-	-	2	19	D
20.	Poecilus cupreus L	1	-	1	-	-	1	3	D
21.	Pseudophonus griseus Panz.	-	13	22	46	20	0	101	Pd
22.	Pseudophonus rufipes Müll	18	4	50	13	41	29	155	Pd
23.	Pterostichus cylindrichus Hr.	-	-	5	1	2	9	17	Pd
24.	Pterostichus niger Schall	2	-	-	-	3	8	13	Pd
25.	Zabrus tenebrioides Goeze.	-	-	2	-	4	2	8	D
Total specimens		138	59	232	84	195	212	810	84D=10,37% 726 U=89,63%

Pd- predator species D- harmful species U- useful entomofauna

Thus, after identification of the 810 specimens, it were registered 25 species, belonging to several families of the coleopters.

The species with the highest number of specimens collected were: *Pseudophonus rufipes* with 205 specimens, *Harpalus distinguendus* with 145 specimens, *Pseudophonus griseus* with 111 specimens, *Calathus fuscipes* with 97 specimens, *Carabus coriaceus* with 68 specimens, *Amara familiaris* with 44 specimens, *Brachysomus crepitans* with 43 specimens, *Carabus scabriusculus* with

21 specimens and *Otiorrhynchus raucus* with 19 specimens. A number of 13 identified species had between 1 and 10 specimens collected.

After diet, 20 species have predatory behavior (Pd), which falls into the group of useful species (U) and 5 species are phytopiophage, thus being considered as harmful species (D). Also, of all the specimens collected, 84 (10.37%) of the specimens belong to the harmful entomofauna and 726 (89.63%) specimens belong to the useful entomofauna.

The situation of the collections in the period **2010-2011, at Delesti, Vaslui stationary** is presented in Table 7.

Thus, after identification of the 161 specimens, it were registered 28 species, belonging to several families of the coleopters.

The species with the highest number of specimens collected were: *Omias rotundatus* with 17 specimens, *Opatrum sabulosum* with 16 specimens, *Coccinella 7punctata* with 12 specimens, *Brachysomus hirtus* with 11 specimens, *Otiorrhynchus pinastri* with 10 specimens, *Mordella aculeata* with 9 specimens, Harpalus tardus with 7 specimens, *Cantharis fusca* and *Phyllotreta vittula* with 6 specimens. A number of 20 identified species had between 1 and 5 specimens collected.

After diet, 11 species have predatory behavior (Pd), which falls into the group of useful species (U), and 18 species are phytopiophage thus being considered as harmful species (D). Also, of the total number of specimens collected, 107 (66.46%) belong to the harmful species and only 48 (33.54%) specimens belong to the useful entomofauna.

The situation of the collections in the **period 2018-2019, at Delesti, Vaslui stationary** is presented in Table 8.

Thus, after identification of the 168 specimens, it were registered 45 species, belonging to several families of the coleopters.

The species with the highest number of specimens collected were: *Opatrum sabulosum* with 31 specimens, *Omias rotundatus* with 20 specimens, *Brachysomus hirtus* with 9 specimens, *Coccinella 7punctata* with 8 specimens, *Meligetes maurus* with 6 specimens, *Dermestes laniarius* with 5 specimens, *Sitona crinitus* with 5 specimens, *Harpalus tardus, Mordellla aculeata, Mordella fasciata , Otiorrhynchus raucus* and *Polydrosus flavipes* with 4 specimens. A number of 33 identified species had between 1 and 3 specimens collected.

Table 7. Structure, dynamics, abundance and type of the Coleopter fauna collected from Delesti, Vaslui stationary in 2010-2011

No	Name of species	Dates/ No. of samples						Total	Type of fauna
		2010			2011				
		17.05	21.06	23.07	28.05	21.06	25.08		
1.	Coccinella 7punctata	3	2	4	2	1	-	12	Pd
2.	Dermestes laniarius	-	1	-	-	-	3	4	Pd
3.	Harpalus distinguendus	1	-	1	1	-	1	4	Pd
4.	Harpalus pubescens	-	1	-	-	1	-	2	Pd
5.	Harpalus tardus	1	2	2	-	-	2	7	Pd
6.	Carabus violaceus	-	1	-	-	2	-	3	Pd
7.	Licinus cassideus	1	3	-	-	-	-	4	Pd
8.	Amara crenata	2	-	-	1	-	-	3	Pd
9.	Amara eurynota	1	-	2	2	-	-	5	Pd
10.	Pterostichus niger	2	-	1	-	-	1	4	Pd
11.	Apion automarium	-	-	1	-	1	-	2	D
12.	Attagemus unicolor	1	1	-	-	-	2	4	D
13.	Brachysomus hirtus	9	-	-	2	-	-	11	D
14.	Longitarsus anchusae	1	-	-	-	-	-	1	D
15.	Meligetes maurus	-	5	-	-	1	-	6	D
16.	Mordela aculeata L.	4	-	-	1	1	3	9	D
17.	Mordella fasciatta	-	1	-	-	1	2	4	D
18.	Omias rotundatus	-	13	-	-	3	2	18	D
19.	Opatrum sabulosum	5	6	-	1	4	-	16	D
20.	Orchestes lonicerae	1	2	-	-	1	-	4	D
21.	Otiorrhynchus pinastri	1	3	1	2	3	-	10	D
22.	Otiorrhynchus raucus	-	1	-	2	-	2	5	D
23.	Otiorrynchus ovatus	1	1	1	-	-	1	4	D
24.	Otiorrynchus obsidianus	1	-	-	1	-	-	2	D
25.	Phyllotreta nemorum	-	-	-	1	-	1	2	D
26.	Phyllotreta vittula	-	1	2	-	3	-	6	D
27.	Scymnus nigrinus	-	1	-	-	1	-	2	D
28.	Tychius 5 punctatus	1	2	-	-	-	-	3	D
TOTAL		37	48	15	16	27	20	161	107D=66,46 % 48 U=33,54%

Pd- predator species D- harmful species U- useful entomofauna

After diet, 18 species have predatory behavior (Pd), which falls into the group of useful

species (U) and 27 species are phytopiophage, thus being considered as harmful species (D). Also, of the total specimens collected, 119 specimens (72%) belong to the harmful entomofauna and only 47 (28%) specimens belong to the useful entomofauna.

Table 8. Structure, dynamics, abundance and type of the Coleopter fauna collected from Delesti, Vaslui stationary in 2018-2019

	Name of species	Dates/ No. of samples						Total	Type of fauna
		2018			2019				
		23.05	17.06	18.07	02.06	02.07	05.08		
1.	Acrolocha sulcula	-	1	-	-	-	1	2	Pd
2.	Amara crenata	-	-	-	1	-	-	1	Pd
3.	Amara eurynota	1	-	-	-	-	-	1	Pd
4.	Apion automarium	-	-	-	-	1	1	2	D
5.	Attagemus unicolor	1	-	-	-	-	2	3	D
6.	Baryplithes araneiformis	-	-	2	-	-	1	3	D
7.	Brachysomus hirtus	9	-	-	-	-	-	9	D
8.	Cantharis fusca	1	-	-	-	-	2	3	Pd
9.	Carabus violaceus	-	-	-	-	2	-	2	Pd
10.	Chaetocnema hortensis	-	-	1	-	-	2	3	D
11.	Coccinella 7punctata	1	1	4	2	-	-	8	Pd
12.	Cymindis vaporariorum	1	-	-	-	-	1	2	Pd
13.	Dermestes haemorrhoidalis	-	1	-	-	-	-	1	Pd
14.	Dermestes laniarius	-	2	-	-	-	3	5	Pd
15.	Harpalus calceatus	1	1	-	-	-	1	3	Pd
16.	Harpalus distinguendus	-	-	1	1	-	1	3	Pd
17.	Harpalus pubescens	-	-	-	-	1	-	1	Pd
18.	Harpalus tardus	1	2	-	-	-	1	4	Pd
19.	Leistus ferrugineus	2	-	-	-	-	-	2	Pd
20.	Leptura maculicornis	-	-	-	1	-	-	1	D
21.	Leucoparyphus fullo	-	2	-	-	-	-	2	Pd
22.	Licinus cassideus	-	3	-	-	-	-	3	Pd
23.	Longitarsus anchusae	1	-	-	-	-	-	1	D
24.	Meligetes maurus	-	5	-	-	-	1	6	D
25.	Mordela aculeata L.	-	-	-	1	-	3	4	D
26.	Mordella fasciatta	-	1	-	-	1	2	4	D
27.	Mordellistena abdominalis	1	-	-	-	-	1	2	D
28.	Omias rotundatus	-	17	-	-	-	3	20	D
29.	Opatrum sabulosum	5	27	-	-	-	-	31	D
30.	Orchestes lonicerae	-	1	-	-	-	-	1	D
31.	Otiorrhynchus tristis	-	-	-	1	-	-	1	D
32.	Otiorrhynchus fullo	-	2	-	-	-	-	2	D
33.	Otiorrhynchus pinastri	1	-	-	-	-	-	1	D
34.	Otiorrhynchus raucus	-	-	-	3	-	1	4	D
35.	Otiorrynchus ovatus	-	2	-	-	-	1	3	D
36.	Otiorrynchus obsidianus	-	1	-	-	-	-	1	D
37.	Phyllotreta nemorum	-	-	-	1	-	2	3	D
38.	Phyllotreta vittula	-	-	1	-	-	-	1	D
39.	Polydrosus flavipes	4	-	-	-	-	-	4	D
40.	Pterostichus niger	-	-	1	-	-	1	2	Pd
41.	Scymnus nigrinus	-	-	-	1	-	-	1	D
42.	Sitona crinitus	-	3	-	-	-	2	5	D
43.	Telmatiphilus typhae	-	-	-	1	-	1	2	D
44.	Tillis elongatus	-	-	-	1	-	1	2	Pd
45.	Tychius 5 punctatus	-	1	-	-	-	-	1	D
TOTAL		30	77	10	14	5	37	168	119D=72 % 47U=28 %

Following the three harvests carried out each year in the study in the stationary for collecting the coleopterans species using soil traps type Barber, the results shall be presented:

In 2010-2011, at the Vasile Adamachi stationary from Iasi country, were collected 20 species, with a total of 507 specimens.

In 2080-2019, at the Vasile Adamachi stationary from Iasi country, were collected 25 species, with a total of 810 specimens.

In 2010-2011, at the Delesti stationary from Vaslui country, were collected 28 species, with a total of 161 specimens.

In 2018-2019, at the Delesti stationary from Vaslui country, were collected 45 species, with a total of 168 specimens.

CONCLUSIONS

Due to the physical-geographical particularities the general nature of the climate in the Moldovoan region presents differences which allow at least two conclusions:

- The valey microclimate , located on the lower terraces of the rivers that transvert the two localities where the experimental stationary were located, the mcroclimat of valley was characterized by high temperature jumps from summer to winter, but also diurns. To mention the frequencies of thermal inversions, the fog, the brums, the relatively heavy moisture.

- The microclimate of terrace and the one on sunny lyrics implies annual average temperatures of around 8.5-9°C, where the insolation is more pronounced in summer and a lower reative moisture.
- Following the application of the soil trap type Barber collection method, in the two stationary, we selected only specimens of coleopters belonging to both the species category of species that make up the useful fauna and the harmful fauna.
- It is to be noticed that in Vasile Adamachi stationary in Iasi county was collected with a significantly higher percentage of the species of coleopters belonging to useful fauna, whereas in the Delesti stationary in Vaslui county the dominant species belong to the harmful fauna to the *Coleoptera* order.

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