

# CONTRIBUTIONS TO THE KNOWLEDGE OF THE EPIGEE COLEOPTEROPHUNA FROM APPLE TREE ORCHARDS WITH GRASSED BANDS BETWEEN ROWS SOWED WITH GUIDES (*LOTUS CORNICULATUS*)

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**Keywords:** orchards, specimens, Coleoptera, beetle.

## ABSTRACT

In preparing this work, the material collected with the help of the soil traps type BARBER, of the "wet" type, was used in an apple tree orchards in the Delești area, Vaslui county. The traps operated from May to September inclusive.

The material from the traps was harvested periodically, throughout the vegetation period, depending on the pedoclimatic conditions, generally at intervals of 10-12 days.

At each of the 10 collections of the material, the liquid in the trap was replaced. The material was then determined, identifying the species of beetles.

The most frequently collected and the most numerous species are presented below: *Harpalus calceatus* (75 specimens), *Harpalus pubescens* (49 specimens), *Anysodactylus binotatus* (48 specimens), *Harpalus tenebrosus* (43 specimens).

## INTRODUCTION

In orchards in general but in orchards in particular, a fairly large number of chemical treatments are applied against pathogens and pests.

In addition to the positive consequences and benefits that these chemical treatments bring, they also have some negative effects such as: destruction of useful species, disturbance of the balance in the agrobiocenosis,

reduction of the diversity of arthropod species, etc.

Beetle species (class Hexapoda-order Coleoptera) are the main components of agrobiocenoses. Beetle species, like other arthropods, are affected by these chemical treatments with pesticides.

This paper presents the structure of beetle species in an apple orchard in the Delești-Vaslui area.

Soil traps type Barber were placed on grassy lanes, a total of 6 traps at

## MATERIAL AND METHOD

distances of 8-10 m between them. A solution of 25% sodium chloride (Na Cl) was placed inside the traps.

The collection was made on the following dates: Rec. I. 23.05.2017, Rec. II. 08.06.2017, Rec. III. 21.06.2017, Rec. IV. 03.07.2017, Rec. V. 17.07.2017, Rec. VI. 29.07.2017, Rec. VII. 11.08.2017, Rec. VIII. 25.08.2017, Rec. IX. 05.09.2017, Rec. X. 17.09.2017.

The material thus collected was determined on capers and harvesters.

## RESULTS AND DISCUSSIONS

Regarding the species and the number of beetles collected, the situation is as follows:

### Harvest I – 23.05.2017

Trap 1: <i>Anysodactilus binotatus</i>	2
<i>Harpalus azureus</i>	1
<i>Harpalus griseus</i>	1
Trap 2: <i>Anysodactilus binotatus</i>	7
<i>Harpalus calceatus</i>	2
<i>Harpalus distinguendus</i>	1
Trap 3: <i>Harpalus azureus</i>	1
<i>Harpalus distinguendus</i>	5
<i>Harpalus griseus</i>	3
Trap 4: <i>Anysodactilus binotatus</i>	2
<i>Harpalus distinguendus</i>	1
<i>Harpalus pubescens</i>	4

### Harvest II – 08.06.2017

Trap 2: <i>Anysodactilus binotatus</i>	6
<i>Harpalus azureus</i>	1
<i>Harpalus griseus</i>	2
<i>Otiorrhynchus pinastris</i>	1
Trap 3: <i>Harpalus azureus</i>	2
<i>Harpalus calceatus</i>	8
<i>Harpalus pubescens</i>	9
Trap 4: <i>Harpalus pubescens</i>	6
<i>Harpalus tardus</i>	2
<i>Otiorrhynchus pinastris</i>	3
Trap 5: <i>Anysodactilus binotatus</i>	3
<i>Harpalus calceatus</i>	4
<i>Harpalus pubescens</i>	3
Trap 6: <i>Anysodactilus binotatus</i>	3
<i>Harpalus distinguendus</i>	4
<i>Harpalus griseus</i>	2
<i>Scymnus auritus</i>	1

### Harvest III – 21.06.2017

Trap 1: <i>Harpalus distinguendus</i>	5
<i>Harpalus griseus</i>	3
<i>Harpalus tenebrosus</i>	7
Trap 2: <i>Harpalus calceatus</i>	2
<i>Harpalus griseus</i>	1
Trap 4: <i>Harpalus calceatus</i>	2
<i>Harpalus pubescens</i>	1
Trap 6: <i>Harpalus tardus</i>	2
<i>Hister purpurascens</i>	1

### Harvest IV – 03.07.2017

Trap 1: <i>Harpalus calceatus</i>	9
<i>Harpalus griseus</i>	6
<i>Otiorrhynchus pinastris</i>	3
Trap 2: <i>Harpalus distinguendus</i>	1
<i>Harpalus pubescens</i>	8
Trap 3: <i>Anysodactilus binotatus</i>	10
Trap 4: <i>Harpalus calceatus</i>	4
<i>Pentodom idiota</i>	1
Trap 5: <i>Anysodactilus binotatus</i>	1
<i>Otiorrhynchus pinastris</i>	4
Trap 6: <i>Anthicus floralis</i>	2
<i>Harpalus pubescens</i>	7

### Harvest V – 17.07.2017

Trap 1: <i>Dermestes lanarius</i>	1
<i>Harpalus calceatus</i>	9
Trap 2: <i>Acylophorus glaberrinus</i>	1
<i>Harpalus distinguendus</i>	5
Trap 3: <i>Harpalus calceatus</i>	8
<i>Otiorrhynchus pinastris</i>	1
Trap 4: <i>Anysodactilus binotatus</i>	8
Trap 5: <i>Elater nigrinus</i>	2
<i>Pentodom idiota</i>	1
Trap 6: <i>Anysodactilus binotatus</i>	3
<i>Harpalus tenebrosus</i>	7

### Harvest VI – 29.07.2017

Trap 3: <i>Otiorrhynchus pinastris</i>	1
<i>Harpalus tenebrosus</i>	5
Trap 5: <i>Harpalus calceatus</i>	9
<i>Otiorrhynchus pinastris</i>	1
Trap 6: <i>Harpalus pubescens</i>	3

### Harvest VII – 11.08.2017

Trap 1: <i>Anysodactilus binotatus</i>	2
<i>Harpalus tenebrosus</i>	9
<i>Scymnus auritus</i>	1
Trap 2: <i>Harpalus griseus</i>	2
<i>Metabletus truncatulus</i>	1
Trap 3: <i>Harpalus calceatus</i>	10
Trap 4: <i>Harpalus calceatus</i>	8
<i>Rinomias forticornis</i>	1
Trap 5: <i>Harpalus distinguendus</i>	3
<i>Metabletus truncatulus</i>	1
Trap 6: <i>Metabletus truncatulus</i>	1
<i>Otiorrhynchus pinastris</i>	3

### Harvest VIII –25.08.2017

Trap 2: <i>Amara aenea</i>	2
<i>Harpalus pubescens</i>	6
Trap 3: <i>Apion apricans</i>	1
<i>Apion virens</i>	1
<i>Otiorrhynchus pinastri</i>	2
Trap 5: <i>Apion apricans</i>	1
<i>Harpalus tenebrosus</i>	12
<i>Otiorrhynchus pinastri</i>	3

### Harvest IX –05.09.2017

Trap 2: <i>Anysodactilus binotatus</i>	1
<i>Blaps letifera</i>	1
<i>Chysomela marginata</i>	2
<i>Coccinella 7 punctata</i>	1
<i>Harpalus distinguendus</i>	2
<i>Harpalus tenebrosus</i>	3

### Harvest X –17.09.2017

Trap 5: <i>Harpalus distinguendus</i>	2
<i>Oxypora vittata</i>	1

In this experimental variant, a number of 25 species of beetles were collected, totaling 319 specimens (Table 1).

The beetle species collected in this experimental variant are: *Acylophorus glaberrinus*, *Amara aenea*, *Anthicus floralis*, *Anysodactilus binotatus*, *Apion apricans*, *Apion virens*, *Blaps letifera*, *Chysomela marginata*, *Coccinella 7 punctata*, *Dermestes lanarius*, *Elater nigrinus*, *Harpalus azureus*, *Harpalus calceatus*, *Harpalus distinguendus*, *Harpalus griseus*, *Harpalus pubescens*, *Harpalus tardus*, *Harpalus tenebrosus*, *Hister purpurascens*, *Metabletus truncatellus*, *Otiorrhynchus pinastri*, *Oxypora vittata*, *Pentodom idiota*, *Rinomias forticornis* și *Scymnus auritus*.

- at harvest I, a number of 30 beetle specimens were collected: *Anysodactilus binotatus*, *Harpalus azureus*, *Harpalus calceatus*, *Harpalus distinguendus*, *Harpalus griseus*, *Harpalus pubescens*;

- at the second harvest, a number of 60 beetle specimens were collected: *Anysodactilus binotatus*, *Harpalus azureus*, *Harpalus calceatus*, *Harpalus distinguendus*, *Harpalus griseus*, *Harpalus pubescens*, *Harpalus tardus*, *Otiorrhynchus pinastri*, *Scymnus auritus*;

-at the third harvest, a number of 24 beetle specimens were collected: *Harpalus calceatus*, *Harpalus distinguendus*, *Harpalus griseus*, *Harpalus pubescens*, *Harpalus tardus*, *Harpalus tenebrosus*, *Hister purpurascens*;

-at the 4th harvest, a number of 56 beetle specimens were collected: *Anthicus floralis*, *Anysodactilus binotatus*, *Harpalus calceatus*, *Harpalus distinguendus*, *Harpalus griseus*, *Harpalus pubescens*, *Otiorrhynchus pinastri*, *Pentodom idiota*;

- at the 5th harvest, a number of 46 beetle specimens were collected: *Acylophorus glaberrinus*, *Anysodactilus binotatus*, *Dermestes lanarius*, *Elater nigrinus*, *Harpalus calceatus*, *Harpalus distinguendus*, *Harpalus tenebrosus*, *Otiorrhynchus pinastri*, *Pentodom idiota*;

- at the 6th harvest, a number of 19 beetle specimens were collected: *Harpalus calceatus*, *Harpalus pubescens*, *Harpalus tenebrosus*, *Otiorrhynchus pinastri*;

-at the 7th harvest, a number of 41 beetle specimens were collected: *Anysodactilus binotatus*, *Harpalus calceatus*, *Harpalus distinguendus*, *Harpalus griseus*, *Harpalus tenebrosus*, *Metabletus truncatellus*, *Otiorrhynchus pinastri*, *Rinomias forticornis*, *Scymnus auritus*;

-at the 8th harvest, a number of 28 beetle specimens were collected: *Amara aenea*, *Apion apricans*, *Apion virens*, *Harpalus pubescens*, *Harpalus tenebrosus*, *Otiorrhynchus pinastri*;

-at the ninth harvest, a number of 12 beetle specimens were collected: *Anysodactilus binotatus*, *Blaps letifera*, *Chysomela marginata*, *Coccinella 7 punctata*, *Harpalus distinguendus*, *Harpalus pubescens*, *Harpalus tenebrosus*;

- at the 10th harvest, a number of 3 beetle specimens were collected: *Harpalus distinguendus*, *Oxypora vittata*;

And at this variant it is found that also at the second harvest from 08.06. The highest number of beetles was recorded (60 specimens), and the smallest number was collected at aXa harvest (3 specimens).

The greatest abundance was the species: *Harpalus calceatus* (75 specimens), *Harpalus pubescens* (49 specimens), *Anysodactylus binotatus* (48 specimens), *Harpalus tenebrosus* (43 specimens), *Harpalus distinguendus* (29 specimens), *Harpalus griseus* (19 specimens). The other species had between 1 and 5 specimens;

## CONCLUSIONS

1. The observations were made in 2017 in an apple tree orchard with an interval between rows in the form of grassy strips, over-seeded with guinea fowl (*Lotus corniculatus*).
2. 319 beetle specimens were collected in the 10 collections carried out at intervals of about 10-15 days.
3. The beetle species with the highest number of specimens were: *Harpalus*

*calceatus* (75 specimens), *Harpalus pubescens* (49 specimens), *Anysodactylus binotatus* (48 specimens), *Harpalus tenebrosus* (43 specimens), *Harpalus distinguendus* (29 specimens), *Otiorrhynchus pinastri* (22 specimens), *Harpalus griseus* (19 specimens).

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**Tabel 1**

The structure and abundance of species collected in 2017

No.	Species	ECOLOGICAL INDEX						
		A	C		D		W	
		%	%	Cl.	%	Cl.	%	Cl.
1.	<i>Harpalus calceatus</i>	75	85,71	C4	23,51	D5	20,1504	W5
2.	<i>Harpalus pubescens</i>	49	69,05	C3	15,36	D5	10,6061	W5
3.	<i>Anysodactilus binotatus</i>	48	64,28	C3	15,04	D5	9,6677	W4
4.	<i>Harpalus tenebrosus</i>	43	71,43	C3	13,47	D5	9,6216	W4
5.	<i>Harpalus distinguendus</i>	29	47,62	C2	9,09	D4	4,3287	W3
6.	<i>Otiorrhynchus pinastri</i>	22	23,81	C1	6,89	D4	1,6405	W3
7.	<i>Harpalus griseus</i>	19	23,81	C1	5,95	D4	1,4167	W3
8.	<i>Harpalus azureus</i>	5	4,76	C1	1,56	D2	0,0743	W1
9.	<i>Harpalus tardus</i>	4	7,14	C1	1,25	D2	0,0893	W1
10.	<i>Metabletus truncatulus</i>	3	7,14	C1	0,94	D1	0,0671	W1
11.	<i>Amara aenea</i>	2	2,38	C1	0,63	D1	0,0150	W1
12.	<i>Anthicus floralis</i>	2	4,76	C1	0,63	D1	0,0300	W1
13.	<i>Apion apricans</i>	2	4,76	C1	0,63	D1	0,0300	W1
14.	<i>Chysomela marginata</i>	2	4,76	C1	0,63	D1	0,0300	W1
15.	<i>Elater nigrinus</i>	2	4,76	C1	0,63	D1	0,0300	W1
16.	<i>Pentodom idiota</i>	2	4,76	C1	0,63	D1	0,0300	W1
17.	<i>Scymnus auritus</i>	2	4,76	C1	0,63	D1	0,0300	W1
18.	<i>Acylophorus glaberrinus</i>	1	2,38	C1	0,31	D1	0,0074	W1
19.	<i>Apion virens</i>	1	2,38	C1	0,31	D1	0,0074	W1
20.	<i>Blaps letifera</i>	1	2,38	C1	0,31	D1	0,0074	W1
21.	<i>Coccinella 7 punctata</i>	1	2,38	C1	0,31	D1	0,0074	W1
22.	<i>Dermestes lanarius</i>	1	2,38	C1	0,31	D1	0,0074	W1
23.	<i>Hister purpurascens</i>	1	2,38	C1	0,31	D1	0,0074	W1
24.	<i>Oxypora vittata</i>	1	2,38	C1	0,31	D1	0,0074	W1
25.	<i>Rinomias forticornis</i>	1	2,38	C1	0,31	D1	0,0074	W1
<b>TOTAL 25 species</b>		<b>319 collected samples</b>						