CONTRIBUTIONS TO KNOWLEDGE THE STRUCTURE, DYNAMICS AND ABUNDANCE OF THE COLLECTED ENTOMOFAUNA FROM WHEAT CROPS

CONTRIBUŢII LA CUNOAŞTEREA STRUCTURII, DINAMICII ŞI ABUNDENŢEI ENTOMOFAUNEI COLECTATE DIN CULTURILE DE GRÂU

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Abstract: *In the present conditions, increased the production of cereals and especially of production wheat is possible only through an intensive culture, by applying the modern technology to work in accordance with the requirements of cultivated varieties, irrigation, prevention and integrated control of diseases and pest, weed through the mechanization, to ensure on time execution of work under optimal conditions.The research on the knowledge of beetles species, dynamics and their abundance were made using soil traps type Barber, in three experimental stationary with wheat.The observations were made in 2015, the material collecting was done from May to July. The harvesting of the material was made at intervals of 14 days, all being done in a numbeof four harvests.The species most frequently collected were: Pentodom idiota, Epicometis hirta, Opatrum sabulosum, Phyllotreta atra, Phyllotreta nemorum and Tanymecus dilaticollis.*
Key words: Carabids, plum, useful entomophauna

Rezumat: *În condiţiile actuale, creşterea producţiei de cereale şi mai ales a producţiei de grâu, este posibilă numai printr-un sistem de cultură intensivă, prin aplicarea tehnologiilor moderne de lucrare, în concordanţă cu cerinţele soiurilor cultivate, irigaţii, prevenirea şi combaterea integrată a bolilor şi dăunătorilor,a buruienilor, prin mecanizare care să asigure executarea lucrărilor la timp şi în condiţii optime. Cercetările cu privire la cunoaşterea speciilor de coleoptere, a dinamicii şi a abundenţei acestora s-au realizat cu ajutorul capcanelor de sol tip Barber, în trei loturi experimentale cu grâu. Observaţiile au fost efectuate în anul 2015, colectarea materialului s-a făcut din luna mai până în luna iulie. Recoltarea materialului s-a făcut la intervale 14 zile, în total efectuându-se un număr de 4 recoltări. Speciile cele mai frecvent colectate au fost: Pentodom idiota, Epicometis hirta, Opatrum sabulosum, Phyllotreta atra, Phyllotreta nemorum şi Tanymecus dilaticollis.*
Cuvinte cheie: carabide, prun, entomofauna utilă.

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INTRODUCTION

Coleoptera are the most numerous species, not only of insects, but throughout the world creatures. All are characterized by converting previous wings sheath that covers very well the rest abdomen and defend it. They are spread all terrestrial, aquatic and cave adopted in part to supply all regions. A large number are predatory entomophagous very useful to man, the vast majority are phytophagous, so harmful. Some have adapted to parasitism (Popov, 2003, Tălmaciu and Tălmaciu, 2005).

There are also species of predatory beetles that can populate ecosystems such as tree species of beetles *Calosoma, Pterostichus, Brachynus* etc (Tălmaciu *et al,* 2001; Tălmaciu *et al*, 2008). Ideally, some species (predatory and harmful) to find a balance so harmful species to cause damage (Panin, 1951). The present study is a comparative study of beetles found in four corn lots with four different types of plants preceding.

MATERIAL AND METHOD

For gathering the material have been used Barber soil traps. They have been placed in wheat area Tişiţa Vrancea, each 6 traps in each variant (Tălmaciu *et al*, 2008), namely:

- Untreated wheat for consumption during the growing season, only to seed;
- Wheat for consumption on treatments that were applied during the growing season against the pathogens and pests;
- Wheat seed which has been applied technology to do so.

The traps have been placed in two rows, each row at distances 3 each between 6 and 8 m and between two rows distance of about 10 m. For capturing and killing species it has been gathered used a solution of concentration of 5.4% formalin into the item (Tălmaciu and Tălmaciu, 2005).

The traps have worked from May until late June. The harvesting of the material gathered has been made at intervals of between 10 and 20 days during 2015. Each harvest the species gathered from each of variant and traps have been put in the gauze, previously removing the the crop residues, soil particles or other contaminants. Such evidence is in this way was then tagged on the label specifying:

- the date of collection;
- variant;
- the trap of number.

The material was then brought into the laboratory after he was washed in a stream of water, they were selected and identified species of beetles. They counted the specimens gathered for each trap, the variants and species. The determination was made by using the German determinant (Reitter, 1908) or the Manual deterrminator (Rogojanu and Perju, 1979) with other colaborators and the internet to comparing the different pictures species.

RESULTS AND DISCUSSIONS

In total, the 3 variants were gathered 2610 samples belonging to 105 species (taxons). On variants the situation is as follows (tab. 1, fig. 1):

- For consumption wheat untreated have been collected 845 beetles belonging to a total of 55 species;

- Wheat consumption treated 838 specimens of beetles have been collected in a total belonging to a 65 number of species (taxons);

- Wheat for seed of has been collected 927 beetles total, belonging to a number of 72 species (taxons):

A number of 29 species gathered were common to in the 3 experimental variants. These include: A*mara aenea*, *Anthicus antherinus*, *Anthicus floralis*, *Anthicus humeralis*, *Blaps mortisaga*, C*artodere ruficollis*, *Coccinella 7 punctata*, *Colodera nigrita*, *Conosoma bipunctata*, *Dermestes laniarius*, *Drasterius bimaculatus*, *Emphilus glaber*, *Epicometis hirta*, *Formicomus pedestris*, *Gryllus campestris*, *Haplothrips tritici*, *Harpalus distinguendus*, *Hypnoidus pulchellus*, *Opatrum sabulosum*, *Oxyporus rufus*, *Pedinus femoralis*, *Pentodon idiota*, *Pleurophorus caesus*, *Pterostichus marginalis*, *Pteryngium crenatum*, *Pyrrhocoris apterus*, *Tachyporus ruficolis*, *Tanymecus palliatus* and *Tanymecus dilaticollis*.

Table 1

The structure and abundace of the colected entomofauna from the wheat crops

No.	The scientific name	Variants			Total
		1	2	3	
1	Agriotes lineatus	-	9	23	32
2	Amara aenea	3	3	1	7
3	Amara eurynota	-	2	1	3
4	Anisodactylus binotatus	-	2	1	3
5	Anisoplia segetum	1			1
6	Anobium punctatum	-	4	1	5
7	Anthicus antherinus	17	48	18	83
8	Anthicus floralis	5	4	32	41
9	Anthicus gracilis	10	1		11
10	Anthicus humeralis	11	2	4	17
11	Anthicus humilis	5	-	1	6
12	Anthicus quadriguttatus	-	-	2	2
13	Aphodius fimetarius	-	2		2
14	Aphthona euphorbia	10	-	2	12

15	Armadilludium vulgare		18	26	44
16	Astenus filiformis	-	1		1
17	Atomaria fuscicollis	-	-	1	1
18	Bidessus geminus	1	-	-	1
19	Blaps mortisaga	1	2	1	4
20	Brachynus explodens	-	2	4	6
21	Broscus cephalotes	1			1
22	Calathus fuscipes	-	-	3	3
23	Callistus lunatus		1		1
24	Calosoma inquisitor		1		1
25	Cantharis fusca	-	-	2	2
26	Cartodere ruficollis	4	1	1	6
27	Cassida nobilis	2	-		2
28	Cephus pygmaeus	-	1		1
29	Cercyon lateralis	3	-	4	7
30	Cerylon ferrungineum	-	-	1	1
31	Cetonia aurata	-	2	1	3
32	Ceutorhynchus punctiger	1	1	-	2
33	Chrysopa perla	-	-	2	2
34	Coccinella 5 punctata	1			1
35	Coccinella 7 punctata	12	5	1	18
36	Coccinulla quatuordecimpustulata sinensis	2			2
37	Colodera nigrita	17	29	7	53
38	Conosoma bipunctata	41	38	200	279
39	Corticaria longicornis	4	-	2	6
40	Cryptophagus dentatus	20	-	2	22
41	Cryptophagus dorsalis	-	-	1	1
42	Cypticus quisquilius	1			1
43	Dermestes laniarius	60	22	25	107
44	Drasterius bimaculatus	10	102	34	146
45	Emphilus glaber	1	1	2	4
46	Epicometis hirta	67	91	29	187
47	Eurygaster integriceps	2			2
48	Forficula auricularia	-	-	1	1
49	Formicomus pedestris	35	24	41	100
50	Gryllus campestris	23	5	15	43
51	Haplothrips tritici	144	15	6	165
52	Harpalus cupreus	-	-	1	1
53	Harpalus distinguendus	18	9	6	33
54	Harpalus smaragninus	-	-	3	3
55	Harpalus spp.	-	-	1	1

56	Harpalus tardus Panzer	4	2		6
57	Hister quadrimaculatus	-	-	1	1
58	Hypnoidus pulchellus	4	5	1	10
59	Idiochroma dorsalis	1	-	8	9
60	Ityocara rubens	1	-	12	13
61	Melanotus brunnipes	-	-	1	1
62	Metabletus foveatus	-	-	1	1
63	Metabletus truncatelus	-	5	5	10
64	Microletes maurus	-	9	3	12
65	Mycetophagus populii	-	1		1
66	Necrophorus antennatus		1		1
67	Onthophagus taurus	-	1		1
68	Opatrum sabulosum	68	65	46	179
69	Ophonus azureus	-	-	1	1
70	Ophonus sabulicola	-	-	4	4
71	Orchestes fagi	-	-	7	7
72	Otiorrhynchus laevigatus	6	3	-	9
73	Otiorrhynchus singularis	2	-		2
74	Oulema melanopa	-	1		1
75	Oxyporus rufus	5	3	1	9
76	Paederus limnophilus	-	-	1	1
77	Paradons quadrisignatus	-	1	1	2
78	Paramecosoma melanocephalum	-	3	-	3
79	Pedinus femoralis	21	2	6	29
80	Pentodon idiota	39	34	18	91
81	Phyllotreta atra	6	11	5	22
82	Phyllotreta nemorum	37	98	-	135
83	Phyllotreta nodicornis	-	17	5	22
84	Pleurophorus caesus	4	14	8	26
85	Psammobius porcicollis	-	1		1
86	Pseudocleonus cinereus	2	3	-	5
87	Pseudophonus rufipes	-	-	6	6
88	Pterostichus aterrimus var. niger	1	1		2
89	Pterostichus cupreus	-	2		2
90	Pterostichus lepidus	3	-		3
91	Pterostichus marginalis	9	33	220	262
92	Pteryngium crenatum	62	9	8	79
93	Pyrrhocoris apterus	8	42	9	59
94	Scirtes hemisphaericus	-	1		1
95	Selatosomus latus	-	-	1	1

96	Silpha obscura	-	2	11	13
97	Sipalis circularis	-	-	2	2
98	Staphylinus caesareus	-	1		1
99	Stomodes gyrosicollis	-	3		3
100	Tachyporus ruficolis	3	5	10	18
101	Tachyusa constricta	-	1		1
102	Tanymecus dilaticollis	24	8	12	44
103	Tanymecus palliatus	1	2	2	5
104	Zabrus blapoides	1		1	2
105	Zabrus tenebrioides	-	-	1	1
Total species		**845**	**838**	**927**	**2610**

The highest number of beetles gathered from the 3 variants, have had a total of 34 species. These were (tab. 2):

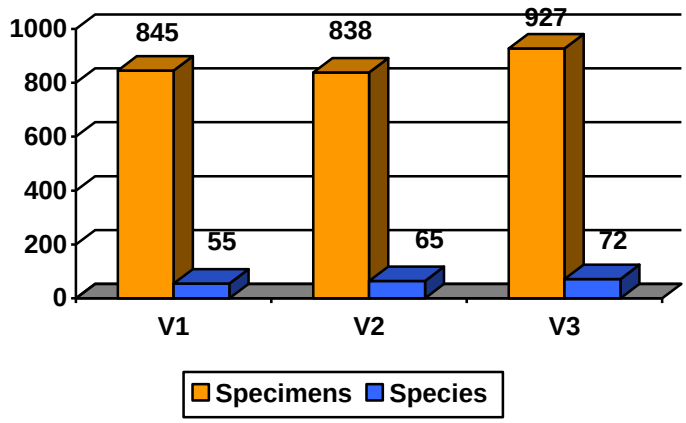

Fig.1 The number of individuals and species collected at the 3 variants

With a total of 297 specimens the *Conosoma bipunctata* species, representing 10.69% of the total; *Pterostichus marginalis*, with a total of 262 specimens, representing 10.04% of the total; *Epicometis hirta*, with a total of 187 specimens, representing 7.14% of the total; *Opatrum sabulosum* L., with a total of 179 specimens, representing 6.86% of the total; *Haplothrips tritici*, with a total of 165 specimens, representing 6.32% of the total; *Drasterius bimaculatus*, with a total of 146 specimens, representing 5.6% of the total; *Phyllotreta nemorum*., with a total of 135 specimens, representing 5.17% of the total; *Dermestes laniarius* L, with a total of 107 specimens, representing 4.1% of the total.

Table 2

The structure of species (taxa) with the largest number of specimens collected

No.	The scientific name	Total	%
1	Conosoma bipunctata	279	10.69
2	Pterostichus marginalis	262	10.04
3	Epicometis hirta	187	7.14
4	Opatrum sabulosum	179	6.86
5	Haplothrips tritici	165	6.32
6	Drasterius bimaculatus	146	5.6
7	Phyllotreta nemorum	135	5.17
8	Dermestes laniarius	107	4.1
9	Formicomus pedestris	100	3.83
10	Pentodon idiota	91	3.48
11	Anthicus antherinus	83	3.18
12	Pteryngium crenatum	79	3.02
13	Pyrrhocoris apterus	59	2.26
14	Colodera nigrita	53	2.03
15	Tanymecus dilaticollis and Armadilludium vulgare	44+44	3.37
17	Gryllus campestris	43	1.64
18	Anthicus floralis	41	1.57
19	Harpalus distinguendus	33	1.26
20	Agriotes lineatus	32	1.22
21	Pedinus femoralis	29	1.11
22	Pleurophorus caesus	26	0.99
23	Phyllotreta nodicornis, Cryptophagus dentatus and Phyllotreta atra	22+22+22	2.52
26	Coccinella 7 punctata and Tachyporus ruficolis Gravenhorst	18+18	1.37
28	Anthicus humeralis	17	0.65
29	Silpha obscura L. and Ityocara rubens	13+13	0.99
31	Microletes maurus and Aphthona euphorbia	12+12	0.92
33	Anthicus gracilis	11	0.42
34	Metabletus truncatelus and Hypnoidus pulchellus	10+10	0.75
35	Other species < 10 samples each	193	7.4
TOTAL		**2610**	**100**

CONCLUSIONS

1. In the 3 samples has been collected a number of 2610 specimens belonging to a total of 105 species of beetles in wheat. On variants, the situation is as follows:

- In the the untreated wheat variant for consumption has been collected 845 beetles belonging to a number of 55 species (taxons);
- the variant number 2, the treated wheat, 830 beetles has been collected from a number belonging to 65 species (taxons);
- The variant number three, wheat for seed the beetles has been collected 927 belonging to 72 species (taxons).

2. A number of 10 species had more than 100 specinens. The species with the greatest number of samples were: *Conosoma bipunctata* with 279 samples representing 10.69% of the total; *Pterostuchus marginalis* with a total of 262 samples, representing 10.04% of the total; *Epicometis hirta* with a total of 187 samples, representing 7.14% of the total *Opatrum sabulosum* with a total of 179 samples, representing 6.86% of the total; *Haplothrips tritici* with a total of 165 samples, representing 6.32% of the total; *Drasterius bimaculatus* with a total of 146 samples, representing 5.6 % of the total; *Phyllotreta nemorum* with a total of 135 samples, representing 5.17% of the total; *Dermestes laniarius* with a total of 107 samples, representing 4.10% of the total and *Formicomus pedestris* with a total of 100 samples, representing 3.83% of the total.

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