CONTRIBUTIONS TO THE STUDY OF BEETLES ENTOMOFAUNA IN ANALYZED ORCHARDS USING THE METHOD TYPE BARBER SOIL TRAPS

CONTRIBUȚII LA STUDIUL ENTOMOFAUNEI DE COLEOPTERE DIN CADRUL PLANTAȚIILOR POMICOLE ANALIZATE PRIN APLICAREA METODEI CAPCANELOR DE SOL DE TIP BARBER

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Abstract. *The research was conducted in 2008-2010 using the method type Barber soil traps and observations were made in four stationary belonging to Iasi and Vaslui counties. In three of these stationarys chemical treatments were performed as follows: stationary V. Adamachi Iasi – treated, Miroslava Iasi and farm plots stationary SC Service Deleşti SRL Vaslui, untreated apple orchard were performed in Iasi stationary V. Adamachi - untreated. For Barber method we used plastic boxes, with a volume of 500 ml, with a diameter of 10 cm and height 8 cm, and the fixing liquid formaldehyde solution was used in concentrations of 4% in 2009 and in 2010 was used as a fixing liquid salt solution at a concentration of 25%. In studied stationarys, six traps were placed each on a row of trees at the edge inward in a straight line at a distance of 20 m from the edge and from 6 to 8 m between traps at a time.*
Key words*:* soil traps, apple orchards, stationary

Rezumat. *Cercetările s-au desfăşurat în perioada 2008-2010 utilizându-se metoda capcanelor de sol tip Barber, iar observaţiile au fot efectuate în patru staţionare aparţinând judeţelor Iaşi şi Vaslui. La trei dintre acestea s-au efectuat tratamente chimice şi anume: staţionarul Vasile Adamachi Iaşi - tratat, staţionarul Miroslava Iaşi şi staţionarului de la ferma SC Loturi Service SRL Deleşti Vaslui, plantaţiile de măr netratate au fost în cadrul staţionarului Vasile Adamachi Iaşi -netratat.Pentru metoda Barber s-au utilizat cutii din material plastic, cu un volum de 500 ml, cu un diametru de 10 cm şi înălţimea de 8 cm, iar ca lichid de fixare s-a utilizat o soluţie de formol în concentraţie de 4% în anul 2009, iar în anul 2010 am utilizat ca şi lichid de fixare o soluţie de sare în concentraţie de 25%. Recoltarea probelor s-a făcut periodic în funcţie de metoda de cercetare aplicată, în cursul perioadei de vegetaţie, pe durata a 2 ani cât s-au desfăşurat cercetările.*
Cuvinte cheie*:* capcane de sol, livezi de măr, staţionare

INTRODUCTION

The literature shows that apple trees most important species in the world, but was attacked by a large number of diseases and pests. Percher (Way, 1988 cit. Talmaciu, 2007) has compiled a list that includes no more than 80 diseases that attack this species is caused by viruses, mycoplasmosis, bacteria, 64 species of insects and mites, 8 species of nematodes and at least 3 species of rodents.

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MATERIAL AND METHODS

The research was conducted in 2008-2010 using the method type Barber soil traps and observations were conducted in four counties of Iasi and Vaslui belonging stationary. Three of these chemical treatments were performed as follows: stationary Vasile Adamachi Iasi – tratat, Miroslava stationary Iasi and farm plots SC Service Deleşti Vaslui SRL, untreated apple orchard were in Iasi Vasile Adamachi untreated stationary. Method Barber traps soil type was used in research in apple orchard in Iasi and Vaslui, from May to September, two years of observations from 2008 to 2009 and from 2009 to 2010. For Barber method we used plastic boxes, with a volume of 500 ml, with a diameter of 10 cm and height 8 cm, and the fixing liquid formaldehyde solution was used in concentrations of 4% in 2009 and in 2010 was used as a fixing liquid salt solution at a concentration of 25%. In studied stationaries, and six traps were placed each on a row of trees at the edge inward in a straight line at a distance of 20 m from the edge and from 6 to 8 m between traps at a time. Harvesting were made at intervals between 10 and 20 days, a total of 6 harvests in 2009, and four harvests in 2010 (Talmaciu, 2006, Barbara, 1981).

RESULTS AND DISCUSSIONS

Stationary Vasile Adamachi Iasi - untreated (table 1) from the application method type traps Barber in 2009, we collected a total of 146 specimens of insects, of which 39 species belong copies and 107 copies useful entomofauna belong entomofaunei harmful . In this stationary did not conducted chemical treatments and species with the highest number of collected specimens were *Opatrum sabulosum* 32 copies, 17 copies *Omias rotundatus, Coccinella 7punctata 10 copies 9 copies Brachysomus hirtus, Meligetes maurus Strm* and *Otiorrhynchus pinastri* with 5 and *Polydrosus flavipes Deg*. with 4 copies. In 2010 the number of specimens collected by Barber soil traps method was 25 copies of which 13 species belong copies of useful entomofauna, and 12 copies belong pest. Species with the highest number of collected specimens were *Harpalus distinguendus* 8 copies *Brachysomus echinatus, Harpalus tardus* and *Longitarsus tabidus* 4 copies, 3 copies *Phylotreta vittula* and with one single species collected were *Drilus concolor* and *Melighetes maurus*.

Table 1

The situation regarding collection of entomofauna from Vasile Adamachi Iaşi – untreated stationary

Year	Barber method		
	No. useful species	**No. harmful species**	**Total no.**
2009	39	107	146
2010	13	12	25
Total	52	119	171
%	**30,4 %**	**69,6 %**	**-**

Stationary Vasile Adamachi Iasi - treated (table 2) after chemical treatment and application type using Barber traps in 2009, were collected a total of 33 species, of which 27 species belong of useful entomofauna and 6 copies belong harmful entomofauna. Species with the highest number of collected

specimens were 6 copies *Carabus coriaceus, Harpalus tardus* with 5, *Dermestes laniarius, Harpalus calceatus Duft.* and *Opatrum sabulosum* with 3 copies remaining 11 species had between 1 and 2 copies. In 2010 the number of specimens collected by Barber soil traps method was 16 copies of which 6 belong to the species of useful entomofauna copies and 10 copies belong pest. Species with the highest number of collected specimens were *Opathrum sabulosum* 4 copies, 3 copies *Harpalus distinguendus.*

Table 2

The situation regarding the collection of entomofauna from Vasile Adamachi Iaşi -treated stationary

Year	Barber method		
	No.useful species	**No.useful species**	**Total no.**
2009	27	6	33
2010	6	10	16
Total	33	16	49
%	**67,4 %**	**32,7 %**	-

Stationary Miroslava Iasi (table 3) from the application method soil traps Barber type in 2009, due to treatments performed were collected fewer species of 45 species, of which 33 species belong copies of useful entomofauna, 12 copies belong harmful. Species with the highest number of collected specimens were *Coccinella septempunctata* with 6 copies, *Dermestes laniarius* and *Harpalus calceatus* with 5, *Carabus violoceus* and *Otiorrhynchus raucus* 4 copies.

Table 3

The situation regarding the collection of entomofauna from Miroslava Iaşi stationary

Year	Barber method		
	No.useful species	**No.useful species**	**Total no.**
2009	33	12	45
2010	9	4	13
Total	42	16	58
%	72,4 %	27,6 %	-

In 2010 the number of specimens collected by type Barber soil traps method was much smaller, 13 copies of the nine samples belonging to the species of useful entomofauna and harmful species belonging to four copies. Species with the largest number of specimens collected are: *Calathus fuscipes* and *Harpalus distinguendus* 3 copies.

Stationary Deleşti Vaslui (table 4) from the application Barber method soil traps in 2009 we collected a total of 347, 310 copies of which belong to the useful entomofauna and and 37 specimens belonging to harmful. Species with the highest number of collected specimens were *Harpalus tardus* cu 88 copies,

Harpalus calceatus with 61 copies, *Dermestes laniarius* with 52 copies, *Harpalus distinguendus* with 46 copies and *Harpalus rufipes Pseudophonus aeneus* and 12 copies. In 2010 the number of samples collected was 170 of which 161 specimens belonging to useful entomofauna and 9 harmful. Species with the largest number of specimens collected were genus Harpalus: *Harpalus distinguendus* 34 copies, *Harpalus tardus, Harpalus aeneus* 31 copies and 22 copies. The species *Calathus fuscipes,* and *Harpalus griseus* were harvested 14 and 10 copies. *Harpalus calceatus* and *Amara similaris* species presented at harvest 9 and respectively 8.

Table 4

The situation regarding the collection of entomofauna from Deleşti Vaslui stationary

Year	Barber method		
	No.useful species	**No.useful species**	**Total no.**
2009	310	37	347
2010	161	9	170
Total	471	46	517
%	91,1 %	8,9 %	-

CONCLUSIONS

1. If untreated variant, the stationary V. Adamachi Iasi - untreated, the number of beetle species collected was higher, 171 copies in both years studied. Useful species represented 30.4% and 69.6% harmful of total.

2. Highest number of species package was registered in the stationary Deleşti-Vaslui, 517 copies of the relevant species represented 91.1% of the total.

3. Most abundant species were *Harpalus calceatus, Harpalus tardus, Dermestes laniarius, Pseudophonus rufipes, Coccinella septempunctata, Carabus violoceus* and *Otiorrhynchus raucus.*

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