RESEARCH ON HARMFUL ENTOMOFAUNA AND USEFUL ENTOMOFAUNA IN SOME APPLE ORCHARDS

CERCETĂRI CU PRIVIRE LA ENTOMOFAUNA DĂUNĂTOARE ŞI UTILĂ DIN UNELE PLANTAŢII POMICOLE DE MĂR

TĂLMACIU M., TĂLMACIU Nela, PĂDURARU L., HEREA Monica
University of Agricultural Sciences and Veterinary Medicine Iasi, Romania

Abstract: *Research has been conducted in the SA Loturi Service SRL Vaslui, Vaslui county during October 2008 - September 2009. For this was made direct field observations, were also regularly collected samples (branches, shoots, leaves) and insects were collected using different methods, shaken, or using soil traps type Barber. Following these investigations were reported as harmful species, the following species: San Jose Scale (Quadraspidiotus permiciosus Comst.), worm apples ((Laspeyresia pomonella L.), saw wasp with the apples (Haplocampa testidinea Drury), Wodlly apple aphid (Eriosoma lanigerum Hsm.), Cherry bark tortrix moth (Enarmonia formosana Scop.) etc. Useful species insect are particulary order Hymenoptera (families Braconidae, Ichneumonidae, Chalcididae etc.), of the order Coleoptera (Coccinelidae families, Carabidae), Neuroptera (Chrysopidae family) etc.*

Key words: soil traps, Coleoptera, *Quadraspidiotus permiciosus, Cydia pomonella* L, apple orchards.

Rezumat: *Research has been conducted in the SA Loturi Service SRL Vaslui, Vaslui county during October 2008 - September 2009. For this was made direct field observations, were also regularly collected samples (branches, shoots, leaves) and insects were collected using different methods, shaken, or using traps type Barber.Following these investigations were reported as harmful species, the following species: San Jose Scale (Quadraspidiotus permiciosus Comst.), worm apples ((Laspeyresia pomonella L.), saw wasp with the apples (Haplocampa testidinea Drury), Wodlly apple aphid (Eriosoma lanigerum Hsm.), Cherry bark tortrix moth (Enarmonia formosana Scop.) etc.. Useful species insect are particulary order Hymenoptera (families Braconidae, Ichneumonidae, Chalcididae etc..), of the order Coleoptera (Coccinelidae families, Carabidae), Neuroptera (Chrysopidae family) etc..*

Cuvinte cheie: capcane de sol, Coleoptera**,** *Quadraspidiotus permiciosus, Cydia pomonella* L, livezi de măr

INTRODUCTION

Apple culture is the best known and widespread in temperate climates, and apples tops both in terms of production volume, the quality - and request their food outlets.

Apple important fruit species worldwide, has an extremely large number of plant and animal organisms effects, which cause harm. Percher (Way, 1988 cit. Talmaciu M., 2007) has compiled a list of 80 diseases caused by viruses, mycoplasma, bacteria, fungi, plus 64 species of insects and mites, eight species of nematodes and at least two species of rodents.

Therefore, knowledge of pests and pathogens that attack apple and prevention and control measures are of particular importance for obtaining high yields and good quality.

MATERIAL AND METHOD

The research was carried out in SA Loturi Service SRL Vaslui, Vaslui County during October 2008 - September 2009. For comments that were made directly in the field were also regularly collected samples (branches, shoots, leaves) and insects were collected using different methods, by slip off, or type using Barber soil traps.

Following these investigations were reported as a pest, the following species: *Quadraspidiotus permiciosus* Comst., *Cydia pomonella* L., *Haplocampa testudinea* Drury., *Eriosoma lanigerum* L.., *Enarmonia formosana* Scop. etc. (Chatened du Gaetan, 1990; Panin I., 1951; Reitter E., 1908; Rogojanu V., Perju T., 1979).

Insect species are particularly useful order *Hymenoptera* (*families Braconidae, Ichneumonidae, Chalcididae* etc.), the order *Coleoptera* (*Coccinelidae* families, *Carabidae), Neuroptera* (*Chrysopidae* family) etc. it was also useful fauna followed by apple orchards, with periodically shaking down branches to the crown of trees and wildlife with soil traps for the air timber (Talmaciu M., 2006; Varvara M., 1981).

RESULTS AND DISCUSSIONS

In 2009, the apple orchards of the Company taken as observations were identified as most important following harmful species (table 1) tested *Quadraspidiotus perniciosus* Comst., *Eriosoma lanigerum, Sciaphobus squalidus* Gyll., *Aphis pomi, Cydia pomonella*, *Panonychus ulmi, Hoplocampa testudinea* etc.

He was also collected beetles fauna of apple orchards epigee of the Society for using this type of soil Barber traps. After determining the species of beetles collected indicates that it belongs to a number of 32, totaling 353 specimens from all 6 harvesting.

The most commonly collected species were: *Pseudoophonus pubescens, Harpalus distinguendus, Dermestes laniarius* Illig., *Harpalus tardus* and *Harpalus calceatus.*

They easily collected at 3, 4 or 5 from 6 harvest. It also notes that most commonly collected species, also had the highest number of such examples: *Harpalus tardus*, which was collected from 4 of the 6 collection it was a number of 88 specimens of species, *Harpalus calceatus* followed, with a total of 66 specimens, *Dermestes laniarius* which had 53 specimens and *Harpalus distinguendus* Duft., species with a total of 46 specimens. A total of 21 species have between one and three copies.

Table 1

Structure pest of apple plantations belonging to SC Lots Service Ltd. in 2009

No.	Scientific name of species	Common name	Order / Family	Time attack event	Observations
1	*Quadraspidiotus perniciosus*	San jose scale	Homoptera/ Diaspididae	From May to September	Occasionally, particularly in older plantations. Treatment was performed at the end of rest
2	*Eriosoma lanigerum*	Wooly apple aphid	Homoptera/ Eriosomatidae	From April to October	With greater frequency during the summer. Treatment was performed at the end of rest
3	*Sciaphobus squalidus*	Weewil buds	Coleoptera/ Curculionidae	Mid-March, the first decade of April	Varieties that have disbuding later, the attack was more powerful treatment is performed
4	*Aphis pomi*	Apple aphid	Homoptera/ Aphididae	Late April-mid September	The attack was quite frequently without significantly influence the quantity and quality production
5	*Anthonomus pomorum*	Apple Blossom Weevil	Coleoptera/ Curculionidae	Late April-early May	The attack was sporadic and did not require application of any treatment
6	*Hoplocampa testudinea*	European apple sawfly	Hymenoptera/ Tenthredinidae	The first half of May	Sporadic attack not necessary to apply a special treatment.
7	*Panonychus ulmi*	Red spider mite	Acari/ Tetranychidae	From May to September	Attack particularly intense in July and August
8	*Lithocolletis blancardella*	Apple blotch leafminer	Lepidoptera/ Tortricidae	From May to September	Sporadic attack, treatments performed to control other pests have taken this species
9.	*Adoxophyes reticulana*	Apple peel tortricid	Lepidoptera/ Tortricidae	From May to September	Occasionally attack 1-2% fruit contested
10.	*Cydia pomonella*	Codling moth	Lepidoptera/ Tortricidae	From June until Octomber months, a strong attack in producing real July-August	The attack was stronger in the second generation. Treatments performed in 10% reduced attack contested fruit
11	*Hyphantria cunea*	Fall Webworm (larva)	Lepidoptera/ Arctiidae	From July to September	Special treatment was made in late August
12	*Euproctis chrysorrhoea, Aporia crataegi, Hyponomeuta malinella, Operophthera brumata*	Brown-tail, Black Veined White, Apple Ermine Moth, Winter Moth	Lepidoptera	From May to September	Defoliator attack these species has been kept under control by carrying out treatment against other pests.

Table 2

Structure entomofauna collected at soil traps on the farm of SC Loturi Service Ltd. in 2009

No.	Species name	Harvest date and number of copies						Total examples
		1 19.05	2 8.06	3 3.07	4 17.07	5 20.08	6 9.09	
1	*Cantharis fusca*	3	-	-	-	-	-	3
2	*Epicometis hirta*	5	3	-	-	-	-	8
3	*Harpalus calceatus*	28	34	4	-	-	-	66
4	*Pseudoophonus pubescens*	1	9	6	1	-	-	17
5	*Calathus fuscipes*	6	1	-	-	-	-	7
6	*Harpalus distinguendus*	37	6	1	1	1	-	46
7	*Harpalus tardus*	58	28	1	1	-	-	88
8	*Amara familiaris*	1	-	-	1	-	-	2
9	*Dermestes laniarius Illig.*	21	25	4	3	-	-	53
10	*Omias rotundatus F.*	4	3	-	-	-	-	7
11	*Colon viennense Hrbst.*	3	-	-	-	-	-	3
12	*Haltica oleracea L.*	2	-	-	-	-	-	2
13	*Apion apricans*	2	-	-	-	-	1	3
14	*Cantharis pagana Rosenhauer*	1	-	-	-	-	-	1
15	*Curculio nucum L.*	-	1	1	-	-	-	2
16	*Pterostichus vulgaris L.*	2	-	-	-	-	-	2
17	*Harpalus aeneus F.*	-	12	-	-	-	-	12
18	*Otiorrhynchus raucus Fabr.*	-	2	3	-	2	1	8
19	*Anisodactylus signatus Panz.*	-	3	-	-	-	-	3
20	*Calathus melanocephalus L.*	-	1	-	-	-	-	1
21	*Amara aenea Djean.*	-	3	-	-	-	-	3
22	*Necrobia violacea L.*	-	1	-	-	-	-	1
23	*Amara ovata F.*	-	1	-	-	-	-	1
24	*Agriotes obscurus L.*	-	-	1	-	-	-	1
25	*Coccinella 7 punctata*	-	-	3	1	-	-	4
26	*Dermestes haermoxidalis*	-	-	1	-	-	-	1
27	*Pseudoophonus griseus*	-	-	2	-	1	-	3
28	*Carabus violaceus L.*	-	-	1	-	-	-	1
29	*Phyllotreta atra F.*	-	-	1	-	-	-	1
30	*Pterstichus cylindricus Hrbst.*	-	-	1	-	-	-	1
31	*Pentodon idiota Hrbst.*	-	-	-	1	-	-	1
32	*Octocemnus glabriculus*	-	-	-	-	1	-	1
TOTAL		174	135	29	8	5	2	353

He was also collected by shaking entomofauna the trees crown. Following its determination, it appears that it belongs to a number of six insect orders, namely: *Homoptera, Hymenoptera, Coleoptera, Thysanoptera, Diptera, Heteroptera* and *Lepidoptera*. Order with most specimens collected were the

order *Homoptera* (32 copies), followed by the order *Coleoptera* (20 copies), *Hymenoptera* (17 copies). The majority of these species of parasitic *Hymenoptera* collected species belonging to several families: *Braconidae, Chalcididae, Pteromalidae, Scelionidae, Proctotrupidae*, etc.

Table 3

Taxonomic structure and abundance entomofauna collected by sliping offin apple orchards

No.	Name order	No.total of copies	Family	No of species and copies	Species name	No of exempl/ species /family
1	Homoptera	32	Lecaniidae	1/5	*Parthenolecanium corni*	5
			Aphididae	1/22	*Aphis pomi*	22
			Cicadelidae	2/5	-	5
2	Hymenoptera	17	Braconidae	1/1	-	17
			Pteromalidae	1/5	-	
			Chalcididae	1/1	-	
			Encyrtidae	1/1	-	
			Proctotrupidae	1/1	-	
			Scelionidae	1/4	-	
			Formicidae	1/1	-	
			Eulophidae	1/2	-	
			Eurytomidae	1/1	-	
3	Coleoptera	20	Coccinellidae	1/18	*Stethorus punctillum*	18
			Curculionidae	1/1	*Apion viciae*	1
			Chrysomelidae	1/1	*Longitarsus apicalis*	1
4	Thysanoptera	6	-	2/6	-	6
5	Diptera	7	-	2/7	-	7
6	Heteroptera	7	-	2/7	-	7
7	Lepidoptera	2	-	1/2	-	2
TOTAL		91	-	22	-	91

CONCLUSIONS

1. Species reported as important pests in apple orchards of the Agricultural Society ,,Loturi Service" Ltd. were tested *Quadraspidiotus perniciosus* Comst., *Cydia pomonella* L., *Hoplocampa testudinea*, *Aphis pomi.*

2. In society, have been applied in apple orchards against pathogens and pests a total of 10 treatments.

3. Soil fauna collected belongs to a number of 32 species, the most abundant species with a: *Harpalus tardus, Harpalus distinguendus, Dermestes laniarius* and *Harpalus calceatus.*

4. Fauna collected from tree crown belongs to a number of six orders of insects are prevalent orders *Homoptera, Coleoptera* and *Hymenoptera*.

REFERENCES

1. **Chatened du Gaetan,** 1990 - *Guide des Coleopteres d'Europe*. Délacrois et Niestlé, Paris.
2. **Panin I.**, 1951 - *Determinatorul Coleopterelor daunatoare si folositoare din R.P.R*. Editura de Stat, Bucuresti.
3. **Reitter E.**, 1908 - *Fauna Germanica*. Die Käfer des Deutschen Reiches Band I, Stuttgart.
4. **Rogojanu V., Perju T**., 1979 - *Determinator pentru recunoasterea daunatorilor plantelor cultivate*. Editura Ceres, Bucuresti.
5. **Talmaciu M., Georgescu T., Mitrea I., Filipescu C., Badeanu Marinela, Radu C**., 1996 – *Contributions to the knowing of the carabid fauna of the vine plantation in Husi vineyard, Vaslui District*. Lucrari stiintifice, vol. 39, Seria Horticultura, U.S.A.M.V. IASI, pp.267 - 271.
6. **Talmaciu M., Talmaciu Nela, Diaconu A**, 2007 - *The efficacious fauna of carabids (Coleoptera: Carabidae) from apple plantations in north-eastern Romania.* Symposium Intern. „Plant Protection and plant Health in Europe" Germania-Berlin, vol.no. 82, p.114-115. ISSN 0306-3941, ISBN 13:978-1-901396-82-9.
7. **Tălmaciu M.,Tălmaciu Nela, Diaconu A., Artene I**., 2006 - *Contribution in relation to cognition structure, dynamics and abundances of species from coleopteres (Coleoptera) in plantation of apple*. Rev. Cercetări agr. în Moldova, vol 4 (128), p.33-41, ISSN 0379-5837
8. **Varvara M. et col**l., 1981 – *Aspectes of the fauna of Carabidae in sugar beet crop, Dobridor, Doly county.* An St. Univ." Alex.I.Cuza" Iaşi, T.XXVII, II, Biol., 75-80.