Academy of Romanian Scientists
Annals Series on Biological Sciences

Volume 1, No. 1, 2012, pp. 85 - 90
Online Edition ISSN 2285 - 4177

ORIGINAL PAPER

Parasitoids complex acting in *Aphis craccivora* (Koch) colonies (*Homoptera, Aphididae*) on some plants from the Agigea Dune Reserve

Received for publication, November, 1, 2011.
Accepted, May, 15, 2012

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Abstract.
During 2005-2007 we have investigated parasitoids complex controlling *Aphis craccivora* (Koch) populations installed on some plants (*Medicago sativa* L., *Onobrychis sativa* Lam. and *Vicia cracca* L.) from the Reserve of Dune of Agigea; most of plants are in buffer area.

Key words*:* parasitoids, hyperparasitoids, aphids, trophic relationships.

Introduction.

Colonies of aphids are constantly accompanied by complexes of entomophages that limit their populations.We have investigated the complex of parasitoid insects acting in the colonies of this aphid on different host plants. It is about a complex of parasitoids because in our research we identified species with different degrees of parasitoism (primary, secondary, tertiary and even quaternary).

To understand the trophic relationships among species we have established a trophic network, notable in this respect.

The material studied was selected from inside the Reserve of Dunes from Agigea.

Material and working methods.

In the Reserve of Dunes from Agigea we have reported the attack of the species *Aphis craccivora* (Koch) on plants of *Medicago sativa* L., *Onobrychis sativa* Lam. And *Vicia cracca* L.

In the 2006-2007 period, we collected a total number of 611 mummies produced by a number of nine species of primary parasitoids of the family *Aphidiidae*. These were studied under laboratory conditions to obtain the species of parasitoids. After the identification of species we have realized a trophic network to elucidate the trophic relationships among the species of this complex.

To be able to show the role of each species within the biocoenotic complex we have realized a synecological analysis in which we have indicated: abundance, constancy, dominance and the ecological significance index.

Results and discussions.

Of the 611 mummies collected from the colonies of *Aphis craccivora*, 592 adults hatched belonging to 18 parasitoid species, classified in 10 genera, belonging to four families, namely:

I.Family *Aphidiida*e; 1. *Ephedrus persicae* Froggatt; 2. *E. plagiarist* (Nees); 3.*Lipolexis gracilis* Förster; 4.*Lysiphlebus ambiguus* (Haliday); 5.*L. fabarum* (Marshall); 6.*L. fritzmülleri* Mackauer; 7.*Praon abjectum* Haliday; 8.*P. volucre* (Haliday); 9.*Trioxys acalephae* (Marshall); 10.*T. angelicae* (Haliday);

II. Family *Charipidae*: 11. *Charips dolichocerus* (Cam.); 12.*Ch.leunisii* (Hartig.); 13. *Ch. perpussilus* (Kieff); 14. *Alloxysta campilla* Kieff, 15.*Al. semiclausa* Kieff.;

III. Family *Encyrtidae:* 16. *Syrphophagus aphidivorus* (Mayr);

IV. Family *Pteromalidae*: 17. *Asaphes suspensus* Wolk.; 18. *Pachyneuron aphidis* (Bché).

To elucidate the trophic relationships among the species of parasitoid insects we have realized a trophic network specific for such parasitoid biocoenoses (Fig.1).

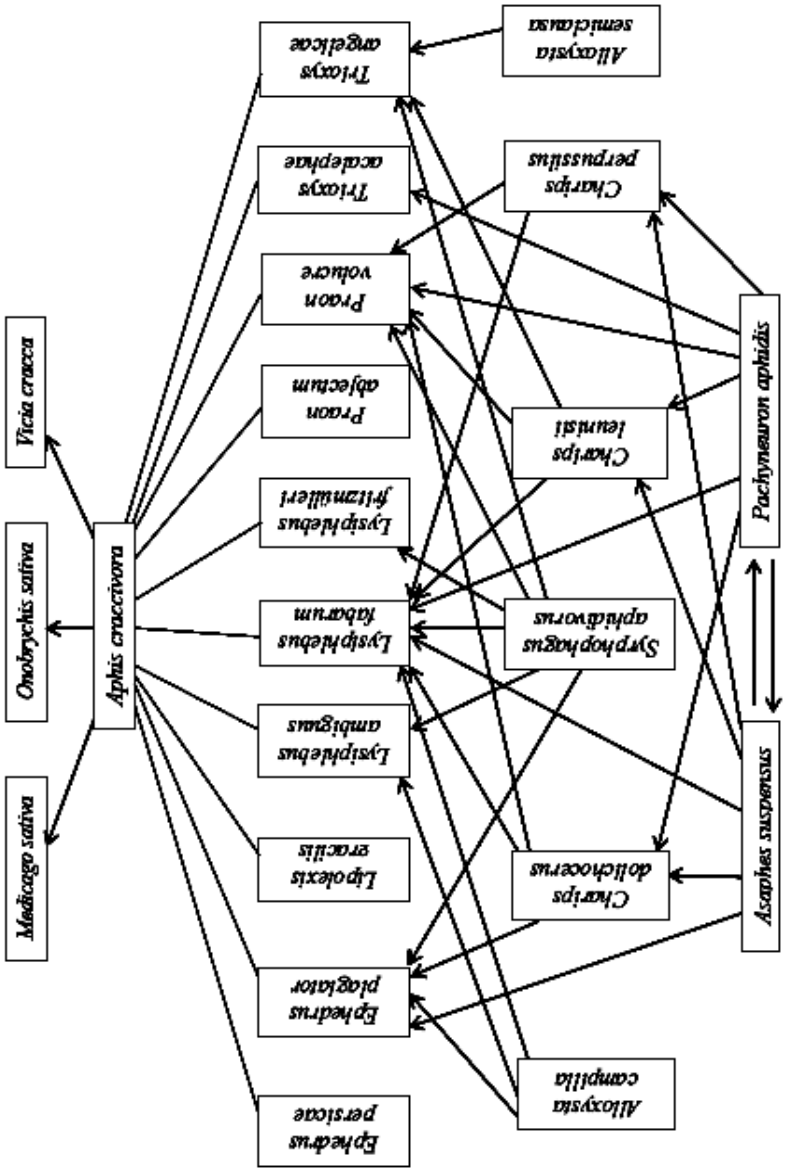

Figure 1. The trophic network specific for parasitoids from *Aphis craccivora*

In Table 1 we have recorded the presence of the parasitoid species in the investigated colonies of *Aphis craccivora*.

The investigated entomological material was ordered depending on the attacked host plants. In Table 2, we present the synecological analysis of the parasitoid species to understand the role of each species within this biocoentic complex in limiting the populations of *A.craccivora*. We can easily deduce that the most important species are: *Syrphophagus aphidivorus, Pachyneuron aphidis, Lysiphlebus fabarum.*

Tabel 1. The complex of parasitoids in the colonies of *Aphis craccivora* Koch.

The name of species		*Medicago sativa*					*Onobrychis sativa*					*Vicia cracca*					Total general	%
		26.05 .2006	30.05 .2006	04.06. 2007	18.06. 2007	Total	26.05 .2006	30.05 .2006	04.06 .2006	18.06 .2007	Total	26.05 .2006	30.05 .2006	04.06 .2006	18.06 .2007	Total		
Primary parasitoids	*Ephedrus persicae*	-	-	-	-	-	-	-	-	-	-	1	-	1	-	2	2	0,33
	Ephedrus plagiator	-	1	-	1	2	2	3	-	-	5	9	5	5	2	21	28	4,72
	Lysiphlebus ambiguus	-	-	-	-	-	-	-	-	-	-	-	2	3	1	6	6	1,01
	Lysiphlebus fabarum	11	5	14	3	53	6	-	5	2	13	2	1	1	-	4	70	11,82
	Lysiphlebus fritzmülleri	-	1	-	-	1	-	1	-	2	3	6	3	9	2	20	24	4,05
	Praon abjectum	-	3	1	-	4	-	2	2	2	6	10	7	5	2	24	34	5,74
	Praon volucre	1	-	1	-	2	-	1	-	-	1	3	5	1	8	17	20	3,37
	Lipolexis gracilis	5	7	2	-	14	9	3	5	2	19	2	-	1	-	3	36	6,08
	Trioxys acalephae	-	1	-	-	1	5	2	6	-	13	-	1	1	-	2	6	1,01
	Trioxys angelicae	-	-	1	-	1	-	-	-	-	-	2	-	1	1	4	5	0,84
Primary parasitoids	*Charips dolichocerus*	1	-	1	1	3	-	2	1	-	3	1	4	3	1	9	15	2,53
	Charips leunisii	3	1	-	3	7	-	1	1	-	2	2	2	-	5	9	18	3,04
	Charips perpussilus	-	1	1	-	2	-	2	1	-	3	-	1	1	1	3	13	1,52
	Alloxysta campilla	3	-	1	1	5	-	-	1	1	2	2	2	5	1	10	17	2,87
	Alloxysta semiclausa	2	3	1	1	7	-	2	1	-	3	-	1	1	1	3	13	2,19
	Syrphophagus aphidivorus	11	9	12	6	38	5	11	4	4	24	21	15	8	9	53	115	19,42
	Asaphes suspensus	-	2	1	-	4	1	1	-	3	5	3	6	-	2	11	20	3,37
	Pachyneuron aphidis	5	8	2	11	26	3	1	3	-	7	9	11	4	14	38	71	11,99
		42	42	38	27	149	31	33	30	16	110	76	64	46	47	233	592	100

Tabel 2. The synecological analysis of the parasitoids complex from colonies of *Aphis craccivora*

Nr. crt.	The name of species	Abundance	Dominance		Constancy		Ecological signigicance index	
1	*Syrphophagus aphidivorus*	115	19,42	D5	100	C4	19,42	W5
2	*Pachyneuron aphidis*	71	11,99	D5	91	C4	10,91	W5
3	*Lysiphlebus fabarum*	70	11,82	D5	83	C4	9,81	W5
4	*Lipolexis gracilis*	36	6,08	D5	75	C3	4,56	W4
5	*Praon abjectum*	34	5,74	D5	75	C3	4,30	W3
6	*Ephedrus plagiator*	28	4,72	D4	58	C3	2,73	W3
7	*Lysiphlebus fritzmülleri*	24	4,00	D3	58	C3	2,32	W3
8	*Praon volucre*	20	3,37	D3	58	C3	1,95	W3
9	*Asaphes suspensus*	20	3,37	D3	66	C3	2,22	W3
10	*Charips leunisii*	18	3,04	D3	66	C3	2,01	W3
11	*Alloxysta campilla*	17	2,87	D3	75	C3	2,15	W3
12	*Charips dolichocerus*	15	2,53	D3	75	C3	1,89	W3
13	*Alloxysta semiclausa*	13	2,19	D3	75	C3	1,64	W3
14	*Charips perpussilus*	9	1,52	D3	50	C2	0,76	W2
15	*Lysiphlebus ambiguus*	6	1,01	D3	25	C1	0,25	W2
16	*Trioxys acalephae*	6	1,01	D3	50	C2	0,50	W2
17	*Trioxys angelicae*	5	0,84	D2	33	C2	0,28	W2
18	*Ephedrus persicae*	2	0,33	D2	16	C1	0,05	W1

The fact that the first two species, *S.aphidivorus* and *P.aphidis*act as hyperparasitoids, then following some species of aphidiidae, allows us to deduce that this biocoenosis of parasitoid type is not an amount of species related accidentally to the colonies of *A.craccivora*, but a functional whole in which each species depends on its existence of other species, forming together a well integrated ecological level of organization, which functions as a unitary whole.

Conclusions.

In this paper, we present the complex of parasitoids acting in the colonies of *Aphis craccivora* (Koch), which attack the species of plants: *Medicago sativa* L., *Onobrychis sativa* Lem., *Vicia cracca* L. the Reserve of Dunes from Agigea.

There were identified 18 species of parasitoids controlling the populations of this complex. The trophic relationships among these species are particularly complex because they have different degrees of parasitism (primary, secondary, tertiary and even quaternary parasitoids). To elucidate these relationships we have performed a trophic network, notable in this respect. To understand the role of each species in this biocoenotic complex in limiting the populations of *A.craccivora* we have did a synecological analysis in which we have marked: abundance, constancy, dominance and the ecological significance index.

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