RESEARCHES REGARDING THE OF POTATO APHID FAUNA STRUCTURE FROM S.D TIMIŞOARA

CERCETĂRI PRIVIND STRUCTURA ENTOMOFAUNEI CARTOFULUI LA S.D TIMIŞOARA

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Abstract: *Paper presents data referring to the abundance and dominance of aphid species from potato cultivations, for a period of two years 2005-2006, from Didactic Station Timisoara. The potato aphid fauna are not studied in West Plain of Romania. The knowlege of potato aphid fauna structure constitute a basic element of the integrated potato pests control.*

Rezumat: *Lucrarea prezintă date privind abundența si dominanța speciilor de afide din culturile de cartof pe o perioadă de doi ani, 2005-2006 de la Statiunea Didactica Timisoara. Afidofauna cartofului nu a fost studiata in Campia de Vest a Romaniei. Cunoasterea structurii entomofaunei cartofului constituie un element de bază al combaterii integrate a dăunatorilor cartofului.*

Key words**:** *potato, aphids, fauna, abundance, dominance*
Cuvinte cheie*:, cartof, afide, fauna, abundență, dominanță*

INTODUCTION

Aphids are one of the most studied entomological groups, as regular pests and especially as virus vector of cultivated plant.

In Romania researches was carried out to ICCP, Brasov by Donescu (1996), (1997), (1998), (2001) and DRAICA (1996). In West part of Romania, however, the aphid fauna of the potato crops have not been studied. In the climatic conditions specific for the West zone aphids have characteristic structure.

The knowledge regarding the potato aphid fauna, the abundance and dominance in the West Plain of Romania are non - existent. The paper presents some data referring to the potato aphid populations, structure in the aim of the potato fields' protection.

MATERIAL AND METHODS

The researches have been carried out for a period of two years, 2005-2006 in the experimental field of the Didactic Station Timisoara (STN). The aphids have been collected with the yellow traps from two days to two days. The monitoring of aphids began on first of May and lasted until 30th of August. The collected aphids were prepared, conserved and determined. Abundance and dominance were calculated with usual methods.

RESULTS AND DISCUSSIONS

In 2005 from the potato cultivations were collected 31 species with an annual abundance of 1434 individuals (table 1).

Regarding the monthly aphid abundance, we can observe the difference between the months. In May there were collected 19 species of aphids with total abundance of 300 individuals. In the first ten days there were collected fewer individuals and in the second period there were collected the greatest number of individuals (156).

June is characterized by the most increased fly of aphids, reaching the greatest values in the last decade (598 individuals). In this month there were collected 24 species of aphids with a total abundance of 922 individuals.

In July there were collected 15 species of aphids, with a total abundance of 162 individuals. In the first twenty days of the month the number was very low, reaching maximum of 120 individuals in last decade.

In August there were collected 15 species with a total abundance of 49 individuals

Table 1

Abundance and dominance of aphid species at S.D, Timisoara, 2005

No.	TAXON	MAY		JUNE		JULY		AUGUST		A. Total	D Total
		A	D	A	D	A	D	A	D		
1	*Acyrthosiphum pisum*	6	2	35	3,79	2	1,23	1	1,81	44	3,05
2	*Anuraphis farfarae*			2	0,21					2	0,13
3	*Aphis acetosae*	1	0,33							1	0,06
4	*Aphis craccae*					1	0,61			1	0,06
5	*Aphis craccivora*	3	1	5	0,54	3	1,85	2	3,63	13	0,90
6	*Aphis fabae*	63	21	195	21,14	37	22,83	12	21,81	307	21,33
7	*Aphis frangulae*	23	7,66	97	10,52	12	7,40	14	25,45	146	10,14
8	*Aphis nasturtii*	8	2,66	39	4,22	9	5,55			56	3,89
9	*Aphis pomi*	1	0,33	4	0,43	3	1,85	3	5,45	11	0,76
10	*Aphis sambuci*							1	1,81	1	0,06
11	*Aulachorthum circumflexus*			3	0,32					3	0,20
12	*Aphis sp*	6	2	7	0,75	5	3,08			18	1,25
13	*Aulachortum solani*	54	18	181	19,63	13	8,02			248	17,23
14	*Brachycaudus cardui*	1	0,33			1	0,61	1	1,81	3	0,20
15	*Brachycaudus helichrysi*	5	0,33	25	2,71	2	1,23	2	3,63	34	2,36
16	*Brevicoryne brassicae*	5	1,66	17	1,84	17	10,49	3	5,45	42	2,9
17	*Cavariella aegopodii*	6	2	6	0,65	2	1,23	1	1,81	15	1,04
18	*Cavariella pastinacae*	2	0,66	1	0,10			1	1,81	4	0,27
19	*Dysaphis plantaginea*			2	0,21					2	0,13
20	*Hyalopterus pruni*					3	1,85	3	5,45	6	0,41
21	Hyperomyzus lactucae					1	0,61			1	0,06
22	Macrosiphum artemisiae					1	0,61			1	0,06
23	Macrosiphum euphorbiae	100	33,3	223	24,18	31	19,13	1	1,81	355	24,66
24	Macrosiphum rosae	5	1,66	5	0,54	4	2,46			14	0,97
25	Myzus ascalonicus			2	0,21	1	0,61	1	1,81	4	0,27
26	Myzus persicae	6	1,33	41	4,44	8	4,93	3	5,45	58	4,03
27	Phorodon humuli	9	3	17	1,84	1	0,61			27	1,87
28	Rhopalosiphum insertum			1	0,10	3	1,85			4	0,27
29	Rhopalosiphum padi	2	0,66	8	0,86	1	0,61			11	0,76
30	Schizaphis graminum			5	0,54	1	0,61			6	0,41
31	Sitobion avenae			1	0,10					1	0,06
	TOTAL:	300		922		162		49		1439	

In this year the most abundant species were: *Macrosiphum euphorbiae* with an abundance of 355 individuals, *Aphis fabae* with an abundance of 307 individuals, *Aulachortum solani* with an abundance of 248 individuals and *Aphis frangulae* with an abundance of 146 individuals (figure 1)

In 2005 in the potato culture there were determined 31 species classified like that: 3 eudominant species (dominance > 10%), 5 subdominant species (2,1-5%), 3 recedent species (1,1-2%). The most species were subrecedente (0-1%). The dominant species are absent.

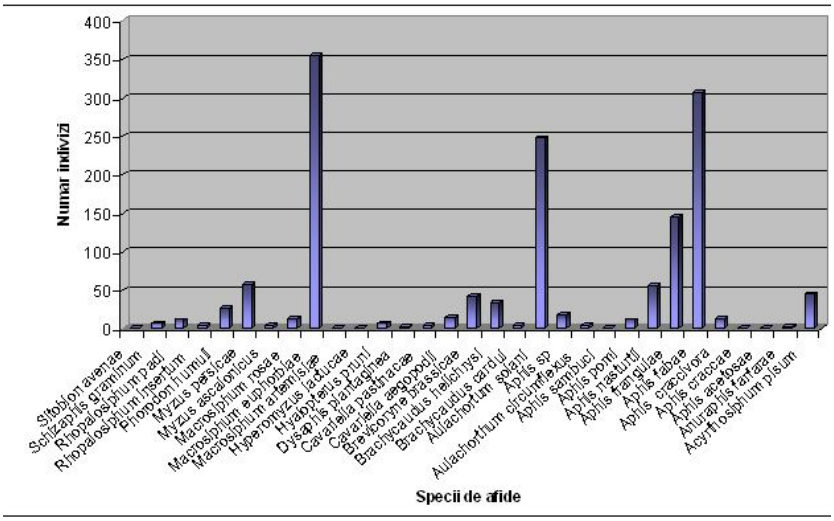

Figure 1. Aphids species abundance, STN, Timişoara, 2005

The other species were:

Eudominant species: *Macrosiphum euphorbiae, Aphis fabae, Aulachortum solani, Aphis frangulae.*

Subdominant species: *Myzus persicae, Aphis nasturtii, Acyrthosiphum pisum, Brevicoryne brassicae Brachycaudus helichrysi*.

Recedent species*: Phorodon humuli, Aphis sp, Cavariella aegopodii.*

Subrecedent species: *Anuraphis farfarae, Aphis acetosae, Aphis craccae, Aphis craccivora, Aphis pomi, Aphis sambuci, Aulachorthum circumflexus, Brachycaudus cardui, Cavariella pastinacae, Dysaphis plantaginea, Hyalopterus pruni, Hyperomyzus lactucae, Macrosiphum artemisiae, Macrosiphum rosae, Myzus ascalonicus, Rhopalosiphum insertum, Rhopalosiphum padi, Schizaphis graminum, Sitobion avenae* (figure 2).

In 2006 from the potato cultivations at Didactic Station Timisoara (STN) there were collected 30 species with an annual abundance of 3270 individuals (table 2).

Regarding the monthly aphids abundance we can observe the differences between the months.

In May there were collected 22 species of aphids with total abundance of 2071 individuals. In this month there were collected the greatest number of individuals of 2006, *Phorodon humuli* increased to 1830.

In June there were collected 22 species of aphids with a total abundance of 351 individuals.

In July there were collected the greatest number of species 25 species of aphids, with a total abundance of 186 individuals.

In August there were collected 16 species with a total abundance of 32 individuals.

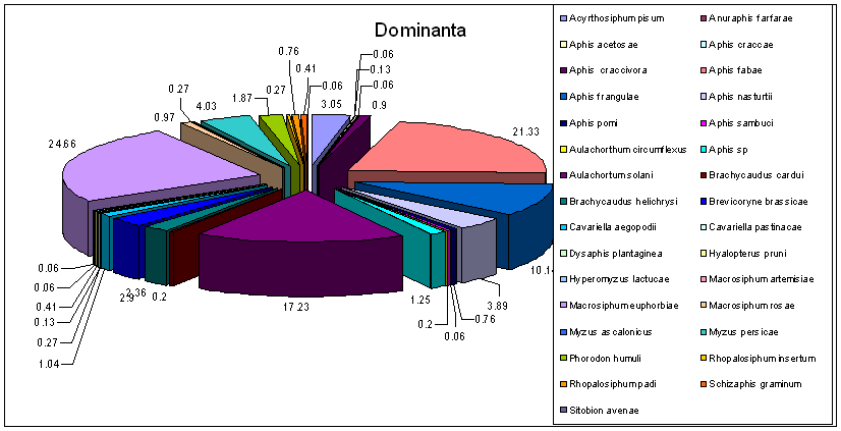

Figure 2: Aphid species dominance, STN, Timişoara, 2005

Table 2

Abundance and dominance of aphid species at STN, Timisoara, 2006

No.	TAXON	MAY		JUNE		JULY		AUGUST		A. Total	D Total
		A	D	A	D	A	D	A	D		
1	*Acyrthosiphum pisum*	3	0,11	2	0,56	4	2,15	1	3,12	10	0,30
2	*Aphis craccae*					8	4,30			8	0,24
3	*Aphis craccivora*	8	0,29	3	0,85	6	3,22	2	6,25	19	0,58
4	*Aphis fabae*	285	10,55	67	19,08	31	16,66	6	18,75	389	11,89
5	*Aphis frangulae*	130	4,81	33	9,40	10	5,37	5	15,62	178	5,44
6	*Aphis nasturtii*	275	10,18	18	5,12	4	2,15			297	9,08
7	*Aphis pomi*	2	0,07	2	0,56	8	4,30	3	9,37	15	0,45
8	*Aphis sp*	10	0,37	11	3,13	7	3,76	2	6,25	30	0,91
9	*Aphis rumicis*	1	0,03			1	0,53			2	0,06
10	*Aulachortum circumflexus*			2	0,56					2	0,06
11	*Aulachortum solani*	32	1,18	17	4,84	30	16,12			79	2,41
12	*Brachycaudus cardui*	1	0,03					1	3,12	2	0,06
13	*Brachycaudus helichrysi*	41	1,51	21	5,98	3	1,61	1	3,12	66	2,01
14	*Brevicoryne brassicae*	10	0,37	1	0,28	26	13,97	1	3,12	38	1,16
15	*Cavariella aegopodii*	7	0,25	2	0,56	5	2,68	1	3,12	15	0,45
16	*Cavariella pastinacae*	1	0,03	3	0,85	1	0,53	1	3,12	6	0,18
17	*Hyperomyzus lactucae*					3	1,61			3	0,09
18	*Hyalopterus pruni*	4	0,14					1	3,12	5	0,15
19	*Macrosiphum artemisiae*					1	0,53			1	0,03
20	*Macrosiphum euphorbiae*	15	0,55	13	3,70	13	6,98	2	6,25	43	1,31
21	*Macrosiphum rosae*	2	0,07	1	0,28	3	1,61			6	0,18
22	*Myzus ascalonicus*	1	0,03	1	0,28	1	0,53	1	3,12	4	0,12
23	*Myzus persicae*	30	1,11	28	7,97	6	3,22	3	9,37	67	2,04
24	*Phorodon humuli*	1830	67,75	100	28,49	11	5,91	1	3,12	1942	59,38
25	*Rhopalosiphoninus latysiphon*					1	0,53			1	0,03
26	*Rhopalosiphum insertum*			3	0,85	1	0,53			4	0,12
27	*Rhopalosiphum padi*	12	0,44	21	5,98	1	0,53			34	1,03
28	*Rhopalosiphum poae*	1	0,03							1	0,03
29	*Schizaphis graminum*			1	0,28	1	0,53			2	0,06
30	*Sitobion avenae*			1	0,28					1	0,03
	TOTAL:	2071		351		186		32		3270	

In this year the most abundant species was *Phorodon humuli* with an abundance of 1942 individuals followed by *Aphis fabae* with an abundance of 389 individuals, *Aphis nasturti*

with an abundance of 298 individuals and *Aphis frangulae* with an abundance of 178 individuals (figure 3).

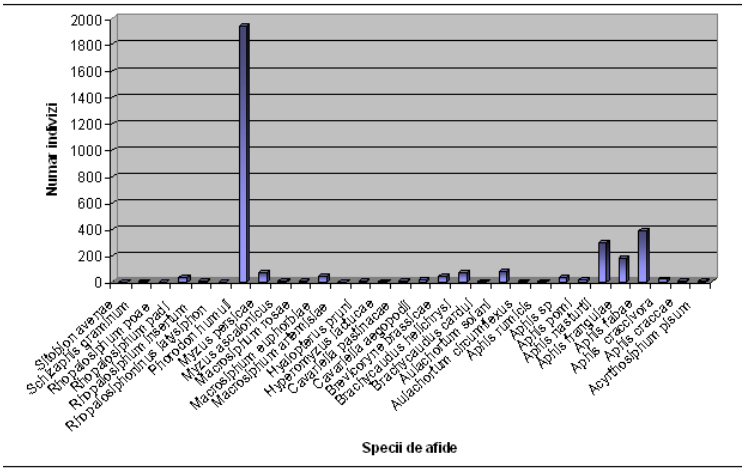

Figure 3: Aphids species abundance, STN, Timişoara, 2006

The most dominant species was *Phorodon humuli* with a dominance of 59,38% followed by *Aphis fabae* with a dominance of 11,89%, *Aphis nasturtiii* with a dominance of 9,08% and *Aphis frangulae* with a dominance of 5,44% (figure 4)

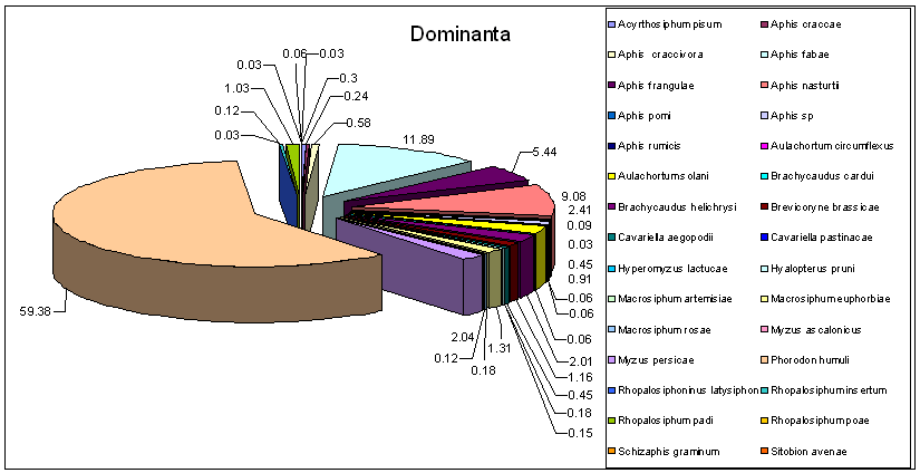

Figure 4: Aphid species dominance, STN, Timişoara, 2006.

In 2006 in the potato cultivations there were determined 31 species classified like this: 2 eudominant species (dominance > 10%), 2 dominant species 2 subdominant species (2,1-5%), 4 recedent species (1,1-2%). The most species was subrecedente (0-1%).

The aphid dominant species were:

Eudominant species: *Phorodon humuli, Aphis fabae.*

Dominant species: *Aphis nasturtii, Aphis frangulae.*

Subdominant species: *Aulachortum solani, Myzus persicae.*

Recedent species: *Brachycaudus helichrysi, Rhopalosiphum padi, Macrosiphum euphorbiae, Brevicoryne brassicae.*

Subrecedent species: *Acyrthosiphum pisum, Aphis craccae, Aphis craccivora, Aphis pomi, Aphis sp, Aphis rumicis, Aulachortum circumflexus, Brachycaudus cardui, Cavariella aegopodii, Cavariella pastinacae, Hyperomyzus lactucae, Hyalopterus pruni, Macrosiphum artemisiae, Macrosiphum rosae, Myzus ascalonicus, Rhopalosiphoninus latysiphon, Rhopalosiphum insertum, Rhopalosiphum poae, Schizaphis graminum, Sitobion avenae.*

In two years of the investigations the most frequent specie ware *Aphis fabae* . The most dangerous species *Myzus persicae* has presented in 2005 an abundance of 58 individuals and dominance of 4%, and in 2006 and abundance of 67 individuals and a dominance of 2%.

CONCLUSIONS

Potato aphid fauna includes a great number of species who are specific for the potato cultivations and others species who are found by chance in this culture.

In 2005 from the potatoes cultivations were collected 31 species with an annual abundance of 1434 individuals.

In this year the most abundant species were: *Macrosiphum euphorbiae, Aphis fabae, Aulachortum solani and Aphis frangulae.*

Eudominanat species were *Macrosiphum euphorbiae, Aphis fabae, Aulachortum solani.* The dominant species are absent but only 3 species were eudominant, 5 species were subdominant and 3 species were recedent and 19 species was subrecedent species.

The most dominant annual species were: *Macrosiphum euphorbiae* with a dominance of 24,66%, *Aphis fabae* with a dominance of 21,33%, *Aulachortum solani* with a dominance of 17,33% and *Aphis frangulae* with a dominance of 10,14%.

In 2006 from the potato cultivations were collected 30 species with an annual abundance of 3270 individuals.

In this year *Phorodon humuli* has reached extremely large number beginning even from the second decade of May and reaching highest value of 1440 individuals in the third decade. *Aphis fabae* showed a high abundance of 389 individuals.

The eudominant species were *Phorodon humuli* and *Aphis fabae.* In this year 2 species were eudominant, 2 species were dominant, 2 species were subdominant, 4 species were recedent and 21 species subrecedente .

The most dominant species was *Phorodon humuli* with a dominance of 59,38% followed by *Aphis fabae* with a dominance of 11,89%, *Aphis nasturtiii* with a dominance of 9,08% and *Aphis frangulae* with a dominance of 5,44%.

The most dangerous species was *Myzus persicae* the principal vector of potato viruses.

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