RESEARCH RESULTS CONCERNING THE BEHAVIOUR OF SOME PEAR TREE VARIETIES AND HYBRIDS UNDER THE ATTACK OF THE MAIN DISEASES AND PESTS IN THE ECOLOGICAL CONDITIONS AT LUGOJ HERDINESTI

REZULTATE DE CERCETARE PRIVIND COMPORTAREA UNOR SOIURI ŞI ELITE HIBRIDE DE PĂR LA ATACUL PRINCIPALELOR BOLI ŞI DĂUNĂTORI ÎN CONDIŢIILE ECOLOGICE ALE BAZINULUI POMICOL LUGOJ HERINDEŞTI

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Abstract: *The objective of our researches was to get to know the new hybrid elites and also the new pear tree varieties, with regards to their behaviour under the attack of the main diseases (Venturia pirina, Mycosphaerella sentina) and pests (Psylla piri), in the climatic and soil conditions from Lugoj area. Similar researches in pear tree have never been carried out so far in Banat; actually this is the first pear tree collection founded in 1998. A part of the hybrids studied were homologated per periods of research as new pear tree varieties (72-32-62- Virgiliu hibernal; 58-12-55-Milenium). Our researches have supervised two diseases (Venturia pirina and Mycosphaerella sentina) and one pest (Psylla piricola), specific as presence in young pear tree orchards. The practical implications have consisted in the introduction of some new pear tree varieties in the variety range from Banat, namely Euras, Milenium and Virgiliu hibernal.*

Rezumat: *Scopul cercetărilor efectuate a fost de a cunoaşte elitele hibride noi create precum şi a noilor soiuri de păr, privind comportarea la atacul principalilor boli (Venturia pirina, Mycosphaerella sentina) şi dăunători (Psylla piri) în condiţiile de climă şi sol din zona Lugoj. Asemenea cercetări la specia păr, nu au mai fost efctuate în Banat, fiind de fapt prima colecţie de păr înfiinţată în anul 1998.. O parte din hibridele studiate au fost omologate pe perioade de cercetare ca noi soiuri de păr (72-32-62- Virgiliu hibernal; 58-12-55-Milenium). Cercetările au urmărit două boli (Venturia pirina şi Mycosphaerella sentina) şi un dăunător (Psylla piricola), specifici ca prezenţă în plantaţiile tinere de păr. Implicaţiile practice constă în introducerea în conveerul varietal de păr din Banat a unor noi soiuri de păr, cum sunt: Euras, Milenium şi Virgiliu hibernal.*

Key words: *pear, hybrid elite, variety, diseases*
Cuvinte cheie: *păr, elite, hibride, soiuri, boli*

INTRODUCTION

Banat region has very favourable conditions for pear tree orchards, but despite all these, pear class is not varied enough, being necessary to improve it with new varieties and hybrids of superior qualities in terms of productivity and resistance to the main diseases` attack. Considering all these, it is necessary for us to get to know the new hybrids` qualities in order to introduce the most valuable ones into the crop system.

MATERIAL AND METHOD

The experimental plantation was created in 1998 in the tree nursery from Lugoj and consists of 14 hybrid elites and the control variety Cüré. These hybrid elites and the control

variety represent the experimental variants, straight situated, with 9 trees per variant, among which 3 trees were taken under observation, each tree being considered a repetition.

In 2004, because trees were young, we observed in each of them 100 leaves, totalling 300 leaves per variant and the total number of fruit within the variant.

In 2005, because it is a fruit plantation, we observed in each tree 300 leaves from 3 branches pointing to different directions within the tree crown (3 branches x 100 leaves) and the total number of fruit existent in the tree. Totally, we observed 900 leaves, 150 sprouts and the fruit existent within the variant.

RESULTS AND DISCUSSIONS

The behaviour to scurf attack was determined through observations upon the maximal attack pointing out.

Attack noting:

1 – without attack: (0)

2 – very slightly attacked (VSA): F = 0.1-3%; I = 3%;

3 – slightly attacked (SA): F = 3.1-10%; I = 10%;

4 – moderately attacked (MA): F = 10.1-25%; I = 25%;

5 – strongly attacked (SA): F = 25.1-50%; I = 50%.

Table 1

The results of the observations concerning the behaviour of some varieties and hybrid elite of pear tree in scurf attack (*Mycosphaerella sentina*) in Lugoj during 2004 – 2006

No	Year	Variety or hybrid elite	No. Of leaves	No. Of leaves attacked	F%	I%	Ga %	Attack level
0	1	2	3	4	5	6	7	8
1.	2004	14/111 – 81	900	0	0	0	0	0
	2005		900	0	0	0	0	0
	2006		300	0	0	0	0	0
2.	2004	15 /44	900	28	9.3	10	0.9	SA
	2005		900	19	2.1	3	0.1	FSA
	2006		300	28	3.1	3	0.1	FSA
3.	2004	1 /63 - 81	900	0	0	0	0	0
	2005		900	0	0	0	0	0
	2006		300	0	0	0	0	0
4.	2004	15 /67	900	22	7.3	3	0.2	FSA
	2005		900	32	3.5	3	0.1	SA
	2006		300	36	4.0	3	0.1	SA
5.	2004	1 /83 – 81	900	11	3.7	3	3	0
	2005		900	0	0	0	0	0
	2006		300	0	0	0	0	FSA
6.	2004	15 /50	900	0	0	0	0	0
	2005		900	0	0	0	0	0
	2006		300	0	0	0	0	0
7.	2004	72 – 32 – 60	900	15	5.0	3	0.1	FSA
	2005		900	12	1.3	3	0.1	0
	2006		300	25	2.8	3	0.1	FSA
8.	2004	72 – 22 – 83	900	14	4.7	3	0.1	FSA
	2005		900	14	1.5	3	0.1	FSA
	2006		300	27	3.0	3	0.1	FSA

0	1	2	3	4	5	6	7	8
9.	2004	58 – 4 – 41	900	30	10.0	10	0.1	FSA
	2005		900	31	4.7	3	0.1	SA
	2006		300	38	4.2	3	1.0	SA
10	2004	58 – 12 – 55	900	0	10.0	0	0	0
	2005		900	0	0	0	0	0
	2006		300	0	0	0	0	0
11	2004	89 – 1 – 81	900	0	0	0	0	0
	2005		900	0	0	0	0	0
	2006		300	0	0	0	0	0
12	2004	99 – 7 – 51	900	26	8.7	3	0.3	FSA
	2005		900	10	1.1	3	0.1	FSA
	2006		300	19	2.11	3	0.1	SA
13	2004	17 /37	900	13	4.3	3	0.2	0
	2005		900	0	0	0	0	0
	2006		300	0	0	0	0	FSA
14	2004	87 – 2 – 22 – 6	900	14	3	3	0.1	FSA
	2005		900	11	3	3	0.1	FSA
	2006		300	21	3	3	0.1	FSA
15	2004	Cure	900	25	10	10	0.1	SA
	2005		900	61	3	3	0.2	FSA
	2006		300	45	3	3	0.2	SA

Taking into account the data presented in the table above, we may conclude that the elites 14 /111 – 81; 1 /63 – 81; 1 /83 – 81; 15 /50; 58 – 12 – 55; 89 – 1 – 81 and 17 /37 proved resistance to the attack of the phyto-pathogenic fungus *Mycosphaerella sentina*. The other hybrid elites were very slightly attacked (FSA) by this pathogen, and the control variant Cüré was slightly attacked was slightly attacked (SA), with an attack degree of 0.2%.

Table 2

The results of the observations concerning the behaviour of some varieties and hybrid elite of pear tree in scurf attack (*Psylla piri*) in Lugoj during 2004 – 2006

No	Year	Variety or hybrid elite	No. of leaves	No. of leaves attacked	F %	Attack level
0	1	2	3	4	5	6
1.	2004	14 /111 – 81	150	42	28.0	MA
	2005		150	53	3.35	PA
	2006		150	48	32.0	PA
2.	2004	15 /44	150	18	12.0	MA
	2005		150	46	30.6	PA
	2006		150	40	26.6	MA
3.	2004	1 /63 – 81	150	5	3.3	SA
	2005		150	2	1.3	SA
	2006		150	5	3.3	SA
4.	2004	15 /67	150	23	15.3	MA
	2005		150	20	13.3	MA
	2006		150	23	15.3	MA
5.	2004	1 /83 – 81	150	7	4.7	SA
	2005		150	3	2.0	SA
	2006		150	2	1.3	SA

0	1	2	3	4	5	6
6.	2004	15 /50	150	40	26.7	MA
	2005		150	37	24.6	MA
	2006		150	30	20.0	MA
7.	2004	72 – 32 – 60	150	44	29.3	MA
	2005		150	45	30	MA
	2006		150	27	18	MA
8.	2004	72 – 22 – 83	150	73	48.7	PA
	2005		150	65	43.3	PA
	2006		150	58	38.7	PA
9.	2004	58 – 4 – 41	150	51	34.0	PA
	2005		150	52	34.6	PA
	2006		150	53	35.3	PA
10	2004	58 – 12 – 55	150	77	51.1	PA
	2005		150	39	26.0	MA
	2006		150	31	20.7	PA
11	2004	89 – 1 – 81	150	49	32.7	PA
	2005		150	79	52.6	PA
	2006		150	69	46.0	PA
12	2004	99 – 7 – 51	150	53	35.3	PA
	2005		150	55	36.6	PA
	2006		150	52	34.7	PA
13	2004	17 /37	150	41	27.3	PA
	2005		150	12	8.0	MA
	2006		150	19	12.7	SA
14	2004	87 – 2 – 22 – 6	150	79	52.7	MA
	2005		150	68	45.3	PA
	2006		150	60	40.0	PA
15	2004	Cure	150	48	32.0	PA
	2005		150	62	41.3	PA
	2006		150	64	42.7	PA

The behaviour of the varieties and hybrid elites towards the attack of the *Psylla piri* (pear sucker) and the frequency of the sprouts attacked by this pest was 3.3%, respectively 1.3% is presented in Table 2.

The hybrids 15 /44; 15 /67; 15 /50; 72 – 32 – 60; 58 – 12 – 55 and 17 /37 were medium attacked, with an attack frequency of 12.7%, respectively 26.6%. The other elites, including the variety Cüré, were strongly attacked, with an attack frequency of 32.0% in the hybrid elite 14 /111 – 81 and 42.7%, in the case of the variety Cüré.

Data presented in Table 3 lead to the conclusion that the elites 1/63-81; 1/83-81; 99-7-51 were not attacked by pear scab on leaves or fruit. The other elites, including the control variant Cüré, were very slightly attacked by pear scab (*Venturia pirina*) on leaves or fruit.

Table 3

The results of the observations concerning the behaviour of some varieties and hybrid elite of pear tree in scurf attack (*Venturia pirina*) in Lugoj during 2004 – 2006

No	Year	Var. or hybrid elite	Attack of the leaves				Attack of the fruit			
			F%	I%	Ga %	Attack level	F%	I%	Ga%	Attack level
1.	2004	14 / 111-81	1.7	3	0.1	FSA	0	0	0	0
	2005		2.0	3	0.1	FSA	2.5	3	0.1	FSA
	2006		3.0	3	0.1	FSA	4	3	0.1	FSA
2.	2004	15 /44	0.7	3	0.1	FSA	5.3	3	0.2	SA
	2005		1.3	3	0.1	FSA	2.5	3	0.1	FSA
	2006		2.4	3	0.1	FSA	0.7	3	0.1	FSA
3.	2004	1 /63-81	0	0	0	0	0	0	0	0
	2005		0	0	0	0	0	0	0	0
	2006		0	0	0	0	0.7	3	0.1	FSA
4.	2004	15 /67	2.7	3	0.1	FSA	6.2	3	0.2	SA
	2005		3.0	3	0.1	FSA	5.6	3	0.2	SA
	2006		3.9	3	0.1	FSA	1.3	3	0.1	FSA
5.	2004	1 /83-81	0	0	0	0	4.8	3	0.1	FSA
	2005		0	0	0	0	0	0	0	0
	2006		0	0	0	0	0	0	0	0
6.	2004	15/50	3	3	0.1	FSA	0.6	3	0.1	FSA
	2005		3.3	3	0.1	FSA	0	0	0	0
	2006		4.9	3	0.1	FSA	0.5	3	0.1	FSA
7.	2004	72-32-60	0	0	0	0	0	0	0	0
	2005		1.8	3	0.1	FSA	0	0	0	0
	2006		4.1	3	0.1	FSA	0.8	3	0.1	FSA
8.	2004	72-22-83	3.7	3	0.1	FSA	0.2	3	0.1	FSA
	2005		4.2	3	0.1	FSA	0	0	0	0
	2006		5.4	3	0.2	FSA	0.7	3	0.1	FSA
9.	2004	58 – 4 – 41	0	0	0	0	11.1	10	0.3	SA
	2005		1.9	0.1	0.1	FSA	3.6		0.1	FSA
	2006		3.4	0.1	0.1	FSA	0.5	3	0.1	FSA
10	2004	58-12-55	0.7	0.1	0.1	FSA	0	3	0	0
	2005		2.1	0.1	0.1	FSA	2.8	0	0.1	FSA
	2006		3.4	0.1	0.1	FSA	0.7	3	0.1	FSA
11	2004	89-1-81	6.3	3	0.2	FSA	0	3	0	0
	2005		6.1	3	0.2	FSA	0	0	0	0
	2006		8.1	3	0.2	FSA	0.7	0	0.1	FSA
12	2004	99-7-51	0	0	0	0	7.7	3	0.2	SA
	2005		0	0	0	0	0	3	0	0
	2006		0	0	0	0	0	0	0	0
13	2004	17 /37	10.7	10	1.1	FSA	5.1	0	0.2	FSA
	2005		8.7	3	0.2	FSA	0	3	0	0
	2006		9.3	3	0.3	FSA	1.3	0	0.1	FSA
14	2004	87-2-22-6	4.0	3	0.1	FSA	0	0	0	0
	2005		6.7	3	0.2	FSA	2.7	3	0.1	FSA
	2006		5.1	3	0.2	FSA	1.0	3	0.1	FSA
15	2004	Cure	5.3	3	0.2	FSA	0	0	0	0
	2005		5.8	3	0.2	FSA	1.7	3	0.1	FSA
	2006		6.9	3	0.3	FSA	2.0	3	0.1	FSA

CONCLUSIONS

The elites 1 /63 – 81 and 1 /83 – 81 have presented the best growth robustness, according to their trunk section area and to their sprouts` height.

The elites 15 /67; 58 – 12 – 55 and 99 – 7 – 51 had very significant results with regards to the average sprout height or to the annual growths.

The elites 1 /63 – 81; 1 /83 – 81 and 99 – 7 – 51 proved resistance to the attack caused by the main diseases (pear scab – *Venturia pirina*) or pests (ashy leaf spot – *Mycosphaerella sentina*), the other elites being very slightly attacked.

The elites 1 /63 – 81 and 1 /83 – 81 were slightly attacked by the pear sucker (*Psylla piri*).

The best yields were achieved from the elites 15 /44, 1 /63 – 81; 15 /67; 1 /83 – 81 and 99 – 7 – 51.

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