

EVOLUTION OF THE DEGREE OF ATTACK OF TORTRICIDS AT APPLE TREES IN THE ECOLOGIC CONDITIONS FROM SCDP IAȘI

EVOLUȚIA NIVELULUI DE ATAC AL TORTRICIDELOR CARPOFAGE LA MĂR, EXPLOATAT ÎN CONDIȚII ECOLOGICE LA SCDP IAȘI

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Abstract. *The experiments were effectuated within the farm no. 6 Sârca of SCDP Iași, on an intensive apple tree plantation with the breeds Idared, Jonathan and Generos. On a surface of 1 ha they eliminated the chemical treatments to fight against the specific pests and they were replaced by other means of fighting such as oophagous wasps of the type Trichogramma (Hym., Trichogrammatidae). They used as a blank test a similar surface exploited conventionally. The evolution of the attack degree was pursued comparatively for the main species of apple tortricids, apple worm - Cydia pomonella L. and fruit skin moth - Adoxophyes orana Hbn.*

Rezumat. *Experiențele s-au efectuat în cadrul fermei nr. 6 Sârca, a SCDP Iași, într-o plantație intensivă de măr cu soiurile Idared, Jonathan și Generos. Pe o suprafață de 1 ha au fost eliminate tratamentele chimice pentru combaterea dăunătorilor specifici, acestea fiind înlocuite cu alte mijloace de combatere, așa cum sunt viespile oofage din genul Trichogramma (Hym., Trichogrammatidae). Ca martor s-a folosit o suprafață similară exploatată convențional. Evoluția nivelului de atac a fost urmărită în mod comparativ la principalele specii de tortricide ale mărului, viermele merelor - Cydia pomonella L. și molia pielei fructelor - Adoxophyes orana Hbn.*

At present, both on the international and national level they intensified researches on the biologic fighting against diseases and pests to reduce the pollution of the environment and to eliminate the toxic wastes from fruits.

Among the useful zoophagous insects, Trichogramma spp. has the largest use in fighting against pests in fruit growing.

MATERIAL AND METHOD

The experiment was effectuated at farm no. 6 Sârca, on an intensive apple tree plantation of 1 ha with the breeds Idared, Jonathan and Generos. On this surface they eliminated the chemical treatments to fight against the specific pests and they

were replaced by other means of fighting such as oophagous wasps of the type *Trichogramma*. These were obtained and prepared at the Institute for Biologic Researches of Iași. They used as a blank test a similar surface exploited conventionally (chemically).

Observations and determinations effectuated focused on the density of butterflies, the flight periods and the percentage of fruits attacked by the two species.

The climatic conditions, especially temperature, influence significantly the evolution and attack of the species *Cydia pomonella* L and *Adoxophyes orana* Hbn. The average and maximum daily and monthly temperatures from 2007 were favourable for the development of pests (table 1). For example, since April, they registered an average temperature of 11,0°C, reaching up to 25,2 °C in July. The maximum temperature reached 38,8°C in May and 40,0°C in July what favors the evolution of pests.

Table 1

The main climatic conditions from march-September 2007

Month	Temperature °C			Rainfalls	HUMIDITY
	MEDIUM	MINIMUM	MAXIMUM		
III	8,1	-2,0	22,6	26,7	71
IV	11,0	0,8	24,7	29,6	59
V	19,6	0,0	38,8	33,4	62
VI	23,1	12,5	36,5	22,0	60
VII	25,2	11,4	40,0	45,0	54
VIII	22,0	11,3	37,1	112	75
IX	16,0	4,3	26,7	87,8	79

RESULTS AND DISCUSSIONS

On the surface of 1 ha (ecologic experiment), where they did not apply treatments with insecticides, the fighting was made by means of *Trichogramma*. In 2007, at SCDP Iași they made 5 launches.

The launching of trichogramma found at the beginning (hatching) of appearance of adults was effectuated manually by introducing the little plates in the tree canopy. They placed a little plate every 5 trees.

The optimum moment of launching the trichogramma was established by using the information supplied by the traps with synthetic sexual pheromones of the type AtraPOM, for *Cydia pomonella* L and ATRARET for *Adoxophyes orana* Hbn. Thus, the first adults of *Cydia pomonella* L. were captured on May 8th.

The first launching was made on April 24th, the other being effectuated at an interval of about three weeks on the following dates: (May 9th, May 28th, June 11th, July 11th).

On the plot exploited conventionally (chemically) they effectuated a number of five treatments presented in (table 2).

Table 2

**Chemical treatments applied to fight against
the main apple pests – 2007 SCDP Iași**

Trat	Pests	Dates of effectuate	Insecticides	Substance Activ	Dose l,kg/ha
1	<i>Cydia pomonella</i> G1T1, <i>Adoxophyes orana</i> and others	14 mai	Calypso 480 SC	Tiacloprid	0,4
2	<i>Cydia pomonella</i> G1T2, <i>Adoxophyes orana</i> and San Jose	29 mai	Palas 50 EC	Malation	4,5
3	<i>Cydia pomonella</i> G2 T1, and others	22 iunie	Mospilan 20 SP	Acetamiprid	0,3
4	<i>Cydia pomonella</i> G2T2	5 iulie	Reldan 40 EC	Clorpirifos	2
5	San Jose, <i>Cydia pomonella</i> , <i>Adoxophyes orana</i> and others	17 iulie	Calypso 480 SC	Tiacloprid	0,4

The effectiveness of the biologic methods by means of *Trichogramma* was expressed by the frequency of the fruits attacked, existing on the tree when harvesting (table 3). Determinations were effectuated by 10 trees per variant (diagonally).

Table 3

Frequency of fruits attacked on the tree when harvesting in 2007

Variant/variety	Fruits analysed	Fruits unattecked		Fruits attacked				Fruits total attacked	
				Adoxophyes orana		Cydia pomonella			
		number	%	number	%	number	%	Number	%
ECOLOGIC	138	43	31	50	69	40	55,2	90	65,2
CHIMIC	130	121	93	4,8	3,0	5	3,8	2	6,9

From table no. 3 it results that from a total of 138 fruits analysed, for the ecologic variant, 43 (31%) fruits remained unattacked and 90 (65,2%) were attacked. Among these 50 (69%) were attacked by *Adoxophyes orana* Hbn. and 40 (55,2%) by *Cydia pomonella* L. We must mention that the attack of the apple worm was quite drastic so that at the beginning of the harvesting a large number of apples had fallen due to the stings. This year they might have started the creation of a balance between the populations of parasites-predators and those of the main apple pests.

For the chemical variant they analyzed 130 fruits out of which 121 (93,0%) remained unattacked and 9 (6,9%) were attacked. From these, 4 (3,0%) were attacked by *Adoxophyes orana* Hbn. and 5 (3,8%) by *Cydia pomonella* L.

CONCLUSIONS

1. In 2007, at SCDP Iași, the climatic conditions were favourable for the evolution and attack of the apple worm and the fruit skin moth.
2. After observations, the percentage of fruits attacked was 65,2% for the variant to which they applied the method of biologic fighting as compared to 6,9% fruits attacked for the blank test variant, chemically treated.
3. After the first year of research, the biologic effectiveness of *Trichogramma embryophagum* was 34,8%
4. As for the chemical method, the effectiveness of the treatments applied was 90,4%.

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