

## RESULTS CONCERNING THE EFFECT OF SOME PLANT PROTECTION PRODUCTS IN THE CONTROL OF *ERIOSOMA LANIGERUM* SPECIES

### REZULTATE PRIVIND EFECTUL UNOR PRODUSE DE PROTECȚIA PLANTELOR ÎN COMBATAREA SPECIEI *ERIOSOMA LANIGERUM*

BEȘLEAGĂ Ramona<sup>1</sup>, CÂRDEI E.<sup>1</sup>, TĂLMACIU M.<sup>2</sup>, CORNEANU G.<sup>1</sup>  
e-mail: k\_ramona2006@yahoo.com

**Abstract:** In 2014, at SCDP Iași we carried out researches regarding the chemical control of *Eriosoma lanigerum* species (wooly apple aphid). The experiment was performed on *Generos* breed and the tested products were MCW 2222, Mospilan, Movento and Actara .

**Key words:** insecticides, phytoprotection, control, apple, wooly apple aphid

**Rezumat:** În anul 2014, la SCDP Iași s-au efectuat cercetări cu privire la combaterea chimică a speciei *Eriosoma lanigerum*(păduchele lănos). Experiența s-a efectuat la soiul *Generos* iar produsele testate au fost: MCW 2222, Mospilan, Movento și Actara.

**Cuvinte cheie:** insecticide, fitoprotecție, combatere, măr, păduchele lănos

## INTRODUCTION

Wooly apple aphid is one of the most dangerous pests of apple tree, its attack resulting in the debilitation of trees and even their death. (Babuc *et al.*, 2013). Woolly aphid colonizes stems, branches, shoots and roots by stinging and sucking the tissue sap (Cârdei, 1992). The parts attacked hypertrophy and there appear swellings just like nodosities or cancer tumors. The attack may be seen by the presence of some whitish-waxy filamentous secretions at the level of wounds (Beșleagă and Cârdei, 2009; Pașol, 2007)

In recent years, the presence of this pest has been more significant. Thus, in 2014 we carried out researches for the chemical control of this pest.

## MATERIAL AND METHOD

The researches regarding the chemical control of wooly apple aphid were conducted by testing the efficiency of some plant protection products in the experimental polygon, on an apple tree plantation for *Generos* breed, trees that were planted at 4x3 m distance and guided on fan-shaped espalier.

We tested four products which also represented the experiment variants:  
V1 – MCW 2222 – 0.250 l/ha

---

<sup>1</sup> Research and Development Station for Fruit Tree Growing of Iași, Romania

<sup>2</sup> University of Agricultural Sciences and Veterinary Medicine of Iași, Romania

V2 – Movento – 1.875 l/ha  
 V3 – Actara – 0.15 kg/ha  
 V4 – Mospilan – 0.3 kg/ha  
 V4 – Untreated control sample

Each variant contained 5 apple trees, each tree being considered as a repetition. Observations and determinations were carried out through sample drawing and analysis under the stereomicroscope of the samples harvested from each variant. 2. Observations were made 3 days, 7 days and 10 days, respectively after each treatment. The two treatments were made during the vegetation period, depending on insect biology. The efficiency of treatments was also influenced by the climatic conditions (table 1).

Table 1

### Climatic characterization of the yeasers 2014 – SCDP Iasi

Specification	Temperatura °C			Precipitations l/mp	No. raing days	U.R. %
	average	Absolute minimum	Absolute maximum			
january	-1,9	-19,9	10,6	12,8	5	86
february	-1,0	-18,5	10,7	26,8	15	88
march	7,7	-1,4	22,5	23,8	11	67
april	10,9	-0,6	24,0	73,0	10	70
may	15,6	0,1	30,5	113,0	16	80
june	17,9	8,9	29,3	35,2	8	76
july	20,7	10,3	31,2	61,6	13	75
august	21,0	8,2	34,5	19,6	5	68
september	16,5	1,5	30,4	9,4	3	61
october	9,1	-6,9	24,0	59,4	7	77
november	3,8	-5,3	18,4	64,2	8	85
december	-0,1	-16,0	14,2	13,8	8	84
Total	10,0	-19,9	34,5	512	109	76

The climatic conditions represent the factor having the highest influence on the evolution and attack of pests and pathogens of fruit trees. Thus, in 2014 these conditions were very favorable for the evolution of pests and pathogens.

We mention that high temperatures were recorded ever since the first months of the year which favored the outbreak of the first aphid colonies (21.03.2014). For example, in January-March interval, average temperatures ranged between -1.9°C and 17.7°C, and the maximum temperatures were between 10.9°C (January) and 22.5°C (March). During the vegetation period extremely high temperatures were also recorded favoring the evolution and development of the pest. Thus, in June-August, maximum temperatures were 29.3°C in June and 34.5°C in August. As it is generally known, *Eriosoma lanigerum* species may have up to 8-10 generations/year during the vegetation period.

## RESULTS AND DISCUSSIONS

*Eriosoma lanigerum* species hibernates in the larva state on trunks, frameworks and branches (Herțug, 1992). The biological reserve from the previous year was quite high and colonies located mostly on collar and roots. The active presence of the pest in the orchards was noticed as early as March (fig. 1).

Tests regarding the efficiency of plant protection products such as MCW 2222, Movento, Actara and Mospilan were conducted in August 2014. Treatments specific to the control of the woolly apple aphid were carried out until the application of treatments with the mentioned products.



Fig. 1 - *Eriosoma lanigerum* (original)

The results regarding the efficacy of products tested to control the woolly apple aphid are given in table 2.

Table 2

The results regarding the efficacy of products tested to control the woolly apple aphid (*Eriosoma lanigerum*)

Variety	Dose/ha	Dose 10l/aqua (1500 l solution)	Nr living aphides before tratament	Efficacy of treatments		
				3 days	7 days	10 days
V1- MCW2222	0,250l/ha	2,5 ml	352	61,3	90,4	98,7
V2 - Movento	1,875l/ha	18,75 ml	310	50,1	85,2	96,4
V3 - Actara	0,15kg/ha	1,5 g	294	75,4	84,6	95,2
V4 - Mospilan	0,3kg/ha	2,5 g	323	57,2	83,0	91,4
V5 – Control untrated						9,5

Two phytosanitary treatments were applied during the vegetation period, namely the first treatment was applied on August 4<sup>th</sup> and the second on August 15<sup>th</sup>.

The observations regarding the efficacy of treatments were made 3, 7 and 10 days respectively after the treatment by registering the number of living and dead aphids (fig. 2 and 3).

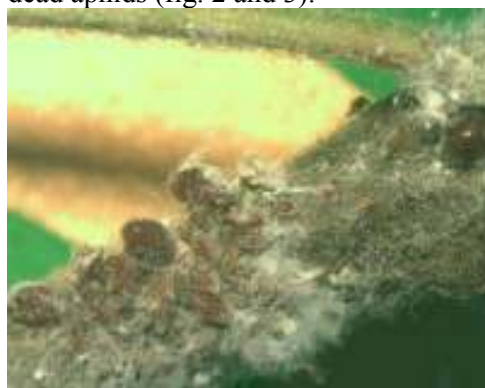


Fig. 2 - *Eriosoma lanigerum* – living aphids (original)



Fig. 3 - *Eriosoma lanigerum* colonies of dead aphides(original)

The data in the table attest the value of products used to control the wooly apple aphid. From the determinations made, the best results were registered by Actara insecticide 3 days after application which was applied in a concentration of 0.15 kg/ha, and having a 75.4% efficacy as compared to Movento product whose efficacy was 50.1%, since it has a slower action.

7 days after the treatment, the highest efficacy of 90.4% was registered by MCW 2222 product applied in concentration of 0.250 l/ha, as compared to Mospilan that had an efficacy of 84.6%.

10 days after the treatment, the best results were registered by MCW 2222 insecticide having an efficacy of 98.7%, followed by Movento with an efficacy of 96.4%, an insecticide characterized by double system and long-term efficiency. Comparable results were obtained by Actara product that also had an efficacy of 95.2% and Mospilan insecticide of 91.4%.

The results obtained attest the value of the products tested to control the wooly apple aphid, as compared to the untreated control sample, where the efficiency percentage was 9.5% and whose mortality was caused by the parasitic wasp *Aphelinus mali*.

## CONCLUSIONS

The climatic conditions registered in 2014 influenced the evolution and attack of *Eriosoma lanigerum* species.

To control the wooly apple aphid we tested the newest plant protection products such as MCW 2222, Movento, Actara and Mospilan. Following the determinations carried out, they had a high efficiency with a percentage ranging between 91.4% and 98.7%. 3 days after the treatment the best results were obtained by Actara insecticide whose efficiency was 75.4%, and 10 days after the treatment MCW 2222 had a high efficiency of 98.7%, followed by Movento with 96.4%.

All products tested to control the wooly apple aphid had a very good efficiency, a thing that recommends them to be used on a large scale in the apple tree phytoprotection.

## REFERENCES

1. Babuc V., Peșteanu A., Gudumac E., Cumpanici A., 2013 – *Manual tehnologic privind producerea merelor*. Chișinău, Republica Moldova. pp 170-195.
2. Beșleagă Ramona, Cârdei Eugen, 2009 - *Efficacy of some insecticides on woolly apple aphid Eriosoma lanigerum haus*. Control at RSFG Iasi
3. Cardei Eugen, 1992 – *Contribuții privind fitoprotecția speciilor semințoase*. Revista Cercetări agronomice în Moldova, vol 2, Iași
4. Herțug Maria, 1992 – *Rezultate privind combaterea integrată a păduchelui lănos (Eriosoma lanigerum Haussm) în plantațiile de măr din zona Focșani*. Revista Sănătatea plantelor, nr. 62.
5. Pașol Paul, 2007 – *Tratat de entomologie specială*. Editura Ceres, București.