CONTROLLING *CYDIA POMONELLA* IN THE PIONEER APPLE TREE VARIETY IN CONDITIONS OF THE DIDACTIC STATION TIMISOARA

COMBATEREA VIERMELUI MERELOR (*CYDIA POMONELLA*) LA SOIUL DE MĂR PIONIER ÎN CONDIȚIILE STAȚIUNII DIDACTICE TIMIŞOARA

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Abstract: *The codling moth (Cydia pomonella L.) is one of the most important and damaging pests existing in the apple orchards of the Banat's region. It damages especially the apple trees and the pear trees and the attack has two forms: a primary attack (when fruits are damaged superficially) and a secondary one (when fruits are severely damaged and they present galleries and excrements of the pest). During the first generation the unripe damaged fruits stop growing and they will fall down. The secondary attacks hurry the maturity of fruits and their falling down before time.The control of this pest in our country is often inadequate and the damage and therefore economic losses are enormous. This lack of control is caused by structural problems such as the absence of an advanced distribution network for phyto-pharmaceutical products, obsolete spraying equipment, the insufficient exchange of knowledge and the codling moth itself between the local research facilities and the actual apple growers.*

Rezumat: *Viermele merelor (Cydia pomonella L.) reprezintă unul dintre cei mai importanţi şi periculoşi dăunători existenţi în plantaţiile de măr în regiunea Banatului. Acesta atacă în special mărul şi părul, iar atacul se manifestă în două faze: atacul primar (când fructele sunt afectate superficial) şi atacul secundar (când fructele sunt afectate foarte profund şi prezintă galerii şi excremente lăsate de dăunător). De-a lungul primei generaţii fructele nematurate atacate se vor opri din creştere şi vor cădea. Atacul secundar grăbeşte maturarea fructelor şi căderea acestora înainte de recoltare. În ţara noastră, combaterea acestui dăunător este de multe ori improprie astfel că pagubele şi pierderile economice sunt enorme. Această slabă combatere a dăunătorului este determinată de diferite probleme cum sunt: slaba aprovizionare cu produse fitofarmaceutice, echipamente de realizare a tratamentelor învechite, schimbul insuficient de informaţii şi dăunătorul însuşi raportat la posibilităţile locale de cercetare şi la pomicultorii propriu-zişi.*

Key words: *Pioneer variety, codling moths, pheromone traps, treatment scheme*
Cuvinte cheie: *soiul Pionier, viermele merelor, capcane feromonale, schema de tratamente*

INTRODUCTION

By this research there was investigated the possibility of controlling the codling moth by the use of pheromone traps in the apple orchard of the Didactic Station Timisoara in order to determine the optimal spray timing and of a specific treatment scheme for the Pionier apple tree variety. This will not only minimize the pressure on the environment, but it will also reduce the costs of the treatments by doing them at the right time. There was initiated an integrated pest management program using Calypso®, Runner® and Reldan®, all easily obtainable and commercially available insecticides in the region. These results highlight the need for the development of an effective codling moth control program.

MATERIALS AND METHODS

In the apple tree orchard of the Didactic Station Timisoara there was placed a pheromone trap having a pheromone capsule for *Cydia pomonella* (L.), placed in the center of

the trap. The pheromone trap has a light orange color as many researches were made and it was determined the fact that male codling moths are more attracted to it than to an usual white trap. The pheromone trap was placed in the orchard on 3rd May 2007.

Every three - four days the pheromone trap was checked and there was observed the number of all the codling moths that were caught, after that they were taken away from the trap. When the pheromone trap was full it was changed with a new one. After six weeks, when the action of the pheromone capsules was gone it had to be renewed.

The treatments were made according to what was caught in the pheromone trap as it follows: every time there were caught more than five codling moth adults in the trap there was made a treatment.

The treatment scheme for controlling the codling moth (*Cydia pomonella* L.*)* on the Pioneer variety included the following insecticides: Calypso®, Runner® and Reldan®, all easily obtainable and commercially available insecticides in the region. The treatments were done as it follows, according to what we caught in the trap and according to the program:

- from 5-7 days since the first codling moths were caught we sprayed with Runner, using a doses of 20 ml/10l of water;
- from 15-20 days since the first adults were caught there was made a treatment with Reldan, using a doses of 13 ml/10l of water;
- after maximum 20 days since the last treatment we used Calypso 4 ml/10 l of water.

RESULTS AND DISSCUSIONS

The first codling moths were caught on the 7th May 2007 and as it were a great number of codling moths of the first generation, which is 19, the first spraying against *Cydia pomonella* was made on the 8th May 2007, after flowering, Reldan (10 ml/ 10 l of water).

The second treatment was made on the 5th June 2008, according to the codling moths caught in the pheromone trap, as on the 4th June 2007 there were 11 adults in the trap. For this treatment we used Runner 20 ml/10 l of water.

On the 14th June 2007 the pheromone capsule was changed and the next spraying was made on the 27th June 2007 using Calypso 4 ml/10 l of water.

The last treatment against *Cydia pomonella* was made on the 18th July 2007 using Reldan 10 ml/10 l of water, because on the 14th July there were caught 8 adults in the trap.

On the 22nd August 2007, after analyzing by eye 100 apples in the trees we could notice that only 22 were damaged by codling moth larvae, which is a very good result comparing it to the situations when the treatments are not done or they are done using improper chemicals. The percentage of the fruits attacked by the codling moth is of 22%.

Table 1

Captures of *Cydia pomonella* from the placement of the pheromone trap until August 2007

Date of control	Number of codling moths caught	Treatment date
03.05.2007	0	
07.05.2007	19	08.05.2007 – Reldan 10 ml/ 10 l water
10.05.2007	17	
14.05.2007	10	
17.05.2007	8	
21.05.2007	7	
24.05.2007	9	
30.05.2007	8	
04.06.2007	11	05.062007 – Runner 20 ml/10 l water
07.06.2007	5	
11.06.2007	3	
14.06.2007	2	
18.06.2007	3	
21.06.2007	12	

Date of control	Number of codling moths caught	Treatment date
25.06.2007	8	27.06.2007 – Calypso 4 ml/10 l water
29.06.2007	10	
02.07.2007	5	
06.07.2007	3	
10.07.2007	4	
14.07.2007	8	
18.07.2007	9	18.07.2007 – Reldan 10 ml/10 l water
20.07.2007	7	
24.07.2007	12	
31.07.2007	4	
14.08.2007	3	
22.08.2007	1	

As it can be seen in the chart above the sprayings were done at the right time when a maximum of codling moths were caught in the trap. These treatments had a good effect and they kept their efficacy for a long period on the treated Pioneer trees.

Very few fruits were attacked by the *Cydia pomonella* larvae in the first generation and because of this the secondary attack was also irrelevant for the production.

Male codling moth of *Cydia pomonella*

Secondary attack of *Cydia pomonella*

CONCLUSIONS

Controlling *Cydia pomonella* has a great impact upon the production and the economic investments made in the orchard. But what is more important is to apply rational treatments that would not damage themselves the whole production and also the environment.

Controlling pests in general and *Cydia pomonella* especially in the apple tree culture has a great importance for obtaining high productions with less damage.

Using pheromone traps is a very good solution because they tell exactly when to do the treatments in the orchard, meaning a good protection, good efficacy, important reduce of costs concerning the substances and also a less contamination degree of the apples.

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