

***Cydia funebrana* Tr: BIOECOLOGICAL PARTICULARITIES AND COMBAT**

Sergiu PANUȚA¹, Nichita CROITORU¹, Dina TROPOȘEL¹,
Oana LĂCĂTUȘU (BODESCU)², Maria Mădălina BODESCU

e-mail: s_panuta@yahoo.com

Abstract

Plum plantations are attacked by various species of sucking pests (aphids gray of plum, plum testaceous aphid) which together with direct damage get dirty with sugary excrements all external organs in which develops various fungi of the genus *Capnodium*, that cover organs attacked with an layer of fumagine. A good part of these pests serve as vectors in the transmission and spread of various viral diseases. From pest defoliators most common are: leaf plum moth, hairy caterpillar of oak, caterpillar with three tufts of yellow hairs, moths carnation leaf-rollers, etc. But the most dangerous are considered carpoфаgi pests whose larvae attack the fruits in which outgrowth galleries destroying the pulp and seeds. Following the attack the fruits presents galleries with excrements and abrasions. Among the most common and damaging species of plum fruits are black wasp and wasp yellow of plum, plum seed wasp, worm plum and oriental fruit moth.

Key words: Plum, *Cydia funebrana* Tr., biology, testing, control

In the fight against worm plums is recommended preventive measures, biological and chemical. Among the preventive measures are important: making autumn plowing to destroy hibernating larvae; cleaning the trunk by peeling bark and destruction by burning; daily gathering of fallen fruits and their destruction, before being abandoned by larvae; applying girdles trap of paper, corrugated cardboard, sackcloth, straw, rags, etc., at the trees strain to attract the larvae at hibernation, which is then destroyed by burning for each generation a part before the flight of butterflies; use specific sex pheromone traps - FeroFun using one trap/3.2 ha for warning optimum periods for applying chemical treatments which allows the reduction of 1.5-2.0 times their numbers 9-10 and traps/ha for mass combating through direct capture of males or disorientation method (Busuioc M., 2006).

Chemical treatments to both generations is applied to 3-4 days from the maximum flight of butterflies using pheromone traps specific, taking into account the biological reserve of pest, the cultivated variety and weather conditions during the development and multiplication of the pest. At the beginning of mass flight of butterflies, usually

when the intensity of laying the eggs increases, especially after the fall of precipitation is recommended 1.5-2 weeks until the classic treatment insecticides applied with ovicidal action ensures a long plant protection in plantations plum tree, between 15 to 25 days and is not toxic to humans and useful fauna (Croitoru N., 2002).

During occurrence of larval mass, when there are more than 2% of fruit with symptoms of fresh intrusion, it is recommended to use rotating one of the following products: Sumithion 50 EC (1,5-2,4 l/ha), Zolone 35 EC (2,0-2,5 l/ha), Bi-58 Nou 40 EC (0,75-1,0 l/ha), Confidor 200 SL(0,3 l/ha), Talstar 10 EC (0,4-0,6 l/ha), Fury 10 EW (0,2 l/ha) etc; at a high frequency of pest, the treatment is repeated after 8-10 days (Lazări I., 2002).

Obtaining high productions of plum, in favorable climatic conditions for the development of this crop pests, it is almost impossible without the using the insecticides, even if are respected all alternative methods. In this situation requires the application of chemical treatments which can diminish pest population density.

¹State Agrarian University of Moldova

²University of Agronomy Sciences and Veterinary Medicine of Iasi

MATERIAL AND METHODS

Investigations concerning the State approval for insecticide Armor 350 SC were fulfilled in 2012. The experiments were performed in the center of RM, in the plum plantations of "Agro Empirically" Malcoci village, Ialoveni. For the testing was selected plum plantation where in the previous year the fruits attack has exceeded the 2%, variety Stanley, approved in Moldova. The scheme of planting is 6 x 3.5 m, area provided of a plant constitutes of 21 m². Experimental plot it borders on all sides with plum orchard, which has an area of 10 ha, age 6 years. The experiment was installed in three repetitions. The location on the ground was randomized, compact. Each plot was composed of five trees, with the surface of 105 m². For the isolation between plots was left one tree and strip protection drawn up a whole row. In the experience were included four variants: 1 - untreated control; 2nd option - standard. Acting as standard it was proposed the insecticide Proteus OD 110 with norm consumption 0.8 l/ha; 3rd version - Armor 0.20 SC-350 l/ha; 4th version - Armor 350 SC-0.25 l/ha. The necessary of preparation and the working solution was calculated based on the consumption norm to 1 ha. Chemical treatments of Experimental lot were achieved manually with the portable sprinkler. The influence of ecological factors at the development of harmful and useful fauna was performed based on data of the State Meteorological Station in Chisinau. The determination of biological effectiveness of insecticides was done according to

the requirements and methodical elaborations for testing plant protection products and fertilizers

RESULTS AND DISCUSSIONS

For determining the presence of the worm plums and population density of this pest, in order to establish the terms of performing chemical treatments at the end of April in plum plantation pheromone traps were placed. The evidence of traps gave us the opportunity to see that in the first five days of May were 1.5 males captured at a trap diurnal.

The records carried out further testify that the the dynamic development population of worm plums from first generation is increasing, reaching a maximum of 36.8 males per trap on a diurnal on 15 May. In connection with this, the first treatment was achieved on May 22. It should be noted that the records still carried out the worm plum density is quite uniform, and the maximum value does not exceed more than 4.2 males per trap over a diurnal. The following three treatments were fulfilled on 7 and 22 June, and 10 July. To assess the biological effectiveness of insecticides after the second wave fall of surplus of fruit under the crown of the trees were removed all the weeds and fallen fruit above and leveled the soil (*figure 1*).

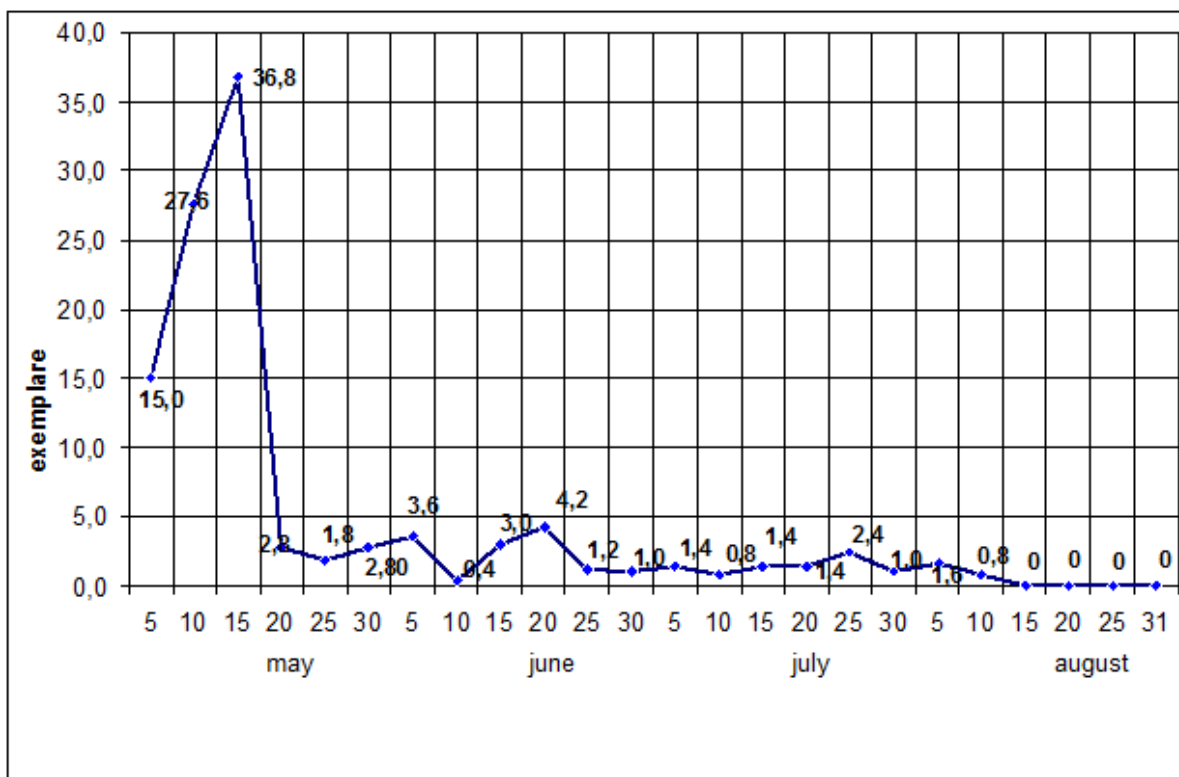


Figure 1 Flight dynamics plum worm in 2013

Table 1

Biological effectiveness of Armor 350 SC insecticide in controlling the worm plums

Nr. Crt.	The variants	Consumption norm, l/ha	Number of fruits collected on a tree, pieces.	From these, pieces			The number of fallen fruit analyzed	From these, pieces		Reducing attacking fruit, % compared to witness in crop	
				Healthy	Attacked by worm plum	%		Attacked by worm plum	Affected by other factors	In the crown of trees	Fallen
1	Witness	Treated with water	300	224,87	75,13	25,04	100	63,21	36,79	0,0	0,0
2	Etalon, Proteus 110 OD	0,8	300	296,63	4,37	1,47	100	2,93	97,07	94,13	95,36
3	Armor 350 SC	0,20	300	292,85	7,15	2,38	100	5,74	94,26	90,50	90,92
4	Armor 350 SC	0,25	300	297,88	2,12	0,71	100	1,44	98,56	97,16	97,12
5	DEM 95%				3,91	1,39				4,12	4,71

Collecting of all the fallen fruits and their analysis was performed at every 5 days. After the last record, which was done with a day before harvest, we calculated the total number of fallen fruits. This gave us the possibility to determine the average percentage of attacking the fruits at one tree model.

During harvest collection on model trees were collected of 300 fruit and determined the percentage of those attacked by the worm plums. Biological effectiveness calculation based on harm reduction percentage compared to control was performed after previous formula.

The results and the calculation of biological efficiency are shown in table 1. The table reveals that from the total number of fruits collected from a tree model (300 pieces) the highest degree of infection was recorded in version control (75.13 pieces), which also make up 25.04%. The lowest number of fruits attacked was detected in the fourth variant, where this index made up 2.12 pieces at one tree, which constitute 0.71% and is within the standard (1.47%). In the third variant numerical value of 7.15 was attacked the fruits pieces at one tree, which also is 10.51 times lower than in the control, but this solution gives essentially the fourth version and is the standard.

The analysis of fallen fruits was found that the lowest number of fruits damaged by plum worm was found in the fourth variant (1.44 pieces) and this index is the standard (table 1).

The calculation of biological efficiency gave us the opportunity to find that the highest reduction of attacking, like the fruits plucked from

the tree, so those collected under the tree crown it was found in the fourth variant, where these indices were properly made up 97.16 and 97.72%, and is the standard. In the third variant essentially reduce attacks the fruits yield of 4, but is at the level of the standard. It is worth noting that single copies of plum aphid gray, lice turtles and other species of pests detected before treatment were reduced entirely through chemical treatments in pest carpofagi.

CONCLUSIONS

During the growing season of 2012, in plum plantations were created favorable conditions for the development of this crop pests.

The most dangerous pests that exceeded the economic damage threshold were wasps windows plums, plum seed wasp and the worm plums.

For the combating pests plum, in lot the experimental carried out seven chemical treatments.

Plum combating pests Armor 350 SC the insecticide is effective with consumption norm 0.25 l / ha, which provides a reduction of the worm attacking the fruits plums - 97.16.

Armor 350 SC insecticide to the norm consumption 0.20 l/ha, but gives essentially the fourth variant is the standard and can be included in integrated protection system plum.

REFERENCES

Busuioc M., 2006 - *Entomologie agricolă*, Centrul Editorial al UASM, Chișinău, 639 p. ISBN 978-9975-64-020-6.

Croitoru N., Busuioc M., Panuța S., 2002 - *Unele aspecte privind modul de atac al viespii sămburilor de prun*, Lucr. șt, UASM.. Chișinău,

2002, vol. 10 (Horticultură), p. 81-83., 0,2 c.a. ISBN 978-9975-64-127-2.

Lazări I., 2002 - *Îndrumări metodice pentru testarea produselor chimice și biologice de protecție a plantelor de dăunători, boli și buruieni în Republica Moldova*, Tipografia Centrală, Chișinău, 286 p. ISBN 9975-9597-3-3.