

**THE EFFICIENCY OF SOME INSECTICIDES USED FOR
CONTROLLING *GRAPHOLITHA FUNEBRANA* TR.
AND *EURYTOMA SCHREINERI* SCHR. PESTS,
IN THE PLUM TREE PLANTATIONS**

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ABSTRACT - During 2002 – 2003, according to the observations on the biology and ecology of *Grapholitha funebrana* Tr. and *Eurytoma schreineri* Schr. species, we have studied the efficiency of insecticides for controlling these species. We have tested the insecticides from synthetic piretroids, organophosphoric, carbamic group, metamorphose inhibitors, and biological products. All the products had a great efficiency, the best results being obtained by Cypermetrin 10CE – 0.05%, VICTENON 50WP 0.1% and Karate 2.5CE – 0.03%, where the attack degree in fruits was between 0 - 1%. The biological products Dipel and Bactospeine had a lower efficiency, and the degree of attacked fruits was comprised between 19-21%.

Key words: Plum tree, *Grapholitha funebrana* Tr.,
Eurytoma schreineri Schr., chemical control, biological control

REZUMAT. *Observații privind eficacitatea unor produse insecticide, utilizate în combaterea speciilor Grapholitha funebrana Tr. și Eurytoma schreineri Schr., din plantațiile de prun. În perioada 2002 – 2003, pe baza observațiilor privind biologia și ecologia speciilor Grapholitha funebrana Tr. și Eurytoma schreineri Schr., s-a urmărit eficacitatea unor produse insecticide aplicate pentru combaterea acestora. S-au testat insecticide din grupa piretroizilor sintetici, organofosforici, carbamici și inhibitori ai metamorfozei insectelor, produse biologice. Se*

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remarcă faptul că toate produsele au avut o eficacitate ridicată. Cele mai bune rezultate s-au obținut la produsele Cypermethrin 10CE - 0,05%, VICTENON 50WP 0,1% și Karate 2,5CE - 0,03%, la care procentul de fructe atacate a fost de 0 - 1,0%. Produsele biologice: Dipel și Bactospeine au avut o eficacitate mai scăzută, procentul fructelor atacate fiind cuprins între 19 - 21%.

Cuvinte cheie: Prun, *Grapholitha funebrana* Tr., *Eurytoma schreineri* Schr., combatere chimică, combatere biologică

INTRODUCTION

The plum tree, a species with old growing tradition on the territory of Romania, is one of the most important fruit-bearing species. Its fruits are asked for consumption at fresh state, and for industrialization.

The investigations on pests from plum trees plantations have shown a great number of pests, which, according to area, climatic conditions, etc., could influence negatively the fruit yield and attack the plum tree.

The chemical method is the most used one and consists in applying chemical treatments if the other measures (land management, physico-mechanical and biological methods) do not limit the pest population under the economic damaging threshold, typical of each species. Treatments are applied only at warning. We mainly use products from the third and the fourth group of toxicity, in order to protect the useful fauna from fruit-bearing plantations, which has an important role in maintaining the biocoenotic balance (Amzăr, 2002).

MATERIALS AND METHODS

According to the observations on the biology and ecology of species *Grapholitha funebrana* Tr. (Georgescu et al., 2003) and *Eurytoma schreineri* Schr. (Copăescu et al., 2003; Gava et al., 1999), we have investigated, during 2002-2003, the efficiency of some insecticides applied for their control. We have tested the insecticides from the synthetic piretroids, organo-phosphoric, carbamic group and inhibitors of insects' metamorphosis. Experiments were conducted on plum tree plantations (Tuleu gras variety).

In 2002, for the control experiments, we have used the piretroids products Decis 2.5EC at a concentration of 0.05% and 0.06%; Karate 2.5EC at two concentrations, 0.03% and 0.01%; carbamic product VICTENON 50WP at a concentration of 0.075%; biological products Dipel 0.1% and Bactospeine 0.4%.

In 2003, for the control experiments we have used the piretroids products Decis 2.5EC at a concentration of 0.02%; Cypermethrin 10EC at a concentration of 0.05%; carbamic product VICTENON 50WP at a concentration of 0.075%, and the inhibiting product for insect metamorphose Dimilin 25 WP 0.07%.

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The control was the variant treated with the product obtained from seeds of *Azadirachta indica* Juss., which had insecticide, nematocide, bactericide, antiviral and antifungal characteristics. The emulsion of *Azadirachta indica* Juss. was obtained by mortar milling of 100 g fruits in 2002, and 150 g fruits in 2003, one day before their application, and their mixing in 5 liters of water. The day it was applied, the obtained solution was filtered and mixed into 100 liters of water, resulting in a concentration of 0.1%, and, respectively, 0.15%. The treatment was applied by using the hand spraying equipment.

For studying the dynamics of species *Grapholitha funebrana* Tr., we have used ATRAFUN sexual pheromone traps. Traps were placed in the fruit tree crown, one trap for each test, at a distance of 30 cm from each other. Traps were placed at the beginning of May, and counting of captures was done within 3-5 days, until the end of July. The change of the adhesive cover together with the sexual pheromone was done every month.

We have studied the efficiency of products, and established the frequency of attacked fruits from each variant, by harvesting 100 fruits from the fruit tree and from the ones, which fell down under the crown of the fruit trees (expressed as percentage).

RESULTS AND DISCUSSION

In 2002, for controlling the species *Grapholitha funebrana* Tr., we have used the following products: Decis 0.06%, at which the frequency of attacked fruits was of 1.5%; Vichtenon 0.075% and Karate 0.01%, with a frequency of attacked fruits of 1.0%; biological products Dipel 0.1% and Bactospeine, with a frequency comprised between 21 – 19%. At the control, where azadirachtin was applied, the frequency of attacked fruits was higher (26.5%), the treatment having a lower efficiency (*Table 1, Figure 1*).

Table 1
Efficiency of piretroids, carbamic and biological products used for controlling species *Grapholitha funebrana* Tr., in 2002

Variant	Product	Rate	% Attacked fruits	Efficiency of treatment (E%)
V ₁	Decis 2.5 CE	0.06	1.5	98.5
V ₂	Vichtenon 50 WP	0.075	1.0	99.0
V ₃	Karate 2.5 EC	0.01	1.0	99.0
V ₄	Dipel	0.1	21.0	89.0
V ₅	Bactospeine	0.4	19.0	81.0
V ₆	Control		26.5	73.5

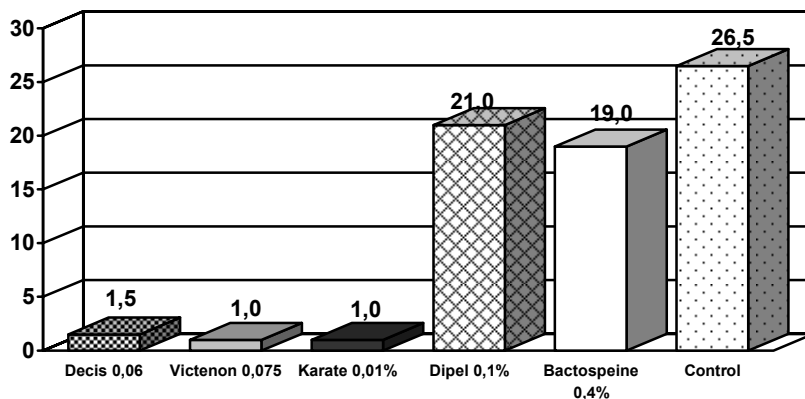


Figure 1
Frequency of attacked fruits after applying treatments for the control of species *Grapholitha funebrana* Tr., in 2002

In 2002, for controlling the species *Eurytoma schreineri* Schr., we have used the following products: Decis 0.05% , at which the frequency of attacked fruits was of 2.0%; Karate 0.03% with a frequency of attacked fruits of 0.8%; biological products Dipel 0.1% and Bactospeine with a frequency comprised between 21 – 19%. At the control, where azadirachtin was applied, the frequency of attacked fruits was higher (79.0%), the treatment having a very low efficiency (Table 2, Figure 2).

Table 2
Efficiency of piretroids, carbamic and biological products used for controlling species *Eurytoma schreineri* Schr., in 2002

Variant	Product	Rate	% Attacked fruits	Efficiency of treatment (E%)
V ₁	Decis 2,5 CE	0.05	2.0	98.0
V ₂	Karate 2,5 EC	0.03	0.8	99.2
V ₃	Dipel	0.1	21.0	89.0
V ₄	Bactospeine	0.4	19.0	81.0
V ₅	Control		79.0	21.0

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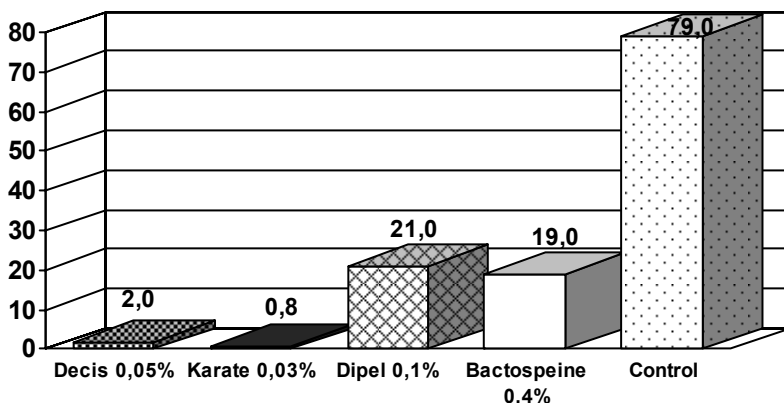


Figure 2

Frequency of attacked fruits after applying treatments for the control of the species *Eurytoma schreineri* Schr., in 2002

In 2003, for controlling the species *Grapholitha funebrana* Tr., we have used the following products: Cypermethrin 0.05% and Victenon 0.1%, at which the frequency of attacked fruits was of 0.0%; Victenon 0.075% with a frequency of attacked fruits of 1.0%, and Dimilin 0.07% with a frequency of attacked fruits of 1.7%. For the control, at which azadirachtin was applied, the frequency of attacked fruits was of 29%, the treatment having a low efficiency (*Table 3, Figure 3*).

Table 3

Efficiency of piretroids, carbamic and biological products used for controlling species *Grapholitha funebrana* Tr., in 2003

Variant	Product	Rate	% Attacked fruits	Efficiency of treatment (E%)
V ₁	Victenon 50 WP	0.075	1.0	99.0
V ₂	Dimilin 25WP	0.07	1.7	98.3
V ₃	Victenon 50 WP	0.1	0.0	100
V ₄	Cypermethrin 10 EC	0.05	0.0	100
V ₅	Control		29.0	71.0

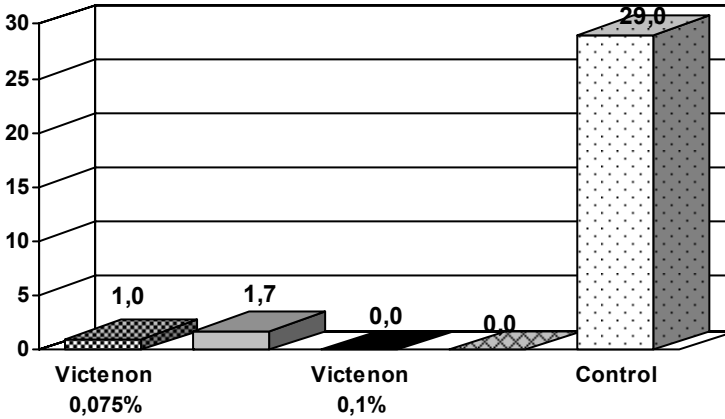


Figure 3
Frequency of attacked fruits after applying treatments for the control of species *Gnatholita funebrana* Tr., in 2003

In 2003, for controlling species *Eurytoma schreineri* Schr., we have used the following products: Decis 0.02%, at which the frequency of attacked fruits was of 2.4%, and Cypermethrin 0.05%, with the frequency of attacked fruits of 0%. The efficiency of products was very good. For the control, azadirachtin was applied, and the frequency of attacked fruits was high (85.0%). The treatment had a very low efficiency (*Table 4, Figure 4*).

Table 4
Efficiency of piretroids and biological products used for controlling species *Eurytoma schreineri* Schr., in 2003

Variant	Product	Rate	% Attacked fruits	Efficiency of treatment (E%)
V ₁	Decis 2.5 CE	0.02	2.4	97.6
V ₂	Cypermethrin 10 EC	0.05	0.0	100
V ₃	Control		85.0	15.0

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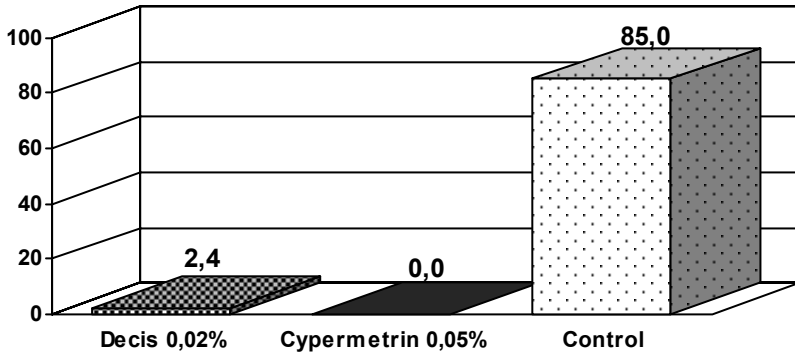


Figure 4
Frequency of attacked fruits after applying treatments for the control of species *Eurytoma schreineri* Schr., in 2003

CONCLUSIONS

Among the tested products for controlling species *Grapholita funebrana* Tr., the best results were obtained after applying Fastac 10 EC, Reldan 40 EC, Karate 25 CE, VICTENON 50 WP and Cypermetrin 10 EC, which efficiency was between 98.0% and 100%. The percentage of attacked fruits was comprised between 0 – 2%.

Biological products Dipel and Bactospeine had a lower efficiency, the percentage of attacked fruits being comprised between 19 – 21% .

At the control, which was treated with the produce obtained from seeds of *Azadirachta indica* Juss., the efficiency of treatments was low and the percentage of attacked fruits was comprised between 26.5 – 29% .

As a result of two-year investigations, for the control of species *Eurytoma schreineri* Schr., we recommend the application of one of the following products: Decis 2.5 EC Karate 2.5 EC, VICTENON 50 WP, Cypermetrin 10 EC and Dimilin 20 WP, which have shown an efficiency comprised between 97.6% and 100%.

The control was the variant treated with the produce obtained from seeds of *Azadirachta indica* Juss. The efficiency of the treatment was very low (15 – 21%), the percentage of attacked fruits being comprised between 79 – 85%.

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