

## RESULTS REGARDING THE CHEMICAL CONTROL OF THE SPECIES *CYDALIMA PERSPECTALIS* WALKER

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### ABSTRACT

*Cydalima perspectalis* Walk. became one of the most dangerous pests of *Buxus* sp., after hatching, the larvae are feeding without control with the leaves of this shrub, a powerful attack will lead to complete defoliation or even death of the host plant.

For chemical control of this pest the following products were used: Calypso 480 SC 0,02% (Tiacloprid 480 g/l), Nurelle D 50/500 EC 0,2% (Cipermetrin 50 g/l + 500 g/l clorpirifos), Karate Zeon 0,2% (50 g/l lambda-cihalotrin), Mavrik 2 F 0,2% (Tau-fluvalinat 240 g/L). The treatments occurred on 15.07.2019 in the „Al. Buia” Botanical Garden, the level of infestation at the treated plants was very high, development stage of the larvae being L4, L5 and L6. The evolution of effectiveness was monitored at 3, 7, 14 and 21 days.

After the determination of frequency of the attack caused by *Cydalima perspectalis*, at the control variant by the frequency of attack is 90%. After applying the 4 treatments, the most efficient product in combating this pest prove to be Nurelle D 50/500 EC with 98,70% effectiveness, followed by Karate Zeon with 98.40%, Mavrik 2F with 98.10% and Fury 10 EC with 96.00% effectiveness.

### INTRODUCTION

*Cydalima perspectalis* (Lepidoptera: Crambidae) is an invasive species originating in humid subtropical environments of East Asia. Until now it is spread in 28 European countries and on Romania's territory it is present in 11 counties.

*Cydalima perspectalis* is the most dangerous pests of *Buxus* sp. the larvae after hatching are feeding without control with the leaves of this shrub, a powerful attack will lead to complete defoliation or even death of the host plant.

In East Asia the chemical control is well established-information regarding chemical control are provided by (ZHOU et al. 2005 cited by H. Wan et al.2014), for biological control (CHOO et al. 1991, LEE et al. 1997), but also for control with

the help of attractive pheromones (KAWAZU et al. 2007, Kim & Park, 2013).

Santi et al. 2015, carried out biological control in Italy with the help of pheromones traps, having positive results.

In our country, Fora et. Al. 2016 carried out studies regarding *Cydalima perspectalis* species control in Timisoara, using products (Decis 25 WG, Karate Zeon, Actara 25WG, Calypso 480 SC and Confidor Energy), the best results being registered with Calypso 480 SC and Karate Zeon.

### MATERIAL AND METHOD

The research was carried out in the „Al. Buia” Botanical Garden, the species was monitored from March until

October 2019, and the purpose of research was to test some products for chemical control of the *Cydalima perspectalis* species.

The used products for chemical control are: Calypso 480 SC 0,02% (Tiacloprid 480 g/l), Nurelle D 50/500 EC 0,2% (Cipermetrin 50 g/l + 500 g/l clorpirifos), Karate Zeon 0,2% (50 g/l lambda-cihalotrin), Mavrik 2 F 0,2% (Tau-fluvalinat 240 g/L), with systemic effect on mobile stages, the species being affected through contact and ingestion.

The products used are not registered for chemical control of the *Cydalima perspectalis*.

The evaluation of attacks was carried out by establishing the frequency (F%), intensity (I%), attack degree (GA%) and effectiveness (E).

The frequency of attack is calculated according to the formula:

$$F\% = \frac{n \times 100}{N}$$

- n = number of plants or organs attacked
- N = Total number of plants or organs attacked

The intensity of attacks is calculated according to formula:

$$I = \frac{\sum [i \times f]}{n}$$

- I = attack note
- f = number of cases for each note
- n = total number of attack cases

The intensity of the attack was assessed using the 6-grade scoring scale.

Attacked area in percentage	Note of the intensity of the attack
1-3%	1
4-10%	2
11-25%	3
26-50%	4
51-75%	5
76-100%	6

The degree of attack is established based on the frequency and intensity.

$$G.A = [F \times I] : 100$$

The effectiveness is determinate according to the following formula

$$E\% = 1 - \frac{GA\% - Vt}{GA\% - Vm} * 100$$

- E%- effectiveness
- GA%-Vt- the degree of attack in the case of the treated variant
- GA%-Vm- the degree of attack in the case of the control variant;

## RESULTS AND CONCLUSIONS

The treatments occurred on 15.07.2019 in the Botanical Garden Al. Buia, the level of infestation at the treated plant was very high, development stage of the larvae being L4, L5 and L6, before

treatments it was found a number of 1200 larvae (Figure 1).

The evolution of effectiveness was monitored at 3, 7, 14 and 21 days (Figure 2).



Figure 1. Larvae of *Cydalima perspectalis* Walk. on *Buxus* sp. leaves before treatments. Orig.



Figure 2. Larva of *Cydalima perspectalis* Walk. affected by treatments Orig.

The effectiveness of products used for chemical control of the species *Cydalima perspectalis* is represented in the table below (Table 1).

Table 1.

Insecticide effectiveness used in control of the species *Cydalima perspectalis* Walk.

No.	Variant	Dosis (l/kg/%)	F%	I%	GA%	E%
1	Control variant	-	90.00	72.22	64.00	0.00
2	Calypso 480 SC	0,02	21.50	12.10	2.60	96.00
3	Nurelle D 50/500 EC	0,2	12.00	7.00	0.84	98.70
4	Karate Zeon	0,2	13.00	8.00	1.04	98.40
5	Mavrik 2F	0,2	12.50	10.00	1.25	98.10

Following the determination of the attack caused by *Cydalima perspectalis*, at the control variant the attack degree was of 64%.

After applying the 4 treatments, the most efficient product for this pest control prove to be Nurelle D 50/500 EC with 98,70% effectiveness, followed by Karate Zeon with 98.40%, Mavrik 2F with 98.10% and Calypso 480 SC with 96.00% effectiveness.

During that period a number of 85 pupae were found in the field, so it has to be mentioned that as results of the treatment, it only had effect on the larvae.

## CONCLUSIONS

Following the determination of the attack produced by *Cydalima perspectalis*, in the control variant the attack degree is 64%. Following the application of the 4 treatments, the most efficient product in combating this pest proved to be Nurelle D 50/500 EC with an efficiency of 98.70%, followed by Karate Zeon with 98.40%, Mavrik 2F with 98.10% and with Calypso 480 SC 96.00%.

It is recommended to repeat the treatments at 3 weeks because this pest develops several generations per year, and the adults have a life span of several weeks, the adults will lay eggs and a new generation will appear.

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