

STUDIES ON THE ATTACK PRODUCED BY THE *CAMERARIA OHRIDELLA* DESHKA-DIMIĆ SPECIES

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Keywords: *Cameraria ohridella*, atra-CAM, monitoring, degree of infestation

ABSTRACT

The horse-chestnut leaf miner (*Cameraria ohridella* Deschka-Dimić) is a rather dangerous invasive pest because the larvae create galleries in the foliar apparatus of the *Aesculus hippocastanum* L. horse-chestnut, and compromise the aesthetic aspect of the tree.

During 2016 and 2017 in the southern area of Oltenia, there were made observations and determinations regarding the degree of damage and the monitoring of the *Cameraria ohridella* Deschka-Dimić species under the microclimate conditions offered by Constantin Poroineanu Park in Caracal.

Throughout the entire experimental period, a total number of 9649 adults were captured on the installed traps, out of which 4726 adults were captured in 2016 and more than 4923 adults were captured in 2017.

The degree of infestation of the horse-chestnut leaves produced by the *Cameraria ohridella* Deschka-Dimić species was obtained on the basis of the number of galleries/leaf/leaflet made by larvae in an average sample of 100 leaves. The number of galleries per leaf was of 20.9 in 2016 and 54.2 in 2017, the average of the years of research being of 37.5, and the number of galleries per leaflet fluctuated between 2.9 in 2016 and 7.7 in 2017, with an average of the years of research of 50.3.

INTRODUCTION

Biological pollution is an increasingly real and widespread ecological problem due to the introduction of new, unknown, invasive species with great capacity of adaptation and multiplication. They represent a permanent threat causing qualitative and quantitative damage to plant species in natural ecosystems and anthropic ecosystems.

Research on the monitoring and the degree of attack of the species (*Cameraria ohridella* Deschka-Dimić) was made by various authors (Pschorn-Walcinek, 1997; Skuhravy V., 1999; Dombi Ö.P., 2012; Oltean et al., 2006 etc.).

In our country, in the past four years the horse-chestnut leaf miner (*Cameraria ohridella* Deschka-Dimić) is the most dangerous pest of ornamental species because it spread very rapidly and it raises problems as regards the protection of *Aesculus hippocastanum* L. horse-chestnut, as decoration in parks, alignments and green spaces in urban areas (Șandru, 1998; Racosy and Ruicănescu, 1998; Perju, 2000; Oltean et al., 2006; Floricel - Niculescu and Mitrea, 2016).

Research must be done in order to obtain new information on the current state, the species distribution in urban ecosystems, the biological control of the species, in order to solve the problems caused by the invasive species.

MATERIALS AND METHODS

The aim of the research is to know the degree of infestation of the leaves of the horse-chestnut produced by the larvae of the species (*Cameraria ohridella* Deschka-Dimić) as well as to monitor the population in the area of green spaces in southern Oltenia.

Observations and determinations were made in the horse-chestnut alignments from Constantin Poroineanu Park in Caracal, during 2016-2017.

The placement of pheromone traps was carried out starting from April following the three-repeat randomized blocks method in different locations of the park. (Figure 1).

The pheromone is synthesized by the "Raluca Ripan" Institute for Research in Chemistry in Cluj-Napoca. The bait is an active substance (E, Z)-8,10-Tetradecadienal, min. 85% purity absorbed on rubber septum plug, bromobutyl. The pheromone bait contains female sex pheromone for the purpose of catching males. Adhesive parts and baits were changed every 6 weeks, from May to October throughout the entire experimental period.

Trap reading was done weekly and it consisted in counting and removing males (Figure 2).



Figure 1. Adhesive trap used in catching the adults of the *Cameraria ohridella* Deschka-Dimić species (original)



Figure 2. Adults trap detail (original)

In order to determine the degree of infestation caused by the larvae of the *Cameraria ohridella* Deschka-Dimić species, there was randomly collected a sample of 100 attacked leaves, which were analyzed to determine the number of mines on each leaf and leaflet (Oltean et al. 2006) (Figure 3).



Figure 3. Chestnut leaves attacked by the larvae of *Cameraria ohridella* Deschka-Dimić species (original)

RESULTS AND DISCUSSIONS

The results of the catches made on 37-AtraCAM-type pheromone traps are shown in Figure 4. The monitoring activity of the population of the *Cameraria ohridella* Deschka-Dimić species began in the second half of April and continued throughout the tree growing until mid-October.

From the analysis of the data obtained during the research period it is shown that a total number of 9649 adults were captured on the traps installed during the whole monitoring period, out of which 4726 adults in 2016 (accounting for about 49% of the total catches), respectively 4923 adults in 2017 (accounting for about 51% of the total catches).

Comparing the maximum number of catches per years, it is noted that in 2016, the largest number of adults were captured in the first half of August, and in 2017 the largest number of adults captured was recorded in the second half of July.

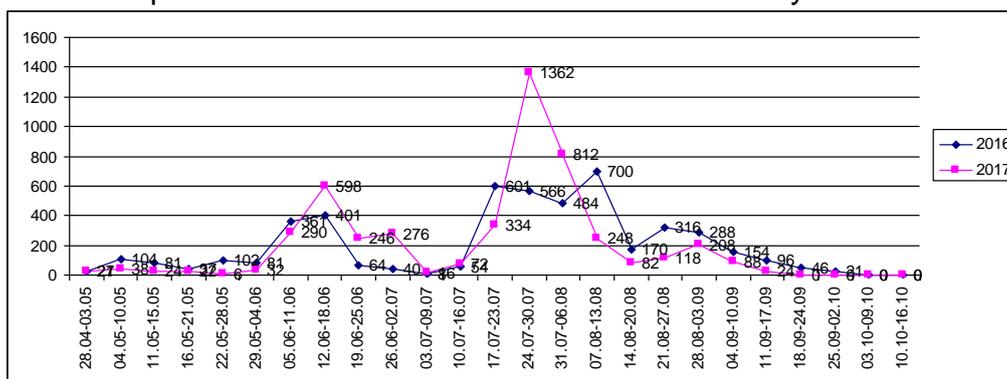


Figure 4. Graphic representation of the number of adults (males) captured using the 37-AtraCAM pheromone, under field conditions, Caracal, 2016-2017

The degree of infestation produced by the larvae of *Cameraria ohridella* Deschka-Dimić species on horse-chestnut leaves under the environmental conditions offered by Constantin Poroineanu Park in Caracal is presented in Table 1.

The analysis of the data recorded during the research period shows that the number of galleries per leaf was of 20.9 in 2016 and 54.2 in 2017, the average of research years being of 37.5.

As for the number of galleries per leaflet, it oscillated between 2.9 in 2016 and 7.7 in 2017, with an average of research years of 5.3.

The much more intense trophic activity of the pest recorded in 2017 correlates directly with the number of adults captured on the pheromone trap, demonstrating that, under the microclimate conditions of the studied ecosystem, there is both an annual increase in the degree of infestation of the horse-chestnut leaves and an increase in the harmful population.

Table 1
The degree of infestation of horse-chestnut leaves by leaf mining-moth - *Cameraria ohridella* Deschka-Dimić (Caracal, 2016-2017)

CONCLUSIONS

Year	No. of galleries/ leaf	No. of galleries/ leaflet	No. of galleries/ leaflet						
			1	2	3	4	5	6	7
2016	20.9	2.9	1.6	3.1	4.1	4.4	3.9	2.6	1.2
2017	54.2	7.7	5	8	10.7	11.2	9.6	6.5	3.2
Average	37.5	5.3	3.3	5.5	7.4	7.8	6.75	4.6	2.2

The horse-chestnut leaf miner (*Cameraria ohridella* Deschka-Dimić) is a dangerous pest of the horse-chestnut-*Aesculus hippocastanum* L.

With the help of the atra-CAM pheromone bait traps mounted in the horse-chestnuts of Constantin Poroineanu Park in Caracal during 2016-2017, a total number of 9649 adults were captured: 4726 adults in 2016 and 4923 adults in 2017.

In 2016, fewer adults were captured than the number of catches made in 2017.

The maximum population density is achieved in the first half of August in 2016, and in 2017 in the second half of July.

In the two experimental years the leaf galleries average is of 37.5 and of 5.3 on the leaflet.

There was found an annual increase in the degree of attack and the pest population.

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