



CHEMICAL CONTROL OF THE HORSE-CHESTNUT LEAF MINER *Cameraria ohridella* DESCHKA & DIMIĆ

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Abstract

Mechanical control through collecting and destruction of litter, in the autumn, must be supplemented by other measures during all growing season. One of these methods is chemical control, especially in parks with large areas, where mechanical method is inefficient (Lethmayer, 2005), or hardly to be applied. Abamectin 0.5% have better effect in controlling of the horse-chestnut leaf miner *Cameraria ohridella*. Good control it can be ensured with Lambda-cihalotrin 50 g/l and Acetamiprid 200 g/kg in addition with organosilicone adjuvant and repeat treatments after 2 weeks.

Keywords: *Cameraria ohridella*, chemical control.

INTRODUCTION

The insect *Cameraria ohridella* is a pest which likes heat (Fora *et al.* 2010) and makes important damages on horse chestnuts trees. In previous years, in Central Park from Arad, the attack of horse chestnut leaves by miner moth was high and very strong. Following the damages which are made, the defoliation was total early in September and second time flowering (Fora *et al.* 2010) has been a frequently phenomenon. In case of earlier and total loss of foliage, the photosynthesis is disturbed and the physiological process, which include the movement of crude and elaborated sap, are like in late of the autumn even that the trees are at the beginning of September. In this situation rainfalls which is recorded in autumn,

conducted at the second flowering, a phenomenon with major repercussions on fructification in next year. Thalmann *et al.* (2003) observed in natural horse chestnuts forests stands from South-Eastern Europe a decreasing of fruits size at trees which are strongly damaged by the pest. Also, on long period, the presence of injuries in each growing season may cause sensitization of affected horse chestnut trees, so that, in time, a pathogen or other insect can cause major damages on host plant *Aesculus hippocastanum*. An example is appearance, with high frequency, of brown spot produced, in next growing season, by *Guignardia aesculi*, after strongly attack made by dangerous moth *Cameraria ohridella*.

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MATERIALS AND METHODS

Research on the efficiency of insecticide treatment on invasive moth *Cameraria ohridella* has been performed in Central Park from Arad. In this area are present alignments of horse chestnuts, in total 16 trees. Four horse chestnut trees have been used for this research. Trial replications which have been use are:

- 1- untreated, spraying with water;
- 2- sprayed with Lambda-cihalotrin 50 g/l (Karate Zeon) + organosilicone 0,1% (Silwet Gold);
- 3- sprayed with Acetamiprid 200 g/kg (Mospilan) + organosilicone 0,1% (Silwet Gold);
- 4- sprayed with Abamectin 0,5% (Vertimec) + organosilicone 0,1% (Silwet Gold).

Silwet Gold is an adjuvant which increases the absorption at stomata level trough reducing of active tension in watery solutions.

Monitoring of adult flight, on all growing season of 2013, was carried out using yellow sticky traps baited with synthetic pheromone AtraCam, starting from 20 April. Has been used four traps baited with pheromone lure, one pheromone trap at 4 horse chestnut trees. Weekly the sticky traps and pheromone lures has been replaced. The traps were viable until early of October. After the peak of moths flight, every seven days in each sample tree, has been taken 25 samples of leaves, totally 100 leaves on each replication. Observations have been done on leaves following larval development. When most larvae were middle-aged, which after Šefrová and Skuhřavý (2000) larva cephalic capsule width between 0.2 and 0.3 mm, the spraying were applied. Treatment was applied with a sprayer which produces a toxic fog.

Efficiency of treatments has been assessed in 7 and 14 days after application, for each variant looking at a number of 100 leaves. It was considered the number of death larva in comparison with larva alive from untreated variant.

RESULTS AND DISCUSSIONS

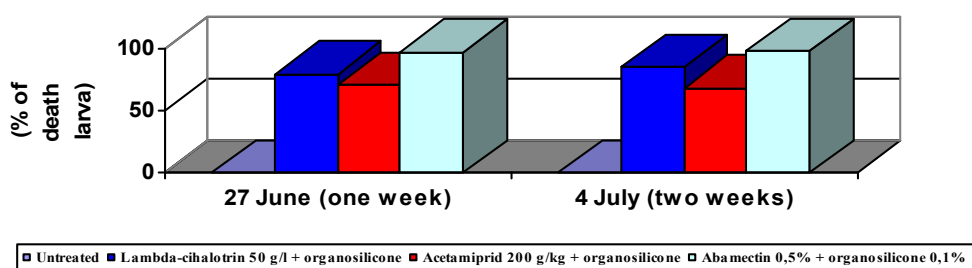


Fig. 1. Spraying efficiency against *Cameraria ohridella* larva

One of the most efficient methods, of maintaining at a low population level of *Cameraria ohridella*, is to destroy the large numbers of wintering pupae from litter. After For a *et al.* (2010), in 100 g of litter wintering more than 400 copies, and mortality at this stage is between 4.1 to 12.9%. However, the mechanical control trough collecting and destruction of litter, in the autumn, must be supplemented by other measures during all growing season. One of these methods is chemical control.

Chemical control of insect pests in parks include, in addition to ensuring the efficiency of insecticides, especial measures to protect the population. We include in tests Lambda-cihalotrin and Acetamiprid. The third substance introduced is Abamectin recommended for use to control spiders and miner moths. In case of use of this substance, must be taken further measures to protect the bees, fish and other aquatic organisms.

In the year 2013, the maximum level flight of the insect was recorded in middle of June. After hatching, the larvae have penetrated the mesophilum of leaves, where they started to feed. The moment of spraying was on 20 June, during which larvae were mostly in middle-aged. The results of the spraying, estimated at 7 or 14 days, are shown in figure 1.

At 7 and 14 days after the spraying, the best efficiency has Abamectin, with an efficiency of 98.12% and 97.23% similar with For a *et al.* 2011. This efficiency ensures the success of spraying. By the point of view of other two active substances, Lambda-cihalotrin had initially, at seven days, a better efficacy (80.22%) in comparison with Acetamiprid (just 71.01%). And even after longer time as after 14 days, Lambda-cihalotrin had a slightly higher efficiency (figure 1).

Efficacy in 14 days of active substances like Acetamiprid (68.45%) requires application of second new spraying.



CONCLUSIONS

The results of spraying with Lambda-cihalotrin 50 g/l, Acetamiprid 200 g/kg, Abamectin 0.5%, on the middle-aged larvae of *Cameraria ohridella*, allowed developing next conclusions:

- more efficiency (98.12% after 14 days) had Abamectin 0.5%;
- good efficiency had Lambda-cihalotrin 50 g/l (85.44% after 14 days), an additional spraying is recommended;
- lower efficiency had Acetamiprid 200 g/kg (68.45% after 14 days) and it is recommended to repeat treatments after 2 weeks.

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