

## ***UNASPIS EUONYMI* (COMSTOCK), A PEST ASSOCIATED WITH DAMAGING THE PARKS AND ORNAMENTAL GARDENS OF BUCHAREST**

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### ***Abstract***

*Euonymus scale is a pest that has been frequently encountered in the recent years in parks and gardens on such ornamental host plants as Euonymus spp., Syringa vulgaris and other. Following the attack, plants are completely defoliated or dried. The attack is more likely to occur on the plants located near buildings, or where air does not circulate and there are water stress conditions. This paper presents observations on the pest presence in the ornamental parks and gardens of Bucharest, its attack mode and possibilities of attack limitation.*

**Key words:** pest, control, ornamental plants, attack.

### **INTRODUCTION**

The euonymous scale is a frequently encountered pest in dendrological nurseries, but also in parks and ornamental gardens.

As it is also the case for other pests which are specific to dendrofloral plants from urban areas, this species' combat is special because it has a series of difficulties. It is to be preferred that biological, physical, cultural are to be used at maximum, in order to protect the native useful fauna and to reduce the impact upon environment.

When a problem occurs, the management programme needs to be reevaluated in order to prevent future apparition of viral or harmful organisms.

The combat possibilities are limited, taking into consideration the plants' placement (parks, public areas, playgrounds, rest spaces, isolated bushes, green fences, private gardens), the lack products with reduced toxicity or biological products, usage method difficulties and treatment costs.

### **MATERIALS AND METHODS**

A hard to combat pest due to its protection shields, *Unaspis euonymi* Comstok is met more frequently on de *Euonymus* sp. plants in landscape maintenance activities (Brewer and Oliver, 1987). This pest's spread is favoured also by the verminous plants' merchandising. Tracking this pest has been realized by observing *Eounymus* plants from Herăstrău park, Kiseleff park, Cișmigiu park, Nicolae Iorga park, the Patriarchal Residence park.

The combat methods we've used consisted in taking prevention and remedial measures curative (Table 1). These have been applied only in private ornamental gardens or closed-circuit public gardens (the Patriarchal Residence park).

The experimental combat variants have had at their basis this species' biology, the larvas apparition moment (before the protection shields' formation) The chemical products' efficiency has been settled 48 h after using the treatment by ascertaining the individuals' death rate (adults and larvas) on leaves, under the binocular magnifying glass.

Table 1. Experimental variants of combat of *Unaspis euonymi* Comstok

Variant	Landscape maintenance
V <sub>1</sub> – witness	Kiseleff Park
V <sub>2</sub> – cutting the attacked branches +gathering the fallen leaves+spraying a powerful spurt of water	Private garden
V <sub>3</sub> – chemical treatment on larvas appearance (Confidor Energy – 0,13 %)	Private garden
V <sub>4</sub> – chemical treatment on larvas appearance (Proteus OD 110 – 0,1%)	Private garden
V <sub>5</sub> – chemical treatment on larvas appearance (Oleosan APG – 1,5%)	Private garden
V <sub>6</sub> – treatment in vegetative repose (Nuprid Oil 004 CE – 1,5%)	Private garden

## RESULTS AND DISCUSSIONS

Euonymus scale is a frequently encountered pest throughout the last years in dendrological nurseries, but also in parks and ornamental gardens (Figure 1). Favourite host plants are *Euonymus* spp., *Syringa vulgaris*, *Hedera helix*, *Hybiscus* spp., *Catalpa bignonioides*, *Lonicera* spp. After the attack plants are completely exfoliated (through leaves falling) or might even perish. Plants living in hidric stress conditions and near buildings or in areas where air stream does not circulate very well are more prone to the attack.

On a soft attack leaves with yellow stains are noticed, with specific larvas and adults along the nerves, on branches and on the plant's basis stem. When infestation is

powerful, plants lose their leaves, scions and branches dry out and plants eventually die.

The insect presents three development stages: egg, larva and adult. Eggs are deposited in early spring under the female's body. After a certain period of time the yellow-orange larvas appear, which migrate on other parts of the plant or are carried away by the wind on nearby plants. After a few days these become motionless, they fix themselves on the plant's tissues and start to secrete the secretion shields. The larvas which will grow into males present white longitudinal knolls, and the larvas which will grow into females are bigger, grey and in the shape of an oyster. Adult males have wings, and females keep their protective shield (Cockfield and Potter,1990).



Figure 1. *Unaspis euonymi* Comstok – euonymus scale

Following observations made this species has been found in many public and private landscaping (Table 2).

Results regarding this pest's combat are shown in Table 3. Variant number 2 is applicable to a reduced number of plants (isolated plants), having as a result population reduction, without setting an

exact death rate. In the case where chemical treatment has been used, the death rate was of 65% at V<sub>3</sub> and 89% at V<sub>4</sub>. Along with systemic insecticides, another product has been used. It belongs to the mineral potassium salts and fatty acids group (potassium oleate) – Oleosan APG (V<sub>5</sub>) where death rate was of 60%. Mineral salts

and fatty acids soap-based pesticides (potassium laureate, miristate potassium, potassium oleate and potassium ricinoleate) are used in order to combat insects, but also thews, seaweeds, orchils and herbs. Due to their reduced toxicity, they situate themselves in the IV-th group and are not toxic for birds in our ecosystem (Tudose et

al., 2008). For this product, mortality rate for larvas and adults was of de 60% on a single treatment used. Treatment usage in vegetative repose using with horticultural oil (Sadof and Sclar, 2000) - Nuprid Oil 004 CE (V<sub>6</sub>) product has led to a 80% mortality rate in hibernal stages.

Table 2. The evonimous scale's presence in landscape maintenance

Ornamental garden	Pest presence/absence (+/-)
Kiseleff park	+
Herăstrău park	+
Cișmigiu park	-
Nicolae Iorga park	-
The Patriarchal Residence park	+
Private garden from northern Bucharest	+
Private garden from northern Bucharest	+
Private garden from northern Bucharest	+
Private garden from Bucharest's center	+

Table 3. Experimental combat variants of the *Unaspis euonymi* Comstok

Variant	Landscape maintenance	Mortality rate (%)
V <sub>1</sub> – witness	Kiseleff park	0
V <sub>2</sub> – cutting the attacked branches +gathering the fallen leaves+spraying a powerful spurt of water	Private garden	-
V <sub>3</sub> – chemical treatment on larvas appearance (Confidor Energy - 0,13%)	Private garden	65
V <sub>4</sub> – chemical tratment on larvas appearance (Proteus OD 110 – 0,1%)	Private garden	89
V <sub>5</sub> – treatment on larvas appearance (Oleosan APG – 1,5%)	Private garden	60
V <sub>6</sub> – treatment in vegetative repose (Nuprid Oil 004 CE – 1,5%)	Private garden	80

Coccinellide have been noticed in the case of euonymous scale population (Figure 2), their presence representing a guide in combat possibilities.

Plants upon which no combat measure was taken (V<sub>1</sub>) have become frost sensitive and have dried out during winter time (Figure 3).



Figure 2. Coccinellidae inside *U. euonymi* colonies



Figure 3. Dried plants after attack

## CONCLUSIONS

While managing this pest's monitoring and combat, a series of curative and prevention measures can be applied:

*Cutting and destroying infested plants* is beneficial before young larvae start migrating.

*Plant trimming*, as a guidance and maintenance method, reduces the supply of pregnant females, although this issue can become difficult when the plant is already exfoliated.

*Manually removal of infested areas in motionless stages*. It is valid at weak plagues and on a small plant number. By removing them, the oral apparatus is affected and thus, the insect cannot establish a new feeding position.

*Vigorously upkeeping the plant*. Dousing and fertilising the plants contributes to a better attack resistance, as it is a pest which stings and sucks the sap.

*Insecticides usage*. It is efficient if systemic products are used during the larvae appearance, before the protective shields are formed. It is right for nurseries and less for parks and gardens.

*Mineral potassium salts and fatty acids based*. These are non-persistent, the halving time being less than a day in the environment. This creates the usage premises in combating pests in parks and ornamental gardens.

*Horticultural oils usage*. They can be used in winter time and aim for the hibernant stages' destruction through contact, through

insertion and by respiratory pathway. It is necessary that a large solution quantity must be used, so that the stems are properly bathed.

*Useful fauna preservation* of *Coccinellidae* species and neuropteras in the case of *U. euonymi* population suggests this species' biological combat possibilities.

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