

HALYOMORPHA HALYS STÅL (HETEROPTERA: PENTATOMIDAE) A NEW PEST FOR THE OLTENIA AREA

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ABSTRACT

The marmorated Stinkbug (*Halyomorpha halys*) is an invasive, polyphagous species, native from Asia, spreading to both the U.S. and on the European Continent.

It is a extremely dangerous species because as a result of the feeding process, on the host plant will appear scars, discoloured areas, deformed fruits, seeds or pods or abortion of the flowering buds, thus leading to a decrease in the quality of the fruit.

This pest was first seen in the „Al. Buia” Botanical Garden, as an adult on the *Hybiscus syracus* L., *Paulownia tomentosa* Thunb., *Buxus sempervirens* L., *Prunus cerasifera* Ehrh., *Solidago canadensis* L. species.

On the species *Buxus sempervirens* L. and *Paulownia tomentosa* Thunb. it has been found that it support the complete development of the species from egg to adult. Currently, *Halyomorpha halys* is found in all green spaces in Craiova.

INTRODUCTION

The marmorated Stinkbug (*Halyomorpha halys*) is part of the Hemiptera order, Heteroptera suborder, Pentatomidae family, Halyomorpha genus. The bug originates in Asia (China, Japan, Korea and Taiwan) (Lee D.H. et al., 2013).

Invasive species, managed to occupy new areas in the world, in the USA it has been seen since 1996, but confirmed its presence in 2001 (Hoebeke E.R., Carter M.R., 2003), it is still present in 42 American states and in two Canadian states (Fogain R., Graff S., 2011).

In Europe has been reported for the first time in Switzerland (Wermelinger B. and co., 2008; Garipey T.D. et al., 2014), in Germany (Heckmann R., 2012), in Greece (Milonas P.G., Partsinevelos G.K., 2014), France (Callot H., Brua C., 2013), Italy (Maistrello L. et al, 2013), Hungary (Vétek et. al. 2014),. Romania (Macavei et al. 2015), Russia (Vetek et al., 2014), Serbia (Šeat 2015), Austria (Rabitsch & Friebe 2015), Bulgaria (Simov N., 2012), Spain (Dioli et. al. 2016), Slovakia (Hemala&Kment, 2017), in 2017 in *Halyomorpha halys* Croatia (Šapina et al. 2018 cited by Rot M. et al., 2018), Georgia (Gapon, 2016).

MATERIAL AND METHOD

The species has been monitored between May-October 2019 in the “Al. Buia” Botanical Garden, “Nicolae Romanescu” Park, “Mihai Bravu” Garden and “Tineretului” Park through visual observation.

Adults and nymphs were collected from the 5 development stages from the green spaces where the species was encountered to determine it. The biological material being

transported to the Entomology laboratory of the Faculty of Horticulture, the individuals collected belonging to the species *Halyomorpha halys* Stål.

RESULTS AND CONCLUSIONS

This pest it was first observed in the “Al Buia” Botanical Garden, in the adult stage on the species *Hybiscus syracus* L., *Paulownia tomentosa* Thunb, later being found in the egg stage on the species *Buxus sempervirens* L, *Paulownia tomentosa* Thunb., *Solidago canadensis* L., *Amorpha fruticosa* L. but also in the nymph stage on the following species: *Cercis siliquastrum* L., *Robinia pseudoacacia* L., *Cornus sanguinea* L., *Fraxinus excelsior* L., *Celtis australis* L., *Malus domestica* Borkh., *Liriodendron tulipifera* L., *Pyracantha coccinea* M. Roem, *Morus alba* L., *Inula helenium* L., *Helianthus tuberosus* L., *Prunus cerasifera* Ehrh.

This species can be easily recognized because the adults have a specific brown or grayish dorsal coloration, with dense and dark punctuation, as the size varies between 12 and 17 mm (Rot et al. 2018). The antennae, legs and edges of the abdomen have alternating white and dark stripes (Figure 1).



Figure 1. Adult of *Halyomorpha halys* Orig.

The eggs are laid in-group (20-25 each group), on the underside of the leaves, their colour is light green becoming white (Hoebeke E.R., Carter M.R., 2003; Rice K.B. et al., 2014). After hatching, larvae go through five stages of development (Medal J. et al., 2013).

New born larvae have black head and orange abdomen (Figure 2), in the second stage are black with black abdomen and reddish spots, have spikes on the lateral of their heads and pronotum, and in the last two stages of development it can be observed a white stripe on the tibia (Rice K.B. et al., 2014; Wermelinger B. et al., 2008) (Figure 3 and 4).

The marmorated stinkbug presents dimorphism, males being smaller than female and can be distinguished through a posterior groove on the ventral side (Medal J. et al., 2013).



Figure 2. New born larvae of *Halyomorpha halys*, stagel , orig.



Figure 3. *Halyomorpha halys* nymphs (left- second stage, right- third stage) orig.



Figure 4. *Halyomorpha halys* nymphs (left –fourth stage, right- fifth stage) orig.

The marmorated stinkbug is an extremely polyphagous invasive species with more than 100 reported host plants (Bergmann et al. 2016).

Prefers different species of fruit trees and shrubs like : *Prunus armeniaca* L., *Prunus savium* L., *Prunus persica* L., *Prunus domestica* L., *Malus* spp., *Pyrus* spp., *Citrus* spp., *Morus* spp., *Diospyros* spp., *Rubus* spp., *Vitis vinifera* L (Haye et al. 2015), as well as horticulture crops such as: *Solanum lycopersicum* L., *Capsicum anuum* L., *Solanum melongena* L., (Kuhar T.P. et al., 2012), *Zea mays* L., *Helianthus annuus* L., *Sorghum bicolor* L., *Triticum aestivum* L., *Gossypium hirsutum* L., *Humulus lupulus* L., *Phaseolus vulgaris* L., *Pisum sativum* L.; trees and bushes (*Acer* spp., *Salix* spp., *Buddleja davidii* L., *Paulownia tomentosa* Thunb., *Pyracantha coccinea* M. Roem., *Lonicera* spp., *Syringa* spp., *Hibiscus* spp., *Cryptomeria* spp.)(Rice K.B. et al, 2014; Wermelinger B. et al., 2008).

The damages are produced by both nymphs and adults, as result of the feeding process may appear scars, discoloured areas, deformed fruits, seeds or pods (Leskey et al., 2009; Kuhar et al., 2012; Rice et al. 2014), leading to low quality of fruits, abortion of the flowering buds, some plants can be affected in long term (Haye et al. 2015).

After 14 years since its initial settlement in the USA, *H. halys* became one of the most important pests, causing loss of more than 37 million dollars in the apple crops from the Mid-Atlantic region (United States Apple Association 2010 cited by Haye et al 2015)

CONCLUSIONS

Extremely polyphagous species, attacking both fruit trees, shrubs as well as herbaceous plants, the damages caused by this pest as a result of feeding process are dark-brown spots on the surface of the attacked organs, affecting its quality.

The species *Buxus sempervirens* L. and *Paulownia tomentosa* Thunb. can tolerate the complete development of the species from egg to adult. Currently the species is found on all green spaces in Craiova.

Particular importance should continue to be given on monitoring the species for limiting the spreading and the damages caused in crops and green spaces, in order to achieve effective treatments to combat this species.

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