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## МАТЕРИАЛЫ КОНФЕРЕНЦИИ

Биологическая Защита Растений:  
Успехи, Проблемы,  
Перспективы



## CONFERENCE MATERIALS



Biological Control:  
Development, Issues  
and Prospects



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**БИОЛОГИЧЕСКИЙ КОНТРОЛЬ ТЛЕЙ В ГОРОДСКОЙ  
ЧЕРТЕ БЕЛГРАДА**

**BIOLOGICAL CONTROL OF APHIDS ON PUBLIC  
GREEN IN BELGRADE**

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**INTRODUCTION**

Urban green is very important for ecological services and human wellbeing. Landscape architects and other professionals managing urban green in Serbia are still not applying methods of integrated pest management in maintenance of healthy urban green and landscapes in urban and suburban area. Pest control mainly relies on chemical methods or they are no control methods applied. The research on aphids, their natural enemies and classical biological control in Serbia was done by Tomanovic et al., 2006, Mihajlovic et al., 2009, Petrovic – Obradovic et al., 2010, Glavendekic, 2012, Glavendekic et al., 2012.

**MATERIAL AND METHODS**

The biology and development of insect pests in public green was studied both in the laboratory and in the field. For some species there were studied development stages in detail and they were brought to the laboratory and reared at room temperature. Various stages of natural enemies were reared in the laboratory. Host plants belong to genera *Rosa*, *Hibiscus*, *Chaenomeles*, *Tilia*, *Ulmus*, *Cedrus*, *Chamaecyparis Thuja* and other. Identification of Aphids was done by Dr. Olivera Petrović-Obradović, of parasitoid wasps Chalcidoidea by Dr. Ljubodrag Mihajlović and of hoverflies Syrphidae by mr Zorica Nedeljko.

**RESULTS AND DISCUSSION**

The research on aphids revealed that *Cinara cedri* Mimeur 1936 cause temporarily outbreaks and cause serious damage on *Cedrus* spp. The most abundant populations were recorded in 2002. Host plants belonging to genera *Thuja* and *Chamaecyparis* have been so far hardly infested by *Cinara tujafilina* (del Guccio 1909) in 2002 and 2013. The most abundant predator in 2013 was *Harmonia axyridis* (Pallas, 1773).

Population dynamic of *Aphis eracivora*, *A. gossypii* (Glover) and *Chaitophorus leucomelas* (Koch) (Homoptera; Aphididae) and their antagonists were studied in urban green

space which is not subject of chemical control. It was found that aphid populations were under pressure of following predators: *Coccinella septempunctata* L. and *Scymnus frontalis* (F.) (Coleoptera: Coccinellidae), *Leucopis* sp. (Diptera: Chamaemyiidae), *Paragus tibialis* (Fallen), *Episirphus balteatus* (De Geer) and parasitoids *Cheiloneus boldyrevi* *Pachyneuron aphidis* (Bouché), *Syrphophagus aphidivorus* (Ashmead) (Figure 1)

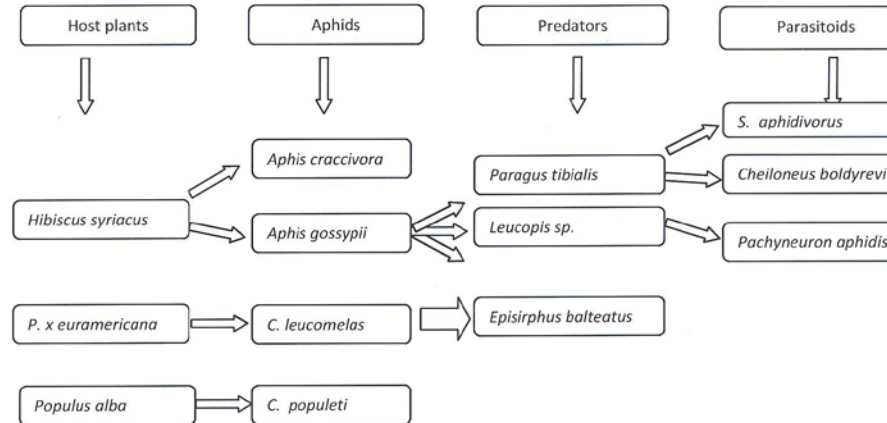


Figure 1. Aphids and their natural enemies at urban green in Belgrade

There is evidence that climate conditions in Serbia changed and many Mediterranean species expanded their range (Glavendekic, 2012). Invasive alien species *H. axyridis* was observed in 2012 in low population after extreme cold days in February 2012. Cosmopolitan and native aphids are responding to mild winters and their outbreaks occur frequently. Ornamental trees, shrubs and urban forests need to adapt to climate change. Professionals in landscape architecture, arboriculture and horticulture should apply ecological approach in their practice and encourage maintenance of healthy urban green and landscapes through regular monitoring of pests, support agents of biological control and integrated pest management.

## CONCLUSIONS

Aphids and complex of their natural enemies are well developed on urban green spaces in Belgrade. Climate conditions affect aphids and their natural enemies. IPM approach and support to agents of biological control is needed.

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