BOOK of ABSTRACTS

IX CONGRESS ON PLANT PROTECTION

November 25-28, 2024
Zlatibor, Serbia

Aleksa Obradović, Darko Jevremović
Editors

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IOBC-EPRS

PLANT PROTECTION SOCIETY OF SERBIA

International Organization for Biological and Integrated Control WPRS

International Organization for Biological and Integrated Control EPRS

National plant protection societies from Bosnia and Herzegovina, Croatia, the Czech Republic, Hungary, North Macedonia and Slovenia

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their content of 10.19±0.34 µg/g in treated pepper, and 11.11±0.28 µg/g in the control, indicating their lower (1 fold) content than was found in the control. By this research we demonstrated the significant influence of treatments with *B. safensis* strain P114 for anthocyanins content in the pepper fruits under conditions of abiotic stress.

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Oral presentation

FLIGHT DYNAMICS OF *Acontia candefacta* (NOCTUIDAE, LEPIDOPTERA) ON LIGHT TRAPS IN BAČKA (SERBIA)

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Caterpillar of *Acontia candefacta* (Hübner, [1831]) (Noctuidae, Lepidoptera) develops on the invasive, allergenic weed *Ambrosia artemisifolia*. It was transported from North America to the Krasnodar and Stavropol regions in Russia in 1967/68 as a potential biological agent.

The species expanded its range, reaching Serbia via Ukraine and Bulgaria. *A. candefacta* was recorded for the first time in Serbia on August 10th, 2009 at the locality Kumratura - Šomdra on Đerdap. Since then, it has been recorded in a large number of localities in Serbia. The range continued to expand through Bosnia and Herzegovina and Croatia to Slovenia and Italy.

Moths have been monitored daily in Sombor since 1994, and in Čelarevo since 2007. The Bečej type light trap works approximately from April 10th to October 10th every year. A 250W mercury lamp is used as a light source. The first butterflies were recorded: on August 18th, 2012 in Sombor and on May 10th, 2013 in Čelarevo. From the first catches until the end of 2023, 537 specimens were recorded in Sombor and 1331 specimens in Čelarevo.

Moths on the trap were recorded from April 25th to October 6th. The dynamics of the flight were as follows: in the period from April 25th to June 18th, one to three specimens were caught per night; in the period from June 19th to August 3rd, from four to seven exemplares; in the period from August 4th to September 12th, the catch was almost daily, and the number reached up to 38 specimens per night. After that period until October 6th, individual specimens were caught, with longer breaks in flight.

Based on literature data on the development of the species and collected data on the flight of butterflies, the species in Serbia has three generations per year. The boundaries between generations are not clear, because moths with shorter or longer breaks are hunted almost continuously. Moths of the first generation are the most numerous from 21st to 31st May. Moths of the second generation are most numerous from 1st to 10th July, and the third from 14th to 26th August.

During the flight of the first generation, peaks in flight were not recorded, because the abundance in that period of the year is low. Peaks in the flight of the second generation were recorded only in Čelarevo on July 3rd 2018, and on July 1st 2022. They brought out 6 and 8 moths respectively. Peaks in the flight of the third generation are a regular occurrence and were recorded on the following dates in Somobor: 2017 August 16th (6 moths), 2018 August 14th (8 moths), 2019 August 26th (11 moths), 2021 August 23rd (7 moths), 2023 August 23rd (13 moths). In Čelarevo: 2016 August 26th (7 moths), 2017 August 16th (38 moths), 2018 August 17th (11 moths),

2019 August 22nd (9 moths), 2021 August 15th (34 moths), 2022 August 18th (13 moths) and 2023 August 16th (20 moths).

After 11 years since the first recorded specimens, it can be concluded that the species *A. candefacta* has a stable population in Bačka.

Considering that the weed *Ambrosia artemisifolia* is one of the most common plants in the agrobiocenoses of Bačka, after corn and soybeans, it seems that the current abundance of the species *A. candefacta* does not have the potential to help reduce the population of this weed in our area.

Oral presentation

BACTERIOPHAGE-BASED BIOCONTROL AGAINST PLANT PATHOGENIC *Xanthomonas* STRAINS

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In crop cultivation and agriculture, plants are exposed to many abiotic and biotic stress effects, among which various bacterial infections cause significant economic damage. They cause one of the main biological threats, critically reduce crop yields and threaten the world's food security.

The genus *Xanthomonas* includes a wide range of plant pathogens that vary in host specificity and host interactions. *Xanthomonas arboricola* pv. *juglandis* (Xaj), related to nut blight, is the most important above-ground bacterial disease-causing enormous losses worldwide. *Xanthomonas oryzae* pv. *oryzae* (Xoo) is the pathogen of bacterial leaf spot of rice, against which there is currently no effective plant protection agent available. These infections can be controlled with copper, but they have a serious environmental impact, which, with the appearance of resistance to treatment, encourages research into other solutions.

The need to develop sustainable biocontrol agents, such as bacteriophages, is increasing significantly. Phage-based biopesticide treatments appear to be a very promising approach to controlling *Xanthomonas* infections. The bacteriophages have a narrow host specificity and minimal effect on eukaryotic cells, so it is not necessary to observe a food hygiene period after the treatment.

In the course of our research, we collected samples from open-air orchards and rice plantations in different countries. Under laboratory conditions, we isolated 12 Xaj and 17 Xoo-infecting bacteriophages, as well as some new bacterial strains, from infected plant and soil samples.

In the case of Xoo, UV-tolerant phages were also isolated. The bacteriophages were morphologically and genomically characterized using traditional methods. MALDI TOF MS determination based on protein structure analysis was performed on bacterial colonies. The data thus obtained were compared with the data in the VITEK MS V3.2.0 database. Sequencing was performed on the ILLUMINA Miseq platform. We selected lytic bacteriophages, determined their morphology and host specificity, and performed comparative genomic analyses. In the project, we also examined their effectiveness, and during the laboratory tests, the basic life cycle parameters (burst time and burst size) were determined in vitro. From the bacteriophages selected based on the results, a cocktail containing six bacteriophages for both pathogens was prepared for agricultural applications, and field experiments were carried out with both to verify their effectiveness. In the case of the anti-Xoo bacteriophage cocktail, we previously carried out a