

BOOK *of* ABSTRACTS

IX CONGRESS ON PLANT PROTECTION

November 25-28, 2024
Zlatibor, Serbia

Aleksa Obradović, Darko Jevremović
Editors

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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PREFACE

The Plant Protection Society of Serbia (PPSS), two sections of the International Organization for Biological and Integrated Control (IOBC-EPRS and IOBC-WPRS), in cooperation with national plant protection societies from Bosnia and Herzegovina, Croatia, the Czech Republic, Hungary, North Macedonia, and Slovenia, organize the IX Congress on Plant Protection.

The purpose of the Congress is to further facilitate the exchange of current scientific and technical information on plant protection in agriculture, forestry, and landscaping among researchers, teachers, experts in extension and public services, and the business community. It also aims to promote knowledge exchange and international cooperation.

Eminent experts in plant protection are invited to present the most recent advancements in their respective research domains. The Congress should assist in developing novel strategies, instruments, and methods to address present and forthcoming challenges in crop protection science and practice.

Aleksa Obradović
president of the PPSS

Darko Jevremović
convener

Organizers

Plant Protection Society of Serbia (PPSS)

International Organization for Biological and Integrated Control – West Palearctic
Regional Section (IOBC-WPRS)

International Organization for Biological and Integrated Control – East Palearctic
Regional Section (IOBC-EPRS)

in cooperation with

Plant Protection Society of Bosnia and Herzegovina

Plant Protection Society of Croatia

Plant Protection Society of the Czech Republic

Plant Protection Society of Hungary

Plant Protection Society of North Macedonia

Plant Protection Society of Slovenia

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Varvara MALIOGKA, Greece
Vera STOJŠIN, Serbia
Victor DOLZHENKO, Russia
Zoltán IMREI, Hungary

PROGRAMME

Monday, November 25

16:00 to 20:00	Registration
19:00	Welcome cocktail

Tuesday, November 26

8:00 to 17:00	Registration
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10:00 to 11:00 Opening ceremony

Chairpersons: Darko Jevremović, Aleksa Obradović, Radmila Petanović

Session 1 - Plant pathogens in agriculture and forestry

Chairpersons: Aleksa Obradović, Mila Grahovac, Jaime Cubero

Time	Title	Speaker
11:00 to 11:30	<i>Xanthomonas arboricola</i> : unraveling their virulence and host range through genomics	Jaime CUBERO
11:30 to 11:50	Genomics approach in analysis of <i>Fusarium graminearum</i> , causal agent of apple fruit rot	Mladen PETREŠ
11:50 to 12:10	Fastidious prokaryotic pathogens infecting sugar beet in central Europe	Bojan DUDUK
12:10 to 12:20	Bacterial microbial communities in virus-infected raspberry plants	Duška DELIĆ
12:20 to 12:30	<i>Macrophomina phaseolina</i> – how a minor sugar beet pathogen caused devastating root rot in Serbia	Nataša DUDUK
12:30 to 12:40	<i>In vitro</i> testing of <i>Xanthomonas euvesicatoria</i> pv. <i>euvesicatoria</i> copper sensitivity and detection of copper resistance genes	Jelena ADAMOVIĆ
12:40 to 12:50	Genetic variability of dichorhavirus coffeae (CoRSV) and the challenges of organic coffee producers in Brazil	Antonia dos Reis FIGUEIRA
12:50 to 13:05	Discussion	
13:05 to 13:45	Poster session	
13:45 to 15:00	Lunch break	 LUNCHTIME

Session 6 - Toxicology, ecotoxicology and food safety

Chairpersons: Sanja Lazić, Dragica Brkić, Hiroshi Kinoshita

Time	Title	Speaker
15:00 to 15:30	Effects of metabolites and solvents in cases of pesticide poisoning	Hiroshi KINOSHITA
15:30 to 15:50	Current green analytical strategies for pesticide residues determination in agricultural and apicultural products	Svetlana HROUZKOVÁ
15:50 to 16:00	Enhanced pesticide residue analysis in soil using combined extraction techniques: QuEChERS - DLLME and ASE-DLLME approaches	Agneša SZARKA
16:00 to 16:10	Mycotoxins contamination of organically grown soybean in Poland	Józef TYBURSKI
16:10 to 16:25	Discussion	

Congress centre SERBIA

Activities of the Plant Protection Society of Serbia

Chairpersons: Danijela Šikuljak, Željko Milovac

Time	
17:00 to 17:40	GALENKA – FITOFARMACIJA AD
17:40 to 18:00	AGROMARKET DOO
18:00 to 18:20	AGROSAVA DOO
18:20 to 18:40	BAYER CROP SCIENCE SRBIJA
18:40 to 19:00	AGROUNIK DOO
19:00 to 19:10	NUFARM, LINZ, SRBIJA
19:10 to 19:20	ADAMA SRB DOO
19:20 to 19:30	SYNGENTA AGRO DOO
19:30 to 19:40	BACILLOMIX CO. DOO

Wednesday, November 27

8:00 to 17:00	Registration
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Session 2 - Insects and pests in agriculture and forestry

Chairpersons: Jasminka Igrec Barčić, Olivera Petrović Obradović, Mirza Dautbašić

Time	Title	Speaker
09:00 to 09:30	Green management of key agricultural pests: the remarkable case of <i>Apiaceae</i> essential oils	Nickolas G. KAVALLIERATOS
09:30 to 09:50	American grapevine leafhopper, <i>Scaphoideus titanus</i> Ball (Hemiptera, Cicadellidae) in Slovenia	Magda RAK CIZEJ

	and its control strategy	
09:50 to 10:10	Flight activity of some insects from fam. Gelechiidae and Tortricidae (Lepidoptera), economically important pests on stone fruits in North Macedonia	Miroljub GOLUBOVSKI
10:10 to 10:30	<i>Coffee break</i>	
10:30 to 10:50	Novel concepts and approaches to address invasive fruit flies (Diptera: Tephritidae) in Europe	Nikos T. PAPADOPOULOS
10:50 to 11:00	Global warming and occurrence of tropical root-knot nematodes in the field in Serbia	Jasmina BAČIĆ
11:00 to 11:10	Non-native and emerging pests in forests and green infrastructure - early warning and rapid respond	Mara TABAKOVIĆ-TOŠIĆ
11:10 to 11:20	Interception of nematodes on imported plant material in Bosnia and Herzegovina	Branimir NJEŽIĆ
11:20 to 11:30	Host plant influence on fall armyworm success: wheat varieties as emerging targets	Muhammad Irfan ULLAH
11:30 to 11:45	Discussion	
11:45 to 13:15	Poster session	
13:15 to 14:30	<i>Lunch break</i>	

Session 3 - Weeds in agriculture and forestry		
Chairpersons: Goran Malidža, Sava Vrbničanin, Mostafa Oveisi		
Time	Title	Speaker
14:30 to 15:00	Regional informed prediction of the impact of plant invasion: a case study of Serbia	Mostafa OVEISI
15:00 to 15:20	Advanced modeling techniques for prediction weed density and diversity	Markola SAULIĆ
15:20 to 15:30	Screening for <i>Sorghum halepense</i> resistance to ALS inhibitors: new approach based on real-time PCR	Dragana BOŽIĆ
15:30 to 15:40	Chemical composition of garden angelica (<i>Angelica archangelica</i> L.) seed essential oil depending on weed control measures	Jovan LAZAREVIĆ
15:40 to 15:50	Sunflower broomrape in Serbia: virulence and resistance strategies in response to environmental changes	Sandra CVEJIĆ
15:50 to 16:00	Field dodder (<i>Cuscuta campestris</i>) control in CONVISO®SMART sugar beet	Goran MALIDŽA
16:00 to 16:15	Discussion	

Congress centre SERBIA

Activities of the Plant Protection Society of Serbia

Chairpersons: Nataša Samardžić, Goran Andrić

Time

16:30 to 16:50 AGROMARKET DOO

16:50 to 17:10 AGROSAVA DOO

17:10 to 17:50 EKOSAN

17:50 to 18:00 SAVACOOP DOO

18:00 to 18:10 CORTEVA AGRISCIENCE

18:10 to 18:20 SAGEA DOO

20:00

Gala dinner



Thursday, November 28

8:00 to 12:00

Registration

Session 4 - Beneficial organisms in agriculture and forestry

Chairpersons: Brankica Pešić, Tamas Kovács, Dragana Budakov

Time

Title

Speaker

09:00 to 09:30

UV tolerant bacteriophages: an efficient tool for a sustainable biocontrol of phytopathogenic bacteria

Tamas KOVÁCS

09:30 to 09:50

Bacterial diversity of Serbian agricultural soils

Aleksa OBRADOVIĆ

09:50 to 10:00

Effect of treatment with *Bacillus safensis* strain P114 on bioactive compounds of sweet pepper under water deficit conditions

Tatjana POPOVIĆ
MILOVANOVIĆ

10:00 to 10:10

Flight dynamics of *Acontia candefacta* (Noctuidae, Lepidoptera) on light traps in Bačka (Serbia)

Dragan VAJGAND

10:10 to 10:20

Bacteriophage-based biocontrol against plant pathogenic *Xanthomonas* strains

Dominika BALI

10:20 to 10:30

Effects of microbial biostimulants on maize and its pest, the western corn rootworm *Diabrotica virgifera virgifera*

Sri ITA TARIGAN

10:30 to 10:45

Discussion

10:45 to 11:00

Coffee break



11:00 to 11:30

Poster session



Session 5 - Pesticides, biopesticides and organic production

Chairpersons: Petar Kljajić, Vladimir Oberemok, Slavica Vuković

11:30 to 12:00	Organic nanoparticles for the sustainable and circular crop protection	Giorgio BALESTRA
12:00 to 12:20	'Genetic zipper' method: easy algorithm for creation of oligonucleotide insecticides	Vladimir OBEREMOK
12:20 to 12:30	Efficacy of SEKATOR OD applied by an unmanned aerial vehicle in control of <i>Lamium purpureum</i> and <i>Lamium amplexicaule</i>	Biljana BOŠKOVIĆ
12:30 to 12:40	Sensitivity of cauliflower to simulated mesotrione residues in the soil	Milena RADIVOJEVIĆ
12:40 to 12:50	Strategies for yield losses limitation caused by main potato pathogens in organic farming	Jolanta KOWALSKA
12:50 to 13:05	Discussion	
13:05 to 15:00	Lunch break	

Presentations of the projects and books

Chairpersons: Goran Aleksić, Mirko Ivanović, Dragana Božić

Time	Title	Speaker
15:00 to 15:10	Project: Inovative solutions in phage-mediated biocontrol of fire blight – InnovaPhage	Katarina GAŠIĆ
15:10 to 15:20	Project: Increased sustainability of plant protection by innovative approaches in <i>Bacillus</i> -based biological plant disease and pest control	Simonida ĐURIĆ
15:20 to 15:30	Pesticidi u poljoprivredi i šumarstvu u Srbiji <i>Pesticides in agriculture and forestry in Serbia</i>	Petar KLJAJIĆ
15:30 to 15:40	Bolesti gajenih biljaka i njihovo suzbijanje Drago MILOŠEVIĆ <i>Diseases of cultivated plants and their control</i>	Mirko IVANOVIĆ
15:40 to 15:50	Akarologija Biljana VIDOVIĆ <i>Acarology</i>	Radmila PETANOVIĆ
15:50 to 16:00	Taksonomija i diverzitet mikrobiote semena Jelena LEVIĆ, Vojislav TRKULJA <i>Taxonomy and diversity of seed micobiote</i>	Mirko IVANOVIĆ
16:00 to 16:10	Selektivnost i fitotoksičnost pesticida Katarina JOVANOVIĆ RADOVANOV <i>Selectivity and phytotoxicity of pesticides</i>	Petar VUKŠA

16:10 to 16:20	Improving work processes using GIS technologies in the Provincial Secretariat for Agriculture, Water Management and Forestry	Vojkan GAJOVIĆ
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16:20 Symposium closure

Chairpersons: Darko Jevremović, Aleksa Obradović, Radmila Petanović

Friday, November 29

10:00 to 17:00	Excursion
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POSTERS

- 1 **DIRECT, SPECIES-SPECIFIC DETECTION OF *Waitea circinata* var. *zeae***
Mira Vojvodić, Dejan Lazić, Brankica Pešić, Petar Mitrović, Ivana Vico, Aleksandra Bulajić
- 2 **BLACK ROOT ROT AFFECTING STRAWBERRY PRODUCTION IN ALBANIA**
Magdalena Cara, Amedeo Kola, Raimonda Ajdini, Mira Vojvodić, Isidora Knežević, Miljan Grkinić, Aleksandra Bulajić
- 3 ***Diplodia bulgarica* – POSTHARVEST PATHOGEN OF APPLE FRUIT**
Nina Vučković, Ivana Vico, Nataša Duduk
- 4 **BLUE MOLD OF GARLIC BULBS CAUSED BY *Penicillium allii***
Nina Vučković, Valentina Ivanović, Jovana Matić, Nataša Duduk, Ivana Vico
- 5 **MOLECULAR CHARACTERIZATION OF APPLE MOSAIC VIRUS ISOLATES FROM APPLE AND HAZELNUT IN SERBIA**
Darko Jevremović, Bojana Vasiljević, Vera Katanić
- 6 **THE INFLUENCE OF GROWING WINTER RYE IN A MIXTURE WITH PEAS ON THE DISEASE INDICES OF LEAF RUST**
Milosav Grčak, Dragan Grčak
- 7 **DIVERSITY OF SPECIES ASSOCIATED TO BANANA FUSARIUM WILT IN EASTERN DEMOCRATIC REPUBLIC OF CONGO**
Mugisho Zirhumana Janvier, Decock Cony, Bisimwa Basengere Espoir, Legrève Anne
- 8 ***Ralstonia solanacearum* - GENETIC DIVERSITY DETERMINED BY rep-PCR**
Sanja Marković, Aleksandra Jelušić, Renata Iličić, Slaviša Stanković, Tatjana Popović Milovanović
- 9 ***Fusarium* SPECIES ASSOCIATED WITH ONION DECAY**
Jozef Gašparovski, Mila Grahovac, Dragana Budakov, Maja Ignjatov, Dobrila Radić, Teodora Mihaljfi, Milica Meseldžija, Aleksandra Janković
- 10 **NEW ALLELIC VARIANT OF *Pseudomonas syringae* pv. *aptata* LATELY ISOLATED FROM SUGAR BEET IN SERBIA**
Tatjana Popović Milovanović, Aleksandra Jelušić, Renata Iličić, Vojislav Trkulja, Ferenc Bagi, Nenad Trkulja
- 11 **REOCCURRENCE OF *Erwinia amylovora* IN CENTRAL SERBIA**
Jelena Adamović, Nevena Zlatković, Milan Šević, Anđelka Prokić, Milan Ivanović, Nebojša Nedić, Katarina Gašić, Aleksa Obradović

12	SENSITIVITY OF <i>Xanthomonas arboricola</i> pv. <i>corylina</i> MONTENEGRIN STRAINS TO COPPER SULFATE AND STREPTOMYCIN Jelena Adamović, Tamara Popović, Milan Ivanović, Anđelka Prokić, Julijana Živojinović, Aleksa Obradović
13	CHARACTERIZATION OF <i>Fusarium graminearum</i> SPECIES COMPLEX ORIGINATED FROM SMALL GRAIN IN SERBIA Ana Obradović, Vesna Krnjaja, Milica Lučev, Goran Stanković, Aleksandra Bulajić, Slavica Stanković
14	ISOLATION AND CHARACTERIZATION OF BACTERIAL STRAINS FROM LETTUCE Julijana Živojinović, Anđelka Prokić, Jelena Adamović, Aleksa Obradović
15	PRELIMINARY CHARACTERIZATION OF BACTERIAL ISOLATES OF <i>Xanthomonas campestris</i> pathovar <i>campestris</i> Roberta Princz-Tóth, Katalin Perei, Tamás Kovács
16	NINE-YEAR SURVEILLANCE ON <i>Xylella fastidiosa</i> PRESENCE IN REPUBLIC OF SRPSKA Vojislav Trkulja, Gordana Babić, Bojana Vuković, Bojana Ćurković, Bogdan Nedić, Jovana Prijić, Tatjana Popović Milovanović
17	MOLECULAR, MORPHOLOGICAL AND PATHOGENIC DETERMINATION OF <i>Fusarium oxysporum</i>, THE CAUSE OF <i>Fusarium</i> WILT ON CUCUMBER (<i>Cucumis sativus</i> L.) IN SERBIA Tanja Vasić, Sanja Živković, Dragan Terzić, Darko Jevremović
18	IDENTIFICATION AND DIVERSITY OF AGROBACTERIA POPULATION ASSOCIATED WITH CROWNGALL DISEASE IN SERBIA Anđelka Prokić, Teodora Vucelja, Milan Ivanović, Jelena Adamović, Julijana Živojinović, Aleksa Obradović
19	A CONTRIBUTION TO THE KNOWLEDGE OF POTENTIAL PESTS OF LEPIDOPTERA IN NATIONALPARKS "KOPAONIK" AND "TARA" AND IN NATURAL MONUMENT "LAZAREV CANJON" Dejan V. Stojanović, Predrag Šumarac, Marko Tomić
20	STATUS OF <i>Aculus fockeui</i> (Nal. & Trt.) (ACARI, ERIOPHYOIDEA) ASSOCIATED WITH SWEET AND SOUR CHERRY: MORPHOMETRIC AND MOLECULAR RESULTS Nikola Anđelković, Tatjana Cvrković, Slavica Marinković, Nataša Barišić Klisarić, Radmila Petanović, Biljana Vidović
21	FAUNISTIC RESEARCH OF LONGHORN BEETLES (COLEOPTERA: CERAMBYCIDAE) IN SELECTED SUBURBAN BIOCENOSSES OF NOVI SAD Andrej Davidović, Dejan V. Stojanović, Aleksandra Konjević, Saša Orlović
22	FAUNISTIC RESEARCH OF LONGHORN BEETLES (COLEOPTERA: CERAMBYCIDAE) IN THE LOCALITY "BOSUT FOREST" IN SREM - SERBIA Srđan B. Segić, Željko M. Tomanović, Dejan V. Stojanović, Aleksandra M. Stanković, Gordana B. Mauna
23	ITS CASCADE FOR NEMATODE IDENTIFICATION Violeta Oro, Rade Stanisavljević, Marijenka Tabaković
24	THE EFFECTS OF CLIMATIC VARIATIONS ON THE OCCURRENCE OF STEM WEEVILS IN OILSEEDRAPE

	Željko Milovac, Filip Franeta, Teodora Brankov, Sonja Gvozdenac, Ana Marjanović Jeromela
25	PREDATORS OF <i>Cacopsylla pulchella</i> (LÖW, 1877) (HEMIPTERA, PSYLLIDAE) IN THE BELGRADE AREA Luka Vuković, Dušanka Jerinić Prodanović
26	OCCURRENCE OF THE PLANTHOPPER <i>Reptalus quinqucostatus</i> (DUFOR) (HEMIPTERA: FULGOROMORPHA: CIXIIDAE), A VECTOR OF 'Candidatus phytoplasma solani' DRIVING THE SUGAR BEET RTD EPIDEMIC, IN A MULTI-CROP SYSTEM Olivera Popov, Živko Ćurčić, Andrea Kosovac
27	FIRST RECORD OF PLUM SEED WASP <i>Eurytoma schreinerei</i> Schreiner (HYMENOPTERA, EURYTOMIDAE) IN SERBIA Ivana Jovičić, Andrea Kosovac, Ljiljana Jeremić, Marija Milošević, Giuseppe E. Massimino Cocuzza
28	OCCURRENCE OF ROOT-KNOT NEMATODES IN THE GREENHOUSES IN SERBIA Jasmina Bačić, Ivana Lalićević, Saša Širca, Melita Theuerschuh, Nik Susić, Barbara Gerić Stare
29	OUTBREAK OF <i>Ips typographus</i> AND <i>Pityogenes chalcographus</i> ON THE PROKLETIJE MOUNTAIN (MONTENEGRO) Milan Gazdić, Dragan Roganović, Jelica Stanić, Milena Lakićević
30	EVALUATION OF THE PHYTOTOXIC EFFECT OF <i>Artemisia absinthium</i> L. PLANT EXTRACT AND ESSENTIAL OIL ON WEEDS AND MAIZE Teodora Tojić, Marija Sarić-Krsmanović, Tijana Đorđević, Rada Đurović-Pejčev, Milica Aćimović, Dragana Božić, Ljiljana Radivojević, Sava Vrbničanin
31	THE INFLUENCE OF TIME OF WEED REMOVAL ON CORN YIELD AND YIELD COMPONENTS DEPENDING ON PRE-APPLIED HERBICIDES, DIFFERENT PLANTING PATTERN AND WEATHER CONDITIONS Dejan Nedeljković, Dragana Božić, Goran Malidža. Miloš Rajković, Stevan Z. Knezevic, Sava Vrbničanin
32	THE EFFECT OF BLACK AGROTEXTIL ON YIELD AND WEED CONTROL IN EXPERIMENTAL CULTIVATION OF <i>Tanacetum parthenium</i> L. Ana Dragumilo, Željana Prijić, Sara Mikić, Miloš Rajković, Vladimir Filipović, Dragana Božić, Tatjana Marković
33	TESTING DIFFERENT INTEGRATED WEED MANAGEMENT OPTIONS AGAINST THE INVAISVE RAGWEED, <i>Ambrosia artemisiifolia</i>, INCLUDING BIOLOGICAL CONTROL Nhu P.Y. Doan, Urs Schaffner, Sri Ita Tarigan, Philias M.O, Zita Dorner, Afiqah I.B. Sundusin, Stefan Toepfer
34	ASSESSING HOST SPECIFICITY OF <i>Ophraella communa</i> FOR THE BIOLOGICAL CONTROL OF <i>Ambrosia artemisiifolia</i>: A NO-CHOICE AND CHOICE TEST APPROACH Afiqah I.B. Sundusin, Urs Schaffner, Sri Ita Tarigan, Nhu P.Y Doan, Zita Dorner, Dora Iványi, Stefan Toepfer
35	EFFICACY OF SOME PRE AND POST EMERGENCE HERBICIDES IN EARLY CABBAGE Darko Jovanović, Slađan Adžić, Bojana Gavrilović, Jelena Stojiljković, Ivan Tupajić

36	HIGHWAYS AND PATHWAYS: THE ROLE OF ROADS IN THE SPREAD OF INVASIVE ALIEN PLANTS IN SERBIA Anđelković Ana, Tmušić Goran, Šikuljak Danijela, Marisavljević Dragana
37	EFFICACY OF HERBICIDES IN WEED CONTROL IN SUGAR BEET CROPS Zlatko Miličević, Nenad Trkulja, Danijela Šikuljak, Anja Milosavljević
38	EFFICACY OF PROPYZAMIDE FOR FIELD DODDER CONTROL IN SUGAR BEET Zlatko Miličević, Nenad Trkulja, Danijela Šikuljak, Anja Milosavljević
39	SURVEILLANCE OF INVASIVE ORNAMENTAL PLANT SPECIES ON TWO PILOT SITES IN ZAGREB COUNTY Martina Kadoić Balaško, Tatjana Masten Milek, Luka Basrek
40	ANTAGONISTIC ACTIVITY OF FOUR <i>Trichoderma harzianum</i> COMPLEX STRAINS AGAINST TOMATO PATHOGEN <i>Fusarium</i> sp. Jelena Luković, Miloš Vasić, Ivana Potočnik, Ivana Vico, Svetlana Milijašević-Marčić, Miloš Stepanović, Biljana Todorović
41	CHANGING THE MICROBIOM IN <i>Agaricus bisporus</i> CULTIVATION SYSTEM TO FIGHT <i>Trichoderma</i> GREEN MOLD Ljiljana Šantrić, Svetlana Milijašević-Marčić, Jelena Luković, Nikola Anđelković, Nikola Grujić, Tanja Drobnjaković, Ivana Potočnik
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ROSEMARY HYDROLATE AS A POTENTIAL BIOHERBICIDE

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Rosemary (*Rosmarinus officinalis* L.) is an aromatic, evergreen, bushy plant from the Lamiaceae family. Rosemary is traditionally used to treat various ailments and has found application as an analgesic, antirheumatic, antiepileptic, and diuretic.

In obtaining essential oil, a by-product of distillation called hydrolate or floral water is separated. This is an aqueous solution that has a similar chemical composition to the essential oil but with a lower content of volatile chemical components.

This study aimed to determine the herbicidal effect of different concentrations of rosemary hydrolate on seed germination and initial growth of seedlings of soybean, alfalfa, and the weed species red-root amaranth (*Amaranthus retroflexus* L.).

The seeds were treated with different concentrations of rosemary hydrolate (10, 20, 50 and 100%), i.e. the distilled water in the case of the controls. The treated seeds were then put in a climate chamber under controlled conditions, and the germination dynamic was monitored for 10 days. At the end of the experiment, the length of hypocotyl and epicotyl of the seedlings was measured.

The results showed that rosemary hydrolate had a weak effect on the germination and initial growth of the tested cultivated plants at lower concentrations, while the 100% rosemary hydrolate completely inhibited the germination of the alfalfa seeds. The 10% rosemary hydrolate had a significant inhibitory effect on both the seed germination and hypocotyl and epicotyl growth of the seedlings of *A. retroflexus*, while the seed germination at higher concentrations was completely inhibited.

Further research is needed under the field conditions, as well as expanding the spectrum of the weed species on which the impact of rosemary hydrolate is tested, to draw a conclusion on its potential. Based on the current research, it can be concluded that this hydrolate has potential for use in plant protection programs as a bioherbicide.

Poster

***Camelina sativa* AND *Brassica carinata* OILS AS POTENTIAL BIOINSECTICIDES AGAINST THE RICE WEEVILS AND BEAN BEETLE**

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Postharvest losses of durable commodities like seeds, caused by stored product pests, are recognized as a major constraint in achieving sustainable agricultural production. Two economically important primary pest worldwide are: i) the rice weevil (*Sitophilus oryzae* L.), a pest of different cereals and cereal-based products, and ii) the bean beetle (*Acanthoscelides obtectus* Say), a major pest of stored legumes. The mentioned pests cause both quantitative and qualitative losses. Due to their economic importance, there is a necessity for their control, that mainly relies on use of chemically synthesized insecticides and toxic fumigants. However, severe restrictions and ban of insecticidal active ingredients, increased demands for pesticide free food and occurrence of insect resistance, pose a need for continuous research and development of new biorational pest management methods and solutions. It has become a great challenge to minimize losses of grains during storage, using eco-friendly and natural products, plant-based once (botanicals). Despite numerous attempts, the number of commercially available botanical products is still low. Therefore, there is a constant need for further screening of different plants for biological activity, as well as for developing cheaper and more effective botanical insecticides. One of the promising options is the use of plant oils as bioinsecticides and repellents.

This work aimed to assess biological activity of non-edible oils of two minor brassica crops, *Camelina sativa* and *Brassica carinata*, against two major seed pests, the rice (*S. oryzae*) and bean beetle (*A. obtectus*). *C. sativa* and *B. carinata* are crops with increasing potential in bioeconomy chain, as well as in the contexts of climate change. The biological activity of camelina and carinata oils was assessed in fumigant, contact toxicity and repellency tests. In fumigant toxicity tests, oils were applied on filter paper cuts at 0.1, 0.5, 1, 2 and 5%. In contact toxicity test, that was performed in glass tubes, both oils were applied at same concentrations but with addition of 0.1% of emulsifier Tween, while Ogriol (oil-seed rape based insecticide) was used as a standard (2%) and distilled water with emulsifier (Tween) was the control. Insect mortality was assessed after 1, 2 and 24 h in fumigant test, and 24, 48 and 72 h in contact toxicity test. Repellence test was performed in a Y-tube olfactometer and repellency was determined based on Repellency index (RI), that was calculated based on the insect distribution in treated and control arms of olfactometer, after and 1, 2 and 24 h.

None of the tested oils expressed fumigant activity, regardless on the applied concentration. After 24 h, camelina oil did not cause significant mortality as it ranged from 7.5 - 33.5% for the rice weevil and from 2.0 - 13.0% for the bean beetle. However, after 48 h, camelina oil expressed high efficacy against both insect species. The mortality of the rice weevil was 77% when applied at 2% concentration while the mortality of the bean beetle was also high (53%) even at 0.5% and at 2% concentration it reached 67%. Carinata oil did not cause significant mortality, and it ranged from 0-19.5% for the rice weevil, 0-18.3% in the case of been beetle, ant it was dose-dependent. Both, camelina and carinata oils expressed extremely high repellence against the rice weevil (RI -100, RI - 100, respectively), while only camelina oil had strongly repellent activity (RI - 77.8) against and bean beetle.

The results indicate that both tested oils have a potential to be used in stored grain protection and reduce the need and risks associated with the use of chemically synthesised insecticides.

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