



**Herbолоško društvo Srbije**  
Weed Science Society of Serbia

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# **XI KONGRES O KOROVIMA I SAVETOVANJE O HERBICIDIMA I REGULATORIMA RASTA**

11th WEED SCIENCE CONGRESS  
AND SYMPOSIUM OF HERBICIDES  
AND GROWTH REGULATORS

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**Zbornik rezimea**  
Book of Abstracts

**20-23. Septembar 2021. | Palić, Srbija**  
September 20-23, 2021 | Palić, Serbia

**XI Kongres o korovima  
i savetovanje o herbicidima  
i regulatorima rasta  
Zbornik rezimea**

**Izdavač:**

Herbološko društvo Srbije

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## PORUKA UČESNICIMA

Herbološko društvo Srbije organizuje kongres o korovima, tradicionalno svake četvrte godine, pa je tako i ovaj jedanaesti po redu bio planiran za 2020. godinu, tačno četrdeset godina nakon prvog naučnog skupa u našoj zemlji koji je bio posvećen herbološkim temama. Međutim, pandemija virusa COVID-19 uticala je da Naučno-stručni odbor, u cilju zaštite zdravlja učesnika kongresa, svojih članova, saradnika i njihovih porodica, a u skladu sa odgovornim ponašanjem u vreme pandemije, donese odluku da se skup odloži za 2021. godinu.

Kao i do sada, program smo tematski koncipirali po sekcijama u okviru kojih će domaći i eminentni inostrani predavači, kroz aktuelne usmene i poster prezentacije, predstaviti najznačajnije rezultate naučno-istraživačkog rada u oblasti proučavanja i suzbijanja korova, do kojih se došlo u proteklom petogodišnjem periodu. Ovoga puta posebno želimo da istaknemo da smo po prvi put u dugoj istoriji organizovanja kongresa o korovima, izdvojili sekciju: Savetovanje o herbicidima i regulatorima rasta, sa ciljem da podstaknemo bolju komunikaciju i saradnju između kolega iz primarne proizvodnje, naučnih institucija, istraživača, industrije pesticida, kao i svih drugih oblasti koje dele zajedničko interesovanje za proučavanje i suzbijanje korova. Pozvali smo kolege iz struke da nam se pridruže sa svojim radovima, kako bi bolje sagledali aktuelne probleme u neposrednoj proizvodnji, razmenili iskustva i svi zajedno sagledali moguća nova rešenja.

Za ovaj skup prijavljeno je ukupno 90 radova, od čega je 16 po pozivu. Radovi po pozivu će dati sliku i naučno obrazložiti razvoj, današnje stanje, najnovija dostignuća, kao i viziju budućih istraživanja u našoj oblasti. Za usmena saopštenja prihvaćeno je 33 rada, a za poster prezentacije 41 rad. Svi radovi će biti publikovani u Zborniku rezimea koji je registrovan u Narodnoj biblioteci Srbije, a biće dostupan na sajtu Herbološkog društva Srbije.

Tokom održavanja skupa, učesnici će imati priliku da prisustvuju promociji najnovijih publikacija iz oblasti herbologije i herbicida. Programom je predviđena i atraktivna ekskurzija.

Deset sponzora kongresa imaće predavanja u okviru sekcije: Savetovanje o herbicidima i regulatorima rasta, u kojima će predstaviti svoje nove tehnologije i proizvode. Takođe, sponzorima je obezbeđen i izložbeni prostor, kao i ostale reklamne aktivnosti.

Nadamo se da će ovako koncipiran program ispuniti vaša očekivanja i interesovanja, pa Vas u ime Naučno-stručnog i Organizacionog i odbora, kao i Herbološkog društva Srbije, sa velikim zadovoljstvom pozivamo da uzmete učešće u radu XI kongresa o korovima i savetovanja o herbicidima i regulatorima rasta, koji će se održati 20-23. septembra 2021. godine na Paliću.

Radujemo se Vašem dolasku!

Organizator

## GENERAL INFORMATION TO PARTICIPANTS

Weed Science Society of Serbia has traditionally been organizing the weed science congress every four years. Consequently, this eleventh Congress was planned for the year 2020, exactly forty years after the first scientific congress devoted to weed science took place in our country. However, the pandemic of the COVID-19 virus has led the Scientific committee to postpone the congress for 2021, acting responsibly during pandemic times, with the aim of preserving the health of congress participants, Society members, associates and their families.

As in previous instances, the programme is divided thematically in various sections, where national and eminent international lecturers will, in the form of oral and poster presentations, present the most important results of scientific research done in the field of weed science over the period of the last five years. This time we would like to highlight that for the first time in the long history of organizing this Congress we have specifically separated the following section: *Symposium on Herbicides and Growth Regulators*, with the aim of encouraging better communication and cooperation between colleagues working in primary production, scientific institutions, pesticide industry, and all other fields which share the common interest in the study and control of weeds. We have invited weed science specialists to present us their results, in order to have a better overview of the current production problems, exchange experiences and evaluate possible new solutions together.

A total of 90 papers have been submitted for this congress, 16 of which are invited speakers. Invited lectures will present a broader picture and scientifically explain the developments, current state, newest contributions and a vision of future research in the field. Thirty three papers have been accepted for oral presentations and 41 for poster presentations. All the papers will be published in a Book of Abstracts, which has been registered with the National Library of Serbia, and will be freely available on the website of the Weed Science Society of Serbia.

During the congress, participants will have a chance to attend presentations of novel publications pertaining to weed science and herbicides. The program also includes an attractive field trip.

Ten congress sponsors will have lectures within the section *Symposium on Herbicides and Growth Regulators*, where they will present their newest technologies and products. Also, the sponsors have been provided with showroom for their produce and other promotional activities.

We are hopeful that a program compiled this way will meet your expectations, and in the name of the Scientific and Organizing committees, as well as the Weed Science Society of Serbia, it is our great pleasure to invite you to participate in the proceedings of the XI Weed Science Congress and Symposium on Herbicides and Growth Regulators, which will take place on September 20-23, 2021 in Palić. We look forward to seeing you there!

Organizer

**PREGLED PROGRAMA KONGRESA  
 CONGRESS AGENDA**

<b>Dan Day</b>	<b>Aktivnosti Activities</b>	<b>Vreme Time</b>	<b>Mesto Place</b>
<b>Ponedjeljak, Monday</b> 20.09.2021.	Registracija učesnika <i>Registration of participants</i>	08:00-	Eko centar
	Ceremonija otvaranja Kongresa <i>Opening ceremony</i>	10:00-11:00	Eko centar
	Prezentacija plenarnih radova <i>Plenary lectures</i>	11:30-13:00	Eko centar
	Sekcija: Biologija i ekologija korova <i>Session: Weed biology and ecology</i>	15:00-16:40	Eko centar
	Promocija knjiga i/ili Okrugli sto <i>Book promotion and/or Round table</i>	16:55-18:30	Eko centar
	Koktel dobrodošlice <i>Welcome cocktail</i>	19:00-22:00	Velika terasa <i>Grand terrace</i>
<b>Utorak, Tuesday</b> 21.09.2021.	Prezentacija plenarnih radova <i>Plenary lectures</i>	9:00-10:20	Eko centar
	Sekcija: Savetovanje o herbicidima i regulatorima rasta <i>Session: Symposium on herbicides and plant growth regulators</i>	10:35-18:25	Eko centar
	Svečana večera <i>Gala dinner</i>	20:00-24:00	Salaš vinarije Zvonko Bogdan <i>Homestead of Zvonko B. Winery</i>
<b>Sreda, Wednesday</b> 22.09.2021.	Sekcija: Invazivni korovi <i>Session: Invasive weeds</i>	9:00-10:25	Eko centar
	Sekcija: Herbicidi i regulatori rasta biljaka <i>Session: Herbicides and plant growth regulators</i>	10:30-13:05	Eko centar
	Diskusija po posterima <i>Discussion regarding the poster session</i>	13:05-13:35	Eko centar
	Sekcija: Integralno suzbijanje korova <i>Session: Integrated weed management</i>	15:00-16:50	Eko centar
	Zaključivanje rada Kongresa <i>Closing ceremony</i>	16:50-17:20	Eko centar
	Ekскурzija <i>Excursion</i>	18:00-20:00	Vinarija Zvonko Bogdan <i>Zvonko Bogdan Winery</i>
<b>Četvrtak, Thursday</b> 23.09.2021.	Ispraćanje gostiju <i>Firewell</i>	8:00-10:00	

## PROGRAM KONGRESA I SAVETOVANJA CONGRESS AND SYMPOSIUM PROGRAM

### PONEDELJAK / MONDAY 20.09.2021.

- 08:00-10:00 Akreditacija učesnika / Registration of participants**  
**10:00-10:30 Otvaranje Kongresa i pozdravna reč / Opening Ceremony**  
*Predsedavajući: Ljiljana Radivojević, Miloš Rajković, Goran Malidža*  
10:30-11:00 Siniša Mitrić: Život i delo akademika Vaskrsije Janjića  
11:00-11:30 Kafe pauza / Coffee break (Herbološko društvo Srbije)

### 11:30-13:00 PLENARNI REFERATI / PLENARY LECTURES

- Predsedavajući: Milena Simić, Stevan Knežević*  
11:30-11:50 Ljiljana Radivojević, Katarina Jovanović-Radovanov: Herbicidi: status i perspektive  
11:50-12:10 Heinz Müller-Schärer: Perspectives on the future of weed science: a European challenge  
12:10-12:30 Mostafa Oveisi: Challenges for weed management with changing climates: what models tell us?  
12:30-13:00 Diskusija po izloženim referatima / Discussion following the presented papers  
13:00-15:00 Pauza za ručak / Lunch break

### 15:00-15:20 PLENARNI REFERAT / PLENARY LECTURE

- Predsedavajući: Ljiljana Nikolić, Zlatan Kovačević*  
15:00-15:20 Sava Vrbničanin, Urban Šilc: Promene korovske flore i vegetacije useva strnih žita

### Sekcija: BIOLOGIJA I EKOLOGIJA KOROVA Session: WEED BIOLOGY AND ECOLOGY

- 15:20-16:40 Usmeni referati / Oral presentations**  
15:20-15:30 Ljiljana Nikolić, Branka Ljevnaić-Mašić, Dejana Džigurski, Srđan Šeremešić: Floristička analiza i indeksi diverziteta korova pšenice u uslovima dugotrajnih plodoreda  
15:30-15:40 Lyuben Zagorchev, Anita Tosheva, Denitsa Teofanova: Response of field dodder (*Cuscuta campestris* Yunck.) to salinity in dependence of the host plants  
15:40-15:50 Branka Ljevnaić-Mašić, Ljiljana Nikolić, Dejana Džigurski: Biološke karakteristike korovske flore u organskim usevima lekovitih i aromatičnih biljaka  
15:50-16:00 Snežana Jarić, Zorana Mataruga, Marina Mačukanović-Jocić, Dimitrije Sekulić, Olga Kostić, Miroslava Mitrović, Pavle Pavlović: Tradicionalna upotreba korovskih biljaka u lekovite svrhe na području Suve planine  
16:00-16:10 Markola Saulić, Mostafa Oveisi, Ivica Đalović, Vladan Jovanović, Dragana Božić, Sava Vrbničanin: Model za simulaciju procene rezerve semena korovskih biljaka u zemljištu  
16:10-16:20 Nenad Stavretović, Ana Novaković, Jovana Petrović, Nadežda Stojanović: Struktura travnjaka saobraćajnica u Beogradu

- 16:20-16:40 Diskusija po izloženim referatima / Discussion following the presented papers
- 16:40-16:55 Kafe pauza / Coffee break (Agrimatco d.o.o., Novi Sad)
- 16:55-18:00 Promocija knjiga / Book promotion**
- 17:15-18:00 Okrugli sto / Round table** Uprava za zaštitu bilja Ministarstva poljoprivrede, šumarstva i vodoprivrede „Zakon o sredstvima za zaštitu bilja“
- 19:00-22:00 Koktel dobrodošlice / Welcome cocktail**

**UTORAK / TUESDAY, 21.09.2021.**

**9:00-10:20 PLENARNI REFERATI / PLENARY LECTURES**

- Predsedavajući: Sava Vrbničanin, Siniša Mitrić*
- 9:00-9:20 Goran Malidža, Sava Vrbničanin, Miloš Rajković, Dragana Božić, Danijela Pavlović, Bojan Konstantinović, Katarina Jovanović-Radovanov, Nataša Samardžić: Stanje rezistentnosti korova na herbicide i antirezistentna strategija u Srbiji
- 9:20-9:40 Ilias Travlos, Panagiotis Kanatas, Nikolaos Antonopoulos, Alexandros Tataridas, Anastasia Tsekoura, Eleni Rapti, Ioannis Gazoulis: Glyphosate alternatives for weed management in perennial crops of Greece
- 9:40-10:00 Stevan Z. Knezević: Soybean response to micro-rates of dicamba and 2,4-D
- 10:00-10:20 Diskusija po izloženim referatima / Discussion following the presented papers
- 10:20-10:35 Kafe pauza / Coffee break (Agroarm d.o.o., Beograd)

**Sekcija: Savetovanje o herbicidima i regulatorima rasta**  
**Session: Symposium on herbicides and plant growth regulators**

- Predsedavajući: Goran Malidža, Maja Sudimac*
- 10:35-13:50 Usmeni referati / Oral presentations**
- 10:35-10:50 Goran Malidža, Miloš Rajković, Jovana Krstić, Siniša Jocić, Vladimir Miklič: Značaj halauksifen-metila za integrisano suzbijanje korova u suncokretu, sa posebnim osvrtom na suzbijanje ambrozije pelenaste rezistentne na ALS inhibitore
- 10:50-11:05 Mirjana Zorić: Razlike u efikasnosti herbicida primenjenih u usevu suncokreta
- 11:05-11:20 Miloš Rajković, Goran Malidža, Siniša Jocić, Sandra Cvejić: Reakcija hibrida suncokreta tolerantnih na imidazolinone i tribenuron-metil prema ALS inhibitorima koji se primenjuju u drugim usevima
- 11:20-11:40 Apostolidis Vassilios: Nova aktivna materija Arylex (Corteva Agriscience SRB d.o.o.)
- 11:40-12:00 Vladimir Ljubičić: Integralno suzbijanje korova – pristup kompanije Bayer (Bayer d.o.o.)
- 12:00-12:15 Kafe pauza / Coffee break (Agroglobe d.o.o., Novi Sad)
- 12:15-12:30 Aleksandar Sedlar, Aleksandra Paroški, Vladimir Višacki, Stanko Kerkez, Dejan Paroški, Rajko Bugarin, Filip Vasić: Varijabilna primena herbicida u zaštiti soje od korova

- 12:30-12:45 Jelena Perenčević: Efikasnost herbicida u soji u zavisnosti od meteoroloških uslova
- 12:45-13:05 Milan Mašić: BASF tehnologije u soji, proverena rešenja u borbi protiv rezistencije (BASF Srbija d.o.o.)
- 13:05-13:20 Jovana Delić, Julijana Ranković, Svetlana Jovičić: Suzbijanje korova u soji i kukuruzu u periodu 2017-2019. godine: demonstracioni ogledi
- 13:20-13:30 Danijela Stefanović: Agromarket tehnologija zaštite soje od korova (Agromarket d.o.o.)
- 13:30-13:50 Diskusija po izloženim referatima / Discussion following the presented papers
- 13:50-15:00 Pauza za ručak / Lunch break

**Sekcija: Sekcija: Savetovanje o herbicidima i regulatorima rasta**  
**Session: Symposium on herbicides and plant growth regulators**

*Predsedavajući: Dragana Božić, Jelena Perenčević*

- 15:00-18:25 Usmeni referati / Oral presentations**
- 15:00-15:15 Zoran Stojanović, Goran Malidža, Miloš Rajković, Jovana Krstić, Filip Franeta, Marko Kostić: Primena herbicida u usevu kukuruza pomoću bespilotne letelice
- 15:15-15:25 Milan Radović: Coltrane® kao novo rešenje protiv tvrdokornih korova u kukuruzu (Adama SRB d.o.o.)
- 15:25-15:40 Miloš Pavlović, Maja Sudimac, Branko Tomić: Efikasnost nekih herbicida u usevu šećerne repe
- 15:40-15:50 Vladimir Vasojević: Uloga herbicida Proman (metobromuron) u antirezistentnoj strategiji u EU (Belchim Crop Protection SRB d.o.o.)
- 15:50-16:05 Marija Sarić-Krsmanović, Goran Malidža, Dragana Božić, Ljiljana Radivojević, Jelena Gajić Umiljendić, Miloš Rajković, Sava Vrbničanin: Vilina kosica: stari problem traži nova rešenja
- 16:05-16:25 Diskusija po izloženim referatima / Discussion following the presented papers
- 16:25-16:40 Kafe pauza / Coffee break (Biogenesis d.o.o., Beograd)
- 16:40-16:50 Aleksandar Oštir: Kako se uspešno rešiti divljevog ovsa u strnim žitima (Syngenta Agro d.o.o.)
- 16:50-17:00 Aleksandar Lazar: XANADU - novi superioran herbicid u žitaricama (UPL)
- 17:00-17:10 Srđan Stevanović: Kontrola širokolisnih korova u strnim žitima - Futur (Chemical Agrosava d.o.o.)
- 17:10-17:20 Vladimir Miklič: NS hibridi suncokreta tolerantni na herbicide (Institut za ratarstvo i povrtarstvo, Institut od nacionalnog značaja za Republiku Srbiju)
- 17:20-17:35 Filip Vranješ, Dijana Zečević: Registracija proizvoda kompanije Galenika-fitofarmacija u Evropskoj Uniji
- 17:35-17:50 Milena Popov, Bojan Konstantinović, Nataša Samardžić, Tijana Stojanović: Mogućnost hemijskog suzbijanja korovske vrste *Asclepias syriaca*
- 17:50-18:05 Sreta Brkić: Praktična iskustva u suzbijanju korova u lekovitom bilju
- 18:05-18:25 Diskusija po izloženim referatima / Discussion following the presented papers
- 20:00-24:00 Svečana večera / Gala dinner**

**SREDA / WEDNESDAY, 22.09.2021.**

**Sekcija: INVAZIVNI KOROVI  
Session: INVASIVE WEEDS**

*Predsedavajući: Nenad Stavretović, Marija Sarić-Krsmanović*

**09:00-10:15 Usmeni referati / Oral presentations**

- 09:00-09:15 Martin Bobinac, Siniša Andrašev, Nikola Šušić: Prilagođena tehnika gajenja šuma za biološku kontrolu širenja invazivnih drvenastih neofita u šumarstvu
- 09:15-09:30 Ana Anđelković, Dušanka Cvijanović, Dragana Marisavljević, Maja Novković, Slađana Popović, Milica Živković, Danijela Pavlović, Snežana Radulović: Značaj riparijalnih područja Srbije u širenju invazivnih biljnih vrsta
- 09:30-09:45 Biljana Kelečević, Vladimir Petković, Zlatan Kovačević, Siniša Mitrić, Sava Vrbničanin: Distribution and invasiveness of *Xanthium* species in the territory of Bosnia and Herzegovina
- 09:45-09:55 Viktor József Vojnich, Orsolya Udvardy, Dóra Kajtor-Apatini, Tamás Szigeti, Adrienn Szarvas, László Makra, Donát Magyar: Pollen concentration of invasive tree of heaven (*Ailanthus altissima* L.) on the Northern Great Plain region (Hungary)
- 09:55-10:15 Diskusija po izloženim referatima / Discussion following the presented papers
- 10:15-10:30 Kafe pauza / Coffee break (Savacoop d.o.o., Novi Sad)

**Sekcija: HERBICIDI I REGULATORI RASTA BILJAKA  
Session: HERBICIDES AND PLANT GROWTH REGULATORS**

*Predsedavajući: Katarina Jovanović-Radovanov, Maja Meseldžija*

**10:30-13:05 Usmeni referati / Oral presentations**

- 10:30-10:45 Maja Šćepanović, Valentina Šoštarčić, Josip Lakić, Ana Pintar, Klara Barić: Prvo izvešće o procjeni rezistentnosti ambrozije (*Ambrosia artemisiifolia* L.) na ALS herbicide foramsulfuron, prosulfuron, tifensulfuron i imazamoks u Republici Hrvatskoj
- 10:45-11:00 Husrev Mennan, Mehmet Bozoğlu, Uğur Başer, Ivo Brants, Xavier Belvaux, Emine Kaya-Altop: Impact analysis of potential glyphosate regulatory restrictions in EU on Turkish orchards productions and economy
- 11:00-11:10 Boban Jakšić, Siniša Mitrić, Biljana Kelečević, Zoran Maličević: Uticaj okvašivača na kvašljivost radne tečnosti herbicida
- 11:10-11:20 Darko Jovanović, Ivan B. Cuvaca, Jon E. Scott, Stevan Z. Knežević: Uticaj PRE-EM herbicida na kritično vreme suzbijanja korova u soji
- 11:20-11:30 Maja Meseldžija, Milica Dudić, Todor Marković, Radovan Begović: Ekonomičnost primene herbicida u usevu kukuruza
- 11:30-11:50 Diskusija po izloženim referatima / Discussion following the presented papers
- 11:50-12:05 Kafe pauza / Coffee break (Sotex MS d.o.o., Novi Sad)
- 12:05-12:15 Dejan Nedeljković, Stevan Z. Knežević, Luka Milošević, Pavle Pavlović, Sava Vrbničanin: Uticaj meteoroloških uslova na kritičan period za suzbijanje korova i prinos useva kukuruza u Srbiji

- 12:15-12:25 Zvonko Pacanoski, Arben Mehmeti: Frequent and scarce precipitation affects efficacy of PRE-EM herbicides in sunflower (*Helianthus annuus* L.) grown on different soil types
- 12:25-12:35 Milan Brankov, Greg Kruger: Izbor rasprskivača smanjuje zanošenje herbicida
- 12:35-12:45 Ana Marjanović Jeromela, Goran Malidža, Jovana Krstić, Miloš Rajković, Dragana Rajković: Efekti primene regulatora rasta u usevu uljane repice
- 12:45-13:05 Diskusija po izloženim referatima / Discussion following the presented papers
- 13:05-13:35 **Diskusija po posterima / Discussion regarding the poster session**  
*Moderatori: Ana Anđelković, Milan Brankov*
- 13:35-15:00 Pauza za ručak / Lunch break

**Sekcija: INTEGRALNO SUZBIJANJE KOROVA**  
**Session: INTEGRATED WEED MANAGEMENT**

*Predsedavajući: Bojan Konstantinović, Jelena Gajić Umiljendić*

- 15:00-16:50 Usmeni referati / Oral presentations**
- 15:00-15:15 Robert Leskovšek, Aleš Kolmanič: Results of the IWMPRAISE project in Slovenia and possibilities of their implementation in the wider region
- 15:15-15:30 Milena Simić, Milan Brankov, Vesna Dragičević, Željko Dolijanović, Marijenka Tabaković: Efekti sistema integrisanih mera za suzbijanje korova u agroekološkim uslovima centralne Srbije
- 15:30-15:45 Biljana Vidović: Eriofidne grinje u funkciji biološke kontrole korova
- 15:45-16:00 Ahmet Uludağ, Deniz İnci, İlhan Üremiş, Kassim Al-Khatib: The need for integrated approach for fleabanes management
- 16:00-16:10 Sandra Cvejić, Siniša Jocić, Milan Jocković, Boško Dedić, Aleksandra Radanović, Vladimir Miklič, Dragana Miladinović: Genetic control of broomrape in sunflower
- 16:10-16:20 Osman Mohammed, Mark Szalai, Mihaly Zalai, Zita Dorner: Assessment of post-dispersal seed predation of *Ambrosia artemisiifolia* as an ecosystem service contribution to integrated weed management in Hungary
- 16:20-16:30 Jovan Lazarević, Sava Vrbničanin, Ana Dragumilo, Tatjana Marković, Aleksandra Savić, Dragana Božić: Mogućnosti suzbijanja korova u usevu angelike (*Angelica archangelica* L.)
- 16:30-16:50 Diskusija po izloženim referatima / Discussion following the presented papers
- 16:50-17:20 **Zaključivanje rada Kongresa / Closing ceremony**
- 18:00-20:00 **Ekskurzija / Excursion**

**ČETVRTAK / THURSDAY, 23.09.2021.**

- 8:00-10:00 **Ispraćanje gostiju / Firewell**

**POSTER PREZENTACIJE / POSTER PRESENTATIONS**

*BIOLOGIJA I EKOLOGIJA KOROVA / WEED BIOLOGY AND ECOLOGY*

1. Ana Anđelković, Goran Tmušić, Dragana Marisavljević, Mladen Marković, Dušanka Cvijanović, Snežana Radulović, Danijela Pavlović: Zastupljenost ekonomski značajnih korovskih vrsta u vegetaciji duž riparijalnih staništa i puteva na području Srbije
2. Ana Dragumilo, Tatjana Marković, Snežana Mrđan, Sara Mikić, Dragoja Radanović, Sava Vrbničanin, Dragana Božić: Korovska flora u konvencionalno gajenom lekovitom bilju na području južnog Banata
3. Ana Dragumilo, Sara Mikić, Tatjana Marković, Stefan Gordanić, Snežana Mrđan, Vladimir Filipović, Sava Vrbničanin, Dragana Božić: Kvalitativna i kvantitativna analiza korova u usevima lekovitog bilja
4. Vladan Jovanović, Kristina Krstić, Ivana Dragičević, Bogdan Nikolić, Hadi Waisi, Markola Saulić, Zlatko Giba: Klijanje semena biljke *Conium maculatum* različite zrelosti
5. Marina Mačukanović-Jocić, Maja Terzić, Dragana Rančić: Morfološke karakteristike polenovih zrna crnog sleza (*Malva sylvestris* L.)
6. Dragana Rančić, Srđan Stevanović, Ilinka Pećinar, Dragana Božić, Katarina Jovanović-Radovanov, Radenko Radošević, Sava Vrbničanin: Anatomska i mikromorfološka građa listova *Triticum aestivum* L., *Agropyrum repens* (L) Beauv., *Avena fatua* L. i *Lolium perenne* L.
7. Danijela Pavlović, Ana Anđelković, Zvonko Pacanocki, Dragana Božić, Sava Vrbničanin: Morfološki parametri semena *Avena fatua* kao parametri razlikovanja među populacijama iz Makedonije
8. Dragana Božić, Sava Vrbničanin, Olivera Petrović-Obradović, Nataša Duduk, Dragica Brkić, Biljana Vidović, Milan Ivanović, Milan Radivojević, Nina Vučković, Uroš Vojinović: Projekat HARISA: harmonizacija i unapređenje doktorskih studija iz oblasti fitomedicine

*SAVETOVANJE O HERBICIDIMA I REGULATORIMA RASTA / SYMPOSIUM OF HERBICIDES AND PLANT GROWTH REGULATORS*

9. Katarina Jovanović-Radovanov, Jelena Gajić Umiljendić, Marija Sarić-Krsmanović, Ljiljana Radivojević: Efikasnost umanjenih količina primene imazamoksa u kombinaciji sa bentazonom i pendimetalinom u usevu graška sa zalivnim sitemom
10. Zlatko Miličević, Anja Milosavljević, Nenad Trkulja: Primena graminicida za suzbijanje sirka u usevu šećerne repe i mogućnost mešanja sa fungicidima
11. Zlatko Miličević, Anja Milosavljević, Nenad Trkulja: Primena preparata Betanal tandem i Powertwin u zaštiti useva šećerne repe od korova
12. Ana Dragumilo, Tatjana Marković, Snežana Mrđan, Vladimir Filipović, Dragoja Radanović, Sava Vrbničanin, Dragana Božić: Uticaj malčeva na suzbijanje korova i prinos pitome nane (*Mentha x piperita*)

### INVAZIVNI KOROVI / INVASIVE WEEDS

- 13.Oimbo Lynnete, Okambo John: Invasive weed species of farming land and their impact on householder food security in western Kenya
- 14.Aleksandra Savić, Danica Živanović, Jovan Lazarević, Danijela Pavlović, Dragana Božić, Sava Vrbničanin: Kompetitivna sposobnost *Ambrosia artemisiifolia* u koasocijaciji sa *Ambrosia trifida*
- 15.Ana Anđelković, Lori Lawson Handley, Elizabete Marchante, Laura Verbrugge: Motivations of citizen scientists to engage in projects on invasive alien species
- 16.Vesna Stankov Jovanović, Violeta Mitić, Marija Marković, Marija Ilić, Sofija Rančić, Slobodan Ćirić, Jelena Nikolić: Potential use of invasive species *Xanthium italicum* as a metal accumulator in bioremediation
- 17.Marija Marković, Vesna Stankov Jovanović, Mirjana Smiljić, Marija Ilić, Violeta Mitić, Slobodan Ćirić, Jelena Nikolić: The heavy metal and chloroplast pigment content in invasive plant species *Erigeron canadensis* on mining waste deposits of lead zinc mine „Trepča”
- 18.Panagiotis Kanatas, Ilias Travlos: Contribution of early seed production, germination and allelopathic potential to the invasiveness of *Physalis angulata*

### HERBICIDI I REGULATORI RASTA BILJAKA / HERBICIDES AND PLANT GROWTH REGULATORS

- 19.Arben Mehmeti, Zvonko Pacanoski: Weed management with herbicides in climate changing conditions
- 20.Milan Brankov, Bruno Canella Vieira, Miloš Zarić, Guilherme Sousa Alves, Greg R. Kruger: Efikasnost mezotriona i rimsulfurona sa tifensulfuron-metilom u zavisnosti od rasprskivača i ađuvanata
- 21.Aleksandar Sedlar, Aleksandra Paroški, Stanko Kerkez, Dejan Paroški, Vladimir Višacki, Rajko Bugarin, Filip Vasić: Predikcija rasprostranjenosti korova u ratarskim usevima i varijabilna aplikacija herbicida
- 22.Filip Vranješ, Ilinka Pećinar, Steva Lević, Sava Vrbničanin, Dragana Božić: Procena uticaja mezotriona na sadržaj karotenoida u listovima primenom Ramanove spektroskopije
- 23.Pavle Pavlović, Adewale Osipitan, Stevan Z. Knežević: Effects of timing of weed removal and application of pre-emergence herbicides on growth of soybean
- 24.Panagiotis Kanatas: Effects of weeds growth stage on the efficacy of the herbicide pyroxsulam+florasulam at reduced rates in wheat
- 25.Katarina Jovanović-Radovanov: Uticaj rezidua imazetapira na sadržaj ukupnih proteina u korenu osetljivih gajenih biljaka
- 26.Snežana Mrđan, Jovan Crnobarac, Tatjana Marković, Ana Dragumilo, Sara Mikić, Stefan Gordanić, Dragoja Radanović: Mogućnost primene IBA stimulatora i IAA biostimulatora u oživljavanju reznica timijana (*Thymus vulgaris* L.)
- 27.Mira Pucarević, Milica Živković, Nataša Stojić, Dragana Linda Mitić, Vesna Teofilović: Herbicidi i njihovi ostaci u podzemnim vodama
- 28.Srđan Stevanović, Dragana Božić, Katarina Jovanović-Radovanov, Sava Vrbničanin: Mogućnost hemijskog suzbijanja *Avena fatua* L. u usevu ozime pšenice
- 29.Siniša Mitrić, Darko Golić, Vaskrsija Janjić, Dragana Božić, Vladan Jovanović, Zlatan Kovačević, Biljana Kelečević: Regresiona zavisnost efikasnosti zemljišnih herbicida u suzbijanju ambrozije od doze i broja dana proteklih nakon primene

30. Aleksandra Paroški, Aleksandar Sedlar, Vladimir Višacki, Dejan Paroški, Danilo Filipendin, Stanko Kerkez, Rajko Bugarin, Filip Vasić: Uticaj tipa rasprskivača na efikasnost suzbijanja korova u šećernoj repi
31. Milica Dudić, Maja Meseldžija, Verica Vasić: Komparacija efikasnosti metoda suzbijanja korovske vegetacije zasada topole
32. Bogdan Nikolić, Hadi Waisi, Sanja Đurović, Miloš Dugalić, Vladan Jovanović: Neki aspekti primene agrohemijskih sredstava na hranljivu vrednost i druge karakteristike useva
33. Darko Jovanović, Dragana Božić, Sava Vrbničanin, Milan Brankov: Uticaj aduvanata i rasprskivača na suzbijanje korova u kukuruzu nikosulfuronom
34. Miloš Krstić, Jelena Ovuka, Goran Malidža, Miloš Rajković, Jovana Krstić, Velimir Radić, Nemanja Čuk, Vladimir Miklič: Uticaj herbicida haloaksifen-metila na prinos i kvalitet semena inbred linija suncokreta
35. Milan Jocković, Siniša Jocić, Sandra Cvejić, Miloš Rajković, Goran Malidža: Inhibitori acetohidroksi kisele sintetaze (AHAS) u suncokretu

#### INTEGRALNO SUZBIJANJE KOROVA / INTEGRATED WEED MANAGEMENT

36. Bojan Konstantinović, Mirjana Kojić, Jovana Šućur, Nataša Samardžić, Milena Popov, Anamarija Koren, Senka Vidović: Uticaj ekstrakta *Cannabis sativa* na aktivnost gvajakol-peroksidaze u listovima *Echinochloa crus-galli*
37. Ognjen Živković, Alexandre Tonon Rosa, Strahinja Stepanović: Uticaj sistema obrade zemljišta na klijanje i nicanje leblebije i žutog graška
38. Sonja Gvozdenac, Snežana Tanasković, Dejan Prvulović, Jelena Ovuka, Sandra Cvejić, Filip Vukajlović: Biološka aktivnost nekih korovskih vrsta prema skladišnim štetočinama – pregled istraživanja
39. Đorđe Malenčić, Miloš Rajković, Goran Malidža, Biljana Kiprovska, Simonida Đurić: Impact of flaming on soybean plants and soil microorganisms
40. Jelena Gajić Umiljendić, Ljiljana Radivojević, Marija Sarić-Krsmanović, Ljiljana Šantrić: Alelopatski potencijal aktinobakterija za suzbijanje divljeg sirka (*Sorghum halepense* (L.) Pers.)
41. Jovana Šućur, Dejan Prvulović, Đorđe Malenčić, Nataša Samardžić, Bojan Konstantinović: Uticaj vodenog ekstrakta *Clinopodium menthifolium* Host na aktivnost antioksidativnih enzima u korovskoj vrsti *Bromus mollis* L.
42. Martin Bobinac, Zoran Gojković, Siniša Andrašev, Nikola Šušić, Milan Kabiljo: Polna struktura pajasena (*Ailanthus altissima* /Mill./ Swingle) u zaštićenom prirodnom dobru „Bajfordova šuma” na području Beograda – osnova za biološku kontrolu širenja i plansku redukciju
43. Nataša Samardžić, Bojan Konstantinović, Milena Popov: Efekat vodenih ekstrakata korovskih vrsta *Abutilon theophrasti* i *Xanthium strumarium* na prinos useva soje i kukuruza
44. Meriem Cheddadi, Mark Szalai, Judit Papp Komaromi, Jozsef Kiss: The route from weed control towards managing botanical diversity
45. Nenad Stavretović, Ana Novaković, Jovana Petrović, Nadežda Stojanović: Mere nege i održavanja travnjaka saobraćajnica u Beogradu

## **Potential use of invasive species *Xanthium italicum* as a metal accumulator in bioremediation**

**Vesna Stankov Jovanović<sup>1\*</sup>, Violeta Mitić<sup>1</sup>, Marija Marković<sup>1</sup>,  
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The industrial, mining and motor vehicle waste, are serious threats as sources of metal contamination of ecosystems. Thus, the use of plants- metal accumulators for bioremediation is very important. Content of 24 elements (Al, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Pb, Tl, V, Zn, As, B, Si, P, and Se) of invasive plant *Xanthium italicum* Moretti (family *Asteraceae*, *Heliantheae*) and corresponding soils from Serbia, was determined. Herb tissues of root, stem, and ripe fruit were examined. The samples were taken from tailing pond Gornje polje of the mine Trepča (Kosovo) and the locations near the mountain village Temska and Prosek (East Serbia). All samples were examined by the ICP-OES method, and the obtained results were compared. It was found that both soil and plant samples from the tailing pond Gornje polje contain a significant excess of a large number of elements. The soil sample from Gornje polje showed an expected enormous Pb and Zn concentration, but also a high value of As, Cd, Cr, Cu, Mn and Ni concentration, as well as an excess of Al, Co, and V. Corresponding plant sample contained and excess concentrations of heavy metals Pb, Zn, Cd, Cr, Mn, Cu, Ni and As, as well as the plants from the different location. The highest content of phosphorus and silicon was found in soil and fruit sample from Prosek. Results of this study suggest the possibility that *X. italicum* could be successfully used as a bioaccumulator of metals in the process of bioremediation.

**Keywords:** invasive plants, *Xanthium italicum*, metal content, soil pollution, bioremediation

## **The heavy metal and chloroplast pigment content in invasive plant species *Erigeron canadensis* on mining waste deposits of lead zinc mine „Trepča”**

**Marija Marković<sup>1\*</sup>, Vesna Stankov Jovanović<sup>1</sup>, Mirjana Smiljić<sup>2</sup>, Marija Ilić<sup>3</sup>,  
Violeta Mitić<sup>1</sup>, Slobodan Ćirić<sup>1</sup>, Jelena Nikolić<sup>1</sup>**

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The technological process of ore exploitation and processing in the Mining and Metallurgical Chemical Company “Trepča” has resulted in a large amount of discharged material, deposited on tailings that are mostly located in inappropriate areas, partially covered with vegetation, mostly consisted of several invasive plants, including the species *Erigeron canadensis* L. Content of heavy metals (Cd, Cu, Pb, Zn) were investigated in invasive plant species *E. canadensis*, collected from

abandoned tailings "Žitkovac". The samples were examined by the ICP-OES method. Chloroplast pigments from leaves on tailings "Žitkovac" and "Gornje polje" were determined spectrophotometrically. The content of chlorophyll *a*, chlorophyll *b*, the sum of chlorophyll *a* and *b*, the ratio of chlorophyll *a* and *b*, the content of carotenoids, as well as the ratio of the sum of chlorophyll *a* and *b* and carotenoids were examined. All obtained results were compared with the plant samples from the environment from the vicinity of Niš city. Content of Cd in in plant samples of *E. canadensis* from tailings "Žitkovac" was  $0.69\pm 0.01$  ppm (0.41% relative standard deviation (RSD)), content of Cu  $20.77\pm 0.24$  ppm (0.95% RSD), content of Pb  $9.44\pm 0.01$  ppm (0.64% RSD), and content of Zn  $79.05\pm 0.35$  ppm (0.46% RSD). In control plant samples from vicinity of Niš city content of heavy metals was smaller: Cd -  $0.35\pm 0.01$  ppm (0.19% RSD), Cu -  $15.63\pm 0.15$  ppm (0.95%), Pb -  $0.90\pm 0.03$  ppm (0.95% RSD), and Zn -  $69.25\pm 0.12$  ppm (0.19% RSD). All the mentioned parameters of chloroplast pigment contents were increased at tailings „Gornje polje“, except for the ratio of chlorophyll *a* and *b* (chlorophyll *a* / *b*), which was higher at the tailing pond "Žitkovac". The future investigations of biochemical and physiological changes in plants on metal tailings are necessary to better understand impact of soil contamination on mechanisms of acquiring resistance on polluted areas.

**Keywords:** invasive plants, *Erigeron canadensis*, metal content, chloroplast pigments

### **Contribution of early seed production, germination and allelopathic potential to the invasiveness of *Physalis angulata***

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Nonnative plants are often intentionally introduced for food, ornamental, medicinal, and other purposes. Cutleaf groundcherry (*Physalis angulata* L.) is an annual herb indigenous to many parts of the tropics and sub-tropics which lately was found during weed surveys in annual summer crops (e.g. maize, soybean, rice) and perennial crops (e.g. olive, citrus) in Greece. The aim of this study was to investigate impact early seed production and germination on invasiveness of *P. angulata*. Seed production of five *P. angulata* biotypes was accessed, while seed germination was also recorded. Also, pot experiments in growth chamber were carried out to determine the allelopathic effects of *P. angulata* on *Avena sativa* (oat) and *Spirodela polyrhiza* (L.) Schleid. (duckweed). Aerial parts (leaves, shoots and inflorescences) of *P. angulata* were collected in western Greece. The several plant parts were cut into small pieces, stored for a week at 0°C in the dark and extracted successively with deionized water. The tested concentrations were 100 and 200 mg/ml. Then, dilutions of 5 and 10% v/v were made and tested on the following parameters: seed germination and seedling growth of oat and fresh weight of duckweed. Findings revealed an early production of more than 1.000 seeds per plant and germination higher than 90% for all the biotypes. Regarding the evaluation of allelopathic potential, oat germination and biomass and duckweed fresh weight were significantly inhibited by the aqueous extracts of *P. angulata*, with the dilution of 10% v/v and inflorescence tissues showing the strongest inhibitory effect. Thus, the observed