



**XI INTERNATIONAL SYMPOSIUM OF
AGRICULTURAL SCIENCES**

BOOK OF ABSTRACTS

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**XI INTERNATIONAL
SYMPOSIUM OF
AGRICULTURAL SCIENCES**

**26-28, May, 2022
Trebinje
Bosnia and Herzegovina**

BOOK OF ABSTRACTS



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University of Banja Luka**

in cooperation with



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TABLE OF CONTENTS

SYMPOSIUM PROGRAM	10
LIST OF THE POSTERS	20
PLENARY LECTURES	30
Session 1: CROP SCIENCE	
Subsection: Poster Presentations	48
Session 1: CROP SCIENCE	
Subsection: Oral Presentations	100
Session 2: HORTICULTURE SCIENCE	
Subsection: Poster Presentation	124
Session 2: HORTICULTURE SCIENCE	
Subsection: Oral Presentations	181
Session 4: AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT	
Subsection: Poster Presentation	196
Session 4: AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT	
Subsection: Oral Presentation	212
Session 3: ANIMAL SCIENCE	
Subsection: Poster Presentation	223
Session 3: ANIMAL SCIENCE	
Subsection: Oral Presentations	245

SYMPOSIUM PROGRAM

PROGRAM OVERVIEW

Thursday 26 May		
13:00 – 18:00	Symposium registration	Coloseum
14:30 – 15:00	Opening ceremony	Hall 2
15:00 – 16:15	Plenary lectures	
16:15 – 16:45	Coffee break	Hotel Panorama
16:45 – 18:00	Plenary lectures	Hall 2
18:00 – 19:00	Drinks reception	Entno village
20:30 – 21:30	Concert of Trebinje Church Choir St. Vasilije Ostrški and Trebinjski	Coloseum
Friday 27 May		
08:30 – 17:00	Symposium registration	Coloseum
09:00 – 11:10	Session 1 Crop science 1	Hall 1
11:20 – 11:40	Coffee break	Hotel Panorama
11:40 – 13:30	Sesion 1 Crop science 2	Hall 1
09:00 – 11:30	Session 2 Horticulture 1	Hall 2
11:30 – 12:00	Coffee break	Hotel Panorama
12:00 – 14:00	Session 2 Horticulture 2	Hall 2
09:00 – 11:00	Sesion 3 Agricultural economics and rural development	Hall 3
11:00 – 11:30	Coffee break	Hotel Panorama
11:30 – 13:30	Session 4 Animal science	Hall 3
13:30 – 15:30	Lunch break	Hotel Panorama
15:30 – 17:30	Raund table	Hall 1
16:00 – 18:00	Conference of agricultural engineers of the Republic of Srpska	Hall 2
20:00	Gala evening	Hotel Panorama
Saturday 27 May, 2022		
09:00 – 13:00	Conference Tour	Milk factory Pađeni and Monastery Dobričevo

SCIENTIFIC PROGRAM

Thursday, May 26

	The City of Sun'Trebinje Hall 2
14:30 – 15:00	<ul style="list-style-type: none"> - Zlatan Kovačević, Dean of the Faculty of Agriculture, University of Banja Luka; - Radoslav Gajanin, Rector of the University of Banja Luka; - Boris Pašalić, Minister of Agriculture, Forestry and Water Management of the Republic of Srpska; - Srđan Rajčević, Minister for Scientific and Technological Development, Higher Education and Information Society; - Mladen Todorović, IAMB - Branimir Nježić, President of the Organizing Committee.
	The City of Sun'Trebinje Hall 2
Chair: Branimir Nježić, Mladen Todorović	
15:00 – 15:25 PL_01	Carlo Leifert INTEGRATED SOIL, CROP AND LIVESTOCK MANAGEMENT IN ORGANIC AGRICULTURE; A LOGICAL FRAMEWORK TO ENSURE FOOD SECURITY AND HUMAN HEALTH?
15:25 – 15:50 PL_02	Mary Ann Lila IF FOOD IS MEDICINE, THEM HOW CAN WE INCREASE ITS INFLUENCE ON IMMUNE HEALTH?
15:50 – 16:15 PL_03	Manuel Mota PLANT PARASITIC NEMATODES, FROM SOIL TO TOP OF PLANT: A CHALLENGE FOR OUR TIME
16:15 – 16:45	Coffee break
16:45 – 17:10 PL_04	Felix H. Arion DOING AGRIBUSINESS IN A COMPETITIVE ENVIRONMENT
17:10 – 17:35 PL_05	Z.T. Popovski, B. Tanaskovski, E. Miskoska – Milevska M. Terzic FURTHER CHALLENGES OF GENETIC MODIFICATION IN AGRICULTURE
17:35 – 18:00 PL_06	Milan Miroslavljević, Vojislava Momčilović, Tanja Dražić, Vladimir Aćin CHANGES IN PHYSIOLOGICAL AND QUALITY TRAITS RELATED TO THE BREEDING PROGRESS
18:00 – 19:00	Drinks reception

Friday, May 27

SESSION 1: CROP SCIENCE 1

Oral Presentations

The City of Sun'Trebinje Hall 1

Chair: Novo Pržulj, Mihajlo Marković, Jan Turan

09:00-09:15 O1_01	Nedović Viktor, Invited lecture SMART SPECIALIZATION STRATEGY: CONCEPT, METHODOLOGY, AGRI-FOOD AS AREA OF PRIORITY, REGIONAL VALUE CHAIN
09:15-09:25 O1_02	Mihajlo Marković, Zlatan Kovačević, Vojo Radić, Nataša Čereković, Jovana Žunić, Mladen Babić, Nery Zapata, Teresa A. Paço, Erminio Efisio Riezzo, Benjamin Crljenković, Sabrija Čadro, Mladen Todorović SMART AGRICULTURAL WATER MANAGEMENT OF MAIZE CROP CULTIVATION ON TWO DIFFERENT PEDOCLIMATIC LOCATIONS IN BOSNIA AND HERZEGOVINA
09:25-09:35 O1_03	Miloš Nožinić, Novo Pržulj, Dejan Simić ANALYSIS OF CLIMATE CHANGES IN PERI - PANNONIAN BASIN AND DINARIC REGION / BASIS FOR FUTURE AGRICULTURAL STRATEGIES
09:35-09:45 O1_04	Zapata, N., Playán, E., Castillo, R., Gimeno, Y., Oliván, I., Jiménez, A., Carbonell, X., Fabregas, M., López-Pardo, J.R., Vicente, L.M., Millán, J., Solano, D., Lorenzo, M.A. CLASSIFICATION OF IRRIGATED AREAS: APPLICATION TO THE CENTRAL EBRO RIVER BASIN (SPAIN)
09:45-09:55 O1_05	Enrique Playán, Nery Zapata, Borja Latorre, Javier Burguete IRRIGATION, HYDROLOGY AND CROP YIELD SIMULATION IN A SOLID-SET SPRINKLER IRRIGATED FARM
09:55-10:05 O1_06	Vladimir Višacki, Jan Turan, Aleksandar Sedlar, Patrik Burg, Vladimir Masan, Rajko Bugarin, Filip Vasić VARIABLE CORN SOWING BASED ON SOIL POTENTIAL
10:05-10:15 O1_07	Marko Mladenović, Jovan Pavlov, Zoran Čamdžija, Aleksandar Kovačević, Sanja Perić, Olivera Đorđević Melnik, Nikola Grčić GRAIN YIELD PERFORMANCE AND ADAPTATION TO DIFFERENT ENVIRONMENTAL CONDITIONS OF ZP COMMERCIAL MAIZE HYBRIDS
10:15-10:25 O1_08	Savo Vučković, Vera Popović, Vojo Radić, Dragan Terzić PRODUCTIVITY OF NATURAL GRASSLAND AND PASTURES OF SERBIA AND SRPSKA
10:25-10:35 O1_09	Sanja Vasiljević, Zorica Nikolić, Vojislav Mihailović, Snežana Katanski, Dalibor Živanov, Zlatica Mamlić, Vojin Đukić, Ana Uhlarik EFFECT OF CUTTING MANAGEMENT ON SEED YIELD, SEED YIELD COMPONENTS AND SEED QUALITY OF RED CLOVER (<i>TRIFOLIUM PRETENSE</i> L.)

10:35-10:45 O1_10	Snežana Brajević, Aleksandar Simić, Gordana Andrejić, Ružica Stričević, Željko Dželetović, Uroš Aleksić, Slaviša Đorđević THE EFFECTS OF FERTILIZATION TREATMENTS ON PHYTOREMEDIATION PROPERTIES OF TALL FESCUE (<i>FESTUCA ARUNDINACEA</i> SCHREB.)
10:45-11:00	Poster presentations Posters: P1_01 – P1_19
11:00-11:10	Discussion
11:10-11:30	Coffee break

SESSION 1: CROP SCIENCE 2

Oral Presentations

The City of Sun'Trebinje Hall 1

Chair: Sava Vrbničanin, Savo Vučković, Sandra Cvejić

11:30-11:45 O1_11	Goran Bekavac, Goran Malidža, Ivica Đalović, Božana Purar, Miroslav Zorić, Invited lecture CTM HYBRIDS – A UNIQUE SOLUTION IN MAIZE PRODUCTION
11:45-11:55 O1_12	Miloš Nožinić, Dejan Simić ANALYSIS OF SOYBEAN VARIETAL TRIALS IN 2015 AND 2016 / DANUBE SOYA PROJECT
11:55-12:05 O1_13	Desimir Knežević, Aleksandra Yu. Novoselskaya-Dragovich, Aleksandar Paunović, Danijela Kondić, Svetlana Roljević Nikolić, Adriana Radosavac, Tomislav Brzaković, Mirjana Menkovska VARIATION OF PROTEIN CONTENT IN WHEAT SEED
12:05-12:15 O1_14	Sandra Cvejić, Siniša Jocić, Milan Jocković, Boško Dedić, Sonja Gvozdenac, Aleksandra Radanović, Ankica Kondić Špika, Ana Marjanović Jeromela, Dragana Miladinović ADVANCED PHENOTYPING TECHNIQUES IN SUNFLOWER BREEDING
12:15-12:25 O1_15	Muftah Krayem STUDY OF THE AMINO ACID CONTENT OF TRITICALE TO COMPARE WITH OTHER CEREAL CROPS GENOTYPE
12:25-12:35 O1_16	Sonja Gvozdenac, Željko Milovac, Sandra Cvejić, Jelena Ovuka, Dragana Miladinović, Siniša Jocić, Miloš Krstić ARE DROUGHT AND PRECIPITATION PATTERNS AFFECTING SUNFLOWER SUSCEPTIBILITY WIREWORMS?
12:35-12:45 O1_17	Jernej Jakše, Ajay Kumar Mishra, Jaroslav Matoušek, Tanja Guček, Nataša Štajner, Sebastjan Radišek CBCVD VIROID THREAT TO EUROPEAN HOP PRODUCTION

12:45-12:55 O1_18	Andrej Sečnik, Nataša Štajner, Sebastjan Radišek, Mitja Križman, Jernej Jakše CYTOSINE METHYLATION IN GENOMIC DNA AND IDENTIFICATION OF DNA METHYLASES AND DEMETHYLASES IN VIROID-INFECTED HOP PLANTS (<i>HUMULUS LUPULUS</i> VAR. 'CELEIA')
12:55-13:20	Poster presentations: P1_20 – P1_40
13:20-13:30	Discussion

SESSION 2: HORTICULTURE 1	
Oral Presentations	The City of Sun'Trebinje Hall 2
Chair: Sanja Radonjić, Dragoslav Ivanišević, Miljan Cvetković	
09:00-09:15 O2_01	Dragoslav Ivanišević, Mladen Kalajdžić, Predrag Božović, Dragan Milošević, Invited lecture THE RESPONSE OF GRAPEVINE CULTIVARS TO CLIMATE CHANGE
09:15-09:25 O2_02	Darko Jaksic, Mirjam Vujadinovic Mandic, Ana Vukovic Vimic, Ivan Bradic, Jordana Ninkov, Bojan Mandic, Veljko Perovic PROKUPAC VINE VARIETY – IN EXPECTATION OF CLIMATE CHANGES
09:25-09:35 O2_03	Katarina Rudolf Pilih, Nataša Štajner, Jana Murovec, Borut Bohanec, Jernej Jakše RAPID BREEDING OF NEW CABBAGE (<i>BRASSICA OLERACEA</i> VAR. <i>CAPITATA</i> L.) HYBRID VARIETIES
09:35-09:45 O2_04	Sanja Lazić, Dragana Šunjka, Slavica Vuković, Dragana Bošković, Aleksandra Šušnjar, Antonije Žunić DISSIPATION AND RESIDUES OF EMAMECTIN BENZOATE IN PAPRIKA
09:45-09:55 O2_05	Milan Adamović, Mirjana Stojanović, Aleksandra Bočarov Stančić, Muhamed Harbinja, Jasmina Kustura INFLUENCE OF NATURAL AND ENRICHED PYROPHYLLITE ON ONION YIELD (<i>ALLIUM CEPA</i>)
09:55-10:05 O2_06	Milena Lakićević, Anja Đoković INVASIVE SPECIES IN THE OLD PARK IN TEMERIN (SERBIA)
10:05-10:15	Discussion
10:15-11:30	Poster presentations:P2_01 – P2_26
11:30-12:00	Coffee break

SESSION 2: HORTICULTURE 2	
Oral Presentations The City of Sun'Trebinje Hall 2	
Chair: Dragana Šunjka, Ivana Glišić, Miljan Cvetković	
12:00-12:15 O2_07	Maria João Carvalho, Silvina Ferro Palma, Invited lecture OLIVE OIL SENSORY QUALITY
12:15-12:25 O2_08	Sanja Radonjić, Snježana Hrnčić NON-EU FRUIT FLIES SERIOUS THREAT FOR EUROPEAN FRUIT PRODUCTION
12:25-12:35 O2_09	Mišaela Vakić, Duška Delić, Mariana Mihaljica, Amer Sunulahpašić, Janis Tzanetakis BLUEBERRY LATENT VIRUS IN HIGHBUSH BLUEBERRY (<i>VACCINIUM CORYMBOSUM</i> L.) IN BOSNIA AND HERZEGOVINA
12:35-12:45 O2_10	Slavica Vuković, Dragana Šunjka, Sanja Lazić, Antonije Žunić, Dragana Bošković, Miloš Petrović CONTROL OF <i>CYDIA POMONELLA</i> L. IN APPLE ORCHARDS USING SPINETORAM, PYRIPROXYFEN AND CHLORANTRANILIPROLE
12:45-12:55 O2_11	Biljana Lolić, Biljana Radusin Sopić, Jelena Nikitović, Marina Antić, Tatjana Milaković REVIEWING THE PROGRESS AND MEASURES FOR CONTROL OF <i>PHYTOPHTHORA FRAGARIAE</i> VAR. <i>RUBI</i>
12:55-13:05 O2_12	Vanja Miljanić, Denis Rusjan, Andreja Škvarč, Philippe Chatelet, Nataša Štajner ELIMINATION OF GRAPEVINE VIRUSES AND VIROIDS THROUGH IN VIVO THERMOTHERAPY AND IN VITRO MERISTEM TIP MICROGRAFTING
13:05-13:15	Discussion
13:15-13:45	Poster presentations Posters: P2_27 – P2_48
SESSION 3: AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT	
Oral Presentations The City of Sun'Trebinje Hall 3	
Chair: Željko Vaško, Stanislaw Minta, Nebojša Novković	
09:00-09:10 O3_01	Gordana Rokvić Knežić, Ljiljana Drinić EUROPEAN GREEN AGENDA AND IMPLICATIONS FOR AGRICULTURE AND RURAL DEVELOPMENT POLICY OF BOSNIA AND HERZEGOVINA
09:10-09:20 O3_02	Željko Vaško IMPACT OF THE COVID-19 PANDEMIC ON AGRICULTURE AND FOOD SUPPLY – EVIDENCE FROM THE REPUBLIC OF SRPSKA

09:20-09:30 O3_03	Leila Šeper FOOD FOR FUTURE - CONSUMER PERSPECTIVE
09:30-09:40 O3_04	Stanislaw Minta, Jerzy Koronczok INTEREST OF POLISH FARMERS IN WATER AND DRAINAGE INVESTMENTS – SELECTED RESULTS OF THE INOMEL PROJECT
09:40-09:50 O3_05	Vesna Mrdalj, Aleksandar Ostojić, Željko Vaško EXPORT COMPETITIVENESS OF MILK AND DAIRY PRODUCTS OF REPUBLIC OF SRPSKA ON THE INTERNATIONAL MARKET
09:50-10:00 O3_06	Nebojša Novković, Beba Mutavdžić, Nataša Vukelić, Blagoje Paunović, Veljko Šarac ANALYSIS AND FORECASTING OF FRUIT PRICES IN SERBIA
10:00-10:10 O3_07	Natalia Jędraszka FISH MARKET ANALYSIS WITH PARTICULAR EMPHASIS ON THE RECIRCULATING AQUACULTURE SYSTEM (RAS)
10:10-10:20 O3_08	Nemanja Jalić, Aleksandar Ostojić, Vesna Mrdalj EXTERNAL PRICE PARITIES OF WHEAT AND MAIZE IN THE REPUBLIC OF SRPSKA
10:20-10:30 O3_09	Rafal Ramut THE ECONOMIC SIGNIFICANCE OF BIOSTIMULANTS ON THE EXAMPLE OF ORCHARD PRODUCTION
10:30-10:40 O3_10	Zorica Srđević, Ružica Stričević, Bojan Srđević, Aleksa Lipovac CLIMATE CHANGE ADAPTATION MEASURES IN AGRICULTURE: PERSPECTIVE OF DIFFERENT EXPERTS' GROUPS
10:40-10:50	SWG group, Sponsored presentation
10:50-11:00	Discussion
11:00-11:30	Poster presentations: P3_01 – P3_12
11:30-12:00	Coffee break

SECTION 4: ANIMAL SCIENCES

Oral Presentations The City of Sun'Trebinje Hall 3

Chair: Biljana Rogić, Radica Đedović, Vesna Ganter

12:00-12:15 O4_01	Muhamed Brka, Radica Đedović, Snežana Trivunović, Vesna Gantner, Invited lecture SUSTAINABLE DEVELOPMENT OF LIVESTOCK PRODUCTION IN THE LIGHT OF CLIMATE CHANGE
12:15-12:30 O4_02	Vasco Fitas da Cruz, Invited lecture OVERVIEW OF RESEARCH AND EDUCATION ACTIVITIES IN PRECISION LIVESTOCK FARMING

12:30-12:45 O4_03	Vesna Gantner, Muhamed Brka, Božo Važić, Invited lecture THE PRECISION TECHNOLOGIES IN LIVESTOCK PRODUCTION
12:45-12:55 O4_04	Dragan Stanojević, Radica Đedović, Vladan Bogdanović, Krstina Zeljić Stojiljković, Nikolija Gligović, Ivan Mitrović, Marina Lazarević, Ljiljana Samolovac THE IMPACT OF BREEDING REGION AND LACTATION ON MILK YIELD TRAITS IN THE OF SIMMENTAL CATTLE POPULATION OF THE REPUBLIC OF SERBIA
12:55-13:05 O4_05	Bouhroum Nassima, Bensahli Belmehel HARM TO THE WELL-BEING OF THE UDDER AT THE LEVEL OF DAIRY FARMS OF SIDI MHAMED BENALI WILAYA OF RELIZANE (ALGERIA)
13:05-13:15 O4_06	Biljana Rogić, Ljuba Štrbac, Slađana Preradović, Božo Važić PHENOTYPIC DESCRIPTION OF THE LIPICANE HORSES POPULATION FROM BOSNIA AND HERZEGOVINA AND SERBIA
13:15-13:25	Discussion
13:25-14:10	Poster presentations: P4_01 – P4_21
	ROUND TABLE
	The City of Sun'Trebinje Hall 1
15:30-17:30	Future of education on agricultural faculties in Balkan countries
	Chair: to be unounced
	XXVII SAVJETOVANJE INŽINJERA POLJOPRIVREDE REPUBLIKE SRPSKE Stručno savjetovanje na temu: ORGANSKA POLJOPRIVREDA – SADAŠNJE STANJE I TENDENCIJE RAZVOJA
	Oral presentations
	The City of Sun'Trebinje Hall 2
	Moderator: Vida Todorović i Stoja Jotanović
16:00–16:05	Pozdravna riječ: Zlatan Kovačević, Siniša Mitrić
16:05 –16:25	Dragana Zec SADAŠNJE STANJE I PERSPEKTIVE RAZVOJA ORGANSKE POLJOPRIVREDE I ZAKONSKA REGULATIVA
16:25- 16:45	Željko Dolijanović POSEBNI (ALTERNATIVNI) SISTEMI GAJENJA U ORGANSKOJ POLJOPRIVREDI (PLODORED, ZDRUŽENI I POKROVNI USEVI)
16:45-17:05	Vida Todorović OSNOVNI PRINCIPI ORGANSKE PROIZVODNJE POVRĆA

17:05-17:25	Stoja Jotanović SPECIFIČNOSTI ANIMALNE ORGANSKE PROIZVODNJE
17:25-17:45	Grujica Vico SPECIFIČNOSTI MARKETINGA I TRŽIŠTA PROIZVODA U ORGANSKOJ PROIZVODNJI
17:45-18:00	Diskusija

LIST OF THE POSTERS

SESSION 1: CROP SCIENCE	
P1_01	Dorđe Todić, Dragan Mandić INFLUENCE OF DIFFERENT QUANTITIES OF NITROGEN FERTILIZERS ON YIELD AND QUALITY OF BANJA LUKA WHEAT VARIETIES JULIJA AND NOVA BOSANKA IN THE DRY 2021
P1_02	Gorica Cvijanović, Vesna Stepić, Marija Bajagić, Vojin Đukić, Jovana Sekulić, Vojin Cvijanović, Zlatica Miladinov INFLUENCE OF ZINC APPLICATION ON GRAIN YIELD AND LEAF AREA OF DIFFERENT MAIZE GENOTYPES
P1_03	Ljubomir Životić, Boško Gajić, Lazar Kaluđerović, Marija Ćosić, Vojislav Lazović DIFFERENCES IN DETERMINATION OF SOIL ERODIBILITY BETWEEN USLE NOMOGRAPH AND ERODIBILITY EQUATION
P1_04	Marijenka Tabaković IMPORTANCE OF SOWING DATE OPTIMIZATION FOR MORPHOLOGICAL PROPERTIES AND GRAIN YIELD
P1_05	Milan Biberdžić, Saša Barać, Dragana Lalević, Aleksandar Đikić, Jelena Stojiljković THE INFLUENCE OF FERTILIZATION ON SOIL COMPACTION AND MAIZE YIELD
P1_06	Željko Lakić, Marina Antić, Igor Đurđić INFLUENCE OF DIFFERENT FERTILIZATION TREATMENTS ON AGRONOMIC PROPERTIES OF BROAD BEANS (<i>VICIA FABAE</i> SSP. <i>EUFABA</i> VAR. <i>MAJOR HARZ.</i>)
P1_07	Vladimir Višacki, Jan Turan, Aleksandar Sedlar, Patrik Burg, Vladimir Masan, Rajko Bugarin, Filip Vasić VEGETATION INDICES FOR DIFFERENTIAL SOIL ZONES AND VARIABLE SOWING
P1_08	Zoran Maličević, Željko Lakić, Milan Jugović ADVANTAGE AND POSSIBILITIES OF APPLICATION OF PRECISE SYSTEMS IN AGRICULTURAL PRODUCTION
P1_09	Jovana Žunić, Dijana Mihajlović, Biljana Kelečević, Zlatan Kovačević PLANTS RESPONSE TO THE ELEVATED NICKEL (Ni) CONTENT IN THE SOIL
P1_10	Aleksandra Angeleska, Radmila Crceva Nikolovska, Elizabeta Dimitrieska Stojkovik, Zehra Hajrulai Musliu, Biljana Dimzoska Stojanovska, Ana Angelovska RADIONUCLIDE CONTAMINATION AND NUTRITIONAL EVALUATION OF MOSTLY USED WHEAT IN REPUBLIC OF NORTH MACEDONIA
P1_11	Gordana Andrejić, Snežana Brajević, Aleksandar Simić, Željko Dželetović, Uroš Aleksić, Dejan Sokolović ACCUMULATION OF HEAVY METALS IN ROOT AND SHOOT OF RED FESCUE GROWN AT THE FLOTATION TAILINGS DUMP

P1_12	Jelena Golijan, Aleksandar Ž. Kostić, Biljana P. Dojčinović, Danijel D. Milinčić, Mirjana B. Pešić, Slavoljub S. Lekić EFFECTS OF DIFFERENT PRODUCTION METHODS ON CONTENT OF SOME MICROELEMENTS IN SPELT SEED (<i>TRITICUM SPELTA</i>)
P1_13	Ljiljana Brbaklić, Milan Mirosavljević, Sanja Mikić, Verica Takač, Vladimir Aćin, Dragan Živančev PHENOTYPIC DIVERSITY OF THE MOST IMPORTANT AGRONOMICAL TRAITS IN A LONG-TERM BREEDING PERIOD OF BARLEY BREEDING IN SERBIA
P1_14	Ivica Djalovic, Goran Bekavac, Jegor Miladinovic, Jitendra Kumar, Vara Prasad ROOT TRAIT VARIABILITY IN CEREAL GRAIN CROPS: POTENTIAL USE IN BREEDING PROGRAMS TO ENHANCE ADAPTATION TO WATER STRESS
P1_15	Dalibor Tomić, Miloš Marjanović, Mirjana Radovanović, Vesna Đurović, Đorđe Lazarević, Vladeta Stevović, Nenad Pavlović INTERDEPENDENCE OF SEED YIELD COMPONENTS OF PUMPKIN (<i>CUCURBITA PEPO</i> L.) GENOTYPES
P1_16	Vojo Radić, Ilija Komljenović, Miloš Berić INTERDEPENDENCE OF YIELD AND SOYBEAN YIELD COMPONENTS
P1_17	Olivera Šimurina, Zvonko Nježić, Bojana Filipčev, Biljana Cvetković, Ivica Đalović, Goran Bekavac QUALITY CHARACTERISTICS OF TORTILLA CHIPS BASED ON DARK RED CORN
P1_18	Ankica Kondić-Špika, Dragana Trkulja, Svetlana Glogovac, Ana Marjanović Jeromela, Dragana Rajković, Dragana Miladinović INDUCED MUTATIONS IN CEREALS BREEDING
P1_19	Milan Stevanovic, Nikola Grčić, Milica Nikolić, Snežana Mladenović Drinić, Sanja Perić, Aleksandar Kovačević, Iva Savić ZP4242- A NEW MAIZE HYBRID
P1_20	Sreten Terzić, Sandra Cvejić, Milan Jocković, Siniša Jocić, Vladimir Miklič EFFECTS OF HIGH-TEMPERATURE STRESS ON MICROSPOROGENESIS AND POLLEN PRODUCTION IN SUNFLOWER
P1_21	Ivana Milenković, Ksenija Radotić EFFECT OF MANGANESE ON ANTIOXIDANT ACTIVITY IN MAIZE
P1_22	Snežana Mladenović Drinić, Milica Nikolić, Jelena Vukadinović, Mirjana Srebrić, Slavica Stanković, Violeta Anđelković GENETIC VARIABILITY OF MAIZE GRAIN ANTIOXIDANT COMPAUNDS
P1_23	Sanja Mikić, Milan Mirosavljević, Ljiljana Brbaklić, Vladimir Aćin, Radivoje Jevtić, Dragan Živančev ANALYSIS OF LOCAL SERBIAN WHEAT VARIETIES AND LANDRACES AS A NEW SOURCE OF VARIABILITY FOR BREEDING
P1_24	Jelena Golijan ORGANIC VS. CONVENTIONAL FOODS: DIFFERENCES IN NUTRIENTS
P1_25	Željko Dolijanović, Milena Simic, Snežana Oljača, Vesna Dragičević, Nemanja Gršić, Zoran Jovović THE MOST IMPORTANT CROP MEASURES IN ORGANIC PRODUCTION OF WINTER WHEAT

P1_26	Dragana Popović, Savo Vučković, Vera Rajčić, Vladimir Filipović, Jela Ikanović, Nataša Ljubičić, Vera Popović ECONOMICALLY IMPORTANT OILSEED FLAX -NS PRIMUS
P1_27	Vesna Kandić, Dejan Dodig, Slađana Žilić, Marijana Simić, Valentina Nikolić ZP BELIJA- WHEAT VARIETY FOR CONFECTIONERY INDUSTRY
P1_28	Nevena Nagl, Lovro Sinković, Mirjana Vasić, Vladimir Meglič, Aleksandra Savić, Zorica Nikolić, Gordana Petrović, Barbara Pipan, Ana Marjanović Jeromela EVALUATION OF <i>LATHYRUS SATIVUS</i> L. SEED FOR PROTEIN CONTENT AND TRYPSIN INHIBITOR ACTIVITY
P1_29	Mira Vojvodić, Brankica Tanović, Petar Mitrović, Ivana Vico, Aleksandra Bulajić PATHOGENIC POTENTIAL OF <i>WAITEA CIRCINATA</i> VAR. <i>ZEAE</i>
P1_30	Vojislav Trkulja, Andrija Tomić OCCURENCE, IMPORTANCE AND CONTROL OF <i>RAMULARIA COLLO-CYGNU</i> – AN EMERGING PATHOGEN IN BARLEY
P1_31	Markola Saulic, Ivica Djalovic, Mostafa Oveisi, Dragana Božić, Sava Vrbničanin CROP ROTATION INFLUENCE ON VERTICAL WEED SEED BANK
P1_32	Zlatan Kovačević, Biljana Kelečević, Siniša Mitrić, Jovana Žunić THREATENED COMMUNITIES <i>NYMPHAEION ALBAE</i> OBERDOFER 1957 ALLIANCE DEVELOPMENT IN RAMSAR AREA OF BARDAČA
P1_33	Biljana Kelečević, Siniša Mitrić, Zlatan Kovačević, Sava Vrbničanin RESPONSE OF <i>XANTHIUM ORIENTALE</i> L. TO GLYPHOSATE
P1_34	Siniša Mitrić, Radmila Radulović, Biljana Kelečević, Zlatan Kovačević, Vaso Bojanić EFFECT OF GLYPHOSATE ON WHEAT SEEDLINGS DEPENDING ON THE CHARACTERISTICS OF THE WATER
P1_35	Elizabet Janić Hajnal, Jovana Kos, Bojana Radić, Radmila Radović, Ivica Đalović, Božana Purar CLIMATE CHANGE: THE IMPACT ON AFLATOXIN CONTAMINATION IN CEREALS
P1_36	Milica Nikolić, Iva Savić, Vesna Kandić, Milan Stevanović, Slavica Stanković OCCURRENCE OF TOXIGENIC FUNGI ON SPELT GRAIN WITH SPECIAL REFERENCE TO <i>ASPERGILLUS</i> SPECIES
P1_37	Iva Savić, Milica Nikolić, Vesna Kandić, Slavica Stanković OCCURRENCE OF MYCOTOXINS IN WHEAT GRAIN DURING THE PERIOD 2020 – 2021 IN SERBIA
P1_38	Vesna Vidović, Petar Nikolić, Snježana Hrnčić, Branimir Nježić MONITORING OF THE BROWN MARMORATED STINK BUG (<i>HALYOMORPHA HALYS</i> STÅL) IN BANJA LUKA, IN 2020 AND 2021
P1_39	Ankica Sarajlić, Marija Ravlić, Irena Jug, Boris Đurđević, Bojana Brozović, Andreas Horvatović, Danijel Jug EFFECT OF SOIL AND FERTILIZATION MANAGEMENT ON MAIZE SUSCEPTIBILITY TO EUROPEAN CORN BORER (<i>OSTRINIA NUBILALIS</i> HÜBNER)
P1_40	Stanislava Lazarevska, Alirami Saliji, Vesna Krsteska OCCURENCE OF <i>PHTHORIMAEA OPERCULELLA</i> (ZELLER, 1873) IN POLOG REGION OF NORTH MACEDONIA

P1_41 Urban Kunej , Ester Stajič , Jernej Jakše , Sebastjan Radišek, Nataša Štajner
 IDENTIFICATION OF MICRORNA TARGETS RESPONSIVE TO *V. NONALFALFAE* INFECTION OF HOP (*HUMULUS LUPULUS L.*)

SESSION 2: HORTICULTURE

P2_01 Nataša Štajner, Kasunič T., Cesar T., Tatjana Jovanović-Cvetković, Gordana Đurić, Mandić A., Leko M., Nikolić D., Ranković Vasić Z., Ivanišević D., Beleski K., Dervishi A., Biniari K., Zdunić G., Lukšić K. , Ana Mucalo, Bubola M., Rusjan D., Maraš V., Bacilieri R., Jakše J.
 VARIABILITY OF CHLOROPLASTS AND TARGETED NUCLEAR DNA OF GRAPEVINE (*VITIS SP.*)

P2_02 Zorica Ranković-Vasić, Tatjana Jovanović-Cvetković, Mirjam Vujadinović Mandić, Jelena Ivanović, Milenko Blesić, Dragan Nikolić
 SPECIFICS OF GROWING LOCALITY AND THEIR IMPACT ON THE GRAPE AND WINE QUALITY OF BLACK GRAPEVINE VARIETIES

P2_03 Zoran Pržić, Nebojša Marković, Aleksandar Simić, Željko Dželetović, Mariana Niculescu
 TECHNOLOGICAL CHARACTERISTICS OF CABERNET SAUVIGNON CV CLONES GROWN IN CONDITIONS OF KRNJEVO VINE AREA

P2_04 Zorica Ranković-Vasić, Mirjam Vujadinović Mandić, Ana Vuković, Marija Čosić,
 Dunja Sotonica, Danijela Živojinović, Mihailo Andrić, Dragan Nikolić
 INFLUENCE OF TEMPERATURE VALUES ON GRAPE QUALITY PARAMETERS IN CABERNET SAUVIGNON GRAPEVINE VARIETY

P2_05 Tatjana Jovanović-Cvetković, Srđan Bojbaša, Đurađ Hajder, Rada Grbić
 CHARACTERISTICS OF TABLE VARIETIES MATILDE AND VICTORIA IN AGROECOLOGICAL CONDITIONS OF MOSTAR

P2_06 Draga Graora, Marija Simonović
 INFESTATION RATE OF *PHYLLOCNISTIS VITEGENELLA CLEMENS* IN COMMERCIAL VINEYARD IN NEŠTIN

P2_07 Lisov Nikolina, Petrović Aleksandar, Plavšić Ivana, Ljiljana Gojković Bukarica
 EXTRACTION KINETICS OF PHENOLIC ACIDS DURING PROLONGED MACERATION TIME AND VINIFICATION OF CABERNET SAUVIGNON GRAPE VARIETY

P2_08 Sonja Rašeta, David Ducanović, Đorđe Umićević, Borut Bosančić, Marina Antić
 AGRO-MORPHOLOGICAL CHARACTERIZATION OF PEPPER (*CAPSICUM ANNUUM L.*) ACCESSIONS FROM GENE BANK OF REPUBLIC OF SRPSKA

P2_09 Barbara Pipan, Marina Antić, Dragana Rajković, Lovro Sinkovič, Sonja Rašeta, Nevena Nagl, Smiljana Goreta Ban, Vladimir Meglič, Vida Todorović, Ana Marjanović Jeromela
 ASSESSMENT OF MOLECULAR DIVERSITY OF *BRASSICA OLERACEA* VAR. *ACEPHALA*

P2_10	Lovro Sinkovič, Barbara Pipan, Mihaela Skrt, Nataša Poklar Ulrih, Vladimir Meglič NUTRACEUTICAL AND MULTI-ELEMENT PROFILE OF ELEPHANT GARLIC (<i>ALLIUM AMPELOPRASUM</i> L.) AND COMMON GARLIC (<i>ALLIUM SATIVUS</i> L.) FROM SLOVENIA
P2_11	Nenad Pavlović, Miloš Marjanović, Jelena Mladenović, Dalibor Tomić, Ljiljana Bošković Rakočević, Đorđe Moravčević, Jasmina Zdravković HEREDITY MODE OF DURATION OF VEGETATIVE STAGE IN ONION (<i>ALLIUM CEPA</i> L.)
P2_12	Vida Todorović, Senad Murtić, Nikolina Đekić, Marina Antić, Borut Bosančić MORPHO-PHYSIOLOGICAL CHARACTERISTICS OF RAMSON (<i>ALLIUM URSINUM</i> L.)
P2_13	Đorđe Moravčević, Marko Krstić, Jelica Gvozdanović-Varga, Aleksandar Ž. Kostić, Ana Vujošević, Sofija Kilibarda, Sandra Vuković THE CONTENT OF METALS AND METALLOIDS IN BULBS OF DIFFERENT GENOTYPES OF <i>ALLIUM</i> SPECIES
P2_14	Đorđe Moravčević, Slavica Jelačić, Ana Vujošević, Sofija Kilibarda, Jelena Pantović, Sandra Vuković INFLUENCE OF LETTUCE CULTIVAR ON MORPHOLOGICAL PROPERTIES AND YIELD
P2_15	Jelena Pantović, Sandra Vuković, Sofija Kilibarda, Aleksa Lipovac, Maja Sudimac, Marija Čosić, Djordje Moravčević EFFECTS OF CONTINUOUS FERTILIZATION ON THE TOMATO SEEDLING QUALITY
P2_16	Nokolina Đekić, Vida Todorović, Đorđe Moravčević, Borut Bosančić, Jelena Sladoje INFLUENCE OF SHADING NET ON CHLOROPHYLL CONTENT, RELATIVE WATER CONTENT AND WEIGHT OF LETTUCE
P2_17	Mihajlo Voruna, Zorana Djekanović, Igor Dabić, Duška Delić DETECTION OF SOFT ROT BACTERIA CAUSING POTATO BLACKLEG AND TUBER SOFT ROOT
P2_18	Jelena Čukanović, Sara Đorđević, Radenka Kolarov ADAPTABILITY OF INDIGENOUS VEGETATION ON PARKING LOTS. CASE STUDY: TREE ALLEYS IN NOVI SAD, SERBIA
P2_19	Mirjana Mladenović, Nataša Saric COURT GARDEN IN SREMSKI KARLOVCI – NATURAL AND CULTURAL HERITAGE OF SERBIA
P2_20	Jelena Davidović Gidas, Milana Vuković, Svjetlana Zeljković CONCEPTUAL LANDSCAPE DESIGN OF CENTRAL PEDESTRIAN ZONE IN LAKTAŠI (BIH)
P2_21	Svjetlana Zeljković, Ivana Kozomara, Jelena Davidović Gidas, Margarita Davitkovska, Zvezda Bogevska SEED GERMINATION OF <i>CALENDULA OFFICINALIS</i> L. UNDER INFLUENCE OF DIFFERENT LIGHT CONDITIONS
P2_22	Stefan Gordanić, Dragoja Radanović, Vladimir Filipović, Snežana Mrđan, Sara Mikić, Željana Prijić, Ana Dragumilo, Tatjana Marković THE INFLUENCE OF ORGANIC BIOSTIMULATORS ON THE GROWTH AND DEVELOPMENT OF MEDICINAL AND AROMATIC PLANT SPECIES <i>OCIMUM BASILICUM</i> L. AND <i>LEVISTICUM OFFICINALE</i> L.

P2_23	Relja Suručić, Stevan Samardžić, Dragana Radulović, Željko Lakić, Nikola Travar, Marina Antić CHEMICAL CHARACTERIZATION AND ACE-INHIBITORY ACTIVITY OF ACETONE EXTRACT OF <i>GERANIUM ROBERTIANUM</i> L. FLOWER
P2_24	Rodoljub Oljača, Sunčica Bodružić, Nikola Travar, Borut Bosančić, Jelena Davidović Gidas, Nataša Pašalić HEALTH AND SAFETY RISK ANALYSIS OF <i>PLATANUS X ACERIFOLIA</i> (AITON) WILLD. IN THE PROTECTED AREA "UNIVERSITY CITY" BY THE METHOD OF ACOUSTIC TOMOGRAPHY
P2_25	Marija Jovanović, Jelena Milovanović GEOMETRIC MORPHOMETRICS APPLICATION IN HORTICULTURE: A CASE STUDY OF RHODODENDRON LEAVES
P2_26	Anastasija Đurić, Predrag Ilić, Gordana Đurić FLOWERING OF AUTOCHTHONOUS APPLES IN THE CONDITIONS OF BANJA LUKA
P2_27	Slađana Marić, Ivana Glišić, Nebojša Milošević, Jelena Tomić, Mira Milinković, Sanja Radičević, Milena Đorđević IN SITU CHARACTERISATION OF SERBIAN AUTOCHTHONOUS PEAR (<i>PYRUS COMMUNIS</i> L.) GENOTYPES
P2_28	Sanja Radičević, Slađana Marić, Radosav Cerović, Milena Đorđević, Ivana Glišić, Nebojša Milošević FLORAL BIOLOGY AND S-INCOMPATIBILITY RESEARCH IN CHERRIES AT FRUIT RESEARCH INSTITUTE, ČAČAK – AN OVERVIEW
P2_29	Tanja Krmpot, Marija Kuprešak, Ljubomir Radoš MORPHOLOGICAL CHARACTERIZATION OF BLACKTHORN POPULATION IN THE MUNICIPALITY OF ŠIPOVO AREA
P2_30	Dragan Nikolić, Vera Rakonjac, Ratko Đorđević, Đorđe Boškov, Milana Stojanoski, Mirjam Vujadinović-Mandić PHENOTYPIC VARIABILITY OF FRUIT PROPERTIES IN CLONES OF SOUR CHERRY ŠUMADINKA VARIETY
P2_31	Ivana S. Glišić, Žaklina Karaklajić-Stajić, Vladislav Ognjanov, Nebojša Milošević, Sanja Radičević, Slađana Marić, Milena Đorđević PROPERTIES OF NEW EUROPEAN PLUM GENOTYPES DEVELOPED IN SERBIA
P2_32	Danilo Vidović, Nikola Mičić, Gordana Đurić INITIAL YIELD POTENTIAL OF THREE CHERRY CULTIVARS ON TWO COMBINATIONS OF ROOTSTOCKS/INTERSTOCK
P2_33	Zlatan Ristić, Boris Pašalić, Borut Bosančić, Mirela Kajkut Zeljković, Predrag Ilić, Danilo Vidović THE EFFECT OF GIBBERELIC ACID TREATMENT ON THE SOLUBLE SOLID CONTENT IN FRUITS OF TWO CHERRIE VARIETES, KORDIA AND REGINA
P2_34	Gordana Barać, Zoran Keserović, Nenad Magazin, Biserka Milić, Maja Milović, Jelena Kalajdžić THE EFFECTS OF PLANTING DISTANCE ON THE PRODUCTIVITY OF PLUM CULTIVARS GRAFTED ON ISHTARA ROOTSTOCK
P2_35	Milana Stojanoski, Boban Djordjevic, Gordan Zec INFLUENCE OF CALCIUM OXIDE AND HYDROXYCORIC ACIDS ON STORAGE OF PLUM VARIETIES

P2_36	Milana Kočić, Đurađ Hajder, Miljan Cvetković BERRY QUALITY OF NORTHERN HIGHBUSH BLUEBERRY (<i>VACCINIUM CORYMBOSUM</i> L.) DURING THE HARVEST SEASON
P2_37	Jurij Rakun, Miljan Cvetković AN ESTIMATE OF LIDAR SUPPORTED SPRAYING OPTIMIZATION FOR SELECTED CASES OF PLUM TREE CULTIVARS
P2_38	Vojislav Trkulja, Gordana Babić, Bojana Ćurković, Bojana Vuković, Jelena Mihić Salapura, Jovana Prijić, Nedić Bogdan SURVEY ON THE PRESENCE OF <i>PLUM POX VIRUS</i> , THE CAUSAL AGENT OF SHARKA IN REPUBLIC OF SRPSKA DURING 2016-2021
P2_39	Jovana Knjeginjić, Sandra M Bijelić, Marina Lazarević, Zoran Đogić, Borivoje Bogdanović, Goran Jaćimović EVALUATION OF STREIF'S INDEX AND SENSORY PROPERTIES OF FOUR CLUB APPLE VARIETIES IN EASTERN SERBIA
P2_40	Sanda Stanivuković, Damjana Topić, Boris Pašalić STABILITY OF VITAMIN C IN APPLE FRUITS DURING SHELF LIFE
P2_41	Ljubomir Radoš, Tanja Krmpot, Bogdan Šormaz THE NUMBER AND THE CHARACTER OF LEAF MASS IN DIFFERENT CATEGORIES OF FRUITING TWIGS IN PEAR TREES
P2_42	Vojislav Trkulja, Gordana Babić, Bojana Ćurković, Bojana Vuković, Jelena Mihić Salapura, Jovana Prijić, Bogdan Nedić FIRE BLIGHT SURVEY IN REPUBLIC OF SRPSKA DURING 2016-2021
P2_43	Gorica Paunović, Radmila Ilić, Tomo Milošević, Ivan Glišić, Mila Terzić ECONOMIC BENEFITS OF RASPBERRY GROWING IN A PROTECTED AREA
P2_44	Marijana Pešaković, Jelena Tomic, Zaklina Karaklajic Stajic, Boris Rilak, Svetlana M Paunovic, Radosav Cerovic MANAGING GREY MOULD (<i>BOTRYTIS CINEREA</i> PERS.) ON STRAWBERRY GROWN UNDER ECOSAFE PROTECTIVE SYSTEM
P2_45	Petar Nikolić, Marko Lisica, Branimir Nježić RESULTS OF MONITORING OF SPOTTED WING DROSOPHILA (<i>DROSOPHILA SUZUKII</i> , MATZUMURA) IN THE REPUBLIC OF SRPSKA
P2_46	Nikola Grujić, Branimir Nježić, Milan Radivojević POPULATION DECLINE OF <i>GLOBODERA ROSTOCHIENSIS</i> POPULATION IN SERBIA IN THE ABSENCE OF THE HOST
P2_47	Zorana Miladinović, Siniša Mitrić, Boban Jakšić, Branimir Nježić EVALUATION OF POTENTIAL OF FOUR ENTOMOPATHOGENIC NEMATODES TO CONTROL BUXUS TREE MOTH (<i>CYDALIMA PERSPECTALIS</i> WALKER)

SESSION 3: AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT

P3_01	Marija Nikolić, Tamara Paunović, Dejana Vučković APPLICATION OF NEW TECHNOLOGIES IN TRANSFER OF KNOWLEDGE AND INFORMATION IN AGRICULTURE
P3_02	Dragan Dokić, Maja Gregić, Mirna Gavran, Vesna Gantner THE ANALYSIS OF BUSINESS BEHAVIOUR IN TERMS OF THE CRISIS OF THREE AGRICULTURAL COMPANIES FROM CROATIA, SERBIA AND SLOVENIA
P3_03	Stanislav Zekić, Bojan Matkovski, Danilo Đokić AGRICULTURAL POLICY AND PRODUCTIVITY GROWTH IN SERBIA UNDERGOING THE EU INTEGRATION PROCESS
P3_04	Ana Kalušević, Mile Veljović APPLICATION OF LOW/ZERO WASTE MODELS IN AGRICULTURAL COOPERATIVES IN SERBIA
P3_05	Benjamin Debrah QUANTITATIVE MEASUREMENT OF AGRICULTURAL SUPPORT IN GHANA USING PSE (PRODUCER SUPPORT ESTIMATE) INDICATOR
P3_06	Bojan Srđević, Zorica Srđević FORECASTING LONG-TERM METEOROLOGICAL DROUGHTS AND ITS POSSIBLE IMPACT ON AGRICULTURE IN VOJVODINA PROVINCE, SERBIA
P3_07	Mihajlo Munćan, Jelena Đoković, Vladimir Zdravković IMPACT OF CLIMATE CONDITIONS OF VOJVODINA ON SOYBEAN YIELDS
P3_08	Ljiljana Drinić, Gordana Rokvić Knežić, Dragana Manojlović THE INFLUENCE OF LEGISLATION ON THE OPERATION OF FAMILY ENTREPRENEURSHIPS IN AGROBUSINESS
P3_09	Despina Popovska Stojanov, Lazo Dimitrov, Dushko Nedelkovski, Melpomena Popovska, Marija Gjosheva Kovachevikj DETERMINATION OF THE PRODUCTION PRICE OF BRANDY MADE FROM GOJI BERRY
P3_10	Bojan Dimitrijević, Jelena Golijan, Vladimir Zdravković THE STATE OF ORGANIC BUCKWHEAT PRODUCTION IN THE REPUBLIC OF SERBIA
P3_11	Miroslav Nedeljković, Adis Puška, Milorad Đokić EVALUATION OF CRITERIA WHEN SELECTING AGRICULTURAL MACHINERY SUPPLIERS
P3_12	Dragana Drobnjak, Nenad Katanić, Jelena Čubrilo Vranac, Maja Šćekić THE AGRICULTURAL INSURANCE SYSTEM IN THE REPUBLIC OF SERBIA AS A RESPONSE MEASURE TO CLIMATE CHANGE
P3_13	Viktoria Kostrzewinska THE NATURAL AND ORGANIC COSMETICS MARKET AS A PROMISING BIOECONOMY SECTOR

SESSION4: ANIMAL SCIENCE

P4_01	Maja Gregić, Mirjana Baban, Tina Bobić, Dragan Dokić, Vesna Gantner PHYSIOLOGICAL AND ETHOLOGICAL ASPECTS OF HORSE FEEDING
P4_02	Nemanja Marić, Bratislav Pešić, Nikola Stolić, Nebojša Zlatković, Filip Stanimirović AN ANALYSIS OF SIMMENTAL BREED PRODUCTION RESULTS IN THE MUNICIPALITY OF LOZNICA BEFORE AND DURING THE COVID19 PANDEMIC
P4_03	Tina Bobić, Borna Buban, Pero Mijić, Maja Gregić, Vesna Gantner FREE TRAFFIC IN ROBOTIC MILKING OF COWS THROUGH ETIOLOGICAL AND WELFARE APPROACH
P4_04	Marko Živić, Bratislav Pešić, Nikola Stolić, Nebojša Zlatković HOOF TRIMMING AS FACTOR AFFECTING MILK PRODUCTION IN HIGH-PRODUCING DAIRY COWS
P4_05	Draženko Budimir YIELD AND ABATEMENT OF TRAPPIST CHEESE “MARIJA ZVIJEZDA”
P4_06	Stoja Jotanović, Aleksandar Plavšić, Grozdana Kosić, Đorđe Savić, Marinko Vekić, Zora Čolović – Šarić INCUBATION RESULTS OF HEAVY LINE HYBRID BREEDING EGGS WITH CRACKED SHELL AND MEMBRANE
P4_07	Stoja Jotanović, Milica Mihajlović, Đorđe Savić, Lidija Perić STATE OF BIOSECURITY ON COOPERATIVE BROILER FARMS
P4_08	Nebojša Savić, Dragan Mikavica EFFECTS OF HIGH WATER TEMPERATURE ON EMBRYONIC DEVELOPMENT AND DIFFERENT TIMES OF INITIAL NUTRITION ON SURVIVAL AND GROWTH OF JUVENILE RAINBOW TROUT (<i>ONCORHYNCHUS MYKISS</i>)
P4_09	Rajko Roljić, Sadbera Trožić-Borovac, Radoslav Dekić, Maja Manojlović, Maja Šibarević, Vera Nikolić, Elvira Hadžiahmetović Jurida INVESTIGATION OF MORPHOMETRIC SPECIFICATION OF CRAYFISH (<i>AUSTROPOTAMOBIOUS TORRENTIUS SCHRANK, 1803</i>) IN SUBOTICA RIVER, BOSNIA AND HERZEGOVINA
P4_10	Marko Cincović, Maja Došenović Marinković, Biljana Delić Vujanović, Radojica Đoković, Miloš Petrović, Dražen Kovačević, Nenad Staničkov ANALYSIS OF THE FREQUENCY DISTRIBUTION OF METABOLIC PARAMETERS IN A POOLED SAMPLE IN EARLY LACTATING COWS
P4_11	Ksenija Čobanović, Ivan Pihler, Saša Krstović, Denis Kučević, Anka Miloradov, Andjela Todić, Bačo Zarubica THE INFLUENCE OF THE SAEASON ON MILK UREA CONTENT IN DAIRY GOAT FARMS
P4_12	Đorđe Savić, Stoja Jotanović, Bojana Bajagić RELATIONSHIP BETWEEN THE CHARACTERISTICS OF ESTRAL MUCUS AND THE RESULTS OF ARTIFICIAL INSEMINATION OF COWS
P4_13	Stoja Jotanović, Milan Nojkić, Đorđe Savić INFLUENCE OF PARITY AND FARROWING SEASON ON REPRODUCTIVE CHARACTERISTICS OF SOWS

P4_14	Maja Šibarević, Rajko Roljić, Snežana Ritan, Zoran Kovačević REVIEW OF HEMORRHAGIC FEVER WITH RENAL SYNDROME (HFRS) AND LEPTOSPIROSIS IN THE REPUBLIC OF SRPSKA, 2014-2018
P4_15	Božana Odžaković, Slavica Grujić, Goran Vučić, Jovanka Popov-Raljić APPLICATION OF SENSORY ANALYSIS IN THE ASSESSMENT OF THE QUALITY OF MEAT PRODUCTS WITH DIFFERENT SODIUM CHLORIDE CONTENT
P4_16	Miroslava Polovinski-Horvatović, Saša Krstović, Dragan Glamočić, Igor Jajić, Ivan Radović, Mile Mirkov, Snežana Mišović THE OCCURRENCE OF HEAVY METALS (Pb AND Cd) IN THE KIDNEYS OF WILD BOAR (<i>SUS SCROFA</i>), MANGULICA AND FATTENING PIGS
P4_17	Filip Stanimirović, Bratislav Pešić, Nikola Stolić, Nebojša Zlatković, Milena Milojević, Nemanja Marić A REVIEW OF PHEASANT HATCHING PRODUCTION RESULTS AT THE RISTOVAČA PHEASANT FARM IN THE PERIOD BETWEEN 2019 AND 2021
P4_18	Miodrag Đorđević, Bratislav Pešić, Nikola Stolić, Nebojša Zlatković IMPACT OF FAT LEVELS IN A MEAL ON PHEASANT CHICKS' GROWTH UNDER CONTROLLED BROODING CONDITIONS
P4_19	Dejan Beuković, Igor Obranović, Marko Vukadinović, Zoran Popović, Miroslava Polovinski-Horvatović, Vukan Lavadinović, Miloš Beuković ANALYSIS OF THE QUALITY OF ROE DEER NUTRITION IN WINTER AND SPRING PERIOD IN THE HUNTING GROUND
P4_20	Nikola Mihailović, Zoran Popović, Stefan Stepić, Dejan Beuković, Vukan Lavadinović AGE STRUCTURE AND REAL GROWTH RATE OF BROWN HARE (<i>LEPUS EUROPAEUS</i> P.) AT THE SERBIAN HUNTING GROUNDS IN 2021
P4_21	Nikola Mihailović, Zoran Popović, Stefan Stepić, Dejan Beuković, Vukan Lavadinović POSSIBILITY OF APPLYING HIGHER DRYING TEMPERATURE OF EYE LENSES IN ORDER TO DETERMINE THE AGE OF BROWN HARE (<i>LEPUS EUROPAEUS</i> PALLAS)

PI_14

Root trait variability in cereal grain crops: potential use in breeding programs to enhance adaptation to water stress

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Abstract

Crop root systems directly interact with soil in capturing water and nutrients. Root system architecture and growth has important functional implications for the timing and extent of soil water and nutrient extraction, yet selection for root traits in breeding programs has been limited due to the labour-intensive and costly phenotyping methods for characterizing roots in field crops. The objectives of this research were to identify root traits in key cereals grain crops (maize, sorghum and wheat) that can be potentially employed as candidate traits conferring water stress tolerance. Genotypes within these crops has large variation in different root traits. Root traits such as total root length, root length at various depths, rooting depth, numbers and area of fine roots and nodal root angle. These traits have the potential to serve as functional parameters for plant breeding programs aimed at developing genotypes with improved resource use efficiency and adaptation to adverse environments (e.g., drought stress), enhancing overall crop productivity. Modification of root system architecture could contribute to improvements of desirable biomass, yield, drought tolerance, and resiliency under isolated or combined nutrient deficiencies. Some of the key root traits can form a basis for aiming to producing specific materials for improved adaptation to target production environments (TPEs).

Key words: root traits, cereal grain crops, adaptation, stressful environments