



**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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**Faculty of Agriculture
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Republic of Srpska**



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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 Jędroszka 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
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17:25-17:45	Grujica Vico SPECIFIČNOSTI MARKETINGA I TRŽIŠTA PROIZVODA U ORGANSKOJ PROIZVODNJI
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PI_20

Effects of high temperature stress on microsporogenesis and pollen production in sunflower

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Abstract

Heat stress can affect pollen production as it may interrupt the process of microsporogenesis and prevent normal pollen development. The aim of this research was to investigate whether occurrence of male sterile plants in a male fertile sunflower accession may be due to the heat stress during microsporogenesis. Male sterile and male fertile plants of an inbred line were analyzed by evaluating development of anthers, presence of pollen, pollen vitality and analysis of meiosis – microsporogenesis. Anthers of male sterile plants were poorly developed and without pollen while fertile plants had pollen vitality of 98%. Analysis of meiosis showed normal diakinesis with 17 bivalents in both sterile and fertile plants. However, the following phases were all with abnormalities in sterile plants (metaphase I 6-18%, anaphase I 6-10%, telophase II 32-46%), while in fertile plants abnormalities were also present but less expressed with 5, 1 and 20% respectively. After telophase II, microspores were found sporadically but smaller than normal, deformed and without an exine. Variable degree of observed irregularities was most probably caused by non uniform flowering and therefore variable exposure to heat stress in the pre-anthesis period. According to literature, heat stress can cause male sterility in plants as temperatures higher than 32/26°C day/night disrupt microsporogenesis, development of pollen epidermis and endothecium. Daily maximum temperature in the 15 days prior to full flowering of the analysed accession was on average 36°C. Therefore, continuous exposure to high temperatures may have caused male sterility in the most affected plants manifested by complete interruption of microsporogenesis and less developed anthers.

Key words: Heat stress, microsporogenesis, sunflower, male sterility