

# BOOK OF ABSTRACTS



*XIV International Scientific Agriculture Symposium  
"Agrosym 2023"  
Jahorina, October 05-08, 2023*



# **BOOK OF ABSTRACTS**

**XIV International Scientific Agriculture Symposium  
“AGROSYM 2023”**



**Jahorina, October 05 - 08, 2023**

## Impressum

XIV International Scientific Agriculture Symposium „AGROSYM 2023“

### Book of Abstracts Published by

University of East Sarajevo, Faculty of Agriculture, Republic of Srpska, Bosnia  
University of Belgrade, Faculty of Agriculture, Serbia  
Mediterranean Agronomic Institute of Bari (CIHEAM - IAMB) Italy

International Society of Environment and Rural Development, Japan  
Balkan Environmental Association (B.EN.A), Greece  
Centre for Development Research, University of Natural Resources and Life Sciences  
(BOKU), Austria  
Perm State Agro-Technological University, Russia  
Voronezh State Agricultural University named after Peter The Great, Russia  
Tokyo University of Agriculture  
Shinshu University, Japan  
Faculty of Agriculture, University of Western Macedonia, Greece  
Enterprise Europe Network (EEN)  
Faculty of Agriculture, University of Akdeniz - Antalya, Turkey  
Selçuk University, Turkey

University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania  
Slovak University of Agriculture in Nitra, Slovakia  
Ukrainian Institute for Plant Variety Examination, Kyiv, Ukraine  
National University of Life and Environmental Sciences of Ukraine, Kyiv, Ukraine  
Valahia University of Targoviste, Romania  
National Scientific Center „Institute of Agriculture of NAAS“, Kyiv, Ukraine  
Saint Petersburg State Forest Technical University, Russia  
University of Valencia, Spain  
Faculty of Agriculture, Cairo University, Egypt  
Tarbiat Modares University, Iran  
Chapingo Autonomous University, Mexico

Department of Agricultural, Food and Environmental Sciences, University of Perugia, Italy  
Higher Institute of Agronomy, Chott Mariem-Sousse, Tunisia  
Watershed Management Society of Iran  
Institute of Animal Science- Kostinbrod, Bulgaria  
SEASN- South Eastern Advisory Service Network, Croatia  
Faculty of Economics Brcko, University of East Sarajevo, Bosnia and Herzegovina  
Biotechnical Faculty, University of Montenegro, Montenegro  
Institute of Field and Vegetable Crops, Serbia  
Institute of Lowland Forestry and Environment, Serbia  
Institute for Science Application in Agriculture, Serbia  
Agricultural Institute of Republic of Srpska - Banja Luka, Bosnia and Herzegovina  
Maize Research Institute “Zemun Polje”, Serbia  
Faculty of Agriculture, University of Novi Sad, Serbia  
Institute for Animal Science, Ss. Cyril and Methodius University in Skopje, Macedonia  
Academy of Engineering Sciences of Serbia, Serbia  
Balkan Scientific Association of Agricultural Economics, Serbia  
Institute of Agricultural Economics, Serbia

**Editor in Chief**

Dusan Kovacevic

**Technical editors**

Sinisa Berjan  
Milan Jugovic  
Rosanna Quagliariello

**Website:**

<http://agrosym.ues.rs.ba>

CIP - Каталогизација у публикацији  
Народна и универзитетска библиотека  
Републике Српске, Бања Лука

631(048.3)(0.034.4)

INTERNATIONAL Scientific Agricultural Symposium "Agrosym  
2023" (14 ; Jahorina)

Book of Abstracts [Електронски извор] / XIV International  
Scientific Agriculture Symposium "Agrosym 2023", Jahorina,  
October 05 - 08, 2023 ; [editor in chief Dušan Kovačević]. - East  
Sarajevo =Istočno Sarajevo : Faculty of Agriculture =Poljoprivredni  
fakultet, 2023. - 1 електронски оптички диск (CD-ROM) : текст,  
слика ; 12 cm

Системски захтеви: Нису наведени. - Насл. са насл. екрана. -  
Регистар.

ISBN 978-99976-987-7-3

COBISS.RS-ID 139166465

**XIV International Scientific Agricultural Symposium “Agrosym 2023”  
Jahorina, October 05-08, 2023, Bosnia and Herzegovina**

**HONORARY COMMITTEE**

- Mr. Savo Minic**, Minister of Agriculture, Water Management and Forestry of Republic of Srpska, Bosnia and Herzegovina  
**Dr. Zeljko Budimir**, Minister of Scientific-Technological Development, Higher Education and Information Society of Republic of Srpska, Bosnia and Herzegovina  
**Prof. dr Mario T. Tabucanon**, President of the International Society of Environment and Rural Development, Japan  
**Prof. dr Milan Kulic**, Rector of the University of East Sarajevo, Bosnia and Herzegovina  
**Prof. dr Dusan Zivkovic**, Dean of the Faculty of Agriculture, University of Belgrade, Serbia  
**Dr. Maurizio Raeli**, Director of the Mediterranean Agronomic Institute of Bari, Italy  
**Prof. dr Metin Aksoy**, Rector of the Selcuk University, Turkey  
**Prof. dr Aleksey Andreev**, Rector of the Perm State Agro-Technological University, Russia  
**Prof. dr Alexey Yu. Popov**, Rector of the Voronezh State Agricultural University named after Peter The Great, Russia  
**Prof. dr Barbara Hinterstoisser**, Vice-Rector of the University of Natural Resources and Life Sciences (BOKU), Austria  
**Prof. dr Sorin Mihai Cimpeanu**, Rector of the University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania  
**Doc. Ing. Klaudia Halászová**, Rector of the Slovak University of Agriculture in Nitra, Slovakia  
**Prof. dr Calin D. Oros**, Rector of the Valahia University of Targoviste, Romania  
**Prof. Dr Katerina Melfou**, Dean of the Faculty of Agriculture, University of Western Macedonia, Greece  
**Prof. dr Amr Ahmed Mostafa**, Dean of the Faculty of Agriculture, Cairo University, Egypt  
**Prof. dr José Sergio Barrales Domínguez**, Rector of the Chapingo Autonomous University, Mexico  
**Prof. dr Davut Karayel**, Dean of Faculty of Agriculture, University of Akdeniz - Antalya, Turkey  
**Prof. Dr EGUCHI Fumio**, Rector of the Tokyo University of Agriculture, Japan  
**Prof Dr Sait Gezgin**, Dean of Faculty of Agriculture, University of Selçuk- Konya, Turkey  
**Dr Chokri Thabet**, the General Director of the High Agronomic Institute of Chott Mariem, Sousse, Tunisia  
**Prof. dr Ivan Yanchev**, Director of the Institute of Animal Science- Kostinbrod, Bulgaria  
**Prof. dr Seyed Hamidreza Sadeghi**, Professor at Tarbiat Modares University and the President of the Watershed Management Society of Iran, Iran  
**Prof. dr Francesco Tei**, Director of the Department of Agricultural, Food and Environmental Sciences, University of Perugia, Italy  
**Prof. dr Viktor Kaminskyi**, Director of National Scientific Center „Institute of Agriculture of NAAS“, Kyiv, Ukraine  
**Dr. Igor Hrovatič**, President of South Eastern Advisory Service Network, Croatia  
**Prof. dr Mirza Dautbasic**, Dean of the Faculty of Forestry, University of Sarajevo, Bosnia and Herzegovina  
**Prof. dr Bozidarka Markovic**, Dean of the Biotechnical Faculty, University of Podgorica, Montenegro  
**Prof. dr Rade Jovanovic**, Director of the Institute for Science Application in Agriculture, Serbia  
**Prof. dr Lazar Radovanovic**, Dean of the Faculty of Economics Brcko, University of East Sarajevo, Bosnia and Herzegovina  
**Prof. dr Vojislav Trkulja**, Director of Agricultural Institute of Republic of Srpska - Banja Luka, Bosnia and Herzegovina  
**Dr. Miodrag Tolimir**, Director of the Maize Research Institute “Zemun Polje”, Serbia  
**Prof. Dr. Jegor Miladinović**, Director of the Institute of Field and Vegetable Crops, Serbia  
**Prof. dr Nedeljko Tica**, Dean of the Faculty of Agriculture, University of Novi Sad, Serbia  
**Prof. dr Rodne Nastova**, Director of the Institute for Animal Science, Skoplje, Macedonia  
**Prof. dr Sasa Orlovic**, Director of the Institute of Lowland Forestry and Environment, Serbia  
**Prof. dr Jonel Subic**, Director of the Institute of Agricultural Economics, Serbia  
**Prof. dr Branko Kovacevic**, President of the Academy of Engineering Sciences of Serbia, Serbia  
**Prof. dr Radovan Pejanovic**, President of Balkan Scientific Association of Agricultural Economics, Serbia

**SCIENTIFIC COMMITTEE**

- Chairman: Academician Prof. dr Dusan Kovacevic**, Faculty of Agriculture, University of Belgrade, Serbia  
**Prof. dr Machito Mihara**, Tokyo University of Agriculture, Japan  
**Prof. dr John Brayden**, Norwegian Agricultural Economics Research Institute (NILF), Norway  
**Prof. dr Steve Quarie**, Visiting Professor, School of Biology, Newcastle University, United Kingdom  
**Prof. dr Andreas Melcher**, CDR, University of Natural Resources and Life Sciences (BOKU), Vienna, Austria  
**Prof. dr Dieter Trautz**, University of Applied Science, Germany

**Prof. dr Sergei Eliseev**, Vice-Rector for Research and Innovations, Perm State Agro-Technological University, Russia  
**Prof. dr Dani Shtienberg**, full professor, Department of Plant pathology and Weed Research, ARO, the Volcani Center, Bet Dagan, Israel  
**Prof. dr William Meyers**, Howard Cowden Professor of Agricultural and Applied Economics, University of Missouri, USA  
**Prof. dr Markus Schermer**, Department of Sociology, University of Innsbruck, Austria  
**Prof. dr Thomas G. Johnson**, University of Missouri – Columbia, USA  
**Prof. dr Fokion Papathanasiou**, School of Agricultural Sciences, University of Western Macedonia, Greece  
**Prof. dr Sabahudin Bajramovic**, Faculty of Agriculture and Food Sciences, University of Sarajevo, Bosnia and Herzegovina  
**Prof. dr Hiromu Okazawa**, Faculty of Regional Environment Science, Tokyo University of Agriculture, Japan  
**Prof. dr Tatiana Sivkova**, Faculty for Veterinarian Medicine and Zootechny, Perm State Agro-Technological University, Russia  
**Prof. dr Aleksej Lukin**, Voronezh State Agricultural University named after Peter The Great, Russia  
**Prof. dr Matteo Vittuari**, Faculty of Agriculture, University of Bologna, Italy  
**Prof. dr Seyed Mohsen Hosseini**, Faculty of Natural Resources, Tarbiat Modares University, Iran  
**Prof. dr Ardian Maci**, Faculty of Agriculture and Environment, Agricultural University of Tirana, Albania  
**Prof. dr Regucivilla A. Pobar**, Bohol Island State University, Philippines  
**Prof. dr Sudheer Kundukulangara Pulissery**, Kerala Agricultural University, India  
**Prof. dr EPN Udayakumara**, Faculty of Applied Sciences, Sabaragamuwa University, Sri Lanka  
**Prof. dr Vladimir Smutný**, full professor, Mendel University, Faculty of agronomy, Czech Republic  
**Prof. dr Franc Bavec**, full professor, Faculty of Agriculture and Life Sciences, Maribor, Slovenia  
**Prof. dr Jan Moudrý**, full professor, Faculty of Agriculture, South Bohemia University, Czech Republic  
**Prof. dr Stefan Tyr**, full professor, Faculty of Agro-biology and Food Resources, Slovakia  
**Prof. dr Natalija Bogdanov**, Faculty of Agriculture, University of Belgrade, Serbia  
**Prof. dr Richard Barichello**, Faculty of Land and Food Systems, University of British Columbia, Canada  
**Prof. dr Francesco Porcelli**, University of Bari Aldo Moro, Italy  
**Prof. dr Vasilije Isajev**, Faculty of Forestry, University of Belgrade, Serbia  
**Prof. dr Elazar Fallik**, Agricultural Research Organization (ARO), Volcani, Israel  
**Prof. dr Junaid Alam Memon**, Pakistan Institute of Development Economics, Pakistan  
**Prof. dr Jorge Batlle-Sales**, Department of Biology, University of Valencia, Spain  
**Prof. dr Pandi Zdruli**, Land and Water Resources Department; IAMB, Italy  
**Prof. dr Mladen Todorovic**, Land and Water Resources Department; IAMB, Italy  
**Dr. Hamid El Bilali**, Mediterranean Agronomic Institute of Bari, Italy  
**Prof. dr Maksym Melnychuk**, National Academy of Agricultural Science of Ukraine, Ukraine  
**Prof. dr Borys Sorochnytskyi**, Ukrainian Institute for Plant Variety Examination, Kyiv, Ukraine  
**Dr. Lorenz Probst**, CDR, University of Natural Resources and Life Sciences (BOKU), Vienna, Austria  
**Prof. dr Dragana Sunjka**, Faculty of Agriculture, University of Novi Sad, Serbia  
**Prof. dr Miodrag Dimitrijevic**, Faculty of Agriculture, University of Novi Sad, Serbia  
**Prof. dr Mohsen Boubaker**, High Institute of Agronomy of Chott Meriem, Sousse, Tunisia  
**Dr. Nouredin Driouech**, Coordinator of MAIB Alumni Network (FTN), Mediterranean Agronomic Institute of Bari, Italy  
**Prof. dr Ion Viorel**, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania  
**Prof. dr. Chuleemas Boonthai Iwai**, Faculty of Agriculture, Khon Kaen University, Thailand  
**Prof. dr Wathuge T.P.S.K. Senarath**, Department of Botany, University of Sri Jayewardenepura, Colombo, Sri Lanka  
**Dr. Hamada Abdelrahman**, Soil Science Dept., Faculty of Agriculture, Cairo University, Egypt  
**Prof. dr Maya Ignatova**, Agricultural Academy – Sofia, Bulgaria  
**Prof. dr Ioannis N. Xynias**, School of Agricultural Technology & Food Technology and Nutrition, Western Macedonia University of Applied Sciences, Greece  
**PhD ing. Artur Rutkiewicz**, Department of Forest Protection, Forest Research Institute - IBL, Poland  
**Prof. dr Mohammad Sadegh Allahyari**, Islamic Azad University, Rasht Branch, Iran  
**Dr. Lalita Siri wattananon**, Faculty of Agricultural Technology, Rajamangala University of Technology Thanyaburi (RMUTT), Thailand  
**Prof. dr Konstantin Korlyakov**, Perm Agricultural Research Institute, Russia  
**Dr. Mohammad Farooque Hassan**, Shaheed Benazir Bhutto University of Veterinary & Animal Sciences Sakrand, Sindh, Pakistan  
**Dr. Larysa Prysiashniuk**, Ukrainian Institute for Plant Variety Examination, Kyiv, Ukraine  
**Prof. dr Oksana Kliachenko**, National University of Life and Environmental Science of Ukraine, Ukraine  
**Prof. dr Ivan Simunic**, Department of amelioration, Faculty of agriculture, University of Zagreb, Croatia  
**Dr. Abid Hussain**, International Centre for Integrated Mountain Development (ICIMOD), Nepal  
**Dr. Amrita Ghatak**, Gujarat Institute of Development Research (GIDR), India  
**Prof. dr Naser Sabaghnia**, University of Maragheh, Iran

**Dr. Karol Wajszczuk**, Poznan University of Life Sciences, Poland  
**Prof. dr Penka Moneva**, Institute of Animal Science - Kostinbrod, Bulgaria  
**Prof. dr Mostafa K. Nassar**, Animal husbandry Dept., Faculty of Agriculture, Cairo University, Egypt  
**Prof. dr Márta Birkás**, full professor, St. Istvan University, Godollo - Hungary  
**Prof. dr Andrzej Kowalski**, Director of the Institute for Agricultural and Food Economy, Warszawa-Poland  
**Prof. dr Yalcin Kaya**, The Director of the Plant Breeding Research Center, University of Trakya, Turkey  
**Prof. dr Sanja Radonjic**, Biotechnical Faculty, University of Montenegro, Montenegro  
**Prof. dr Ionela Dobrin**, Department for Plant Protection, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania  
**Prof. dr Inocencio Buot Jr.**, Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Banos, Philippines  
**Prof. dr Monica Paula Marin**, Department for Animal Husbandry, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania  
**Prof. dr Nedeljka Nikolova**, Institute for Animal Science, Ss. Cyril and Methodius University in Skopje, Republic of Macedonia  
**Prof. dr Mohammad Al-Mamun**, Department of Animal Nutrition, Bangladesh Agricultural University, Bangladesh  
**Prof. dr Anucha Wittayakorn-Puripunpinyoo**, School of Agriculture and Co-operatives, Sukhothai Thammathirat Open University, Nonthaburi, Thailand  
**Dr. Redouane Choukr-Allah**, International Center for Biosaline Agriculture (ICBA), United Arab Emirates  
**Prof. dr Ignacio J. Díaz-Maroto**, High School Polytechnic, University of Santiago de Compostela, Spain  
**Prof. dr Nidal Shaban**, University of Forestry Sofia, Bulgaria  
**Prof. dr Mehdi Shafaghati**, Faculty of Geography, Tarbiat Moalem (kharazmi) University, Iran  
**Prof. dr Youssif Sassine**, Lebanese University Beirut, Lebanon  
**Prof. dr Cafer Topaloglu**, Faculty of Tourism, Mugla Sitki Kocman University, Turkey  
**Prof. dr Seyed Hamidreza Sadeghi**, Faculty of Natural Resources, Tarbiat Modares University, Iran  
**Prof. dr Mohsen Mohseni Saravi**, University of Teheran and Member of WMSI Management Board, Iran  
**Prof. dr Branislav Draskovic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Prof. dr Mahmood Arabkhedri**, Soil Conservation and Watershed Management Research Institute and Member of WMSI Management Board, Iran  
**Prof. dr Ataollah Kavian**, Sari Agricultural Science and Natural Resources University and Member of WMSI Management Board, Iran  
**Prof. dr Tugay Ayasan**, Department of Organic Farming Business Management, Osmaniye, Applied Science School of Kadirli, Osmaniye Korkut Ata University, Turkey  
**Prof. dr Sakine Özpınar**, Department of Farm Machinery and Technologies Engineering, Faculty of Agriculture, Çanakkale Onsekiz Mart University, Çanakkale, Turkey  
**Prof. dr Sherein Saeide Abdelgayed**, Faculty of Veterinary Medicine, Cairo University, Cairo, Egypt  
**Prof. dr Zohreh Mashak**, Islamic Azad University, Karaj Branch, Iran  
**Dr. Khalid Azim**, National Institute of Agriculture Research, Morocco  
**Dr. Mario Licata**, Department of Agricultural, Food and Forest Sciences, University of Palermo, Italy  
**Prof. dr Srdjan Lalic**, University of East Sarajevo, Bosnia and Herzegovina  
**Prof. dr Muhammad Ovais Omer**, Faculty of Bio-Sciences, University of Veterinary & Animal Sciences, Lahore, Pakistan  
**Dr. Edouard Musabanganji**, School of Economics/CBE, University of Rwanda, Rwanda  
**Prof. dr Kubilay Baştaş**, Department of Plant Protection, Faculty of Agriculture, Selçuk University, Turkey  
**Dr. Branka Kresovic**, Director of the Maize Research Institute “Zemun Polje”, Serbia  
**Dr. Nenad Delic**, Maize Research Institute “Zemun Polje”, Serbia  
**Dr. Milan Stevanovic**, Maize Research Institute “Zemun Polje”, Serbia  
**Prof. Violeta Babic**, Faculty of Forestry, University of Belgrade, Serbia  
**Dr. Svetlana Balesevic-Tubic**, Institute of Field and Vegetable Crops Novi Sad, Serbia  
**Dr. Ana Marjanovic Jeromela**, Institute of Field and Vegetable Crops Novi Sad, Serbia  
**Prof. dr Tatjana Krajisnik**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Prof. dr Aleksandra Govedarica-Lucic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Prof. dr Desimir Knezevic**, University of Pristina, Faculty of Agriculture, Kosovska Mitrovica - Lesak, Kosovo i Metohija, Serbia  
**Dr. Snezana Mladenovic-Drinic**, Maize Research Institute “Zemun Polje”, Serbia  
**Prof. dr Nebojsa Momirovic**, Faculty of Agriculture, University of Belgrade, Serbia  
**Prof. dr Osman Mujezinovic**, Faculty of Forestry, University of Sarajevo, Bosnia and Herzegovina  
**Prof. dr Dalibor Ballian**, Faculty of Forestry, University of Sarajevo, Bosnia and Herzegovina  
**Prof. dr Zoran Jovovic**, Biotechnical Faculty, University of Montenegro, Montenegro  
**Prof. dr Danijel Jug**, Faculty of Agriculture, University of Osijek, Croatia  
**Prof. dr Milan Markovic**, Biotechnical Faculty, University of Montenegro, Montenegro  
**Prof. dr Zeljko Dolijanovic**, Faculty of Agriculture, University of Belgrade, Serbia

**Prof. Mirjana Jovovic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Prof. Goran Marinkovic**, Faculty of Technical Sciences, University of Novi Sad, Serbia  
**Dr Dejan Stojanovic**, Institute of Lowland Forestry and Environment, Serbia  
**Dr Dobrovoj Postic**, Institute for plant protection and environment, Belgrade, Serbia  
**Dr Srdjan Stojnic**, Institute of Lowland Forestry and Environment, Serbia  
**Dunja Demirović Bajrami**, Research Associate, Geographical Institute “Jovan Cvijić,” Serbian Academy of Sciences and Arts, Belgrade, Serbia

## **ORGANIZING COMMITTEE**

**Chairperson: Prof. dr Vesna Milic**, Dean of the Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Dr Marko Gutalj**, Vice rector of the University of East Sarajevo, Bosnia and Herzegovina  
**Dr Jelena Kronic**, Vice rector of the University of East Sarajevo, Bosnia and Herzegovina  
**Dr. Maroun El Moujabber**, Mediterranean Agronomic Institute of Bari, Italy  
**Mrs. Rosanna Quagliariello**, Mediterranean Agronomic Institute of Bari, Italy  
**Dr. Nouredin Driouech**, Coordinator of MAIB Alumni Network (FTN), Mediterranean Agronomic Institute of Bari, Italy  
**Dr Milic Curovic**, The journal “Agriculture and Forestry”, Biotechnical Faculty Podgorica, University of Montenegro, Montenegro  
**Dr. Tatiana Lysak**, International Relations Office, Voronezh State Agricultural University named after Peter The Great, Russia  
**Dr. Oksana Fotina**, International Relations Center, Perm State Agro-Technological University, Russia  
**Prof. dr Fokion Papathanasiou**, School of Agricultural Sciences, University of Western Macedonia, Greece  
**Dr Ana Marjanović Jeromela**, Institute of Field and Vegetable Crops, Serbia  
**Dr. Anastasija Novikova**, Faculty of Bioeconomy Development, Vytautas Magnus University, Lithuania  
**Prof. dr Engr. Teodora Popova**, Institute of Animal Science - Kostinbrod, Bulgaria  
**Prof. dr Mehmet Musa Ozcan**, Faculty of Agriculture, Selçuk University, Turkey  
**Dr. Abdulvahed Khaledi Darvishan**, Faculty of Natural Resources, Tarbiat Modares University, Iran  
**Prof. dr Nikola Pacinovski**, Institute for Animal Science, Ss. Cyril and Methodius University in Skopje, N. Macedonia  
**MSc. Erasmo Velázquez Cigarroa**, Department of Rural Sociology, Chapingo Autonomous University, Mexico  
**Dr. Ecaterina Stefan**, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Romania  
**Dr. Jeeranuch Sakkhamduang**, The International Society of Environmental and Rural Development, Japan  
**Dr. Raoudha Khanfir Ben Jenana**, High Institute of Agronomy of Chott Meriem, Sousse, Tunisia  
**Dr. Hamada Abdelrahman**, Soil Science Dept., Faculty of Agriculture, Cairo University, Egypt  
**Prof. Dragana Sunjka**, Faculty of Agriculture, University of Novi Sad, Serbia  
**Dr. Antonije Zunic**, Faculty of Agriculture, University of Novi Sad, Serbia  
**Dr. Vedran Tomic**, Institute for Science Application in Agriculture, Serbia  
**MSc. Vojin Cvijanovic**, Institute for Science Application in Agriculture, Serbia  
**MSc. Mladen Petrovic**, Institute for Science Application in Agriculture, Serbia  
**Dr. Milan Stevanovic**, Maize Research Institute “Zemun Polje”, Serbia  
**Dr. Andrej Pilipovic**, Institute of Lowland Forestry and Environment, Serbia  
**Dr. Sc. Morteza Behzadfar**, Tarbiat Modares University, Tehran, Iran  
**Dr. Larysa Prysiazhniuk**, Ukrainian Institute for Plant Variety Examination, Kyiv, Ukraine  
**Doc. dr Sead Ivojevic**, Faculty of Forestry, University of Sarajevo, Bosnia and Herzegovina  
**Dr. Nenad Markovic**, Enterprise E. N. (EEN) Coordinator, University of East Sarajevo, Bosnia and Herzegovina  
**Domagoj Group**, SEASN - South Eastern Advisory Service Network, Croatia  
**Prof. dr Zeljko Lakic**, Agricultural Institute of Republic of Srpska - Banja Luka, Bosnia and Herzegovina  
**Doc. dr Zoran Maletic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**MSc. Milan Jugovic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Prof. dr Sinisa Berjan**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**MSc. Milena Stankovic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Dr. Stefan Stjepanovic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**MSc. Stefan Bojic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Dr. Tanja Jakisic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Dr. Boban Miletic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**MSc. Todor Djorem**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**MSc. Selena Cevriz**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina  
**Dr. Igor Djurdjic**, Faculty of Agriculture, University of East Sarajevo, Bosnia and Herzegovina, **General Secretary**



## QUANTITATIVE TRAITS OF WHITE CABBAGE CULTIVARS IN ASSOCIATION WITH TWO BIOFERTILISERS

Milica STOJANOVIĆ<sup>1\*</sup>, Dragica MILOSAVLJEVIĆ<sup>1</sup>, Aleksandra GOVEDARICA-LUČIĆ<sup>2</sup>, Đorđe MORAVČEVIĆ<sup>3</sup>, Jelena DRAGIŠIĆ MAKSIMOVIĆ<sup>1</sup>, Vuk MAKSIMOVIĆ<sup>1</sup>

<sup>1</sup>University of Belgrade, Institute for Multidisciplinary Research, Kneza Višeslava 1, 11030 Belgrade, Serbia

<sup>2</sup>University of East Sarajevo, Faculty of Agriculture, Vuka Karadžića 30, 71123 Istočno Novo Sarajevo, Bosnia and Herzegovina

<sup>3</sup>University of Belgrade, Faculty of Agriculture, Nemanjina 6, 11080 Belgrade, Serbia

\*Corresponding author: milica.stojanovic@imsi.bg.ac.rs

### Abstract

Cabbage is one of the most important vegetables from Brassicaceae family to which biofertilisers is increasingly applied following the current trend in the cabbage organic farming. The main goal of our study was to examine whether solely applied biofertilisers enhance head weight and other morphological parameters in cabbage. Experiment with three Bejo Zaden cultivars ('Farao' F<sub>1</sub>, 'Tiara' F<sub>1</sub>, and 'Excalibur' F<sub>1</sub>) were conducted under the open field conditions from April to June 2019. Two different microbiological fertilisers, Organic balance and FitoHelp, were applied foliar, six times during the vegetation period, with a battery sprayer. After harvest, several parameters were estimated: head weight, width and height, number of leaves, internal core height and width. The results showed the highest value of head weight (1264.89 g), head width (15.06 cm), head height (15.57 cm), number of leaves (22.56), internal core height (8.01 cm) and internal core width (3.51 cm) in cultivar 'Excalibur' F<sub>1</sub> compared to other two cultivars for fresh market. Application of both fertilisers led to increased levels of all tested parameters compared to control. Furthermore, fertiliser Organic balance showed the highest impact on all tested parameters, resulting in increasing value of head weight by 78.6%. This study revealed that mixed culture fertiliser showed greater impact in terms of head weight, number of leaves, and internal core width compared to fertiliser containing a single strain of bacteria. Accordingly, with an exception in head and internal core height, all examined factors showed statistically significant impact on tested parameters, including their interaction.

**Keywords:** *Cabbage, Biofertilisers, Head weight, Number of leaves, Internal core height.*