Soybean Research for Sustainable Development

WSRC 11
World Soybean Research Conference
18 – 23 June 2023
Vienna | Austria

Abstracts
World Soybean Research Conference 11
18-23 June 2023, Vienna, Austria

Johann Vollmann · Marjana Vasiljević · Leopold Rittler ·
Jegor Miladinović · Donal Murphy-Bokern

Editors

Soybean Research for Sustainable Development

Abstracts of the World Soybean Research Conference 11 (WSRC 11)
18-23 June 2023
Vienna, Austria

University of Natural Resources and Life Sciences, Vienna, Austria

Editors
Johann Vollmann, Marjana Vasiljević, Leopold Rittler, Jegor Miladinović, Donal Murphy-Bokern

Title
Soybean Research for Sustainable Development. Abstracts of the World Soybean Research Conference 11 (WSRC 11), 18-23 June 2023, Vienna, Austria

Publisher
University of Natural Resources and Life Sciences, Vienna, Austria
ISBN: 978-3-900397-09-8. doi: 10.5281/zenodo.7974681

Corresponding editor: Dr. Johann Vollmann, ✉ johann.vollmann@boku.ac.at

The abstracts submitted by the authors have not undergone a rigorous editorial review. Thus, full responsibility for text and scientific content of each abstract is with the respective authors.

Correct citation
Vollmann J., Vasiljević M., Rittler L., Miladinović J., Murphy-Bokern D. (eds.) 2023: Soybean Research for Sustainable Development. Abstracts of the World Soybean Research Conference 11 (WSRC 11), 18-23 June 2023, Vienna, Austria. University of Natural Resources and Life Sciences, Vienna, Austria. doi: 10.5281/zenodo.7974681

Pdf e-book published through
ZENODO repository: https://doi.org/10.5281/zenodo.7974681

Front page image source
Nikolaus Joseph v. Jacquin (1781-1786): *Icones Plantarum Rariorum.* Vol. I, C.F. Wappler Publ., Vienna. Plate 145. For detail information see poster abstract on page 518.

Conference venue: Austria Center Vienna, Bruno-Kreisky-Platz 1, 1220 Vienna, Austria

Acknowledgements

The editors thank Mrs. Theresa Schauppenlehner (Columbus Congress & Events, Vienna, Austria) for technical support during the preparation of this document. The editors are also grateful to Mrs. Marcella Gross-Varga (Donau Soja, Vienna, Austria) for handling author communications. Mr. Martin Pachner (University of Natural Resources and Life Sciences Vienna, Tulln an der Donau, Austria) contributed to abstract formatting. Mr. Xindong Yao (Harbin, Heilongjiang, China) contributed to author communications and translation of Chinese abstracts. Mr. Matthias Svojtka (University of Vienna, Botany Section of Biology and Botany Library, Vienna, Austria) provided access to N.J. Jacquin's 1781-1786 publication containing the first colorized image of a soybean plant (see front cover page). The editors are also grateful to members of the scientific committee who reviewed all submitted contributions for their scientific content.

World Soybean Research Conference 11 (2023)

International Scientific Committee

Alvadi Balbinot | Embrapa, Brazil
Kristin Bilyeu | University of Missouri, USA
Adeney de Freitas Bueno | Embrapa, Brazil
Marina Ćeran | Institute of Field and Vegetable Crops, Serbia
Vuk Djordjević | Institute of Field and Vegetable Crops, Serbia
Tomislav Duvnjak | Agricultural Institute Osijek, Croatia
Julio Ferrarotti | Haziak, Argentina
Volker Hahn | University of Hohenheim, Germany
Tianfu Han | Chinese Academy of Agricultural Sciences, China
Fernando Henning | Embrapa, Brazil
Jeong-Dong Lee | Kyungpook National University, South Korea
Zenglu Li | University of Georgia, USA
Keshun Liu | United States Department of Agriculture, USA
Febina Mathew | North Dakota State University, USA
Mark Messina | Loma Linda University, USA
Jegor Miladinović | Institute of Field and Vegetable Crops, Serbia
Alexandre Nepomuceno | Embrapa, Brazil
Henry Nguyen | University of Missouri, USA
Leonardo Daniel Ploper EEAOC, Tucumán, Argentina
Vara Prasad | Kansas State University, USA
Istvan Rajcan | University of Guelph, Canada
Milind Ratnaparkhe | Indian Councel of Agriculture Research (ICAR), India
Asheesh Singh | Iowa State University, USA
Johann Vollmann (chair) | University of Natural Resources and Life Sciences Vienna, Austria
Deyue Yu | National Key Laboratory of Crop Genetics and Germplasm Enhancements, China

Local Organizing Committee

Institute of Field and Vegetable Crops (Novi Sad)

Vuk Djordjević
Dragana Latković
Jegor Miladinović
Marjana Vasiljević

Donau Soja Association (Vienna)

Elisabeth Berger
Marcella Gross-Varga
Matthias Kroen (chair)
Donal Murphy-Bokern
Leopold Rittler

Columbus Congress & Events (Vienna)

Renate Androsch-Holzer
Sissy Aschenbach
Karin Fussi
Theresa Schauppenlehner

WSRC Continuing Committee

The Continuing Committee for the World Soybean Research Conference (WSRC) is comprised of four soybean specialists from each of four regions of the world for a two-conference term plus the past chair-person. Two members from each region are elected at each conference.

Chair of the WSRC Continuing Committee
Ricardo Vilela Abdelnoor | Brazilian Agriculture Research Corporation (Embrapa Soja), Londrina, PR, Brazil

REGION I - USA and Canada
Randall Nelson | USDA-ARS, Urbana, IL, USA
Zenglu Li | University of Georgia, Athens, GA, USA
Istvan Rajcan | University of Guelph, Guelph, Canada
Lorna Woodrow | Agriculture and Agri-Food Canada, Harrow, Canada

REGION II - México, Central America, South America, and the Caribbean Islands
Ricardo Vilela Abdelnoor | Brazilian Agriculture Research Corporation (Embrapa Soja), Londrina, PR, Brazil
Alexandre Jose Cattelan | Brazilian Agriculture Research Corporation (Embrapa Soja), Londrina, PR, Brazil
Eligio N. Morandi | Universidad Nacional de Rosario, Cordoba, Argentina
Julio Ferrarotti | Haziak, Rosario, Argentina

REGION III - Continental Asia (Bangladesh, Burma, Cambodia, India, Nepal, Laos, Malaysia, Pakistan, Thailand, Vietnam, China, North and South Korea)
Philips Varghese | Agharkar Research Institute (MACS), Maharashtra, India)
Wenbin Li | Northeast Agricultural University, Harbin, China
Xiaobing Liu | Northeast Institute of Geography and Agroecology, Harbin, China
Deyue Yu | Nanjing Agricultural University/National Center for Soybean Improvement, Nanjing, China

REGION IV – Africa and adjacent Island countries, Indonesia, Europe, Middle East, Oceania, Philippines, Sri Lanka, Australia, New Zealand, Japan, Russia and East European countries
Makita Hajika | NARO Institute of Crop Science, Tsukuba, Japan
Monique Berger | Université de Toulouse, Toulouse, France
Gerhard Jan Hendrik Scholtemeijer | Protein Research Foundation, Rivonia, South Africa
Willem Engelbrecht | K2 Seed Marketing, South Africa

Past chair of the WSRC Continuing Committee
Leonardo Daniel Ploper | Estación Experimental Agroindustrial Obispo Colombres (EEAOC), Tucumán, Argentina

Table of contents

Soybeans as a food and energy source

Ljubiša Kolaric[1], Jela Ikanović[1,2], Vera Popovic[2,3], Ljubiša Zivanovic[1], Snežana Janković[4], Nikola Rakašćan[5], Marko Burić[6,7], Branko Jevremov[8]

[1]University of Belgrade, Faculty of Agriculture, Zemun, Serbia, University of Bijeljina, Faculty of Agriculture, Bijeljina, Bosnia and Hercegovina, [3]Institute for Agriculture and Vegetables, Novi Sad, Serbia, [4]Institute of Application of Science in Agriculture, Serbia, [5]Biogas Energy doo., Ilandža, Serbia, [6]University of Kragujevac, Faculty of Medicine, Kragujevac, Serbia, [7]Health Center "Dimitrije-Dika Marenić", Danilovgrad, Montenegro, [8]Danube Soja, Novi Sad, Serbia

High protein content with lower carbohydrate content, highlights soy as a unique vegetable protein source and they are good milk substitutes. Soy contains isoflavones, which are polyphenols with estrogenic properties highly. Many studies show that individuals consuming foods high in vegetable proteins have lower risk of cardiovascular disease and other metabolic disorders. Soybean is also an important source of bioenergy. As a source of bioenergy, preference is given to harvest residues that contain more cellulose and oil, for example soybean straw. In order to obtain greater energy benefits from soybeans, breeding is aimed at the production of varieties with higher biomass and increased oil yield per hectare, as well as the creation of varieties that would be more suitable for industrial processing for the production of technical oils. In this study, productive parameters of soybeans were examined in 2021 and 2022 in Dolovo, Serbia, on chernozem type soil. The subject of research was the soybean genotype Favorit. Average soybean yields varied from 2.8 t ha^{-1} (2022), to 2.92 t ha^{-1} (2022). The total soybean biomass yield was 4.15 t ha^{-1}, while the biogas yield was 372 m^3 ha^{-1}. The year 2021 was more favorable for soybean production, where higher grain yields, biomass and biogas yields were achieved.

Keywords: Soybean, food, energy genotype, grain yield, biomass and biogas yield

Acknowledgments: Research was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (Grant numbers: 451-03-47/2023-01/200032; 200116 and 200045) and Project number PR-166-Serbia and Prizma Project 6770 PALraFES (2023-2027): Preservation of agricultural land in rural areas as a function of energy stability.

Competing interest: The authors declare that they have no financial or personal relationship which may have inappropriately influenced them in writing this article.

University of Natural Resources
and Life Sciences, Vienna
doi: 10.5281/zenodo.7974681