

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

Edition 1.1

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> and LegumeHub: www.legumehub.eu

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.

Assessment of grain quality traits in a Chinese soybean diversity panel

Juan E. Rosas¹, Sergio Ceretta², Daniel Vázquez², Jhon Larzábal², Qiu Lijuan³, Gu Yongzhe³, Victoria Bonnacarrère¹

¹INIA, Las Brujas, Uruguay, ²INIA, La Estanzuela, Uruguay, ³Chinese Academy of Agricultural Sciences, Institute of Crop Sciences, China

Soybean grain quality with high protein and oil content is in high demand by domestic and international markets. The National Agricultural Research Institute of Uruguay (INIA) soybean breeding program aims to develop varieties that can meet those requirements. However, most locally available germplasm has middle to low protein content. An agreement between INIA and the Chinese Academy of Agricultural Sciences (CAAS) provided access to valuable genetic resources such as a diversity panel with high reported values of grain protein content. With the aim of phenotypically assess this panel for grain quality traits and yield, two field trials with an incomplete block design and rows as experimental units were conducted in La Estanzuela, Uruguay (S 34.34, W 57.70) in 2022 and grain yield, protein and oil content was measured. No significant genotype by trial interaction was found for any of the studied traits. The heritability was 0.68 for protein content, 0.84 for oil content, and 0.44 for grain yield. Phenotypic adjusted means for protein content ranged from 39.9% to 48.3%, for oil content from 15.7% to 20.7% and for yield from 371 to 4994 kg ha⁻¹. Strong and negative correlations were found between protein and oil content and between protein and yield. Five accessions were identified with superior quality traits and yield. These results suggest that the diversity panel provides suitable additive genetic variance for obtaining genetic gains in grain quality and yield. The observed negative correlations will demand the use of strategies such as genomic selection and mapping of quantitative trait loci to select for high protein content without compromising acceptable levels of grain yield and oil content. To that end, the development of populations of recombinant inbred lines derived from the diversity panel and local germplasm is currently in progress.

Keywords: Nutritional quality, phenotyping, genetic diversity, soybean breeding programs, Uruguay