

HELIA

EDITOR IN CHIEF

Dragan Škorić, Serbia

MANAGING EDITOR

Zvonimir Sakač, Serbia

EDITORIAL BOARD

Walter Anyanga, Uganda

Yakov Demurin, Russia

Maria Duca, Moldova

Valentina Entcheva, Bulgaria

Jose Fernández-Martinez, Spain

Wolfgang Friedt, Germany

Oleg Gorbachenko, Russia

Antonio Hall, Argentina

Renate Horn, Germany

Brent Hulke, USA

Yalcin Kaya, Turkey

Nataliya Kutishcheva, Ukraine

Nicolas Langlade, France

Maria Pacureanu-Joita, Romania

Begoña Pérez-Vich, Spain

Monica Poverene, Argentina

Lili Qi, USA

Mulpuri Sujatha, India

Gian Paolo Vannozzi, Italy

Kirichenko Victor Vasylovich, Ukraine

Felicity Vear, France

Abelardo de la Vega, Argentina-Spain

Jovan Crnobarac, Serbia

Ferenc Viranyi, Hungary

Jun Zhao, China

DE GRUYTER

HELIA is published by the Serbian Academy of Sciences and Arts (SASA), Branch in Novi Sad in cooperation with De Gruyter. HELIA publishes original theoretical, experimental and technical contributions arising from the scientific study of sunflower crops and farming systems. The subject fields covered include crop agronomy; sunflower genetic resources; sunflower improvement and breeding; phytopathology and plant protection; sunflower physiology, biochemistry, metabolism, structure, genetics, at diverse levels of integration; ecology; soil, water and mineral nutrition management and farming systems.

ABSTRACTED/INDEXED IN AGRICOLA (National Agricultural Library) · Baidu Scholar · CABI (over 50 subsections) · CNKI Scholar (China National Knowledge Infrastructure) · CNPIEC: cnpLINKer · Dimensions · EBSCO (relevant databases) · EBSCO Discovery Service · Genamics JournalSeek · Google Scholar · Japan Science and Technology Agency (JST) · J-Gate · JournalGuide · JournalTOCs · KESLI-NDSL (Korean National Discovery for Science Leaders) · MyScienceWork · Naver Academic · Naviga (Softweco) · Primo Central (ExLibris) · ProQuest (relevant databases) · Publons · QOAM (Quality Open Access Market) · ReadCube · Scilit · SCImago (SJR) · SCOPUS · Semantic Scholar · Sherpa/RoMEO · Summon (ProQuest) · TDNet · Ulrich's Periodicals Directory/ulrichsweb · WanFang Data · WorldCat (OCLC) · X-MOL · Yewno Discover

ISSN 1018-1806 · e-ISSN 2197-0483

All information regarding notes for contributors, subscriptions, Open Access, back volumes and orders is available online at <http://www.degruyter.com/journals/helia>.

EDITOR IN CHIEF Prof. Dr. Dragan Škorić, Serbian Academy of Sciences and Arts (SASA), Branch in Novi Sad, Nikole Pašića 6, 21000 Novi Sad, Serbia, e-mail: draganskoric@sbb.rs

MANAGING EDITOR Zvonimir Sakač, MSc., Institute of Field and Vegetable Crops, Industrial Crops Department, Maksima Gorkog 30, 21000 Novi Sad, Serbia, e-mail: zvonimir17@sbb.rs; maritimus17@gmail.com

PUBLISHER Walter de Gruyter GmbH, Berlin/Boston, Genthiner Straße 13, 10785 Berlin, Germany

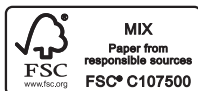
JOURNAL COORDINATOR Dagmara Magryta, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany, e-mail: dagmara.magryta@degruyter.com

ADVERTISEMENTS e-mail: anzeigen@degruyter.com

TYPESETTING TNQ Technologies, Chennai, India

© 2023 Walter de Gruyter GmbH, Berlin/Boston and SASA, Branch in Novi Sad, Serbia

PRINTING Franz X. Stückle Druck und Verlag e.K., Ettenheim



Contents

Review Article

Miroslava Hristova-Cherbadzhi

The top Bulgarian contributions to sunflower breeding — 143

Research Articles

Jason A. Anandappa, Hannah E. Stanford, Laura F. Marek, Eric W. Goolsby and Chase M. Mason

Bioprospecting for improved floral fragrance in wild sunflowers — 169

Maria Duca and Ina Bivol

Genetic diversity of broomrape (*Orobanche cumana* Wallr.) populations from different geographical origins assessed by ISSR markers — 187

Maria Duca, Ana Mutu, Angela Port and Steliana Clapco

Genotype-environment interaction in the variability of yield associated indices under stress conditions in sunflower — 201

Katerina Vedmedeva, Olena Nosal, Iryna Poliakova and Tatiana Machova

Correlations of confectionary seed traits in different head zones sunflower — 215

Iryna Sokolovska and Yuriy Maschenko

Biotechnological methods of growing sunflower in different fertilizer systems — 233

Olena Sydiakina and Mykola Ivaniv

Sunflower hybrids productivity depending on the rates of mineral fertilizers in the south of Ukraine — 245