

PROCEEDINGS OF THE

20th INTERNATIONAL SUNFLOWER CONFERENCE



Novi Sad, Serbia
June 20-23, 2022

Proceedings of the

20th International Sunflower Conference



Novi Sad, Vojvodina, Serbia
June 20-23, 2022

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Proceedings of the 20th International Sunflower Conference
Novi sad, Serbia, June 20-23, 2022

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The proceedings of the 20th International Sunflower Conference contain 153 contributions from scientists of 30 countries. They include plenary lectures, oral talks and regular communications presented with posters, among which, selected contributions were emphasized with short oral talks. The manuscripts are classified by research areas in ten separate sections. They offer a thorough review of the current state of the art of sunflower research and production around the world. The Organizing Committee is grateful to Tanja Vunjak and Aleksandar Vojisavljević for their excellent editorial assistance in the preparation of these Proceedings.

ISC2022 Organizing committee



Conference program

Sunday, 19 June

16.00-21.00	Registration
19.00-21.00	Welcome Reception

Monday, 20 June

8.00-17.00	Registration	
9.00-9.30	Opening Ceremony	
9.30- 10.15	Invited talk Section 1: Dr. Felicity Vear (France)	
10.15-11.00	Coffee break	
11.00-12.00	Section 1: Breeding – New/old breeding goals and challenges	Section 2: Oils and proteins – Innovations for increased quality and feedstock supply
	Oral and short oral presentations	Oral and short oral presentations
12.00-13.30	Lunch	
13.30-14.30	Invited talks Section 3: Dr. C.C. Jan (China) Section 4: Dr. Sreten Terzić (IFVCNS, Serbia)	
14.30-15.00	Coffee break	
15.00-16.00	Section 3: Confectionery sunflower – Emerging crop	Section 4: Genetic resources – Investment for the future
	Oral and short oral presentations	Oral and short oral presentations
16.00-17.00	Poster session – Sections 1, 2, 3, 4	
18.00-21.00	Novi Sad and Petrovaradin fortress tour	

Tuesday, 21 June

8.30-17.00	Registration	
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10.30-11.00	Coffee break	
11.00-12.00	Section 5: Biotic stress resistance – New and emerging pests and diseases	Section 6: Crop production and modeling – Yield stability in changing environment
	Oral and short oral presentations	Oral and short oral presentations
12.00-13.30	Lunch	
13.30-14.30	Invited talks Section 7: Dr. Nicolas Langlade (INRAE, France) Section 8: Etienne Pilorgé (Terres Inovia, France)	
14.30-15.00	Coffee break	
15.00-16.00	Section 7: Abiotic stress resistance – Challenges of changing environment	Section 8: Economy and market – Trends and prospects
	Oral and short oral presentations	Oral and short oral presentations
16.00-17.00	Poster session – Sections 5, 6, 7, 8	

Wednesday, 22 June

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10.30-11.00	Coffee break	
11.00-12.00	Section 9: Broomrape – Constant challenge	Section 10: Bees and seeds – Exploring new venues for increased yield and seed production
	Oral and short oral presentations	Oral and short oral presentations
12.00-13.30	Lunch	
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14.30-15.00	Coffee break	
14.30-15.30	Poster session – Sections 9, 10	
15.00-16.30	ISA Assembly	
16.30-17.00	Closing ceremony	
20.00-24.00	Gala Dinner Pustavoit Award Presentation Ceremony IFVCNS Best Poster Award Presentation	

Thursday, 23 June

9.00-15.00	Field day
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IMPORTANCE OF TOCOPHEROL IN MODIFICATION THE QUALITY OF SUNFLOWER OIL

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Abstract

Standard sunflower oil contains predominantly alpha-tocopherol (>95%). The discovery by Demurin (1993) that within the sunflower collection there are examples of spontaneous mutations when it comes to tocopherols has made it possible to manipulate tocopherol types and contents in the sunflower oil. Used in the study were genetic materials obtained by crossing the standard line HA-26-B with isogenic line BK-66-TPH-2-OL-1. After inbreeding F1, F2, F3 and F4, the F4 population was selected and grown in the greenhouse of the Institute of Field and Vegetable Crops in Novi Sad, Serbia. During the flowering, each individual plant was isolated with a natron bag in order to enable self-fertilization. The qualitative and quantitative tocopherol contents were determined by the HPLC method developed at our laboratory, according to the official ISO 9936 method, on the Sykam HPLC system coupled with the both, UV and fluorescent detectors, and supported by the Clarity Chromatography Data Station (CDS) software for data acquisition and processing. Separation of tocopherols in the oil was carried out by the use of normal-phase chromatography procedure with the binary eluent n-hexane : ethyl acetate in proportion 75 : 25, and flow of the eluent through the chromatographic column at 1 ml/min. Signal detection was carried out at 292 nm for UV detection, and at 280 nm (excitation) / 340 nm (emission) for fluorescence detection. The quantification of the results was performed on the basis of a constructed calibration curve of standard tocopherol solutions of known concentrations. The total tocopherol content in the oil of the newly developed sunflower inbred lines varies a lot from line to line. For sunflower breeders of the greatest importance are the lines that have total tocopherols above 900 mg/kg oil (ppm). The newly developed variability enables the development of sunflower hybrids with different oil quality. Using back crosses between mutant lines for a high oleic acid content of the oil and different levels of total and individual tocopherols on the one hand and standard lines on the other new germplasm has been developed that makes it possible to develop hybrids with different oil quality.

Keywords: sunflower, oil quality, tocopherols, alpha-tocopherol, beta-tocopherol, gamma-tocopherol, delta-tocopherol

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