

PROCEEDINGS OF THE

# 20<sup>th</sup> INTERNATIONAL SUNFLOWER CONFERENCE



Novi Sad, Serbia  
June 20-23, 2022

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Proceedings of the

# 20<sup>th</sup> International Sunflower Conference



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

**Sponsored by**



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*Proceedings of the 20<sup>th</sup> International Sunflower Conference*  
Novi sad, Serbia, June 20-23, 2022

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The proceedings of the 20<sup>th</sup> 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 | <b>Invited talk</b><br>Section 1: Dr. Felicity Vear (France)   |  |
| 10.15-11.00 | Coffee break   |  |
| 11.00-12.00 | <b>Section 1: Breeding – New/old breeding goals and challenges</b>                                       | <b>Section 2: Oils and proteins – Innovations for increased quality and feedstock supply</b> |
|             | <b>Oral and short oral presentations</b>   | <b>Oral and short oral presentations</b>   |
| 12.00-13.30 | Lunch  |  |
| 13.30-14.30 | <b>Invited talks</b><br>Section 3: Dr. C.C. Jan (China)<br>Section 4: Dr. Sreten Terzić (IFVCNS, Serbia) |  |
| 14.30-15.00 | Coffee break   |  |
| 15.00-16.00 | <b>Section 3: Confectionery sunflower – Emerging crop</b>  | <b>Section 4: Genetic resources – Investment for the future</b>                              |
|             | <b>Oral and short oral presentations</b>   | <b>Oral and short oral presentations</b>   |
| 16.00-17.00 | <b>Poster session</b> – Sections 1, 2, 3, 4  |  |
| 18.00-21.00 | Novi Sad and Petrovaradin fortress tour  |  |

## Tuesday, 21 June

|                    |   |  |
|--------------------|---|--|
| 8.30-17.00         | Registration  |  |
| <b>9.30-10.30</b>  | <b>Invited talks</b><br>Section 5: Dr. Leire Molinero Ruiz (CISC, Spain)<br>Section 6: Dr. Philippe Debaeke (INRAE, France)   |  |
| 10.30-11.00        | Coffee break  |  |
| <b>11.00-12.00</b> | <b>Section 5: Biotic stress resistance – New and emerging pests and diseases</b>  | <b>Section 6: Crop production and modeling – Yield stability in changing environment</b> |
|                    | <b>Oral and short oral presentations</b>  | <b>Oral and short oral presentations</b>   |
| 12.00-13.30        | Lunch   |  |
| <b>13.30-14.30</b> | <b>Invited talks</b><br>Section 7: Dr. Nicolas Langlade (INRAE, France)<br>Section 8: Etienne Pilorgé (Terres Inovia, France) |  |
| 14.30-15.00        | Coffee break  |  |
| <b>15.00-16.00</b> | <b>Section 7: Abiotic stress resistance – Challenges of changing environment</b>  | <b>Section 8: Economy and market – Trends and prospects</b>                              |
|                    | <b>Oral and short oral presentations</b>  | <b>Oral and short oral presentations</b>   |
| <b>16.00-17.00</b> | <b>Poster session</b> – Sections 5, 6, 7, 8   |  |

## Wednesday, 22 June

|                    |  |  |
|--------------------|--|--|
| 8.30-17.00         | Registration   |  |
| <b>9.30-10.30</b>  | <b>Invited talks</b><br>Section 9: Dr. Stéphane Muños (INRAE, France)<br>Section 10: Dr. Nicole Creux (FABI, South Africa) |  |
| 10.30-11.00        | Coffee break   |  |
| <b>11.00-12.00</b> | <b>Section 9: Broomrape – Constant challenge</b>   | <b>Section 10: Bees and seeds – Exploring new venues for increased yield and seed production</b> |
|                    | <b>Oral and short oral presentations</b>   | <b>Oral and short oral presentations</b>   |
| 12.00-13.30        | Lunch  |  |
| <b>13.30-14.30</b> | <b>Panel: Sunflower in a changing environment – Trends and prospects</b>   |  |
| 14.30-15.00        | Coffee break   |  |
| <b>14.30-15.30</b> | <b>Poster session</b> – Sections 9, 10   |  |
| 15.00-16.30        | ISA Assembly   |  |
| 16.30-17.00        | Closing ceremony   |  |
| 20.00-24.00        | Gala Dinner<br>Pustavoit Award Presentation Ceremony<br>IFVCNS Best Poster Award Presentation                              |  |

## Thursday, 23 June

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| 9.00-15.00 | Field day |
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## MINING ROOT TRAITS FOR SUNFLOWER DROUGHT TOLERANCE IMPROVEMENT BY USE OF AN AUTOMATED PHENOTYPING PLATFORM

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### Abstract

Drought is a major limiting abiotic factor in production of sunflower (*Helianthus annuus* L.), one of the main oil crops, worldwide. Consequently, breeders are always in search of drought tolerant genotypes and getting more insight into mechanisms underlying drought tolerance. With the global environmental changes occurring, drought stress gained even more on its significance. Different and significant changes in plant morphology and metabolism occur in response to drought stress. Analysis of the root as a main plant organ for water uptake, was mainly neglected, mostly due to the difficulties of reaching and examining it. Development of modern automated phenotyping platforms enable overcoming this problem. For the purpose of analyzing response of sunflower root system to water deprivation conditions, cultivated and wild sunflower genotypes were chosen from a vast sunflower collection located at the Institute of Field and Vegetable Crops (IFVCNS). Sunflower root architecture was analyzed by the use of the automated phenotyping platform GROWSCREEN-Rhizo located at the institute IBG-2: Plant Sciences at Forschungszentrum Jülich GmbH (FZJ). The aim of this study was to analyze the responses of different genotypes and genotypic constitutions to water deficiency conditions and to identify root trait(s) that could be used as a discriminant between genotypes that are tolerant and sensitive to low water availability.

**Keywords:** *Helianthus annuus* L., drought tolerance, root phenotyping, GROWSCREEN-Rhizo

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