

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	
9.30-10.30	Invited talks Section 5: Dr. Leire Molinero Ruiz (CISC, Spain) Section 6: Dr. Philippe Debaeke (INRAE, France)	
10.30-11.00	Coffee break	
11.00-12.00	Section 5: <i>Biotic stress resistance – New and emerging pests and diseases</i>	Section 6: <i>Crop production and modeling – Yield stability in changing environment</i>
	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: <i>Abiotic stress resistance – Challenges of changing environment</i>	Section 8: <i>Economy and market – Trends and prospects</i>
	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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11.00-12.00	Section 9: <i>Broomrape – Constant challenge</i>	Section 10: <i>Bees and seeds – Exploring new venues for increased yield and seed production</i>
	Oral and short oral presentations	Oral and short oral presentations
12.00-13.30	Lunch	
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14.30-15.30	Poster session – Sections 9, 10	
15.00-16.30	ISA Assembly	
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20.00-24.00	Gala Dinner Pustavoit Award Presentation Ceremony IFVCNS Best Poster Award Presentation	

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THE FIRST REPORT ON EFFICIENT CRISPR-BASED PROTOCOL FOR SUNFLOWER

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Abstract

In recent years, sunflower has become a strategic plant due to the increased demand for its oil, as well as low input requirements that enable it to be grown in different agroecological conditions. The most important problem affecting sunflower yield and production are different biotic stressors, such as fungal pathogens and parasitic weed broomrape. The most effective and ecologically-friendly method of control of those stressors is creation of resistant genotypes. Novel, CRISPR-based techniques provide new tools that could accelerate breeding process and introduction of desirable traits into cultivated sunflower. In this work, researchers from Ondokuz Mayıs University and Institute of Field and Vegetable Crops (IFVCNS) combined their knowledge and know-how in order to develop efficient CRISPR-based protocol(s) applicable in targeted improvement of sunflower. IFVCNS inbred lines, preselected for high regeneration capacity, were transformed using CRISPR/Cas9 and CRISPR/Act.2CRISPR systems by Ondokuz Mayıs University team. Both systems were efficient in silencing targeted genes which was confirmed by phenotype of regenerated plants. Up to our knowledge, this is the first report on efficient transformation and regeneration of sunflower plant using CRISPR, and the result obtained pave the way for wider application of this technique in sunflower improvement.

Keywords: sunflower; CRISPR/Cas9; CRISPR/Act.2; genome editing

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