

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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**The Institute of Field and Vegetable Crops, National
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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

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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	
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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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SECRETORY TISSUES OF DISCS FLOWERS IN WILD *HELIANTHUS* L. SPECIES

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Abstract

Flower morphological characteristics influence abundance and foraging behavior of pollinators. As a source of food, nectar has important role in attracting pollinators and improving the percentage of fertilization in sunflower. On the other side, presence and density of capitate glandular trichomes in the area of anthers, which produce mainly sesquiterpene lactones and flavonoids, is frequently associated with protection against herbivores and pathogens. Therefore, for detailed understanding of the attractiveness of capitula to insects, secretory tissues of disc flowers in wild sunflower species were investigated. Stereoscopic, light and scanning electron microscopy were used to examine nectary anatomy of 21 wild *Helianthus* species. Presence and distribution of capitate glandular trichomes were analyzed on the same flowers in the anther region. In all analyzed species nectaries are ring shaped and located above the inferior ovary. The nectary is composed of two distinct tissues: the epidermis (single cell layer with modified stoma) and 5-8 layers of secretory parenchyma cells located subepidermally. Species with the largest area of disk flowers and nectaries as well as the thickest nectaries are *H. eggertii*, *H. resinosus*, *H. decapetalus*, *H. tuberosus*, *H. hirsutus*, and *H. argophyllus*. Capitate glandular trichomes are present on the interior surface of the anther top, with different density. According to the trichome density, the species are separated into three main groups: very dense, dense and rare. Only *H. laevigatus* was without trichomes. Better knowledge of the structure and function of secretory tissues in wild *Helianthus* species can be used as a potential source for enhancing the attractiveness to pollinators.

Keywords: nectary, trichomes, sunflower, anatomy, micromorphology.

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