

ISA



ISA NEWSLETTER N°5, September 2019

International Sunflower Association

Contents

Editorial	2
Activity and News of the association	2
20th International Sunflower Conference	2
Value chains and regional news.....	3
Summer crops in Europe: relatively good behavior of sunflower	3
USA: 2019 sunflower acreage	4
Publication: the California Hybrid Seed Production Manual	4
EU Protein balance sheet and Oilseeds balance sheet	5
Book : Studies of Sunflower in the Republic of Moldova	5
Scientific news.....	5
Publications	5
GENETICS AND BREEDING	5
PATHOLOGY / CROP PROTECTION	7
AGRONOMY	9
PHYSIOLOGY	11
PROCESS AND PRODUCTS	11
ECONOMY AND MARKETS	13
IN HELIA	13
Coming International and national events	14



Editorial

The summer went on in the North hemisphere, and sunflower performed quite well, even sometimes in difficult conditions due to climatic hazards.

We now begin an important period for ISA: 2020 will be the place of the 20th ISC International Sunflower Conference, in Novi Sad, Serbia, with several key steps:

The preparation of the conference is a heavy job for the organizing team and scientific committee, which will read, sort the proposed abstracts, and organize the sessions.

To prepare the General Assembly, we shall consult the ISA members for the attribution of the Pustovoit awards (see: <http://isasunflower.org/presentation/pustovoit-awards.html>), and will have to think about the renewal of the Executive Board, etc,...

We also work for the launching of a new website, for the beginning of 2020, with improved and up-to-date functionalities, for both sharing scientific information and better interactions among the world sunflower community.

And we have not to forget to mobilize more widely the sunflower community with new members and new sponsors: to enlarge our vision at world scale and better understand the challenges the sunflower has to cope with, we need to share ideas between breeders, agronomists, pathologists, economists, people of process and industries... in order to better coordinate the efforts for the development of sunflower.

Etienne Pilorgé, ISA General Secretary-Treasurer

Activity and News of the association

20th International Sunflower Conference, Novi Sad, Serbia.
<https://isc2020.com/program/program-overview/>



Dear all,

You are kindly reminded that the **deadline** for the Online **Abstract Submission** for 20th ISC, **October 20th 2019**, is quickly approaching. We would like to thank to those of you who have already submitted their abstracts. If you haven't managed submitting your abstract yet, please do so at your earliest convenience before the deadline.

The Scientific Committee will decide upon the acceptance of the contributions, based on the abstract. Only registered participants of the Conference may submit oral and/or poster contributions. Two Abstracts per one registered author will be accepted. If you require any further information, feel free to **contact us at** science@isc2020.com



Best wishes,

The 20th ISC team

Value chains and regional news

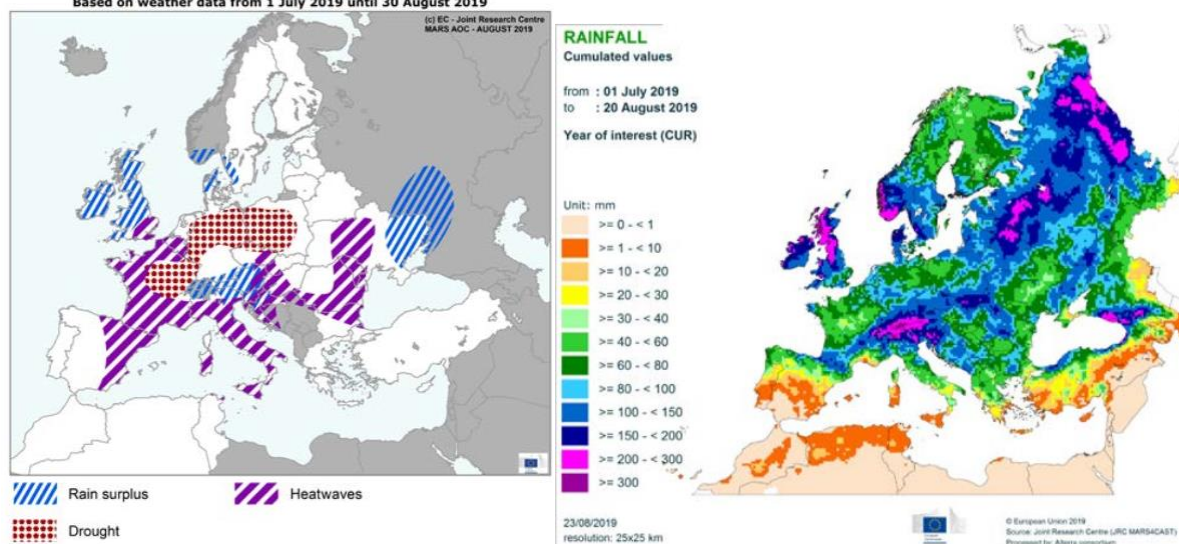
Summer crops in Europe: relatively good behavior of sunflower

According to the EU Commission MARS Bulletin published last Aug 27 (<https://ec.europa.eu/jrc/sites/jrcsh/files/jrc-mars-bulletin-vol27-no8.pdf>), forecasts for maize and sunflowers in Europe remain above 5-year average. The yield outlook for sunflowers remains firmly above the 5-year average, with a 2019 forecast of 2.39t/ha at EU scale, 8.4% higher than the 5 years average of 2.21t/ha. Nevertheless, the results are contrasted depending on regions.

In France, all summer crop yields are forecasted close to a historical low; the French official service AGRESTE gives precisions: sunflower production is estimated at 1.3 Mt (+ 6.3% in one year and - 2.1% compared to the 2014-2018 average), due to an increase of acreage by 9.2% in one year to reach 603 thousand hectares, but the yield dropped by 2.6% in one year to 22.1 q / ha. It is there 4% below the five-year average of 23 q / ha.

AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on weather data from 1 July 2019 until 30 August 2019

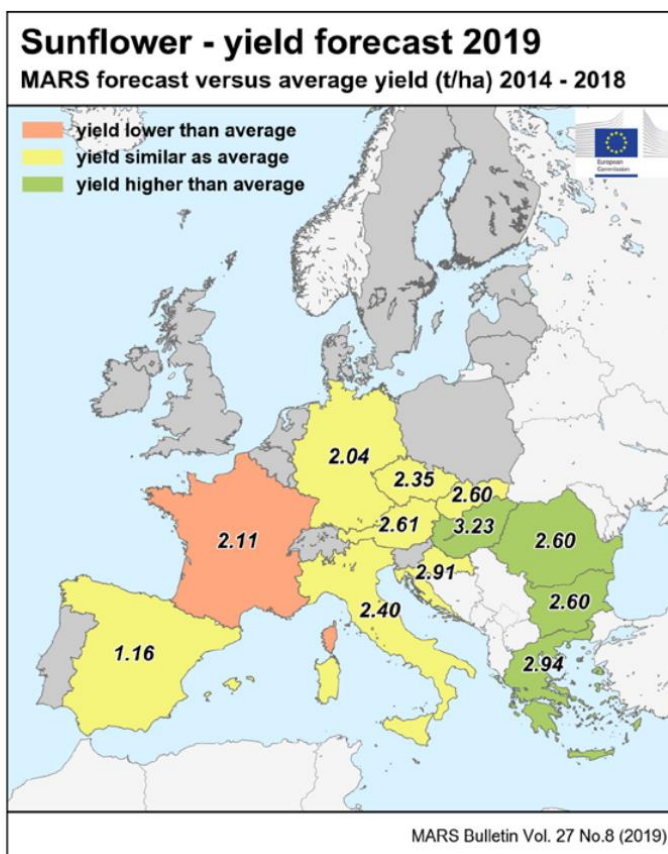


In Spain, for sunflower, usually non-irrigated, the yield outlook is just below average levels having suffered in the hot and dry conditions.

In central Europe, Hungary, Romania, Bulgaria, where precipitations were more abundant, sunflower crops performed rather well and expected yields are well above the 5 years average.



Country	SUNFLOWER (t/ha)				
	Avg 5yrs	2018	MARS 2019 forecasts	%19/5yrs	%19/18
EU	2.21	2.42	2.39	+8.4	-1.1
AT	2.64	2.80	2.61	-1.0	-6.9
BE	-	-	-	-	-
BG	2.29	2.44	2.60	+14	+6.5
CY	-	-	-	-	-
CZ	2.40	2.36	2.35	-1.9	-0.3
DE	2.07	1.82	2.04	-1.5	+12
DK	-	-	-	-	-
EE	-	-	-	-	-
ES	1.16	1.34	1.16	-0.3	-14
FI	-	-	-	-	-
FR	2.32	2.26	2.11	-8.8	-6.6
GR	2.53	2.43	2.94	+16	+21
HR	2.88	2.99	2.91	+1.0	-2.7
HU	2.82	2.96	3.23	+14	+9.0
IE	-	-	-	-	-
IT	2.32	2.40	2.40	+3.7	+0.3
LT	-	-	-	-	-
LU	-	-	-	-	-
LV	-	-	-	-	-
MT	-	-	-	-	-
NL	-	-	-	-	-
PL	-	-	-	-	-
PT	-	-	-	-	-
RO	2.33	2.80	2.60	+11	-7.4
SE	-	-	-	-	-
SI	-	-	-	-	-
SK	2.67	2.93	2.60	-2.4	-11
UK	-	-	-	-	-



In Serbia, according to the field reports and observations available so far, the current year has been good for sunflower production. Compared to 2018 with 239.148 ha, sunflower harvested area slightly decreased and will be in the range of 220-230.000 ha. Yields are expected to be above 5-year average (2,83 t/ha) reaching above 3 t/ha and total production of approximately 660-690.000 t. In Ukraine, summer crops also present favorable biomass accumulation: the rain surplus observed in the south and east has favored the sunflower crop and a record yield is foreseen.

USA: 2019 sunflower acreage

The National Sunflower Association reported the update of the USDA plantings report, (<http://www.sunflowernsa.com/magazine/articles/default.aspx?ArticleID=3848>) dated Aug 12: the USDA's Farm Service Agency released updated figures on 2019 planted acreage. August acreage numbers, by state, were as follows: California — 15837 ha; Colorado — 21216 ha; Kansas — 14717ha; Minnesota — 21762ha; Nebraska — 12582ha; North Dakota — 209420ha; South Dakota — 205978ha; Texas — 10577ha. The FSA report also listed 16143ha acres of sunflower being planted in "Other" states.

The total acreage for oil-type sunflower was slightly less than 469500 ha (including 11400 in "Other" states). The total for nonoil sunflower planted acres in August was just under 58679 ha (including 4747 in "Other" states).

Publication: the California Hybrid Seed Production Manual

The US NSA reported the recent publication of the California Hybrid Seed Production Manual (<https://anrcatalog.ucanr.edu/Details.aspx?itemNo=8638>) by a team of researchers of the University of California and Tom Gulya, ISA Honorary Member retired from USDA. The manual provides information on production needs, such as irrigation and nutrient management, as well as a color guide to insect pests, diseases and weeds of concern for hybrid sunflower seed production, says the NSA news.



EU Protein balance sheet and Oilseeds balance sheet

The EU published last may a revised Feed protein balance sheet and updated in August its oilseeds balance sheet. https://ec.europa.eu/agriculture/market-observatory/crops/oilseeds-protein-crops/balance-sheets_en.

Book: Studies of Sunflower in the Republic of Moldova, 2018, Chisinau, by Maria Duca. In Romanian. « The book proposes a review of the results of the scientific research in Moldova. The first chapter highlights the historiography of the production of sunflower in culture. The other chapters are selective bibliographic studies based on the analysis of the most relevant scientific papers – monographs, collections, articles published in national and international journals, conferences and symposiums, practical recommendations, etc... At the end of the book are presented patents, doctoral and doctor habilitat thesis with sunflower study. »

Scientific news

We remind all our readers that they can contribute to this bibliography chapter by informing us about their recent publications, if possible, with an internet link or contact.

Publications

GENETICS AND BREEDING

Kirill Azarin, Maksim Makarenko, Alexander Usatov, Oleg Gorbachenko, Alexey Kovalevich, Vera Gavrilova. Data on the polymorphic sites in the chloroplast genomes of the sunflower **alloplasmic CMS** lines. Data in Brief, Volume 25,2019, <https://doi.org/10.1016/j.dib.2019.104072>

Miladinović D, Vollmann J, Molinero-Ruiz L, Torres M (2019). Editorial: Advances in Oil Crops Research - Classical and New Approaches to Achieve Sustainable Productivity. Fron Plant Sci <https://doi.org/10.3389/fpls.2019.00791>

Miladinović D, Marjanović Jeromela A, Jocić S, Radanović A, Cvejić S, Hladni N, Terzić S, Ovuka J, Jocković M, Dedić B, Rajković D, Gvozdenac S, Radić V, Balalić I, Dušanić N, Miklič V (2019). New trends in oil crops breeding. Zbornik radova sa 60. Savetovanja industrije ulja, Herceg Novi, 16.-21.06.2019. p. 27-32. <http://www.indbilje.co.rs/wp-content/uploads/2019/06/Proizvodnja-i-prerada-uljarica-60-sa-reklamama.pdf>

Miklić V, Ovuka J, Radić V, Ostojić B, Jokić G, Dušanić N, Jocić S (2019) Sunflower hybrid seed production in Serbia. Zbornik radova sa 60. Savetovanja industrije ulja, Herceg Novi, 16.-21.06.2019. p. 33-40.

SreeLekha Duruvassala, Sujatha Mulpuri, Ulaganathan Kandasamy. Mapping of plastid RNA editing sites of Helianthus and identification of differential editing in fungal infected plants. Current Plant Biology, 2019, <https://doi.org/10.1016/j.cpb.2019.100109>

Guchetl', S.Z. Antonova, T.S. Araslanova, N.M. New donors of sunflower resistance to **broomrape** race G: studying of a trait inheritance [2018]. (Russian) <http://agris.fao.org/agris-search/search.do?recordID=RU2019000445>

Ramazanova, S.A. Antonova, T.S. Marking of PI5, PI6 и PI8 loci controlling resistance to **Plasmopara halstedii** in sunflower lines developed in VNIIMK [2018] (Russian) <http://agris.fao.org/agris-search/search.do?recordID=RU2019000440>

Money, K. L., B. D. Koehler, C. G. Misar, M. Grove, W. Underwood, and B. S. Hulke. 2019. Registration of Oilseed Sunflower Germplasm RHA 485, RHA 486, and HA 487, Selected for



Resistance to Phomopsis Stalk Canker and Sclerotinia, in a High-Yielding and High-Oil Background. J. Plant. Reg. 0. <https://doi.org/10.3198/jpr2019.02.0008crg>

Demurin, Ya.N. Borisenko, O.M. Chebanova, Yu.V. Inheritance of **mid-oleic acid trait** in sunflower hybrid seeds of the second and third generation [2018](Russian) <http://agris.fao.org/agris-search/search.do?recordID=RJ2019000439>

Cvejić S, Jocić S, Jocković M, Dedić B, Radeka I, Radanović A, Miladinović D, Balalić I, Grahovac N, Stojanović D, Miklič V (2019). NS Sanol – New **high-oleic** sunflower hybrid. Zbornik radova sa 60. Savetovanja industrije ulja, Herceg Novi, 16.-21.06.2019. p. 41-48.

Cheevarungnapakul, K., Khaksar, G., Panpetch, P., Boonjing, P., & Sirikantaramas, S. (2019). Identification and Functional Characterization of Genes Involved in the Biosynthesis of Caffeoylquinic Acids in Sunflower (*Helianthus annuus* L.). *Frontiers in plant science*, 10, 968. <https://doi.org/10.3389/fpls.2019.00968>

Hulke, B. S., and J. K. Winkler-Moser. 2019. Registration of Sunflower Genetic Stocks TOCO B1, TOCO R1, and TOCO R2 with **High Gamma- and Delta-Tocopherol** and Altered Fatty Acid Composition in the Seed Oil. J. Plant. Reg. 0. <https://doi.org/10.3198/jpr2018.10.0070crgs>

Hladni N. and Miladinović D. (2019): **Confectionery sunflower** breeding and supply chain in Eastern Europe. OCL, Volume 26, 29. <https://www.ocl-journal.org/articles/oc/abs/2019/01/oc/190002/oc/190002.html>

Hladni N, Babec B, Miklič V, Jocić S, Miladinović D, Marjanović Jeromela A, Jocković M (2019). NS **confectionery sunflower** hybrids under organic and conventional production conducted in Selenča. Zbornik radova sa 60. Savetovanja industrije ulja, Herceg Novi, 16.-21.06.2019. p. 55-62.

Lukomets V.M, Tishkov V.M.. Seed yield and quality of **confectionery sunflower varieties** depending on plant population. 2019 (Russian) <https://cyberleninka.ru/article/n/urozhaynost-i-kachestvo-semyanu-sortov-krupnoplodnogo-podsolnechnika-v-zavisimosti-ot-gustoty-stoyaniya-rasteniy>

Bochkovoy A.D, Kamardin V.A, Nazarov D.A . A structure of **confectionery sunflower varieties** population on self-fertility. 2019 (Russian). <https://cyberleninka.ru/article/n/struktura-populyatsii-krupnoplodnyh-sortov-podsolnechnika-po-samofertilnosti>

Pre-Print: Tyler Parks, Yordan S. Yordanov. Composite plants for a composite plant: An efficient protocol for **root studies** in the sunflower using composite plants approach. bioRxiv <https://doi.org/10.1101/712760>

Muhammad Mubashar Hussain, Saeed Rauf, Marilyn L. Warburton. Development of **drought-tolerant** breeding lines derived from *Helianthus annuus* × *H. argophyllus* interspecific crosses. *Plant Breeding* 2019 <https://doi.org/10.1111/pbr.12731>

PhD thesis: Surendra Neupane, South Dakota State University 2019. Identification and Characterization of **Stress Responsive Genes** in Soybean and Sunflower. <https://openprairie.sdstate.edu/etd/3249/>

Mushke, R., Yarra, R. & Kirti, P.B. Improved **salinity tolerance** and growth performance in transgenic sunflower plants via ectopic expression of a wheat antiporter gene (TaNHX2) *Mol Biol Rep* (2019). <https://doi.org/10.1007/s11033-019-05028-7>

Alejandro Presotto, Fernando Hernández, Kristin L. Mercer. Phenotypic selection under two contrasting environments in **wild sunflower** and its crop–wild hybrid <https://doi.org/10.1111/eva.12828>



Fernando Hernández, Alejandro Presotto, Mónica Poverene, Jennifer R Mandel, Genetic diversity and population structure of **wild sunflower** (*Helianthus annuus* L.) in Argentina: reconstructing its invasion history, *Journal of Heredity*, , esz047, <https://doi.org/10.1093/jhered/esz047>

Delfina Gagliardi, Damian A. Cambiagno, Agustin L. Arce, Ariel H. Tomassi, Jorge I. Giacomelli, Federico D. Ariel, and Pablo A. Manavella. Dynamic regulation of chromatin topology and transcription by inverted repeat derived small RNAs in sunflower. *PNAS* August 27, 2019 116 (35) 17578-17583; <https://doi.org/10.1073/pnas.1903131116>

KUMARI, Sachin et SHEORAN, R. K. GENETIC DIVERGENCE STUDY IN SUNFLOWER (*Helianthus annuus* L.). *Plantica* 2019. <http://jpsr.in/files/documents/01f505a9-6d1d-4505-ac5c-e09b2ab009a9.pdf>

Esther W. Mwangi, Salem Marzougui, Jung Suk Sung, Ernest C. Bwalya, Yu-Mi Choi and Myung-Chul Lee. Assessment of **Genetic Diversity** and Population Structure **on Kenyan Sunflower** (*Helianthus annuus* L.) Breeding Lines by SSR Markers. https://www.researchgate.net/profile/Salem_Marzougui/publication/334318977_Assessment_of_Genetic_Diversity_and_Population_Structure_on_Kenyan_Sunflower_Helianthus_annuus_L_Breeding_Lines_by_SSR_Markers/links/5d246ab5a6fdcc2462ce316e/Assessment-of-Genetic-Diversity-and-Population-Structure-on-Kenyan-Sunflower-Helianthus-annuus-L-Breeding-Lines-by-SSR-Markers.pdf

PhD thesis: Choudhari, Ambalika Keshav. Heterosis combining ability and stability analysis studies in sunflower (*Helianthus annuus* L.). Vasantnao Naik Marathwada Krishi Vidyapeeth, Parbhani India. 2018 <https://krishikosh.egranth.ac.in/handle/1/5810084360>

PREPRINT: Kate L. Ostevik, Kieran Samuk, Loren H. Rieseberg. Ancestral reconstruction of sunflower karyotypes reveals dramatic **chromosomal evolution**. *BioRxiv*. 2019. <https://doi.org/10.1101/737155>

Jennifer R. Mandel, Rebecca B. Dikow, Carolina M. Siniscalchi, Ramhari Thapa, Linda E. Watson, and Vicki A. Funk. A fully resolved backbone **phylogeny** reveals numerous dispersals and explosive diversifications throughout the **history of Asteraceae**. *PNAS*. <https://doi.org/10.1073/pnas.1903871116>

PATHOLOGY / CROP PROTECTION

Calderón-González Álvaro, Pouilly Nicolas, Muñoz Stéphane, Grand Xavier, Coque Marie, Velasco Leonardo, Pérez-Vich Begoña. An SSR-SNP Linkage Map of the Parasitic Weed **Orobanche Cumana** Wallr. Including a Gene for Plant Pigmentation. *Frontiers in Plant Science* 2019. <https://doi.org/10.3389/fpls.2019.00797>

KİTİŞ, Yasin Emre, GRENZ, Jan Hendrik, SAUERBORN, Joachim. "Effects of some cereal root exudates on germination of **broomrapes** (*Orobanche* spp. and *Phelipanche* spp.)". *Mediterranean Agricultural Sciences* 32 / 2 (August 2019): 145-150. <https://doi.org/10.29136/mediterranean.546564>
BAGHYALAKSHMI, K., SARALA, K., PRABHAKARARAO, K., et al.

Cvejić S, Jocić S, Jocković M, Dedić B, Terzić S, Imerovski I, Radanović A, Miklič V, Miladinović D (2019). Breeding strategies for **Orobanche cumana** resistance in sunflower. *Proceedings of 15th World Congress on Parasitic Plants*, 30th June–5 th July, Amsterdam, the Netherlands, p. 67.

Imerovski I, Dedić B, Cvejić S, Miladinović D, Jocić S, LH Reiseberg (2019). Validation of **broomrape** resistance QTLs in sunflower line HA-267. *Proceedings of 15th World Congress on Parasitic Plants*, 30th June–5 th July, Amsterdam, the Netherlands, p. 82.

Miladinović D, Čitaković I, Dedić B, Cvejić S, Radanović A, Jocić S, Jocković M, Marjanović Jeromela A, Samardžić J (2019). Sunflower reaction to combined **broomrape –downy mildew** attack –



Preliminary study. COST INDEPTH Prague Meeting, February 24-27, 2019, Prague, Czech Republic, p. 90.

Orobanche menace in crop plants: Host resistance as a potential tool to control. <http://www.phytojournal.com/archives/2019/vol8issue2S/PartC/SP-8-2-49-366.pdf>

Juanjuan Li, Chong Yang, Hui Liu, Mengting Cao, Guijun Yan, Ping Si, Weijun Zhou, Ling Xu. 5-aminolevulinic acid enhances sunflower resistance to **Orobanche cumana** (Broomrape), Industrial Crops and Products, 2019, <https://doi.org/10.1016/j.indcrop.2019.111467>

L.A. Rothmann, M.C. Meiring and N.W. McLaren. The development of novel risk reduction strategies for **Sclerotinia** head and stem rot of sunflower and soya beans. Oilseeds Focus 5, pp 22 - 23 (2019). <https://journals.co.za/content/journal/10520/EJC-1603f50011>

Maryam Monazzah, Sattar Tahmasebi Enferadi. Changes in anatomical features and protein pattern of sunflower partially resistant and susceptible lines during infection by virulence factors of **Sclerotinia sclerotiorum**. Phytion 2019. <https://doi.org/10.32604/phyton.2019.05053>

Darwin Christdhas Henry*, M. ThamaraiSelvi and R. Sutha Raja Kumar EFFECT OF CERTAIN PLANT PRODUCTS AGAINST **MACROPHOMINA PHASEOLINA** (TASSI) GOID. CAUSING DRY ROOT ROT IN SUNFLOWERL. http://www.plantarchives.org/PDF%20SUPPLEMENT%202019/78_470-472_.pdf

Tančić Živanov S, Dedić B, Dimitrijević A, Dušanić N, Jocić S, Miklič V, Kovačević B, Miladinović D (2019). Analysis of genetic diversity among **Macrophomina phaseolina** (Tassi) Goid. isolates from Euro-Asian countries. J Plant Dis Prot. doi: <https://doi.org/10.1007/s41348-019-00260-6>

VYPRITSKAYA, KUZNETSOV. RESULTS OF ASSESSING THE STABILITY OF SUNFLOWER TO **FUSARIUM** ROOT ROT (in Russian). <https://elibrary.ru/item.asp?id=35596998>

ЄО Домарацький, ОП Козлова THE INFLUENCE OF **BIOLOGICAL FUNGICIDES** ON THE DAMAGE LEVEL OF THE SUNFLOWER HYBRIDS BY THE PATHOGENIC MICROFLORA. PODILIAN BULLETIN ..., 2018(Russian, English summary) <http://pb.pdatu.edu.ua/article/view/161191>

David Wheeler, Dennis A Johnson. **Verticillium isaacii** is a pathogen and endophyte of potato and sunflower in the Columbia Basin of Washington. Plant Disease 2019 <https://doi.org/10.1094/PDIS-04-19-0779-RE>

Pluzhnikova, I.I. Kriushin, N.V Effect of fungicides and timing of application on the intensity of development of **rust** on plants of sunflower [2018] (Russian) <http://agris.fao.org/agris-search/search.do?recordID=RU2019000395>

Araslanova, N.M. Saukova, S.L. Antonova, T.S. About harmfulness of **Phoma macdonaldii** (Boerema) on sunflower [2018] (Russian) <http://agris.fao.org/agris-search/search.do?recordID=RU2019000443>

Quiroz, F. J.; Velázquez, L.; Lázzaro, N.; Escande, A. R.; Aguirrezábal, L. A. N.; Dosio, G. A. A. **Impact of foliar diseases** on physiological variables that determine the yield of sunflower in different growing situations. <https://www.cabdirect.org/cabdirect/abstract/20193272977>

Moschini, R.C., Rodríguez, M.J., Martínez, M.I. et al. Weather-based predictive models for **Diaporthe helianthi** ascospore release in Uruguay. Australasian Plant Pathol. (2019) 48: 519. <https://doi.org/10.1007/s13313-019-00655-x>



Thompson, S.M., Tan, Y.P., Neate, S.M. et al. **Diaporthe novem** isolated from sunflower (*Helianthus annuus*) and other crop and weed hosts in Australia. *Eur J Plant Pathol* (2018) 152: 823. <https://doi.org/10.1007/s10658-018-1515-7>

Lawson, S.K.; Sharp, L.G.; Powers, C.N.; McFeeters, R.L.; Satyal, P.; Setzer, W.N. Essential Oil Compositions and **Antifungal Activity** of Sunflower (*Helianthus*) Species Growing in North Alabama. *Appl. Sci.* 2019, 9, 3179. <https://doi.org/10.3390/app9153179>

Fareed, A., S.A. Ali, K.A. Hasan, V. Sultana and S. Ehteshamul-Haque. 2019. Evaluation of **biocontrol** and plant growth promoting potential of endophytic yeasts isolated from healthy plants. *Pak. J. Bot.*, 51(6): DOI: [http://dx.doi.org/10.30848/PJB2019-6\(44\)](http://dx.doi.org/10.30848/PJB2019-6(44))

Tom A Royer, Janet J Knodel. **Sunflower Moth** (Lepidoptera: Pyralidae) Biology, Ecology, and Management. *Journal of Integrated Pest Management* 2019. <https://doi.org/10.1093/jipm/pmz024>

Prasifka, J.R. & Wallis, Concentrations of sunflower phenolics appear insufficient to explain resistance to floret- and seed-feeding **caterpillars**. *C.M. Arthropod-Plant Interactions* (2019). <https://doi.org/10.1007/s11829-019-09706-y>

Jarrad R. Prasifka. **Cochylis hospes** (Lepidoptera: Tortricidae) damage to male lines varies significantly and inbred susceptibility predicts damage to hybrids. *The Canadian entomologist* 2019. <https://doi.org/10.4039/tce.2019.48>

AGRONOMY

Sadiq, R., Maqbool, N., B., Parveen, K. and Hussain, M. (2019) Vulnerability of Sunflower Germination and Metal Translocation under **Heavy Metals Contamination**. *American Journal of Plant Sciences*, 10, 738-751. <https://www.scirp.org/journal/CTA.aspx?paperID=92558>

Afsheen Zehra, Zulfiqar Ali Sahito, Wenbin Tong, Lin Tang, Yasir Hamid, Muhammad Bilal Khan, Zarina Ali, Beena Naqvi, Xiaoe Yang. Assessment of sunflower germplasm **for phytoremediation** of lead-polluted soil and production of seed oil and seed meal for human and animal consumption, *Journal of Environmental Sciences*, 2020, <https://doi.org/10.1016/j.jes.2019.05.031>

Yevgenii Domaratskiy*, Lesya Revtio, Valerii Bazaliy, Alexander Zhuykov, Alexander Domaratskiy, and Yelena Sidiyakina. Research of The Impact of Growth Regulators Application on The Basic Biometric, Structural Indicators and Formation of Sunflower Hybrids Seed Performance in The Southern Zones of Ukraine Under the Conditions of Global Climate Transformations. http://www.ksau.kherson.ua/files/kaf_budmeh/%5B134%5D.pdf

Yevhenii Domaratskiy, Victor Shcherbakov, Valerii Bazaliy, Olga Kozlova, Alexander Zhuykov, Irina Mikhalenko, Inna Boychuk, Alexander Domaratskiy, and Alexey Teteruk. Analysis of Synergetic Effects from Multifunctional Growth Regulating Agents in The of Sunflower Mineral Nutrition System. http://www.ksau.kherson.ua/files/kaf_budmeh/%5B41%5D.pdf

Lukomets V.M., Piven V.T., Detsina A.A., Semerenko S.A. Phytosanitary problems of sunflower cultivation (Russian). <https://elibrary.ru/item.asp?id=37640745>

Mysnik E.N., Zakota T.Yu. Weeds in sunflower crops in the steppe zone of the Kuban region (Russian). <https://elibrary.ru/item.asp?id=37640751>

A. A. DETSYNA, I. V. ILLARIONOVA. Influence of plant population on head positions of sunflower op varieties. (Russian, English summary) https://www.arisersar.ru/Agrovestnik/vestnik_2019_1.pdf#page=16



Stepanova, L.P. Boltushkin, D.M. Koren'kova, E.A. Yakovleva, E.V. et al. Evaluation of sunflowers varieties for their precocity and productivity in the Orel region [2018](Russian) <http://agris.fao.org/agris-search/search.do?recordID=RU2019000387>

Remy Fieuzal, Vincent Bustillo, David Collado, Gerard Dedieu. Estimation of **Sunflower Yields** at a Decametric Spatial Scale—A Statistical Approach Based on Multi-Temporal **Satellite Images**. Proceedings 2019, 18(1), 7; <https://doi.org/10.3390/ECRS-3-06203>

S. Gad et al (book chapter Precision agriculture '19) Early **detection of corn and sunflower stress** induced by chemical spraying. https://doi.org/10.3920/978-90-8686-888-9_34

Alexander Calero Hurtado, Denise Aparecida Chiconato, Renato de Mello Prado, Gilmar da Silveira Sousa Junior, Guilherme Felisberto, Silicon attenuates sodium toxicity by improving nutritional efficiency in sorghum and sunflower plants, Plant Physiology and Biochemistry, 2019, <https://doi.org/10.1016/j.plaphy.2019.07.010>

Jamile Maria Da Silva Dos Santos, Clovis Pereira Peixoto, Marcos Roberto Da Silva, Ademir Trindade Almeida, Ana Maria Pereira Bispo De Castro. Agronomic and productive characteristics of sunflower intercropped with forage in a crop-livestock integration system. Revista Caatinga 2019. <http://dx.doi.org/10.1590/1983-21252019v32n224rc>

PhD thesis: Hernández, Fernando. 2019 ; Variación natural de la tolerancia a **temperaturas extremas** en girasol (*Helianthus annuus* L.) silvestre y cultivado. Universidad Nacional del Sur, Argentina. <http://repositoriodigital.uns.edu.ar/handle/123456789/4536>

Çiçek, N., Pekcan, V., Arslan, Ö. et al. Assessing **drought tolerance** in field-grown sunflower hybrids by chlorophyll fluorescence kinetics. Braz. J. Bot (2019) 42: 249. <https://doi.org/10.1007/s40415-019-00534-1>

Faisal, A.; M.F.M. Ibrahim and S.A. Shehata EXOGENOUS APPLIED PUTRESCINE ELEVATE **DROUGHT TOLERANCE** OF SUNFLOWER PLANTS BY MODIFYING OF SOME PHYSIO-BIOCHEMICAL PARAMETERS. https://ajs.journals.ekb.eg/article_28387_74e96c4f349ed2f3b091f26a259c9640.pdf

Pan, Y.; Pan, X.; Zi, T.; Hu, Q.; Wang, J.; Han, G.; Wang, J.; Pan, Z. Optimal Ridge–Furrow Ratio for Maximum **Drought Resilience** of Sunflower in Semi-Arid Region of China. Sustainability 2019, 11, 4047. <https://doi.org/10.3390/su11154047>

J. García-López, R. García-Ruiz, J. Domínguez, I.J. Lorite. Improving the sustainability of farming systems under **semi-arid conditions** by enhancing crop management. Agricultural Water Management 2019. <https://doi.org/10.1016/j.agwat.2019.105718>

MZEZEWA, Jestinos et VAN RENSBURG, Leon Daniel. **Risk assessment** of Sunflower Production Using In-Field Rainwater Harvesting on **Semi-Arid** Ecotope in South Africa. In: Soil Management and Plant Nutrition for Sustainable Crop Production. IntechOpen, 2019. <https://www.intechopen.com/online-first/risk-assessment-of-sunflower-production-using-in-field-rainwater-harvesting-on-semi-arid-ecotope-in->

Groot A, Demissie T, Duku C, Budding-Polo M, Kabuka G, Nkenja E, Ninga K, Lyimo R, Recha J, Osumba J, Schonenberg P. 2019. Sunflower Tanzania: **Climate change risks and opportunities**. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). <https://cgispace.cgiar.org/handle/10568/103237>



PHYSIOLOGY

PhD thesis: Castillo-Lorenzo, Elena (2018) **Seed functional traits** in crops and their wild relatives. PhD thesis, University of Warwick. Embargoed item. Restricted access to Repository staff only until 17 October 2020. <http://wrap.warwick.ac.uk/115629/>

Raúl González Belo, Leonardo Velasco, Susana M. Nolasco, Natalia G. Izquierdo. Oil Phytosterol Concentration in Sunflower Presents a Dilution Response with Oil Weight per Grain. AOCs. <https://doi.org/10.1002/aocs.12265>

Ramadan, Amany A., Abd Elhamid, Ebtihal M., Sadak, Mervat Sh. Comparative study for the effect of arginine and sodium nitroprusside on sunflower plants grown under **salinity stress** conditions Bulletin of the National Research Centre (Egypt). <https://doi.org/10.1186/s42269-019-0156-0>

M. Jarrah, R. Ghasemi-fasaei, A. Ronaghi, M. Zarei & S. Mayel (2019) Enhanced Ni phytoextraction by effectiveness of chemical and biological amendments in sunflower plant grown in **Ni-polluted soils**, Chemistry and Ecology, 35:8, 732-745, <https://doi.org/10.1080/02757540.2019.1644325>

Norouzi chaghamarani n., MOHAMMADI GH.R., GHOBADI M. Yield and growth characteristics of sunflower cultivars inoculated by arbuscular **mycorrhizal fungi under drought** tension conditions. CROP PHYSIOLOGY (Iran). <https://www.sid.ir/en/journal/ViewPaper.aspx?id=668310>

Mazen IBRAHIM. Sunflower response to inoculation with single and mixed species of arbuscular **mycorrhizal fungi**: Agronomic characteristics. Acta Agricultura Slovenica 2019. <http://ojs.aas.bf.uni-lj.si/index.php/AAS/article/view/653/338>

PROCESS AND PRODUCTS

US Patent: Sebastian Meyer, Ulrich Meyer, Reinhard Trumme, Christina Simeone, Stephan ALBERS. Process for Producing a Bioplastics Product. <https://patents.google.com/patent/US20190144664A1/en>

Mokhtar Dabbour, Ronghai He, Benjamin Mintah, Jiahui Xiang, Haile Ma, Changes in functionalities, conformational characteristics and antioxidative capacities of sunflower protein by controlled enzymolysis and ultrasonication action. Ultrasonics Sonochemistry, 2019. <https://doi.org/10.1016/j.ultsonch.2019.104625>

Shulaev, G.M. Milushev, R.K. Ehngovatov, V.F Concentrate from legumes and sunflower protein for compound feed [2018] (Russian) <http://agris.fao.org/agris-search/search.do?recordID=RU2019000088>

Ming Xu, Mingyue Qi, H.D. Goff, S.W. Cui, Polysaccharides from sunflower stalk pith: Chemical, structural and functional characterization. Food Hydrocolloids 2019, <https://doi.org/10.1016/j.foodhyd.2019.04.053>

Zineb Kassab, Mounir El Achaby, Youssef Tamraoui, Houssine Sehaqui, Rachid Bouhfid, Abou El Kacem Qaiss. Sunflower oil cake-derived cellulose nanocrystals: Extraction, physico-chemical characteristics and potential application, International Journal of Biological Macromolecules, 2019, <https://doi.org/10.1016/j.ijbiomac.2019.06.049>

Denise Silva de Aquino, Anastassia Fanhani, Natália Stevanato, Camila da Silva. Sunflower oil from enzymatic aqueous extraction process: Maximization of free oil yield and oil characterization. Journal of Food Process Engineering. 2019. <https://doi.org/10.1111/jfpe.13169>



Zhana Petkova, Ginka Antova. A comparative study on quality parameters of pumpkin, melon and sunflower oils during thermal treatment. OCL 2019. <https://doi.org/10.1051/ocl/2019028>

Haro, A.; Gonzalez, J.; de Evan, T.; de la Fuente, J.; Carro, M.D. Effects of Feeding Rumen-Protected Sunflower Seed and Meal Protein on Feed Intake, Diet Digestibility, Ruminal, Cecal Fermentation, and Growth Performance of Lambs. *Animals* 2019, 9, 415. <https://doi.org/10.3390/ani9070415>

Efimenko, S.G. Efimenko, S.K. Express-evaluation of oleic and linoleic fatty acids content in oil in milled sunflower kernels by means of IR-spectrometry [2018] (Russian) <http://agris.fao.org/agris-search/search.do?recordID=RU2019000449>

Carole Delavaud, H el ene Foug ere, Yves Chilliard, Laurence Bernard. The dietary addition of fish oil or sunflower oil plus starch differently modulates the lipid classes in plasma of lactating cows and goats. *Pipid Science*. <https://doi.org/10.1002/ejlt.201900075>

Gracheva, N.V. & Zheltobryukhov, Sorption Properties of Sunflower Husk Melanins. *V.F. Pharm Chem J* (2019) 53: 337. <https://doi.org/10.1007/s11094-019-02002-2>

Dimitris Karefyllakis, Atze Jan van der Goot, Constantinos V Nikiforidis, Multicomponent emulsifiers from sunflower seeds, *Current Opinion in Food Science*, 2019, <https://doi.org/10.1016/j.cofs.2019.07.005>

GP Kononenko, MI Ustyuzhanina, AA Burkin. The problem of safe sunflower (*Helianthus annuus L.*) use for food and fodder purposes (review)- *Agricultural Biology*, 2018 - <http://www.agrobiolgy.ru/articles/3-2018kononenko.pdf>

Panda SK, da Silva LCN, Sahal D and Leonti M (2019) Editorial: Ethnopharmacological Studies for the Development of Drugs with Special Reference to Asteraceae. *Front. Pharmacol.* 10:955. <https://doi.org/10.3389/fphar.2019.00955>

E. Yılmaz, A. K. Erden. Purification of degummed crude sunflower oil with selected metal-organic frameworks as adsorbents. *Grasas y Aceites*, Vol 70, No 4 (2019) <https://doi.org/10.3989/gya.0930182>

O. E. Ledea-Lozano, L. A. Fern andez-Garc a, D. Gil-Ibarra, N. Tena, R. Garc es, E. Mart nez-Force, J. J. Salas. Characterization of different ozonized sunflower oils I. Chemical changes during ozonization *Grasas y aceites* 2019. <https://doi.org/10.3989/gya.1166182> II. Triacylglycerol condensation and physical properties <https://doi.org/10.3989/gya.1167182>

E. A. Shestakova, D. S. Raspopov, E. I. Verboloz. Development of flow technology for the purification and production of food sunflower phospholipids (Russian) <https://www.vestnik-vsuet.ru/vguit/article/view/2067>

Rodr guez, M., Nolasco, S., Izquierdo, N. et al. Microwave-assisted extraction of antioxidant compounds from sunflower hulls. *Heat Mass Transfer* (2019). <https://doi.org/10.1007/s00231-019-02648-4>

Nada Grahovac, Zvonimir Saka , Snezana Kravi , Zorica Stojanovi , Ranko Romani , Tanja Lu ai , Sandra Cveji , Sini a Joci , Ana Marjanovi -Jeromela. Tocopherol content in cold-pressed oil from different sunflower hybrids grown in Serbia. In proceedings of 4th International Congress "Food Technology, Quality and Safety" and 18th International Symposium "Feed Technology" (FoodTech2018), October 23-25, 2018, Novi Sad, Ser BSA-serbia, ISBN 978-86-7994-056-8, page 404-407.



SOUSA, D. F., SALGADO, J. M., BELO, I., et al. Production of bioactive compounds by solid-state fermentation of oilseed cakes. In: Wastes: Solutions, Treatments and Opportunities III: Selected Papers from the 5th International Conference Wastes 2019, Sept 4-6, Lisbon, Portugal. CRC Press, 2019. p. 281.

https://books.google.fr/books?hl=fr&lr=&id=lsqnDwAAQBAJ&oi=fnd&pg=PA281&dq=sunflower&ots=Syugy_TDZ&sig=fqK-yWekJsTao2wHfrocYfEsWs#v=onepage&q=sunflower&f=false

Tanja Lužaić, Ranko Romanić, Nada Grahovac, Siniša Jocić, Sandra Cvejić, Snezana Kravić, Zorica Stojanović (2019). Investigation of the Oxidation Products of Oil Seeds of Sunflower Hybrids Grown in Serbia and Argentina. Book of abstracts. 9th European Symposium on Plant Lipids, 07-10 July 2019, Marseille, France. p. 75

L Thesis: Pincay Carrillo, Marjorie Dayana, Veloz Benites, Néstor Gonzalo. Propuesta de sustitución de harina de trigo por harina de girasol (*Helianthus annuus*) y su aplicación en masa liviana y masa quebrada de la pastelería. Universidad de Quayaquil. (Spanish). <http://repositorio.ug.edu.ec/handle/redug/42012>

P. Antony Jesu Prabhu, E. Fountoulaki, R. Maas, L.T.N. Heinsbroek, E.H. Eding, S.J. Kaushik, J.W. Schrama, Dietary ingredient composition alters faecal characteristics and waste production in common carp reared in recirculation system, Aquaculture, 2019, <https://doi.org/10.1016/j.aquaculture.2019.734357>

Simona Grasso, Ese Omoarukhe, Xiaokang Wen, Konstantinos Papoutsis, Lisa Methven. The Use of Upcycled Defatted Sunflower Seed Flour as a Functional Ingredient in Biscuits. Foods 2019. <https://doi.org/10.3390/foods8080305>

Kabutey, A.; Herak, D.; Ambarita, H.; Sigalingging, R. Modeling of Linear and Non-linear Compression Processes of Sunflower Bulk Oilseeds. Energies 2019, 12, 2999. <https://doi.org/10.3390/en12152999>

ECONOMY AND MARKETS

Ihana Aguiar Severo, Stefania Fortes Siqueira, Mariany Costa Deprá, Mariana Manzoni Maroneze, Leila Queiroz Zepka, Eduardo Jacob-Lopes. Biodiesel facilities: What can we address to make biorefineries commercially competitive? Renewable and Sustainable Energy Reviews, 2019, <https://doi.org/10.1016/j.rser.2019.06.020>

RP Paranjak, BM Kalyn, BV Gutyj. Prospects of transgenic plants in the agro-sphere of Lviv region <https://nvlvet.com.ua/index.php/agriculture/article/view/3718>; <https://doi.org/10.32718/nvlvet-a9009>

Nestor SHPAK, Nadiya SELIUCHENKO, Viktoriya KHARCHUK, Nataliya KOSAR, Włodzimierz SROKA. Evaluation of Product Competitiveness: A Case Study Analysis. <http://organizacija.fov.uni-mb.si/index.php/organizacija/article/view/984>

Authors: Serba E.M., Tadzhibova P.Y., Rimareva L.V., Krivova A.Y., Overchenko M.B., Ignatova N.I., Kuznetsova N.A. Biotechnological aspects of the creation of a protein-polysaccharide feed enricher based on secondary food production. 2019 (Russian) <https://doi.org/10.30850/vrsn/2019/3/56-59>

F. Rosa, F. Nassivera, M. Taverna. Nutraceutical Food: Testing the Consumer's WTP for Sunflower PUFA Oil. <https://doi.org/10.18461/pfsd.2019.1911>

IN HELIA: Ahead of prints: see <https://www.degruyter.com/view/j/helia> (free access for ISA members through <http://isasunflower.org/> and login to Members Space.



Gil Mercedes, Nestares Graciela. Decoding Non-Target-Site Herbicide Resistance in Sunflower: The Beginning of the Story. *Helia* 2019: <https://doi.org/10.1515/helia-2019-0002>

V. A. Lyakh, N. I. Kostyuchenko, I. A. Shevchenko. Broomrape (*Orobanche cumana* Wallr.) can Influence the Microbial Cenosis in Sunflower Rhizosphere. *Helia* 2019 <https://doi.org/10.1515/helia-2018-0014>

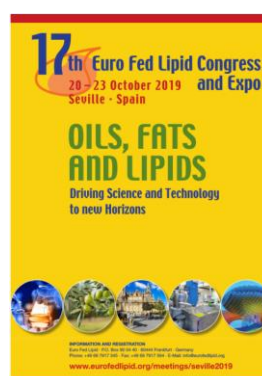
Gerald J. Seiler. Genetic Resources of the Sunflower Crop Wild Relatives for Resistance to Sunflower Broomrape. *Helia* 2019 <https://doi.org/10.1515/helia-2019-0012>

Soolmaz Ahmadian/ Sattar Tahmasebi Enferadi/ Abbas Alemzadeh. Assessment of Genetic Diversity of Cultivated Sunflower in Terms of Oil Content, Fatty Acid Compositions and Seed Traits. *Helia* 2019 <https://doi.org/10.1515/helia-2019-0009>

Coming International and national events

18-21 September 2019: European Conference on crop diversification. Budapest, Hongrie. <https://www.cropdiversification2019.net/call-for-abstracts.html>

20-23 October 2019, 17th Euro Fed Lipid Congress and Expo. Seville, Spain
<http://www.eurofedlipid.org/index.html>



19-20 January 2020, 2nd Congress Lipids & Cosmetics, Bordeaux France
<https://lipidcosmetics.sciencesconf.org>



3-5 February 2020. iCROP2020. Crop modelling for Agriculture and Food Security under Global Change. Montpellier, France. <https://www.icropm2020.org/>

9-12 February 2020. World congress on oils and fats. Sidney, Australia.
www.wcofsydney2020.com



22-25 June 2020, 20th International Sunflower Conference, Novi Sad, Serbia. <https://isc2020.com/>



Registration:

Early fee deadline	20 October 2019
Regular fee deadline	20 May 2020
On site fee	from 21 May 2020

Abstract Submission Deadline: October 20, 2019

We invite all the persons who read this newsletter to share information with the Sunflower community: let us know the scientific projects, events organized in your country, crops performances or any information of interest for sunflower R&D.

Contact ISA Newsletter:

Etienne Pilorgé, ISA Secretary-Treasurer: e.pilorge@terresinovia.fr

Or: contact@isasunflower.org

Join ISA

Why should you join ISA?

You are interested in sunflower research and development

You wish to share points of view and exchange information with colleagues from all over the world,

You wish to be informed of the latest news about sunflower,

You will benefit from premium registration fees to attend our International Sunflower Conferences and Sunflower Symposia

You will get free access to Helia scientific review

To become a member of ISA, you are requested to fill a registration form on line and pay annual membership fees (70€)

Contact: Laetitia Devedeux l.devedeux@terresinovia.fr

Or contact@isasunflower.org

