



## ISA NEWSLETTER N°16, December 2023

### International Sunflower Association

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## Editorial

2023 comes to its end, after the international symposium on broomrape, the 5<sup>th</sup> one, held in Antalya, Turkey, early November. Despite the sad international situation characterized by tensions and wars in the Black Sea and Mediterranean regions, this event was a success: as a non-political organization, ISA goes on organizing exchanges between researchers and developers of all countries.

Vegetable oils, and at a lesser extent proteins, know a growing pressure for non-food uses, when requirements for food are still growing, research and development efforts for sunflower are more necessary than ever, and exchanges and coordination remain essential.

Until we meet again in 2024 at the International Sunflower Conference in Bayannur, China Inner Mongolia, we wish you all a very happy festive season.

Have a Merry Christmas!

Etienne Pilorgé, ISA Secretary

## Activity and News of the association

### 5<sup>th</sup> International Symposium on Broomrape in Sunflower, Antalya, Turkey, 1-3 Nov. 2023

The 5<sup>th</sup> International Symposium on BROOMRAPE in Sunflower "OROBANS" was held in Antalya, Turkey, from 1<sup>st</sup> to 3<sup>rd</sup> November 2023. It was organized by Prof. Yalcin Kaya and his team of Trakya University, and ISA, and gathered about 150 participants, from 22 countries, with high participation of seed companies, some taking the opportunity for their regional meeting in very attractive housing conditions.

A parallel meeting "PROTOIL 2023, International congress on oil and protein crops," organized by Trakya University and EUCARPI from 2<sup>nd</sup> to 4<sup>th</sup> November, permitted to some of the attendees to join the two events.

17 Oral presentations and 8 posters were presented during the broomrape symposium.

The book of abstracts is presently available on the conference website  
<http://www.orobans.com/en/sayfa/1028/home>

### 21<sup>st</sup> International Sunflower Conference, August 20-24, 2023, China

Registration and abstracts submission are now open for the [21<sup>st</sup> International Sunflower Conference](#) In Bayannur, China Inner Mongolia, August 20-24, 2023.

Key dates for participants are the following:

Early registration: November 5<sup>th</sup>, 2023 to March 31<sup>st</sup>, 2024

Abstracts submission: November 5<sup>th</sup>, 2023 to May 31<sup>st</sup>, 2024

## Pustovoit Awards 2024

Following the tradition of ISA, the Pustovoit Awards ceremony will take place during the Sunflower International Conference, next August in Bayannur, China.

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The Awards are given to persons, individuals or teams, but not to Institutions, to recognize major contributions in the field of sunflower research and crop development. The criteria and rules for nominations are explained on the ISA website at <https://www.isasunflower.org/about-us/pustovoit-awards>.

The process leading to the attribution of the awards is the following:

- A call for propositions is sent to ISA members
- Names will be proposed with short notices to the ISA Secretariat (email: contact(at)isasunflower.org)
- The choice through a voting process by the ISA board, each Board Member voting for 4 nominees, with order of preferences.

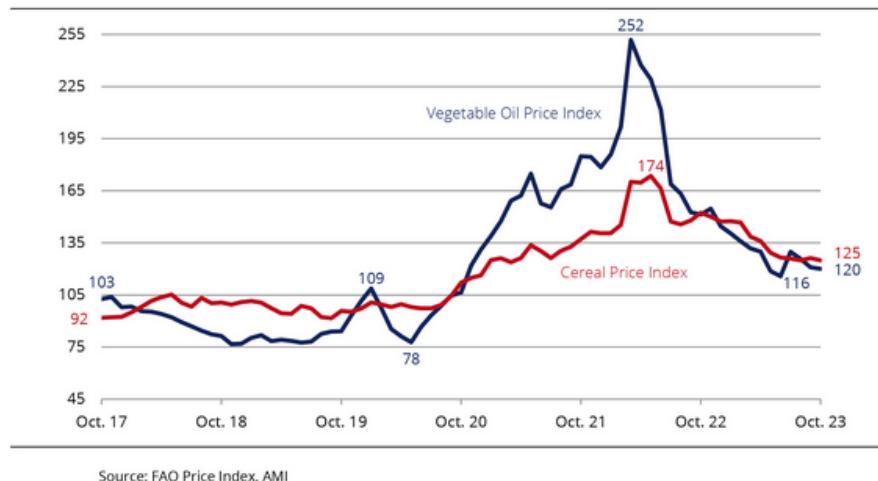
*ISA members may send their propositions until March 31<sup>st</sup>, 2024. Each proposition must include a short notice (about one page) describing the major contribution(s) of the nominee.*

## Value chains and regional news

### FAO vegetable oil price index 2023 going down

"The **FAO Vegetable Oil Price Index** averaged 124.1 points in November, up 4.1 points (3.4 percent) from October after declining for three consecutive months. The increase in the price index was driven by higher world palm and sunflower oil prices, more than offsetting lower soy and rapeseed oil quotations. International palm oil prices rebounded by more than 6.0 percent in November, chiefly underpinned by more active purchases by leading importing countries and seasonally lower outputs in major producing countries. World sunflower oil prices also rose moderately, mainly supported by a continued steady pace of import purchases. By contrast, international soy oil prices dropped slightly on subdued global import demand, outweighing the impact of lower soybean production prospects in Brazil, while lingering abundant world supplies contributed to lower world rapeseed oil prices."

Sources: FAO (<https://www.fao.org/worldfoodsituation/foodpricesindex/en/>) and UFOP  
FAO Global Vegetable Oil and Cereal Price Indices



### USDA: 2021 Production Down 36% from 2020

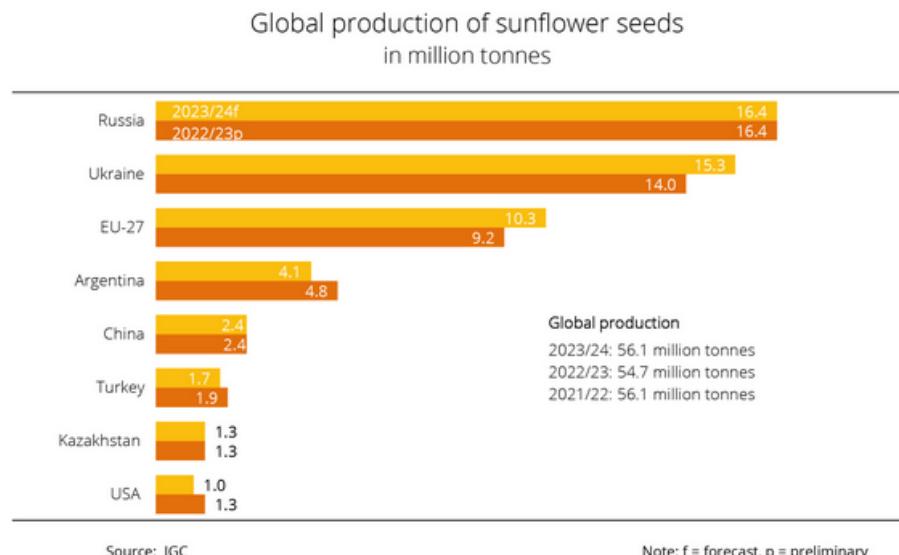
« According to recent information published by the International Grains Council (IGC), global production of sunflower seed will probably amount to 56.1 million tons in 2023/24. The IGC lowered its previous month's forecast by 300,000 tons, mainly due to a prospective smaller crop in the EU-27. The previous year's output is seen to be exceeded by only 2.6 per cent.

The sunflower seed harvest in the Union, the world's third most important supplier, is expected to reach around 10.3 million tons, which is 100,000 tons less than projected in August. Nevertheless, the previous year's figure will presumably be exceeded by 12.4 per cent.

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The harvest area in Ukraine is seen to have been expanded significantly for 2023. Due to favorable growing conditions, yields are expected to increase on 2022. The IGC projects production to reach 15.3 million tons. This translates to an 8.9 per cent rise on the past year. Especially the sunflower acreage in the currently "uncontrolled areas" account for a significant share in the overall output. In Russia, where harvesting commenced at the end of September 2023, output of sunflower seed is expected to remain at the previous year's level of 16.4 million tons. In other words, the previous month's forecast remained unchanged. »



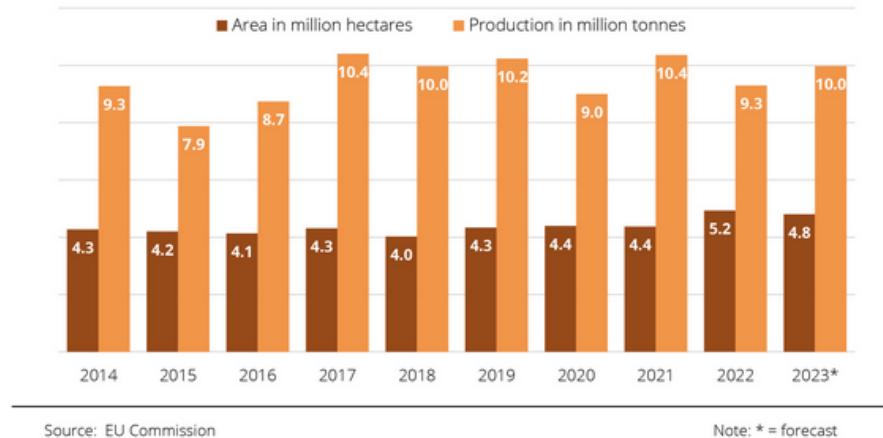
Source: UFOP Chart of the week 41/2023 [https://www.ufop.de/english/news/chart-week/#kw49\\_2023](https://www.ufop.de/english/news/chart-week/#kw49_2023)

## Sunflower harvest in EU: 2023 in the top years

According to EU Commission, reported in the UFOP "chart of the week" 2023 is among the best years for sunflower production.

"According to EU Commission estimates, EU sunflower seed production in 2023 amounted to just less than 10 million tonnes. This was just over 7 per cent more than in 2022, but clearly below the 10.4 million tonne bumper harvest recorded in 2017. Although the area planted was reduced around 2.7 percent to 4.8 million hectares, yields were nearly 10 per cent higher than those recorded in 2022, reaching 20.7 decitonnes per hectare. Whereas dry spells and extreme heat had diminished the yield potential significantly the previous year, crop development in 2023 benefited from mild temperatures and rainfall in some regions. Romania remained by far the most important sunflower-producing region in the EU-27, the sunflower area hitting a new record at 1.2 million hectares. However, despite the significant expansion in area, yields fell around 12 per cent short of the previous year's level, resulting in a marginally smaller Romanian harvest of 2.1 million tonnes compared to 2022."

## Production of sunflower seeds in the EU-27



Source: EU Commission

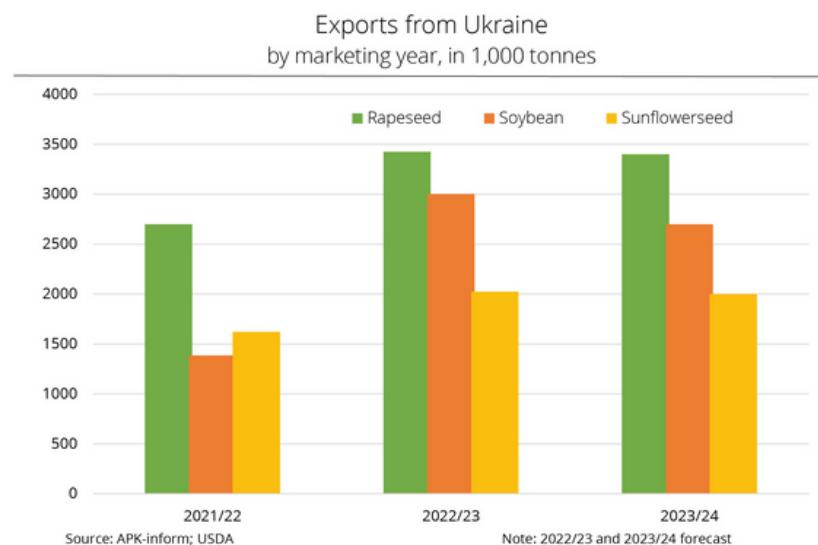
Note: \* = forecast

Source: [https://www.ufop.de/english/news/chart-week/#kw49\\_2023](https://www.ufop.de/english/news/chart-week/#kw49_2023)

## Ukraine maintains its global position in sunflower despite the war

Exports of oilseeds grown in Ukraine increased despite the war that has been going on since February 2022 and the associated restrictions.

“Ukraine maintained its global position as main producer of sunflower seed in the 2022/23 season. Although the 12.2 million tons harvest was 5.3 million tons smaller than that of the previous season, Ukraine remained the world's second most important producer after Russia and ahead of the EU. At the same time, the share of commodity exports increased considerably in the year-on-year comparison. Between September 2022 and May 2023, most exports were destined for the EU (79 per cent), because access to the world market was limited due to the fragile grain deal. Despite the challenging conditions, around 2 million tons of sunflower seed were still exported, slightly more than in the previous season.”



Source: [https://www.ufop.de/english/news/chart-week/#kw49\\_2023](https://www.ufop.de/english/news/chart-week/#kw49_2023)

# Scientific news

## Publications

### GENETICS AND BREEDING

Seiler, G., Gulya, T., & Marek, L. F. (2023). Fifty years of collecting **wild Helianthus species** for cultivated sunflower improvement. *Helia*, (0), <https://doi.org/10.1515/helia-2023-0003>

Spear, M. M., Levi, S. J., Etterson, J. R., & Gross, B. L. (2023). Resurrecting urban sunflowers: Phenotypic and molecular changes between antecedent and modern populations separated by 36 years. *Molecular Ecology*, 32(19), 5241-5259. <https://doi.org/10.1111/mec.17112>

Sprycha, Y. OptiArch: Optimization of **plant architecture** in sunflower (*Helianthus annuus*) for yield increase (Doctoral dissertation, Dissertation, Rostock, Universität Rostock, 2023). [REFERENCE](#)

Gholizadeh, A., & Ghaffari, M. (2023). Genotype by yield\* trait (GYT) biplot analysis: A novel approach for **phenotyping sunflower** single cross hybrids based on multiple traits. *Food Science & Nutrition*. <https://doi.org/10.1002/fsn3.3524>

Mola, T. (2023). Diversity Index and **Phenotypic Character Analysis** for Important Qualitative Traits of Sunflower [*Helianthus annuus L.*] Genotypes in Central Highlands of Ethiopia. *Haya Saudi J Life Sci*, 8(10), 227-232. [https://saudijournals.com/media/articles/SJLS\\_810\\_227-232.pdf](https://saudijournals.com/media/articles/SJLS_810_227-232.pdf)

Wang, H., Hou, H., Jan, C. C., & Chao, W. S. (2023). Irradiated Pollen-Induced Parthenogenesis for **Doubled Haploid Production** in Sunflowers (*Helianthus spp.*). *Plants*, 12(13), 2430. <https://doi.org/10.3390/plants12132430>

Aktaş, Y. E., Aydin, Y., & Uncuoglu, A. A. (2023). Induction of haploid plants for **speed-up breeding** in sunflower (*Helianthus annuus L.*) by pollen irradiation. *Genetics & Applications*, 7(1). <https://doi.org/10.31383/ga.vol7iss1ga05>

Lebedeva, M.A., Gancheva, M.S., Losev, M.R. et al. Molecular and Genetic Bases for Sunflower **Resistance to Broomrape**. *Russ J Plant Physiol* 70, 92 (2023). <https://doi.org/10.1134/S1021443723600824>

Anton, F. G., Joița-Păcureanu, M., Rîșnoveanu, L., & Oprea, D. (2023). Sunflower breeding for **broomrape resistance**. In Natural sciences in the dialogue of generations (pp. 20-20). <https://ibn.idsi.md/ro/cautare?find=632.53%3A633.854.78>

Qi, L., Ma, G., & Seiler, G. (2023). Registration of HA-DM12, HA-DM13, and HA-DM14 oilseed sunflower **germplasms with resistance** to sunflower **downy mildew and rust**. *Journal of Plant Registrations* <https://doi.org/10.1002/plr2.20297>

Ma, G. J., Li, X. H., Seiler, G. J., & Qi, L. L. (2023). Registration of HA-R20 and HA-R21 confection sunflower **germplasms resistant to rust and downy mildew**. *Journal of Plant Registrations*. <https://doi.org/10.1002/plr2.20324>

Qi, L. L., & Seiler, G. J. Registration of HA-DM15 and HA-DM16 oilseed sunflower germplasms with **resistance** to sunflower **downy mildew**. *Journal of Plant Registrations*. <https://acsess.onlinelibrary.wiley.com/doi/abs/10.1002/plr2.20325>

Bhuiyan, M. S. H., Malek, M. A., Khana, N. A. K. A., Islam, M., Rahman, S., & ALAM, M. A. (2023). Validated Molecular Marker for **Downy Mildew Disease Resistance Breeding** of Sunflower: A Short Review. *Journal Of Agrobiotechnology*, 14(2), 28-43. <https://doi.org/10.37231/jab.2023.14.2.333>

Dudhe, M.Y., Jadhav, M.V., Sujatha, M. et al. WAASB-based stability analysis and validation of sources resistant to ***Plasmopara halstedii race-100*** from the sunflower working germplasm for the semiarid regions of India. Genet Resour Crop Evol (2023). <https://doi.org/10.1007/s10722-023-01698-2>

Angidi, S. (2023). Identification and Genetic Characterization of Cultivated Sunflower Lines With Resistance to Sclerotinia Basal Stalk Rot (Doctoral dissertation, North Dakota State University). [REFERENCE](#)

Talukder, Z. I., Underwood, W., Misar, C. G., Li, X., Seiler, G. J., Cai, X., & Qi, L. (2023). Genetic analysis of **basal stalk rot resistance** introgressed from wild *Helianthus petiolaris* into cultivated sunflower (*Helianthus annuus L.*) using an advanced backcross population. Frontiers in Plant Science, 14. <https://doi.org/10.3389%2Ffpls.2023.1278048>

Duruvasula, S., Kandasamy, U., & Sujatha, M. (2023). Computational identification, characterization, and expression analysis of **MLO genes** in two **powdery mildew resistant** and susceptible lines of sunflower. Physiological and Molecular Plant Pathology, 102197. <https://doi.org/10.1016/j.pmpp.2023.102197>

Podder A, Ahmed FF, Suman MZH, Mim AY, Hasan K (2023) Genome-wide identification of DCL, **AGO** and **RDR gene families** and their associated functional regulatory element analyses in sunflower (*Helianthus annuus*). PLoS ONE 18(6): e0286994. <https://doi.org/10.1371/journal.pone.0286994>

Sami, A., Haider, M. Z., Shafiq, M., Sadiq, S., & Ahmad, F. (2023). Genome-Wide Identification and In-silico Expression Analysis of **CCO Gene Family** in Sunflower (*Helianthus annuus*). <https://doi.org/10.21203/rs.3.rs-3344879/v1>

Kaur, B., & Kaila, V. Variability assessment and **trait relationships** among **confectionery sunflower** inbreds. [http://emergentresearch.org/uploads/38/14725\\_pdf.pdf](http://emergentresearch.org/uploads/38/14725_pdf.pdf)

Moore-Pollard, E. R., Jones, D. S., & Mandel, J. R. (2023). Compositae-ParaLoss-1272: Complementary sunflower specific probe-set reduces issues with paralogs in complex systems. bioRxiv, 2023-07. <https://doi.org/10.1101/2023.07.19.549085>

Cvejić, S., Hrnjaković, O., Jocković, M. et al. **Oil yield prediction** for sunflower hybrid selection using different machine learning algorithms. Sci Rep 13, 17611 (2023). <https://doi.org/10.1038/s41598-023-44999-3>

Rauf, S., Fatima, S., & Ortiz, R. (2023). Modification of **Fatty Acid Profile and Oil Contents** Using Gene Editing in Oilseed Crops for a Changing Climate. GM Crops & Food, 1-12. <https://doi.org/10.1080/21645698.2023.2243041>

Ghaffari, M., & Shariati, F. (2023). Genetic analysis of sunflower **fatty acids** under optimum and water stressed conditions. Helia, (0). <https://doi.org/10.1515/helia-2023-0006>

Radanović, A., Cvejić, S., Jocković, M., Dedić, B., Jocić, S., Miladinović, D. (2023). Conventional and Molecular Breeding for Sunflower **Nutrition Quality Improvement**. In: Raina, A., Wani, M.R., Laskar, R.A., Tomlekova, N., Khan, S. (eds) Advanced Crop Improvement, Volume 2. Springer, Cham. [https://doi.org/10.1007/978-3-031-26669-0\\_13](https://doi.org/10.1007/978-3-031-26669-0_13)

Hussain, M., Rauf, S., Ortiz, R., Al-Khayri, J. M., Tauqir, N. A., & Elbok, S. (2023). Genotype by environment interaction influence on functional molecules (**tocopherols and sterols**) accumulation in sunflower oil. <https://doi.org/10.21203/rs.3.rs-3561950/v1>

Jadhao, K.R., Kale, S.S., Chavan, N.S. et al. Genome-wide analysis of the **SPL transcription factor** family and its response to **water stress** in sunflower (*Helianthus annuus*). Cell Stress and Chaperones (2023). <https://doi.org/10.1007/s12192-023-01388-z>

Zaib, P., Ahmad, H. M., Attacha, S., Rahman, M. U., Shafiq, M. R., Parveen, K., ... & Umer, M. J. (2023). Comparative genomics of **light harvesting chlorophyll (LHC) gene family** and impact of chlorophyll-ISA NEWSLETTER No.16, December2023



A contents under **drought stress** in *Helianthus annuus*. Journal of Plant Physiology, 154136. <https://doi.org/10.1016/j.jplph.2023.154136>

Ahmadpour, S., Darvishzadeh, R., Sofalian, O., Abbaspour, N., Abbasi Holasou, H., & Sajjad, M. (2023). Association analysis of **salt tolerance** in sunflower (*Helianthus annuus L.*) using retrotransposon markers. Iranian Journal of Genetics and Plant Breeding, (Articles in Press). <https://doi.org/10.30479/IJGPB.2023.19245.1354>

Mardini, M., Kazantsev, M., Ivoilova, E., Utkina, V., Vlasova, A., & Kirov, I. (2023). Simple Seed-vacuum **Protocol** for Agrobacterium-mediated Virus Induced Gene Silencing (**VIGS**) in Sunflower *Helianthus annuus L.* <https://dx.doi.org/10.17504/protocols.io.261ged56dv47/v1>

Hristova-Cherbadzhi, M. (2023). The top Bulgarian contributions to **sunflower breeding**. Helia, (0). <https://doi.org/10.1515/helia-2022-0015>

Georgiev, G. (2023, September). POTENTIAL OF NEW SUNFLOWER HYBRIDS DEVELOPED AT DAI. In AGRIBALKAN 2023 V. BALKAN AGRICULTURAL CONGRESS (p. 42). [REFERENCE](#)

## PATHOLOGY / CROP PROTECTION

Gulzar, Y., Ünal, Z., Aktaş, H., & Mir, M. S. (2023). Harnessing the power of **transfer learning in sunflower disease detection**: A comparative study. Agriculture, 13(8), 1479. <https://doi.org/10.3390/agriculture13081479>

Auriac, M. C., Griffiths, C., Robin-Soriano, A., Legendre, A., Boniface, M. C., Munos, S., ... & Chabaud, M. (2023). The penetration of sunflower root tissues by the parasitic plant **Orobanche cumana Wallr.** is intracellular. bioRxiv, 2023-07. <https://doi.org/10.1101/2023.07.24.550254>

Ma, Q. Q., Hu, L. J., Xi, H., Yao, Z. Q., Wang, P., Zhao, S. F., & Zhang, X. K. (2023). First Report of Karelinia caspia as a New Host of **Orobanche cumana** in Xinjiang, China. Plant Disease, 107(10), 3323. <https://doi.org/10.1094/PDIS-05-23-0988-PDN>

Zhang, X., Zhang, M., Wang, P., Liu, Z., Yao, Z., Zhao, S., & Xi, H. (2023). Identification and genetic diversity analysis of **broomrape** in Xinjiang province, China. <https://doi.org/10.22541/au.169648575.57105081/v1> or <https://doi.org/10.21203/rs.3.rs-3413997/v1>

Duca, M., & Bivol, I. (2023). Genetic diversity of **broomrape** (*Orobanche cumana Wallr.*) populations from different geographical origins assessed by ISSR markers. Helia, (0). <https://doi.org/10.1515/helia-2023-0014>

Zhang, N.; Ali, S.; Huang, Q.; Yang, C.; Ali, B.; Chen, W.; Zhang, K.; Ali, S.; Ulhassan, Z.; Zhou, W. Brassinosteroids Effectively Enhance Sunflower Resistance against Parasitic Weed (**Orobanche cumana**) Infection. Preprints 2023, 2023111446. <https://doi.org/10.20944/preprints202311.1446.v1>

Fernández-Melero, B., Martín-Sanz, A., Del Moral, L., Pérez-Vich, B., & Velasco, L. (2023). A **novel sunflower broomrape race** with unusual virulence potentially caused by a mutation. Frontiers in Plant Science, 14. <https://doi.org/10.3389%2Ffpls.2023.1236511>

Vypritskaya, A. A., Kuznetsov, A. A., & Buchneva, G. N. **FUSARIUM SAMBUCINUM** FUCKEL ON SUNFLOWER. Вестник, 55. [REFERENCE](#)

Poudel, R. S., Belay, K., Nelson Jr, B., Brueggeman, R., & Underwood, W. (2023). Population and genome-wide association studies of **Sclerotinia sclerotiorum** isolates collected from diverse host plants throughout the United States. Frontiers in Microbiology, 14. <https://doi.org/10.3389%2Ffmicb.2023.1251003>

Fu, M., Qu, Z., Pierre-Pierre, N., Jiang, D., Souza, F. L., Miklas, P., ... & Chen, W. (2023). Exploring the mycovirus SsHADV-1 as a **biocontrol** agent of **white mold** caused by *Sclerotinia sclerotiorum*. Plant Disease, (ja). <https://doi.org/10.1094/PDIS-07-23-1458-RE>

Maslienko, L., Efimtseva, E., & Datsenko, L. (2023, June). Interaction of a promising **bacterial antagonist** strain 11-1 *Bacillus* sp. with the **phoma** rot pathogen *Plenodomus lindquistii*. In AIP Conference Proceedings (Vol. 2817, No. 1). AIP Publishing. <https://doi.org/10.1063/5.0148440>

Maslienko, L., Datsenko, L., & Efimtseva, E. (2023, June). Primary screening of **bacterial antagonist** strains to the sunflower dry rot pathogen *Rhizopus oryzae*. In AIP Conference Proceedings (Vol. 2817, No. 1). AIP Publishing. <https://doi.org/10.1063/5.0148452>

Colombo, D. N., Molas, A. C., Paniego, N. B., & Comerio, R. M. (2023). First report of *Diaporthe ambigua* causing **Phomopsis** stem canker on sunflower in Argentina. New Disease Reports, 48(1). <https://doi.org/10.1002/ndr2.12204>

Kashyap, R., Markell, S. G., Harveson, R. M., Rekabdarkolaee, H. M., and Mathew, F. M. 2023. Application of pyraclostrobin fungicides at miniature floral head development growth stage is efficacious against **Phomopsis stem canker** fungi in sunflower (*Helianthus annuus*). Plant Health Prog. <https://doi.org/10.1094/PHP-06-22-0059-RS>.

Dangal, N. K., Rekabdarkolaee, H. M., Markell, S. G., Harveson, R. M., and Mathew, F. M. 2023. Foliar fungicides containing FRAC 11 mitigates **Phomopsis stem canker** in sunflower (*Helianthus annuus*). Plant Dis. <https://doi.org/10.1094/PDIS-03-22-0516-RE>

Guidini, R., Jahani, M., Huang, K., Rieseberg, L., and Mathew, F. M. 2023. Genome wide association mapping in sunflower (*Helianthus annuus L.*) reveals common loci and putative candidate genes for resistance to *Diaporthe gulyae* and *D. helianthin* causing **Phomopsis stem canker**. Plant Dis. <https://doi.org/10.1094/PDIS-05-22-1209-RE>

Mathew, F., Harveson, R., Gulya, T., Thompson, S., Block, C., and Markell, S. Spanish translation by Andres Zambelli, 2022 (Accepted 3/24/2022). **Phomopsis** stem canker of sunflower. The Plant Health Instructor. <https://doi.org/10.1094/PHI-I-2018-1103-01>

Gagkaeva, T. Y., Orina, A. S., Gomzhina, M. M., & Gavrilova, O. P. (2023). ***Fusarium biliaeae***, a new cryptic species in the *Fusarium fujikuroi* complex associated with sunflower. Mycologia, 1-15. <https://doi.org/10.1080/00275514.2023.2259277>

Ahmed, W.K., Alsalim, H.A.A., Mohammed, A.T. et al. Evaluation of the effectiveness of some **mycorrhizal fungi** isolates against **charcoal rot** disease. Egypt J Biol Pest Control 33, 104 (2023). <https://doi.org/10.1186/s41938-023-00747-3>

Kitti, C., & Gábor, T. INVESTIGATION OF THE BIOLOGY AND DAMAGE OF THE PATHOGEN (*MACROPHOMINA PHASEOLINA*) CAUSING **CHARCOAL ROT** OF SUNFLOWER IN THE CARPATHIAN BASIN. [REFERENCE](#)

Venkataramanamma, K., Prabhakar, K., Neelima, S., & Reddy, B. R. P. Management of **Alternaria Leaf Spot** using Available **Fungicides** (Combi Products) in Sunflower. Indian Journal of Agricultural Research, 1, 6.,<https://doi.org/10.18805/IJARe.A-6079>

Domaratskiy, Y., Kovalenko, O., Kachanova, T., Pichura, V., & Zadorozhnii, Y. Analysis of the Effectiveness of Biological Plant Protection on Sunflower Productivity under Different Cenosis Density under the Non-Irrigated Conditions of the Steppe Zone. <https://doi.org/10.12912/27197050/173004>

de Almeida Dantas, L. V., Silva, E. N., da Silva, D. K. A., Beckmann-Cavalcante, M. Z., & Yano-Melo, A. M. (2023). Impact of long-term application of **paclobutrazol** in communities of arbuscular **mycorrhizal fungi** and their efficiency in the development of *Helianthus annuus L.* Applied Soil Ecology, 191, 105029. <https://doi.org/10.1016/j.apsoil.2023.105029>

Dalcin, L. H., de Menezes Filho, A. C. P., Alves, A. P. S., Silva, Y. F., Dalcin, T. E., Rodrigues, E., & Ventura, M. V. A. (2023). Reproduction factor of *Meloidogyne javanica*, *M. incognita* and *Pratylenchus brachyurus* in sorghum, millet and sunflower varieties. Brazilian Journal of Science, 2(11), 33-42. <https://doi.org/10.14295/bjs.v2i11.394>

Zhou, J., Chen, L. L., Zhu, Y. T., Siemann, E., & Wan, N. F. (2023). Volatiles of the trap crop sunflowers: Effects on the behaviour of adult female *Conogethes punctiferalis* moths. Journal of Applied Entomology. <https://doi.org/10.1111/jen.13185>

Dhinda, B., Nayak, U. S., Das, C. K., & Panda, S. (2023). Comparative Efficacy of Certain IPM Strategies Against **Tobacco Caterpillar and Head Borer** in Sunflower. <https://doi.org/10.23910/1.2023.3594b>

Gual, G., de Sousa Miranda, D., & de Sousa Almeida, A. C. Antixenosis and antibiosis to *Spodoptera frugiperda* (Lepidoptera Noctuidae) in sunflower genotypes. <https://doi.org/10.21475/ajcs.23.17.10.p3555>

Prvulović, D., Gvozdenac, S., Latković, D., Peić Tukuljac, M., Sikora, V., Kiprovski, B., ... & Ovuka, J. (2023). Phytotoxic and insecticidal activity of industrial hemp (*Cannabis sativa L.*) Extracts against *Plodia interpunctella* Hübner—A potential sunflower grain protectant. Agronomy, 13(10), 2456. <https://doi.org/10.3390/agronomy1310245>

Ivanov–Student, A., & Angelova, P. HARMFUL AND USEFUL SUNFLOWER ENTOMOFAUNA AT THE TUTRAKAN REGION. НАУЧНИ ТРУДОВЕ. <https://conf.uni-ruse.bg/bg/docs/sns/2023/AIF.pdf#page=11>

Egan, C. C., Blackwell, B. F., Fernández-Juricic, E., & Klug, P. E. (2023). Data for the analysis of antipredator responses of **blackbird** flocks toward different drone platforms used as hazing tools in sunflower fields. <https://www.fs.usda.gov/rds/archive/catalog/NWRC-RDS-2023-001>

Egan, C. C., Blackwell, B. F., Fernández-Juricic, E., & Klug, P. E. (2023). Dispersal of **blackbird** flocks from sunflower fields: efficacy influenced by flock and field size but not drone platform. Wildlife Society Bulletin, 47(3), e1478. <https://doi.org/10.1002/wsb.1478>

LEGEARD, A., Sausse, C., Thiery, L., Moreau, J., Patris, B., Schaal, B., & Destrez, A. Conditioned Aversion of Coloured Seeds with a **Chemo-Repellent** to Defend Sunflower Seeds from **Birds**: A Field Test of Effectiveness. Available at SSRN 4524888. <http://dx.doi.org/10.2139/ssrn.4524888>

BA, A., Hedge, S. C., HS, K., & Raj, B. A. (2023). Drone Based **Bird Hazer** for Sunflower Crop. International Journal of Environment and Climate Change, 13(11), 2918-2925. <https://doi.org/10.9734/ijecc/2023/v13i113462>

## POLLINATORS AND BEES

Ochoa Cadena, L. (2023). Examining Potential **Trade-offs Between Pest Management and Pollination** to Sunflower Production in Nebraska. <https://digitalcommons.unl.edu/entomologydiss/87/>

Saleem, M. S., Akbar, M. F., Javed, M. A., & Sultan, A. (2023). **Neonicotinoid** pesticide applications affect **pollinator abundance and visitation**, leading to implications for sunflower production (*Helianthus annuus L.*). Cogent Food & Agriculture, 9(1), 2258773. <https://doi.org/10.1080/23311932.2023.2258773>

GRADIŠEK, A., ROBINSON, J. A., BOGATAJ, N., & BEVK, D. (2023). **POLLINATORS OF SUNFLOWERS** THROUGH CITIZEN SCIENCE: AN ADULT EDUCATION APPROACH. Acta entomologica slovenica, 31, 1. [https://www.pms-lj.si/app/uploads/2023/07/1-GRADISEK-1\\_2023.pdf](https://www.pms-lj.si/app/uploads/2023/07/1-GRADISEK-1_2023.pdf)

Catrice, O., Holalu, S., Terzić, S., Todesco, M., Creux, N., & Langlade, N. B. (2023). Progresses of the international community to understand **sunflower–pollinator interactions** through multiscale approaches. *OCL*, 30, 17. <https://doi.org/10.1051/ocl/2023012>

Mulwanda, C., Nyirenda, V.R. & Namukonde, N. Traditional ecological knowledge, perceptions and practices on **insect pollinator conservation**: A case of the smallholder farmers in Murundu ward of Mufulira mining district of Zambia. *J Environ Stud Sci* (2023). <https://doi.org/10.1007/s13412-023-00863-4>

Idrees, A., Qadir, Z. A., Hasnat, A. U., Afzal, A., Ahmad, S., Aqueel, M. A., ... & Li, J. (2023). Effectiveness of **honeybee** (*Apis mellifera*) visit on the pollination of different sunflower cultivars. *Journal of King Saud University-Science*, 35(7), 102837. <https://doi.org/10.1016/j.jksus.2023.102837>

Thakur, M., Sharma, D., Kapoor, B., Khajuria, M., & Yadav, V. (2023). Diversity of **sunflower pollinators** and their effect on seed yield.

<https://www.thepharmajournal.com/archives/2023/vol12issue6/PartAA/12-6-110-755.pdf>

Scheper, J., Badenhausser, I., Kantelhardt, J., Kirchweger, S., Bartomeus, I., Bretagnolle, V., ... & Kleijn, D. (2023). **Biodiversity and pollination benefits trade off** against profit in an intensive farming system. *Proceedings of the National Academy of Sciences*, 120(28), e2212124120.

<https://doi.org/10.1073/pnas.2212124120>

## AGRONOMY

Nugroho, P. A., Juhos, K., Prettl, N., & Kotroczo, Z. **Soil biological indicators** under sunflowers field in a **long-term tillage** experiment of luvisol. [REFERENCE](#)

Alzain, M. N., Loutfy, N., & Aboelkassem, A. (2023). Effects of Different Kinds of **Fertilizers** on the Vegetative Growth, Antioxidative Defense System and Mineral Properties of Sunflower Plants. *Sustainability*, 15(13), 10072. <https://doi.org/10.3390/su151310072>

Janmohammadi, M., & Sabaghnia, N. (2023). **Tillage** intensity by **organic fertilization interaction** on sunflower performance and some soil properties. *Helia*, (0). <https://doi.org/10.1515/helia-2023-0005>

Song, J., Zhang, H., Chang, F., Yu, R., Wang, J., Zhang, X., ... & Li, Y. **Subsurface Organic Fertilization Increases Ecosystem Multifunctionality and Sunflower Yield in Saline Soil**. Available at SSRN 4611534. <https://ssrn.com/abstract=4611534> or <http://dx.doi.org/10.2139/ssrn.4611534>

da Silva, W. V., da S Taveira, J. H., Fernandes, P. B., Silva, P. C., da Costa, A. B., Costa, C. M., ... & Gurgel, A. L. (2023). **Organic and mineral fertilization** determining the agronomic performance of sunflower cultivars and soil chemical attributes. *Revista Brasileira de Engenharia Agrícola e Ambiental-Agriambi*, 27(12). <http://dx.doi.org/10.1590/1807-1929/agriambi.v27n12p927-933>

Sokolovska, I., & Maschenko, Y. (2023). Biotechnological methods of growing sunflower in different **fertilizer systems**. *Helia*, (0). <https://doi.org/10.1515/helia-2023-0011>

Prabhakar, K., Venkataramanamma, K., Reddy, B. V. R. P., Kumar, Y. S., Ramesh, K., Narasimhulu, R., ... & Venkateswarlu, N. C. (2023). The Effect of **Site Specific Nutrient Management (SSNM)** on Sunflower Production. *International Journal of Plant & Soil Science*, 35(20), 753-762. <https://doi.org/10.9734/ijpss/2023/v35i203862>

Maqbool, R., Alawadi, H. F. N., Khan, B. A., Nadeem, M. A. N., Mahmood, A., Javaid, M. M., ... & Ali, B. (2023). Exploring the effect of **zinc and boron** application on oil contents, protein contents, growth and yield of sunflower. *Semina: Ciências Agrárias*, 44(4), 1353-1374. <https://doi.org/10.5433/1679-0359.2023v44n4p1353>

Crista, F., Radulov, I., Imbreia, F., Manea, D. N., Boldea, M., Gergen, I., ... & Bănățean Dunea, I. (2023). The study of the impact of complex **foliar fertilization** on the yield and quality of sunflower seeds (*Helianthus annuus L.*) by principal component analysis. *Agronomy*, 13(8), 2074. <https://doi.org/10.3390/agronomy13082074>

Seabra Filho, M., Menezes, A. S., Neto, L. G. P., de Azevedo, B. M., & de Araújo Viana, T. V. (2023). Effects of split-applied **nitrogen fertigation** on sunflower (*Helianthus annuus*). *DELOS: DESARROLLO LOCAL SOSTENIBLE*, 16(44), 1402-1421. <https://doi.org/10.55905/rdelosv16.n44-026>

Ahmed, A. A. O. (2023). Effect of **Irrigation Intervals and Planting Methods** on the **Yield** of Sunflower in Upper Egypt Aswan. *Aswan University Journal of Environmental Studies*, 4(4), 219-236. <https://dx.doi.org/10.21608/aujes.2023.206609.1147>

Chen, X., Zhang, H., Teng, A., Zhang, C., Lei, L., Ba, Y., & Wang, Z. (2023). Photosynthetic characteristics, yield and quality of sunflower response to **deficit irrigation in a cold and arid environment**. *Frontiers in Plant Science*, 14, 1280347. <https://doi.org/10.3389/fpls.2023.1280347>

Dawar, R., Pal, M. S., Kumar, S., & Kumar, D. Influence of **Mulching and Irrigation** scheduling on yield and quality parameter of summer Sunflower in north India (*Helianthus annuus L.*). <https://doi.org/10.5281/zenodo.7796749>

Dehtiarova, Z. O. (2023). **INFLUENCE OF SHORT-TERM CROP ROTATIONS WITH DIFFERENT PROPORTIONS OF SUNFLOWER ON SOIL WATER REGIME**. *Land Reclamation and Water Management*, (1), 94-101. <https://doi.org/10.31073/mivg202301-349>

Souques, Lucie and ALLETTTO, Lionel and Blanchet, Nicolas and Casadebaig, Pierre and Langlade, Nicolas Bernard, **Cover Crop Residues** Mitigate Impacts of **Water Deficit** on Sunflower During Vegetative Growth with Varietal Differences, But Not During Seed Development. Available at SSRN: <https://ssrn.com/abstract=4557139> or <http://dx.doi.org/10.2139/ssrn.4557139>

en El-Dein, A. A., Hefny, Y. A., & Rashwan, E. A. (2023). **Effect of the preceding crop** and organic or mineral fertilization on yield and oil components of sunflower. *Egyptian Journal of Agricultural Research*, 101(3), 774-790. [https://ejar.journals.ekb.eg/article\\_309200.html](https://ejar.journals.ekb.eg/article_309200.html)

Tadjiyev, M., & Tadjiyev, K. (2023). Effect of Repeated Oilseed Crops on Soil Fertility in The Southern of Uzbekistan. *Texas Journal of Agriculture and Biological Sciences*, 20, 8-12. <https://www.zienjournals.com/index.php/tjabs/article/view/4405>

Morales, M. E., Villamil, M. B., Allegrini, M., Basualdo, J., Iocoli, G. A., & Zabaloy, C. Balancing **Soil Health and Crop Performance**: Winter Cover Crops in Sunflower Farming. Available at SSRN 4646442. <https://ssrn.com/abstract=4646442> or <http://dx.doi.org/10.2139/ssrn.4646442>

Nasir, I. R., Kaleem, S., Nadeem, M. K., Karim, F., Afzal, M., Muzzamil, S., & Abbas, G. (2023). **Phenological Display** of Sunflower (*Helianthus annuus L.*) in **Salt Affected** Area of South Punjab, Pakistan. *GU Journal of Phytosciences*, 3(3), 188-195. <http://phytoscience.com/index.php/GUJP/article/view/119>

Rahman, M. A., Ahmed, S., Begum, F., Roy, P., Gaber, A., & Hossain, A. (2023). Evaluation of Management Approaches Suitable for Improving the Productivity of *Helianthus annuus L.* in the **Salt-Affected Region**. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 71, 17. <https://doi.org/10.11118/actaun.2023.017> or [REFERENCE](#)

Salbas, B., & Erdem, T. (2023). Evaluation of **plant-based measurements** during the flowering period for purposes of the **management of irrigation** of sunflower (*Helianthus annuus L.*). *Journal of Elementology*, 28(2). [REFERENCE](#)

Nwachukwu, B. C. (2023). Microbial diversity, community structure and functional characteristics of **sunflower rhizospheric soil** (Doctoral dissertation, North-West University (South Africa)). <https://repository.nwu.ac.za/handle/10394/41932>

ISA NEWSLETTER No.16, December2023



Zhao, X., Joo, J. C., Du, D., Li, G., & Kim, J. Y. (2023). Modelling **heavy-metal phytoextraction** capacities of *Helianthus annuus* L. and *Brassica napus* L. Chemosphere, 139341. <https://doi.org/10.1016/j.chemosphere.2023.139341>

Waseem, M., Khilji, S. A., Tariq, S., Jamal, A., Alomrani, S. O., & Javed, T. (2023). **Phytoremediation** of heavy metals from industrially contaminated soil using sunflower (*Helianthus annus* L.) by inoculation of two indigenous **bacteria**. Plant Stress, 100297. <https://doi.org/10.1016/j.stress.2023.100297>

Li, S., Xie, Y., Jiang, S., Yang, M., Lei, H., Cui, W., & Wang, F. (2023). **Biochar Decreases Cr Toxicity** and Accumulation in Sunflower Grown in Cr (VI)-Polluted Soil. Toxics, 11(9), 787. <https://doi.org/10.3390/toxics11090787>

Rodriguez, I. M., Mercau, J. L., Cipriotti, P. A., Hall, A. J., & Monzon, J. P. (2023). Fine-tuning the **CROPGRO-Sunflower model** and its application to the quantification of crop responses to environmental and management variables. Field Crops Research, 300, 108986 <https://doi.org/10.1016/j.fcr.2023.108986>

Dong, L., Lei, G., Huang, J., & Zeng, W. (2023). Improving crop modeling in saline soils by **predicting root length density dynamics** with machine learning algorithms. Agricultural Water Management, 287, 108425. <https://doi.org/10.1016/j.agwat.2023.108425>

Zen El-Dein, A. A. M., Koriem, M. H. M., & Ibrahim, S. A. (2023). Effect of **Intercropping** Sunflower Cultivars and Defoliation Time on **Sugar Beet** Yield and Quality. Journal of Plant Production, 303-311. <https://dx.doi.org/10.21608/jpp.2023.214798.1245>

Tabert, M. S. (2023). **Sunflower Intercropping to Establish Alfalfa** or Integrate Cover Crops in the Rotation (Doctoral dissertation, North Dakota State University). [REFERENCE](#)

Beteri, J. M., Lyimo, J. G., & Msinde, J. V. (2023). The influence of climatic and environmental variables on **sunflower planting season** suitability in **Tanzania**. <https://doi.org/10.21203/rs.3.rs-3076185/v1>

Mihai Valentin HERBEI, Cosmin Alin POPESCU, Radu BERTICI, & Florin SALA. (2023). ESTIMATION OF SUNFLOWER CROP **PRODUCTION** BASED ON **REMOTE SENSING** TECHNIQUES. AgroLife Scientific Journal, 12(1), 87–96. <https://doi.org/10.17930/AGL2023111>

Qadir, A., Skakun, S., Eun, J., Prashnani, M., & Shumilo, L. (2023). **Sentinel-1 time** series data for sunflower (*Helianthus annuus*) phenology monitoring. Remote Sensing of Environment, 295, 113689. <https://doi.org/10.1016/j.rse.2023.113689>

Kara, S., Maden, B., Ercan, B. S., Sunar, F., Aysal, T., and Saglam, O.: ASSESSING THE **IMPACT OF BEET WEBWORM MOTHS** ON SUNFLOWER FIELDS USING MULTITEMPORAL **SENTINEL-2 SATELLITE IMAGERY AND VEGETATION INDICES**, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XLVIII-M-1-2023, 521–527, <https://doi.org/10.5194/isprs-archives-XLVIII-M-1-2023-521-2023>, 2023.

Marino, S. (2023). Understanding the spatio-temporal behaviour of the sunflower crop for subfield areas delineation using **Sentinel-2 NDVI** time-series images in an organic farming system. Heliyon, 9(9), e19507. <https://doi.org/10.1016/j.heliyon.2023.e19507>

Casadebaig, P., Blanchet, N., & Langlade, N. B. (2023). **Prediction of sunflower leaf area** at vegetative stage by image analysis and application to the estimation of water stress response parameters in post-registration varieties. arXiv preprint arXiv:2307.11110. <https://doi.org/10.48550/arXiv.2307.11110>

Brown, S., & Mandel, J. (2023). Rapid restructuring of **rhizosphere and endospheric fungal communities** with drought in multiple lines of domesticated sunflower. Phytobiomes Journal, (ja). <https://doi.org/10.1094/PBIOMES-06-23-0049-R>

Krstić, M., Mladenov, V., Banjac, B., Babec, B., Dunderski, D., Ćuk, N., ... & Ovuka, J. (2023). Can Modification of Sowing Date and Genotype Selection Reduce the Impact of Climate Change on Sunflower Seed Production?. *Agriculture*, 13(11), 2149. <https://doi.org/10.3390/agriculture13112149>

Duca, M., Mutu, A., Port, A., & Clapco, S. (2023). **Genotype-environment interaction** in the variability of yield associated indices under stress conditions in sunflower. *Helia*, (0). <https://doi.org/10.1515/helia-2023-0016>

Mao, Q., Xie, Z., Pinzon-Nuñez, D. A., Issaka, S., Liu, T., Zhang, L., & Irshad, S. (2023). Leptolyngbya sp. XZMQ and *Bacillus* XZM co-inoculation reduced sunflower arsenic toxicity by regulating rhizosphere microbial structure and enzyme activity. *Environmental Pollution*, 123001. <https://doi.org/10.1016/j.envpol.2023.123001>

Mengistu, B., & Abu, M. (2023). Evaluation of stability parameters for the selection of stable and superior sunflower genotypes. *Cogent Food & Agriculture*, 9(2), 2275406. <https://doi.org/10.1080/23311932.2023.2275406>

Farias, J. P., Amabile, R. F., Brige, F. A. A., Loures, L. M. R., de Carvalho, C. G. P., Melo, J. V. P., ... & Santos, G. B. C. (2023). **Paraquat** action in reproductive phases of sunflower on agronomic behavior and seed quality. *DELOS: DESARROLLO LOCAL SOSTENIBLE*, 16(47), 2942-2951. <https://ojs.revistadelos.com/ojs/index.php/delos/article/view/985>

Farzamnia, M., Moayeri, M., & Heidarislantabadi, M. (2023). Water and energy productivity of confectionary sunflower: A case study of the cities of Esfahan and Borkhar in Esfahan province. *Iranian Journal of Irrigation & Drainage*. [https://idj.iaid.ir/article\\_182268\\_en.html](https://idj.iaid.ir/article_182268_en.html)

Vilček, J., Maxin, M., Lörincová, M., & Kudla, M. (2023). Pedo-climatic predictions and reality of sunflower (*Helianthus annuus L.*) growing in **Slovakia**. *Plant, Soil and Environment*, 69(11), 545-553. <https://doi.org/10.17221/323/2023-PSE>

Petrenko, V., Topalov, A., Khudolii, L., Honcharuk, Y., & Bondar, V. (2023). Profiling and geographical distribution of **seed oil content** of sunflower in **Ukraine**. *Oil Crop Science*. <https://doi.org/10.1016/j.ocsci.2023.05.002>

## PHYSIOLOGY

Shehzad, M. A., Hussain, I., Akhtar, G., Ahmad, K. S., Nawaz, F., Faried, H. N., & Mehmood, A. (2023). Insights into physiological and metabolic modulations instigated by exogenous sodium nitroprusside and spermidine reveals **drought tolerance** in *Helianthus annuus L.* *Plant Physiology and Biochemistry*, 202, 107935. <https://doi.org/10.1016/j.plaphy.2023.107935>

Ghaffari, M., Gholizadeh, A., Rauf, S., & Shariati, F. (2023). **Drought-stress** induced changes of fatty acid composition affecting sunflower grain yield and oil quality. *Food Science & Nutrition*. <https://doi.org/10.1002/fsn3.3690>

Shen, J., Wang, X., Song, H., Wang, M., Niu, T., Lei, H., ... & Liu, A. (2023). Physiology and transcriptomics highlight the underlying mechanism of sunflower responses to **drought stress and rehydration**. *Iscience*, 26(11). <https://doi.org/10.1016/j.isci.2023.108112>

Lalarukh, I., Zahra, N., Shahzadi, A. et al. Role of Aminolevulinic Acid in Mediating **Salinity Stress Tolerance** in Sunflower (*Helianthus annuus L.*). *J Soil Sci Plant Nutr* (2023). <https://doi.org/10.1007/s42729-023-01406-0>

Qadir, M., Hussain, A., Shah, M., Hamayun, M., Iqbal, A., Irshad, M., ... & Lee, I. J. (2023). *Pantoea conspicua* promoted sunflower growth and engulfed rhizospheric arsenate by secreting exopolysaccharide. *Plant Physiology and Biochemistry*, 107826,. <https://doi.org/10.1016/j.plaphy.2023.107826>

Mukherjee, S., Bhatla, S.C. Endogenous Serotonin Accumulation Coincides with Reorganization of Auxin Efflux Protein (PIN1) and Actin (ACT8) Accompanying Primary Root Growth Inhibition in NaCl-Stress-Induced Etiolated Sunflower (*Helianthus annuus*; cv. KBSH 44) Seedlings. *J Plant Growth Regul* 42, 5192–5202 (2023). <https://doi.org/10.1007/s00344-023-11046-4>

Han, S. M., Chun, S. J., & Nam, K. H. (2023). Comparison of **overwintering** potential of seeds in laboratory and field conditions for the risk assessment of transgenic plants: a sunflower case study. *Journal of Ecology and Environment*, 47, 02. <https://doi.org/10.5141/jee.23.014>

Antonela, M. K., Dario, I., Manda, A., Aleksandra, S., & Ivana, V. The relationship between chlorophyll a fluorescence parameters and yield components in sunflower hybrids. <https://doi.org/10.2298/BOTSERB2301103M>

Garcia, Leonela and Martinez, Giselle and Tognetti, Jorge and Dosio, Guillermo, Plastic **Responses to Light Availability** in Sunflower: A Trade-Off between Growth and Sugar Storage Capacity. Available at SSRN: <https://ssrn.com/abstract=4583410> or <http://dx.doi.org/10.2139/ssrn.4583410>

Meotti, M. G. L., Carvalho, I. R., Loro, M. V., Silva, J. A. G., & Lautenschleger, F. (2024). **Artificial defoliation** and its impact on the agronomic performance of sunflower in a non-preferential season. *Agronomy Science and Biotechnology*, 10, 1-15. <https://doi.org/10.33158/ASB.r198.v10.2024>

## PROCESS AND PRODUCTS

Abdilova, G., Sergibayeva, Z., Orynbekov, D., Shamenov, M., Zhumadilova, G., Bakiyeva, A., ... & Dukenbayev, D. (2023). Influence of Grinding Degree and Screw Rotation Speed on Sunflower Oil **Pressing Process**. *Applied Sciences*, 13(17), 9958. <https://doi.org/10.3390/app13179958>

Yang, J., Vardar, U. S., Boom, R. M., Bitter, J. H., & Nikiforidis, C. V. (2023). **Extraction** of oleosome and protein mixtures from sunflower seeds. *Food Hydrocolloids*, 145, 109078. <https://doi.org/10.1016/j.foodhyd.2023.109078>

FdS, B., Ramos, G. S. M., MGdO, C., & Koblitz, M. G. B. (2023). Natural deep eutectic solvents characteristics determine their extracting and protective power on chlorogenic acids from sunflower meal. <https://doi.org/10.21203/rs.3.rs-3317696/v1>

Xu, S., Zhao, J. R., Guo, Q., Liu, H. M., Qin, Z., & Wang, X. D. (2023). Comparative evaluation of different enzyme pretreatment on the oxidative stability and volatile compounds of sunflower oil. *LWT*, 187, 115385. <https://doi.org/10.1016/j.lwt.2023.115385>

Khabbaz, E. S., Jaldani, S., & Farhoosh, R. (2023). Unusual multiphase **peroxidation of sunflower oil**: A kinetic study. *LWT*, 114981. <https://doi.org/10.1016/j.lwt.2023.114981>

Lacivita, V., Lordi, A., Kalaydzhev, H., Chalova, V. I., Del Nobile, M. A., & Conte, A. (2023). Sunflower meal ethanol solute powder as an upcycled value-product to prolong food shelf life. *Food Bioscience*, 102869 <https://doi.org/10.1016/j.fbio.2023.102869>

Muñoz-Almagro, N., Molina-Tijeras, J. A., Montilla, A., Vezza, T., Sánchez-Milla, M., Rico-Rodríguez, F., & Villamiel, M. (2023). **Pectin** from sunflower by-products **obtained by ultrasound**: Chemical characterization and in vivo evaluation of properties in inflammatory bowel disease. *International Journal of Biological Macromolecules*, 125505. <https://doi.org/10.1016/j.ijbiomac.2023.125505>

Xu, S., Wu, Z. W., Shi, K. Q., Jin, Y. X., Guo, Q., Liu, H. M., ... & Wang, X. D. Physicochemical characteristics and **digestive properties of cell wall polysaccharides** fractionated from sunflower meal. *International Journal of Food Science & Technology*. <https://doi.org/10.1111/ijfs.16736>

Hadidi, M., Aghababaei, F., & McClements, D. J. (2023). Sunflower **meal/cake** as a sustainable **protein source** for global **food** demand: Towards a zero-hunger world. *Food Hydrocolloids*, 109329. <https://doi.org/10.1016/j.foodhyd.2023.109329>

Pöri, P., Lille, M., Edelmann, M., Aisala, H., Santangelo, D., Coda, R., & Sozer, N. (2023). Technological and sensory properties of plant-based **meat analogues** containing fermented **sunflower protein** concentrate. *Future Foods*, 100244. <https://doi.org/10.1016/j.fufo.2023.100244>

Pöri, P., Lille, M., Edelmann, M., Aisala, H., Santangelo, D., Coda, R., & Sozer, N. Technological and sensory properties of **plant-based meat** analogues containing fermented sunflower protein concentrate. *Future Foods*. <https://doi.org/10.1016/j.fufo.2023.100244>

Alexandrino, T. D., Nabeshima, E. H., Gastardo, N. D. A., Sadahira, M. S., Muranyi, I., Eisner, P., & Pacheco, M. T. B. (2023). Plant based **proteins as an egg alternative** in cookies: using de-oiled sunflower meal and its protein isolate as an emulsifying agent. *Brazilian Journal of Food Technology*, 26, e2023038. <https://doi.org/10.1590/1981-6723.03823>

Tsykhanovska, I., Yevlash, V., Tovma, L., Adamczyk, G., Alexandrov, A., Lazarieva, T., & Blahyi, O. (2023). **Flour** from Sunflower Seed Kernels in the Production of **Flour Confectionery**. Bioconversion of Wastes to Value-added Products, 129. [REFERENCE](#)

dos Santos Friolli, M. P., Silva, E. K., Chaves, J., da Silva, M. F., Goldbeck, R., Galland, F. A. B., & Pacheco, M. T. B. (2023). Sequential Processing Using Supercritical Carbon Dioxide and High-Intensity Ultrasound in **Sunflower Protein Flour Production**: Nutritional Value, Microstructure, and Technological Functionality. *Processes*, 11(8), 2407. <https://doi.org/10.3390/pr11082407>

Blicharz-Kania, A., Pecyna, A., Zdybel, B. et al. Sunflower seed cake as a source of nutrients in **gluten-free bread**. *Sci Rep* 13, 10864 (2023). <https://doi.org/10.1038/s41598-023-38094-w>

Laemont, J., & Barringer, S. (2023). Effect of pH, Reducing Sugars, and Protein on **Roasted Sunflower** Seed Aroma Volatiles. *Foods*, 12(22), 4155. <https://doi.org/10.3390/foods12224155>

Shavali-gilani, P., Yazdanfar, N., Jahed-khaniki, G. et al. The effect of flavorings on PAHs level in the **roasted sunflower** seeds. *Sci Rep* 13, 17508 (2023). <https://doi.org/10.1038/s41598-023-44994-8>

Bisinotto, M. S., da Silva Napoli, D. C., Simabuco, F. M., Bezerra, R. M. N., Antunes, A. E. C., Galland, F., & Pacheco, M. T. B. (2023). Sunflower and Palm Kernel Meal Present Bioaccessible Compounds after Digestion with Antioxidant Activity. *Foods*, 12(17), 3283. <https://doi.org/10.3390/foods12173283>

Pirgozliev, V. R., Whiting, I. M., Mansbridge, S. C., & Rose, S. P. (2023). Sunflower and rapeseed meal as alternative **feed** materials to soybean meal for sustainable **egg production**, using aged laying hens. *British Poultry Science*, 64(5), 634-640. <https://doi.org/10.1080/00071668.2023.2239176>

de Oliveira Costa, M. K., Nepomuceno, R. C., Souza, D. H., de Melo, M. C. A., de Souza, O. F., Silva, V. S., ... & Freitas, E. R. (2023). Sunflower cake associated with crude glycerin in white **laying hens** diets: Performance and quality, antioxidant activity and lipid oxidation of eggs. *Research in Veterinary Science*, 164, 105038 <https://doi.org/10.1016/j.rvsc.2023.105038>

Al-molah, M. I., & Kloor, I. S. (2023, November). The Effect of Substituting De-Hulled Sunflower Meal Instead of Soybean Meal with or Without Adding Xylanase Enzyme to the Ration on Productive Performance and Carcass Characteristics of **Broiler Chicks**. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1259, No. 1, p. 012074). IOP Publishing. <https://iopscience.iop.org/article/10.1088/1755-1315/1259/1/012074/pdf>

Crespo, S. P., Fernández, A. B., Veiga, M., González, L., Zafra, C. R., Fernández, R. L., ... & Calvete, G. F. (2023). Prediction of **the nutritive value** of whole plants and morphological fractions of **forage sunflower** by near-infrared reflectance spectroscopy and empirical equations. *Ciencia e investigación agraria: revista latinoamericana de ciencias de la agricultura*, 50(2), 46-57. <https://dialnet.unirioja.es/servlet/articulo?codigo=9102360>

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Geraseev, L. C., Silva, N. C. D., Chaves, A. S., Costa, D. S., Ornelas, L. T. D. C., Crocomo, L. F., & Moreira, S. D. J. M. (2023). Use of sunflower meal as a protein source in diets of **growing lambs**. Revista Brasileira de Zootecnia, 52, e20220144. <http://dx.doi.org/10.37496/rbz5220220144>

Alobre, M. M., Abdelrahman, M. M., Alhidary, I. A., Matar, A. M., Aljumaah, R. S., & Alhotan, R. A. (2023). Evaluating the Effect of Using Different Levels of **Sunflower Hulls** as a Source of Fiber in a Complete Feed on **Naemi Ewes'** Milk Yield, Composition, and Fatty Acid Profile at 6, 45, and 90 Days Postpartum. Sustainability, 15(19), 14431. <https://doi.org/10.3390/su151914431>

Sheida, E., Ryazanov, V., Miroshnikov, S., Matyushenko, N., & Duskaev, G. (2023). **Sunflower husk** processing technology for **fodder production**. In BIO Web of Conferences (Vol. 71, p. 01027). EDP Sciences. <https://doi.org/10.1051/bioconf/20237101027>

Bekhta, P., Kozak, R., Gryc, V., Pipíška, T., Sedliačik, J., Reh, R., ... & Rousek, R. (2023). Properties of lightweight **particleboard** made with sunflower stalk particles in the core layer. Industrial Crops and Products, 205, 117444. <https://doi.org/10.1016/j.indcrop.2023.117444>

Brazzo, D. (2023). Identification of sunflower genotypes suitable for organic agriculture and development of analytical tools for their **traceability**. <http://amsdottorato.unibo.it/id/eprint/11033>

Tang, Z., Wu, C., Tang, W., Huang, M., Ma, C., & He, Y. C. (2023). Enhancing **enzymatic saccharification of sunflower straw** through optimal tartaric acid hydrothermal pretreatment. Bioresource Technology, 129279,. <https://doi.org/10.1016/j.biortech.2023.129279>

Avellaneda, A. et al. (2023). Evaluation of the Potential of Plant Aggregates from Corn and **Sunflower Stalks** for the Design of Building **Materials**. In: Amziane, S., Merta, I., Page, J. (eds) Bio-Based Building Materials. ICBBM 2023. RILEM Bookseries, vol 45. Springer, Cham. [https://doi.org/10.1007/978-3-031-33465-8\\_7](https://doi.org/10.1007/978-3-031-33465-8_7)

Yang, Z., Wang, K., Wang, X., Huan, S., Yang, H., & Wang, C. (2023). Low-cost, superhydrophobic, flame-retardant sunflower straw-based xerogel as thermal **insulation materials** for energy-efficient buildings. Sustainable Materials and Technologies, 38, e00748. <https://doi.org/10.1016/j.susmat.2023.e00748>

Bojanić, N., Vidosavljević, S., Fišteš, A., Šereš, Z., Fodor, E., & Maravić, N. **Emulsion stabilizing capacity of sunflower meal** depending on fraction protein content and particle size. International Journal of Food Science & Technology. <https://doi.org/10.1111/ijfs.16814>

Bezerra, F. D. S., Ramos, G. S. M., Carvalho, M. G. D. O., & Koblitz, M. G. B. Natural Deep Eutectic **Solvents** Characteristics Determine Their Extracting and Protective Power on Chlorogenic Acids from Sunflower Meal. Available at SSRN 4617389.<https://ssrn.com/abstract=4617389> or <http://dx.doi.org/10.2139/ssrn.4617389>

Mezolaki, Á., Such, N., Wágner, L., Rawash, M., Tewelde, K., Pál, L., ... & Dublec, K. (2023). Evaluation the nutrient composition of extracted sunflower meal samples, determined with wet chemistry and near infrared spectroscopy. Journal of Central European Agriculture, 24(3), 613-623 <https://doi.org/10.5513/JCEA01/24.3.3812>

## ECONOMY AND MARKETS

Laber, M., Klimek, P., Bruckner, M. et al. Shock propagation from the Russia–Ukraine conflict on international multilayer food production network determines global food availability. Nat Food 4, 508–517 (2023). <https://doi.org/10.1038/s43016-023-00771-4>

Menier, R., Bagnarosa, G., & Gohin, A. (2023). On the dependence structure of European vegetable oil markets. Applied Economics, 1-20. <https://doi.org/10.1080/00036846.2023.2275220>

Mohamed, I. H. H., Eleraky, M. B., & Kandeel, M. S. A. (2023). An Analytical Study of The Production and Consumption of Some Oil Crops in The Arab Republic of Egypt. Alexandria Science Exchange Journal, 44(4), 593-614. <https://dx.doi.org/10.21608/asejaiqsa.2023.324415>

Declerck, F., Hikouatcha, P., Tchoffo, G., & Tédongap, R. (2023). Biofuel policies and their ripple effects: An analysis of vegetable oil price dynamics and global consumer responses. Energy Economics, 128, 107127.,<https://doi.org/10.1016/j.eneco.2023.107127>

Vedmedeva, K., Nosal, O., Poliakova, I., & Machova, T. (2023). Correlations of confectionary seed traits in different head zones sunflower. *Helia*, (0). <https://doi.org/10.1515/helia-2023-0012>

## MISCELLANEOUS

Recha, J. W., & Demissie, T. D. (2023). Training on Climate-Smart Agriculture for Sunflower Value Chain in Tanzania. <https://cgospace.cgiar.org/handle/10568/131161>

de Godoi, R. G. P., & Kettlewell, P. S. (2023). Applying sunflower oil to rapeseed plants reduces water loss. Journal of the Science of Food and Agriculture. <https://doi.org/10.1002/jsfa.12872>

Puttha, R., Venkatachalam, K., Hanpakdeesakul, S., Wongsa, J., Parametthanuwat, T., Srean, P., ... & Charoenphun, N. (2023). Exploring the Potential of Sunflowers: Agronomy, Applications, and Opportunities within Bio-Circular-Green Economy. Horticulturae, 9(10), 1079. <https://doi.org/10.3390/horticulturae9101079>

## Coming international and national events

**April 28 – May 1, 2024, Palais des congrès de Montréal, Montréal, Québec, Canada : 2024 AOCS Annual Meeting & Expo**

<https://annualmeeting.aocs.org/>



**8 - 10 July 2024, Bologna, Italy: 5<sup>th</sup> International Symposium on Lipid Oxidation and Antioxidants - 5th ISLOA**

<https://veranstaltungen.gdch.de/microsite/index.cfm?I=11650&modus=>



**20 - 24 August 2024, Bayannur/China: 21st International Sunflower Conference**  
<http://www.esanrui.com/isc>



**23 - 27 September 2024, Virginia Beach, VA, USA: ISTRO International Soil and Tillage Research Organisation Conference**  
<https://www.arec.vaes.vt.edu/arec/eastern-shore/istro-2024-22nd-conference.html>



**We invite everyone 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.

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