



Global Council for Innovation in Rapeseed and Canola

“Building a World community for Innovation on Rapeseed and Canola”

N° 15, July 2023

Table des matières

Editorial	2
Activity/ News of the association:	3
IRC-16 Sydney 2023 – September 24-27, 2023, Australia	3
GCIRC General Assembly	4
Welcome to New GCIRC members	4
Value chains and regional news	4
Australia	4
Rapeseed prices: importance of biodiesel and biodiesel regulations	5
Yield forecast in Europe	6
European Union and New Breeding Technologies	8
Scientific news	8
Some publications from Australia	8
Publications	9
GENETICS & BREEDING	9
CROP PROTECTION	15
AGRONOMY & CROP MANAGEMENT	19

PHYSIOLOGY	22
REMOTE SENSING	26
PROCESSING, QUALITY & PRODUCTS	26
NUTRITION AND HEALTH	30
ANALYZES	31
MISCELLANEOUS	32
Upcoming International and national events	32

Editorial

Greetings and welcome to GCIRC Newsletter #15, July 2023.

As always welcome to newsletter #15 and trust that this finds you in good health especially all colleagues in the northern hemisphere as many of you are being affected by the extreme hot conditions. It saddens me that the war in Ukraine continues, but our thoughts and support remain very strong for everyone in Ukraine and none more than our colleagues and the agriculture community. Living so far away it is hard to comprehend the despair of a country at war.

Globally grain and oilseed supplies will be monitored closely as the northern hemisphere gears up for harvest and what impact heat and drought conditions have.

Canola forecasts in Australia is shaping up to be a mixed bag with area and production numbers trending down on 2022 numbers by around 10-15%. In Western Australia much of the cropping regions in the north and east very dry and outlook for below average rainfall, whereas in the southern areas good soil moisture, and outlook is much better. In the eastern states, South Australia, Victoria and New South Wales have some variation in soil moisture and generally in a stronger position. AOF July crop forecasts are due to be released this week and made available.

At the May GCIRC board meeting, the US advised that they are able to host the 2025 technical meeting, on a good note the UK has shown interest and along with India been asked to submit a formal application by the end of July, to enable appropriate discussion for a decision and announcement at the Sydney board meeting.

Finally, I look forward to seeing the more than 400 delegates already registered in September and encourage it's not too late to register and participate.

Robert Wilson, GCIRC President

Activity/ News of the association: IRC-16 Sydney 2023 – September 24-27, 2023, Australia



Welcome Reception – Sunday 24th September.

IRC-2023 is thrilled to announce the Welcome Reception on Sunday 24th September will be held on the luxurious super yacht, The Jackson. Presented by the hosts GCIRC & AOF, delegates will sail around Sydney Harbour, enjoying breathtaking views of iconic landmarks such as the Sydney Opera House and the Harbour Bridge.



After four difficult years this is GCIRC's first in person get together, this Welcome Reception Cruise will allow delegates to reconnect with their international colleagues and friends, to engage in meaningful conversations and establish valuable new connections. Delegates will enjoy delectable canapés and refreshments, featuring Australian wines and produce, all prepared by the expert onboard culinary team. A great way to kick off IRC-2023.

Program - Monday 25th – Wednesday 27th September.

The IRC-2023 Program and Agenda has been finalised after some late tweaking. Featuring Plenary and keynote presentations across an array of topics. The many oral and poster presentations will deliver key research associated to the core Congress themes.

- Genetics, Genomics & Breeding
- Agronomy, Physiology & Management
- Diseases & Pests
- Products & Quality, End Uses, Economy & Markets

We are excited to have over 400 delegates from 28 countries registered to attend this the 16th IRC in Sydney.

Dinner - Tuesday 26th September.

Sponsored by Nuseed, the IRC-2023 Gala Dinner will be THE social event of the Congress. Set in the ballroom of the iconic Luna Park, delegates will enjoy a three-course meal, drinks, and an evening of star-studded entertainment. With the backdrop of Sydney Harbour, this will be the perfect way to reminisce about the wonderful sessions, keynotes, and program of IRC-2023.

A ticket to the dinner is included in the Full Registration ticket, or individual and group tables are also available to purchase. So why not consider inviting colleagues or clients?

GCIRC General Assembly

The GCIRC General Assembly will be held in Sydney, Australia, on Monday, September 25, 5:30 to 7:00 PM local time, at the Sheraton Grand Sydney Hyde Park, the IRC location.

Only GCIRC members who have paid their annual subscription will vote the resolutions. The meeting will be open to all interested people present at the IRC.

Welcome to New GCIRC members

Since last February, we have welcomed two new members:

- HU Qiong, Chinese Academy of Agricultural Sciences, CHINA
- RAHMAN Mukhlesur, North Dakota State University, USA

You may visit their personal pages on the GCIRC website directory, to better know their fields of interest. We take this opportunity to remind all members that they can modify their personal page, especially indicating their fields of interest in order to facilitate interactions.

Value chains and regional news

Australia

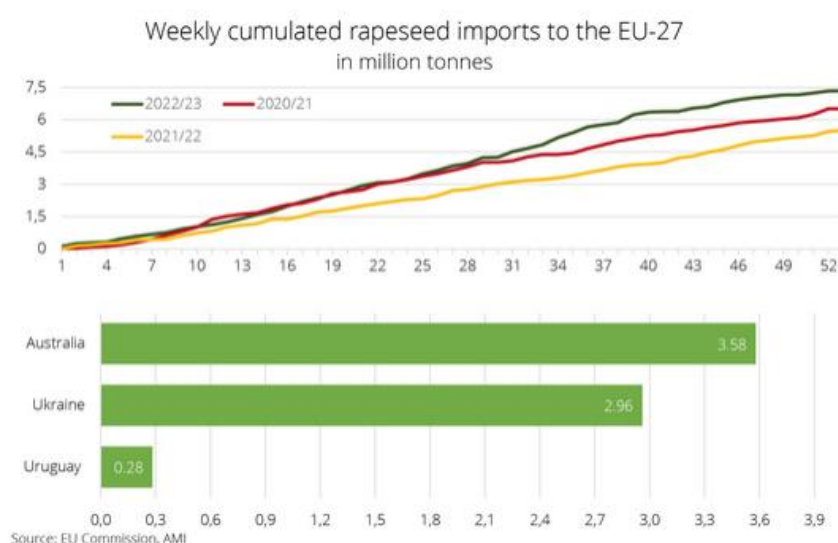
According to the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), National planting to winter crops in 2023–24 is forecast to fall but remains historically high in at 23.3 million hectares. Winter crop production is expected to fall from record highs under expectation of below average rainfall for winter and spring. “Area planted to canola is forecast to fall by 11% to 3.5 million hectares, the second largest area on record. The reduction in area reflects the less favourable start to the season and drier outlook, and to some extent the lower expected returns following recent

falls in world canola prices. Grower constraints related to crop rotations have also seen some substitution towards other crops. Following three consecutive record production years, total Australian winter crop production is forecast to fall by 34% to 44.9 million tonnes in 2023–24. This is around 3% below the 10-year average to 2022–23 of 46.4 million tonnes. Yield prospects are forecast to be below average due to the expectation of below average rainfall for winter and spring.” 2023/24 Canola production is estimated to 4,9MT, 3rd largest harvest, but 41% decline after the 2022/23 record (8,2MT) and 2021/22 (6,8MT).

Read more at: <https://www.agriculture.gov.au/abares/research-topics/agricultural-outlook/australian-crop-report/overview#summer-crop-production-above-average-but-below-last-seasons-record>

The UFOP chart of the week (28 2023) shows that Australia remained primary rapeseed supplier to the EU in 2022/23, with 3,58 MT on a total of 7,3MT.

Australia remained primary rapeseed supplier to the EU in 2022/23



“At 7.3 million tonnes, EU-27 rapeseed imports from non-EU countries clearly exceeded the previous year's volume of 5.5 million tonnes. This translates to a 33 per cent rise.” (Read more at https://www.ufop.de/english/news/chart-week/#kw24_2023)

Rapeseed prices: importance of biodiesel and biodiesel regulations

In its Chart of the week 22 2023, UFOP comments the recent sharp decline in rapeseed prices: “Stock exchange prices for rapeseed have been falling almost continuously since the beginning of the year. Temporarily, they even slid below the level of EUR 400 per tonne for the first time since November 2020. According to the UFOP, this development is partly due not only to expected good global market supply of rapeseed, but also to imports of used waste oils and fats from China and biodiesel produced from them (UCOME - Used Cooking Oil Methyl Ester) in the amount of approximately 500,000 tonnes since the end of 2022. (...) The UFOP has explained that if these biofuel volumes counted twofold

against the mandatory quotas in Germany and other EU member states, such virtual crediting to meet GHG quota obligations reduces physical demand accordingly, especially for rapeseed oil-based bio-diesel. The association fears that this puts a fundamental question mark over the credibility of sustainability certification. (...) In line with the complex market situation, Paris futures market quotations for rapeseed have been falling virtually unchecked for several months. European rapeseed also lost in value based on slipping crude oil and palm oil prices and a temporary decline in US soybean prices.”



Read more at https://www.ufop.de/english/news/chart-week/#kw24_2023

Yield forecast in Europe

According to the JRC MARS Bulletin, published last June 19, 2023 rapeseed yields in the European Union would be slightly lower than in 2022, but remain 6% higher than the 5 years average. The meteorological conditions were unusual and marked by strong contrasts with negative impacts on crop yield expectations in several regions. “Spring was characterised by drier-than-usual conditions in southern Europe, which intensified drought in the Iberian Peninsula, and contrasting wetter-than-usual conditions in many other parts of Europe, including some of the regions affected by drought earlier in the season.”

AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on weather data from 1 May 2023 until 12 June 2023



AREAS OF CONCERN - CROP IMPACTS

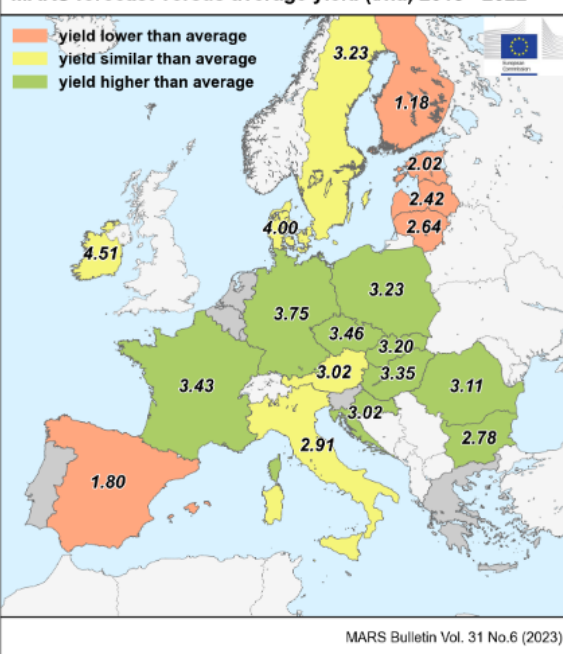
Based on weather data until 12 June 2023



Country	Rape and turnip rape (t/ha)				
	Avg 5yrs	2022	MARS 2023 forecasts	%23/5yrs	%23/22
EU	3.10	3.33	3.29	+6	-1
AT	3.06	3.21	3.02	-1	-6
BE	—	—	—	—	—
BG	2.57	2.29	2.78	+8	+21
CY	—	—	—	—	—
CZ	3.25	3.39	3.46	+6	+2
DE	3.47	3.95	3.75	+8	-5
DK	4.08	4.49	4.00	-2	-11
EE	2.47	2.53	2.02	-18	-20
EL	—	—	—	—	—
ES	2.35	2.16	1.80	-23	-17
FI	1.31	1.37	1.18	-10	-14
FR	3.24	3.68	3.43	+6	-7
HR	2.72	2.59	3.02	+11	+17
HU	2.88	2.50	3.35	+16	+34
IE	4.44	4.92	4.51	+2	-8
IT	2.84	2.85	2.91	+3	+2
LT	2.80	2.57	2.64	-6	+3
LU	—	—	—	—	—
LV	2.62	2.21	2.42	-8	+9
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	3.05	3.38	3.23	+6	-5
PT	—	—	—	—	—
RO	2.56	2.62	3.11	+21	+19
SE	3.20	3.35	3.23	+1	-4
SI	—	—	—	—	—
SK	3.03	3.12	3.20	+6	+3

Rapeseed - yield forecast 2023

MARS forecast versus average yield (t/ha) 2018 - 2022



MARS Bulletin Vol. 31 No.6 (2023)

In Ukraine, high levels of winter crops production are expected, especially for rapeseed with a production forecast of 5,47 MT for 2023 compared to 2,93MT in 2021, due to 79% increase of acreage (2023 versus 2021) and 5% yield increase. If confirmed, this production level will make Ukraine a major rapeseed producer in continental Europe, beyond France and Germany.

Read complete analysis at <https://publications.jrc.ec.europa.eu/repository/handle/JRC133186>

European Union and New Breeding Technologies

Adopting a position on the use of new breeding technologies based on CRISPR is a matter of reflexion for some time in Europe. The European Commission has put forward a proposal to update European Union (EU) rules to reflect greater precision of new gene editing techniques, saying that the move would give farmers more resilient crops and reduce the use of chemical pesticides and offer consumers food with higher nutritional value.

To summarize the past process, the EU's top court had ruled in 2018 that genome-editing techniques should be governed by GMO rules, then the Commission launched a review in 2021 after concluding that GMO legislation from 2001 was "not fit for purpose".

The EU Commission proposes to split new genomic technique (NGT) plants into two categories: those that could also occur naturally or by conventional breeding would be exempted from GMO legislation and labelling requirements. Plants will qualify for the first category if there are no more than 20 genetic modifications. All other NGT plants would be treated as GMOs, requiring risk assessments and authorization. A faster track approval process would apply for the second category of plants if, for example, they are more tolerant to climate change or require less water or fertilizer.

The proposal needs approval from the European Parliament and EU governments and may be revised. However, the proposal is likely to be opposed by environmental groups that would like the 2001 rules on GMO to be retained.

Source: Reuters, July 5.

Some recent illustrations of the use of CRISPR technologies in rapeseed can be seen in the literature section on Genetics and Breeding of this newsletter, applied to diseases resistance and to ALA content notably.

Scientific news

Some publications from Australia

Bell, L., Whish, J., Simpfendorfer, S., Baird, J., Hertel, K., & Erbacher, A. Canola in northern farming systems. [REFERENCE](#)

Dillon, S., & Helliwell, C. Optimisation of canola phenology in diverse Australian growing environments using genomics. [REFERENCE](#)

Congdon, B. S., Baulch, J. R., Filardo, F., & Nancarrow, N. (2023). Turnip yellows virus variants differ in host range, transmissibility, and virulence. <https://doi.org/10.21203/rs.3.rs-2968728/v1>

Publications

To the authors: we identify publications through research with 2 key words only: “rapeseed” and “canola”.

If a publication does not contain one of these two words, but for example only *Brassica napus* or terms implicitly linked to rapeseed/canola (names of diseases or insects or genes, etc....), it will not be detected.

GENETICS & BREEDING

- Amas, J. C., Bayer, P. E., Hong Tan, W., Tirnaz, S., Thomas, W. J., Edwards, D., & Batley, J. (2023). Comparative pangenome analyses provide insights into the evolution of *Brassica rapa* resistance gene analogues (RGAs). *Plant Biotechnology Journal*. <https://doi.org/10.1111/pbi.14116>
- Yang, Z., Wang, S., Wei, L., Huang, Y., Liu, D., Jia, Y., ... & Yang, Q. Y. (2023). BnIR: A **multi-omics database** with various tools for *Brassica napus* research and breeding. *Molecular Plant*, 16(4), 775-789. <https://doi.org/10.1016/j.molp.2023.03.007>
- Katche, E. I., Schierholt, A., Becker, H. C., Batley, J., & Mason, A. S. (2023). Fertility, genome stability, and homozygosity in a diverse set of resynthesized rapeseed lines. *The Crop Journal*, 11(2), 468-477. <https://doi.org/10.1016/j.cj.2022.07.022>
- Katche, E. I., Schierholt, A., Schiessl, S. V., He, F., Lv, Z., Batley, J., ... & Mason, A. S. (2023). Genetic factors inherited from both diploid parents interact to affect genome stability and fertility in resynthesized allotetraploid *Brassica napus*. *G3: Genes, Genomes, Genetics*, jkad136. <https://doi.org/10.1093/g3journal/jkad136>
- Ihien Katche, E., & S. Mason, A. (2023). **Resynthesized Rapeseed** (*Brassica napus*): Breeding and Genomics. *Critical Reviews in Plant Sciences*, 42(2), 65-92. <https://doi.org/10.1080/07352689.2023.2186021>
- Yuan, X., Fu, M., Li, G., Qu, C., Liu, H., Li, X., ... & Liu, F. (2023). Whole-Genome Resequencing Reveals the Genetic Diversity and Selection Signatures of the *Brassica juncea* from the Yunnan-Guizhou Plateau. *Agronomy*, 13(4), 1053. <https://doi.org/10.3390/agronomy13041053>
- Shrivastav, A., Tripathi, M. K., Tiwari, S., Tripathi, N., Tiwari, P. N., Bimal, S. S., ... & Chauhan, S. (2023). Evaluation of **Genetic Diversity** in Indian Mustard (*Brassica juncea* var. *rugosa*) Employing SSR Molecular Markers. *PLANT CELL BIOTECHNOLOGY AND MOLECULAR BIOLOGY*, 10-21. <https://doi.org/10.56557/PCBMB/2023/v24i3-48245>
- Gritsenko, D., Daurova, A., Pozharskiy, A., Nizamdinova, G., Khusnitdinova, M., Sapakhova, Z., ... & Zhambakin, K. (2023). Investigation of mutation load and rate in androgenic **mutant lines** of rapeseed in early generations evaluated by high-density SNP genotyping. *Heliyon*, 9(3). <https://doi.org/10.1016/j.heliyon.2023.e14065>

- Starosta, E., Szwarc, J., Niemann, J., Szewczyk, K., & Weigt, D. (2023). *Brassica napus* **Haploid and Double Haploid** Production and Its Latest Applications. Current Issues in Molecular Biology, 45(5), 4431-4450. <https://doi.org/10.3390/cimb45050282>
- Yan, S., He, J., Tang, M., Ming, B., Li, H., Fan, S., ... & Li, M. (2023). Dissecting the **Meiotic Recombination** Patterns in a *Brassica napus* Double Haploid Population Using 60K SNP Array. International Journal of Molecular Sciences, 24(5), 4469. <https://doi.org/10.3390/ijms24054469>
- Xing, M., Peng, Z., Guan, C., & Guan, M. (2023). Comparative study on abortion characteristics of **Nsa CMS** and **Pol CMS** and analysis of long non-coding RNAs related to pollen abortion in *Brassica napus*. Plos one, 18(4), e0284287. <https://doi.org/10.1371/journal.pone.0284287>
- Orantes-Bonilla, M., Wang, H., Lee, H.T. et al. Transgressive and parental dominant gene expression and cytosine **methylation** during seed development in *Brassica napus* hybrids. Theor Appl Genet 136, 113 (2023). <https://doi.org/10.1007/s00122-023-04345-7>
- Li, Z., & Wu, W. (2023). Genotype recommendations for high performance and stability based on **multiple traits selection** across a multi-environment in rapeseed. European Journal of Agronomy, 145, 126787. <https://doi.org/10.1016/j.eja.2023.126787>
- Zhang, C., Gong, R., Zhong, H., Dai, C., Zhang, R., Dong, J., ... & Hu, J. (2023). Integrated multi-locus genome-wide association studies and transcriptome analysis for seed **yield** and yield-related traits in *Brassica napus*. Frontiers in Plant Science, 14. <https://doi.org/10.3389/fpls.2023.1153000>
- Yang, B.; Kim, D.; Kim, S.H.; Lee, Y.; Kim, W.J.; Baek, S.H.; Kang, S.; Ahn, J.; Bae, C.; Ryu, J. Association Study of **Agronomic and Oil Traits** in Rapeseed (*Brassica napus* L.) Mutant Lines Using Genotyping-by-Sequencing. Preprints.org 2023, 2023041070. <https://doi.org/10.20944/preprints202304.1070.v1>
- Ping, X. U., Hao, L. I., Hai-yuan, L. I., Ge, Z. H. A. O., Sheng-jie, D. A. I., Xiao-yu, C. U. I., ... & Xiao-hua, W. A. N. G. (2023). Genome-wide and candidate gene association studies identifies BnPAP17 conferring **utilization of organophosphorus** in oilseed rape. Journal of Integrative Agriculture. <https://doi.org/10.1016/j.jia.2023.05.002>
- Zhengbiao Long and others, Genome-wide-association study and transcriptome analysis reveal the genetic basis controlling the **formation of leaf wax** in *Brassica napus*, Journal of Experimental Botany, Volume 74, Issue 8, 18 April 2023, Pages 2726–2739, <https://doi.org/10.1093/jxb/erad047>
- Hu, LL., Zheng, LW., Zhu, XL. et al. Genome-wide identification of Brassicaceae histone modification genes and their responses to **abiotic stresses** in allotetraploid rapeseed. BMC Plant Biol 23, 248 (2023). <https://doi.org/10.1186/s12870-023-04256-1>
- Yan, G., Zhang, M., Guan, W., Zhang, F., Dai, W., Yuan, L., ... & Wu, X. (2023). Genome-Wide Identification and Functional Characterization of **Stress Related Glyoxalase Genes** in *Brassica napus* L. International Journal of Molecular Sciences, 24(3), 2130. <https://doi.org/10.3390/ijms24032130>

- Xu, H., Huang, L., Qian, F., Zhang, X., Li, H., Zhai, Y., & Wei, W. (2023). Genome-wide analyses of the Tubby-like proteins in *Brassica napus* revealed their potential roles in the **abiotic stress** response. <https://doi.org/10.21203/rs.3.rs-2633265/v1>
- Li, C., Shi, H., Xu, L., Xing, M., Wu, X., Bai, Y., ... & Cui, C. (2023). Combining transcriptomics and metabolomics to identify key response genes for **aluminum toxicity** in the root system of *Brassica napus* L. seedlings. <https://doi.org/10.21203/rs.3.rs-2891950/v1>
- Dai, J., Han, P., Walk, T. C., Yang, L., Chen, L., Li, Y., ... & Qin, L. (2023). Genome-Wide Identification and Characterization of **Ammonium Transporter (AMT) Genes** in Rapeseed (*Brassica napus* L.). *Genes*, 14(3), 658. <https://doi.org/10.3390/genes14030658>
- Wang, H., Liu, J., Huang, J., Xiao, Q., Hayward, A., Li, F., ... & Xiao, M. (2023). Mapping and Identifying Candidate Genes Enabling **Cadmium Accumulation** in *Brassica napus* Revealed by Combined BSA-Seq and RNA-Seq Analysis. *International Journal of Molecular Sciences*, 24(12), 10163. <https://doi.org/10.3390/ijms241210163>
- Du, K., Yang, Y., Li, J., Wang, M., Jiang, J., Wu, J., ... & Wang, Y. (2023). Functional Analysis of **Bna-miR399c-PHO2** Regulatory Module Involved in **Phosphorus Stress** in *Brassica napus*. *Life*, 13(2), 310. <https://doi.org/10.3390/life13020310>
- Luo, D., Mei, D., Wei, W., & Liu, J. (2023). Identification and Phylogenetic Analysis of the **R2R3-MYB Subfamily** in *Brassica napus*. *Plants*, 12(4), 886. <https://doi.org/10.3390/plants12040886>
- Luo, D., Raza, A., Cheng, Y., Zou, X., & Lv, Y. (2023). Cloning and Functional Characterization of Cold-Inducible MYB-like 17 Transcription Factor in Rapeseed (*Brassica napus* L.). *International Journal of Molecular Sciences*, 24(11), 9514. <https://doi.org/10.3390/ijms24119514>
- Kaur, K., Megha, S., Wang, Z., Kav, N. N., & Rahman, H. (2023). Identification and expression analysis of C2H2-zinc finger protein genes reveals their role in **stress tolerance** in *Brassica napus*. *Genome*, 66(5), 91-107. <https://doi.org/10.1139/gen-2022-0100>
- Yang, S., Chen, J., Ding, Y., Huang, Q., Chen, G., Ulhassan, Z., ... & Wang, J. (2023). Genome-wide investigation and expression profiling of **LOR gene family** in rapeseed under salinity and ABA stress. *Frontiers in Plant Science*, 14, 1197781. <https://doi.org/10.3389/fpls.2023.1197781>
- Fang, F., Zhou, W., Liu, Y. et al. Characterization of RING-type **ubiquitin** SINA E3 ligases and their responsive expression to **salt and osmotic stresses** in *Brassica napus*. *Plant Cell Rep* 42, 859–877 (2023). <https://doi.org/10.1007/s00299-023-02996-w>
- Linghu, B., Song, M., Mu, J., Huang, S., An, R., Chen, N., ... & Zhang, Y. (2023). Comprehensive analysis of U-box E3 **ubiquitin** ligases gene family revealed BnPUB18 and BnPUB19 negatively regulated **drought tolerance** in *Brassica napus*. *Industrial Crops and Products*, 200, 116875. <https://doi.org/10.1016/j.indcrop.2023.116875>
- Corbridge, E., MacGregor, A., Al-Saharin, R., Garneau, M. G., Smalley, S., Mooney, S., ... & Hellmann, H. (2023). *Brassica napus* Plants Gain Improved **Salt-Stress Tolerance** and Increased Storage **Oil Biosynthesis** by Interfering with **CRL3BPM** Activities. *Plants*, 12(5), 1085. <https://doi.org/10.3390/plants12051085>

- Saberi, A. A., Ravari, S. Z., Mehrban, A., Ganjali, H. R., & Oghan, H. A. (2023). Genetic Analysis of Important Traits of Rapeseed Under Normal and **Salinity Stress** Conditions. <https://doi.org/10.21203/rs.3.rs-2846658/v1>
- Kashyap, A., Kumari, S., Garg, P., Kushwaha, R., Tripathi, S., Sharma, J., ... & Rao, M. (2023). Indexing **Resilience to Heat and Drought Stress** in the **Wild Relatives** of Rapeseed-Mustard. *Life*, 13(3), 738. <https://doi.org/10.3390/life13030738>
- Dong, X., Liu, Z., Wei, J., Zheng, G., Li, H., Wang, Y., ... & Xu, C. (2023). The **BrAFP1 promoter** drives gene-specific expression in leaves and stems of winter rapeseed (*Brassica rapa* L.) under cold induction. *Plant Science*, 331, 111669. <https://doi.org/10.1016/j.plantsci.2023.111669>
- Tang, Y., Zhang, G., Jiang, X., Shen, S., Guan, M., Tang, Y., ... & Qu, C. (2023). Genome-Wide Association Study of **Glucosinolate Metabolites** (mGWAS) in *Brassica napus* L. *Plants*, 12(3), 639. <https://doi.org/10.3390/plants12030639>
- Ryu, J.; Yang, B.; Lee, Y.; Kim, D.; Kim, J.H.; Kim, J.; Kim, W.J.; Kim, S.H.; Kwon, S.; Kim, J.; Kang, S.; Lyu, J.I.; Bae, C.; Ahn, J. Genetic Characterization and Association Study of **Anti-nutritional Compounds** in Rapeseed (*Brassica napus* L.) Mutant Lines Using Genotyping-by-Sequencing (GBS). Preprints.org 2023, 2023051612. <https://doi.org/10.20944/preprints202305.1612.v1>
- Huang, Q., Lu, L., Xu, Y. et al. Genotypic variation of **tocopherol content** in a representative genetic population and genome-wide association study on tocopherol in rapeseed (*Brassica napus*). *Mol Breeding* 43, 50 (2023). <https://doi.org/10.1007/s11032-023-01394-0>
- Chang, T., Wang, X., Liao, L., Peng, G., Chen, H., Guan, C., & Guan, M. (2023). Prediction of Oleic Acid Content in *Brassica napus* L. Seeds Based on Hyperspectral Parameters at Seedling Stage: A New Method for Rapidly **Screening Germplasm** with Different **Oleic Acid** Content at Early Growth Stage of Rapeseed. <https://doi.org/10.21203/rs.3.rs-2448851/v1>
- Wang, X., Zhao, D., Li, X., Zhou, B., Chang, T., Hong, B., ... & Guan, M. (2023). Integrated Analysis of lncRNA–mRNA Regulatory Networks Related to Lipid Metabolism in **High-Oleic-Acid** Rapeseed. *International Journal of Molecular Sciences*, 24(7), 6277. <https://doi.org/10.3390/ijms24076277>
- Li, B., Liu, X., Guo, Y. et al. BnaC01.BIN2, a GSK3-like kinase, modulates **plant height and yield** potential in *Brassica napus*. *Theor Appl Genet* 136, 29 (2023). <https://doi.org/10.1007/s00122-023-04325-x>
- Williams, K., Hepworth, J., Nichols, B. S., Corke, F., Woolfenden, H., Paajanen, P., ... & Wells, R. (2023). Integrated Phenomics and Genomics reveals genetic loci associated with **inflorescence growth** in *Brassica napus*. *bioRxiv*, 2023-03. <https://doi.org/10.1101/2023.03.31.535149>
- Yan, G., Li, S., Ma, M., Quan, C., Tian, X., Tu, J., ... & Dai, C. (2023). The transcription factor BnaWRKY10 regulates cytokinin dehydrogenase BnaCKX2 to control **cytokinin** distribution and **seed size** in *Brassica napus*. *Journal of Experimental Botany*, erad201. <https://doi.org/10.1093/jxb/erad201>
- Wang, Q.; Xue, N.; Sun, C.; Tao, J.; Mi, C.; Yuan, Y.; Pan, X.; Gui, M.; Long, R.; Ding, R.; Li, S.; Lin, L. **Cytokinin Signaling** Are Required for **Multi-Main Stems** Development in *Brassica napus* L.. Preprints.org 2023, 2023040586. <https://doi.org/10.20944/preprints202304.0586.v1>

- Yang, B., Zhang, L., Xiang, S., Chen, H., Qu, C., Lu, K., & Li, J. (2023). Identification of Trehalose-6-Phosphate Synthase (TPS) Genes Associated with Both Source-/Sink-Related **Yield Traits** and **Drought Response** in Rapeseed (*Brassica napus* L.). *Plants*, 12(5), 981. <https://doi.org/10.3390/plants12050981>
- Morsi, N. A., Hashem, O. S., El-Hady, M. A. A., Abd-Elkrem, Y. M., El-temsah, M. E., Galal, E. G., ... & Abdelkader, M. A. (2023). Assessing **drought tolerance** of newly developed tissue-cultured canola genotypes under varying irrigation regimes. *Agronomy*, 13(3), 836. <https://doi.org/10.3390/agronomy13030836>
- Chen, J., Zhang, S., Li, B. et al. Fine mapping of BnDM1—the gene regulating indeterminate **inflorescence** in *Brassica napus*. *Theor Appl Genet* 136, 151 (2023). <https://doi.org/10.1007/s00122-023-04384-0>
- Zhu, J., Lei, L., Wang, W. et al. QTL mapping for **seed density per silique** in *Brassica napus*. *Sci Rep* 13, 772 (2023). <https://doi.org/10.1038/s41598-023-28066-5>
- Ma, X., Wang, J., Gu, Y. et al. Genetic analysis and QTL mapping for **silique density** in rapeseed (*Brassica napus* L.). *Theor Appl Genet* 136, 128 (2023). <https://doi.org/10.1007/s00122-023-04375-1>
- Mahmood, U., Li, X., Qian, M. et al. Comparative transcriptome and co-expression network analysis revealed the genes associated with senescence and polygalacturonase activity involved in **pod shattering** of rapeseed. *Biotechnol Biofuels* 16, 20 (2023). <https://doi.org/10.1186/s13068-023-02275-6>
- Tian, Z., Wang, X., Dun, X., Tian, Z., Zhang, X., Li, J., ... & Wang, H. (2023). Integrating biochemical and anatomical characterizations with transcriptome analysis to dissect superior **stem strength** of ZS11 (*Brassica napus*). *Frontiers in Plant Science*, 14, 1144892. <https://doi.org/10.3389/fpls.2023.1144892>
- Guan, M., Shi, X., Chen, S., Wan, Y., Tang, Y., Zhao, T., ... & Qu, C. (2023). Comparative transcriptome analysis identifies candidate genes related to **seed coat color** in rapeseed. *Frontiers in Plant Science*, 14. <https://doi.org/10.3389/fpls.2023.1154208>
- Liu, F., Chen, H., Yang, L., You, L., Ju, J., Yang, S., ... & Liu, Z. (2023). QTL Mapping and Transcriptome Analysis Reveal **Candidate Genes** Regulating **Seed Color** in *Brassica napus*. *International Journal of Molecular Sciences*, 24(11), 9262. <https://doi.org/10.3390/ijms24119262>
- Łopatyńska, A., Wolko, J., Bocianowski, J., Cyplik, A., & Gacek, K. (2023). Statistical Multivariate Methods for the Selection of High-Yielding Rapeseed Lines with Varied **Seed Coat Color**. *Agriculture*, 13(5), 992. <https://doi.org/10.3390/agriculture13050992>
- Li, S., Li, X., Wang, X., Chang, T., Peng, Z., Guan, C., & Guan, M. (2023). Flavonoid Synthesis-Related Genes Determine the **Color of Flower Petals** in *Brassica napus* L. *International Journal of Molecular Sciences*, 24(7), 6472. <https://doi.org/10.3390/ijms24076472>
- Li, R., Zeng, Q., Zhang, X., Jing, J., Ge, X., Zhao, L., ... & Shen, J. (2023). Xanthophyll esterases in association with fibrillins control the stable **storage of carotenoids** in yellow flowers of rapeseed (*Brassica juncea*). *New Phytologist*. <https://doi.org/10.1111/nph.18970>

- Zan, L., Li, K., Jia, Y. et al. Screening and evaluation of three restorer lines used to create synthetic hybrids of **extra-early-maturing** *Brassica napus*. *Euphytica* 219, 45 (2023). <https://doi.org/10.1007/s10681-023-03175-4>
- Tonu, N. N., Wen, R., Song, T., Guo, X., Murphy, L. A., Gossen, B. D., ... & Peng, G. (2023). Canola with Stacked Genes Shows Moderate Resistance and Resilience against a Field Population of *Plasmiodiophora brassicae* (**Clubroot**) Pathotype X. *Plants*, 12(4), 726. <https://doi.org/10.3390/plants12040726>
- Yu, K., Zhang, Y., Fei, X., Ma, L., Sarwar, R., Tan, X., & Wang, Z. (2023). BnaWRKY75 positively regulates the resistance against *Sclerotinia sclerotiorum* in ornamental *Brassica napus*. *Horticultural Plant Journal*. <https://doi.org/10.1016/j.hpj.2023.05.001>
- Muhammad, N., Khan, S. A., Ahmad, S., Ahmed, S., & Khan, Z. (2023). Gene mapping of the mustard **aphid** (*Lipaphis erysimi* (Kalt.) Hemiptera: Aphididae) linkages of **resistance gene** in canola genotypes associated with RAPD markers. *Journal of the Saudi Society of Agricultural Sciences*, 22(5), 309-317. <https://doi.org/10.1016/j.jssas.2023.02.002>
- Xu, Huaxiang and Guo, Xi and Bai, Huiyang and Shi, Huiming and Yu, Jie and Lu, Junxing and Zhu, Bo and Tao, Zhang, Plant **Defensin Gene Pfpdf2** from *Perilla Frutescens* Confers High-Level Resistance to *Alternaria Brassicae* and *Botrytis Cinerea* In *Brassica Napus*. Available at SSRN: <https://ssrn.com/abstract=4344022> or <http://dx.doi.org/10.2139/ssrn.4344022>
- Ali, E., & Zhang, K. (2023). CRISPR-mediated technology for **seed oil improvement** in rapeseed: Challenges and future perspectives. *Frontiers in Plant Science*, 14. <https://doi.org/10.3389/fpls.2023.1086847>
- Moradyar, M., Zamani, M., Motallebi, M., & Jourabchi, E. (2023). Analysis of the Effect of **Chimeric Chitinase** Expressed by Synthetic Promoter in T2 Generation of **Transgenic** Canola. *Journal of Genetic Resources*, 9(1), 48-58. <https://doi.org/10.22080/jgr.2023.24506.1336>
- Xue, Y. F., Fu, C., Chai, C. Y., Liao, F. F., Chen, B. J., Wei, S. Z., ... & Chai, Y. R. (2023). Engineering the Staple Oil Crop *Brassica napus* Enriched with **α-Linolenic Acid** Using the **Perilla FAD2–FAD3** Fusion Gene. *Journal of Agricultural and Food Chemistry*, 71(19), 7324-7333. <https://doi.org/10.1021/acs.jafc.2c09026>
- Calabuig-Serna, A., Mir, R., Porcel, R., & Seguí-Simarro, J. M. (2023). The Highly Embryogenic *Brassica napus* DH4079 Line Is Recalcitrant to Agrobacterium-Mediated **Genetic Transformation**. *Plants*, 12(10), 2008. <https://doi.org/10.3390/plants12102008>
- Wu, Q., Wu, J., Hu, P. et al. Quantification of the three-dimensional **root system architecture** using an automated rotating imaging system. *Plant Methods* 19, 11 (2023). <https://doi.org/10.1186/s13007-023-00988-1>
- Zhang, Y., An, R., Song, M., Xie, C., Wei, S., Wang, D., ... & Mu, J. (2023). A Set of Molecular Markers to Accelerate Breeding and Determine Seed Purity of CMS Three-Line Hybrids in *Brassica napus*. *Plants*, 12(7), 1514. <https://doi.org/10.3390/plants12071514>
- Li, X., Sandgrind, S., Moss, O., Guan, R., Iverson, E., Wang, E. S., ... & Zhu, L. H. (2023). Corrigendum: Efficient **protoplast regeneration protocol** and CRISPR/Cas9-mediated editing of glucosinolate

- transporter (GTR) genes in rapeseed (*Brassica napus* L.). *Frontiers in Plant Science*, 14. <https://doi.org/10.3389/fpls.2023.1183684>
- Ahmad, N., Fatima, S., Mehmood, M. A., Zaman, Q. U., Atif, R. M., Zhou, W., ... & Gill, R. A. (2023). **Targeted genome editing** in polyploids: lessons from *Brassica*. *Frontiers in Plant Science*, 14, 1152468. <https://doi.org/10.3389/fpls.2023.1152468>
- Szwarc, J., Niemann, J., Bocianowski, J., Kaczmarek, J., Doğu, M. Z., & Nowicka, A. (2023). Improving the Selection Efficiency of Breeding Material within Interspecific Brassicaceae Hybrids with **Genomic Prediction and Phenotyping**. *Agriculture*, 13(5), 962. <https://doi.org/10.3390/agriculture13050962>
- De Meyer S, Cruz DF, De Swaef T, Lootens P, De Block J, Bird K, et al. (2023) **Predicting yield** of individual field-grown rapeseed plants from rosette-stage **leaf gene expression**. *PLoS Comput Biol* 19(5): e1011161. <https://doi.org/10.1371/journal.pcbi.1011161>
- Norouzi, M. A., Ahangar, L., Payghamzadeh, K., Sabouri, H., & Sajadi, S. J. (2023). Investigation Of Genetic Diversity Of Different Rapeseed (*brassica napus* L.) Genotypes And **Yield Prediction** Using Machine Learning Models. <https://doi.org/10.21203/rs.3.rs-2932625/v1>

CROP PROTECTION

- Pierre, E., Marcelo, P., Crouette, A., Dauvé, M., Bouton, S., Rippa, S., & Pageau, K. (2023). Impact of Rhamnolipids (RLs), Natural **Defense Elicitors**, on Shoot and Root Proteomes of *Brassica napus* by a Tandem Mass Tags (TMTs) Labeling Approach. *International Journal of Molecular Sciences*, 24(3), 2390, <https://doi.org/10.3390/ijms24032390>
- Umer, M., Qadeer, A., Razaq, Z., Anwar, N., & Kiptoo, J. J. (2023). Mycovirus: **Biocontrol** agent against *Sclerotium* of Rapeseed. *Phytopathogenomics and Disease Control*, 1, 97-108. [REFERENCE](#)
- Cao, S., Jiang, B., Yang, G. et al. Isolation and evaluation of *Bacillus subtilis* RSS-1 as a potential **biocontrol** agent against *Sclerotinia sclerotiorum* on oilseed rape. *Eur J Plant Pathol* 166, 9–25 (2023). <https://doi.org/10.1007/s10658-023-02642-x>
- Trivedi, S., Jambhulkar, P. P., Kumar, S., & Niranjana, P. (2023). A modified and effective stem inoculation technique for artificial screening against *Sclerotinia sclerotiorum* in mustard. *Journal of Phytopathology*. <https://doi.org/10.1111/jph.13179>
- Wei, J., Yao, C., Zhu, Z., Gao, Z., Yang, G., & Pan, Y. (2023). Nitrate reductase is required for sclerotial development and virulence of *Sclerotinia sclerotiorum*. *Frontiers in Plant Science*, 14, 1096831. <https://doi.org/10.3389/fpls.2023.1096831>
- Michael, P. J., Lamichhane, A. R., & Bennett, S. J. (2023). Growing Season Conditions and Isolate Are Important Determinants of *Brassica Napus* Susceptibility to Aggressive *Sclerotinia Sclerotiorum* Isolates. <https://doi.org/10.3390/agronomy13061606>
- Michael, P. J., Rijal Lamichhane, A., & Bennett, S. J. (2023). Temperature and Isolate Are Important Determinants of *Brassica napus* Susceptibility to Aggressive *Sclerotinia sclerotiorum* Isolates. *Agronomy*, 13(6), 1606. <https://doi.org/10.3390/agronomy13061606>

- Walker, P. (2023). Investigation of the *Brassica napus*-*Sclerotinia sclerotiorum* pathosystem and development of RNA interference-based technologies to control pathogenicity. <http://hdl.handle.net/1993/37179>
- Wang, Yongchun and Yu, Han and Xu, Yuping and Wu, Mingde and Zhang, Jing and Tsuda, Kenichi and Liu, Shengyi and Jiang, Daohong and Chen, Weidong and Wei, Yangdou and Li, Guo-Qing and Yang, Long, Expression of a Mycoparasite Protease in Plant Petals Suppresses the Petal-Mediated Infection by Necrotrophic Pathogens. Available at SSRN: <https://ssrn.com/abstract=4423202> or <http://dx.doi.org/10.2139/ssrn.4423202>
- Gautier, A., Laval, V., Faure, S., Rouxel, T., & Balesdent, M. H. (2023). Polymorphism of avirulence genes and adaptation to *Brassica* resistance genes is gene-dependent in the phytopathogenic fungus *Leptosphaeria maculans*. *Phytopathology*, (ja). <https://doi.org/10.1094/PHYTO-12-22-0466-R>
- Talbi, N., Fokkens, L., Audran, C., Petit-Houdenot, Y., Pouzet, C., Blaise, F. et al. (2023) The neighbouring genes AvrLm10A and AvrLm10B are part of a large multigene family of cooperating effector genes conserved in Dothideomycetes and Sordariomycetes. *Molecular Plant Pathology*, 24, 914–931. Available from: <https://doi.org/10.1111/mpp.13338>
- Fu, H., Yang, Y., Sarkes, A., Harding, M. W., Feindel, D., & Feng, J. (2023). Development of a **duplex qPCR system for detection** and quantification of the two canola **blackleg** pathogens *Leptosphaeria biglobosa* and *L. maculans*. *Plant Disease*, (ja). <https://doi.org/10.1094/PDIS-10-22-2308-RE>
- Bagi, B., Palkovics, L. & Petrőczy, M. Phylogenetic analysis of *Plenodomus lingam* and *Plenodomus biglobosus* isolates in Hungary. *J Plant Dis Prot* (2023). <https://doi.org/10.1007/s41348-023-00720-0>
- Auer, S., Ludwig-Müller, J. **Biocontrol of clubroot** disease: how successful are endophytic fungi and bacteria?. *Eur J Plant Pathol* (2023). <https://doi.org/10.1007/s10658-023-02701-3>
- Sarkar, A., Kisiala, A., Adhikary, D., Basu, U., Emery, R. N., Rahman, H., & Kav, N. N. (2023). Silicon ameliorates **clubroot** responses in canola (*Brassica napus*): A “multi-omics”-based investigation into possible mechanisms. *Physiologia Plantarum*, 175(2), e13900. <https://doi.org/10.1111/ppl.13900>
- Hollman, K. B., Manolii, V. P., Aigu, Y., Harding, M. W., Hwang, S. F., & Strelkov, S. E. (2023). Characterization of *Plasmodiophora brassicae* pathotypes from western Canada in 2019–2020. *Canadian Journal of Plant Pathology*, 1-10. <https://doi.org/10.1080/07060661.2023.2212639>
- Salih, R., Brochu, A. S., Labbe, C., Strelkov Sr, S., Franke, C., Bélanger, R., & Pérez-López Sr, E. (2023). A Hydroponic-Based Bioassay to Facilitate *Plasmodiophora brassicae* Phenotyping. *bioRxiv*, 2023-05. <https://doi.org/10.1101/2023.05.13.540618>
- Upadhyay, P., Tewari, A. K., & Punetha, H. (2023). Biochemical estimation of polyphenol and peroxidases in resistant sources against **white rust** disease of rapeseed mustard incited by *Albugo candida*. <https://www.thepharmajournal.com/archives/2023/vol12issue3/PartBB/12-3-340-591.pdf>

- Romero, B., Dumonceaux, T., Olivier, C., Wist, T., & Prager, S. (2023). Development of **Aster Yellows** on crop and non-crop species from the Canadian Prairies. *PhytoFrontiers*, (ja). <https://doi.org/10.1094/PHYTOFR-01-23-0008-R>
- Sulg, S., Kovács, G., Willow, J., Kaasik, R., Smagghe, G., Lövei, G. L., & Veromann, E. (2023). Spatiotemporal **distancing of crops** reduces **pest pressure** while maintaining conservation **biocontrol** in oilseed rape. *Pest Management Science*. <https://doi.org/10.1002/ps.7391>
- Boetzel, F. A., Bommarco, R., Aguilera, G., & Lundin, O. (2023). **Spatiotemporal isolation** of oilseed rape fields reduces **insect pest pressure** and crop damage. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.14424>
- Shortall, C. R., Cook, S. M., Mauchline, A. L., & Bell, J. R. (2023). Long-term trends in migrating ***Brassicogethes aeneus*** in the UK. *Pest Management Science*. <https://doi.org/10.1002/ps.7501>
- Bick, E., Sigsgaard, L., Torrance, M. T., Helmreich, S., Still, L., Beck, B., ... & Cook, S. M. (2023). Dynamics of pollen beetle (***Brassicogethes aeneus***) immigration and colonisation of oilseed rape (*Brassica napus*) in Europe. *Pest Management Science*. <https://doi.org/10.1002/ps.7538>
- Hrudová, E., Seidenglanz, M., Tóth, P., Poslušná, J., Kolařík, P., & Havel, J. (2023). **Pollen Beetles** in Oilseed Rape Fields: Spectrum and Distribution in Czech Republic during 2011–2013. *Agriculture*, 13(6), 1243. <https://doi.org/10.3390/agriculture13061243>
- Vankosky, M. A., Hladun, S., Williams, J., Soroka, J. J., Andreassen, L., Meers, S., ... & Mori, B. A. (2023). Pheromone trap monitoring reveals the continued absence of **swede midge** in the Northern Great Plains. *The Canadian Entomologist*, 155, e7. <https://doi.org/10.4039/tce.2022.38>
- D'Ottavio, M., Boquel, S., Labrie, G., & Lucas, E. (2023). Landscape Effects on the Cabbage Seedpod Weevil, ***Ceutorhynchus obstrictus*** (Coleoptera: Curculionidae), and on Its Parasitoid, *Trichomalus perfectus* (Hymenoptera: Pteromalidae), in Canola. *Insects*, 14(4), 327. <https://doi.org/10.3390/insects14040327>
- Bouzan, R. S., Júnior, A. L. M., da Silva Pereira, P. R. V., Brescovit, A. D., & Iniesta, L. F. M. (2023). First records of **millipedes** (Myriapoda, Diplopoda) associated to cultivation of Canola *Brassica spp.* (Brassicaceae) in Brazil. *Scientific Electronic Archives*, 16(2). <https://doi.org/10.36560/16220231665>
- Dehghan, A., Rounagh-Ardakani, H., Mohammadzadeh, A., Mohammadzadeh, M., Mohammadzadeh, M., & Borzoui, E. (2023). Induction of resistance, enzyme activity, and phytochemicals in canola plants treated with abscisic acid elevated based on nutrient availability: a case study on ***Brevicoryne brassicae* L.** (Homoptera: Aphididae). *Journal of Insect Science*, 23(3), 17. <https://doi.org/10.1093/jisesa/iead037>
- Tiwari, S., Gupta, S. K., Upadhyay, R., Singh, H., Yadav, O. P., & Pandey, M. K. (2023). Screening of *Brassica* genotypes against **mustard aphid** under northern Indian Shivalik hill conditions. *Environment Conservation Journal*. <https://doi.org/10.36953/ECJ.15402483>
- Nisar, M. S., Rashid, A., Samiullah, K., Haidar, M. R., & Malik, S. (2023). Ecofriendly Approaches for Controlling **Mustard Aphid** (*Lipaphis erysimi* Kalt.) Infestation. *Plant Protection*, 7(1), 1-7. <https://esciencepress.net/journals/index.php/PP/article/view/4455>

- Kaur, H., Khadda, B. S., & Singh, P. (2023). Efficacy of Some Botanical Pesticides Against **Mustard Aphid** *Lipaphis erysimi* (Kalt.) In *Brassica napus*. Indian Journal of Entomology. <https://indianentomology.org/index.php/ije/article/view/1047>
- Elliott, N. C., Giles, K. L., Baum, K. A., & Elzay, S. D. (2023). Quantitative Study of **Aphid Natural Enemies** in Central Oklahoma Canola Fields. Southwestern Entomologist, 47(4), 821-828. <https://doi.org/10.3958/059.047.0403>
- Almdal, Crystal Dawn and Costamagna, Alejandro C., Annual Crops Contribute More **Predators** than Perennial Habitats During an **Aphid** Outbreak. Available at SSRN: <https://ssrn.com/abstract=4421516> or <http://dx.doi.org/10.2139/ssrn.4421516>
- Mai, M., Mesbah, I. I., Hendawy, A. S., Hamed, S. A., El-Zahraa, F., & Hegazy, H. Survey and Population Fluctuation of Certain **Insect Pests** and their **Predators** in Canola Fields at Kafr-El Sheikh Governorate. https://jsaes.journals.ekb.eg/article_298172_78d2134ce40ca68d44cae9d604a3c03c.pdf
- Congdon, B. S., Baulch, J. R., Filardo, F., & Nancarrow, N. (2023). **Turnip yellows virus** variants differ in host range, transmissibility, and virulence. <https://doi.org/10.21203/rs.3.rs-2968728/v1>
- Bootter, M. B., Li, J., Zhou, W., Edwards, D., & Batley, J. (2023). Diversity of **Phytosterols** in Leaves of Wild Brassicaceae Species as Compared to *Brassica napus* Cultivars: Potential Traits for **Insect Resistance** and **Abiotic Stress Tolerance**. Plants, 12(9), 1866. <https://doi.org/10.3390/plants12091866>
- Mutua, E. K., Gaoqiong, L., & Mwangi, M. **Insecticidal** properties of **neem seed extracts**: A review. <https://repository.ruforum.org/sites/default/files/Mutua%20E.pdf>
- ÖZTÜRK, L. (2023). A Field Study on Determination of **Nematode Diversity** in Canola Fields in Tekirdağ, Turkey. Türk Doğa ve Fen Dergisi, 12(1), 91-98. <https://doi.org/10.46810/tdfd.1224967>
- Sandoval-Ruiz, R., & Grabau, Z. J. (2023). HOST SUITABILITY OF CARINATA (*Brassica Carinata*) FOR *Rotylenchulus reniformis* Nematropica, 53. <https://journals.flvc.org/nematropica/article/view/133411>
- Abati, R., Libardoni, G., Osowski, G. et al. Residual effect of **imidacloprid** and **beta-cyfluthrin** on Africanized *Apis mellifera* L. (Hymenoptera: Apidae) workers. Apidologie 54, 26 (2023). <https://doi.org/10.1007/s13592-023-01005-z>
- Jaques, S. A., Jofré-Pérez, C., Murúa, M. M., Vieli, L., & Fontúrbel, F. E. (2023). Crop-Specific Effects on Pan-Trap Sampling of Potential **Pollinators** as Influenced by Trap Color and Location. Agronomy, 13(2), 552. <https://doi.org/10.3390/agronomy13020552>
- Hada, Z., Jenfaoui, H., Khammassi, M., Matmati, A., & Souissi, T. Allelopathic Effect of Barley (*Hordeum vulgare*) and Rapeseed (*Brassica napus*) Crops on Early Growth of Acetolactate Synthase (**ALS**)-Resistant *Glebionis Coronaria*. <https://doi.org/10.52543/tjpp.17.2.2>
- Hu, M., Zhang, H., Kong, L., Ma, J., Wang, T., Lu, X., ... & Chu, P. (2023). Comparative proteomic and physiological analyses reveal **tribenuron-methyl** phytotoxicity and nontarget-site resistance mechanisms in *Brassica napus*. Plant, Cell & Environment. <https://doi.org/10.1111/pce.14598>

AGRONOMY & CROP MANAGEMENT

- KA Seetseng, JH Barnard, LD van Rensburg, & CC du Preez. (2023). Canola (*Brassica napus* L.) **water use** indicators as affected by sustained deficit irrigation and plant density in central Free State, South Africa. *Water SA*, 49(2 April). <https://doi.org/10.17159/wsa/2023.v49.i2.3965>
- Ullah, S., Nafees, M., & Ahmed, I. (2023). Resistance induction in *Brassica napus* L. against **water deficit stress** through application of **biochar** and plant growth promoting **rhizobacteria**. *Journal of the Saudi Society of Agricultural Sciences*. <https://doi.org/10.1016/j.jssas.2023.04.001>
- Xiang, Jie and Vickers, Laura and Hare, Martin and Kettlewell, Peter, Increasing the Concentration of **Film Antitranspirant** Enhances Yield Benefits on Rapeseed (*Brassica Napus* L.) Under Terminal Drought. Available at SSRN: <https://ssrn.com/abstract=4327524> or <http://dx.doi.org/10.2139/ssrn.4327524>
- Xiang, J., Vickers, L. H., Hare, M. C., & Kettlewell, P. S. (2023). Increasing the concentration of **film antitranspirant** increases yields of rapeseed under terminal drought by improving plant water status. *Agricultural Water Management*, 284, 108350. <https://doi.org/10.1016/j.ag-wat.2023.108350>
- Tian, X., Zhao, Y., Chen, Z. et al. Effects of **Nitrogen** Fertilization on Yield and Nitrogen Utilization of Film Side Planting Rapeseed (*Brassica napus* L.) Under Different Soil Fertility Conditions. *J Soil Sci Plant Nutr* 23, 368–379 (2023). <https://doi.org/10.1007/s42729-022-01030-4>
- Li, J., Zhou, Y., Gu, H., Lu, Z., Cong, R., Li, X., ... & Lu, J. (2023). Synergistic effect of **nitrogen and potassium** on seed yield and nitrogen use efficiency in winter oilseed rape (*Brassica napus* L.). *European Journal of Agronomy*, 148, 126875. <https://doi.org/10.1016/j.eja.2023.126875>
- Wang, R., Zheng, W., Wu, Y., Liu, D., & Peng, W. Effects of a range of **phosphorus** levels on yield, phosphorus efficiency and canopy sunlight interception in direct-seeded winter rapeseed. *Agronomy Journal*. <https://doi.org/10.1002/agj2.21394>
- Safdar, M.E., M. Asif, A. Ali, A. Aziz, N. Akhtar, M.S. Gulrez and W. Raza. 2023. Integrated use of **boron and zinc** for enhancing growth, yield and quality of canola. *Sarhad Journal of Agriculture*, 39(1): 287-297. <https://dx.doi.org/10.17582/journal.sja/2023/39.1.287..297>
- Nasrollahzadeh, S., Mamnabi, S., Ghassemi-Golezani, K., Raei, Y., & Weisany, W. (2023). PGPR and vermicompost with reduced chemical fertilizer enhances biodiesel production, nutrient uptake and improve oil composition of rapeseed grown under water deficit stress. *South African Journal of Botany*, 159, 17-25. <https://doi.org/10.1016/j.sajb.2023.06.001>
- Al Naemi, M., Garnier, P., Jullien, A., and Richard-Molard, C.: Effects of Winter Rapeseed - Faba-bean **intercrop** and litter mulch on **soil Nitrogen** , EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-14362, <https://doi.org/10.5194/egusphere-egu23-14362> , 2023
- Chen, S., Yang, D., Wei, Y., He, L., Li, Z., & Yang, S. (2023). Changes in Soil Phosphorus Availability and **Microbial Community** Structures in **Rhizospheres** of Oilseed Rapes Induced by **Intercropping** with White Lupins. *Microorganisms*, 11(2), 326. <https://doi.org/10.3390/microorganisms11020326>

- Zhang, Z., Chang, L., Liu, X., Wang, J., Ge, X., Cheng, J., ... & Chen, T. (2023). Rapeseed Domestication Affects the Diversity of **Rhizosphere Microbiota**. *Microorganisms*, 11(3), 724. <https://doi.org/10.3390/microorganisms11030724>
- Li, Y., Vail, S. L., Arcand, M. M., & Helgason, B. L. (2023). Contrasting **nitrogen fertilization** and *Brassica napus* (canola) variety development impact recruitment of the root-associated **microbiome**. *Phytobiomes Journal*, 7(1), 125-137. <https://doi.org/10.1094/PBIOMES-07-22-0045-R>
- Farhat, F., Tariq, A., Waseem, M. et al. Plant **Growth Promoting Rhizobacteria** (PGPR) Induced Improvements in the Growth, Photosynthesis, Antioxidants, and Nutrient Uptake of Rapeseed (*Brassica napus* L.). *Gesunde Pflanzen* (2023). <https://doi.org/10.1007/s10343-023-00845-0> or [REFERENCE](#)
- Świątczak, J., Kalwasińska, A., Szabó, A., & Swiontek Brzezinska, M. (2023). *Pseudomonas sivasensis* 2RO45 inoculation alters the taxonomic structure and functioning of the **canola rhizosphere microbial** community. *Frontiers in Microbiology*, 14, 1168907. <https://doi.org/10.3389/fmicb.2023.1168907>
- Town, J.R., Dumonceaux, T., Tidemann, B. et al. **Crop rotation** significantly influences the composition of soil, rhizosphere, and root **microbiota** in canola (*Brassica napus* L.). *Environmental Microbiome* 18, 40 (2023). <https://doi.org/10.1186/s40793-023-00495-9>
- Xie, Z., Kong, J., Tang, M., Luo, Z., Li, D., Liu, R., ... & Zhang, C. (2023). **Modelling** Winter Rapeseed (*Brassica napus* L.) Growth and Yield under Different Sowing Dates and Densities Using Aqua-Crop Model. *Agronomy*, 13(2), 367. <https://doi.org/10.3390/agronomy13020367>
- Guirrou, I., El Harrak, A., El Antari, A., Hssaini, L., Hanine, H., El Fechtali, M., & Nabloussi, A. (2023). **Bioactive Compounds** Assessment in Six Moroccan Rapeseed (*Brassica napus* L.) **Varieties** Grown in Two Contrasting Environments. *Agronomy*, 13(2), 460. <https://doi.org/10.3390/agronomy13020460>
- Al-Awad, O. A. S., Prendergast, K. S., Robson, A., & Rengel, Z. (2023). Screening Canola Genotypes for **Resistance to Ammonium Toxicity**. *Agronomy*, 13(4), 1150. <https://doi.org/10.3390/agronomy13041150>
- Rybacki, P., Niemann, J., Bahcevandziev, K., & Durczak, K. (2023). Convolutional Neural Network **Model** for **Variety Classification** and Seed Quality Assessment of Winter Rapeseed. *Sensors*, 23(5), 2486. <https://doi.org/10.3390/s23052486>
- Li, Q., Luo, T., Cheng, T., Yang, S., She, H., Li, J., ... & Zhou, G. (2023). Evaluation and Screening of Rapeseed **Varieties** (*Brassica napus* L.) Suitable for Mechanized Harvesting with High Yield and Quality. *Agronomy*, 13(3), 795. <https://doi.org/10.3390/agronomy13030795>
- Morsi, N. A., Hashem, O. S., El-Hady, M. A. A., Abd-Elkrem, Y. M., El-temsah, M. E., Galal, E. G., ... & Abdelkader, M. A. (2023). Assessing **drought tolerance** of newly developed tissue-cultured canola genotypes under varying irrigation regimes. *Agronomy*, 13(3), 836. <https://doi.org/10.3390/agronomy13030836>
- Kazemi Oskuei, B., Bandehagh, A., Farajzadeh, D. et al. Morphological, biochemical, and physiological responses of canola **cultivars** to **drought stress**. *Int. J. Environ. Sci. Technol.* (2023). <https://doi.org/10.1007/s13762-023-04928-3>

- Nawaz, H., Khan, A., Ali, A., & Ameer, A. (2023). **Screening** of canola (*Brassica napus* L.) **cultivars for nickel stress tolerance**. International Journal of Applied and Experimental Biology, 2(2), 125-131. <https://doi.org/10.56612/ijaeb.v1i1.36>
- Shafey, S., El-Maaty, S.A., El Habbasha, S.F. et al. Evaluation of the growth, yield traits and the genetic diversity of some *Brassica napus* **genotypes** under Egyptian conditions. Beni-Suef Univ J Basic Appl Sci 12, 48 (2023). <https://doi.org/10.1186/s43088-023-00388-3>
- Wang, C., Li, Z., & Wu, W. (2023). Understanding **fatty acid composition** and lipid profile of rapeseed oil in response to **nitrogen management** strategies. Food Research International, 165, 112565. <https://doi.org/10.1016/j.foodres.2023.112565>
- Sabbahi, R., Azzaoui, K., Rhazi, L., Ayerdi-Gotor, A., Aussenac, T., Depeint, F., ... & Hammouti, B. (2023). Factors Affecting the **Quality of Canola Grains** and Their Implications for Grain-Based **Foods**. Foods, 12(11), 2219. <https://doi.org/10.3390/foods12112219>
- Shen, S., Li, Y., Chen, M., Huang, J., Liu, F., Xie, S., ... & Pan, Y. (2023). Reduced **cadmium toxicity** in rapeseed via alteration of root properties and accelerated plant growth by a nitrogen-fixing bacterium. Journal of Hazardous Materials, 449, 131040. <https://doi.org/10.1016/j.jhazmat.2023.131040>
- Razzaghi, F., Shabani, A., Sepaskhah, A.R. (2023). Do **Cultivating Methods** Improve Crop **Yield Under Saline Conditions** in Semi-Arid Areas. In: Choukr-Allah, R., Ragab, R. (eds) Biosaline Agriculture as a Climate Change Adaptation for Food Security. Springer, Cham. https://doi.org/10.1007/978-3-031-24279-3_11
- Tian, X., Li, Z., Liu, Y. et al. Role of **tillage measures in mitigating waterlogging damage** in rapeseed. BMC Plant Biol 23, 231 (2023). <https://doi.org/10.1186/s12870-023-04250-7>
- Chao, W. S., Anderson, J. V., Li, X., Gesch, R. W., Berti, M. T., & Horvath, D. P. (2023). **Overwintering** Camelina and Canola/Rapeseed Show Promise for Improving Integrated **Weed Management** Approaches in the Upper Midwestern US. Plants, 12(6), 1329. <https://doi.org/10.3390/plants12061329>
- Siahbidi, A. Z., & Asgari, A. (2023). Determination of the **optimal plant population** and rapeseed **genotype** (*Brassica napus* L.) in western Iran. International journal of agriculture and natural resources, 50(1), 1-11. https://www.scielo.cl/scielo.php?pid=S2452-57312023000100001&script=sci_arttext
- Yuldasheva, Z. (2023, April). Growth phases of autumn rapeseed effect of seedling thickness. In E3S Web of Conferences (Vol. 389, p. 03083). <https://doi.org/10.1051/e3sconf/202338903083>
- Conyers, M. K., Moroni, J. S., Poile, G. J., Oates, A. A., Lowrie, R., Swan, A. D., ... & Kirkegaard, J. A. (2023). Response of canola and cereals to **amendment** of subsurface **soil acidity** and a hardpan. Crop and Pasture Science. <https://www.publish.csiro.au/cp/CP23009>
- Shaaban, A., El-Mageed, T.A.A., El-Momen, W.R.A. et al. The Integrated Application of **Phosphorous and Zinc** Affects the Physiological Status, Yield and Quality of Canola Grown in Phosphorus-suffered Deficiency Saline Soil. Gesunde Pflanzen (2023). <https://doi.org/10.1007/s10343-023-00843-2>

- Madsen, I. J., & Neely, C. (2023). **Dual-purpose canola** management in the Pacific Northwest. <https://doi.org/10.7273/000004647>
- KUMHÁLA, F., KUMHÁLOVÁ, J., BEČKA, D., & MADĚRA, M. USE OF AERIAL APPLICATION OF **POD SEAL-ANTS** IN CANOLA CROPS. <https://2022.tae-conference.cz/proceeding/TAE2022-37-Frantisek-KUMHALA.pdf>
- Huang, J., Cao, X., Kuai, J., Cheng, H., Zuo, Q., Du, H., ... & Deng, N. (2023). Evaluation of production capacity for **rice-rapeseed cropping system** in China. *Field Crops Research*, 293, 108842. <https://doi.org/10.1016/j.fcr.2023.108842>
- Xu, P., Jiang, M., Khan, I., Shaaban, M., Zhao, J., Yang, T., & Hu, R. (2023). The effect of upland crop planting on field **N₂O** emission from rice-growing seasons: A case study comparing **rice-wheat and rice-rapeseed rotations**. *Agriculture, Ecosystems & Environment*, 347, 108365. <https://doi.org/10.1016/j.agee.2023.108365>
- Tenuta, M., Gao, X., Tiessen, K. H., Baron, K., & Sparling, B. Placement and **nitrogen** source effects on **N₂O emissions** for canola production in Manitoba. *Agronomy Journal*. <https://doi.org/10.1002/agj2.21408>
- Robinson, S. V., Cartar, R. V., Pernal, S. F., Waytes, R., & Hoover, S. E. (2023). **Bee visitation, pollination service**, and crop yield in commodity and hybrid seed canola. *Agriculture, Ecosystems & Environment*, 347, 108396. <https://doi.org/10.1016/j.agee.2023.108396>
- Tomczyk, M., Zaguła, G., Kaczmarski, M., Puchalski, C., & Dżugan, M. (2023). The Negligible Effect of **Toxic Metal** Accumulation in the Flowers of Melliferous Plants on the Mineral Composition of **Monofloral Honeys**. *Agriculture*, 13(2), 273. <https://doi.org/10.3390/agriculture13020273>
- Hološková, A., Kadlec, T., & Reif, J. (2023). Vegetation Structure and Invertebrate **Food Availability for Birds** in Intensively Used Arable Fields: Evaluation of Three Widespread Crops. *Diversity*, 15(4), 524. <https://doi.org/10.3390/d15040524>

PHYSIOLOGY

- Shen, Shili and Li, Yinghan and Chen, Mingbiao and Huang, Jun and Liu, Feng and Pan, Ying, Reduction of **Cadmium Toxicity** in Rapeseed Via Alteration of Cell Wall Properties in Roots and Acceleration of its Growth by a Nitrogen-Fixing Bacterium. Available at SSRN: <https://ssrn.com/abstract=4326381> or <http://dx.doi.org/10.2139/ssrn.4326381>
- Liao, Y., Tang, Y., Wang, S., Su, H., Chen, J., Zhang, D., ... & Liu, L. (2023). Absciscic acid modulates differential physiological and biochemical responses to **cadmium stress** in *Brassica napus*. *Environmental Pollutants and Bioavailability*, 35(1), 2168216. <https://doi.org/10.1080/26395940.2023.2168216>
- Doğuş, H., Yıldız, M., Terzi, H. et al. Evaluation of **Selenium** Influence on the Alleviation of **Chromium Stress** in Rapeseed by Physiological and Proteomic Approaches. *Plant Mol Biol Rep* (2023). <https://doi.org/10.1007/s11105-023-01384-8>
- Singh, G., Kumari, B., Kriti, Sinam, G., Kulsoom, M., Niranjana, A., ... & Mallick, S. (2023). Changes in **fatty acids** in *Brassica juncea* L. oil grown under two simulated conditions of

- fluoride contamination. International Journal of Phytoremediation, 1-8. <https://doi.org/10.1080/15226514.2023.2197508>
- Wang, J., Tan, B., He, Y., Liu, C., Li, N., Tan, X., & Lu, H. (2023). Potential Biochemical Markers Affecting **Aging** and “the Compensatory Effects” of Canola (*Brassica napus* L.) Seeds Stored in Deep Underground. Agriculture, 13(2), 320. <https://doi.org/10.3390/agriculture13020320>
- Abrahimi, F., Taghvaei, M., & Mastinu, A. (2023). **Nano-Organic Coatings** Improve Early Vigor of *Brassica napus* L. **Seeds** in Water Deficit. Agronomy, 13(2), 390. <https://doi.org/10.3390/agronomy13020390>
- Rezayian, M., Niknam, V. & Arabloo, M. **Iron nanoparticle** regulate succinate dehydrogenase activity in canola plants under **drought stress**. Sci Rep 13, 9628 (2023). <https://doi.org/10.1038/s41598-023-36105-4>
- Belt, D., Grygier, A., Siger, A., Kmiecik, D., Spasibionek, S., & Rudzińska, M. (2023). Changes in Oil Quality and Peroxidase Activity during **Germination** of Rape Seeds and Mustard Seeds. Applied Sciences, 13(4), 2196. <https://doi.org/10.3390/app13042196>
- Hasanuzzaman, M., Raihan, M. R. H., Alharby, H. F., Al-Zahrani, H. S., Alsamadany, H., Alghamdi, K. M., ... & Nahar, K. (2023). Foliar **application of ascorbic acid and tocopherol** in conferring **salt tolerance** in rapeseed by enhancing K⁺/Na⁺ homeostasis, osmoregulation, antioxidant defense, and glyoxalase system. Agronomy, 13(2), 361. <https://doi.org/10.3390/agronomy13020361>
- Molnár, K., Biró-Janka, B., Domokos, E., Nyárádi, I. I., Fodorpataki, L., Stoie, A., & Duda, M. M. (2023). Effects of Seed Priming and Foliar Treatment with Ascorbate, Cysteine, and Triacantanol on Canola (*Brassica napus* L.) under Field Conditions. Horticulturae, 9(2), 207. <https://doi.org/10.3390/horticulturae9020207>
- Hong, B., Zhou, B., Peng, Z., Yao, M., Wu, J., Wu, X., ... & Guan, M. (2023). Tissue-Specific Transcriptome and Metabolome Analysis Reveals the Response Mechanism of *Brassica napus* to **Waterlogging Stress**. International Journal of Molecular Sciences, 24(7), 6015. <https://doi.org/10.3390/ijms24076015>
- Francisco, M., Doghri, M., & Rodríguez, V. M. (2023). Daytime of leaf wounding determines plant biomass and affect the **interplay between growth and defense** in Brassica crops. Plant Biology. <https://doi.org/10.1111/plb.13530>
- Secchi, M. A., Fernandez, J. A., Stamm, M. J., Durrett, T., Prasad, P. V., Messina, C. D., & Ciampitti, I. A. (2023). Effects of **heat and drought** on canola (*Brassica napus* L.) yield, oil, and protein: A meta-analysis. Field Crops Research, 293, 108848. <https://doi.org/10.1016/j.fcr.2023.108848>
- Rivelli, G. M., Gomez, N. V., Mantese, A. I., Miralles, D. J., Abeledo, L. G., & Rondanini, D. P. (2023). **Photothermal Quotient** Describes the Combined Effects of **Heat and Shade**

- Stresses** on Canola Seed Productivity. *Seeds*, 2(1), 149-164. <https://doi.org/10.3390/seeds2010012>
- Huang, R., Yu, H., Yang, Y., Liu, H., Wu, X., Liu, Z., ... & Wang, H. (2023). Effects of **Heat Stress** during Seed Filling Stage on *Brassica napus* Seed Oil Accumulation and Chlorophyll Fluorescence Characteristics. *Phyton* (0031-9457), 92(2). [REFERENCE](#)
- Delamare, J., Brunel-Muguet, S., Morvan-Bertrand, A., Cantat, O., Firmin, S., Trinsoutrot-Gattin, I., ... & Personeni, E. (2023). **Thermopriming** effects on **root morphological traits and root exudation** during the reproductive phase in two species with contrasting strategies: *Brassica napus* (L.) and *Camelina sativa* (L.) Crantz. *Environmental and Experimental Botany*, 210, 105318. <https://doi.org/10.1016/j.envexpbot.2023.105318>
- OSMAN, U. Y., & İLBAŞ, A. İ. (2023). The Effects of **Salinity on Germination** and Seedling Growth of Some Canola Varieties. *Environmental Toxicology and Ecology*, 3(1), 11-21. <https://dergipark.org.tr/en/pub/etoxec/issue/77165/1255622>
- Kopecká, R., Kameniarová, M., Černý, M., Brzobohatý, B., & Novák, J. (2023). **Abiotic Stress** in Crop Production. *International Journal of Molecular Sciences*, 24(7), 6603. <https://doi.org/10.3390/ijms24076603>
- Zheng, W., Wu, L., Sun, M., Li, J., Ma, J., Li, Y., ... & Yu, Y. (2023). Exogenous application of 5-aminolevulinic acid Improves **Chilling Tolerance** in Rapeseed (*Brassica napus* L.) Seedlings. <https://doi.org/10.21203/rs.3.rs-2837181/v1>
- Qin, M., Li, H., Guo, Z., Zhu, Y., Wang, R., Zhang, M., ... & Xu, A. (2023). Phenotypic damage and transcriptomic responses of flower buds in rapeseed (*Brassica napus* L.) under **low-temperature stress**. *Industrial Crops and Products*, 198, 116669. <https://doi.org/10.1016/j.indcrop.2023.116669>
- Chen, K., Yin, Y., Ding, Y., Chao, H., & Li, M. (2023). Characterization of **Oil Body** and Starch Granule Dynamics in **Developing Seeds** of *Brassica napus*. *International Journal of Molecular Sciences*, 24(4), 4201. <https://doi.org/10.3390/ijms24044201>
- Singh, S. K., Chakrabarty, S. K., Kumar, M., Prakash, K., & Kumari, S. (2023). Response of Early, Timely & Late Genotypes of *Brassica* spp. Grown under Different Temperature Conditions for **Oil Content & Fatty Acid** Composition. *International Journal of Plant & Soil Science*, 35(3), 170-179. <https://doi.org/10.9734/ijpss/2023/v35i32789>
- Wang, C., Yang, J., Chen, W. et al. Contribution of the **leaf and silique photosynthesis** to the seeds **yield and quality** of oilseed rape (*Brassica napus* L.) in reproductive stage. *Sci Rep* 13, 4721 (2023). <https://doi.org/10.1038/s41598-023-31872-6>
- Jedličková, V., Hejret, V., Demko, M. et al. Transcriptome analysis of **thermomorphogenesis** in ovules and during early seed development in *Brassica napus*. *BMC Genomics* 24, 236 (2023). <https://doi.org/10.1186/s12864-023-09316-2>

- Zhai, L., Abdalla, A., Sun, D., Zhou, Y. A., Zhou, W., & Cen, H. (2023). Spatial heterogeneity analysis of **silique** chlorophyll a fluorescence-based **photosynthetic traits** for rapeseed yield and quality assessment. *Computers and Electronics in Agriculture*, 209, 107829. <https://doi.org/10.1016/j.compag.2023.107829>
- Liu, J., Zhang, K., Bi, J., Yu, X., Luo, L., & Hu, L. (2023). Mesophyll conductance and N allocation co-explained the variation in **photosynthesis** in two canola genotypes under contrasting **nitrogen supply**. *Frontiers in Plant Science*, 14, 1171331. <https://doi.org/10.3389/fpls.2023.1171331>
- Hu, Y., Javed, H.H., Du, YL. et al. Improving Lignin Metabolism, Lodging Resistance, and Yield of Rapeseed (*Brassica napus* L.) by Applying **Straw-Fermented Fertilizer**. *J Soil Sci Plant Nutr* 23, 2832–2848 (2023). <https://doi.org/10.1007/s42729-023-01238-y>
- Zhan, N., Xu, K., Ji, G., Yan, G., Chen, B., Wu, X., & Cai, G. (2023). Research Progress in High-**Efficiency Utilization of Nitrogen** in Rapeseed. *International Journal of Molecular Sciences*, 24(9), 7752. <https://doi.org/10.3390/ijms24097752>
- Nan, Yunyou and He, Huiying and Xie, Yuyu and Li, Congcong and Atif, Ayub and Hui, Jing and Tian, Hui and yajun, Gao, The Responses of Genotypes with Contrasting **Nute** to Exogenous Aba During the Flowering Stage in *Brassica Napus*. Available at SSRN: <https://ssrn.com/abstract=4481824> or <http://dx.doi.org/10.2139/ssrn.4481824>
- Wang, L., Zheng, J., Zhou, G., Li, J., Qian, C., Lin, G., ... & Zuo, Q. (2023). Moderate **nitrogen application** improved **salt tolerance** by enhancing photosynthesis, antioxidants, and osmotic adjustment in rapeseed (*Brassica napus* L.). *Frontiers in Plant Science*, 14, 1196319. <https://doi.org/10.3389/fpls.2023.1196319>
- Krysa, M., Susniak, K., Kubas, A., Kidaj, D., & Sroka-Bartnicka, A. (2023). MALDI MSI and Raman Spectroscopy Application in the Analysis of the Structural Components and **Flavonoids** in *Brassica napus* Stem. *Metabolites*, 13(6), 687. <https://doi.org/10.3390/metabo13060687>
- Xu, Dongmei and Zhao, Mengting and Li, Jun and Zhou, Shanshan and Li, Ke and Niu, Lili and Zhao, Lu, Analysis of the Effects of Sulfamethoxazole on the Secondary Metabolites and Antioxidants in Oilseed Rape (*Brassica Napus* L.) and the Underlying Mechanisms. Available at SSRN: <https://ssrn.com/abstract=4463215> or <http://dx.doi.org/10.2139/ssrn.4463215>
- Ganeva, Dessislava and Tallec, T. and Brut, Aurore and Prikaziuk, Egor and Tomelleri, Enrico and Koren, Gerbrand and Verrelst, Jochem and Katja, Berger and Graf, Lukas Valentin and Belda, Santiago and Cai, Zhazhang and Silva, Cláudio Figueira, In-Situ Crop Phenology Data of Major European Crop Types from France and Bulgaria at a Field Level. Available at SSRN: <https://ssrn.com/abstract=4439227> or <http://dx.doi.org/10.2139/ssrn.4439227>

Lili, Z. E. N. G., & Junsong, J. I. A. N. G. (2023). Construction and Validation of Critical **Phosphorus Concentration Dilution Curve** Model in Rape. Journal of Henan Agricultural Sciences, 52(4), 51. (Chinese, English abstract) <http://www.hnnkx.org.cn/EN/abstract/abstract9237.shtml>

REMOTE SENSING

Yang, H. C., Yuan, H. Y., Wang, Y. L., Li, Y., & Yin, Z. Q. Rape **seedling density estimation** in-field conditions based on improved multi-column convolutional neural network. Agronomy Journal. <https://doi.org/10.1002/agj2.21333>

Xia, L., & Zhang, P. (2023). Remote sensing **estimation of chlorophyll content** in rape leaves in Weibei dryland region of China. <https://doi.org/10.21203/rs.3.rs-2675708/v1>

Li, W., Weiss, M., Garric, B., Champolivier, L., Jiang, J., Wu, W., & Baret, F. (2023). Map-ping **Crop Leaf Area Index** and **Canopy Chlorophyll Content** Using UAV Multispectral Imagery: Impacts of Illuminations and Distribution of Input Variables. Remote Sensing, 15(6), 1539. <https://doi.org/10.3390/rs15061539>

Li, F., Li, X., Huang, H., Xiang, H., Guan, C., & Guan, M. (2023). An Image Processing Method for Measuring the **Surface Area of Rapeseed Pods**. Applied Sciences, 13(8), 5129. <https://doi.org/10.3390/app13085129>

PROCESSING, QUALITY & PRODUCTS

Sun, Y., Zhang, Y., Hou, Y., Gong, H., Pang, Y., Ge, X., & Li, M. (2023). Molecularly imprinted polymers based on calcined rape pollen and deep eutectic solvents for efficient **sinapic acid extraction** from rapeseed meal extract. Food Chemistry, 416, 135811. <https://doi.org/10.1016/j.foodchem.2023.135811>

Cisneros-Yupanqui, M., Chalova, V. I., Kalaydzhev, H. R., Mihaylova, D., Krastanov, A. I., & Lante, A. (2023). Ultrasound-assisted **extraction of antioxidant bioactive** compounds from wastes of rapeseed industry and their application in delaying rapeseed oil oxidation. Environmental Technology & Innovation, 30, 103081. <https://doi.org/10.1016/j.eti.2023.103081>

Liu, P., Gong, Y., Yang, C., Ledesma-Amaro, R., Park, Y. K., Deng, S., ... & Chen, W. (2023). **Bio-refining of rapeseed meal**: A new and sustainable strategy for improving Cr (VI) biosorption on residual wastes from agricultural byproducts after phenolic extraction. Waste Management, 165, 70-81. <https://doi.org/10.1016/j.wasman.2023.04.024>

Liang, Q., Xiong, W., Zhou, Q., Cui, C., Xu, X., Zhao, L., ... & Yao, Y. (2023). Glucosinolates or erucic acid, which one contributes more to volatile **flavor of fragrant rapeseed oil**?. Food Chemistry, 412, 135594. <https://doi.org/10.1016/j.foodchem.2023.135594>

- Drabińska, N., Siger, A., & Jeleń, H. H. (2023). Metabolic Changes during **Sprouting** of Rapeseed and Their Consequences for the Volatilome of Cold-Pressed Oil. *European Journal of Lipid Science and Technology*, 2200181. <https://doi.org/10.1002/ejlt.202200181>
- Zhang, Y., Zhang, X., Qu, Z., Zhang, N., Li, Q., Gao, Y., & Yu, X. (2023). Changes in the physico-chemical characteristics and lipid concomitant of rapeseed oil during **germination**. *International Journal of Food Science & Technology*. <https://doi.org/10.1111/ijfs.16433>
- Cao, L., Jia, P., Liu, H., Kang, S., Jiang, S., & Pang, M. (2023). Effects of High-Canolol Phenolic Extracts on Fragrant Rapeseed Oil Quality and **Flavor Compounds during Frying**. *Foods*, 12(4), 827. <https://doi.org/10.3390/foods12040827>
- Peng, L., Yang, C., Wang, C., Xie, Q., Gao, Y., Liu, S., ... & Zhou, Y. (2023). Effects of **deodorization** on the content of polycyclic aromatic hydrocarbons (PAHs), 3-monochloropropane-1, 2-diol esters (3-MCPDE) and glycidyl esters (GE) in rapeseed oil using ethanol steam distillation at low temperature. *Food Chemistry*, 413, 135616. <https://doi.org/10.1016/j.foodchem.2023.135616>
- Danthine, S., Closset, S., Maes, J., Mascrez, S., Blecker, C., Purcaro, G., & Gibon, V. (2023, May). Enzymatic Interesterification to produce **rapeseed oil-based zero-trans and dialkylketones-free fats**. In 2023 Annual Meeting & Expo. <https://hdl.handle.net/2268/304413>
- Gentès, Marie-claude and Giroux, Hélène J. and Britten, Michel, Effects of **Milk Fat Substitution by Canola Oil** on the Properties of High-Fat High-Protein Yogurt. Available at SSRN: <https://ssrn.com/abstract=4353510> or <http://dx.doi.org/10.2139/ssrn.4353510>
- Giroux, H. J., Britten, M., & Gentès, M. C. (2023). Effects of **milk fat substitution by canola oil** on the properties of high-fat high-protein yoghurt. *International Dairy Journal*, 142, 105653. <https://doi.org/10.1016/j.idairyj.2023.105653>
- Di Lena, G., Schwarze, A. K., Lucarini, M., Gabrielli, P., Aguzzi, A., Caproni, R., ... & Rusu, A. (2023). Application of Rapeseed Meal **Protein Isolate** as a Supplement to Texture-Modified Food for the Elderly. *Foods*, 12(6), 1326. <https://doi.org/10.3390/foods12061326>
- Eichhorn, M., Kastner, H., Weissbrodt, J., & Drusch, S. (2023). Impact of process conditions and type of **protein** on conjugate formation with pectin by vacuum drying. *Food Hydrocolloids*, 139, 108517. <https://doi.org/10.1016/j.foodhyd.2023.108517>
- Bermejo-Cruz, M., Osorio-Ruiz, A., Rodríguez-Canto, W., Betancur-Ancona, D., Martínez-Ayala, A., & Chel-Guerrero, L. (2023). **Antioxidant potential of protein hydrolysates** from canola (*Brassica napus* L.) seeds. *Biocatalysis and Agricultural Biotechnology*, 50, 102687. <https://doi.org/10.1016/j.bcab.2023.102687>
- Li, C., Shi, D., Stone, A. K., Wanasundara, J. P., Tanaka, T., & Nickerson, M. T. (2023). Effect of canola meal fermentation and protein extraction method on the functional properties of resulting **protein products**. *Journal of the American Oil Chemists' Society*. <https://doi.org/10.1002/aocs.12701>

- Zhang, M., Wang, O., Cai, S., Zhao, L., & Zhao, L. (2023). Composition, functional properties, health benefits and applications of **oilseed proteins**: A systematic review. Food Research International, 113061. <https://doi.org/10.1016/j.foodres.2023.113061>
- Wanasundara, J., Tanaka, T., & Warnakulasuriya, S. (2023). Canola meal valorization via hydrolysis for **amino acid generation**. <https://doi.org/10.22541/au.168620691.16061325/v1>
- Kraljić, K., Škevin, D., Čukelj Mustač, N., Benković, M., Drakula, S., Balbino, S., ... & Ćurić, D. (2023). Influence of **Cryogenic Grinding** on the Nutritional and Antinutritional Components of Rapeseed Cake. Applied Sciences, 13(10), 5841. <https://doi.org/10.3390/app13105841>
- Betchem, Garba and Ma, Haile and Dabbour, Mokhtar and Tuly, Jamila A. and Laura, Flavorta Billong, **Optimization of Fermentation** Conditions to Improve the Functional and Structural Characteristics of Rapeseed Meal with a Mutant *Bacillus Subtilis* Species. Available at SSRN: <https://ssrn.com/abstract=4455202> or <http://dx.doi.org/10.2139/ssrn.4455202>
- Zhu, X., Chen, Y., Hao, S., Jin, S., & Li, X. (2023). Improvement of the Nutritional Quality of Rapeseed Meal through **Solid-State Fermentation** with *B. subtilis*, *S. cerevisiae*, and *B. amyloliquefaciens*. Fermentation, 9(5), 492. <https://doi.org/10.3390/fermentation9050492>
- Dygas, D., Liszkowska, W., Steglińska, A., Sulyok, M., Kręgiel, D., & Berłowska, J. (2023). Rapeseed Meal Waste Biomass as a Single-Cell Protein Substrate for Nutritionally-Enhanced **Feed** Components. Processes, 11(5), 1556. <https://doi.org/10.3390/pr11051556>
- Wilke, V., Gickel, J., & Visscher, C. (2023). Monitoring of Performance-Based Environmental Impacts of Substituting Soybean Meal with Rapeseed Meal in the Rye-Based Diet of **Weaned Pigs**. Sustainability, 15(3), 2210. <https://doi.org/10.3390/su15032210>
- Muszyński, S., Dajnowska, A., Arciszewski, M. B., Rudyk, H., Śliwa, J., Krakowiak, D., ... & Czech, A. (2023). Effect of **Fermented Rapeseed Meal** in Feeds for Growing **Piglets** on Bone Morphological Traits, Mechanical Properties, and Bone Metabolism. Animals, 13(6), 1080. <https://doi.org/10.3390/ani13061080>
- Czech, A., Wlazło, Ł., Łukaszewicz, M., Florek, M., & Nowakowicz-Dębek, B. (2023). **Fermented rapeseed meal** enhances the digestibility of protein and macro-and microminerals and improves the performance of **weaner pigs**. Animal Feed Science and Technology, 300, 115656. <https://doi.org/10.1016/j.anifeedsci.2023.115656>
- Konkol, D., Jonuzi, E., Popiela, E., Sierżant, K., Korzeniowska, M., Leicht, K., ... & Korczyński, M. (2023). Influence of solid state **fermentation** with *Bacillus subtilis* 67 strain on the nutritional value of **rapeseed meal** and its effects on performance and meat quality of **broiler chickens**. Poultry Science, 102(7), 102742. <https://doi.org/10.1016/j.psj.2023.102742>

- Zaworska-Zakrzewska, A., Kasprowicz-Potocka, M., Kierończyk, B., & Józefiak, D. (2023). The Effect of Solid-State **Fermentation** on the Nutritive Value of Rapeseed Cakes and Performance of **Broiler Chickens**. *Fermentation*, 9(5), 435. <https://doi.org/10.3390/fermentation9050435>
- Hosseini, L., Navidshad, B., Faelehi Jahromi, M. et al. The **Antioxidant Properties of Bioactive Peptides** Derived from Enzymatic Hydrolyzed or Fermented Canola Meal and Its Effects on **Broiler Chickens**. *Int J Pept Res Ther* 29, 40 (2023). <https://doi.org/10.1007/s10989-023-10509-2>
- Orlich, M., Drażbo, A., Ognik, K., Rogiewicz, A., & Juśkiewicz, J. The effect of **raw, hydrobacterially treated and fermented rapeseed cake** on plasma biochemical parameters, total tract digestibility and gut function in **laying hens**. *Annals of Animal Science*. <https://doi.org/10.2478/aoas-2023-0040>
- Guilbaud, T., Martin, N., Lambert, W., Grandmaison, J. L. C., & Bourgeat, E. (2023). Assessment of the impact of **a decrease in crude protein content in monogastric feed** on oilseeds meals and legumes, prospective approach. *OCL*, 30, 7. <https://doi.org/10.1051/ocl/2023005>
- Rehemujiang H, Yusuf HA, Ma T, Diao Q, Kong L, Kang L and Tu Y (2023) Fermented cottonseed and rapeseed meals outperform soybean meal in improving performance, rumen fermentation, and bacterial composition in Hu **sheep**. *Front. Microbiol.* 14:1119887. <https://doi.org/10.3389/fmicb.2023.1119887>
- Broudicou, L. P., Quinsac, A., Berthelot, V., Carré, P., Dauguet, S., & Peyronnet, C. (2023). Differential effects of rapeseed, sunflower and linseed oils **on rumen microbial functions** in dual effluent fermenters on maize silage-based diet. *OCL*, 30, 5. <https://doi.org/10.1051/ocl/2023003>
- Gao, M., Cieślak, A., Huang, H., Gogulski, M., Petrič, D., Ruska, D., ... & Szumacher-Strabel, M. (2023). Effects of raw and **fermented rapeseed cake** on ruminal fermentation, methane emission, and milk production in **lactating dairy cows**. *Animal Feed Science and Technology*, 300, 115644. <https://doi.org/10.1016/j.anifeedsci.2023.115644>
- Farivar, F., Mostafalou, Y., Gharehbash, A. M., & Khanahmadi, A. (2023). The effect of **urea processed canola straw** on nutrients digestibility, growth performance and blood parameters of **Dalagh rams**. *Journal of Ruminant Research*, 11(1), 93-108. <https://doi.org/10.22069/ejrr.2022.20596.1864>
- Kang, P., Hang, Y., Chen, C., Pan, Y., Wang, Q., & Hua, X. (2023). Effects of replacing fishmeal with rapeseed meal and dietary condensed tannins on antioxidant capacity, immunity, and hepatic and intestinal health of **largemouth bass** (*Micropterus salmoides*). *Aquaculture Reports*, 30, 101548 <https://doi.org/10.1016/j.aqrep.2023.101548>

- Guan, L., Zhuo, L., Tian, H., Li, C., Li, J., Meng, Y., & Ma, R. (2023). **Canola oil substitution** doesn't affect growth but alters fillet quality of triploid **rainbow trout**. *Aquaculture*, 569, 739385. <https://doi.org/10.1016/j.aquaculture.2023.739385>
- Davis, B.A., Devine, M.D. Evaluation of **long-chain omega-3 canola oil** on **Atlantic salmon** growth, performance, and essential fatty acid tissue accretion across the life cycle: a **review**. *Aquacult Int* (2023). <https://doi.org/10.1007/s10499-023-01099-3>
- Ranjan, A., Welz, P.J. & Mthethwa, T. Investigation of an effective acid pre-treatment method for the **valorisation of Canola fines**. *Biomass Conv. Bioref.* (2023). <https://doi.org/10.1007/s13399-023-03946-y>
- Dai, Y., Chen, D. H., Lei, Q., Ren, X. L., Li, C. H., Zhang, J., & Chang, H. J. Effect of **rapeseed oil and β -cyclodextrin coatings** on the quality of **eggs** in shell. *International Journal of Food Science & Technology*. <https://doi.org/10.1111/ijfs.16444>
- Kosolapova, S. M., Smal, M. S., Rudko, V. A., & Pyagay, I. N. (2023). A New Approach for **Synthesizing Fatty Acid Esters** from Linoleic-Type Vegetable Oil. *Processes*, 11(5), 1534. <https://doi.org/10.3390/pr11051534>
- Almutairi, A. W., Abomohra, A., & Elsayed, M. (2023). A closed-loop approach for enhanced biodiesel recovery from rapeseed biodiesel-based byproducts through integrated **glycerol recycling by black soldier fly larvae**. *Journal of Cleaner Production*, 409, 137236. <https://doi.org/10.1016/j.jclepro.2023.137236>
- Bojanowska, M. (2023). **Handling and transportation** properties of **rapeseed biomass** as affected by particle size. *74 Scientific Journals of the Maritime University of Szczecin*, (74). <https://repository.am.szczecin.pl/handle/123456789/2772>
- Silva, M.C.F.e., da Silva Fontes, L., Barbosa, D.R.e. et al. **Insecticidal activity of fixed oils** on *Zabrotes subfasciatus* (Boheman) (Coleoptera: Chrysomelidae) in common bean stored. *Int J Trop Insect Sci* 43, 961–969 (2023). <https://doi.org/10.1007/s42690-023-01007-5>

NUTRITION AND HEALTH

- Guriec, N., Le Foll, C., & Delarue, J. (2023). **Long-chain n-3 PUFA** given before and throughout gestation and lactation in rats prevent high-fat diet-induced **insulin resistance** in male offspring in a tissue-specific manner. *British Journal of Nutrition*, 1-16. <https://doi.org/10.1017/S000711452300017X>
- Shen, J., Liu, Y., Wang, X., Bai, J., Lin, L., Luo, F., & Zhong, H. (2023). A Comprehensive **Review of Health-Benefiting Components** in Rapeseed Oil. *Nutrients*, 15(4), 999. <https://doi.org/10.3390/nu15040999>

- Tessier, R., Calvez, J., Airinei, G., Khodorova, N., Dauguet, S., Galet, O., ... & Gaudichon, C. (2023). Digestive and metabolic **bioavailability** in healthy humans of ¹⁵N-labeled **rape-seed and flaxseed protein** incorporated in biscuits. The American Journal of Clinical Nutrition, 117(5), 896-902. <https://doi.org/10.1016/j.ajcnut.2023.02.020>
- Duan, X., Dong, Y., Zhang, M., Li, Z., Bu, G., & Chen, F. (2023). Identification and molecular interactions of novel **ACE inhibitory peptides** from rapeseed protein. Food Chemistry, 422, 136085. <https://doi.org/10.1016/j.foodchem.2023.136085>
- Yang, F., Huang, J., He, H., Ju, X., Ji, Y., Deng, F., ... & He, R. (2023). Study on the **hypolipidemic activity** of rapeseed **protein-derived peptides**. Food Chemistry, 423, 136315. <https://doi.org/10.1016/j.foodchem.2023.136315>
- Goyal, A., Dubey, N., Verma, A., & Agrawal, A. (2023). **Erucic Acid**: A Possible Therapeutic Agent for **Neurodegenerative Diseases**. Current Molecular Medicine. <https://doi.org/10.2174/1566524023666230509123536>
- Zhang, J., Yao, Y., Xu, F., Yuan, Q., Ju, X., & Wang, L. (2023). **Anti-Inflammatory** and Transepithelial Transport Activities of Rapeseed (*Brassica napus*) **Napin-Derived Dipeptide** Thr-Leu in Caco-2 and RAW264. 7 Cocultures. Journal of Agricultural and Food Chemistry. <https://doi.org/10.1021/acs.jafc.3c00227>
- Patel, D., Munhoz, J., Goruk, S. et al. Maternal diet supplementation with **high-docosahexaenoic-acid canola oil**, along with arachidonic acid, promotes immune system development in allergy-prone BALB/c mouse offspring at 3 weeks of age. Eur J Nutr (2023). <https://doi.org/10.1007/s00394-023-03160-6>

ANALYZES

- Oskouei, B., Sadeghi, L., & Doorooshi, F. (2023). Optimization **Identification of wild mustard** (*Sinapis arvensis* L.) seeds **in rapeseed** seed lots by morphological, chemical and Molecular methods. Iranian Journal of Seed Science and Technology, 11(4), 85-96. <https://doi.org/10.22092/ijst.2022.357359.1419>
- Kozub, A., Nikolaichuk, H., Przykaza, K., Tomaszewska-Gras, J., & Fornal, E. (2023). Lipidomic characteristics of three edible cold-pressed oils by LC/Q-TOF for simple quality and authenticity assurance. Food Chemistry, 415, 135761. <https://doi.org/10.1016/j.foodchem.2023.135761>
- Majcher, J., Kafarski, M., Szyplowska, A., Wilczek, A., Lewandowski, A., Skierucha, W., & Staszek, K. (2023). Prototype of a sensor for measuring **moisture** of a single rapeseed (*Brassica napus* L.) using **microwave reflectometry**. Measurement, 214, 112787. <https://doi.org/10.1016/j.measurement.2023.112787>
- Ali Redha, A., Torquati, L., Langston, F., Nash, G. R., Gidley, M. J., & Cozzolino, D. (2023). Determination of **glucosinolates and isothiocyanates** in glucosinolate-rich vegetables and

- oilseeds using **infrared spectroscopy**: A systematic **review**. Critical Reviews in Food Science and Nutrition, 1-17. <https://doi.org/10.1080/10408398.2023.2198015>
- Zhao, Mingxing and Jiang, Hui and Chen, Quansheng, **Identification of Procymidone in Rapeseed Oils Based on Olfactory Visualization Technology**. Available at SSRN: <https://ssrn.com/abstract=4441651> or <http://dx.doi.org/10.2139/ssrn.4441651>
- Tan, Z., Liu, R., & Liu, J. (2023). BR-Net: Band reweighted network for **quantitative analysis of rapeseed protein spectroscopy**. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 299, 122828. <https://doi.org/10.1016/j.saa.2023.122828>
- Zhang, Y., Stöppelmann, F., Zhu, L., Liang, J., Rigling, M., Wang, X., ... & Zhang, Y. (2023). A comparative study on **flavor trapping techniques** from the viewpoint of odorants of hot-pressed rapeseed oil. Food Chemistry, 136617. <https://doi.org/10.1016/j.foodchem.2023.136617>

MISCELLANEOUS

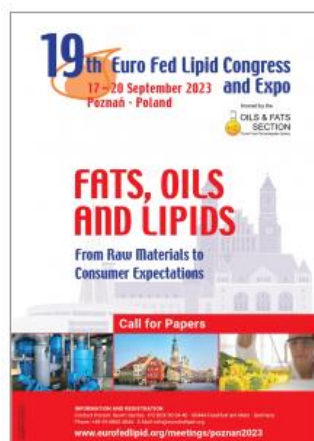
- Keadle, S. B., Sykes, V. R., Sams, C. E., Yin, X., Larson, J. A., & Grant, J. F. (2023). National Winter Oilseeds Review for Potential in the US Mid-South: Pennycress, Canola, & Camelina. Agronomy Journal. <https://doi.org/10.1002/agj2.21317>

Upcoming International and national events

17-20 September, 2023, Poznan, Poland: 19th Euro Fed Lipid Congress and Expo

Early Bird Registration deadline: 02 August 2023

https://veranstaltungen.gdch.de/tms/frontend/index.cfm?l=11215&sp_id=2



24-27 September, 2023: 16th International Rapeseed Congress, Sydney, Australia

www.irc2023sydney.com



23-24 October 2023, Frankfurt, Germany: The Future of Oilseeds: Prospects for Plant based Proteins?

Information and Registration: <http://www.dgfett.de/meetings/aktuell/frankfurt2023>



5-7 December 2023, Calgary, Canada: Canola Week 2023

The conference will be presented in a hybrid format, allowing attendees to tune in remotely or attend in person.

<https://www.canolacouncil.org/research/canola-week/>



We invite you to share information with the rapeseed/canola community: let us know the scientific projects, events organized in your country, crop performances or any information of interest in rapeseed/canola R&D.

Contact GCIRC News:

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

Contact GCIRC: contact@gcirt.org