GCIRC News

Global Council for Innovation in Rapeseed and Canola

"Building a World community for Innovation on Rapeseed and Canola"

N° 18, January 2026

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Editorial

Happy new year 2026!

After the successful Technical Meeting in Cambridge in 2025, the focus is now fully on preparations for the big International Rapeseed Congress (IRC) in Paris 2027.
Much of the preparatory work is expected to be about how rapeseed can meet future demands for climate adaptation.

From all over Europe, we hear how insect control is a key issue to solve with fewer mode of actions in rapeseed, a crop that both loves and is loved by pollinating insects. Serious pathogens such as clubroot continue to conquer agricultural lands, climate is a serious threat for some and an opportunity for others, but I am sure science will overcome the challenges in our fantastic crop.
Science will overcome and will do it quicker if we cooperate, network, and meet around the globe.

Another meeting that needs a host is the next Technical Meeting in 2029. The board asks for candidates, and we hope to see some prospects in the first half of 2026.

May the coming year bring you prosperity, good health, and immense joy.
Looking forward to hearing from you in the upcoming oilseed activities in 2026.

Albin Gunnarson GCIRC President

Activity/ News of the association

Insights from the GCIRC Technical Meeting 2025 at Cambridge, April 9-10, 2025

The GCIRC Technical Meeting, hosted by NIAB at Cambridge on April 9 and 10, 2025, covered a wide range of topics, from rapeseed nutrition and fertilization to genetics, disease and pest management, and regulatory developments in genome editing.

Most of the presentations and posters are available for GCIRC members on the GCIRC website.

We warmly thank Colin Peters and NIAB for their involvement in preparing the logistics and program of this 2025 GCIRC Technical Meeting.

Colin Peters (NIAB) introducing the Technical meeting

This short report has been elaborated with the support of the Terres Inovia team, present at the meeting.

Rapeseed nutrition and fertilization

Five presentations were devoted to rapeseed nutrition and fertilization, two of which focused on cultivars nitrogen use efficiency (NUE), and two on estimating greenhouse gas (GHG) emissions associated with this crop.

The first presentation by Adam Stepien (PSPO) concerned the methodology used in Poland to estimate GHG emissions from rapeseed cultivation, in order to contribute to the European comparison database. The results established a median of 2.3 tons of CO2 equivalent per hectare of rapeseed, with more than 50% of emissions linked to the use of nitrogen fertilizers. These nitrogen-related emissions were

divided into 50% due to N2O emissions from the soil, mainly caused by nitrogen fertilizers, and 25% due to fertilizer production and transport. With a yield average in Poland of 4 tons per hectare, emissions per ton of seed produced were 0.6 t CO2eq/t of rapeseed. One limitation of this approach was the lack of uniformity in the calculation method between countries, which makes result comparisons difficult.

Christina Baxter (ADAS, UK) presented the work carried out in Great Britain by the "YEN zero" subgroup of the Yield Enhancement Network (YEN), which aims both to reduce agricultural GHG emissions and to increase yields. Farmers, participating in this network, calculated that their median emissions for rapeseed amounted to 2.5 t CO2eq/ha. Rapeseed appeared as the crop generating the highest GHG emissions per hectare, a level very close to that of bread wheat, but twice that of oats and five times that of protein peas. The distribution of rapeseed emissions within the network was as follows: 60% came from nitrogen fertilizers (20% for production and transport, 40% for N2O emissions in the field), 25% were due to denitrification of crop residues, 12% to fuel, and 2% to the production and transport of non-nitrogen fertilizers. The network's recommendations for reducing these emissions included optimizing the nitrogen fertilizers use (via drip lines or nitrification inhibitors), using cover crops, and choosing low-carbon crops for crop rotation.

Emile Lerebour (Terres Inovia, France) presented an overview of nitrogen fertilization calculation methods in France and worked to develop a new dynamic method based on estimating the nutritional status of plants during cultivation.

Regarding nitrogen use efficiency (NUE), a Canadian presentation (Sally Vail, AAFC) traced its evolution for different rapeseed varieties since the 1960s. The introduction of hybrids initially led to a drop in NUE due to their high nitrogen requirements for low yield gains compared to landraces. NUE has since returned to the level of the old lines thanks to increased yield potential and the associated slight increase in nitrogen requirements. These presentations highlighted the importance of proximity sensors and remote sensing in assessing nitrogen uptake by the different genotypes studied.

Trials conducted in Switzerland (Alice Baux, Ivan Hittpold) on the association of rapeseed with frost-sensitive legumes were unable to demonstrate any significant difference between associated and non-associated methods in terms of rapeseed nutrition, possibly due to the high levels of nitrogen availability in the soil. The work is continuing.

Finally, Anne-Charlotte Wallenhammar (SLU, Sweden) demonstrated the benefits and limitations of rapeseed-legume associations in organic farming under Swedish conditions for improving nitrogen availability and limiting the impact of stem weevils. The presentation concluded that these combinations were beneficial in nitrogen-poor conditions and that slow-growing clover species should be used to limit competition, with planting in the second half of August to ensure legume growth.

Agronomy and genetics

Combining agronomy and genetics, the work of the Australian GRDC (Matthew Nelson) focused on the possibility of deeper sowing to exploit residual moisture. One issue raised was the hypocotyl length as a limiting factor for deep sowing, as Australian varieties have relatively short hypocotyls compared to foreign varieties. A phenotyping method, under controlled conditions was developed, confirming in the field that varieties with the best emergence performance were those with long hypocotyls. A project has been launched in Australia to develop these varieties.

The work of the JKI (Germany) presented by Daniel Valle Torres, involving various devices (300 trials of F1 hybrids in different environments and cultivation practices, plant-by-plant studies with genomic data) showed differences in genetic and physiological responses, and the value of combining genomic and phenomic prediction to improve the predictive capacity for nitrogen efficiency traits.
Liang Guo (Huazhong Agricultural University, China) focused on the phenotypic plasticity of rapeseed oil content, which depended on light and temperature conditions, in response to climate change. Beyond adjusting sowing dates, research was moving towards the development of high-oil-content varieties adapted to reduced light conditions.
A Canadian presentation (Habibur Rahman, University of Alberta) explored the search for genetic diversity through crosses between *Brassica napus* and *Brassica oleracea*. This work revealed the existence of alleles of interest for agronomic traits and promising heterosis effects on grain yield in F1 hybrids.
Mukhlesur Rahman (North Dakota University) also presented work undertaken in the United States, notably the identification of sources of resistance to phoma and verticillium, with marker mapping.

Pest management
Four presentations dealt with pest management.
Agroscope (Eve-Anne Laurent, Alice Baux, and Yvan Hiltpold) presented the effects of combining rapeseed with field beans (winter or spring) to reduce damage caused by various insects (winter flea beetle, rapeseed stem weevil, pollen beetle). An original approach using artificial plants made it possible to distinguish the effects of physical or visual barriers from chemical effects (volatile compounds). The results showed a reduction in cruciferous flea beetle bites for the three tested methods and a reduction in adult winter flea beetle pressure with field beans. In spring, stem weevil attacks and pollen beetle pressure were lower for all three methods. Yields were significantly higher with spring field beans, with no significant difference compared to winter field beans. The identified mechanisms of action were visual or physical confusion (suggested by artificial plants) and chemical confusion, leading to behavioral disturbances in insects. Except for the winter flea beetle, all three mechanisms appeared to be involved.
The Agroscope team (Eve-Anne Laurent) also assessed the resistance/tolerance of varieties to a range of pests but found no correlation between insect pressure and yield in their network, with more than 80% of yield variability explained by the interaction between location and site. The impact of insect pressure was considered marginal. Hybrid varieties showed higher yield potential under high flea beetle larvae pressure. Only a weak correlation was found between collar diameter and the number of flea beetles per plant.
The presentation by Terres Inovia (Céline Robert, Nicolas Cerrutti) focused on the three work packages of the French R2D2 project aimed at reducing insect damage on a regional scale (1,300 ha): agronomic levers in fields, behavioral manipulation techniques (intercropping traps), and improvement of biological control.
Similarly, Samantha Cook (Rothamsted Research, UK) emphasized the future of integrated management strategies and the combination of prophylactic levers (from plot to landscape scale) to reduce dependence on insecticides, before applying appropriate decision rules as a last resort. In particular, she highlighted the use of technological tools such as connected traps to facilitate field monitoring.

These approaches elicited mixed reactions from the audience, who emphasized the difficulties of dissemination and adoption by farmers without financial compensation.

Diseases and genetics

Bruce Fitt (UK, University of Hertfordshire) presented a summary of innovative British research on the implications of climate change for oilseed pests and diseases. This research predicted an increase in the severity of Phoma in the United Kingdom, but a decrease in cylindrosporiosis. It was shown that climate change had contrasting effects on different diseases, potentially affecting the resistance of oilseed rape and altering the competitive relationships between pathogens. It was highlighted that the rise in temperature (from 15 to 25°C) caused loss of resistance of the major Rlm6 gene of Phoma (*Leptospaeria maculans*). Furthermore, if contamination by *L. biglobosa* preceded that by *L. maculans*, the growth of *L. maculans* could be prevented. The optimal growth temperatures differed between the two pathogens.

Henrik Stotz and Yongju Huang detailed work carried out at the University of Hertfordshire on the temperature sensitivity of other phoma resistances (Rlm4, Rlm7-1, Rlm7-2) and continued to model ascospore emissions for *L. maculans* and *L. biglobosa*, resulting in a model that predicts 50% of spore emissions. For cylindrosporiosis, spore emissions were annual and the development of the disease was dependent on "warm" winters (UK conditions), favored by temperature and humidity conditions.

Phoma was also the subject of a short presentation by Kevin King on the first detections in Europe of *Plenodomus biglobosus (Leptosphaeria biglobosa) canadensis'* and resistance to triazole fungicides in *L. maculans*.

Janetta Niemann presented new markers of resistance to phoma.

Marian Thorsted (SEGES, Denmark) presented the use of artificial intelligence (AI) based on image analysis for the assessment of cylindrosporiosis attacks, with results considered equivalent or superior to visual ratings, although the model has not yet been tested under conditions of multi-disease attacks or weed infestations.

Finally, Andreas von Tiedemann's work on the regulation of dormancy and germination of soil-borne diseases (verticillium and clubroot) showed that root exudates were essential for spore germination and that the bacterial microbiome played a fundamental role as a suppressor or inhibitor.

Gene Editing and NGT

The panel on genome editing, which brought together Mario Caccamo (Niab), Petra Jorash (Euroseeds), and Tony Mora (Cibus), discussed how science and politics can work together to facilitate the adoption of precision breeding crops (NGT).

Petra Jorash presented the regulatory status, noting that the European Commission's proposal (2023) was still under discussion, requiring another two years of procedures for its implementation after debates in the European Parliament.

Political debates focueds on intellectual property and patent filings, particularly for NGT1, with implications for traceability and the reuse of genetic resources. The Parliament opposed the Commission on patents and called for GMO-type post-registration monitoring for NGTs, Category 1, which was a red line for seed companies. France specifically opposes the recognition of herbicide resistance in Category 1.

The limit of 20 transformations did not have the same impact depending on the ploidy of the species, leading to a more limited number of cumulative transformations for a polyploid species (e.g., 4 or 5 for a tetraploid). This number of 20 modifications, taken from the scientific literature reviewed by the Commission, was considered by the European Union alone, with other countries focusing more on the nature of the modifications. Traceability was a major challenge, while changes in nucleotides were detectable, it was very difficult to guarantee the origin of these changes (genomic editing or natural). If a seed producer adds new modifications to material that has already reached the 20-change limit, that material would move from category 1 to category 2. From the seed producers' point of view, excessive regulatory requirements (data to be provided, post-marketing monitoring) could neutralize efficiency gains, leading them to favor conventional breeding.

Farm visit

The farm visit took place on a very large farm (2,000 ha) where mustard (whose cycle prevents flea beetle attacks) had replaced rapeseed while maintaining excellent profitability. The farm, managed for optimal profitability and to supply traditional British mustard production, used very powerful machinery and modern equipment for high-throughput operations.

GCIRC General Assembly

The current information on the life of GCIRC has been reported to and validated by the General Assembly: activity, evolution of membership, financial situation, provisional budget.

As usual at the time of the Technical Meeting, a new Board has been established by the GA, involving some changes. Former and present boards are listed below:

Country	Board 2021-2025	Board 2025-2029
Australia	WILSON Robert	NELSON Matthew
Canada	REMPEL Curtis	REMPEL Curtis
China	LI Peiwu	LI Peiwu
Czech Republic	BARANYK Petr	BARANYK Petr
Denmark		
France	PILORGE Etienne	PILORGE Etienne / JAUVION Vincent
Germany	ABBADI Amine	ABBADI Amine
India	ARORA Rakesh	ARORA Rakesh
Poland	MIKOLAJCZYK Katarzyna	MATUSZCZAK Marcin
Sweden	GUNNARSON Albin	GUNNARSON Albin
United Kingdom	PETERS Colin	PETERS Colin
USA	SERNYK Larry	

Matthew Nelson/CSIRO will replace Rob Wilson for Australia.

Marcin Matuszszak/IHAR-PIB will replace Katarzyna Mikolajczyk for Poland.

Concerning France, Etienne Pilorgé will retire just before/or at the time of the congress. Vincent Jauvion/Terres Inovia will work with Etienne Pilorgé for Secretary and should replace him afterwards. We are still looking for a representant of the USA, where canola development is progressing.

Next to the General Assembly, the Board elected Albin Gunnarson, Sweden, as President.
We derogated to the usual practice to elect a president from the country organizing the next IRC, in order to facilitate an optimum coordination between GCIRC and the organisation team. The next congress being scheduled in France, and the GCIRC Secretariat being also in France for historical and practical reasons, choice has been made to elect a president from another European country, namely Sweden, with Albin Gunnarson.

This transition has been illustrated at the Gala Dinner: many thanks to Rob Wilson for his involvement in the GCIRC and his essential contribution to the success of the IRC16 in Sydney, despite the disrupted international context. Welcome to Albin.

Former GCIRC President Rob Wilson (Australia, standing right) and new President Albin Gunnarson (Sweden, left) speech in the Jesus College dining hall

The General Assembly reports are available for GCIRC members on the website (Publications/Archives/General Assemblies).

Next IRC in Paris, France: Save the date

Message from the IRC organizing Committee:

"Dear Colleagues,

We are pleased to announce that the 17th International Rapeseed Congress (IRC) will take place at the Palais des Congrès de Paris (France), on **April 18th to 21st 2027.**

The IRC, held every four years, creates enduring relationships in the extensive worldwide network of rapeseed experts. It is a forum for ideas, innovation and networking, highly respected among participants from academic and private research, and government, as well as sponsors and exhibitors. This edition will be hosted by the French Oil and Protein seeds sector institutions – The technical institute Terres Inovia, the interbranch association Terres Univia, and the Federation of Producers FOP – under the auspices of the GCIRC.

Discover the teaser video"

Complementary information:

Information will be progressively updated on the congress website (https://ircparis2027.com/), and on the GCIRC website.

The key dates are the following:

- March 30th, 2026: Call for abstracts and registration opens
- October 2nd, 2026: Abstract deadline
- November 30th, 2026: Early-bird registration deadline
- January 15th, 2027: Abstracts announcements
- April 16th-17th, 2025: Field tour and technical visits
- April 18th, 2027: Welcome to the congress
- April 19th, 2027: Congress Day 1

The organizing committee has been working actively for more than one year now to welcome all participants in the best conditions. A group of French researchers has already prepared some outlines and will contact soon colleagues from other countries to build the scientific committee of the congress.

An invitation from IOBC group on integrated control in oilseed crops: save the date

Dear Colleagues,
We are pleased to announce that the 20th IOBC-WPRS Working Group on Integrated Control in Oilseed Crops will take place:

Dates: Tuesday, 29 September – Wednesday, 30 September 2026
Location: Alnarp, Sweden

Please save the date in your calendars. Further details regarding the program, registration, and accommodation will be shared in due course.
We kindly encourage you to forward this announcement to colleagues and others with an interest in oilseed crops.
We look forward to welcoming you to Alnarp, Sweden, for an engaging and fruitful meeting.
Best regards,
Nazanin Zamani-Noor and Ivan Juran
Convenors, IOBC-WPRS Working Group on Integrated Control in Oilseed Crops

Welcome to New GCIRC members

We have welcomed 18 new members since February 2025, and a new country is now represented in the association: Netherlands.

HANCE	Thomas	US Canola Association	USA
VAIL	Sally	Agriculture and Agri-Food Canada	CANADA
ADRIAENSEN	Remy	BASF	BELGIUM
TALIBUDEEN	Alex	NIAB	UNITED KINGDOM
CLAUS	Sébastien	NIAB	UNITED KINGDOM
WALLACE	Margaret	NIAB	UNITED KINGDOM
JAVED	Muhammad Ashfaq	Hope Seeds Company	PAKISTAN
DABROWSKA	Katarzyna	University College Dublin	IRELAND
GRANT	Richard	University College Dublin	IRELAND
LOGAN	Skori	AgGene Inc	CANADA
POREE	Fabien	BAYER AG	GERMANY
RICHARDS	Rosemary	AOF	AUSTRALIA
BORGGREVE	Rene	NUFARM	AUSTRALIA
DUFOUR	Cédric	AVRIL	FRANCE
LABALETTE	Françoise	TERRES UNIVIA	FRANCE
PAJIC	Vladimir	PACIFIC SEEDS	AUSTRALIA
REMIJN	Bastiaan	Feed Forward BV	NETHERLANDS
ULUOCHA	Maduabuchi Daniel	Sheffield Hallam University	UNITED KINGDOM

In the meantime, ten persons left the association, mainly for retirement.

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 to facilitate interactions.

Value chains and regional news

EU reaches deal on gene-edited crops

PARIS, Dec 4 (Reuters) - The European Union has reached a preliminary deal on how to regulate gene-edited crops in a move that could ease the development of new varieties in a region long wary of biotech innovations in food.

The EU has debated for years how to regulate so-called new genomic techniques (NGT), which can edit the genetic material of an organism without introducing traits from another species.

Proponents say the technology accelerates naturally occurring mutations and offers a response to climate and environmental pressures, while critics bracket it with genetically modified organisms as a risk to ecosystems and health.

Under an agreement struck overnight by representatives of EU countries and the European Parliament, a first category of NGT crops will be regulated like conventional crops and not require special labelling except for seeds.

However, a second category deemed to feature more complex modifications will fall under the EU's stricter GMO regime, including obligatory product labelling. This category will include herbicide-tolerant varieties.

To address concerns over control of NGT patents, the agreement included a requirement for crop developers to disclose patent details in a public database.

"The regulation will allow us to develop new plant varieties that are more resilient to climate change and require less fertilisers or pesticides," Jacob Jensen, the minister for food, agriculture and fisheries in Denmark, which holds the rotating EU presidency, said in a statement on Thursday.

EU farming association Copa-Cogeca welcomed a "historic agreement", saying it was the only initiative so far under the bloc's Green Deal to offer practical solutions for farmers.

Environmental protection association Friends of the Earth condemned the loosening of rules for "new GMOs", calling the deal a "free pass given to the biotech industry".

The preliminary agreement still needs to be voted on by the European Parliament and the EU's council of member states before being put into law.

Source: Reuters, December 4, 20252:48 PM GMT+1Updated December 4, 2025 Reporting by Gus Trompiz; Editing by Kirsten Donovan.

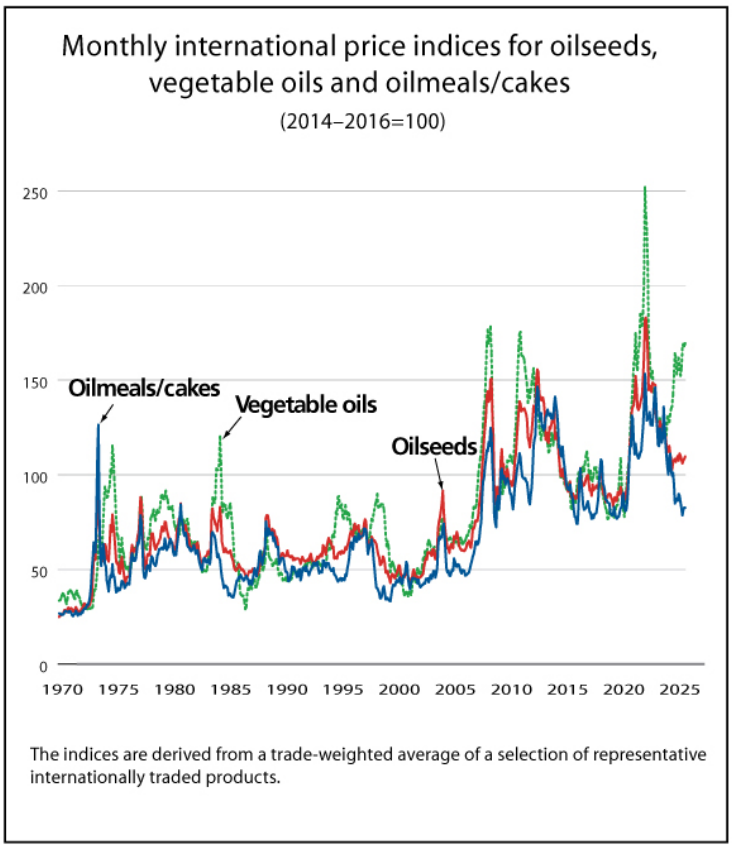
NB: See also in the Publications section, a review by Asif Mukhtar et al, which focuses on the application and progresses of CRISPR/Cas technologies in rapeseed and their potential to address global agricultural challenges https://doi.org/10.1007/s44154-025-00229-6

Evolution of the FAO vegetable oils price index: oils prices still at high levels.

In October 2025, the FAO oilseed price index continued to increase for the third consecutive month, gaining 1.2 points (1.3 percent) from September and 1.8 percent from its year-earlier level. (…) The continued strengthening of the oilseed index reflected higher prices of soybeans and sunflower seed, while rapeseed quotations remained virtually stable. (…)

The oil-meal price index was virtually steady in October as stable soymeal values, the dominant component of the index, offset declines in rapeseed and sunflower meal quotations. (…)

As for vegetable oils, the increase in the price index reflected higher quotations for palm, rapeseed, soy and sunflower oils. International palm oil prices rebounded slightly after easing in the previous month, supported by expectations of tighter exportable supplies following Indonesia's planned increase in biodiesel blending mandates in 2026, despite higher-than-expected production in Malaysia. World sunflower oil prices rose for the fourth consecutive month in October, largely due to limited supplies from the Black Sea region amid harvest delays and cautious farmer sales. Meanwhile, global rapeseed and soy oil prices increased on account, respectively, of persistent tight supplies in the European Union and higher domestic demand in Brazil and the United States.



Read more details on https://www.fao.org/markets-and-trade/commodities-overview/basic-foods/oilcrops-food-price-indices/en (October 2025)

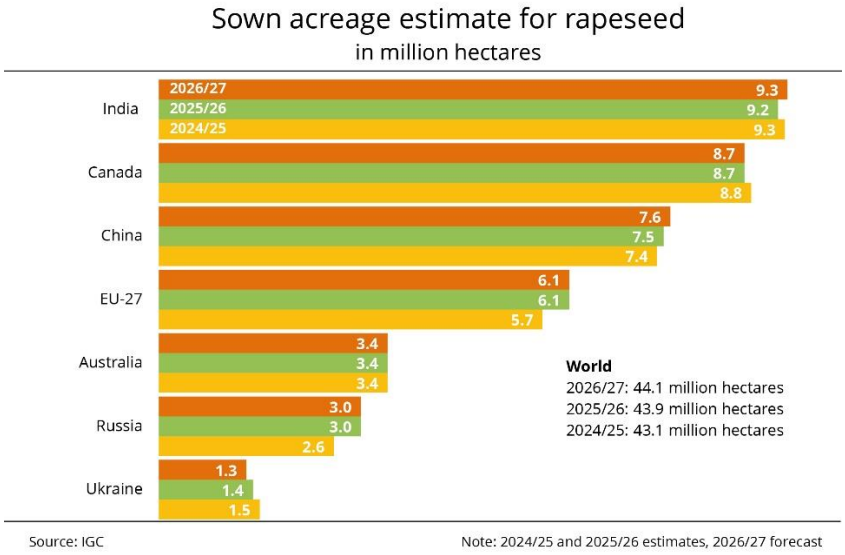
Global rapeseed production

IGC expects all-time high in rapeseed area for the 2026/27 marketing year.

The International Grains Council (IGC) forecasts the global rapeseed area at 44.1 million hectares; 0.2 million hectares higher compared to the current 2025/26 crop year. In major exporting countries, the rapeseed area is expected to decline slightly, while other regions – especially Asia – are projected to see moderate expansion.

In the EU-27, the rapeseed area is forecast to remain unchanged at 6.1 million hectares. However, in the southeastern EU, especially in Romania, the strong 2025 harvest may encourage farmers to expand their rapeseed plantings. In contrast, other member states are expected to reduce their areas slightly. In Russia, the area devoted to rapeseed cultivation is forecast to remain stable at 3.0 million hectares, following significant expansion in the current season. By contrast, according to research by Agrarmarkt Informations-Gesellschaft (mbH), the area planted with rapeseed in Ukraine is expected to decline 100,000 hectares to 1.3 million hectares. Nevertheless, the aggregated area in the Commonwealth of Independent States (CIS) is expected to reach the second largest level on record, underscoring the growing importance of rapeseed as a crop.

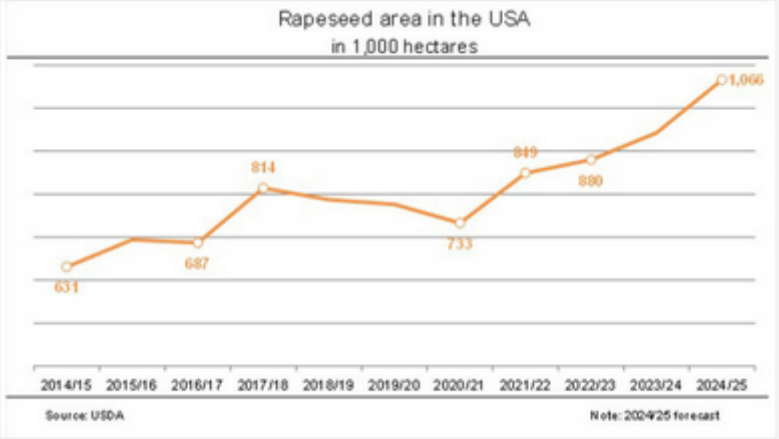
Forecasts for leading exporters Canada and Australia remain particularly uncertain, as sowing will not begin for several months. Driven by expectations of brisk international demand, Canada's rapeseed area is projected to remain close to its previous average at 8.7 million hectares. Australia's rapeseed area is likewise expected to stay unchanged compared to the previous year, at 3.4 million hectares.



Source: IGC reported by UFOP Chart of the week 48 2025 (https://www.ufop.de/english/news/chart-week/#kw48_2025)

Canola in US

“According to the USDA, canola production in the United States is surging, driven by strong demand from the domestic biofuel sector. For the 2024/25 season, planted area exceeded 1 million hectares for the first time, marking a 13% increase from the previous year and setting the stage for a record harvest of over 2.1 million tonnes. Growth has been strongest in North Dakota, Montana, and Washington, where planted areas hit record highs. Fuelled by policies such as the Renewable Fuel Standard (RFS) and California’s Low Carbon Fuel Standard (LCFS), canola oil has become an increasingly valuable feedstock for renewable diesel and sustainable aviation fuel, reinforcing the crop’s importance to both U.S. agriculture and clean energy.



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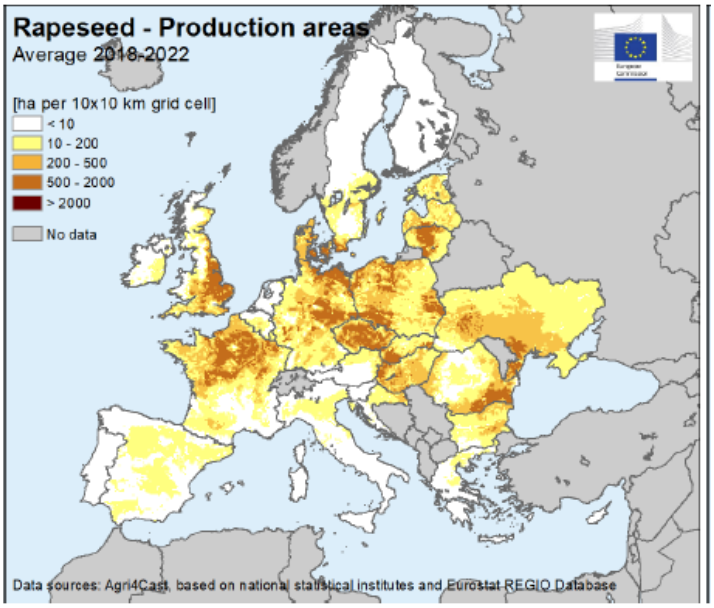
Source: [US Canola Quick Bytes, November](#) 2025

Europe: early crop growth supported by favourable conditions



"In northern Europe (**Finland**, **Sweden** and the **Baltic countries**) and across western to eastern regions (**France**, **Germany**, **Austria**, **Poland**, **Czechia** and **Slovakia**), rapeseed crops are developing well, supported by adequate rainfall and generally mild temperatures. This has resulted in uniformly established stands, currently ranging from the five-leaf stage to the formation of side shoots, depending on sowing dates. In north-western Europe (**France**, **Belgium**, **Denmark** and north-western **Germany**), crop hardening slightly delayed by the unusually warm first half of November (…)
In **Hungary**, crops are developing well. While recent rains have helped improve top-soil moisture in the central and eastern regions of the Great Plains, deeper soil layers remain dry, which could impede future crop development unless significant rainfall occurs. In **Romania**, dry soils in September followed by abundant rains made sowing difficult in the southern regions, leading to high heterogeneity in crop development, from emergence to advanced rosette, and poor uniformity in late-sown fields; soils remain dry along the eastern border. In **Bulgaria**, sowing is complete and the area may increase this year."

Read more on JRC MARS Bulletin - Crop monitoring in Europe - November 2025 - Vol. 33 No 10 *https://dx.doi.org/10.2760/4463007*

Scientific news

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

Fan, H., Li, J., Huang, W., Liang, A., Jing, L., Li, J., ... & Yang, Z. (2025). Pan-genome analysis of the R2R3-MYB genes family in *Brassica napus* unveils phylogenetic divergence and expression profiles under hormone and abiotic stress treatments. Frontiers in Plant Science, 16, 1588362. https://doi.org/10.3389/fpls.2025.1588362

Sheng, W. (2025). Mitochondrial Genomic Characterization and Phylogenetic Analysis of **Wild Rapeseed**. Phyton, 94(7), 2015. http://dx.doi.org/10.32604/phyton.2025.066232

Guo, Y., Han, Y., Gao, J., Ge, X., Luo, Y., Zhao, K., ... & Cheng, X. (2025). Rapid Identification of Alien Chromosome Fragments and Tracing of Bioactive Compound Genes in Intergeneric Hybrid Offspring Between *Brassica napus* and *Isatis indigotica* Based on AMAC Method. International Journal of Molecular Sciences, 26(5), 2091. https://doi.org/10.3390/ijms26052091

Zhao, H., Tan, Z., Zheng, Y., Guan, Z., Wang, X., Yang, J., ... & Liu, K. (2025). Transposable element-mediated structural variations drive gene expression and agronomic trait diversity in *Brassica napus*. https://doi.org/10.21203/rs.3.rs-6452497/v1

Mackon, E., Zhang, S., Pan, Z., Khan, L. U., Peng, J., Ikram, M., ... & Liu, P. (2025). Integrated Transcriptome and Metabolome Insights Into Floral Buds Fertility and Adaptive Mechanisms Under Long-Term Thermal Stress in *Brassica napus L*. Physiologia plantarum, 177(4), e70414. https://doi.org/10.1111/ppl.70414

Montero-Tena, J. A., Zanini, S. F., Yildiz, G., Kox, T., Abbadi, A., Snowdon, R. J., & Golicz, A. A. (2025). Machine learning and multi-omic analysis reveal **contrasting recombination landscape of A and C subgenomes** of winter oilseed rape. bioRxiv, 2025-09. https://doi.org/10.1101/2025.09.23.677995

Geng, R., Fan, X., Sarwar, R., Wang, Y., Dong, K., & Tan, X. L. (2025). **CRISPR mutant rapid identification** in *B. napus*: RNA-Seq functional profiling and breeding technology application. Frontiers in Plant Science, 16, 1572020. https://doi.org/10.3389/fpls.2025.1572020

Mukhtiar, A., Ullah, S., Yang, B. et al. Unlocking genetic potential: a review of the role of **CRISPR/Cas technologies** in rapeseed improvement. Stress Biology 5, 31 (2025). https://doi.org/10.1007/s44154-025-00229-6

Xu, Y., Cao, Y., Sun, R., Lin, B., & Dong, J. (2025). Genetic manipulation of BnCOP1 genes enhances multiple agronomic traits in rapeseed. Crop Design, 100117. https://doi.org/10.1016/j.cropd.2025.100117

Xiao, L., Zhang, J., Guo, S. et al. Exploration of the molecular mechanism behind a **novel natural genic male-sterile mutation** of 1205A in *Brassica napus*. BMC Plant Biol 25, 142 (2025). https://doi.org/10.1186/s12870-025-06150-4

Shi, J., Yu, H., Liu, R., Zhang, Y., Fu, Y., Wang, T., ... & Zhao, J. (2025). Generation and Identification of a **Male Sterile Rapeseed** (*Brassica napus*) Line for Hybrid Seed Production Using a Kompetitive Allele-Specific PCR (KASP) Marker. https://www.preprints.org/manuscript/202503.1651/v1

Liu, X., Wang, T., Guo, Y., Yang, Q., Qu, L., Deng, L., ... & Li, B. (2025). Development and Validation of KASP and InDel **Markers** Cosegregating With the **Fertility Restoring Gene** for Ogura Cytoplasmic Male Sterility in Rapeseed *(Brassica napus L.).* Plant Breeding. https://doi.org/10.1111/pbr.13278

Zhang, D., Zhang, X., Chen, Z., Chen, H., Zhang, Q., Hu, Z., & Hu, S. (2025). Molecular mapping of dominant **male sterile gene** in the *Brassica napus* line Shaan-GMS by BSA-Seq and candidate gene association analysis. Crop Science, 65(2), e70043. https://doi.org/10.1002/csc2.70043

Farooq, Z., Ali, A., Wang, H., Bakhsh, M. Z. M., Li, S., Liu, Y., ... & Bin, Y. (2025). An overview of **cytoplasmic male sterility** in *Brassica napus.* Functional Plant Biology, 52(5). https://www.publish.csiro.au/fp/FP24337

Bakhsh, M. Z. M., Lei, M., Zhang, X., Ali, A., & Yi, B. (2025). Gigas-Cell1 mediated in vivo haploid induction in *Brassica napus*: A step forward for **hybrid development** and crop improvement. Plant Biotechnology Journal, 1-3. https://doi.org/10.1111/pbi.70215

Wolter, F. P., Lübeck, J., & Abbadi, A. (2025). Breeding for **protein content and quality** in rapeseed: a mini review. OCL, 32, 29. https://doi.org/10.1051/ocl/2025020

Han, X., Wu, X., Zhang, Y., Tang, Q., Zeng, L., Liu, Y., ... & Guo, L. (2025). Genetic and transcriptome analyses of the effect of genotype-by-environment interactions on *Brassica napus* **seed oil content.** The Plant Cell, 37(4), koaf062. https://doi.org/10.1093/plcell/koaf062

Shen, W., Yu, L., Qu, Q., Han, X., Ma, W., Zu, F., ... & Tang, S. (2025). Genetic optimization of the source, sink and flow for increasing **seed oil content** in rapeseed. Journal of Integrative Plant Biology. https://doi.org/10.1111/jipb.70017

Lécureuil, A., Corso, M., Boutet, S., Le Gall, S., Niñoles, R., Gadea, J., ... & Jasinski, S. (2025). Innovative screening for mutants affected in seed oil/protein allocation identifies TRANSPARENT TESTA7 as a regulator of **oil accumulation**. The Plant Journal, 122(6), e70269. https://doi.org/10.1111/tpj.70269

Zhang, Y., Liu, Y., Zong, Z. et al. Integrative omics analysis reveals the genetic basis **of fatty acid composition** in *Brassica napus* seeds. Genome Biol 26, 83 (2025). https://doi.org/10.1186/s13059-025-03558-x

Tianxia, G. (2025). **CRISPR**-Based Modification of Fatty Acid Biosynthesis Pathways to **Increase Oleic Acid** in Rapeseed. Field Crop, 8. https://cropscipublisher.com/index.php/fc/article/html/4081/

Wang, J., Dong, Q., Li, Y., Hu, L., Jia, C., Li, H., ... & Fan, C. (2025). Base editing of BnaFAD2 fine-tunes **oleic acid content** in allotetraploid rapeseed without compromising yield. Plant Physiology, 199(2), kiaf467. https://doi.org/10.1093/plphys/kiaf467

Yang, Z., Chen, Y., Ma, S., Zhang, M., Tang, T., & Du, C. (2025**). Bioengineering of long-chain polyunsaturated fatty acids** in oilseed crops. Progress in Lipid Research, 101333. https://doi.org/10.1016/j.plipres.2025.101333

Wang, F., Kuang, L., Xiao, Z., Tian, Z., Wang, X., Wang, H., & Dun, X. (2025). An alternative splicing caused by a natural variation in BnaC02. VTE4 gene affects **vitamin E and glucosinolate content** in rapeseed (*Brassica napus L.).* Plant Biotechnology Journal, 23(5), 1535-1547. https://doi.org/10.1111/pbi.14603

Emon, R. M., & Khatun, M. K. (2025). Development of **low erucic** acid content rapeseed **mutant** variety BINA Sarisha12. Journal of Advances in Biology & Biotechnology, 28(2), 117-128. https://hal.science/hal-05049360/

Liu, H., Yuan, Y., Ye, K., Li, R., Ran, H., Tang, Y., ... & Qu, C. (2025). Dissection of the genetic architecture of **seed erucic acid content** and consequences for breeding in *Brassica napus L.* Industrial Crops and Products, 226, 120727. https://doi.org/10.1016/j.indcrop.2025.120727

Lv X.M., Jiang X.L., and Han Y.P., 2025, Molecular basis of **flower color variation** in rapeseed: breeding implications, Plant Gene and Trait, 16(2): 64-73 https://doi.org/10.5376/pgt.2025.16.0008

Huang, W. (2025). Identification of Genes Involved in **Flower Color** Formation in Rapeseed. Plant Gene and Trait, 16.http://dx.doi.org/10.5376/pgt.2025.16.0004

Wang, T., Liu, J., Chu, Z., Zhao, Y., Ma, J., Tao, Z., ... & Li, P. (2025). A genome-wide association study uncovers that BnaA10. NCBP regulates **early flowering** in *Brassica napus*. Industrial Crops and Products, 226, 120703. https://doi.org/10.1016/j.indcrop.2025.120703

Li, Y., Li, X., Du, D. et al. Genetic dissection of **flowering time** and fine mapping of qFT.A02-1 in rapeseed (Brassica napus L.). Theor Appl Genet 138, 70 (2025). https://doi.org/10.1007/s00122-025-04845-8

Gong, M., Wu, G., Weng, X., Zhang, H., Zhou, T., Guo, W., ... & Zhu, Y. (2025). The intronic structure variation of rapeseed BnaC3. LEAFY regulates the **timing of inflorescence formation and flowering**. Plant Communications, 6(6). https://www.cell.com/plant-communications/fulltext/S2590-3462(25)00080-X

Dong, H., Qi, S., Shen, Q. et al. Elucidation of the genetic basis of variation in **flowering time** in *Brassica napus* via genome-wide association studies and gene coexpression analysis. BMC Plant Biol 25, 350 (2025). https://doi.org/10.1186/s12870-025-06253-y

Zhang, M., Chang, W., Hu, R., Ruan, Y., Li, X., Fan, Y., ... & Lu, K. (2025). Deciphering the genetic regulation of **flowering time** in rapeseed **for early-maturation breeding**. Journal of Genetics and Genomics. https://doi.org/10.1016/j.jgg.2025.08.011

Jiang, M., Li, J., Huang, Y. et al. Mapping and molecular marker development for the BnaSBT gene controlling **inflorescence and plant architectures** in *B. napus.* Mol Breeding 45, 45 (2025). https://doi.org/10.1007/s11032-025-01556-2

Liu, H., Ren, R., Liu, W., Yang, B., He, X., Liu, Z., ... & Xiong, X. (2025). Excavation and Functional Verification of **Plant Height** Gene BnGPI2-A03 in *Brassica napus L.* Agronomy, 15(3), 554. https://doi.org/10.3390/agronomy15030554

Cui, T., Wang, X., Wang, W., Cheng, H., Mei, D., Hu, Q., ... & Liu, J. (2025). Genome-Wide Association Study Reveals Candidate Genes **Regulating Plant Height and First-Branch Height** in *Brassica napus.* International Journal of Molecular Sciences, 26(11), 5090. https://doi.org/10.3390/ijms26115090

Xu, Y., Ma, N., Guo, Z. et al. QTL mapping and transcriptome analysis identified BnaA03.XTH4 as a novel negative regulator of **plant height** in *Brassica napus L.*. Theor Appl Genet 138, 165 (2025). https://doi.org/10.1007/s00122-025-04951-7

Feng, B., Wang, Y., Zhang, X. et al. Targeted mutagenesis and functional marker development of two Bna.TAC1s conferring novel rapeseed germplasm with **compact architecture**. Theor Appl Genet 138, 86 (2025). https://doi.org/10.1007/s00122-025-04876-1

Wang, X., Yu, J., Cai, Y., Tang, M., Zhang, L., Chen, F., ... & Zheng, M. (2025). BnaGSK3-BnaIDD16 module negatively regulates **branch angle** in *Brassica napus*. The Plant Journal, 123(3), e70388. https://doi.org/10.1111/tpj.70388

Zhang, L., Cheng, X., Chen, D. et al. Integration of bulked segregant analysis and transcriptome sequencing reveals an interaction network associated with **cluster buds trait** in *Brassica napus.* Theor Appl Genet 138, 200 (2025). https://doi.org/10.1007/s00122-025-04989-7

Quan, Y., Liu, H., Li, K. *et al.* Genome-wide association study reveals genetic loci for **seed density per silique** in rapeseed (*Brassica napus* L.). *Theor Appl Genet* **138**, 80 (2025). https://doi.org/10.1007/s00122-025-04857-4

Shen, W., He, T., Gao, J. et al. Cytological and genetic analyses of the **seed number per silique** locus BnSNSC09 in *Brassica napus.* Theor Appl Genet 138, 168 (2025). https://doi.org/10.1007/s00122-025-04957-1

Hosain, S., Horvath, D.P., Roy, J. et al. Genome-wide association study and genomic prediction **for pod-shattering tolerance** in a diverse rapeseed/canola germplasm collection. Euphytica 221, 54 (2025). https://doi.org/10.1007/s10681-025-03494-8

Wang, W., Chu, W., Wang, H. et al. Uncovering a stable QTL qSRI.A06 and candidate gene for rapeseed **pod shatter resistance**. Mol Breeding 45, 70 (2025). https://doi.org/10.1007/s11032-025-01590-0

Cai, L., Zhou, Q., Ding, T. *et al.* Three-year QTL mapping discovers a novel locus and candidate gene *BnC09.LMI1* regulating the **leaf complexity** of *Brassica napus*. *Plant Growth Regul* **105**, 1091–1103 (2025). https://doi.org/10.1007/s10725-025-01323-5

Yu, W., Wang, X., Wang, H., Wang, W., Cheng, H., Mei, D., ... & Liu, J. (2025). Optimization and application of **genome prediction model in rapeseed**: flowering time, yield components and oil content as examples. Horticulture Research, uhaf115. https://doi.org/10.1093/hr/uhaf115

Bocianowski, J., Nowosad, K., Kozak, B. et al. Identification of SNP markers associated with **yield** in winter oilseed rape *(Brassica napus L.)* hybrids. J Appl Genetics (2025). https://doi.org/10.1007/s13353-025-00953-9

Bao, L., Xinhong, L., Qian, Y. et al. A glycogen synthase kinase-3 gene enhances **grain yield heterosis** in semi-dwarf rapeseed. Plant Mol Biol 115, 45 (2025). https://doi.org/10.1007/s11103-025-01555-z

Balamurugan, B., Singh, M., Mishra, D.C. et al. Genome-wide investigation of cytokinin oxidase/dehydrogenase (CKX) family genes in *Brassica juncea* with an emphasis on yield-influencing CKX. Sci Rep 15, 18825 (2025). https://doi.org/10.1038/s41598-024-81004-x

Akhatar, J., Goyal, A., Mittal, M. et al. Genetic analysis **of silique and seed traits** in *Brassica juncea (L.)* Czern. under differential doses of nitrogen application. Sci Rep 15, 23977 (2025). https://doi.org/10.1038/s41598-025-07758-0

Zhao, C., Xia, J., Liang, B. et al. Large-scale screening of genes responsible for **silique length and seed size** in *Brassica Napus* via pooled CRISPR library. BMC Genomics 26, 829 (2025). https://doi.org/10.1186/s12864-025-11979-y

Chen, S., Yao, L., Wang, R., Zeng, J., Li, J., Cui, S., ... & Gong, P. (2025). BnaNRT1. 5s mediates nitrate transporter to regulate **nitrogen use efficiency** in *Brassica napus*. Sheng wu Gong Cheng xue bao= Chinese Journal of Biotechnology, 41(7), 2954-2965. https://doi.org/10.13345/j.cjb.241009

Haelterman, L., Laperche, A., Faure, S., Garin, V., & Hermans, C. (2025). Genetic Control **of Root Morphology** in Rapeseed Recombinant Inbred Lines Grown Under Contrasting Nitrogen Levels. Physiologia Plantarum, 177(4), e70431. https://doi.org/10.1111/ppl.70431

Wang, Y., Zhao, D., Li, Z., Yang, Y., Peng, Z., Meng, C., ... & Zhang, C. S. (2025**). Kaempferol** drives genotype-specific microbiota *Bacillaceae* to enhance **nitrogen acquisition** in rapeseed. Journal of Advanced Research. https://doi.org/10.1016/j.jare.2025.07.018

Zheng, G., Liu, Z., Wang, J., Wei, J., Dong, X., Li, H., ... & Cui, J. (2025). Integrative Analysis of the Methylome, Transcriptome, and Proteome Reveals a New Mechanism of Rapeseed Under **Freezing Stress**. Agronomy, 15(3), 739. https://doi.org/10.3390/agronomy15030739

Zheng, G., Liu, Z., Jiang, L., Yang, Q., Wei, J., Wu, Z., ... & Wang, X. (2025). Genome-wide association studies and transcriptome analysis reveal novel genes associated with **freezing tolerance** in rapeseed *(Brassica napus L.).* PLoS One, 20(5), e0322547. https://doi.org/10.1371/journal.pone.0322547

Li, Xinxin and Zhu, Juncheng and Pu, Yuanyuan and Ma, Li and Liu, Lijun and Wang, Wangtian and Yang, Gang and Fan, Tingting and Sun, Wancang and Wu, Junyan, Revealing the Response Mechanism of Winter Rape *(Brassica rapa L. subsp. oleifera)* to **Freezing Stress** Based on Transcriptome Analysis. Available at SSRN: https://ssrn.com/abstract=5429531 or http://dx.doi.org/10.2139/ssrn.5429531

yang, bo and Wang, Qiangjun and Chen, Hao and Chen, Xiaoyu and Xia, Xiaoyan and Zhou, Zixuan and Sun, Lei and Qian, Lunwen and Liu, Zhongsong and He, Xin and Xiong, Xinghua, A Comparative Transcriptome Analysis of **Freezing Stress Responses** in early-maturing Rapeseed *(Brassica napus L.*) Seedlings. Available at SSRN: https://ssrn.com/abstract=5451601 or http://dx.doi.org/10.2139/ssrn.5451601

Xia, X., Li, S., Sun, L., Wang, Z., Chen, X., Yang, B., ... & He, X. (2025). The interaction between BnaAIF1 and BnaICE1 enhances the **low-temperature tolerance** of *Brassica napus*. Plant Stress, 101053. https://doi.org/10.1016/j.stress.2025.101053

Fahim, A. M., Cao, L., Li, M., Gang, Y., Rahman, F. U., Yuanyuan, P., ... & Wancang, S. (2025). Integrated transcriptome and metabolome analysis revealed hub genes and metabolites associated with **subzero temperature tolerance** following cold acclimation in rapeseed *(Brassica rapa L.).* Plant Physiology and Biochemistry, 221, 109647. https://doi.org/10.1016/j.plaphy.2025.109647

Tidy, A. C., Siles, L., Jacott, C., Wells, R., Kurup, S., & Wilson, Z. A. (2025). Large scale phenotyping on the effect **of heat and cold stress** *on Brassica napus* during floral development. Plant Stress, 100957. https://doi.org/10.1016/j.stress.2025.100957

Shahsavari, M., Mohammadi, V., Alizadeh, B. et al. RNA-Seq Meta-Analysis Unveils **Key Genes** and Pathways in Rapeseed *(Brassica napus L.)* Responses to **Drought and Heat Stress**. J Plant Growth Regul 44, 3660–3680 (2025). https://doi.org/10.1007/s00344-025-11658-y

Taak, Y., Patel, M.K., Chaudhary, R. et al. Determining **Drought- and Heat-Tolerant** Genotypes in Indian Mustard *[Brassica juncea]* Employing GGE Biplot Analysis. Agric Res (2025). https://doi.org/10.1007/s40003-025-00866-3

Zhang, Y., Yuan, X., Zhang, Y., Luo, Y., Zhao, K., Zu, F., ... & Liu, F. (2025). GWAS and WGCNA analysis uncover candidate genes associated with **drought** in *Brassica juncea* L. Frontiers in Plant Science, 16, 1551804. https://doi.org/10.3389/fpls.2025.1551804

Ashfaq, L., Iqbal, S., Rasheed, S. et al. Genome-Wide Identification and Functional Characterization of LEA4-5 Genes in Response to **Drought Stress** in *Brassica* Species. J Plant Growth Regul 44, 4678–4704 (2025). https://doi.org/10.1007/s00344-025-11717-4

Jin, S., Wang, Y., Song, Y., Fan, S., Luo, N., Gan, Q., ... & Ni, Y. (2025). Dual regulation of cuticle and cell wall biosynthesis by BnaC9. MYB46 confers **drought tolerance** in *Brassica napus*. Plant Biotechnology Journal. https://doi.org/10.1111/pbi.70314

Tian, T., Long, Z., Gong, X. et al. ARGOS homolog evolution in *brassicaceae* and the role of BnaC6.ARGOS in conferring **drought tolerance** via expression-responsive localization and reduced seed porosity in rapeseed. BMC Plant Biol 25, 1254 (2025). https://doi.org/10.1186/s12870-025-07233-y

Zhao, P., Zheng, J., Xu, Q., Zhao, S., Li, J., Zhu, Y., ... & Jiang, Y. Q. (2025). Genome-Wide Identification and Analysis of the JAZ Gene Family in Rapeseed Reveal JAZ2 and JAZ3 Roles in **Drought and Salt Stress Tolerance.** Journal of agricultural and food chemistry, 73(33), 20955-20971. https://doi.org/10.1021/acs.jafc.5c01237

Han, C., Ma, L., Tao, X., Lian, Y., Wu, J., Fahim, A. M., ... & Sun, W. (2025). Genome-Wide Identification of the Cation/Proton Antiporter (CPA) Gene Family and Expression Pattern Analysis **Under Salt Stress** in Winter Rapeseed *(Brassica rapa L.).* International Journal of Molecular Sciences, 26(7), 3099. https://doi.org/10.3390/ijms26073099

Zhou, M., Song, X., Yu, Q., Dai, B., Zhou, W., Zan, X., & Deng, W. (2025). Metabolomics and Transcriptome Analysis of Rapeseed Under **Salt Stress at Germination** Stage. Current Issues in Molecular Biology, 47(7), 481. https://doi.org/10.3390/cimb47070481

Saima, S., Ahmad, I., Javed, A., Anila, I., Ijaz, K., Ghazal, U., & Hashim, M. (2025). Evaluation of 10 Genotypes of Rapeseed *(Brassica napus L.)* Under **NaCl Salinity Tolerance**. Indus Journal of Bioscience Research, 3(7), 333-338. https://doi.org/10.70749/ijbr.v3i7.1834

Liu, Y., Li, D., Qiao, Y., Fan, N., Gong, R., Zhong, H., ... & Dong, J. (2025). Integration of mRNA and miRNA Analysis Reveals the Regulation of **Salt Stress Response** in Rapeseed *(Brassica napus L.).* Plants, 14(15), 2418. https://doi.org/10.3390/plants14152418

Xu, X., Zhang, X., Fan, Y. et al. Genome-wide identification and expression analysis of the TCP transcription factor family and its response to **abiotic stress** in rapeseed *(Brassica napus L.).* 3 Biotech 15, 119 (2025). https://doi.org/10.1007/s13205-025-04273-x

Zhu, R., Yue, C., Wu, S. et al. Alternative Splicing of BnABF4L Mediates Response to **Abiotic Stresses** in Rapeseed *(Brassica napus L.).* Biotechnol. Biofuels Bioprod. 18, 51 (2025). https://doi.org/10.1186/s13068-025-02645-2

Pu, Y., Liu, L., Ma, L., Yang, G., Wang, W., Fan, T., ... & Sun, W. (2025). Genome-Wide Identification and Characterization of Q-Type C2H2 Zinc Finger Proteins in Rapeseed *(Brassica napus L.)* and Their Expression Patterns Across Tissues and **Under Abiotic Stress**. Agronomy, 15(9), 2085. https://doi.org/10.3390/agronomy15092085

Zhu, H., Jiang, K., Meng, J., Kuang, L., Zhu, S., Zhang, Y., ... & Jiang, J. (2025). Overexpression of miR393 improves **anthocyanin accumulation** and **osmotic stress tolerance** of *Brassica napus*. Plant Science, 112523. https://doi.org/10.1016/j.plantsci.2025.112523

Liu, J., Wu, J., Liu, X., Liu, L., Yan, M., & Li, B. (2025). Overexpression of Vitreoscilla hemoglobin gene enhances **flooding resistance** in *Brassica napus*. Oil Crop Science. https://doi.org/10.1016/j.ocsci.2025.03.002

Xing, M., Kang, Y., Lv, M., Serani, B. R., Shen, Q., Jiao, W., ... & Huang, L. (2025). Genome-wide identification and functional analysis of PEL gene family in *Brassica napus L.* BMC Plant Biology, 25, 838. https://doi.org/10.1186/s12870-025-06864-5

Liu, Y., Wei, X., Liu, Y., Tang, Y., Shen, S., Xu, J., ... & Zhang, T. (2025). Genome-Wide Identification and Functional Characterization of the BAHD Acyltransferase Gene Family in *Brassica napus L.* Plants, 14(14), 2183. https://doi.org/10.3390/plants14142183

Yang, R., Chen, J., Huang, Y. et al. Identification and expression analysis of the FRK gene family in Oilseed *(Brassica napus L.).* BMC Plant Biol 25, 921 (2025). https://doi.org/10.1186/s12870-025-06964-2

Zhou, B., Guan, C., & Guan, M. (2025). Genome-Wide Identification of the BnaRFS Gene Family and Functional Characterization of BnaRFS6 in *Brassica napus. Genes*, *16*(9), 1032. https://doi.org/10.3390/genes16091032

Wang, C., Kuang, L., Tian, Z., Wang, X., Wang, H., & Dun, X. (2025). Genome-wide association study reveals the genetic basis **of vitamin C content** in rapeseed *(Brassica napus L.)* seedlings. Frontiers in Plant Science, 16, 1649023. https://doi.org/10.3389/fpls.2025.1649023

Wang, N., Song, X., Kuang, L. et al. Integrating genome assembly, structural variation map construction and GWAS reveal the impact of SVs on agronomic traits of *Brassica napus.* Theor Appl Genet 138, 191 (2025). https://doi.org/10.1007/s00122-025-04977-x

Ibeabuchi, K. O., Dourado, M. M., Scholten, S., & Feuerstein, U. (2025). Genome-wide association mapping reveals genetic loci underlying phenotypic variation in **early root vigour** improvement by **osmopriming** in *Brassica napus L*. https://doi.org/10.21203/rs.3.rs-7137420/v1

Kumari Onkarnath, D. P. (2025). Molecular studies for **Aphid** *[Lipaphis erysimi (Kalt.)]* **resistance** in the advanced generation (F4) of the Brassica interspecific hybrid GM-3× Pusa Swarnim. https://doi.org/10.36953/ECJ.30012956

Li, L., Shu, L., Li, Y., Zhang, F., Meng, Y., Wang, H., ... & Yan, J. (2025). Ectopic Overexpression of Rapeseed BnaNTL1 Transcription Factor Positively Regulates Plant Resistance ***to Sclerotinia sclerotiorum*** through Modulating JA Synthesis and ROS Accumulation. Journal of Agricultural and Food Chemistry, 73(9), 5042-5053. https://doi.org/10.1021/acs.jafc.4c10185

Yang, C., Zhong, W., Li, W., Xia, Y., Qin, L., Tang, X., & Xia, S. (2025). LRR Receptor-like Protein in Rapeseed Confers Resistance to ***Sclerotinia sclerotiorum*** Infection via a Conserved Ss NEP2 Peptide. International Journal of Molecular Sciences, 26(10), 4569. https://doi.org/10.3390/ijms26104569

Shi, Y., Xu, K., Zhao, F., Bao, S., Wang, K., Zheng, L., ... & Huang, Z. (2025). Identification and characterization of Bol. TNL. 2, a key **clubroot resistance** gene from cabbage, in *Arabidopsis and Brassica napus L*. Horticulture Research, uhaf208. https://doi.org/10.1093/hr/uhaf208

Liu, D., Yu, S., Ji, B., Peng, Q., Gao, J., Zhang, J., ... & Hu, M. (2025). Molecular Mechanisms **of Herbicide Resistance** in Rapeseed: Current Status and Future Prospects for Resistant Germplasm Development. International Journal of Molecular Sciences, 26(17), 8292. https://doi.org/10.3390/ijms26178292

CROP PROTECTION

Shields, A., Yao, L., Rossi, C. A., Collado Cordon, P., Kim, J. H., AlTemen, W. M. A., ... & Castroverde, C. D. M. (2025). **Warm temperature** suppresses plant **systemic acquired resistance** by intercepting N-hydroxypipecolic acid biosynthesis. The Plant Journal, 123(3), e70374. https://doi.org/10.1111/tpj.70374

Talbi, N., Pakzad, S., Blaise, F., Ollivier, B., Rouxel, T., Balesdent, M. H., ... & Fudal, I. (2025). Molecular Investigation of **Rlm3** From Rapeseed as a **Potential Broad-Spectrum Resistance Gene** Against Fungal Pathogens Producing Structurally Conserved Effectors. Plant Pathology. https://doi.org/10.1111/ppa.70063

Chen, W., Wang, P., & Zhu, F. (2025). Preconditioning Hormesis of the **Fungicide Dimethachlone** on Mycelial Growth and Aggressiveness of ***Sclerotinia sclerotiorum***. Journal of Phytopathology, 173(3), e70090. https://doi.org/10.1111/jph.70090

Xie, X., Yang, Z., Zhong, W., Li, H., Deng, W., Ruan, Y., & Liu, C. (2025). Induction of Resistance Against ***Sclerotinia sclerotiorum*** in Rapeseed by β-Ocimene Through Enhanced Production of Coniferyl Aldehyde. International Journal of Molecular Sciences, 26(12), 5678. https://doi.org/10.3390/ijms26125678

Chandam, M., Tewari, A.K., Purohit, R. et al. Utilizing petal infestation and predictive models to forecast **Sclerotinia stem rot** of rapeseed-mustard. J Plant Pathol (2025). https://doi.org/10.1007/s42161-025-01965-4

Krause, V., Zamani-Noor, N., Müller, L., Kehlenbeck, H., & Dominic, A. R. (2025). Advancing **Sclerotinia risk forecasting** for winter rapeseed in Germany: integrating crop phenology and disease development into a decision support system. Pest Management Science. https://doi.org/10.1002/ps.70166

Zamani-Noor, N., Daneshbakhsh, D., & Berger, B. (2025). Molecular Identification, Pathogenicity, and **Fungicide Sensitivity of Sclerotinia spp. Isolates** Associated with Sclerotinia Stem Rot in Rapeseed in Germany. Agriculture, 15(19), 1994 https://doi.org/10.3390/agriculture15191994

Trevenen, E. J., Pires, R. N., Mastrantonis, S., & Renton, M. (2025). Could Canola **Canopy Architecture** Affect **Pathogen Infection** by Impacting Flower Accumulation on Branches?. Phytopathology®, 115(8), 1008-1017. https://doi.org/10.1094/PHYTO-11-24-0377-R

Peng, W., Yi, C., Zhang, Y., Sun, Y., Tang, P., Liao, Q., & Xiong, Y. (2025). Flexible ag-SiO2 microsphere SERS substrate integrated microfluidic Chip for **fungal pathogen detection** in rapeseed crop. Food Chemistry, 145178. https://doi.org/10.1016/j.foodchem.2025.145178

Zhang, Y., Huang, Q., Wang, S. et al. Genetic characterization of the **AHAS mutant line** K4 with resistance to AHAS-inhibitor herbicides in rapeseed *(Brassica napus L.).* Stress Biology 5, 16 (2025). https://doi.org/10.1007/s44154-024-00184-8

Cheng, H., Li, J., Zhu, H. et al. **Herbicidal activity** and crop safety of ***Alternaria alternata*** DT-XRKA and ***Fusarium avenaceum*** DT-QKBD004A. Sci Rep 15, 9933 (2025). https://doi.org/10.1038/s41598-025-94241-5

Myrzabaeva, M. T., Konysbaeva, D. T., Gadzhimuradova, A. M., & Baibusenov, K. S. (2025). APPLICATION OF **BIOLOGICAL PROTECTION** PRODUCTS FOR RAPESEED CULTIVATION IN THE NORTH KAZAKHSTAN REGION. Eurasian Journal of Applied Biotechnology, (2), 26-38. https://doi.org/10.11134/btp.2.2025.4

Willow, J., Kallavus, T., Dos Santos, É.A. *et al.* First insights towards **RNAi-based management** of the **pollen beetle** *Brassicogethes viridescens*, with risk assessment against model non-target pollinator and biocontrol insects. *J Pest Sci* **98**, 1689–1697 (2025). https://doi.org/10.1007/s10340-025-01873-7

Fricke, U., Redlich, S., Lucas-Barbosa, D., & Steffan-Dewenter, I. (2025). Towards sustainable insect pest management: A conceptual review using the example of **pollen beetles** in rapeseed. Crop Protection, 107364. https://doi.org/10.1016/j.cropro.2025.107364

Askri, S. M. H., Fu, W., Abd El-Rady, W. A., Adil, M. F., Sehar, S., Ali, A., ... & Shamsi, I. H. (2025). Comparative metabolomics elucidates the **early defense response** mechanisms to ***Plutella xylostella*** infestation in *Brassica napus.* Plant Physiology and Biochemistry, 221, 109678. https://doi.org/10.1016/j.plaphy.2025.109678

Ma, Y., Qin, M., Zeng, Y., Shen, Y., Lai, Y., & Lu, G. (2025). Isolation, Identification, Biological Characterization, and Pathogenicity **of Entomopathogenic Fungus** from the Larvae of the *Evergestis extimalis (Scopoli)(Lepidoptera: Pyralidae).* Biology, 14(5), 467. https://doi.org/10.3390/biology14050467

Li, X., Hu, F., Li, R., Peng, D., Gao, P., Rao, F., ... & Liu, D. (2025). The pleiotropic odorant binding protein CaspOBP12 involved in perception of ***Ceutorhynchus asper*** for plant volatiles and pesticides. Pesticide Biochemistry and Physiology, 106578. https://doi.org/10.1016/j.pestbp.2025.106578

Farzadfar, S., Al-Waeli, M. & Pourrrahim, R. Biological and molecular characterization of recombinant cucumber **mosaic virus** (*Cucumovirus CMV*) isolates from rapeseed in Southern-Eurasia Iraq. *J Plant Pathol* **107**, 1245–1253 (2025). https://doi.org/10.1007/s42161-025-01870-w

Javed, M.W., Hussain, D., Hasnain, M. *et al.* **Sulphur Nutrition** Improves Plant Growth Performance Against a **Specialist Herbivore** by Eliciting Phenolic Defense and Nutrient Induction in Rapeseed. *J Plant Growth Regul* (2025). https://doi.org/10.1007/s00344-025-11884-4

Seyidbayli, C., Fengler, B., Szafranski, D., & Reinhardt, A. (2025). **Acoustic Trap** Design for Biodiversity Detection. IoT, 6(4), 58. https://doi.org/10.3390/iot6040058

BEES AND POLLINATORS

Tourbez, C., Gekiere, A., Bottero, I., Chauzat, M. P., Cini, E., Corvucci, F., ... & Michez, D. (2025**). Variation in the pollen diet** of managed bee species across European agroecosystems. Agriculture, Ecosystems & Environment, 383, 109518. https://doi.org/10.1016/j.agee.2025.109518

Budrys, E., Budrienė, A., Lazauskaitė, M., Skuja, J. A., & Skujienė, G. (2025). **Wildflower strips** increase aculeate pollinator diversity but not abundance in agricultural landscapes with rapeseed in crop rotations. Diversity, 17(4), 263. https://doi.org/10.3390/d17040263

AGRONOMY & CROP MANAGEMENT

Quinlan, G., & Goslee, S. (2025). The future of oilseeds: **climate change** expected to negatively impact canola more than camelina. Frontiers in Agronomy, 7, 1498293. https://doi.org/10.3389/fagro.2025.1498293

Tovpyha, M. Features of growing winter rapeseed in abnormally **warm winters**. https://doi.org/10.56407/bs.agrarian/2.2025.94

Nandhini, V., Boomiraj, K., Dhevagi, P., Babu, R. P. V., Kaleeswai, R. K., Karthikeyan, G., ... & Gayathri, J. (2025). Impact of **climate change** on oilseed production-A review. https://doi.org/10.14719/pst.9562

Vilček, J., Torma, S., Koco, Š. et al. **Suitability of soil and landscape** for rapeseed *(Brassica napus subsp. napus L.)* growing. Sci Rep 15, 29681 (2025). https://doi.org/10.1038/s41598-025-15958-x

Maier, R., Hörtnagl, L. & Buchmann, N. Large **nitrous oxide emissions** from arable soils after crop harvests prior to sowing. *Nutr Cycl Agroecosyst* **130**, 161–175 (2025). https://doi.org/10.1007/s10705-024-10395-0

Bamber, N., Turner, I. & Pelletier, N. Rapeseed, wheat and peas grown in Canada have considerably lower **carbon footprints** than those from major international competitors. Nat Food 6, 757–761 (2025). https://doi.org/10.1038/s43016-025-01212-0

Tarigan, S., Pradiko, I., Darlan, N. H., & Kristanto, Y. (2025). **Carbon Footprint** Comparison of Rapeseed and Palm Oil: Impact of Land Use and Fertilizers. Sustainability, 17(4), 1521. https://doi.org/10.3390/su17041521

Dordai, L., Roman, M., & Levei, L. (2025). ASSESSMENT OF **GREENHOUSE GAS (GHG) EMISSIONS** ASSOCIATED WITH RAPESEED FARMING IN ROMANIA. Studia Universitatis Babes-Bolyai, Chemia, 70(1). https://doi.org/10.24193/subbchem.2025.1.09

Hai-yan, W. U., Huan-huan, Q. I. U., & Qian, Z. H. O. U. (2025). **Carbon footprint** accounting and spatiotemporal changes of Chinese rapeseed based on life cycle assessment method. Journal of Southern Agriculture, 56(4), 1341-1350. https://dx.doi.org/10.3969/j.issn.2095-1191.2025.04.030

Li, X., Kong, H., Huang, J., Yan, J., He, W., Wang, H., ... & Lou, Y. (2025**). Intercropping wheat and rapeseed in Cd-polluted** weakly alkaline soil: Crop productivity, Cd enrichment capacity, and rhizosphere soil characteristics. Journal of Agriculture and Food Research, 19, 101721. https://doi.org/10.1016/j.jafr.2025.101721

Stéphane Cadoux, Josephine Peigné, Raymond Reau, Matthieu Abella, Jean-Luc Forrler, et al. 'OUTILLAGE'- **Tools to help farmers innovate on** their farms. Innovations Agronomiques, 2024,88, pp.150-167. https://doi.org/10.17180/ciag-2024-vol88-art13-GB hal-04714879

Bouchard, M. A., Andriamandroso, A. L. H., Siah, A., Waterlot, C., Vandoorne, B., & Andrianarisoa, K. S. (2025). Do **Decision Support Tools** Allow Farmers to be Better Advised on **Nitrogen Fertilisation** in Wheat—Rapeseed Crops Succession in Northern France?. Journal of Agronomy and Crop Science, 211(2), e70032. https://doi.org/10.1111/jac.70032

Wang, C., Wang, Z., Lou, H., Wang, X., Shao, D., Tan, X., ... & Zhao, J. (2025). Optimized straw incorporation depth can improve the **nitrogen uptake** and yield of rapeseed by promoting fine root development. Soil and Tillage Research, 250, 106504. https://doi.org/10.1016/j.still.2025.106504

Zhang, Y., Zhou, X., Wang, Z., & Leng, S. (2025). **Foliar N Supplementation** Improves Rapeseed **Transplanting Survival Rate** and Yield. Agronomy, 15(2), 402. https://doi.org/10.3390/agronomy15020402

Liu, S., Xiong, L., Fang, W., Wang, K., Cui, X., Liu, C., ... & Lu, J. (2025). Effects of nitrogen, phosphorous, and potassium **fertilization** on rapeseed yield under **freeze stress**. Crop and Environment. https://doi.org/10.1016/j.crope.2025.04.002

Li, Z., Huang, Y., Wu, J. et al**. Phosphorus** transformation after amendment applications in rapeseed soil with cadmium contamination. J Soils Sediments 25, 1328–1339 (2025). https://doi.org/10.1007/s11368-025-04008-8

Zhao, Z., Wang, S., Wang, Y., & Xu, F. (2025). **Imbalance** between **boron and phosphorus** supply influences boron deficiency symptoms in *Brassica napus L*. Journal of the Science of Food and Agriculture. https://doi.org/10.1002/jsfa.14304

Tölle, J. B., Alcock, T. D., & Bienert, G. P. (2025). **Borax** Promotes Fertility of *Brassica napus* Better Than Other Boron Species at Suboptimal Supply. Journal of Plant Nutrition and Soil Science. https://doi.org/10.1002/jpln.70000

Abd Manshood, M., & Al-Refai, S. I. Effect of supplemental **phosphorus** and plant spacing on vegetative growth parameters of rapeseed crop. https://iasj.rdd.edu.iq/journals/uploads/2025/08/11/d99f80d6f11734984de53d706dae185c.pdf

Kumar, V., & Maurya, S. P. Assessment of **Sulphur Nutrition** for Productivity, Quality and Profitability of Rapeseed-mustard: A Review. https://doi.org/10.9734/jeai/2025/v47i83704

Picazo, P. J., Ancín, M., Gakière, B., Gilard, F., Soba, D., Gámez, A. L., ... & Aranjuelo, I. (2025). Advancing Sustainable Agriculture: Molecular and Physiological Insights into Rapeseed Responsiveness to **Organic Amendment Fertilization**. Plants, 14(18), 2937. https://doi.org/10.3390/plants14182937

Tan, X., Bai, M., Wang, Z., Xiang, C., Cheng, Y., Yin, Y., ... & Zhou, G. (2025). Simple-efficient cultivation for rapeseed under **UAV-sowing**: Developing a high-density and **high-light-efficiency population** via tillage methods and seeding rates. Field Crops Research, 327, 109887. https://doi.org/10.1016/j.fcr.2025.109887

Rastelli, V., Giovannelli, V., Staiano, G., Bianco, P. M., Sergio, A., & Lener, M. (2025). Development of a **Monitoring Plan** for the Accidental **Dispersal of Genetically Modified Oilseed Rape** in Italy. Seeds, 4(2), 20. https://doi.org/10.3390/seeds4020020

Li, X., Huang, W., Yang, Z., Hu, W., Zhou, Z., & Chen, B. (2025). Leaf and pod growth affect seed yield after shoot removal and different nitrogen rates of dual-purpose rapeseed *(Brassica napus L.).* Journal of Integrative Agriculture. https://doi.org/10.1016/j.jia.2025.04.035

Wang, Y., Wang, Y., Xing, R., Lou, H., Li, Z., Sun, Y., ... & Zhou, G. (2025). **Density-Tolerant Rapeseed** Increased Population Yield by Enhancing Post-Anthesis Nonstructural Carbohydrate Translocation Efficiency in Stem. Physiologia Plantarum, 177(3), e70341. https://doi.org/10.1111/ppl.70341

Bian, X., Jiang, Z., Cao, Y., Huang, F., Duan, B., Xiao, X., & Ma, N. (2025). Characteristics of heat and water resources allocation and utilization in **rice-rice/re-rape triple cropping systems** in Southern China. Journal of Agriculture and Food Research, 102094. https://doi.org/10.1016/j.jafr.2025.102094

Gun, S., Liu, J., Huang, F., Wang, J., Cheng, H., Li, Q., ... & Ma, N. (2025). **Optimizing the rotation cycle** of previous crops increases crop yield and environmental sustainability in paddy field rotation. The Crop Journal. https://doi.org/10.1016/j.cj.2025.05.011

Zhu, Z., Gao, S., Zhang, Y., Si, G., Xu, X., Peng, C., ... & Geng, M. (2025). **Rapeseed Green Manure** Coupled with Biochar and Vermicompost Enhances Soil Aggregates and Fungal Communities in Gleyed Paddy Fields. Agronomy, 15(7), 1510. https://doi.org/10.3390/agronomy15071510

Cao, X., Huang, J., Zhou, G., & Deng, N. (2025). A review of **rice–rapeseed cropping system** in China: towards sustainable development. Crop and Environment. https://doi.org/10.1016/j.crope.2025.06.003

Wang, H., Li, Y., Huang, Y., Wang, Y., Qu, W., Lin, Y., ... & Zuo, Q. (2025). Response of rapeseed growth to **soil salinity content** and its improvement effect on coastal saline soil. Frontiers in Plant Science, 16, 1601627. https://doi.org/10.3389/fpls.2025.1601627

Ahmad, S., Ahmad, N., Khan, M.N., Ercisli, S., Iqbal, R. (2025). Use **of Biostimulants to Improve Drought Tolerance** in Oilseed Crops. In: Abdel Latef, A.A.H. (eds) Oilseed Crops Under Abiotic Stress. Sustainability Sciences in Asia and Africa(). Springer, Singapore. https://doi.org/10.1007/978-981-96-8346-8_2

B. L. Yadav, and Irfan Khan. 2025. "Cluster Frontline Demonstration: A Innovative Extension Approach to Enhance Mustard Production in **Semi-Arid Condition** of Jaipur District of Rajasthan, India". International Journal of Plant & Soil Science 37 (8):238–244. https://doi.org/10.9734/ijpss/2025/v37i85625.

Bouchyoua, A., Kettani, R., Kouighat, M., Ouardi, L., Adiba, A., Lamoumni, O., ... & Nabloussi, A. (2025). Unveiling differential genotypic responses to **soil moisture stress** during early plant stages in rapeseed *(Brassica napus L.).* Industrial Crops and Products, 235, 121782. https://doi.org/10.1016/j.indcrop.2025.121782

Li, L., Xiao, G., Jin, H., Wang, Y., Xie, C., & Zhang, Z. (2025). Effects of a Novel Waterlogging-Tolerant Growth-Promoting Pelletizing Agent on the Growth of *Brassica napus*. Horticulturae, 11(8), 946. https://doi.org/10.3390/horticulturae11080946

Peng, W., Luo, Q., Bai, C., Li, X., Jia, C., Ren, Y., ... & Zhou, G. (2025). Optimizing **harvest timing** in rapeseed *(Brassica napus L.):* Balancing oil yield, metabolic quality, and field efficiency. Industrial Crops and Products, 236, 122012. https://doi.org/10.1016/j.indcrop.2025.122012

PHYSIOLOGY

Zhou, M., Deng, W., Dai, B., Yu, Q., Zhou, W., Zan, X., & Song, X. (2025). Mechanisms of **Silique Dehiscence** in Rapeseed: A Review of Research Progress. Current Issues in Molecular Biology. https://doi.org/10.3390/cimb47090755

Chen, T., Cai, Q. A., Liu, C., Li, R., Wang, L., Chen, J. A., ... & Zhang, F. (2025). Pod lignin biosynthesis contributes to **pre-harvest sprouting tolerance** of rapeseed. Environmental and Experimental Botany, 106129. https://doi.org/10.1016/j.envexpbot.2025.106129

Ding, L., Chen, X., Wang, X., Jiang, W., Xu, X., Hou, M., ... & Xiang, Y. (2025). ODR1, the key **seed dormancy and germination regulator**, promotes seed Proanthocyanidin biosynthesis via interaction with TTG1 and modulation of MBW complex activity. The Plant Journal, 123(4), e70434. https://doi.org/10.1111/tpj.70434

Damalas, C. A., & Koutroubas, S. D. (2025). Rapeseed *(Brassica napus L.)* response to **salinity** and **seed priming** with NaCl. *Annals of Applied Biology*, *187*(1), 16-23. https://doi.org/10.1111/aab.12974

Ulhassan, Z., Ali, S., Kaleem, Z., Shahbaz, H., He, D., Khan, A. R., ... & Huang, Q. (2025). Effects of **Nanosilica priming** on rapeseed *(Brassica napus)* tolerance **to cadmium and arsenic stress** by regulating cellular metabolism and antioxidant defense. Journal of Agricultural and Food Chemistry, 73(8), 4518-4533. https://doi.org/10.1021/acs.jafc.4c08246

Yu, Y., Ding, M., Zhou, X., Zhang, L., Ouyang, Q., Zhang, F., ... & Zhou, K. (2025). Hydrogen sulfide enhances **cadmium tolerance** in oilseed rape roots by augmenting glutathione-mediated antioxidant defense and ROS homeostasis. Ecotoxicology and Environmental Safety, 292, 118004. https://doi.org/10.1016/j.ecoenv.2025.118004

Batool, I., Ayyaz, A., Zhang, K. et al. Transcriptome and Physiological Analyses Unravel **Chromium Stress Tolerance** Mechanism in *Brassica napus L.*. J Plant Growth Regul 44, 4022–4038 (2025). https://doi.org/10.1007/s00344-025-11670-2

Ayyaz, A., Batool, I., Qin, T., Bano, H., Hannan, F., Chen, W., ... & Ni, X. (2025). Nano-Manganese and H2S Signalling Improve Rapeseed Tolerance to **Chromium Stress** by Regulating Cellular Metabolism and Downstream Pathways. Physiologia Plantarum, 177(3), e70286. https://doi.org/10.1111/ppl.70286

Shi, H., Li, C., Zhou, Q. et al. KH2PO4 and salicylic acid synergistically promote the germination of rapeseed, *Brassica napus*, under **aluminum stress**. Plant Soil (2025). https://doi.org/10.1007/s11104-025-07449-9

Sultan, A., Haseeb, A., LATIF, I., & GHAFOOR, A. (2025). Ameliorative role of salicylic acid on morpho-anatomy and physiology of rapeseed *(Brassica napus L.)* under **lead stress**. Notulae Botanicae Horti Agrobotanici Cluj-Napoca, 53(3), 14703-14703. https://doi.org/10.15835/nbha53314703

Wei Liang, Q., & Qi, W. (2025). Analysis of the threshold range of ROS concentration in winter rapeseed of the *Brassica napus* type. Frontiers in Plant Science, 16, 1673768. https://doi.org/10.3389/fpls.2025.1673768

Jiang, H., An, H., Yang, W., Zhang, X., Chai, J., Hao, Y., ... & Yang, Z. (2025). Screening of **Saline–Alkali-Tolerant Rapeseed Varieties** Through Multi-Index Integrated Analysis Across the Entire Growth Cycle. Agronomy, 15(9), 2046. https://doi.org/10.3390/agronomy15092046

Prasad, M., Shetty, P., Pal, A. K., Rigó, G., Kant, K., Zsigmond, L., ... & Szabados, L. (2025). Transcriptional and epigenomic changes in response to polyethylene glycol-triggered **osmotic stress** in *Brassica napus L.* Journal of Experimental Botany, 76(9), 2535-2556. https://doi.org/10.1093/jxb/eraf123

He, S., Yang, S., Min, Y., Ge, A., Liu, J., Liu, Z., ... & Chen, M. (2025). *Brassica napus* BnaWIP2 transcription factor promotes **seed germination under salinity stress** by repressing ABA biosynthesis and signaling. The Crop Journal, 13(2), 444-455. https://doi.org/10.1016/j.cj.2025.02.003

Li, L., Zhang, L., & Dong, Y. (2025). **Seed priming** with cold plasma mitigated the negative influence of **drought stress** on growth and yield of rapeseed *(Brassica napus L.).* Industrial Crops and Products, 228, 120899. https://doi.org/10.1016/j.indcrop.2025.120899

Soostani, S.B., Ranjbar, M., Memarian, A. et al. Investigating the effect of **chitosan** on the expression of P5CS, PIP, and PAL genes in rapeseed *(Brassica napus L.)* under **salt stress**. BMC Plant Biol 25, 215 (2025). https://doi.org/10.1186/s12870-025-06187-5

Bigham Soostani, S., Ranjbar, M., Memarian, A. et al. Regulation of APX, SOD, and PAL genes **by chitosan** under **salt stress** in rapeseed *(Brassica napus L.).* BMC Plant Biol 25, 824 (2025). https://doi.org/10.1186/s12870-025-06815-0

Ma, C., Wu, J., Chen, Y. et al. The phytohormone brassinosteroid (BR) promotes **early seedling development** via auxin signaling pathway in rapeseed. BMC Plant Biol 25, 237 (2025). https://doi.org/10.1186/s12870-025-06223-4

Hariri, N., Sorkheh, K. & Nejadsadeghi, L. ***Aeromonas hydrophila*** by Quorum Sensing Auto-Inducers on Growth Amelioration, Enhance **Salt Tolerance** and Mechanism of Encoding Genes in Rapeseed. J Plant Growth Regul 44, 3730–3751 (2025). https://doi.org/10.1007/s00344-025-11656-0

Mohseni, H., Sorkheh, K. & Ahmadi, D.N. Foliar application ***Ascophyllum nodosum*** extract biostimulants regulated the **stem and root apical meristem** by orchestrating miRNA-targets gene transcription and regulatory network in rapeseed (Brassica napus). J Appl Phycol 37, 1373–1388 (2025). https://doi.org/10.1007/s10811-025-03450-y

Kolomeichuk, L.V., Litvinovskaya, R.P., Khripach, V.A. et al. Effects of 24-Epibrassinolide and Its Conjugate with Succinic Acid on the **Resistance of Rapeseed Plants to Chloride Salinization**. Dokl Biol Sci 521, 111–116 (2025). https://doi.org/10.1134/S0012496624600726

Koley, S., Jyoti, P., Lingwan, M., Wei, M., Xu, C., Chu, K. L., ... & Allen, D. K. (2025). Persistent **fatty acid** catabolism during plant oil synthesis. Cell Reports, 44(4). https://doi.org/10.1016/j.celrep.2025.115492

Zheng, T., Yang, J., Chen, Q. et al. Analysis of **lipidomics** profile of *Brassica napus* hybrid 'Fangyou 777' and its parents during ripening stages based on UPLC-MS/MS. BMC Plant Biol 25, 197 (2025). https://doi.org/10.1186/s12870-025-06220-7

Mi, C., Zhao, Y., Yang, X., Lin, L., & Wang, J. (2025). Effect of **Low Nighttime Temperature** on **Oil** Accumulation of Rapeseed Seeds *(Brassica napus L.)* Based on RNA-Seq of Silique Wall Tissue. Agriculture, 15(6), 576. https://doi.org/10.3390/agriculture15060576

Çağlı, İ., Kıvrak, B. E., Altunbaş, O., & Sönmez, Ç. (2025). Unveiling the Impact of **Vernalisation** on **Seed Oil Content and Fatty Acid Composition** in Rapeseed *(Brassica napus L.)* Through Simulated Shorter Winters. Journal of Agronomy and Crop Science, 211(3), e70057. https://doi.org/10.1111/jac.70057

Ayub, A., Nayab, A., Yunyou, N., Yuyu, X., Derong, S., Hussan, M. U., ... & Yajun, G. (2025). Integration of Transcription Factors, Photosynthesis, and Nitrogen Metabolic Genes Modulates **Nitrogen Stress** with Abscisic Acid in Rapeseed. Physiologia Plantarum, 177(5), e70486. https://doi.org/10.1111/ppl.70486

Gong, Y., Huan, F., Zafar, S. et al. Joint multi-omics analysis reveals the response mechanism in rapeseed *(Brassica Rapa L.)* under **low nitrogen stress**. Funct Integr Genomics 25, 197 (2025). https://doi.org/10.1007/s10142-025-01713-y

Ayub, A., Nayab, A., Yunyou, N., Yuyu, X., Derong, S., Ahmed, T., ... & Yajun, G. (2025). Exogenous abscisic acid application enhances **nitrogen use efficiency and root developmen**t in rapeseed: Transcriptomic and morphological evidence. Plant Science, 112610. https://doi.org/10.1016/j.plantsci.2025.112610

Zhang, B., Zhu, X., Yuan, P., Han, B., Wu, T., Din, I., ... & Shi, L. (2025). **Root morphological adaptation** and leaf lipid remobilization drive differences in **phosphorus use efficiency** in rapeseed seedlings. The Crop Journal, 13(2), 524-535. https://doi.org/10.1016/j.cj.2024.12.022

ZHANG Yiwen, WU Jingyi, LI Yueying, CHEN Xingbo, LI Genze, DONG Xiangshu. Evaluation of seedling **low phosphorus tolerance** of main Brassica napus varieties in Yunnan region[J]. Journal of Yunnan University: Natural Sciences Edition, 2025, 47(3): 573-581. DOI: https://doi.org/10.7540/j.ynu.20240088

Gu, H., He, Z., Lu, Z., Liao, S., Zhang, Y., Li, X., ... & Lu, J. (2025). Growth and survival strategies of oilseed rape *(Brassica napus L.)* leaves under **potassium deficiency stress**: trade-offs in potassium ion distribution between vacuoles and chloroplasts. The Plant Journal, 121(4), e70009. https://doi.org/10.1111/tpj.70009

Riaz, M., Rafiq, M., Nawaz, H. H., & Miao, W. (2025). Bridging Molecular Insights and Agronomic Innovations: Cutting-Edge Strategies for Overcoming **Boron Deficiency** in Sustainable Rapeseed Cultivation. Plants, 14(7), 995. https://doi.org/10.3390/plants14070995

Shiv Bahadur, Amar Singh, Bikarmaditya, Vipin Kumar, and S. P. Maurya. 2025. "Assessment of **Sulphur Nutrition** for Productivity, Quality and Profitability of Rapeseed-Mustard: A Review". Journal of Experimental Agriculture International 47 (8):628–641. https://doi.org/10.9734/jeai/2025/v47i83704.

Hasanuzzaman, M., Rummana, S., Sinthi, F., Alam, S., Raihan, M. R. H., & Alam, M. M. (2025). Enhancing **Drought Resilience** in *Brassica campestris*: Antioxidant and Physiological Benefits of Ascophyllum nodosum Extract and Alginic Acid. Plant Physiology and Biochemistry, 110198. https://doi.org/10.1016/j.plaphy.2025.110198

Hussain, M. A., Pitann, B., & Mühling, K. H. (2025). Combined Effect of Melatonin and Sulfur on Alleviating **Waterlogging Stress** in Rapeseed. Plant-Environment Interactions, 6(2), e70050. https://doi.org/10.1002/pei3.70050

Song, X., Ge, L., Wang, K., Wang, N., & Wang, X. (2025). Transcriptome and Small-RNA Sequencing Reveals the Response Mechanism of *Brassica napus* to **Waterlogging Stress**. Plants, 14(9), 1340. https://doi.org/10.3390/plants14091340

Wasim, A., Bian, X., Huang, F., Zhi, X., Cao, Y., Gun, S., ... & Ma, N. (2025). Unveiling root growth dynamics and rhizosphere microbial responses **to waterlogging stress** in rapeseed seedlings. Plant Physiology and Biochemistry, 110269. https://doi.org/10.1016/j.plaphy.2025.110269

Hu, Y., Javed, H. H., Liu, L., Alabdallah, N. M., Ghaffor, K., Liu, Y. L., ... & Wu, Y. C. (2025). Evaluate the sensitivity of **rapeseed lodging under low ligh**t: A field study on the biomechanics of stem and root lodging in rapeseed *(Brassica napus L.)*. Field Crops Research, 327, 109881. https://doi.org/10.1016/j.fcr.2025.109881

Zhou, Y., Wan, Q., Huang, T., Hu, Z., Zhang, X., Cai, S., & Zhao, H. (2025). Genetic Dissection of Hypocotyl Elongation Responses to **Light Quality** in *Brassica napus*. Agronomy, 15(9), 2047. https://doi.org/10.3390/agronomy15092047

Dong, X., Wang, J., Wei, J., Zheng, G., Wu, Z., Cui, J., ... & Liu, Z. (2025). Effects of Ca2+ signaling inhibition on **cold acclimation** in winter rapeseed. Plant Stress, 16, 100839. https://doi.org/10.1016/j.stress.2025.100839

Monika, S., Shipa, R. D., & Prasann, K. (2025). Optimising morpho-physiological traits via micronutrient enrichment and cytokinin-mediated control in *Brassica juncea.* https://doi.org/10.14719/pst.3785

Chen, X., Kang, Y., Li, S. et al. Identification and expression analysis of N6-methyltransferase and demethylase in rapeseed *(Brassica napus L.).* BMC Genomics 26, 526 (2025). https://doi.org/10.1186/s12864-025-11695-7

James, M., Nexer, E., Girondé, A. et al. A *Brassica napus* water soluble chlorophyll binding protein (WSCP1) delays chlorophyll degradation and inhibits serine proteases during dark-induced leaf senescence in *Arabidopsis thaliana*. Planta 262, 39 (2025). https://doi.org/10.1007/s00425-025-04754-6

Guo, Z., Yang, X., Shen, Y., Zhu, Y., Jiang, L., & Cen, H. (2025). Rapeseed population point cloud completion network (RP-PCN) with dynamic graph convolution for **3D reconstruction of crop canopy** occlusion architecture. arXiv preprint arXiv:2506.18292. https://doi.org/10.48550/arXiv.2506.18292

Zhang, W., Zhang, W., Wu, Q., Sun, C., Ge, D., Cao, J., ... & Cao, H. (2025). Model **of leaf biomass partitioning coefficient** in different leaf ranks of rapeseed (*Brassica napus L.)* main stem. bioRxiv, 2025-07. https://doi.org/10.1101/2025.07.27.667074

Faralli, M., Weerasinghe, M., Leung, G. S., Marriott, R., Miles, M., Monaghan, J. M., & Kettlewell, P. (2025). Can Bio-Based Stomatal Blockers **Inhibit Rapeseed Growth**?. International Journal of Plant Biology, 16(3), 98. https://doi.org/10.3390/ijpb16030098

Das, R., Biswas, S. & Dutta, A. Physiological, biochemical and enzymatic quality parameters of primed seed of rapeseed-mustard genotypes. Sci Rep 15, 31967 (2025). https://doi.org/10.1038/s41598-025-09325-z

Li, Y., Cheng, S., Xu, Y., Sun, N., & Dong, J. (2025). The E3 ubiquitin ligase SCFLAO1 promotes NITRITE REDUCTASE degradation to modulate growth and oilseed production in *Brassica napus*. Plant Physiology, 199(2), kiaf429. https://doi.org/10.1093/plphys/kiaf429

REMOTE SENSING, YIELD PREDICTION

Gée, C., Lerebour, E., Paut, R., Denimal, E., Jeuffroy, M. H., & Champolivier, L. (2025). Contribution of visible imagery to the APPI-N fertilization method for monitoring rapeseed. In Precision agriculture'25 (pp. 502-508). Wageningen Academic. https://doi.org/10.1163/9789004725232_065

Wang, C., Zhang, J., Wu, H., Liu, B., Wang, B., You, Y., ... & Wen, P. (2025). A band selec-tion method for consumer-grade camera modification for UAV-based rapeseed growth moni-toring. Smart Agricultural Technology, 10, 100830. https://doi.org/10.1016/j.atech.2025.100830

Wu, F., Lu, P., Chen, S., Xu, Y., Wang, Z., Dai, R., & Zhang, S. (2025). Identifying the Peak Flowering Dates of Winter Rapeseed with a NBYVI Index Using Sentinel-1/2. Remote Sens-ing, 17(6), 1051. https://doi.org/10.3390/rs17061051

Wang, C., Ling, L., Kuai, J., Xie, J., Ma, N., You, L., ... & Zhang, J. (2025). Integrating UAV and satellite LAI data into a modified DSSAT-rapeseed model to improve yield predictions. Field Crops Research, 327, 109883. https://doi.org/10.1016/j.fcr.2025.109883

Li, J., Yang, C., Zhu, C., Qin, T., Tu, J., Wang, B., ... & Qiao, J. (2025). CMRNet: An Automatic Rapeseed Counting and Localization Method Based on the CNN-Mamba Hybrid Model. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing. https://doi.org/10.1109/JSTARS.2025.3575102

Sun, Y., Ma, J., Lyu, M., Shen, J., Ying, J., Ali, S., ... & Song, W. (2025). Monitoring Chlorophyll Content of *Brassica napus L*. Based on UAV Multispectral and RGB Feature Fusion. Agronomy, 15(8), 1900. https://doi.org/10.3390/agronomy15081900

Rahimi, E., & Jung, C. (2025). Comparative Performance of Multi-Spectral Vegetation Indices for Phenology-Based Rapeseed Classification. Journal of Sustainable Agriculture and Environment, 4(3), e70087. https://doi.org/10.1002/sae2.70087

Halstead, D. A., Benmerrouche, L. N., Gossen, B. D., & McDonald, M. R. (2025). **Early detection of clubroot** in canola using drone-based hyperspectral imaging and machine learning. European Journal of Agronomy, 170, 127727. https://doi.org/10.1016/j.eja.2025.127727

PROCESSING, QUALITY & PRODUCTS

Liu, C., Wang, R., Wang, T., Gu, C., Zhang, L., Meng, D., ... & Yang, R. (2025). The Whey–**Plant Protein** Heteroprotein Systems with Synergistic Properties and Versatile Applications. *Journal of Agricultural and Food Chemistry*, *73*(8), 4440-4454. https://doi.org/10.1021/acs.jafc.4c10736

Toutirais, Lina and Walrand, Stephane and Vaysse, Carole, Digestibility of **Oilseed Protein Products** and the **Digestibility**-Matrix Composition Relationship. Available at SSRN: https://ssrn.com/abstract=5151229 or http://dx.doi.org/10.2139/ssrn.5151229

Taubman, C., Silva, J.V.C., Borello, L. et al. Enhancing the **thermal stability of canola protein** for ready-to-drink beverage applications: a comprehensive review of strategies. Eur Food Res Technol 251, 1021–1031 (2025). https://doi.org/10.1007/s00217-025-04685-2

Moutkane, M., Mudau, C. P., Balakrishnan, G., Jaquette, B., Chassenieux, C., & Nicolai, T. (2025). Stable rapeseed **protein microgel** suspensions. Food Hydrocolloids, 166, 111297. https://doi.org/10.1016/j.foodhyd.2025.111297

James, G. C., & Euston, S. R. (2025). Molecular dynamics simulation allows mechanistic understanding of natural deep **eutectic solvents** action on **rapeseed proteins**. Food Hydrocolloids, 166, 111328. https://doi.org/10.1016/j.foodhyd.2025.111328

Mudau, C. P., Moutkane, M., Balakrishnan, G., Nicolai, T., & Chassenieux, C. (2025). Heat-induced **aggregation** and **gelation** of **rapeseed proteins.** Food Hydrocolloids, 166, 111338. https://doi.org/10.1016/j.foodhyd.2025.111338

Tomić, D., Simeunović, J., Đermanović, B., Maric, A., Sakač, M., Šarić, B., & Jovanov, P. (2025). Rapeseed as the source of **proteins**: A review. Food and Feed Research. https://doi.org/10.5937/ffr0-56718

Zhang, S., Mei, Y., Cai, J., Wan, Z., Noskov, B. A., & Yang, X. (2025). Interfacial and Emulsifying **Properties of Rapeseed Proteins** Produced by Salt Extraction Combined with Ultrafiltration. Sustainable Food Proteins, 3(2), e70015. https://doi.org/10.1002/sfp2.70015

Ayan, K., Nikiforidis, C. V., & Boom, R. M. (2025). Electrophoretic **Dephenolization of Rapeseed Proteins:** The Influence of Ionic Strength on Sinapic Acid Electromigration. ACS Sustainable Chemistry & Engineering, 13(19), 7248-7256. https://doi.org/10.1021/acssuschemeng.5c02086

Sakač, M., Marić, A., Đermanović, B., Tomić, D., Dragojlović, D., Šarić, B., & Jovanov, P. (2025). Characterisation of **fibre-rich ingredients** obtained from defatted cold-pressed **rapeseed cake after protein extraction**. LWT, 222, 117671. https://doi.org/10.1016/j.lwt.2025.117671

Gao, Y., Dong, Y., Liu, F., Niu, A., Liu, S., Li, W., & Wang, C. (2025). Mechanisms of **deodorizing rapeseed oil** with ethanol steam at a low temperature: A focus on free fatty acids, tocopherols, and phytosterols. Food Chemistry, 481, 143957. https://doi.org/10.1016/j.foodchem.2025.143957

Zhang, L., Chen, J., Guo, X., Cao, Y., Qu, G., & Yu, X. (2025). Quality changes in **fragrant rapeseed oils** derived from different varieties during **roasting**: Focusing on erucic acid and glucosinolate. Food Chemistry, 144854. https://doi.org/10.1016/j.foodchem.2025.144854

Freis, A. M., & Vemulapalli, S. P. B. (2025). Analysis of the Generation of **Harmful Aldehydes** in Edible Oils During Sunlight Exposure and **Deep-Frying** Using High-Field Proton Nuclear Magnetic Resonance Spectroscopy. Foods, 14(3), 513. https://doi.org/10.3390/foods14030513

Kondratiuk, M., Spiekermann, M. L., Seidensticker, T., & Gooßen, L. J. (2025). **Sustainable Diesel** from Rapeseed Oil Esters by Sequential Semi-Hydrogenation, Double Bond Isomerization, and Metathesis. Chemistry–A European Journal, 31(22), e202500523. https://doi.org/10.1002/chem.202500523

Liang, K., & Yan, S. (2025). Exploring the Potential of Rapeseed Biomass for **Renewable Energy**. Journal of Energy Bioscience, 16. http://dx.doi.org/10.5376/jeb.2025.16.0011

Hong, K., Zhang, H., Han, M., Nie, X., Fu, X., Lei, F., & He, D. (2025). A novel four-species **microbial** consortium for nutritional value **improvement** of **rapeseed meal**. Food Chemistry, 478, 143712. https://doi.org/10.1016/j.foodchem.2025.143712

van Harn, J., Berman, H., Dijkslag, A., & Jansman, A. (2025). Effects of using regionally (EU) grown, protein-rich ingredients in diets on the growth performance of fast and slow **growing broilers**. Wageningen Livestock Research. https://edepot.wur.nl/684963

Deng, H., Li, S., Huang, Y. et al. Molecular cloning, expression, and bioinformatics analysis of the CueO **laccase gene** from Escherichia coli SDB2. Mol Biol Rep 52, 307 (2025). https://doi.org/10.1007/s11033-025-10388-4

Wang, Y., Cao, K., Zhang, X., Li, C., Wang, X., Liu, X., ... & Chen, L. (2025). Physicochemical and microstructural characteristics of **canola meal fermented** by autonomously screened Bacillus licheniformis DY145 and its immunomodulatory effects on gut microbiota. Food Chemistry, 484, 144291. https://doi.org/10.1016/j.foodchem.2025.144291

Lei, B., Lv, G., Mo, X., Hua, L., Jiang, X., Feng, B., ... & Zhuo, Y. (2025). **Gestating sows** exhibit greater ileal amino acid digestibility of corn distillers grains, rapeseed meal, and cottonseed meal than growing pigs, but not soybean meal. animal, 19(7), 101556. https://doi.org/10.1016/j.animal.2025.101556

Lang, C., Huang, Y., Lin, K., Chen, W., Chen, W., Zhong, Q., ... & Chen, H. (2025). Exploring the optimization of **microwave-treated rapeseed oil extraction** based on response surface and lipidomics and its effects on quality characteristics, chemical composition, nutritional properties, and antioxidant capacity

during storage. Journal of Food Composition and Analysis, 107787. https://doi.org/10.1016/j.jfca.2025.107787

HUANG, Y., & ZHENG, C. (2025). Effect of Steam Explosion Pretreatment on Nutritional and Antioxidant Properties of Rapeseed Oil. Food Science, 46(9), 248-256. https://doi.org/10.7506/spkx1002-6630-20241104-014

Liu, P., Ni, W., Fu, J., Sun, M., Liang, D., Chen, W., & Ding, X. (2025). An extended processing strategy for rapeseed: Concentrating homologous phenolics from meal to enhance oil quality. LWT, 118180. https://doi.org/10.1016/j.lwt.2025.118180

Qin, C., Fu, R., Wen, X., Ni, Y., Boom, R. M., & Nikiforidis, C. V. (2025). Comparative Assessment of **Extraction Efficiency** and Physical Stability of Rapeseed Oleosome–Protein Mixtures via Centrifugation Versus Cheesecloth Filtration. Journal of Food Science, 90(4), e70214. https://doi.org/10.1111/1750-3841.70214

Tofanica, B. M., Callone, E., Ungureanu, E., Ungureanu, O. C., & Popa, V. I. (2025). Structure of **Cellulose** Isolated from **Rapeseed Stalks**. Polymers, 17(8), 1032. https://doi.org/10.3390/polym17081032

Panigrahi, S. S., Hemis, M., & Singh, C. B. (2025). Energy and moisture source-term based distributive (luikov) parameter **model** to simulate **rapeseed hot-air drying**. Journal of Stored Products Research, 114, 102701. https://doi.org/10.1016/j.jspr.2025.102701

Leivers, S., Nilsson, A., Haugen, JE. et al. Impact on lipid profile and influence on sensory, texture and structural properties when **replacing saturated fats with rapeseed oil** in Frankfurter-type sausages. Eur Food Res Technol 251, 2211–2224 (2025). https://doi.org/10.1007/s00217-025-04758-2

Yao, L.; Baharum, A.; Yu, L.J.; Yan, Z.; Badri, K.H. A Vegetable-Oil-Based **Polyurethane Coating** for Controlled Nutrient Release: A Review. Coatings 2025, 15,665. https://doi.org/10.3390/coatings15060665

Quan, X., Chen, C., Wang, X. et al. A novel sustainable **biopolymer** derived from rapeseed oil for asphalt binder: rheological performance and modification mechanism. Mater Struct 58, 167 (2025). https://doi.org/10.1617/s11527-025-02698-7

Dumpler, J. (2025). Rapeseed protein refined: Kinetic modeling of the extraction of polyphenols, glucosinolate, phytate, and **protein extraction** from whole dehulled rapeseed using Natural Deep **Eutectic Solvents**. https://doi.org/10.3929/ethz-b-000741468

Abookleesh, F., Zubair, M., & Ullah, A. (2026). Eco-friendly **rapeseed protein-chitosan hybrid nanocomposite films** for active **food packaging** and preservation. Food Hydrocolloids, 170, 111672. https://doi.org/10.1016/j.foodhyd.2025.111672

Hafeez, Z., Beaubier, S., Aymes, A., Christophe, S., Akbar, S., Kapel, R., & Miclo, L. (2025). Study on **Rapeseed Albumin Hydrolysis** by PrtS Protease from *Streptococcus thermophilus* and Bioactivity Characterization of Resulting Hydrolysates. Foods, 14(13), 2235. https://doi.org/10.3390/foods14132235

Heuzé, V., Carré, P., de La Borde, I., Tormo, E., & Tran, G. (2025). Could **fermentation of soybean and rapeseed meal** be an avenue for innovation in French **pig feed**?-La fermentation du tourteau de soja et de colza pourrait-elle être une voie d'innovation dans l'alimentation des porcs en France?. OCL, 32, 20. https://doi.org/10.1051/ocl/2025010

Chen, Y., Wei, G., Li, X., Du, G., & Deng, S. (2025). From agricultural waste to **green corrosion inhibitors**: High-performance **rapeseed meal extracts** for cold-rolled steel in acidic media. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 137649. https://doi.org/10.1016/j.colsurfa.2025.137649

Siger, A., Gawrysiak-Witulska, M., Szczechowiak-Pigłas, J., & Bartkowiak-Broda, I. (2025). Effect of Adverse **Storage** Conditions **on Oil Quality and Tocochromanol** Content in Yellow-Seeded Breeding Lines of *Brassica napus L.* Journal of the American Oil Chemists' Society, 102(9), 1477-1486. https://doi.org/10.1002/aocs.70005

Lu, H. Y., Shi, A. N., Wang, J., Liu, L. J., Tang, J. Y., Wang, Y. J., ... & Wang, Q. (2025). Biological Characterization and **Glucosinolate Degradation** Mechanisms of *Bacillus subtilis* BSY82 in **Rapeseed Meal.** Aquaculture Nutrition, 2025(1), 3661772. https://doi.org/10.1155/anu/3661772

Arnecke, J., Gillmann, J., Börner, T., Hafner, M., & Frech, C. Optimizing rapeseed **protein purification**: a continuous chromatographic approach for napin and cruciferin. Journal of Chemical Technology & Biotechnology. https://doi.org/10.1002/jctb.70032

Li, K., Peng, D., Shao, J., Huang, F., Jin, W., Wan, X., ... & Deng, Q. (2025). The **digestibility** of rapeseed **protein isolate** prepared by **salt and alkali extraction**: The importance of protein composition. Food Chemistry, 145852. https://doi.org/10.1016/j.foodchem.2025.145852

Man, J. J., Yang, M., Hu, Q. Y., Wang, W., Wang, P., Lv, X. F., & Luo, J. (2025). Effects of increased rapeseed meal addition on production performance, health, rumen fermentation, and microbial community in **dairy goats**. Journal of Animal Science, skaf261. https://doi.org/10.1093/jas/skaf261

Lihme, Peter Fog and Ezenarro, Jokin and Nielsen, Tina Skau and Jensen, Poul Erik and Lund, Marianne Nissen, The Influence of **Phytase** on the **Solubility of Storage Proteins** in Rapeseed Press Cake. Available at SSRN: https://ssrn.com/abstract=5400495 or http://dx.doi.org/10.2139/ssrn.5400495

Lama, M., Franco-Uría, A., & Moreira, R. (2025). Characterization of Rapeseed Oil **Oleogels** Produced by the Emulsion Template Method Using Hydroxypropyl Methylcellulose and the Drying Kinetics of the Emulsions. Foods, 14(16), 2908. https://doi.org/10.3390/foods14162908

Chen, P., Li, X., Fan, B., Tang, W., & He, Y. C. (2025). Reduction of xylan and lignin of **rapeseed straw** through **pretreatment** with three-component deep **eutectic solvent** Choline chloride: Oxalic acid: Aluminum trichloride. International Journal of Biological Macromolecules, 147173. https://doi.org/10.1016/j.ijbiomac.2025.147173

Górka, P., Krupa, K., Podżorski, M., Przybyło, M., Kański, J., Kowalski, Z. M., ... & Patterson, R. ACCEPTED AUTHOR VERSION OF THE MANUSCRIPT: Investigation of methods to enhance the efficiency of **canola meal** use in pelleted **calf starter** mixtures and comparisons with other high-protein by-products. https://doi.org/10.2478/aoas-2025-0074

Malewska, E., Kurasiak-Popowska, D., Rzyska-Szczupak, K., Szwajkowska-Michałek, L., Polaczek, K., Recupido, F., ... & Stuper-Szablewska, K. (2025). ***Brassica carinata*** and ***Camelina*** *sativa* oils as renewable raw materials for producing **viscoelastic polyurethane foams**. RSC advances, 15(37), 30804-30816. https://doi.org/10.1039/D5RA04620C

Liu, X., Jacquet, N., Xie, J., Jiang, X., & Blecker, C. (2025). Response surface methodology optimization of alkaline extraction of **polysaccharides** from rapeseed meal: Structural characterization and **antioxidant activities**. LWT, 118431. https://doi.org/10.1016/j.lwt.2025.118431

Carré, P., Rousseau, F., Gouyo, T., & Savoire, R. (2025). Insights from an Instrumented **Screw Press**: Investigating pressure, torque, cage strain and flows dynamic. OCL, 32, 27. https://doi.org/10.1051/ocl/2025023

Zondervan, S. J., Bitter, J. H., van der Goot, A. J., Keppler, J. K., & Nikiforidis, C. V. (2025). **The gelation properties** of rapeseed **proteins** are barely affected by co-extracted phenolic compounds. Food Hydrocolloids, 111959. https://doi.org/10.1016/j.foodhyd.2025.111959

Liang, K., & Yan, S. (2025). Characterization of **Rapeseed Oil** for **Biodiesel** Production: A Comparative Study. Journal of Energy Bioscience, 16. https://bioscipublisher.com/index.php/jeb/article/view/4129

Sun, J., Sun, Z., Liao, X., Zhang, L., Ye, X., Zhao, F., ... & Lu, L. (2025). Effects of age and rapeseed meal source on the ileal amino acid **digestibility** of **broilers**. Animal Production Science, 65(15), AN25076. https://doi.org/10.1071/AN25076

Liu, G., Zhou, J., Wang, Y., Fang, S., Fan, Z., Xie, C., ... & Yang, R. (2025). A simple waste-to-wealth strategy: sustainable bioconversion of rapeseed meal-derived **glucosinolates** into **antimicrobial isothiocyanates**. Food Chemistry, 146469. https://doi.org/10.1016/j.foodchem.2025.146469

Fant, P., Mantovani, G., Vadroňová, M., Sabetti, M. C., Krizsan, S. J., & Ramin, M. (2025). Lactational performance and enteric methane emissions in **dairy cows** fed high-oil oats, cold-pressed rapeseed cake, and 3-nitrooxypropanol in a grass silage–based diet. Journal of Dairy Science. https://doi.org/10.3168/jds.2025-27007

Gao, W., Ming, K., Fu, Y., Xu, Q., Yi, T., Su, Y., ... & Zhao, C. (2025). Effects of rapeseed meal replacing fishmeal on growth, body composition, amino acid digestion and transport, lipid metabolism, and immunity of **black carp** (*Mylopharyngodon piceus*). Aquaculture Reports, 45, 103079. https://doi.org/10.1016/j.aqrep.2025.103079

Liu, Z., Upadhyay, P., & Ullah, A. (2025). Enhanced properties of novel canola meal **nanocomposite packaging films** reinforced with cellulose nanocrystals and glycidyl methacrylate. Food Packaging and Shelf Life, 49, 101511. https://doi.org/10.1016/j.fpsl.2025.101511

Benyoucef, M., & Panigrahi, S. S. (2025). **Fluidization-bed drying and microwave radiation effects** on drying rate, fatty acid, protein and germination of rapeseed. Journal of Food Composition and Analysis, 142, 107562. https://doi.org/10.1016/j.jfca.2025.107562

Shrees, S., Masood, A., Shrestha, Y., & Garima, G. (2025). Life cycle assessment of **Jatropha and rapeseed biodiesels**: Cradle to grave. Biomass and Bioenergy, 199, 107895. https://doi.org/10.1016/j.biombioe.2025.107895

Myćka, Ł., Łabaj, J., Madej, P., Kortyka, Ł., Palimąka, P., Matuła, T., & Bukowska, A. (2025). Physicochemical Properties of **Rapeseed Cake** and its Potential as a Biomass **Reductant of Metallurgical Slags**. Archives of Foundry Engineering. https://doi.org/10.24425/afe.2025.153789

NUTRITION AND HEALTH

Jia, D., & Xue, S. (2025). **Mediterranean diet research trajectories in China** (2006–2025): a scoping review and scientometric analysis to localize global nutrition models. Frontiers in Nutrition, 12, 1661835.https://doi.org/10.3389/fnut.2025.1661835

Lu, S. A., Lee, I. T., Tan, C. X., Wang, S. T., & Lee, W. J. (2025). Dietary strategies **for optimizing omega-3 fatty acid intake**: a nutrient database-based evaluation in Taiwan. Frontiers in Nutrition, 12, 1661702. https://doi.org/10.3389/fnut.2025.1661702

Chisholm, K. W., Jebeile, H., Henderson, M. J., Lorien, S., Srinivasan, S., & Lister, N. (2025). Nutrition and dietary interventions for treatment and management of familial **hypercholesterolaemia** in children and adolescents: A systematic review. Nutrition, Metabolism and Cardiovascular Diseases, 103967. https://doi.org/10.1016/j.numecd.2025.103967

Xu, Y., Fang, M., Chen, Z., Jin, Z., Zhang, T., Yu, L., ... & Li, P. (2025). **High-phytosterol rapeseed oil prevents atherosclerosis** by reducing intestinal barrier dysfunction and cholesterol intake in ApoE−/− mice. Food Research International, 116537. https://doi.org/10.1016/j.foodres.2025.116537

Mohanty, S., Mehrotra, N., Khan, M. T., Sharma, S., & Tripathi, P. (2025). **Paradoxical Effects of Erucic Acid**—A Fatty Acid With Two-Faced Implications. Nutrition Reviews, nuaf032. https://doi.org/10.1093/nutrit/nuaf032

Su, Y., & Gao, Y. (2025). Effects of One-week Intake of Different Edible Oils on the Urinary Proteome of Rats. bioRxiv, 2025-02. https://doi.org/10.3389/fnut.2025.1571846

Yang, G., Zhu, L., Wang, Y. *et al.* **Antihypertensive effect of *sinapine*** extracted from rapeseed meal in 2K1C hypertensive rats. *Sci Rep* **15**, 4133 (2025). https://doi.org/10.1038/s41598-025-88926-0

Xiang, X., Liu, H., Zheng, C., Jiang, N., Huang, F., & Zhou, Q. (2025). Flavor profile of 4-isothiocyanato-1-butene in microwave rapeseed oil and its **anti-inflammatory** properties in vitro. Journal of Agricultural and Food Chemistry, 73(17), 10520-10530. https://doi.org/10.1021/acs.jafc.4c11689

Liu, H., Zheng, C., Jiang, N., Zeng, C., Huang, F., Li, W., & Xiang, X. (2025). **Canolol** and its dimer from rapeseed oil attenuate AGEs-induced endothelial cytotoxicity via modulation of MAPK/NF-κB signaling axis. Food Bioscience, 107604. https://doi.org/10.1016/j.fbio.2025.107604

Boot, N., Hermans, W. J., Warnke, I., Overman, A., Kranenburg, J. M., Senden, J. M., ... & Loon, L. J. (2025). Canola **protein** processing modifies postprandial **plasma amino acid profiles** in vivo in healthy, young females. https://doi.org/10.21203/rs.3.rs-6733821/v1

Zhou, C., Jepsen, C. S., Rigby, N., Lübeck, M., Mackie, A., Sancho, A. I., & Bøgh, K. L. (2025). Evaluation **of allergenicity** of the alternative food **protein sources** microalga Spirulina and rapeseed cake–A study in Brown Norway rats. Food Research International, 117357. https://doi.org/10.1016/j.foodres.2025.117357

EFSA Panel on Nutrition, Novel Foods and Food Allergens (NDA), Turck, D., Bohn, T., Cámara, M., Castenmiller, J., De Henauw, S., ... & Hirsch-Ernst, K. I. (2025). Safety of **rapeseed protein–fibre concentrate** as a **novel food** pursuant to Regulation (EU) 2015/2283. EFSA Journal, 23(9), e9631. https://doi.org/10.2903/j.efsa.2025.9631

Oktar, B., De Aguiar Saldanha Pinheiro, A. C., Tappi, S., & Rocculi, P. (2025). A comprehensive overview of three **novel plant proteins** approved by EFSA: alfalfa protein concentrate, rapeseed and mung bean protein isolates. Critical Reviews in Food Science and Nutrition, 1-17. https://doi.org/10.1080/10408398.2025.2564898

Kreps, F., Krepsova, Z., & Dubaj, T. (2025). Formation of oxidative and cytotoxic products of tocopherols and their adsorption onto the surface of French fries when fried with rapeseed oil. Food Chemistry, 478, 143701. https://doi.org/10.1016/j.foodchem.2025.143701

Xu, S., Huang, D., Liu, C., Gao, Y., Li, Q., & Yu, X. (2025). Development of nutrition-flavor dual process of rapeseed oil based on resource utilization of rapeseed cake. Food Chemistry, 145576. https://doi.org/10.1016/j.foodchem.2025.145576

ANALYZES

Yuan, R., Wang, M., Li, Z. et al. A method for **detecting transgenic rapeseed** using pollen collected by *Apis mellifera L*. Transgenic Res 34, 18 (2025). https://doi.org/10.1007/s11248-025-00438-9

Johannes Fiedler, Maksim Kukushkin, Karl Ruben Kuckelsberg, Jan Lukas Storck, Martin Bogdan, Thomas Schmid, and Reinhard Kaschuba "Optimization of **the purity analysis of rapeseed** by using hyperspectral imaging in the spectral range from 400 to 1600 nm", Proc. SPIE 13357, Photonic Technologies in Plant and Agricultural Science II, 133570B (19 March 2025); https://doi.org/10.1117/12.3041814

Gong, J., Dou, X., Wang, D., Fang, M., Yu, L., Ma, F., ... & Zhang, L. (2025). Authentication of rapeseed variety based on hyperspectral imaging and chemometrics. Applied Food Research, 100941. https://doi.org/10.1016/j.afres.2025.100941

Hu, Z., Xiong, W., Liang, Q. *et al.* **Canolol** as a key equivalent for **phenolic content quantification in rapeseed oil** via Folin–Ciocalteu method. *Eur Food Res Technol* **251**, 1257–1268 (2025). https://doi.org/10.1007/s00217-025-04701-5

Gutiérrez, R. B., Rodríguez, E. R., & Landín, G. M. (2025). Estimation of the chemical composition of grains and protein meals by **spectroscopy** (NIRS-FTIR). Rev. Mex. Cienc. Pecu. Vol. 16 Núm. 2, pp. 236-495, ABRIL-JUNIO-2025, 16(2), 428-445. https://doi.org/10.22319/rmcp.v16i2.6637

Peng, W., Wang, Q., Wang, H., Yu, X., Ni, X., Chu, Y., ... & Liao, Q. (2025). A **portable** rapeseed quality non-destructive inspection device based on **multichannel spectroscopy**. Journal of Food Composition and Analysis, 108028. https://doi.org/10.1016/j.jfca.2025.108028

Zhang, X., Du, W., Zhang, D., Zhang, N., Liu, Y., & Jiang, S. (2025). **Flavor** Quality Characterization of **Rapeseed Oil** During **Storage** by Physicochemical Analysis, Sensory Evaluation, Electronic Nose, and GC–O. Journal of Food Biochemistry, 2025(1), 7434957. https://doi.org/10.1155/jfbc/7434957

Yan, J., Jiao, Z., Song, L., Yao, S., Jiménez, A., Peng, C., & Qin, W. (2025). Rapid and nondestructive quality analysis of thermally oxidized rapeseed **oil** based **on ultrasonic diagnostic technology**: A study on temperature compensation mechanisms. Food Chemistry, 144481. https://doi.org/10.1016/j.foodchem.2025.144481

Lante, A., Massaro, A., Zacometti, C., Mihaylova, D., Chalova, V., Krastanov, A., ... & Tata, A. (2025). DART-HRMS for the **Rapid Assessment of Bioactive Compounds** in Ultrasound-Processed Rapeseed Meal By-Product. Applied Sciences, 15(11), 5952. https://doi.org/10.3390/app15115952

ECONOMY and MARKET

Meijaard, E., Carlson, K., Sheil, D., Zaini, S., & Meijaaard, E. (2025). Does Palm Oil Really Rule the Supermarket?. https://www.preprints.org/manuscript/202503.1060/v1

Petrenko, O. (2025). THE IMPACT OF THE FULL-SCALE **WAR** ON AGRICULTURAL PERFORMANCE **IN UKRAINE** (Doctoral dissertation, Kyiv School of Economics). REFERENCE

de Paula Leite, A. C., Pimentel, L. M., & de Almeida Monteiro, L. (2025). Biofuel adoption in the transport sector: The **impact of renewable energy policies**. Sustainable Energy Technologies and Assessments, 81, 104419. https://doi.org/10.1016/j.seta.2025.104419

Schmitt, J., Offermann, F., & Finger, R. (2025). The use of crop diversification in agricultural **yield insurance products**. Food Policy, 134, 102905. https://doi.org/10.1016/j.foodpol.2025.102905

Nakui, S., & Mikami, T. (2025). **Brassica oilseed crops in Japan**: cultivation, consumption, and cultivars. Acta agriculturae Slovenica, 121(2), 1-8. https://doi.org/10.14720/aas.2025.121.2.19925

Zhang, Q., Ye, F., Tong, T., & Feng, Z. (2025). Enhancing cost efficiency and promoting sustainable **development of rapeseed in China:** the role of scale operations and management. Frontiers in Sustainable Food Systems, 9, 1502049, https://doi.org/10.3389/fsufs.2025.1502049

MUSTARD and Other Brassicae

Akhatar, J., Upadhyay, P., Kumar, H. (2025). Crop Cultivation and **Hybrid Seed Production Strategies in Rapeseed-Mustard**. In: Lamichaney, A., Parihar, A.K., Bohra, A., Karmakar, P., Naik, S.J.S. (eds) Hybrid Seed Production for Boosting Crop Yields. Springer, Singapore. https://doi.org/10.1007/978-981-96-0506-4_8

See also Genetics and Breeding, and Crop Protection sections

MISCELLANEOUS

Cantúa-Ayala, J. A., Castillo-Torres, N., & Marroquín-Morales, J. Á. (2025). Evaluation of canola varieties and elite lines in **Southern Sonora**. *Revista mexicana de ciencias agrícolas*, *16*(2)., https://doi.org/10.29312/remexca.v16i2.3362

Hamayunova, V., Khonenko, L., & Baklanova, T. (2025). Diversification of oil crops in the **Southern steppe of Ukraine:** adaptation to climate changes and environmental conditions. *Technology audit and production reserves*, *1*(3 (81)), 69-74. https://doi.org/10.15587/2706-5448.2025.323953

Mohamed, I. A., Shalby, N., El-Badri, A. M., Awad-Allah, E. F., Batool, M., Saleem, M. H., ... & Fu, T. (2025). **Multipurpose uses of rapeseed** (*Brassica napus L.)* crop (food, feed, industrial, medicinal, and environmental conservation uses) and improvement strategies in **China**. *Journal of Agriculture and Food Research*, 101794. https://doi.org/10.1016/j.jafr.2025.101794

Rebbah, K., Meziani, S., Demmouche, A., Labga, L., Amara, L., Badri, F. Z., ... & Menadi, N. (2025). Nutritional and antioxidant profiling of **Algerian** rapeseed seeds (*Brassica napus L*.) and its cold-pressed by-products. *Croatian journal of food science and technology*, *17*(1), 81-100. https://doi.org/10.17508/CJFST.2025.17.1.06

Wang, X., Wang, Y., Zhang, F., Liu, L., Wu, Z., Liu, Y., ... & Yang, Y. (2025). Dynamic whole-life cycle measurement of individual plant height in oilseed rape through the fusion of point cloud and crop root zone localization. Computers and Electronics in Agriculture, 236, 110505. https://doi.org/10.1016/j.compag.2025.110505

Liu, C., Zhang, H., Li, Z., Zeng, Z., Zhang, X., Gong, L., & Li, B. (2025). Experimental and Numerical Study on the Restitution Coefficient and the Corresponding Elastic Collision Recovery Mechanism of Rapeseed. Agronomy, 15(8), 1872. https://doi.org/10.3390/agronomy15081872

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