



Global Council for Innovation in Rapeseed and Canola

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

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Editorial

Despite the covid crisis, time is going fast and rapeseed/canola research and GCIRC activities maintain quite well if we look at the number and quality of publications on various topics, and at the mobilization of GCIRC board and committees to organize our Technical Meeting and General Assembly, exceptionally online, for next September 28th-29th and 30th.

Technical Meetings are systematically organized every four years, between International Congresses devoted to rapeseed. The first Technical Meeting was held in 1980 in Changin, Switzerland and the last in 2016 in Alnarp, Sweden.

The 11th Technical Meeting was to be held in Poznan, Poland, organized by Plant Breeding and Acclimatization Institute – National Research Institute (IHAR). It became impossible due to the Covid-19 crisis. However, to maintain and ensure the continuity of the GCIRC committees' activity, the board decided to organize Online Technical Meeting in cooperation with IHAR Poznan. The Meeting will be shortened, for technical reasons, to the reports presented first by invited speakers. Notwithstanding the Technical Meeting should target research and breeding for the solution of today's problems in cultivation and utilization of rapeseed/canola, like insect control and rapeseed meal competitiveness in the market of animal feed, even food in a future.

Insect control is a challenge for this crop due to new regulatory restrictions and withdrawal from use of many insecticides. Products obtained after extracting oil from rapeseed offer unique possibilities as a native protein source and guarantee the availability of the row material in large quantities. However, the improvement of rapeseed meal remains to be solved. We hope to see many of you connected for this meeting.

*Dr Iwona BARTKOWIAK-BRODA
GCIRC Board member*

Activity/News of the association:

GCIRC Board and Committees

The GCIRC Board has met twice, online conferences, on March 8th and June 7th, 2021, to review past and ongoing activities as well as financial situation and budgets. A special issue was the organization of the Technical Meeting and of the General Assembly, in the disrupted context of the Covid crisis

and its uncertainties. The decision has finally been taken to organize it as a web conference, regretting to abandon for this year the possibility of unformal discussions and personal interactions, which are so important for maintaining a living community. Even if web meeting gives more flexibility for current exchanges, we will have to rethink the way we interact and make the best of online and face-to-face meetings.

GCIRC Technical Meeting: September 28th-29th, 2021

Due to the lasting Covid crisis, the GCIRC Technical Meeting previously scheduled at Poznan, Poland, will be held online, co-organized by IHAR Poznan and GCIRC.

This event, traditionally reserved to GCIRC members, will be open to non-member participants in the limits of the web conference capacity.

Pre-recorded presentations (15 to 25min) will be available online for registered participants at least 24 hours before. A live session including summary presentation, Question & Answer session, and Debate, involving the speakers and GCIRC Committee leaders, will be held on September 28th and 29th from 13:30 to 16:00 CET, to facilitate participation for all regions of the world. Participants will have the possibility to comment and ask questions through the moderator.

These two days will focus on 2 strategic issues for rapeseed-canola future: the progress in insects and pests control, and the valorization of proteins.

- September 28th will focus on “Insect pest management in rapeseed: technical situation and research progress towards sustainable control”, coordinated by Dr Samantha COOK/Rothamsted-UK.
- September 29th will focus on “Rapeseed protein production and added value: research issues from agronomy to product quality and process”, coordinated by Dr Véronique BARTHET/Winnipeg-Canada.

Full program available on GCIRC website at <https://www.gcirc.org/news-events/events/article/gcirc-technical-meeting-september-28-29th-2021-tm21>

Registration: <https://www.weezevent.com/gcirc-technical-meeting-tm21>

GCIRC members/Free of charge, Non GCIRC members/25€

GCIRC General Assembly

The GCIRC General Assembly, normally organized jointly to the Technical Meeting, will take place online, on September 30th, 2021. This Assembly is reserved to registered GCIRC members.

Welcome to New GCIRC members

- The GCIRC has a *new sponsor: PSPO, the Polish Association of Oil Producers.*



The Polish Association of Oil Producers is a sector organisation representing oilseed processing industry in Poland that brings together all the leading fat industry players. The Mission of the Polish Association of Oil Producers is acting to establish conditions for competitive development of the Polish oilseed industry. <https://www.pspo.com.pl/about-us.html>.

The representatives for PSPO, and therefore new GCIRC members, are *Mr Adam STEPIEN* and *Mr Maciej CZERWINSKI*.

- We also have the pleasure to welcome three new members: *Dr Amine ABBADI*, from NPZ Innovation GmbH/Germany; *Dr Nathalie NESI*, from INRAE/France and *Mr Roman HNILICKA*, from SPZO/Czech Republic.

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, indicating their fields of interest to facilitate interactions.

Scientific news

Publications:

BREEDING

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CURRENT WORKS

Broomrape control on rapeseed: soil micro-organisms for future solutions? (Source Terres Inovia, France)

Soil micro-organisms could perhaps be a way to control the broomrape *Phelipanche ramosa*. Terres Inovia is co-financing a thesis, with the University of Nantes, to study this possibility.

This parasitic plant, which is found on rapeseed and many other species, captures nutrients, and jeopardizes the sustainability of yields. It is particularly feared by rapeseed growers because few levers exist to control it: only prophylaxis, adapted cultivation practices and the choice of less sensitive varieties can partially limit the development of the parasite.

From 2010 onwards, Terres Inovia has observed a significant reduction in broomrape in certain experimental rapeseed fields. "It appeared that the broomrape plants were necrotic, and were rotting even before they emerged," according to Christophe Jestin, of Terres Inovia. The institute then carried out preliminary work under controlled conditions, suggesting that "certain micro-organisms in the soil could be the cause of this phenomenon".

To verify this hypothesis, extensive scientific work was launched in 2019 as part of a thesis with doctoral student Lisa Martinez on "the study of suppressive soils of the parasitic plant *Phelipanche ramosa* for parasitic biocontrol", with the University of Nantes, and in particular its laboratory of plant biology and pathology. The thesis, which is due to be completed in November 2022, aims to study the interactions between microbiota contained in the soil and the broomrape. It is being carried out at the University of Nantes laboratory, under the supervision of two research professors, Lucie Poulin and Philippe Simier, and of Christophe Jestin (Terres Inovia).

The low level of infestation observed in the field could be reproduced in the laboratory. Some micro-organisms can favor the development of the parasitic plant, while others have an opposite effect and limit the number of broomrape attachments on the rape. This phenomenon, which reduces the infestation, does not affect the germination of the broomrape, but the subsequent stages of the interaction. The work of the thesis continues to validate the potential microbiota behind these observations.

Value chains and regional news

- **Australia: yield record breaking attributed to science (reported by John Kirkegaard, CSIRO)**

Especially when crops know difficult situations, it is important to remember that rapeseed canola has a yield potential and compensation capacities and that surprising results may be very positive...

This is a nice summer story.

A yield record for canola was achieved last year with an average yield of **7.16 tonnes/ha on a 33-ha paddock near Canberra**. Peter Brooks who manages the "Mayfield" farm owned by the Hawkins family at Oberon, NSW, says it was the result of more than a decade of working closely with CSIRO, backed by Grains Research and Development Corporation (GRDC) investment, to develop the dual-purpose canola cropping system. Read more on <https://www.csiro.au/en/News/News-releases/2021/Record-breaking-canola-crop-credited-to-science-from-CSIRO>

Site and climate details

The farm Mayfield, owned by the Hawkins family is located near Oberon, west of the Blue mountains on the Tablelands of southern NSW. At 1000m elevation and with an annual average rainfall of 708mm spread evenly throughout the year, the long cool growing season is ideal for growing high-yielding temperate crops such as canola and wheat. In 2020, the rainfall was 889mm but fell evenly through the year, provided an early sowing opportunity in February and a long growing season to early December. The soils on the farm are derived on basalt also have good natural fertility, and the long-term pasture history of the Mayfield site meant there was an abundance of natural fertility to support crop growth throughout the season.

The area experiences very cool and sunny conditions during the critical period of yield determination during the flowering period when the number of grains is set. The high and evenly distributed rainfall supports the long cool, grain filling period. Dr John Kirkegaard, CSIRO farming systems agronomist says that "high radiation and cool temperatures during the critical period mean a longer period to set grain and lots of photosynthesis to support grain set. This so-called "photothermal quotient" (the ratio of radiation/temperature) for this area are among the highest in Australia, generating high yield potentials. Provided damaging frosts or heat are avoided in this period, and the rainfall is adequate, he has estimated that a yield potential of up to 8 t/ha was possible in 2020, and up to 9 t/ha is theoretically possible. The higher rainfall in 2020 meant slightly warmer temperature and lower radiation due to cloud in the critical period, but this also reduced the chance of damaging frost and heat. Using CSIROs simulation model APSIM Canola, Dr Julianne Lilley estimated the potential to be 7.7 t/ha in 2020.

Dr Kirkegaard says that the remarkable thing about this crop is that Peter Brooks, his consultant agronomist James Cheetham, and the farm management team led by Troy Fitzpatrick have achieved close to that very high yield potential of 8 t/ha at a commercial scale, not in a small research plot, and the fact that 2 months of grazing of the crop was achieved in the winter prior to the grain harvest makes this even more remarkable.

They say: “luck is when opportunity meets preparedness”, and while 2020 no doubt provided the opportunity for high yields, Peter and his colleagues have been refining the management of dual-purpose winter canola since CSIRO first brought the idea to them in the late-2000s after 5 years of research at CSIRO to develop the concept. Peter was an “early adopter” and has worked away over the last decade to refine the management of winter canola to a point where it has truly transformed the farming systems in the area. Research always has more impact when it is done in collaboration with keen farmers and advisors who are always pushing the envelope. This achievement demonstrates the potential of sound agronomic management (with no miracle products) - just an appropriate canola variety selected for the site, timely agronomic management with attention to detail, and a season to remember.

Few would have thought that anything approaching a world record canola crop would be grown in Australia, and even fewer would believe that it could be grazed by sheep as well!

Agronomy details

Farm Owners: Mayfield, Oberon, NSW Australia owned by Hawkins family

Farm Manager: Mr Peter Brooks

Agronomy adviser: Mr James Cheetham, Delta Agriculture

Crop Management Team Leader: Troy Fitzpatrick

Paddock: Top Mosman 33Ha

Paddock history: Long-term pasture with feed-lot cattle – not cropped in living memory.

Paddock preparation: Graze, Sprayed on October 19, Direct sown without cultivation

Variety: Hyola970CL

Sowing Date: 28th Feb 2020

Seeding Machine: Seed Hawk 8m dual-knife, press wheel parallelogram.

Row spacing: 25 cm

Sowing Rate: 2.5kg/Ha

Established Plant Population: 30 plants/m²

Sowing Fertiliser: 80kg/Ha MAP (Impact treated) (8 kg N/ha and 17.5 kg P/ha)

Grazing: 27th April until 25th June (59 days) with 20 merino lambs per ha (1180 dse.days/ha)

Herbicides: 26th June - 500ml/Ha Intervix + 150ml Lontrel advanced + 300ml/Ha select extra + 500ml/100L Update Oil

Top Dress Fertiliser: 200kg/Ha Urea, 2nd September 2020

Flowering date (start): 11 September (50% plants with 1 open flower)

Fungicide: 450ml/Ha Prosaro + 50g/Ha Transform, 3rd Oct 2020

Windrowing: 7th December 2020

Harvested: 14th January 2021,

Delivery and weighing: Grain delivered to MSM Milling, Manildra NSW Australia 15th and 18th January (see Table 1)

Yield: 236.22t off 33Ha = 7.16t/Ha.

Grain delivery details

Table 1. Verified Records from MSM Milling, Manildra, NSW, Australia

Job ID	Exit Date	Farm	Warehouse/P	Product	Destination	Quantity	WB Docket #	Pickup Vehicle	Driver	MSM 700	MSM 400	Contract Price	Oil Adjustment	Impurities adjustment	Adjusted Price	Adjusted Price (Ex GST)	Moisture	Test Weig	Oil	Impurities
MF202014	15/01/2021	Mayfield	Top mosman	Canola	Manildra (MSM Milling)	21.06	D0482907	AD87KB	Stephen Dwyer	21.06		\$ 580.00	\$ 22.19	\$ (11.02)	\$ 591.17	\$ 12,450.04	4.6	62.80	44.6	1.9
MF202015	15/01/2021	Mayfield	Top Mosman	Canola	Manildra (MSM Milling)	36.28	D0482912	XN64BP	James Dunbar	36.28		\$ 580.00	\$ 11.03	\$ (14.50)	\$ 576.53	\$ 20,916.51	5.1	62.20	43.3	2.5
MF202016	15/01/2021	Mayfield	Top Mosman	Canola	Manildra (MSM Milling)	30.44	D0483222	XN10RF	Barry Elms	30.44		\$ 580.00	\$ 20.65	\$ (6.38)	\$ 594.27	\$ 18,089.58	3.8	63.60	44.4	1.1
MF202017	15/01/2021	Mayfield	Top Mosman	Canola	Manildra (MSM Milling)	22.18	D0483474	AD87KB	Stephen Dwyer	22.18		\$ 580.00	\$ 12.00	\$ (8.70)	\$ 583.30	\$ 12,937.59	5.1	63.60	43.4	1.5
MF202018	15/01/2021	Mayfield	Top Mosman	Canola	Manildra (MSM Milling)	32.38	D0483651	CC99MH	Paul Livingston	32.38		\$ 580.00	\$ 22.26	\$ (9.28)	\$ 592.98	\$ 19,200.69	4.7	62.80	44.6	1.6
MF202019	15/01/2021	Mayfield	Top Mosman	Canola	Manildra (MSM Milling)	35.86	D0484130	XN64BP	James Dunbar		35.86	\$ 613.00	\$ 19.87	\$ (11.03)	\$ 621.84	\$ 22,299.18	4.5	63.40	44.2	1.8
MF202020	18/01/2021	Mayfield	Top Mosman	Canola	Manildra (MSM Milling)	21.58	D0484507	AD87KB	Stephen Dwyer		21.58	\$ 613.00	\$ 9.94	\$ (10.42)	\$ 612.52	\$ 13,218.18	4.3	64	43.1	1.7
MF202021	18/01/2021	Mayfield	Top Mosman	Canola	Manildra (MSM Milling)	36.44	D0484736	XN64BP	James Dunbar		36.44	\$ 613.00	\$ 25.08	\$ (15.94)	\$ 622.14	\$ 22,670.78	4.2	62	44.8	2.6
						Total Tonnes	236.22													

Potential yield estimates

Based on radiation and temperature in the critical period for yield determination and the seasonal rainfall, a simple potential yield estimate of 8 t/ha was made (Dr John Kirkegaard, CSIRO Canberra).

Based on the APSIM canola model which uses daily rainfall, radiation and temperature and a soil typical of the area, as well as the specific management as detailed above – the potential yield was estimated at 7.7 t/ha (Dr Julianne Lilley, CSIRO Canberra).

Pictorial history of the crop.



Figure 1. Agronomist James Cheetham (Delta Agriculture) showing the size of the crop at the start of flowering.



Figure 2. Crop at mid-flowering (now well over head height).



Figure 3. Crop just before windrowing showed huge potential.



Figure 4. L-R. Dr John Kirkegaard (CSIRO), Mr James Cheetham (Agronomist, Delta Agriculture) and Mr Peter Brooks (Manager) show the size of the windrows.



Figure 5. Mr Peter Brooks, farm manager at Mayfield shows the large number of long, full pods along the main stem at windrowing.



Figure 6. Harvesting the large windrows.

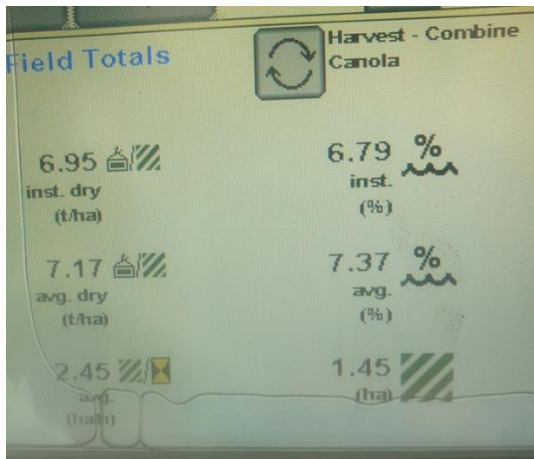


Figure 7. The yield monitor on the harvester confirms a > 7 t/ha high yield. Later confirmed at the weighbridge at 236.22 tons off 33 ha (7.16 t/ha).

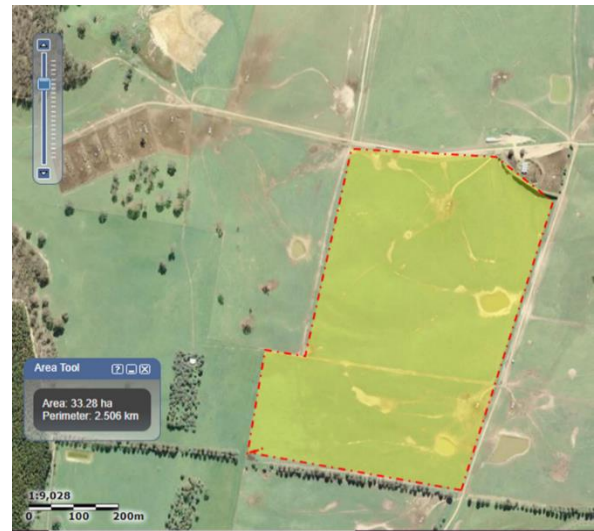


Figure 8. Paddock area (Top Mossman paddock, on Mayfield, at Oberon, NSW Australia).

- **Update on rapeseed and major oilseeds production in the European Union (EU-27) (reported by Wolfgang Friedt, IFZ)**

In spite of climate change and current adverse weather conditions in Europe, the oilseeds harvest in the EU-27 is expected to rise in comparison to last year; the total production is estimated to increase by 11% to a total of 30.6 million tons, according to the EU Commission. While the rapeseed harvest may increase only moderately, record harvests are expected for soybeans and sunflower kernels.

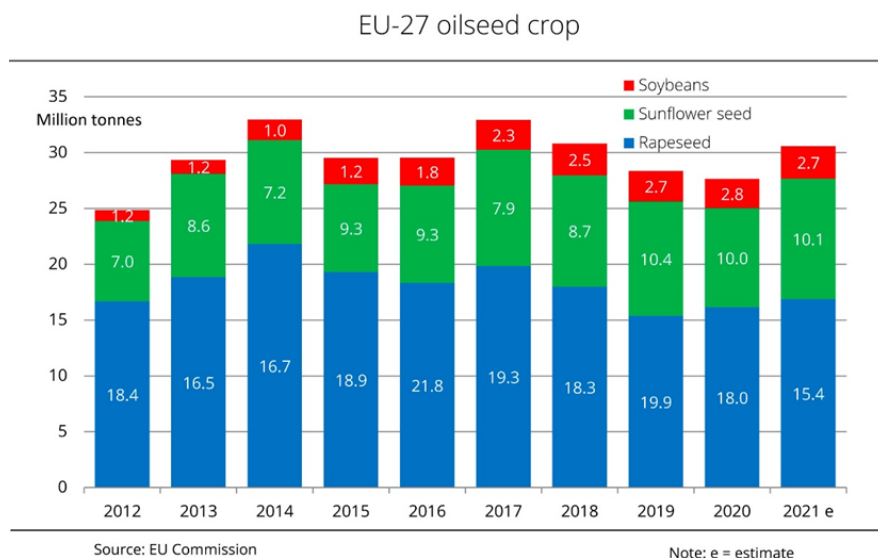


Figure: Estimated harvest volume of major oilseed crops including rapeseed (blue), sunflower (green) and soybean (red) in the EU-27 for 2021s (estimated) in comparison to previous years since 2012 (Source: EU Commission).

Despite the moderate extension of rapeseed acreage (3 % plus) the major oilseed crop in Europe may not fully meet yield expectations this year. The EU Commission currently estimates mean rapeseed yield at 31.8 dt/ha and a total of 16.9 million t which would be 4% lower than the long-term average. The all-time yield maximum of 4t/ha in Germany could not be repeated recently. This is thought to be due to limitations of nitrogen fertilization and N availability of the crop as well as restrictions of chemical plant protection along with lacking pest and pathogen resistance of rapeseed. In view of long-term perspectives, intense breeding efforts for improving N efficiency and insect resistance or tolerance are urgently needed.

Behind leading oilseed rape, sunflower is the second most important oil crop in the European Union. The harvest quantity is estimated to reach a record level of 10.8 million tons in 2021. At the same time, cultivation of soybeans is expanding in Europe. Due to the extension of acreage (3%) and an estimated yield plus of 8% at total of 2.9 million tons of soybean may be harvested in the EU-27 which would represent a record harvest ever.

Along with positive price trends for oil crops, vegetable oils and oil meal the competitiveness of oil plants is expected to increase. This trend would be highly welcome in the sense of widening crop rotations and increasing biodiversity in arable fields and European agriculture as a whole.

- **Canada - China trade: Canada secures WTO panel against China**

Reported by Agra-Press / A. Garnier, July 29th, 2021

At a meeting of the Dispute Settlement Body on July 26th, Canada won the consent of World Trade Organization (WTO) members to establish a panel to examine Beijing's restrictive measures on imports of Canadian canola seed. Ottawa indicated that this second request was warranted because of the lack of concrete action by China to address its concerns while these measures continued to have a serious impact on Canadian producers.

The points of friction in this case relate to both the suspension of canola seed imports from two Canadian companies and Beijing's application of enhanced inspections to canola seed imports from the other Canadian companies.

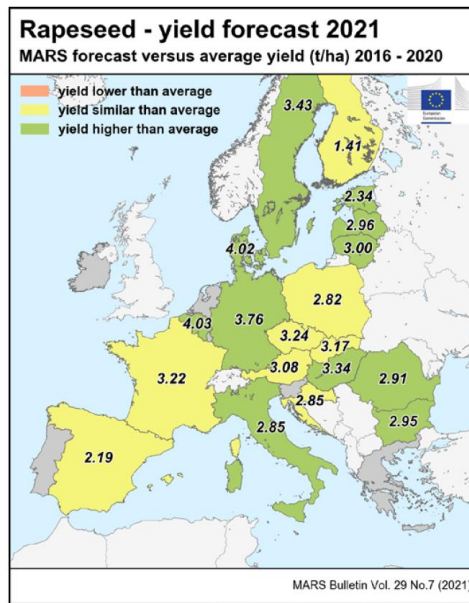
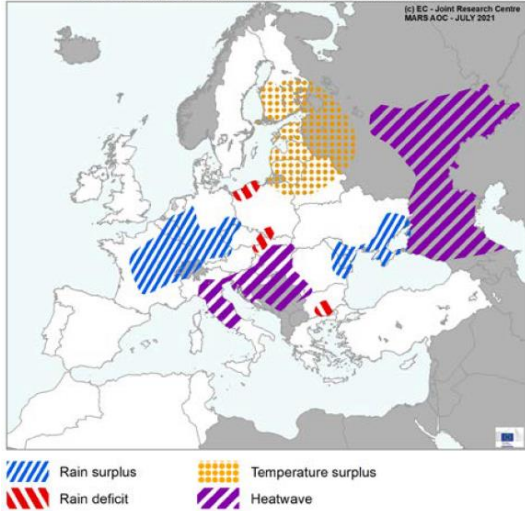
For its part, Beijing said it regretted Canada's decision to reiterate its request for a panel, assuring that it had engaged in constructive dialogue on the issue. In justifying its decision, Beijing again explained that it had detected quarantine pests in shipments of canola seed.

- **2021 Yields and prices**

In Europe, despite disturbed weather conditions the yield outlook remains globally positive according to the JRC-MARS Bulletin.

AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on weather data from 1 June 2021 until 20 July 2021



Source: JRC MARS Bulletin July 2021

<https://publications.jrc.ec.europa.eu/repository/handle/JRC124852>)

UFOP (Germany) gives explanations for the present tensions on rapeseed-canola prices (see Chart of the Week 29, 2021 at https://www.ufop.de/english/news/chart-week/#kw29_2021). “Prospects of tight rapeseed supply at the world's biggest rapeseed exporter has driven up prices. In Winnipeg, the July contract reached a new record high at the equivalent of just less than EUR 661 per ton on 13 July 2021. An exceptional increase had already been recorded in the days before, rapeseed rose around EUR 100 per ton in Canada in a single week.

The surge was driven by expectations of heat-related crop failures in Canada. Continued high temperatures and drought in the Canadian plains have severely affected the development of the rapeseed plants and will limit the yield potential. In its most recent estimate, the USDA lowered its yield forecast to 22.4 decitons per hectare based on reports from Canada, below the long-term average. Consequently, the potential output is also reduced. The estimate was lowered 0.3 per cent from the previous month to 20.2 million tons.

Whereas Canada's stocks from 2019/20 amounted to just over 3 million tons the previous year, the country's storage facilities are virtually empty at 1.2 million tons prior to the 2021 harvest. Even if the harvest were to reach the estimated volume of just over 20 million tons, exceeding the previous year's output by 1 million tons, total supply would slide to a level 740,000 tons below the previous year's figure and 1.5 million tons below the five-year average. This situation will limit rapeseed supply on a global scale and stabilise producer prices at the current appealing level.”

- **USA: canola going on developing**

“The USDA National Agriculture Statistics Service’s June 30 acreage report pegged planted canola acres at slightly more than 800000 ha, up 72000 ha or 9.8 percent from 2020. North Dakota planted 680000ha, up 68,000 or 11.3 percent. Kansas and Oklahoma acreage stabilized at 2800 and 5300, respectively, up a combined 17.6 percent. Minnesota acreage increased to 23470, up 3200 or 16 percent. Washington planted 38500, an increase of 800 or 8.3 percent, while Montana acreage declined to 60700, down 2000 or 3.2 percent.”

Source USCanola Canola Quick bytes <https://www.uscanola.com/newsletter/canola-quick-bytes-july-2021/>

- **France: online rapeseed decision support tool " Estimation of the risk linked to adult flea beetles**

Terres Inovia has developed and put online on its website a decision support tool for French conditions aimed at estimating, in case of emergence before October 1st (late summer in France), the risk linked to leaf destruction by flea beetles and adult winter flea beetles, two frequent pests. It was built by integrating trial results and expertise of Terres Inovia. This tool will be completed by two other modules aimed at estimating the risk linked to winter stem weevil and flea beetle larvae. To estimate the risk linked to adult flea beetles, the user is invited to enter the stage of the rapeseed, whether the crop is well established and growing, whether insects are present, the percentage of plants attacked and the percentage of leaf surface consumed by the insects. The tool then evaluates the risk (nil, low, medium, high) and associates it with some advice.

The tool is available in French on the Terres Inovia website <https://www.terresinovia.fr/p/estimation-du-risque-lie-aux-altises-adultes>). It will also be available as an application programming interface (API) and can be used on other digital interfaces.

Upcoming international and national events

September 28-29th, 2021, GCIRC Online Technical Meeting TM21

Program and information: <https://www.gcirc.org/news-events/events/article/gcirc-technical-meeting-september-28-29th-2021-tm21> Registration: <https://www.weezevent.com/gcirc-technical-meeting-tm21>



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

www.irc2023sydney.com



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

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