GCIRC News

Global Council for Innovation in Rapeseed and Canola

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

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Contents

Editorial

The COVID-19 pandemics is still ongoing and all of us must adapt to this situation. Even if agricultural production has been more disturbed by climate variations in many regions than by the pandemics, the rest of the value chain has been disrupted by rapid and strong changes in consumption patterns. No restaurants means a drop in oil requirements for catering and an increase for home cooking, with different conditioning, labelling, etc… not always easy to adapt to with such short delay. No planes flying and few cars on roads mean variations on petrol markets and a drop in biodiesel needs… when cattle still need to eat oilseed meals. The flexibility of value chain is being severely tested.

Research life is similarly affected: closed laboratories, disturbed or cancelled programs. 2020 was a very extra-ordinary year, and 2021 is far from "normal", and we may doubt that the new normal will look like the normal of the past. However, this crisis lies positive things: new habits of work and contacts via cheap videoconferencing between distant regions have greatly facilitated the organization of the GCIRC Board and of several working meetings, the success of the Canadian Canola Week virtual event is a good example of this. Digital tools set the terms of the challenge of a broad renewal of the way of working and nature of interactions within GCIRC in the future, including the best use of our new website. Without forgetting that the sun never sets on the rapeseed empire: when it is noon in Europe, it is 10 p.m. in Australia and 5 a.m. in Western Canada. After the first experiences in 2020, we have in 2021 to learn how to optimize the use of these technologies for a global community like the GCIRC.

Etienne Pilorgé

GCIRC General Secretary

Activity/ News of the association:

GCIRC 2021 Technical Meeting

The GCIRC Technical Meeting and the GCIRC General Assembly were planned to be organized in 2021 in Poznan, Poland, historical site of Rapeseed research in Europe. The COVID-19 19 crisis makes the situation too uncertain to organize a physical on site meeting this year. The GCIRC board will examine the alternative solutions beginning of March, and GCIRC members will be informed of plans as soon as possible.

Welcome to New GCIRC members

Ward TOMA from Alberta Canola joined GCIRC last November.
You may visit his personal page on the GCIRC website directory, to better know his fields of interest.

We take this opportunity to remind all members that they can modify their personal page, especially indicating their fields of interest in order to facilitate interactions.

Value chains and regional news

- **USA: Cibus Announces Successful Field Trials for Disease Tolerant Trait to sclerotinia in Canola (press release on January 12, 2021)**

Cibus announced that « its first field trials have confirmed greenhouse results of a non-GMO trait that provides tolerance to white mold (*Sclerotinia*). This milestone represents a major step in Cibus' mission to breed a durable resistant plant with its Rapid Trait Development System (RTDS™), as well as a breakthrough for a complex challenge that GMO and traditional technologies have been unable to fully address. This trait is among Cibus' 14 trait products that the US Department of Agriculture, under its "Am I Regulated" process, has recently ruled were not subject to regulation under 7 CFR Part 340 and instead are regulated in the same manner as traits developed using conventional breeding practices. » Read more at https://www.cibus.com/press-release.php?date=011221 . Reported by D. Gouache, Terres Inovia.

- **USA: missions of US Canola Association slightly evolve**

During its autumn meeting, the USCA Board approved a slightly revised mission statement and updated communications strategy focused on increasing U.S. canola production. The new mission is "to increase domestic canola production to meet growing demand for healthy oil, meal and protein by promoting policies and conditions favorable to growing, marketing, processing, and using U.S. canola." Read more on https://www.uscanola.com/newsletter/canola-quick-bytes-december-2020/

- **Canada: Canola Week 2020 online**

For the first time, due to the COVID-19 pandemics, the Canola Week 2020 was an online event on December 1-3. It had 650 registrants, with up to 400 participating at one time. Registration data show that 51 per cent were from research and development, 21 per cent were agronomists, 12 per cent from industry, 10 per cent producers and 6 per cent from sales. Geographically, 92 per cent were from Canada (almost all from the Prairie provinces) and 6 per cent were from the United States. The experience is quite successful, despite its limits regarding social aspects and networking.

A full reporting of the 2020 campaign and challenges for canola production in the Prairies was presented (see: https://www.canolacouncil.org/canola-watch/2020/12/16/highlights-from-canola-week-2020/).

Regarding Canola economy, the COVID-19 raised interrogations on the capacity of the supply chain to remain fluid and the diversification of outlets. The Canadian industry expects the biofuel market to be a driver of growth, partly under the influence of the US, in particular California, which is also a large buyer of oilcake, and probably Europe. Market access for sustainable biofuels is then a key challenge for the coming years, for both the domestic and export markets, leading to look for “low-carbon canola”, "the Clean Fuel” standard could induce a "renaissance" of up to 1.5MT. Nevertheless, the main objectives remain the food market with restaurants and industries, and yield enhancement at farms level.

Some highlights in science and innovation presentations:

- In agronomy, the AAFC presented studies on canola greenhouse gas emissions: in the conditions of the Canadian Prairies, giving a range of variation of N2O emissions from 0,16 to 0,8kgN2O-N per 100kg of N fertilizer, below the default IPCC standard (1.0). Another AAFC communication explored the use of satellite remote sensing to assess the risk of sclerotinia using risk grid criteria: mobilization of historical data on the crops in fields, observation of areas where the soil remains wet, crop phenology by cross-referencing observations with crop models, all leading to a prototype disease risk assessment tool, the DiRT, "which does not identify and predict the existence of the disease but provides a framework of geolocalized data to test existing models, hypotheses and develop new prediction models". Interesting idea for R&D, and perhaps practical applications in the future.
- Regarding genetics and breeding, the University of Alberta (Gavin Chen) worked on the development of a GMO canola rich in punicic acid (C18:3 / delta9cis-11trans-13cis), with promising results at lab level. Punicic acid is naturally present in pomegranate seeds (65% of GA), and is believed to have anticancer activity on prostate cancer, used in food supplements and cosmetics. A very interesting presentation was done by Sally MacKenzye (Pensilvania State University) on the introduction of epigenetics in plant breeding, based on the possibility of creating phenotypic variability and a memory of the stresses endured. The work was carried out on tomato, soybean, sorghum, millet, tobacco, and canola, and published in May 2020: https://doi.org/10.1038/s41467-020-16036-8)
- On valorization aspects, let us highlight a presentation by Christopher Hald, Technical University of Munich, on the role of Kaempferol-glycoside as the origin of the bitterness of proteins from rapeseed using a "sensomics analysis" approach. The cruciferin fraction of rapeseed proteins is predominantly bitter, astringent, and sour, whereas napins are predominantly astringent. HPLC analyses enable the Kaempferol-glycoside to be identified. The levels in rapeseed are then measured, and the impact on bitterness confirmed by adding the compound to milk casein. The authors conclude on the technological and genetic pathways to reduce bitterness.

- **Canada: highlights on Canola protein challenges by Johann F. Tergesenn President and CEO of Burcon**

The USCA Blog reported on October 28th, 2020, J.F. Fergensen's vision of the recent movements and perspectives regarding the use of vegetable proteins, notably canola's, in food industries. New added value for rapeseed/canola products is good news for the sector, in the hope that part of the added value will go back up the value chain. See https://www.uscanola.com/news-views/usca-blog/canola-protein-for-foods-and-beverages-coming-soon/.

- **Gene editing can modify canola architecture**

A study lead by researchers at the University of Calgary used gene editing to modify canola's genes, producing shorter plants with more branches and flowers which could potentially increase the crop's yield, the university says in a news release on Feb. 1. Read more on https://seedworld.com/new-study-finds-possible-higher-yielding-canola/ Source: SeedWorld.com, reported by W. Keller.

For the original publication in Plant Biotechnology Journal last November: see section Scientific news/Breeding: Stanic M et al.

- **UK: London launches consultation to review its regulations on gene editing (source AgraPresse, January 13, 2021)**

The British Agriculture Minister, George Eustice, announced on January 7th the launch of a consultation on gene editing techniques in agriculture, with a view to a less stringent regulation than the European GMO regulation. The UK minister promises more flexible regulation than the one in force in Europe since the European Court of Justice (ECJ) associated with the GMO directive the other new genome-modification technologies (NBTs) that emerged after the GMO directive was adopted in 2001.

- **China: rapeseed production stable around 13,5MT**

"Marketing Year 20/21 rapeseed production is forecast at 13.5 MMT, higher than the USDA official and US Foreign Agricultural Service China estimates for the previous year based on a slightly higher marketing price due to decreased imports. The China's National Grain and Oils Information Center forecast for 20/21 rapeseed production is 13.9 MMT, basically unchanged from its production estimate for 19/20." Source USDA Oilseeds and products update Oct 2020

- **India: high demand for mustard oil**

In India during cropping season 2020-21, the area under rapeseed and mustard, the main winter oilseeds have increased by 6.7% to 7.3 million hectares. This is the highest ever area cultivated under rabi oilseeds. Strong demand for mustard oil during the COVID-19 pandemic and higher crushing may also contribute to higher sowing this year. Mustard oil is considered to be an immunity booster. Mustard prices rose to a record high of 6,400 rupees per 100 kg (equal to 727 euro per metric ton) during last months. Source: P. Sharma, ICAR.

- **High prices on oilseeds, oils, and meals markets**

World prices of basic foodstuffs soared in January to their highest level since July 2014, driven by rising prices of cereals, oils and sugar, the FAO announced on February 4th. The monthly rise in vegetable oils was 5.8%, its highest level since May 2012, with a "staggering increase" of 14.5% compared to October. The rise in vegetable oils would be due to lower-than-expected palm oil production in Indonesia and Malaysia due to excessive rains and a persistent shortage of migrant workers. Soybean prices have also soared over the past 8 months due to reductions in export availability, strikes in Argentina, and strong demand from China. The two price drivers of the oilseed complex are therefore under pressure.

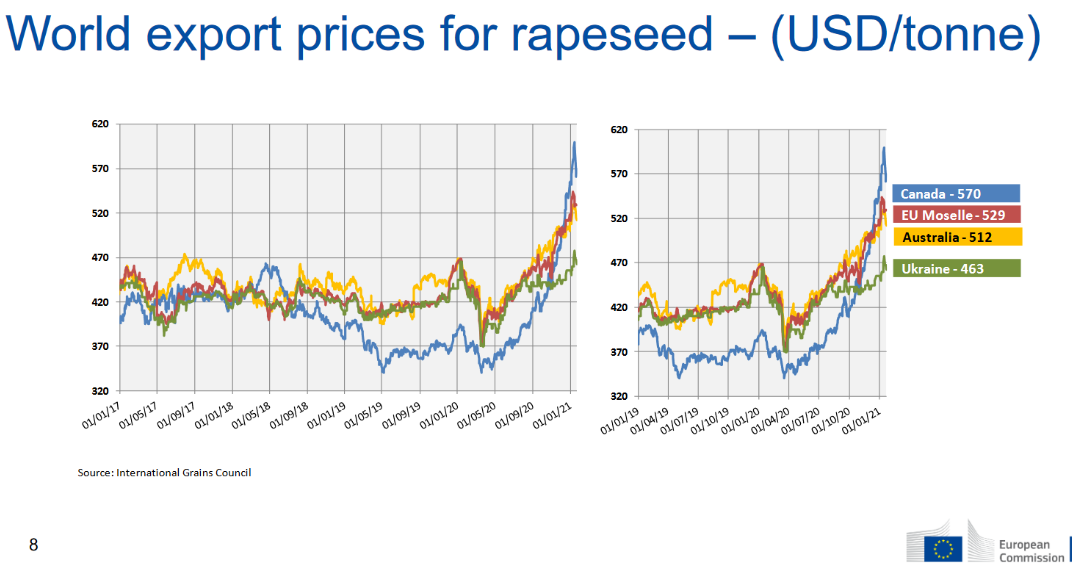
A presentation by the European Commission dated January 28th summarizes these trends: Global oilseed production is expected to be further reduced to 594 million tons on unfavorable weather in South America and Black Sea region. Prices of Oilseeds continued to increase sharply at the end of 2020 and start of 2021 on unfavorable conditions in producing regions and strong demand. Lately the trend slowed down on news of beneficial rains is South America and hopes of steep in-crease in acreage and production next season, driven by current high prices. Rapeseed prices also slowed down after recent sharp increases and seem to stabilize at high levels. Ukraine remains the most competitive origin for EU market. Global rapeseed production seems stable at 69 million tons.

See FAO: http://www.fao.org/worldfoodsituation/foodpricesindex/en/

See USDA: https://apps.fas.usda.gov/psdonline/circulars/oilseeds.pdf

Seed “Chart of the week (02 2021) on UFOP website: Soybean prices drove oilseed meal prices:
https://www.ufop.de/english/news/chart-week/

See EU Commission: https://circabc.europa.eu/sd/a/215a681a-5f50-4a4b-a953-e8fc6336819c/oilseeds-market%20situation.pdf):



- **Europe: BASF and VanderSat: new tool for rapeseed monitoring:**

Germany's BASF and Holland's VanderSat have announced on January 25th that they have signed a commercial agreement to provide daily images of biomass without interference from cloud cover. The VanderSat tool, based on passive microwave technology, will be grafted onto the decision support tool for monitoring the health of rapeseed, wheat and winter barley designed by Xarvio (BASF Digital farming) to enable farmers to "accurately monitor crop growth". Tests were successfully conducted in Germany, Ukraine, the United Kingdom, Canada, and Brazil during the 2019-20 campaign. They are based on three different satellite technologies: a VanderSat method, based on passive microwave technology, active microwaves, and optical images from the European agency ESA's Sentinel satellites.

The tool, which will be operational by the end of March, will be offered first in North and Latin America, and then beyond in the course of 2021. Only the United States, Canada, Brazil, Argentina, Germany, and Ukraine are currently targeted. Source AgraPresse, January 27, 2021

Scientific news

Publications:

BREEDING

Focus: *Reported by Wilf Keller, former GCIRC President, this article gives an overview of the use of genetic and gene technologies, for a better understanding of what is at stake with these technologies for rapeseed/canola future.*

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Chen, X., Tong, C., Zhang, X., Song, A., Hu, M., Dong, W., ... & Zhang, L. (2020). A high-quality *Brassica napus* **genome** reveals expansion of transposable elements, subgenome evolution and disease resistance. Plant Biotechnology Journal. https://doi.org/10.1111/pbi.13493

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CROP PROTECTION

Focus: *A publication which develops the ideas introduced by A. von Tiedemann in his keynote at the last IRC, in Berlin, June 2019. At that time, it provoked some reactions in the room: changing perspective is always difficult… but often necessary to build the future.*

Zheng, X., Koopmann, B., Ulber, B., & von Tiedemann, A. (2020). A Global Survey on **Diseases and Pests** in Oilseed Rape—Current Challenges and Innovative Strategies of Control. Frontiers in Agronomy, 2, 1-15. https://doi.org/10.3389/fagro.2020.590908

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