

January 2019

# canola DIGEST

The Source for Canada's  
Canola Growers

## SEE WEEDS, SPRAY THEM

Optimal spot spraying is finally making in-roads in North America. / Page 10

### INSIDE:

Use 'big data' when it  
provides a clear benefit / Page 14

FARMER PANEL: I want that / Page 22

What is the most economical  
seeding rate? / Page 36





# A Better Harvest is Just Steps Away

## Set it and forget it with Combine Advisor™

Your S700 Combine can automatically maintain harvest settings — throughout changing conditions or with an inexperienced operator. It's as easy as 1-2-3!

The first step is get your combine set. When you've been running your combine for a few hours and it's set to the grain quality and loss levels you want, it's time to enable Combine Advisor. Just select the ICA2 button on the run screen and make sure your current priorities are correct. Next, turn on Auto-Maintain. This will maintain the grain quality and loss levels that you have set throughout the day. And last, select the Set Performance Target button. This locks in your current settings.

Now, you're ready to keep harvesting, without worrying about changing conditions. How easy was that? Is your S700 Combine not equipped with Combine Advisor? No problem. Ask your dealer for details.

**Nothing runs like a Deere.**



**JOHN DEERE**



10

## SEE WEEDS, SPRAY THEM

Optimal spot spraying is finally making in-roads in North America. Sprayers can detect the presence of weeds and turn on and off each nozzle as needed. It can mean huge savings in overall application rates.

14

## Use 'big data' when it provides a clear benefit

Terry Griffin from Kansas State University says farmers don't need to rush into data collection, sharing and analysis. When the business case is strong enough, farmers will move into that space in a big way.

16

## What fertilizer practices are the worst for losses?

Crop fertilizer specialists from across the Prairies describe the worst scenarios for loss and recommend better alternatives or ways that enhanced-efficiency products might help.

19

## Cargill launches omega-3 canola for fish feed

With the rise in aquaculture, sustainability requires an alternative to feeding fish to fish. Cargill's Latitude canola-based fish oil provides a solution.

32

## Dairy-driven Wisconsin sees canola meal benefit

Marketing Canadian canola meal to the American dairy industry takes on a Midwest focus, using on-farm trials in Wisconsin to show how higher usage levels can lead to higher milk yields.

34

## Clubroot around the world

One thing attendees learned at the International Clubroot Workshop last summer is how widespread clubroot has become in brassica-crop-growing areas around the world.

## 36 CANOLA DISCOVERY FORUM SECTION

### What is the most economical seeding rate?

The major theme at Canola Discovery Forum 2018 was canola crop establishment, with part of the discussion dedicated to seeding rates. The following article will help canola farmers think through the economics behind their target stands and the seeding rates required to achieve them.

### Non-farmed spaces have real value

Canola Discovery Forum 2018 in Banff included two presentations on the profit-driving diversity that shelterbelts, wetlands, fencelines and pivot corners provide to the farm.

### Communications lesson: Telling them over and over and over again

The public often needs simple messages repeated often before behaviours or impressions start to change. Sometimes finding common ground with the opposition can help.

40

## Take time needed for neonic review

The Canadian canola industry is asking the PMRA to take time and consider incoming research results before making a final decision on neonicotinoid seed treatments.



## DEPARTMENTS

### 22 Farmer panel I want that

Canola Digest asked four farmers what ag innovations they think could make an immediate positive impact on their operations.

### 26 Agronomy Insights From the CCC agronomy team

Clint Jurke provides a short report from the U.S. Canola Association's National Canola Research Conference in Baltimore. See the new Stand Establishment video at the Canola Research Hub. Mark your calendar for Combine College.

### 30 Business management Sharing data? Look for companies with ADT certification

Farm Credit Canada is the first Canadian company certified through Ag Data Transparent, a program based on data principles established by the American Farm Bureau Federation.

26

## PROVINCIAL BULLETINS

### 4 ALBERTA CANOLA

Alberta Canola's annual general meeting during FarmTech on January 29 will include director elections. Get unprecedented access to Alberta's top farm business management advisors at the Leading Edge Conference.

### 6 SaskCanola

SaskCanola's market development, advocacy and research investments are featured in its latest annual report. The new Saskatchewan Soil Information System is one program that benefited from SaskCanola funding.

### 8 Manitoba Canola Growers

Manitoba Canola Growers hosts various events through the year, and is partnering more with other commodity groups to stretch your check-off dollars. CropConnect and Crops-A-Palooza are just two examples.

## CALENDAR

### SASKCANOLA ANNUAL GENERAL MEETING

January 14 | Saskatoon, Saskatchewan  
[saskcanola.com/news/saskcanola-agm](http://saskcanola.com/news/saskcanola-agm)

### CROSPHERE

January 15-16 | Saskatoon, Saskatchewan  
[saskcanola.com/news/cropsphere](http://saskcanola.com/news/cropsphere)

### CROP PRODUCTION SHOW

January 14-17 | Saskatoon, Saskatchewan  
[cropproductiononline.com](http://cropproductiononline.com)

### MANITOBA AG DAYS

January 22-24 | Brandon, Manitoba  
[agdays.com](http://agdays.com)

### FARMTECH

January 29-31 | Edmonton, Alberta  
[farmtechconference.com](http://farmtechconference.com)

### ALBERTA CANOLA ANNUAL GENERAL MEETING

January 29 | Edmonton, Alberta  
[albertacanola.com/agm](http://albertacanola.com/agm)

### TOP NOTCH FARMING 2019

February 06 | Lloydminster, Saskatchewan  
February 07 | North Battleford, Saskatchewan  
February 08 | Swift Current, Saskatchewan  
February 12 | Melfort, Saskatchewan  
February 13 | Humboldt, Saskatchewan  
February 14 | Davidson, Saskatchewan  
[saskcanola.com/news/top-notch-farming1](http://saskcanola.com/news/top-notch-farming1)

### CROPCONNECT

February 13-14  
Winnipeg, Manitoba  
[www.cropconnectconference.ca](http://www.cropconnectconference.ca)

### MCGA ANNUAL GENERAL MEETING

February 14  
Winnipeg, Manitoba  
[canolagrowers.com/about-mcga/annual-general-meetings/](http://canolagrowers.com/about-mcga/annual-general-meetings/)

### LEADING EDGE – FARM MANAGEMENT CONFERENCE

February 26-27 | Red Deer, Alberta  
[albertacanola.com/leadingedge](http://albertacanola.com/leadingedge)

### CANOLA LEADERSHIP CONFERENCE

February 27-28  
Brandon, Manitoba  
[canolagrowers.com](http://canolagrowers.com)

### CANADIAN CROPS CONVENTION

March 5-7  
Montreal, Quebec  
[convention.canolacouncil.org](http://convention.canolacouncil.org)







# Wilderness tips

**I**n his book *1491*, Charles C. Mann wrote about the Americas before the arrival of Christopher Columbus in 1492. The book includes insights too numerous to mention in this small space, but I'll focus on one insight most relevant to Canadian agriculture and the goal of many farmers: Indigenous people knew how to greatly enhance soil productivity. (That Indigenous people of the Americas knew how to farm goes without saying. They basically created corn, now the biggest crop in the world, and produced many other crops that are common to this day).

In a chapter called "Amazonia," Mann describes how the vast Amazonian rainforest, an area we once considered the true definition of wilderness, had been tailored for generations and generations before 1492 to suit the people living there. To start with, an overwhelming and unnatural percentage of trees in the Amazon forest produce human food. This is a result of deliberate selection by the people living there. Mann quoted Peter Stahl, an anthropologist with the State University of New York in Binghamton, saying, "what the eco-imagery would like to picture as a pristine and untouched [primeval world] in fact has been managed by people for millennia."

A big part of this "management" includes soil-building. Scientists exploring Amazonia discovered vast areas of rich, fertile soil that anthropologists believe was made by human beings, who added high-nutrient inputs – including excrement and animal bones – to increase productivity. The soil had more plant-available nutrients and more organic matter than is common in the rain forest, Mann writes, and the high-quality soil was not rapidly exhausted by agriculture use. A key added ingredient, says Bruno Glaser, a chemist at the University of Bayreuth in Germany, was charcoal.

The man-made soil had up to 64 times more charcoal than surrounding red soil. The added charcoal was so important to soil stability and quality, Mann writes, because "organic matter sticks to charcoal" and doesn't wash away. He notes that the charcoal wasn't from slash and burn clearing of the forest, which wouldn't yield enough to make a lasting difference, but from years of adding partially-burned biomass.

The point I want to make in sharing these excerpts is not that we should add charcoal to our soil, but that we have a lesson to learn from the people of Amazonia, who deliberately built up highly-productive soil knowing its importance to their communities and their survival. Mann quotes Glaser again: "They practiced agriculture here for centuries. But instead of destroying the soil, they improved it."

With all the technological advances, with all the knowledge we have accumulated, what excuse does agriculture anywhere in the world today have for degrading soil when the so-called primitive people of Amazonia figured out how to improve soil productivity hundreds and thousands of years ago?

Efforts in Canada to protect soils through minimum tillage, to focus on productive areas and set-aside land prone to flooding or chronic unprofitability, to follow 4R practices to improve nutrient return on investment, to use maintenance rates of fertilizer, to perhaps lime appropriately, to make better use of manure and, finally, to recycle waste from sewage treatment plants are all steps that can improve our soil productivity. The sidebar on Crystal Green on page 18 of this issue indicates another advance in the recycling of nutrients from waste. Protecting soil while also maintaining the productive diversity of the "forest" around us is not a fad. It is one major thing we in agriculture can do, in our time, to move humanity forward. 🌱



## EDITORIAL OFFICE

Jay Whetter, Editor  
Canola Council of Canada  
400 – 167 Lombard Avenue  
Winnipeg, MB R3B 0T6  
(807) 468-4006  
Email: whetterj@canolacouncil.org

**Publisher:** Canola Council of Canada  
400 – 167 Lombard Avenue  
Winnipeg, MB R3B 0T6  
(204) 982-2100 Fax: (204) 942-1841

**Production:** Suckerpunch Creative  
(204) 452-9446  
Email: hello@suckerpunch.ca  
www.suckerpunch.ca

## ADVERTISING SALES: WTR Media Sales Inc.

1024 – 17 Avenue SE  
Calgary, AB T2G 1J8  
Robert Samletzki (403) 296-1346  
Toll free: 1-888-296-1987  
Email: robert@wtrmedia.com  
Linda Samletzki  
(403) 296-1349  
Toll free: 1-888-296-1987  
Email: linda@wtrmedia.com



## Alberta Canola OFFICE

Ward Toma, Alberta Canola  
Producers Commission  
14560 – 116 Avenue NW  
Edmonton, AB T5M 3E9  
(780) 454-0844 Fax: (780) 451-6933  
Email: ward@albertacanola.com



## SaskCanola OFFICE

Lisa Horn, SaskCanola  
212 – 111 Research Drive  
Saskatoon, SK S7N 3R2  
(306) 975-0262 Fax: (306) 975-0136  
Email: lhorn@saskcanola.com



## MCGA OFFICE

Delaney Ross Burntnack,  
Manitoba Canola Growers Association  
400 – 167 Lombard Avenue  
Winnipeg, MB R3B 0T6  
(204) 982-2120 Fax: (204) 942-1841  
Email: delaney@canolagrowers.com

## THE CANOLA DIGEST

is a joint publication of the Alberta Canola Producers Commission (ACPC), SaskCanola, the Manitoba Canola Growers Association (MCGA) and the Canola Council of Canada.

## SUBSCRIPTION INQUIRIES, ADDRESS CHANGES OR CANCELLATIONS

British Columbia ..... 250-262-6585  
Alberta ..... 780-454-0844  
Saskatchewan ..... 877-241-7044  
Manitoba ..... 204-982-2122  
Ontario ..... 519-986-3519  
All others ..... 204-982-2100  
Toll Free ..... 866-834-4378

To subscribe,  
visit [canoladigest.ca/subscribe/](http://canoladigest.ca/subscribe/)

## CANADIAN POSTMASTER

Send address changes and undeliverable copies (covers only) to:  
400 – 167 Lombard Avenue  
Winnipeg, MB R3B 0T6

## PRINTED IN CANADA

ISSN 0715-3651  
Postage paid in Winnipeg, MB  
Publication Mail Sales Agreement  
#40027283





## Alberta Canola Producers Commission Annual General Meeting



**TUESDAY, JANUARY 29 | EDMONTON EXPO CENTRE**

Alberta Canola's Annual General Meeting (AGM) takes place during the FarmTech Conference. There is no charge to attend the AGM, and registration to FarmTech is not required to attend the AGM.

AGM agenda includes:

- A review of the activities, audited financial statements and budget for Alberta Canola.
- Voting on resolutions. Resolutions to be presented at Alberta Canola's AGM must be received no less than 10 business days prior (January 15, 2019) to the AGM to allow for background to be collected and resolutions to be prepared for presentation at the meeting.

- Director elections. Nominations will be taken from the floor to elect a director to fill a vacancy in Regions 11 and 12. For information on Regions 11 and 12 and becoming a director, visit [albertacanola.com/elections](http://albertacanola.com/elections).



For information on the FarmTech conference visit [farmtechconference.com](http://farmtechconference.com).

## Alberta Canola – working for all canola growers in Alberta



Alberta Canola focuses on four key areas:

- Research
- Grower Relations and Extension
- Public Engagement and Promotion
- Government and Industry Affairs

Our activities in these areas are guided by our elected farmer directors and driven by our mission statement: to improve the long-term profitability of Alberta's canola producers. For complete details, check out our Annual Report and our 'Year in Review' video (featuring the farmer directors) on our website at [albertacanola.com/annualreport](http://albertacanola.com/annualreport).

# Leading Edge Farm Management Conference

## Leading Edge – The Next Generation

**FEBRUARY 26 & 27, 2019 | RED DEER – HOLIDAY INN & SUITES ON GASOLINE ALLEY**

The Leading Edge Farm Management Conference gives delegates unprecedented access to Alberta's top farm business management advisors. The 2019 event is being specifically designed for those that are in the earlier stages of their farming careers.



### This year's confirmed speakers include:



**DAVID IRVINE**

The Leader's Navigator



**MERLE GOOD**

Independent Farm Management Consultant



**DEAN GALLIMORE**

Independent Chartered Accountant & Business Valuator



**RYAN STEVENSON**

Partner – Tax & Valuations, KPMG



**ROB STRILCHUK**

Tax Advisor – Agriculture, MNP



Register now at [albertacanola.com/leadingedge](http://albertacanola.com/leadingedge).

## New website for talking canola



**LearnCanola.com** is the sister site to **albertacanola.com**. Alberta Canola chose to have two websites in order to better highlight the right information to the right audience. By sending Alberta teachers to **learnCanola.com**, the teachers can easily and quickly order learning resources for their classrooms online. While on the site, they can also look up the latest news on canola and canola oil. Students doing research for a class project on agriculture and canola can access **learnCanola.com** to find accurate information or read the blog.

**LearnCanola.com** also has some valuable tools for Canola Growers. Growers can link to **learnCanola.com** from **albertacanola.com** through the 'Teachers, Parents & Kids' link on the top toolbar or access the site directly. Growers can access talking points they need to be advocates for agriculture. Simply presented information on canola history, farming practices and fatty acids are shared via the 'Jo the Grower' series so that growers can answer consumer questions about the canola crop they grow. Whether you are a consumer, a teacher, a student or a grower, **learnCanola.com** has relevant information for you.



**WAYNE SCHNEIDER**

## Alberta Canola Director Nomination Results

The call for nominations for farmers to serve on the Board of Directors of the Alberta Canola Producers Commission resulted in three canola producers being elected by acclamation. The nomination deadline was October 31, 2018.

- Wayne Schneider from Nisku will replace outgoing director Renn Breitzkreuz from Onoway in Region 6.
- Denis Guindon from Falher will serve a second term as director in Region 3.
- Kevin Serfas from Turin will serve a second term as director for Region 9.
- Region 12 received no nominations and therefore an election for director will occur at the Annual General Meeting during FarmTech on January 29, 2019.





## LEARN TO LEAD



## Learn to Lead

On November 22, SaskCanola hosted a performance strategies workshop for 13 Learn to Lead alumni. Later that evening, the alumni and the in-coming 2019 delegation became acquainted with each other during a networking reception.

Then on November 23 and 24, SaskCanola hosted its third annual leadership workshop that saw 21 Saskatchewan farmers partake in a two-day event that included sessions on governance, media training and decision making. Under SaskCanola's strategic plan, 'Producer Engagement' is one of four key pillars. Fostering leadership capacity in Saskatchewan's agriculture sector has been identified as a top priority within said pillar. If you are interested in future leadership events and opportunities with SaskCanola, please contact the SaskCanola office at 306-975-0262.

## SaskCanola... representing Saskatchewan canola growers since 1991

SaskCanola invests in research, advocacy and market development (provincially and nationally) to grow producer prosperity on your behalf, all guided by our grower-elected board of directors.

For a summary of SaskCanola's accomplishments in 2017-18, check out our annual report – available on our website at [saskcanola.com/about/report](http://saskcanola.com/about/report).



## Save the date

Don't miss these upcoming events!  
Hosted or sponsored by SaskCanola.

### SASKCANOLA ANNUAL GENERAL MEETING

**Saskatoon** – January 14, 2019

SaskCanola's AGM will be held prior to the start of CropSphere at TCU Place. Canola producers may attend the AGM without registering for CropSphere.

### CROPSPHERE

**Saskatoon** – January 15 & 16, 2019

Ideas, Innovation and Knowledge. The CropSphere conference features sessions on market outlook, research and agronomy, along with sessions specific to each crop.

### CROP PRODUCTION SHOW

**Saskatoon** – January 14 to 17, 2019

Canola Council of Canada and SaskCanola will be exhibiting together in Hall B at Prairieland Park.

### TOP NOTCH FARMING 2019

**Lloydminster** – February 6, 2019

**North Battleford** – February 7, 2019

**Swift Current** – February 8, 2019

**Melfort** – February 12, 2019

**Humboldt** – February 13, 2019

**Davidson** – February 14, 2019

A day of agronomy, marketing and management information.

### COMBINE COLLEGE

**Saskatoon** – March 2019

A hands-on, interactive workshop with multiple combine manufacturers and harvest management discussions.

### CANOLAPALOOZA

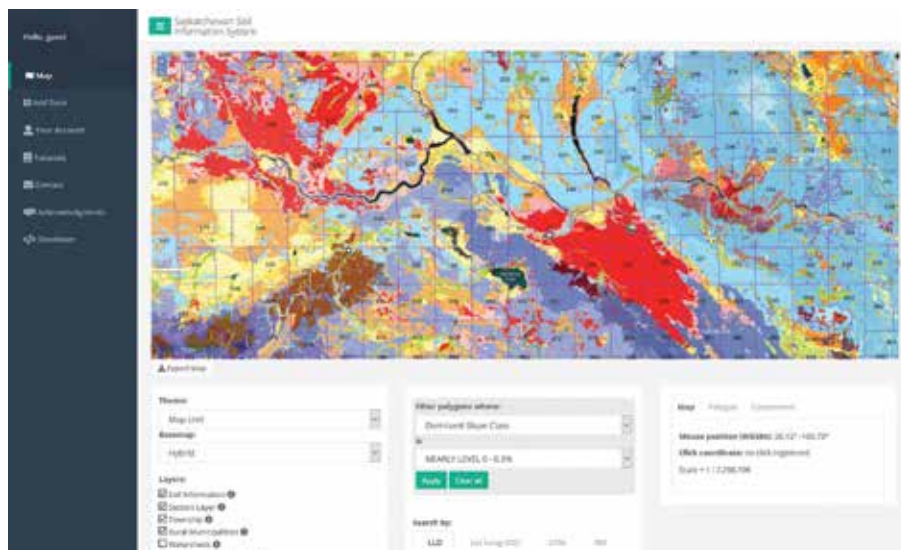
**Saskatoon** – July 9, 2019

The canola agronomy event of the summer.

Visit [saskcanola.com](http://saskcanola.com) for event registration information.

Follow @SaskCanola on Facebook and Twitter to receive important news and event updates!





Look for your own fields at [sksis.usask.ca](http://sksis.usask.ca). Click the 'Map' tab on the top left then use the filters and zoom in to find specific details for specific fields.



## Access soil data through your cellphone

SaskCanola Invests in Enhanced Saskatchewan Soil Data for Sustainable Land Management.

Researchers at the University of Saskatchewan and collaborators initiated a project in 2016 to design and develop a new enhanced data framework to store and access Saskatchewan soil information. The Saskatchewan Soil Information System (SKSIS) was officially launched in 2018.

"SaskCanola is proud to invest in the SKSIS project bringing important soils information into the hands and cell-phones of growers," says Bernie McClean, SaskCanola board member and chair of

the research committee. "Until now, this information was only available in hard copy format. SKSIS makes information readily available in a digital format, improving access to growers and agronomists, and will be a baseline for making future land management decisions."

SKSIS provides the foundation for land management and decision support tools in making field-specific recommendations. It is available for both desktop and mobile users wanting to identify soil

properties at a specific location, with the mobile access platform using smart-phone GPS technology to establish user location. "SKSIS helps users get a better understanding of the existing soil survey data and the capability and sources of limitations of the land," explains Angela Bedard-Haughn, professor of soil science and associate dean at the University of Saskatchewan College of Agriculture and Bioresources. "The site can also be used to better understand variability in the field and inform nutrient planning, when used in concert with variable rate equipment or other precision ag technologies."

Android and Apple apps are currently in development to allow users in poor data connections areas to directly download maps. Bedard-Haughn adds they are developing a framework to allow users to upload and share their data, which can then be incorporated into the maps. "We are also working on a refined mapping approach using new digital soil mapping technologies to develop finer scale maps down to a quarter-section. We will continue to enhance SKSIS usability and accessibility for a wider audience."

Visit [sksis.usask.ca](http://sksis.usask.ca) to view the Saskatchewan Soil Information System.

## Research Tax Credit

Scientific Research and Experimental Development (SR&ED) is a federal government program designed to encourage research and development through tax-based incentives. SaskCanola invests a significant amount of the producer levy contributions in research to manage new challenges farmers face in their fields. As a result of the research investment, SaskCanola is able to participate in this program and the benefits are passed along to the producers. These tax credits can be claimed by filing form T2038(IND) for individuals or T2SCH31 for corporations.

In addition, farm corporations may claim a portion of their levy contributions as a qualifying expenditure towards the Saskatchewan Research and Development Tax Credit by filing form T2SCH403.

More information is available at [saskcanola.com/research/taxcredit](http://saskcanola.com/research/taxcredit).





## Commodity Group Partnerships

Maximizing your check-off dollars for membership learning opportunities

Being cautious and fiscally responsible in stretching check-off funds for maximum effect is a priority for the Manitoba Canola Growers (MCGA). The goal is to leverage each dollar two to three times, at a minimum.

“Collaboration and partnerships are a key strategy for MCGA,” says Roberta Galbraith, grower engagement and extension manager. “Leveraging grower dollars for the most impactful learning events while balancing the individual commodity voice is a win-win for everyone.”

In the planning process, MCGA is also cognizant of the value of your time away from the farm and we strive to be as efficient as possible. Collaborating with other organizations for larger events, such as CropConnect and Crops-A-Palooza,

where multiple crops are showcased, makes sense and does exceedingly well in meeting both financial and time-management goals.

All of the following events are designed with growers in mind and are in keeping with MCGA’s mission statement to “maximize net income for canola farmers through sustainable production.”

### Collaborative events that leverage grower dollars

| Event               | Number of organizations collaborating | Leverage ratio (MCGA contribution ratio) |
|---------------------|---------------------------------------|--|
| CropConnect 2018*   | 8                                     | 7:1                                      |
| canoLAB/soyLAB 2018 | 3                                     | 3:1                                      |
| Crops-A-Palooza*    | 7                                     | 5:1                                      |

\*Sponsorship also supported these events.

### CropConnect Conference



The annual two-day CropConnect Conference, which began in 2013, brings together farmers, suppliers and commodity groups. Topics cover new technologies, environmental issues, agronomy, farm management practices and advocacy. A trade-show with crop-specific information runs in conjunction with the conference. Last year this popular event sold out with 800 participants each day.

Manitoba Canola Growers Association, Manitoba Corn Growers Association, Manitoba Flax Growers Association, Manitoba Pulse and Soybean Growers, Manitoba Oat Growers Association, Manitoba Seed Growers Association, the National Sunflower Association of Canada, Winter Cereals Manitoba and Manitoba Wheat and Barley Growers Association make up the host committee.

The event also includes each participating organization’s annual general meeting (AGM). The MCGA AGM is February 14 at 7:30 a.m. in the Wellington Room at the host hotel, Winnipeg’s Victoria Inn. While there is no charge to attend the annual meetings, event passes and banquet tickets must be purchased. Young (under 46) or beginning farmers can apply for funding under the Ag Action Manitoba Program. For more information and registration, go to [cropconnectconference.ca](http://cropconnectconference.ca).



**CropConnect**  
Conference

### Crops-A-Palooza



After two summers of hosting canola-PALOOZA, a one-day, hands-on, in-field learning event, six other commodity groups joined Manitoba Canola Growers to host a new version of the event.

Manitoba Canola Growers and Manitoba Corn Growers, Manitoba Flax Growers, Manitoba Pulse and Soybean Growers, Manitoba Wheat and Barley Growers, National Sunflower Association of Canada and Manitoba Oat Growers, along with the Canola Council of Canada, hosted the first annual Crops-A-Palooza at AAFC Portage la Prairie on July 25, 2018.

Close to 400 people attended this free, family-friendly day with a wide variety of interactive stations manned by industry research and agronomy extension professionals. There are no set presentation times. Attendees go at their own pace, choosing stations applicable to them, spending as much as they want at each one. This casual come-and-go style is a great fit for farmers at a busy time of year. Topics covered varied from insect, weed and disease management to fertilizer, soil, safety, crop grading and even farm-to-food conversations. This past year included a kids corner with Agriculture in the Classroom-Manitoba.





## STAY CONNECTED.

Sign up for our Canola Crush Newsletter today! Visit [www.CanolaGrowers.com](http://www.CanolaGrowers.com)



# and Collaborations

## Combine College



CanolAB, a diagnostic workshop with live plants and insects, began in 2012. This partnership with the Canola Council of Canada (CCC) and Assiniboine Community College took place each March, initially in Brandon and then Dauphin as well. The event was open to farmers, retail agronomists, company representatives or anyone in the industry looking for hands-on education.

Participants rotated through different sessions on canola production topics led by Western Canada's top researchers and extension professionals. In 2018, Manitoba Canola Growers co-hosted canolAB/soyLAB with the Manitoba Pulse and Soybean Growers to cover both crops and maximize grower investment even further. The fee was \$125 with a reduced rate for farmers who were members of the grower groups.

This March, canolAB will be replaced by Combine College with a focus on harvest loss management and storage. Manitoba Canola Growers partners for this event will be the CCC, Manitoba Wheat and Barley Growers and Manitoba Corn Growers Association. It will take place at the Keystone Centre in Brandon. Every type of combine will be there with qualified technicians/engineers to help you set your machine for maximum results. Representatives from Prairie Agricultural Machinery Institute (PAMI) will also be in attendance. Cost to attend will be \$75, with farmers receiving a rebate of \$25 per membership in each grower organization.

## Ag Days and Canola Day



Canola Day is the first morning of Manitoba Ag Days in Brandon. Canola Day programming and expenses are covered by MCGA and CCC, with Ag Days providing the space.



## Learn to Lead



Manitoba Canola Growers also recognizes the importance of leadership throughout the province, regardless of where farmers might serve – whether it be a commodity board, in municipal politics or any local board within their community. The Canola Leadership Conference began in 2013 to fill a void where opportunities for such training was previously filled by organizations like Manitoba Pool or United Grain Growers. To date 100 young farmers have been through the program. The next conference titled Learn to Lead will be held February 27 & 28 in Brandon. The cost is covered by MCGA through funding and sponsorship. If you, or anyone you know, would be interested please contact Roberta Galbraith, grower engagement and extension manager, at 204-874-2387 or [roberta@canolagrowers.com](mailto:roberta@canolagrowers.com).

## Mark Your Calendars



### MANITOBA AG DAYS

Keystone Centre | Brandon, Man.  
January 22-24, 2019  
[agdays.com](http://agdays.com)

### CROPCONNECT

Victoria Inn Hotel & Conference Centre  
Winnipeg, Man. – February 13-14, 2019  
[cropconnectconference.ca](http://cropconnectconference.ca)

### MCGA ANNUAL GENERAL MEETING

Victoria Inn Hotel & Conference Centre  
Winnipeg, Man. – February 14, 2019  
Hot breakfast served at 7:00 am  
Meeting starts at 7:30 am

### LEARN TO LEAD

Victoria Inn | Brandon, Man.  
February 27 & 28, 2019

### COMBINE COLLEGE

Keystone Centre | Brandon, Man.  
March 20, 2019

### CROPS-A-PALOOZA

Canada-Manitoba Crop Diversification  
Centre (CMCDC) | Carberry, Man.  
July 24, 2019

## Stay Connected with MCGA!



To ensure you don't miss an opportunity to take part in

upcoming programs, please visit our websites [canolagrowers.com](http://canolagrowers.com) and [canolaeatwell.com](http://canolaeatwell.com) where you can also sign up for our Canola Crush and Canola Eat Well newsletters.

### Follow us on Social Media!



@ManitobaCanolaGrowers  
@CanolaEatWell



@CanolaGrowers  
@CanolaEatWell



@CanolaGrowers  
@CanolaEatWell

Optimal spot spraying is finally making in-roads in North America. Sprayers can detect the presence of weeds and turn on and off each nozzle as needed. It can mean huge savings in overall application rates.

---

# SEE WEEDS, SPRAY THEM

BY TOM WOLF

---

**S**ite-specific treatments have long been a goal in agriculture. It makes sense to provide inputs or treatment at rates that reflect the local situation. To a large degree, those capabilities have been available for fertility and seed inputs for some time, with input zones reflecting soil types and topography, but the sprayer world has not seen as much site-specific treatment.

One reason for the delay in site-specific spraying is that pest maps are time-consuming to generate and their usefulness may be short-lived. Or perhaps weeds are fairly ubiquitous, and it usually makes sense to treat an entire field. Another is that sprays are relatively inexpensive compared to fertilizer or seed.

But for spraying, we need to re-define site-specific. While traditional zone maps (corresponding to, say, soil type and elevation or slope position) allow unique treatments on a scale of acres, new sensors have allowed sprayers to basically leapfrog this approach





and treat each square foot uniquely. These sensors identify plants directly and create an immediate treatment response.

The idea, and technology, have been around agriculture since the early 1990s, with the Concord DetectSpray and later the Trimble WeedSeeker. For various reasons, these never became widespread. New cutting edge technologies are about to change this.

WEEDit is an optical spot spraying system manufactured in the Netherlands by Rometron, and has been available on the market for several years. It is widely adopted for use in Australia and South America, is now making inroads in North America.

WEEDit spray booms contain sensors placed at one metre intervals. These scan the ground ahead of the boom, identify the presence of plants, and trigger the nozzle in line with the plant. The sensor contains five channels so that its resolution is actually 20 cm wide. The boom therefore contains a nozzle every 20 cm, and this nozzle has a correspondingly narrow fan angle that treats just this space.

The detection principle is based on the quality of light that is reflected from living plant tissue compared to everything else. A red or blue light is emitted, and chlorophyll-containing plants reflect a unique wavelength that differentiates them from ground or dead plant material. Response time of the system is very fast. Triggered by small solenoids, a travel speed of up to 15 mph is possible when the sensor looks one metre ahead. Furthermore, the software allows the user two important controls: first, the sprayed distance before and after a detected plant can be buffered between five and 20 cm, resulting in a sprayed patch between 10 and 40 cm long.

This could be useful when boom heights fluctuate and placement of the sprayed patch shifts accordingly. Second, the user can select from among four sensitivity settings. Higher sensitivity can detect smaller weeds but will also result in more false results.

One reason the system has been successful in the southern hemisphere is the long growing season that may require multiple spray passes outside of the crop each year, and in this situation weeds may be relatively large at treatment time and therefore easier to detect. In North America, the pre-seed spray window is relatively narrow and weeds may be very small or just emerging. The risk of a miss due to non-detection is therefore greater. The WEEDit system has a feature that addresses this risk.

The solenoids that trigger an individual nozzle are pulse-width modulated (PWM). This means that the application rate is adjusted according to travel speed. And it offers an innovative feature: The entire boom can be programmed to spray a defined fraction of the full dose, to a maximum of 50 per cent, as a background broadcast rate (called 'bias'). The smallest weeds that escape detection are likely to be susceptible to this lower dose. Larger weeds are then detected and sprayed with an individual spot spray at the full dose. Bias is typically set to about 25 per cent. Savings are less with the bias setting, but control is improved for those very early season situations.

Currently, several hundred WEEDit sprayers are operating in Australia. Since 2017, there have been five installations in Western Canada and about 25 in the U.S. Midwest. Savings compared to broadcast spraying range from 65 to 85 per cent.



With 75 per cent product savings, a tank of product will last longer. The time lost to hauling water and product, as well as filling the sprayer, will decrease. For example, WEEDit users are spraying a full day on a single load.



## MORE INNOVATORS COMING

Similar systems are in development by other manufacturers, and the future looks very promising. Another approach is pioneered by a company called Green Eye Technologies. They have developed plant recognition algorithms that are currently able to identify 150 different species. Green Eye has launched a business in Canada that scouts fields by high-resolution drone imagery, and then provides customers with species-specific distribution maps. (Watch the video 'Green Eye user interface' on YouTube.) Plant counts can show crop establishment and species-composition by zone. When this information is converted to a prescription map, rate and tank mix composition could be varied as necessary by zone, or weeds can be sprayed individually. The agronomic value of this information is clearly very high.

## OPPORTUNITIES FOR OSS

Optical spot spraying (OSS) offers a number of opportunities for weed management. These include:

**Cost savings:** OSS has an appealing rate of return on investment. On a 5,000-acre farm, a pre-seed treatment of glyphosate plus tank mix for resistance management may cost \$10 per acre or \$50,000 per year. At an average savings of 75 per cent, that represents \$37,500 per year. Add other non-crop uses, such as post-harvest, and savings increase. With eventual weed recognition in-crop, virtually all herbicide treatments are candidates for such savings.

**Herbicide resistance management:** Delaying the onset of herbicide resistance requires the use of



Find out more about WEEDit at [weed-it.com](http://weed-it.com) and about Green Eye Technologies at [green-eye.ca](http://green-eye.ca).

*The WEEDit boom has sensors spaced every metre, and each sensor contains five channels for resolution of 20cm. Corresponding nozzles are also spaced every 20 cm and have a narrow fan angle to treat just this space.*

multiple effective modes of action in a tank mix. Cost of tank mixes is a deterrent to this practice. With OSS, these tank mixes become affordable.

**Efficiency:** With 75 per cent product savings, a tank of product will last longer. The time lost to hauling water and product, as well as filling the sprayer, will decrease. For example, WEEDit users are spraying a full day on a single load. Or they may choose to use a much smaller load, decreasing equipment weight.

**Pre- and post-harvest:** Whether for desiccation or weed control, site-specificity of late season sprays can also be based on living tissue. Only regions in the field requiring the desiccant are treated. Perennial or late-season weeds are selectively controlled pre-harvest. Since herbicide rates in these applications are typically higher, savings are significant.

**High value crops:** Row crops requiring multiple fungicide applications per season, such as potatoes, can benefit from OSS. Sprays applied prior to canopy closure can thus avoid gaps between plants, saving product.

**Producer innovation:** One user of the WEEDit system in Saskatchewan developed an innovative use. Having missed a pre-seed spray, the applicator was faced with large weeds in a one-leaf-stage crop of RoundupReady canola. By turning down the sensitivity of the system so the canola crop did not trigger the sensors and turning on bias mode, he was able to broadcast spray the field at a low dose (sufficient to control the small weeds) and then apply a full dose to the larger weeds, triggered by the sensor.

**Equipment innovation:** As individual zones, or weeds, require unique doses or products, technologies like direct injection, remote nozzle switching, multiple smaller tanks and booms, and PWM will make more sense and grow.

**'License to farm':** OSS makes intuitive sense not only to applicators, but also to the public at large. Showing and using these technologies demonstrates stewardship practices that are easy to communicate and understand.

Development and improvement of these technologies is ongoing rapidly. Finally, we may have all the pieces that can bring site specific weed management to market. ✖

—Tom Wolf is a sprayer specialist and owner of Agrimetrix Research & Training in Saskatoon, Sask. Find out more at [sprayers101.com](http://sprayers101.com).





# When you have cleavers, that's all you can see.



Someone driving by your farm might see a nice canola crop. To you, it's all cleavers and headaches. Take your farm back. Command® 360 ME herbicide, applied preseed with or without glyphosate, is game-over for cleavers. Its powerful Group 13 action delivers extended control of flushing cleavers - to keep your canola fields clean right from the start.

**CANOLA**

**Save up to \$5.50/acre with FMC Grower CashBack.**



Terry Griffin from Kansas State University says farmers don't need to rush into data collection, sharing and analysis. When the business case is strong enough, farmers will move into that space in a big way.

# USE 'BIG DATA' WHEN IT PROVIDES A CLEAR BENEFIT

BY RICHARD KAMCHEN

**D**ata is big business. It pervades all areas, from political polls and sports analytics down to farmers' fields. What it includes continues to expand as leaders bring into play growing reams of information in order to make more enlightened decisions.

'Big data' refers to massive data sets created from click streams, email, instruments, Internet transactions, satellites, sensors and all other sorts of digital sources. Terry Griffin, cropping systems economist at Kansas State University's agricultural economics department, says big data in farm terms can span management practices and technologies, and include seeding depth, seed placement, cultivar, machinery diagnostics, dates of tillage, planting, scouting, spraying and input application.

In order for 'farm data' to become big data, it must be shared so that it becomes aggregated within a community of data from many other farms, Griffin says.

"It's not just that the value of big data is in sharing. Sharing is a necessity to be considered big data."

A paper he wrote reveals how technological advances like computation, data storage, communications and sensing are fuelling big data's capabilities. "Big data can provide us with access to an enormous quantity of data from diverse sources with minimal lag times or in real time," the paper says.

## OPPORTUNITIES

Big data has the potential to fuel agricultural productivity, and offers numerous opportunities for farmers to use inputs more efficiently and accelerate decision-making.

For instance, reliable sensor data can improve field-level nutrient management and reduce pesticide leaching and runoff, and smart irrigation systems analysis can play a big part in strategies that would conserve irrigation water in dry areas, the paper reports.

The paper adds that GPS-assisted navigation can contribute to decreases in on-farm energy use, reducing agriculture's carbon footprint, while farm record digitization and automated data uploads can assist in implementing nutrient management plans in livestock feeding operations.

"Over the long term, farm microdata will feed back to research and development efforts driving innovations in equipment, remote sensing, chemicals, and biotechnologies, facilitating greater progress towards sustainability," the paper says.

While field-level data's value is limited to a specific field, a community of aggregated data has wider potential value for management decisions.

"Big data's inclusion of outcomes from differing management strategies, along with other economic variables of interest, will increase the depth of analysis for farm management strategies," the paper says.

## RISKS

These new technologies, however, also afford potential risks. There are no federal laws restricting the disclosure of farm data, and third party release of information by accident or design is a real concern. Another is: who controls the information?

Aggregating data into big data also creates the potential to inform profit-making firms, as well as to influence



Follow Terry Griffin  
on Twitter -

@SpacePlowboy.





the marketplace by being accessible to only a smaller number of players in the farm economy.

“In many cases, the data are collected by private entities that would profit from aggregating data into useful market information, often with the purpose of selling back value-added products to the same farmers who provided the data,” Griffin’s paper says.

He notes farmers are reluctant to share their data, concerned about loss of ownership and control. They see the ramification of relinquishing control as possibly giving up their bargaining power, as well as fearing their own data will be used against them.

“There are several risks associated with farm data and many risks that farm data helps to mitigate,” Griffin says. “These risks must be understood before cognizant decisions can be made.”

He believes control of intangible resources like farm data needs discussion. Some aspects of farm data are valuable when it can be controlled by the farmer, but when it’s shared, control of that intangible resource has been relinquished.

“Some benefits of farm data are only achieved when that data are analyzed in a community,” says Griffin. “For nearly all uses of farm data in a community – i.e. big data – there are risks but also opportunities. In all cases, farmers should compare the costs against the benefits.”

He recommends farmers ask prospective data companies how many growers, farms, fields and acres are in a data community, what community analytics conducted will benefit their farms, as well as what data quality control standards are being used.

### NO RUSH TO JOIN

Big data’s value differs among farmers, retailers, manufacturers and aggregators, and the value to any one producer is small compared to that of the aggregator.

Many producers are choosing to wait for a variety of reasons, which is a decision Griffin agrees with.

“It has and continues to be my recommendation that farmers wait to join farm data services until they see a clear benefit outweighing any perceived costs,” Griffin says. “If you don’t see value in moving forward then wait until there is value.”

He recommends farmers collect their own data, even if they don’t currently use it, as well as calibrate and backup that data while maintaining its quality.

“I think that when the time and service is right, the answer will present itself such that farmers will know what to do.” ✖

—Richard Kamchen is a freelance agriculture writer based in Winnipeg, Man.

“Some benefits of farm data are only achieved when the data are analyzed in a community. For nearly all uses of farm data in a community, there are risks but also opportunities. In all cases, farmers should compare the costs against the benefits.”

—Terry Griffin

# JumpStart® XL

**NEW** LIQUID FORMULATION  
**SAME** PROVEN TECHNOLOGY

CANOLA

## Features & Benefits

JumpStart® XL liquid inoculant delivers a fast start and strong finish by improving phosphate availability to the crop.

JumpStart XL helps provide the following potential benefits to your canola crop:



Improved phosphate availability



Active in cool soil temps helping to enhance early-season vigour



Earlier, more uniform maturity

Order your canola seed for 2019  
pre-treated with JumpStart® XL inoculant

For more information visit: [useJumpStartXL.ca](http://useJumpStartXL.ca)

ALWAYS READ AND FOLLOW LABEL DIRECTIONS. Acceleron BioAg™ and JumpStart® are trademarks of Bayer Group, Monsanto Canada ULC licensee. © 2018 Bayer Group. All rights reserved.

**ACCELERON**  
BioAg™

Crop fertilizer specialists from across the Prairies describe the worst scenarios for loss and recommend better alternatives or ways that enhanced-efficiency products might help.

---

# WHAT FERTILIZER PRACTICES ARE THE WORST FOR LOSSES?

COMPILED BY JAY WHETTER

---



**F**or this article, we asked fertilizer specialists to describe significant nutrient-loss scenarios that consider loss risks based on product, timing, placement, soil conditions and weather. “The purpose of the article,” Canola Digest explained when asking for their input, “is to identify high-loss situations and provide better options, using 4R thinking and perhaps enhanced-efficiency tools to benefit farm profitability and the environment.” Here are their responses, in their own words.

## **DON FLATEN (WITH MARIO TENUTA) UNIVERSITY OF MANITOBA**

The biggest nutrient-loss scenario in Manitoba is broadcasting nitrogen (N) fertilizer in the fall.

Fall broadcasting of N fertilizer seems to be increasingly popular in some areas of the Prairies, probably due to the cheaper cost of fertilizer in the fall vs. spring, as well as being faster and cheaper, compared to subsurface banding. However, fall broadcast N is vulnerable to losses that decrease its agronomic efficiency and increase its risk of environmental problems.

According to the Manitoba Soil Fertility Guide, fall broadcast fertilizer averages 40 per cent less efficiency compared to banding in the spring. This issue of poor efficiency of fall broadcast N is even worse if the soils are waterlogged in early spring.

Therefore, if N fertilizer is applied in fall, it should be banded, preferably as late as possible, especially for low-lying areas of fields that might be ponded with water during snowmelt. That’s because banding helps to slow down the conversion of N fertilizers such as urea (46-0-0) or anhydrous ammonia (82-0-0) into nitrate, which is vulnerable to leaching and denitrification. Furthermore,

---

“The biggest nutrient-loss scenario in Manitoba is broadcasting nitrogen (N) fertilizer in the fall. ”

—Don Flaten and Mario Tenuta



banding also helps to reduce volatilization and the amount of N immobilized by soil microbes.

*John Heard, crop fertility specialist with Manitoba Agriculture, adds:* The temptation to fall broadcast nutrients (as fertilizer P and N or manure) onto frozen soil may have helped prompt development of our Manitoba regulations prohibiting winter applications.

## JEFF SCHOENAU UNIVERSITY OF SASKATCHEWAN

The nutrient loss scenario of surface broadcast of granular fertilizer, as covered by Don and Mario, certainly pertains to Saskatchewan as well. One other thing that comes to mind for drier environments like southern Saskatchewan is related to anhydrous ammonia and the potential for significant volatilization losses (escape of ammonia) if shallow application is made in dry sandy or lumpy soils.

Injected ammonia is retained in the soil by reacting with mainly with water and other proton donors like organic matter and clay mineral surfaces. This converts the ammonia gas to the ammonium ions that are retained in the soil. If the surface soil is very dry and sandy, one should place the ammonia deeper to moisture to aid in retention and conversion to ammonium. The greater depth also gives the ammonia gas more opportunity to react with water and the soil before it diffuses through the pores to the surface. Also make sure the injection channel is closed up well behind the opener. If the soil is very lumpy with large pores, this will reduce

contact and increase rate of movement of ammonia gas to the surface. Under these conditions, a granular or liquid form of N may be a better selection, but even with these forms it is important that the fertilizer is covered with soil to retain the ammonia gas that is produced by hydrolysis of the urea.

To demonstrate this to my students, I use a classic study by Stanley and Smith (Soil Sci Soc Am J., 1956). With anhydrous ammonia applied at 100 pounds of N per acre to a silt loam soil, the study found losses of ammonia in excess of 10 per cent from three-inch depth in a silt loam when soil moisture was very dry (only three to four per cent moisture), but when soil was moist (18 to 20 per cent moisture), losses dropped to less than one per cent. Ammonia losses were reduced in the dry soil conditions when depth of application was increased.

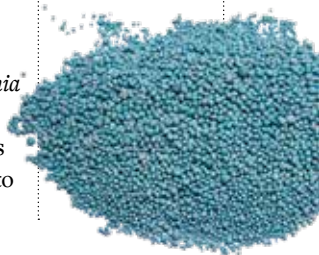
For granular urea or UAN, a urease inhibitor would help reduce potential volatile ammonia losses from shallow banding. I think especially under conditions of high loss potential – sandy, dry, high pH – that there can be economic benefit from the inhibitor. However, there is no product additive for anhydrous ammonia to stop volatilization. Paying attention to depth and sealing of band is important for all ammonia containing and producing fertilizers.

*Mario Tenuta in Manitoba adds to the anhydrous ammonia conversation:* The best management practice for anhydrous ammonia is deep injection under moist conditions with good slot closure and band coverage, and ideally into cool soil temperatures.

“One other thing that comes to mind for drier environments like southern Saskatchewan is related to anhydrous ammonia and the potential for significant volatilization losses (escape of ammonia) if shallow application is made in dry sandy or lumpy soils.”

—Jeff Schoenau

Credit: iStock.com/phanasitti



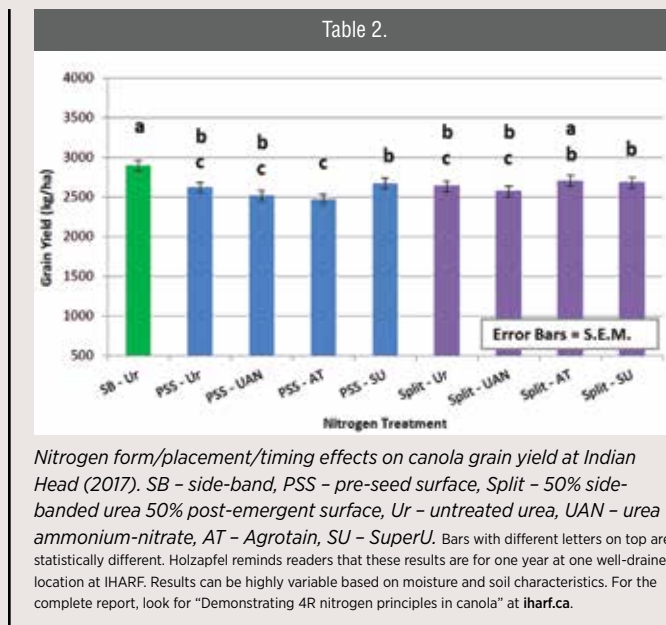
## EEF studies at IHARF

BY CHRIS HOLZAPFEL

We've done various projects with enhanced efficiency fertilizer (EEF) products at Indian Head Agricultural Research Foundation (IHARF) in southeast Saskatchewan. The projects are mostly with either wheat or canola. Overall, the benefits I've seen here to EEF products have been modest and fairly sporadic and I would argue that focusing on the right time and place is more important.

On reasonably well-drained land, with normal weather and using sound placement and timing options, there is fairly low probability that EEFs will increase profits. Bear in mind that we are on very well-drained land here and generally nobody puts plots in the wetter, depressional areas where some types of losses (denitrification and leaching) are most likely to occur. On-farm experiences in those situations may sometimes differ. To be positive, the methods by which (most) of these products work are sound... they are just only likely to result in agronomic or economic benefits where the potential for loss is reasonably high.

I think EEFs can be a good tool to consider in situations where we know our risk is high. For example, SuperU for fall broadcast (or band) applications and Agrotain for spring or in-crop surface applications. ESN can be a good fit for fall band applications or when wanting to increase seed safety for single-shooting or even side-banding at high rates. Denitrification inhibitors (i.e. N-Serve or Instinct) can be a good fit in very wet fields, even for spring



applications, and could even be utilized in variable-rate applications with anhydrous ammonia if the applicator is set up for it (i.e. only applying the denitrification inhibitor in depressional areas).

—Chris Holzapfel is research manager at the Indian Head Agricultural Research Foundation. [iharf.ca](http://iharf.ca).

## LEN KRYZANOWSKI

### ALBERTA AGRICULTURE AND FORESTRY

Between 2007 and 2012, we conducted a province-wide research study comparing ESN, urea and a blend (75 per cent ESN and 25 per cent urea) under a range of application options and conditions to assess the agronomic, economic and environmental performance of the treatments and to provide recommendations about when to use which option. The study had nine sites from north to south, including one irrigated.

Results showed that agronomically, spring application tended to be better than fall, with higher yields and greater nitrogen use. As expected, seed-placed urea resulted in the poorest growth and greatest seedling damage. In comparison, the seed-placed blend (ESN and urea) allowed higher nitrogen rates without seedling injury, and the seed-placed ESN allowed even higher rates.

If you want to use urea, then banding is a much better option. If you want to seed-place your nitrogen fertilizer, then ESN or ESN-urea blend is the best choice because it results in less seedling damage, more yield and greater productivity.

To evaluate the economics, we examined whether the value of the crop's additional yield with ESN or the blend was large enough to offset the higher fertilizer costs compared to urea, using a partial budget approach. This analysis helps growers decide whether they should pay the extra for ESN rather than use urea alone. When nitrogen is seed-placed with canola, the blend would have the best chance of being worth the extra cost. And seed-placed ESN would have a good chance of being worth the extra cost, at most sites, when canola prices are high.

The greatest economic benefits from using ESN or the blend were for canola, followed by wheat and then barley. For all three crops, the economic results varied greatly within sites, between sites and between years due to regional differences. Some sites were highly economical, such as under irrigation where it was easy to get higher



## Selling phosphorus recovered from waste-water treatment plants

Taurus Agricultural Marketing offers Crystal Green, a phosphorus fertilizer recaptured from municipal waste water treatment facilities and other streams of waste-water containing background levels of phosphate. Phosphorus (P) extraction systems are set up at treatment plants in Edmonton and Saskatoon, with most major cities in Western Canada coming on line in the coming years.

Extracted P is called struvite. Struvite captured from livestock manure showed promise in a grower-funded research study led by Francis Zvomuya at the University of Manitoba. To read more about this study, search for 'struvite' at [canoladigest.ca](http://canoladigest.ca). Crystal Green itself also has a growing body of third-party research from Canada and the U.S.

Craig Davidson with Taurus says Crystal Green does have a fit on farms with low baseline soil P and soils with pH below 6.4 or above 7.3. That's because it doesn't get immobilized by calcium in high pH soil or by aluminum and iron in low pH soil. But Davidson says Crystal Green isn't immediately plant-available until you have roots exuding citric acid to solubilize the magnesium phosphate bond. He says research has shown that Crystal Green will perform best as part of a total phosphate strategy including water soluble phosphate.

Based on grower value established from third party research, suggested price for Crystal Green is \$1,050 per tonne. Analysis is 5-28-0-0 with 10 per cent magnesium.

**"Typically there was between 17 and 25 per cent reduction in nitrous oxide emissions by going from fall-applied to spring-applied nitrogen. Spring application avoids that most critical time for nitrogen loss – the thawing period."**

—Len Kryzanowski

yield productivity using ESN or the blend. But in drier conditions the results became much more variable.

The study also measured nitrous oxide emissions. Spring application was clearly the most effective way to reduce emissions. Typically there was between 17 and 25 per cent reduction in nitrous oxide emissions by going from fall-applied to spring-applied nitrogen. Spring application avoids that most critical time for nitrogen loss – the thawing period. ESN resulted in somewhat lower emissions than urea. Switching from fall-applied urea to fall-applied ESN resulted in about a six per cent reduction in emissions. (See the table for results.)

In closing, I will add, from the Alberta perspective, that I also agree with the comments on fall broadcast application of nitrogen fertilizer as noted at the beginning by Don and Mario. 🌻

Table 1. How management changes can reduce nitrous oxide emissions (Alberta study)

| Nutrient Stewardship Spring vs Fall Urea vs ESN Banded | Dark Brown Chernozem Irrigated (2008 - 2011) |         | Black Chernozem (2008 - 2011) |         | Dark Gray Luvisol (2008 - 2012)* |         |
|--|--|---------|-------------------------------|---------|----------------------------------|---------|
| Management Change                                      | 120 kg N ha <sup>-1</sup>                    |         | 120 kg N ha <sup>-1</sup>     |         | 120 kg N ha <sup>-1</sup>        |         |
|  | Average                                      | std err | Average                       | std err | Average                          | std err |
| Fall Urea → Fall ESN                                   | -6.1   | 11.9    | -16.3                         | 3.5     | 4.2                              | 29.5    |
| Fall Urea → Spring Urea                                | -29.9  | 18.3    | -17.9                         | 13.4    | -6.1                             | 34.7    |
| Fall Urea → Spring ESN                                 | -39.4  | 17.8    | -22.1                         | 12.8    | -13.0                            | 22.6    |
| Fall ESN → Spring ESN                                  | -32.4  | 18.8    | -6.0                          | 16.9    | -11.4                            | 21.0    |
| Spring Urea → Fall ESN                                 | 76.1   | 54.0    | 16.1                          | 29.1    | 26.0                             | 21.6    |
| Spring Urea → Spring ESN                               | -10.4  | 13.0    | -5.3                          | 0.6     | 1.2                              | 11.0    |

\*Summary does not include 2010 site due to hail damage. Positive average values indicate emissions; negative average values indicate reduced emissions.



With the rise in aquaculture, sustainability requires an alternative to feeding fish to fish. Cargill's Latitude canola-based fish oil provides a solution.

# CARGILL LAUNCHES OMEGA-3 CANOLA FOR FISH FEED

BY JAY WHETTER

**F**armed fish will soon surpass caught fish in the supply of fish for global human consumption. A report from the Food and Agriculture Organization of the United Nations (FAO), 'The state of world fisheries and aquaculture 2016', projected total world fishery production (capture plus aquaculture) to reach 196 million tonnes by 2025. Of that, the report estimates 102 million tonnes will come from aquaculture.

The same report noted that while aquaculture will remain one of the fastest-growing sectors for animal food production, its annual growth rate is slowing. One factor is availability of fish feeds in the requisite quality and quantity.

To produce the omega-3 oils that make fatty fish particularly healthy, farmed fish species, including salmon, are fed rations that include fish oil from wild-caught fish. As an alternative, Cargill has announced the launch of Latitude, a canola-based source of long-chain eicosapentaenoic acid (EPA), docosapentaenoic acid (DPA) and docosahexaenoic acid (DHA) omega-3 fatty acids for aquafeed.

Latitude can provide the predictable quality and quantity that fish farmers need, reducing the dependency on marine ingredients, including forage fish.

"The growth in aquaculture production brings an increase in demand for omega-3s," said Willie Loh, vice president of market development for Cargill's global edible oils business. "Latitude will help relieve some of the pressure on wild caught fish, while delivering a reliable omega-3 product to aquafeed manufacturers – a win-win for the industry."

Cargill says the functional elements of Latitude meet aquaculture requirements. "Fresh and saltwater feed trials have shown that 100 percent of fish oil can be replaced with Latitude in commercial salmon feed with no effect on fish growth rates, fish health or fillet omega-3 content," the company says.

The primary market for Latitude is salmon farming, which is concentrated in Chile and Canada. Latitude was launched at AquaSur,

one of the largest aquaculture events in the world, in Chile in October. Salmon feed manufacturers in Chile and Canada will be able to purchase Latitude after its commercial launch, planned for 2020.

Canola used to produce Latitude is currently grown in Montana. Cargill could expand production to new areas as demand increases, but the specialty crop will likely have to remain in areas that don't have large acres of commercial canola. In a November 2017 Canola Digest article on new specialty canola traits, Loh said: "What we don't want to do is have pollen potentially contaminate any other canola crop. We don't want to contaminate the mainstream canola crop, and frankly we don't want the mainstream canola crop to contaminate our omega-3 oil." ❀

—Jay Whetter is the editor of Canola Digest.



## What does omega-3 mean?

In an omega-3 fatty acid, the first double-bonded carbon atom is three carbons away from the methyl ( $-CH_3$ ) end – also called the 'omega' end – of the molecule. Omega-3 fatty acids the body needs are:

**$\alpha$ -linolenic acid (ALA)** has 18 carbons and 3 double carbon bonds. ALA is found in plant oils and standard canola oil is a good source.

**eicosapentaenoic acid (EPA)** has 20 carbons and 5 double carbon bonds. EPA is found in marine (fish and seafood) oils and now Cargill Latitude.

**docosapentaenoic acid (DPA)** has 22 carbons and 5 double bonds. DPA is found in marine oils and now Cargill Latitude.

**docosahexaenoic acid (DHA)** has 22 carbons and 6 double carbon bonds. DHA is found in marine oils and now Cargill Latitude.







# Step inside the world of Brevant™ seeds.

Enter a world of growth and opportunity.

Welcome to Brevant™ seeds. We're bringing new life to the seed industry with a focused seed portfolio of canola hybrids and soybean varieties. We're excited to bring you leading genetics tailored to your growing conditions, plus the assurance of local testing for top performance. Our team is ready to grow with you and make your business thrive.

To experience the world of Brevant seeds, visit [Brevant.ca](http://Brevant.ca)



# I want that

Canola Digest asked four farmers what ag innovations they think could make an immediate positive impact on their operations.

BY JAY WHETTER



**KEVIN RUNNALLS**  
NEW LISKEARD, ONT.

**O**ntario canola grower Kevin Runnalls wants Canadian agriculture to be a leader in a major disrupting technology coming to agriculture: blockchain.

The blockchain platform, as he describes, is based on the concept of a distributed ledger, which can be used to record and verify transactions between two parties. Each participant holds an identical ledger, which is updated as transactions occur and is verified by the underlining

blockchain protocol. Because the ledger is distributed among a network, it is difficult to tamper with, thereby increasing trust in the transaction.

For Runnalls, the real disruption in blockchain will be the removal of third-party intermediaries that don't actually add value to the product or take an active role in distribution. It has the potential to provide huge cost savings.

Runnalls is past president of the Canadian Seed Growers' Association, which is working on a few blockchain pilot projects. "Blockchain will be a disruptor like Uber for taxis and AirBnb for hotels," Runnalls says. "Growers can work direct with end-users on price, payment and delivery, with payment, contract and traceability secured by the blockchain."

"Blockchain will be a disruptor like Uber for taxis and AirBnb for hotels. Growers can work direct with end-users on price, payment and delivery, with payment, contract and traceability secured by the blockchain."

—Kevin Runnalls



**DARCY SARAFINCHAN**  
LAVOY, ALTA.

**D**arcy Sarafinchan says the "biggest thing" he'd like to see is canola seed with a gene to control or ward off flea beetles. "I think canola with

genetic resistance to flea beetles would have a significant impact on agriculture in Western Canada," he says.

Neonicotinoid seed treatments are under fire around the world, he notes. "With the amount of canola acres in Canada, if you take away neonics, it will be a huge blow to the industry," he says. "With tight margins, losing 10 to 20 per cent of canola yield to flea beetles could make it difficult to grow canola profitably. The loss could be worth hundreds of millions of dollars to the Canadian farm economy."

He has had good experience with new seed treatments. In 2018, he seeded his first 700 acres of canola using seed treatments that did not include cyantraniliprole (Lumiderm brand in this case). He ended up having to spray all of those acres for flea beetles. His later-seeded canola had a treatment that included Lumiderm and it didn't need a foliar spray. Later seeding might have been a factor. And, he adds, under heavy infestations you can still have flea beetle damage with Lumiderm-treated seed. Noteworthy, however, is that all current seed treatments, new or older, have a neonic as the base product. Whether new actives like cyantraniliprole still provide adequate flea beetle protection without the neonic component remains to be seen.

A better tool, Sarafinchan says, would be a genetic trait that protects against flea beetles without the need for seed treatment or foliar insecticide. "There is already genetic insect tolerance in corn," he says. "It would be nice to see the transition into canola."

"Nobody likes to spray insecticide," he says. Even though spraying has to be done some times, as Sarafinchan experienced in 2018, he would prefer the genetic solution.

"I think canola with genetic resistance to flea beetles would have a significant impact on agriculture in Western Canada."

—Darcy Sarafinchan



**JEFF BENNETT**  
DODSLAND, SASK.

**J**eff Bennett would like a do-it-yourself way to apply the data he's collecting, especially for variable-rate (VR) fertilizer applications.

The farm is already doing some VR, working with an outside service provider to analyze field records and maps to come up with application prescriptions. Bennett would like to do this analysis on his own. He wants the ability to make adjustments based on probabilities, field characteristics and current and forecast soil moisture. He wants to have benchmarks for each field



# IT'S MORE THAN A NEW FUNGICIDE. IT'S A NEW ERA.

Setting the new standard with two  
industry-leading active ingredients  
that target sclerotinia.

**Cotegra®**  
Fungicide

With the rise in sclerotinia across Western Canada, a better management solution couldn't have come at a better time. New Cotegra® fungicide combines two industry-leading active ingredients targeting sclerotinia in a liquid premix. It provides better protection against this yield-robbing disease in canola. In other words, Cotegra is more than a game changer. It changes everything. For more information, visit [agsolutions.ca/cotegra](http://agsolutions.ca/cotegra).

 **BASF**  
We create chemistry

**Always read and follow label directions.**

AgSolutions, and COTEGRA are registered trade-marks of BASF; all used with permission by BASF Canada Inc. COTEGRA fungicide should be used in a preventative disease control program. © 2018 BASF Canada Inc.

based on farm records so he knows how VR polygons within each field will perform with low, average and high moisture.

“We have one field in particular where yield potential between zones can flip based on moisture,” Bennett says.

By being able to do data analysis and set VR prescriptions himself, Bennett will have more flexibility based on realistic expectations of a return. That might mean using VR on fields that will provide a return and not using it on fields where the probability of a return just isn't there. The rationale, he says, is to “intensify” the use of the data so he can make more money.

“I don't know how a DIY data-management system would look yet,” he says. “Field-by-field benchmarking might take 10 years to yield a benefit, and it won't happen until we have enough properly-collected data.”

Reliable, trusted data is a big part of making this all work – and we may not be there yet. This past fall, Bennett had two combines working side by side in the same field. One monitor read 70 bu./ac. while working through a challenging section, the other read zero. “Likely neither was right,” he says.

By being able to do data analysis and set VR prescriptions himself, Jeff Bennett will have more flexibility based on realistic expectations of a return. That might mean using VR on fields that will provide a return and not using it on fields where the probability of a return just isn't there. The rationale, he says, is to “intensify” the use of the data so he can make more money.



“One new technology that could help get more done, when weather windows allow, is automation. A self-driving field implement will start early and go all day, even 24 hours if needed, and be predictable. “The technology is there.”

—Peter Skrabek

## PETER SKRABEK TEULON, MAN.

Peter Skrabek says he's always fighting the urge to make knee-jerk reactions – whether that be in changing agronomy practices or adopting new tools and technology – in response to weather. “I go through a long process to figure out what I think is the right system for my farm, but then we have an incredibly dry spring like 2018. We had no rain in May, which I don't remember ever happening before, and it affected the entire life of the crop. After that experience, it can be easy to lose faith in your system, but you can't make decisions for next year based on a repeat of that. You have to go back to the averages, hoping again that you've made the right decisions.”

Having said that, farmers also have to question their decisions and be prepared to adapt to changing weather, changing regulations and improved technology. Farmers have to roll with a one-two approach that may seem at odds: faith in what they're doing on one hand and willingness to change on the other. “The farmers still in business are those who can adapt,” Skrabek says.

One new technology that could help him get more done, when weather windows allow, is automation. A self-driving field implement will start early and go all day, even 24 hours if needed, and be “predictable”. “The technology is there,” Skrabek says. With his current equipment, he can drive the perimeter lap then lock it in and set the implement to finish the field – with an operator in the cab. Liability is the only hold up to true autonomy that he can see, and says it would seem backward if autonomous cars are widely adopted before autonomous field machinery.

It is part of a theme that doesn't make sense to him. He says people, 90 per cent of which are urban, don't seem to want technology applied to agriculture the way they want it in medicine. “I don't think we're embracing the true science of agriculture the way we embrace the science of medicine,” he says. “Science in medicine is praised. Science in agriculture is shunned.” 🌻

## Trait Stewardship Responsibilities Notice to Farmers

**Monsanto Company is a member of Excellence Through Stewardship® (ETS).** Monsanto products are commercialized in accordance with ETS Product Launch Stewardship Guidance, and in compliance with Monsanto's Policy for Commercialization of Biotechnology-Derived Plant Products in Commodity Crops. These products have been approved for import into key export markets with functioning regulatory systems. Any crop or material produced from these products can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying position for these products. Excellence Through Stewardship® is a registered trademark of Excellence Through Stewardship.

**ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** Roundup Ready 2 Xtend® soybeans contain genes that confer tolerance to glyphosate and dicamba. Agricultural herbicides containing glyphosate will kill crops that are not tolerant to glyphosate, and those containing dicamba will kill crops that are not tolerant to dicamba. Contact your Monsanto dealer or call the Monsanto technical support line at 1-800-667-4944 for recommended Roundup Ready® Xtend Crop System weed control programs. Roundup Ready® technology contains genes that confer tolerance to glyphosate, an active ingredient in Roundup® brand agricultural herbicides. Agricultural herbicides containing glyphosate will kill crops that are not tolerant to glyphosate.

**Acceleron® seed applied solutions for corn (fungicides only)** is a combination of three separate individually-registered products, which together contain the active ingredients metalaxyl, prothioconazole and fluoxystrobin. **Acceleron® seed applied solutions for corn (fungicides and insecticide)** is a combination of four separate individually-registered products, which together contain the active ingredients metalaxyl, prothioconazole, fluoxystrobin, and clothianidin. **Acceleron® seed applied solutions for corn plus Poncho®/VOTIVO™ (fungicides, insecticide and nematocide)** is a combination of five separate individually-registered products, which together contain the active ingredients metalaxyl, prothioconazole, fluoxystrobin, clothianidin and *Bacillus firmus* strain I-1582. **Acceleron® Seed Applied Solutions for corn plus DuPont™ Lumivia® Seed Treatment (fungicides plus an insecticide)** is a combination of four separate individually-registered products, which together contain the active ingredients metalaxyl, prothioconazole, fluoxystrobin and chlorantraniliprole. **Acceleron® seed applied solutions for soybeans (fungicides and insecticide)** is a combination of four separate individually registered products, which together contain the active ingredients flupyrroxad, pyraclostrobin, metalaxyl and imidacloprid. **Acceleron® seed applied solutions for soybeans (fungicides only)** is a combination of three separate individually registered products, which together contain the active ingredients flupyrroxad, pyraclostrobin and metalaxyl. Fortenza® contains the active ingredient cyantraniliprole. Visivio™ contains the active ingredients difenoconazole, metalaxyl (M and S isomers), fludioxonil, thiamethoxam, sedaxane and sulfoxaflor. Acceleron®, Acceleron BioAg™, Acceleron BioAg and Design™, Cell-Tech®, DEKALB and Design®, DEKALB®, Genuity®, JumpStart®, Optimize®, QuickRoots®, Real Farm Rewards™, RIB Complete®, Roundup Ready 2 Xtend®, Roundup Ready 2 Yield®, Roundup Ready®, Roundup Transorb®, Roundup WeatherMAX®, Roundup Xtend®, Roundup®, SmartStax®, TagTeam®, Transorb®, TruFlex®, VaporGrip®, VT Double PRO®, VT Triple PRO® and XtendiMax® are trademarks of Monsanto Technology LLC. Used under license. BlackHawk®, Conquer® and GoldWing® are registered trademarks of Nufarm Agriculture Inc. Valtera™ is a trademark of Valent U.S.A. Corporation. Fortenza®, Helix®, Vibrance® and Visivio™ are trademarks of a Syngenta group company. DuPont™ and Lumivia® are trademarks of E.I. du Pont de Nemours and Company. Used under license. LibertyLink® and the Water Droplet Design are trademarks of Bayer. Used under license. Herculex® is a registered trademark of Dow AgroSciences LLC. Used under license. Poncho® and VOTIVO™ are trademarks of Bayer. Used under license. All other trademarks are the property of their respective owners.







# CAN'T CONTROL THE WEATHER

But with a **Cash Advance from CCGA** you **can** control when to market your crop.

More cash flow means less pressure to sell and more control to execute your marketing plan, allowing you to sell at the best time for the best price.

Call 1-866-745-2256 or visit [ccga.ca/cash](http://ccga.ca/cash).

**45**  
commodities

**\$100k**  
interest free

**\$400k**  
blended  
interest rate  
below prime



CANADIAN  
**CANOLA GROWERS**  
ASSOCIATION

Made available by  
Agriculture and Agri-  
Food Canada's Advance  
Payments Program

**Canada** 



# AGRONOMY INSIGHTS

Tips and tools from the  
Canola Council of Canada  
Agronomy Team

## GET TO KNOW YOUR CCC AGRONOMY TEAM



### SHAWN SENKO

Agronomy Specialist  
NE Saskatchewan

**Contact:** 306-270-9307  
and [senkos@canolacouncil.org](mailto:senkos@canolacouncil.org)

**Twitter:** @SenkoCCC

**Specialty:** Machinery, precision ag  
and big data



### DAN ORCHARD

Agronomy specialist,  
Central Alberta North

**Contact:** 780-777-9923 and  
[orchardd@canolacouncil.org](mailto:orchardd@canolacouncil.org)

**Twitter:** @OrchardCCC

**Specialty:** Clubroot and crop tours



### JUSTINE CORNELSEN

Agronomy Specialist,  
Western Manitoba

**Contact:** 204-298-4364 and  
[cornelsenj@canolacouncil.org](mailto:cornelsenj@canolacouncil.org)

**Twitter:** @CornelsenCCC

**Specialty:** Blackleg



Find the whole team at  
[canolawatch.org/contact-us](http://canolawatch.org/contact-us)

## SHARING OUR ACHIEVEMENTS WITH THE USCA



Selfie of Clint Jurke in Baltimore harbour.

By Clint Jurke

I was honoured with an invitation to speak about Canadian canola production at the U.S. Canola Association's National Canola Research Conference in Baltimore in November. It is always nice to talk about canola outside of our country – and even nicer to be able to highlight some of the impressive gains that canola has made in Canada. Our average yield in the last three years is above 40 bu./ac., compared to 34 four years ago. Focusing our efforts on the areas that hold back our yield potential may help get us to 52 bu./ac. target by 2025 – which would really be worth bragging about internationally.

The conference was held in conjunction with the American Society of



*Mukhlesur Rahman with North Dakota State University compared the size of winter (R) and spring (L) canola roots. Can we use the winter genes to boost spring root growth?*



Agronomy's annual conference. There is a lot to learn. Like, did you know that winter canola roots are much more vigorous than the roots from our spring-type canola? Yep. So, canola researchers in North Dakota are determining how to make the spring-type root better, since bigger roots may mean bigger yields. Or, did you know that zero-till farmers in Brazil use higher pressure lime-injection equipment? Yep. That would be a cool thing for liming soils in Alberta to help reduce clubroot damage.

You can read more about National Canola Research Conference highlights at [uscanola.com](http://uscanola.com).

## CANOLAB BECOMES COMBINE COLLEGE

CanoLAB 2019 is taking on a more specific focus – combining.

**Key learnings will address:**

- What are combine loss monitors telling us? And how accurate are they?
- What are our actual threshing losses? How do we properly check them? And what are some tips to reduce them in various weather and crop conditions?
- Functional tips for all major manufacturers' combines.
- How are our crops graded and why should producers care? What are all of the grading factors and tolerances?

- Getting the most out of pre-harvest aids.
- After-market options for combines.
- Straight cut header options.

The Combine Colleges are hosted by the Canola Council of Canada and funded by growers through provincial grower associations. Dates were not finalized when this magazine went to print, but look at the events listing at [canolacouncil.org](http://canolacouncil.org) for updates.





## NEW STAND ESTABLISHMENT VIDEO AT THE RESEARCH HUB

Some people prefer to learn by reading, while others prefer watching a demonstration or listening. The new 86-second “Stand Establishment” video at the Canola Research Hub (found in the videos section of the ‘Media’ tab at [research.canolacouncil.org](http://research.canolacouncil.org)) offers all three learning methods. Watch agronomist Brittany Hennig demonstrate how to determine a plant count using a quarter-square-metre hula hoop and a couple of quick calculations, and see some examples of different plant stands.

In addition, Brittany suggests using the Canola Council of Canada’s Canola Calculator at [canolacalculator.ca](http://canolacalculator.ca) to determine your target plant density, seeding rate, plant survival and plant density. Play around with different scenarios to update your notes on the previous season and to prep for next year.

The stand establishment video is one of many at the Canola Research Hub. Want to reduce your risk of any canola storage issues this winter? Watch the quick and informative “Storage Management” video with PAMI’s Lorne Grieger.

Checking out these resources during the winter can be a great way to save yourself some time in the busy growing season. Plus it lets you look at outdoor plants when it’s snowy and cold outside! You’ll be extra ready for spring when it arrives.



To use a quarter-square-metre hula hoop like Brittany Hennig uses in the video, just randomly toss it in your field, count the plants within the hoop and then multiply the number by four to get the plant count per square metre. (Plant count  $\times 4 = \text{plants/m}^2$ ) Divide that product by 10 to get a count per square foot.

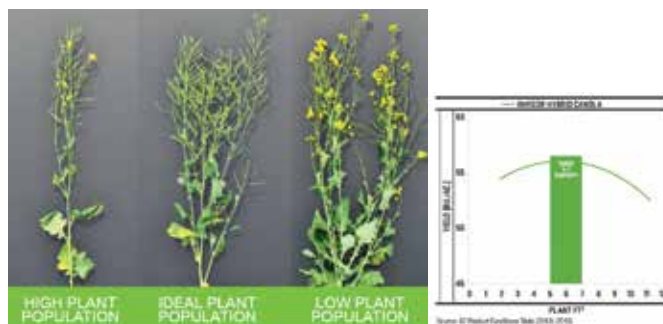
An interview from canolaPALOOZA 2017 in Portage la Prairie, MB with Brittany Hennig, Agronomist. [CLICK HERE](#) for information about this year’s PALOOZA events across the Prairies.



## BASF PROMOTES TARGET POPULATIONS

InVigor RATE is a canola seeding rate recommendation that helps growers adapt to a Target Plant Population (TPP). This helps maximize the agronomic performance, yield and consistency of InVigor hybrid canola. Demonstrated through large-scale field research by BASF’s Product Excellence team, seeding to achieve a TPP is proven to help optimize yield and agronomic considerations such as reduced lodging and disease incidence, strong weed competition and resource utilization. Based on this research, BASF recommends targeting a plant population of five to seven plants per square foot.

Assuming a standard survivability of 50 to 70 per cent, the desired plant population can be achieved by seeding 10 seeds per square foot. Look for InVigor RATE videos at the BASF AgSolutions YouTube channel.



Find the new stand establishment video with Brittany Hennig in the “Media” section at [research.canolacouncil.org](http://research.canolacouncil.org).

## SIGN UP FOR CANOLA WATCH

Canola Watch is a timely agronomy email from the Canola Council of Canada agronomy team. It provides field observations and agronomy tips throughout the growing season. To receive this valuable tool, funded by levy dollars, go to [canolawatch.org/signup](http://canolawatch.org/signup).



# CHECK OUT OUR FULL 2019 LINEUP

No two fields are the same. That's why InVigor® canola hybrids are designed to address a wide range of challenges across the broadest spectrum of growing conditions.

| HYBRID  | KEY FEATURES  | YIELD  | GROWING ZONES              | STANDABILITY          | AGRONOMIC TRAITS   |
|---|---|--|----------------------------|-----------------------|--|
| <b>InVigor<sup>®</sup><br/>L233P</b>          | <ul style="list-style-type: none"> <li>#1 grown canola hybrid in Western Canada in 2018*</li> <li>Winner of the 2017 Canola 100 at <b>85.88 bu./ac.</b></li> <li>Excellent yield performance</li> <li>Very early maturing</li> <li>Pod Shatter Reduction</li> </ul>                             | <b>108.8%</b><br>of checks (InVigor 5440 and Pioneer® 45H29) in 2014-2015 WCC/RRC trials | All growing zones          | Strong                | Pod Shatter Reduction<br>Blackleg Resistance<br>LibertyLink® system  |
| <b>InVigor<sup>®</sup><br/>L140P</b>          | <ul style="list-style-type: none"> <li>First hybrid to feature Pod Shatter Reduction trait</li> <li>Medium height</li> <li>Available in limited quantities for 2019</li> </ul>  | <b>100%</b><br>of checks (InVigor 5440 and Pioneer® 45H29) in 2011-2012 WCC/RRC trials   | All growing zones          | Strong                | Pod Shatter Reduction<br>Blackleg Resistance<br>LibertyLink system   |
| <b>NEW<br/>InVigor<sup>®</sup><br/>L234PC</b> | <ul style="list-style-type: none"> <li>Pod Shatter Reduction</li> <li>NEW 2<sup>nd</sup> generation multi-genetic clubroot resistant** traits</li> <li>Excellent yield performance</li> <li>Early maturity</li> <li>Medium height</li> </ul>  | <b>104%</b><br>of checks (InVigor 5440 and Pioneer® 45H29) in 2017 WCC/RRC trials        | All growing zones          | Strong                | Pod Shatter Reduction<br>2 <sup>nd</sup> Generation Multi-Genetic Clubroot Resistance<br>Blackleg Resistance<br>LibertyLink system |
| <b>InVigor<sup>®</sup><br/>L255PC</b>         | <ul style="list-style-type: none"> <li>Pod Shatter Reduction &amp; Clubroot Resistance**</li> <li>Top yield performer</li> <li>Harvest flexibility</li> <li>Medium height</li> </ul>  | <b>109%</b><br>of checks (InVigor 5440 and Pioneer® 45H29) in 2016 WCC/RRC trials        | Mid- to long-growing zones | Very Strong           | Pod Shatter Reduction<br>Clubroot Resistance<br>Blackleg Resistance<br>LibertyLink system  |
| <b>InVigor<sup>®</sup><br/>L241C</b>          | <ul style="list-style-type: none"> <li>Clubroot Resistance**</li> <li>Winner of the 2016 Canola 100 at <b>81.43 bu./ac.</b></li> <li>Strong yield performance</li> <li>Mid maturity</li> <li>Medium height</li> </ul>   | <b>102%</b><br>of checks (InVigor 5440 and Pioneer® 45H29) in 2012-2013 WCC/RRC trials   | All growing zones          | Very Strong           | Clubroot Resistance<br>Blackleg Resistance<br>LibertyLink system   |
| <b>InVigor<sup>®</sup><br/>L135C</b>          | <ul style="list-style-type: none"> <li>Clubroot Resistance**</li> <li>Solid performance</li> <li>Early maturity</li> <li>Medium height</li> <li>Available in Alberta only</li> </ul>  | <b>138%</b><br>of checks (Pioneer® 46A65 and Q2) in 2010 WCC/RRC trials                  | All growing zones          | Strong                | Clubroot Resistance<br>Blackleg Resistance<br>LibertyLink system   |
| <b>InVigor<sup>®</sup><br/>L252</b>           | <ul style="list-style-type: none"> <li>#1 hybrid canola grown in Canada in 2016 &amp; 2017***</li> <li>Winner of the 2017 Canola Performance Trials (CPTs) for the 5<sup>th</sup> straight year (average of all growing zones)</li> <li>Top yield performance</li> <li>Medium height</li> </ul> | <b>110%</b><br>of checks (InVigor 5440 and Pioneer® 45H29) in 2011-2012 WCC/RRC trials   | All growing zones          | Strong to Very Strong | Blackleg Resistance<br>LibertyLink system  |
| <b>InVigor<sup>®</sup><br/>L230</b>           | <ul style="list-style-type: none"> <li>Strong yield performance</li> <li>Early maturing</li> <li>Medium height</li> </ul>   | <b>103.9%</b><br>of checks (InVigor 5440 and Pioneer® 45H29) in 2014-2015 WCC/RRC trials | All growing zones          | Strong to Very Strong | Blackleg Resistance<br>LibertyLink system  |

\*2018 BPI (Business Planning Information) Data

\*\*To predominant clubroot pathotypes identified in Canada at the time of product registration. NEW InVigor L234PC has the same resistance profile as InVigor L255PC, InVigor L135C and InVigor L241C, plus it contains 2<sup>nd</sup> generation multi-genetic clubroot resistance to additional clubroot pathotypes to help combat evolving clubroot pathotypes

\*\*\*2016 & 2017 BPI Data



# THE PROOF IS IN THE BIN



## RESULTS THAT SPEAK FOR THEMSELVES

For over 22 years, InVigor hybrid canola has continuously raised the bar. Because in this business success isn't what you do occasionally, it's what you do consistently.

See how InVigor hybrids are performing against the competition in your area.

**2018 TRIAL RESULTS ARE  
NOW AVAILABLE.**

**VISIT [INVIGORRESULTS.CA](http://INVIGORRESULTS.CA)**

To learn more visit [agsolutions.ca/InVigor](http://agsolutions.ca/InVigor) or call  
AgSolutions® Customer Care at 1-877-371-BASF (2273).

**Always read and follow label directions.**

AgSolutions, INVIGOR, and LIBERTYLINK are registered trade-mark of BASF;  
used with permission by BASF Canada Inc. © 2018 BASF Canada Inc.

**InVigor**®

**■ - BASF**

We create chemistry





Farm Credit Canada is the first Canadian company certified through Ag Data Transparent, a program based on data principles established by the American Farm Bureau Federation.

BY JAY WHETTER

**F**armers can see big improvements in business and agromony decisions by putting their data to use, but that often requires them to share their data with providers of outside expertise. This can make farmers nervous about how their data is collected, used and controlled. A positive data-sharing relationship depends on trust.

With a recent upgrade to its AgExpert platform, including new web-based versions of AgExpert Field ([fcc.ca/agexpertfield](http://fcc.ca/agexpertfield)) and AgExpert Accounting, Farm Credit Canada (FCC) knew that trust would be essential to expand these services to existing and new farmer customers.

So FCC became the first Canadian company to receive Ag Data Transparent (ADT) certification.

“We realized we were collecting an awful lot of producer data,” says Fred Wall, FCC marketing vice-president. “This third-party verification shows farmers they can trust us with their information.”

### ADT ORIGINS

ADT began with farmers. About five years ago, the American Farm Bureau Federation had lots of farmer members raising the issue of data security. So it held meetings with its members, U.S. commodity organizations and key companies in the digital space and came up with a ground-rules document called “Privacy and Security Principles for Farm Data.”



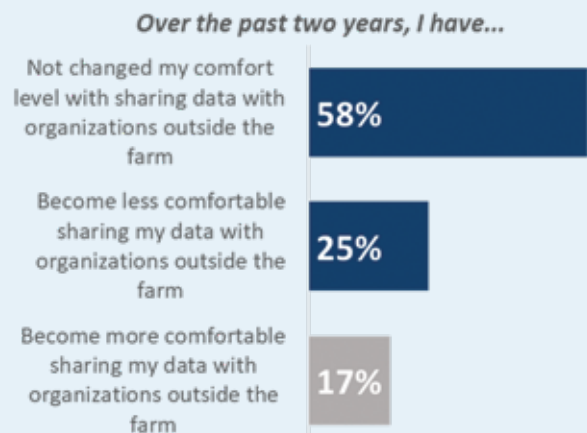
### How Canadian farmers view sharing of data

FCC conducted a ‘Data Management in Agriculture’ survey of 2,000 producers across Canada, representative of all commodity types. Here are three key findings:

1. Overall, farmers are less comfortable sharing their data with organizations outside the farm than they were two years ago. (See the graph.)
2. At the same time, farmers can see all kinds of potential in sharing their data and using it for greater purposes. Farmers see opportunities for efficiency, management decision-making, benchmarking and more. They see opportunities to use data to transform the industry. However, trust remains a key obstacle.
3. Trust in ownership and use of farm data is a problem. While seven in 10 farmers say clear contracts specifying ownership and sharing are ‘very important’ or ‘extremely important’ to them in deciding whether to adopt a tool, only three in 10 farmers say they have a clear understanding of who owns their farm data and how it is used. FCC had a lot of comments

on this issue and one summed it up nicely: “It’s the Wild West out there right now with farm data.”

All information was gathered through the FCC Vision Panel, which FCC uses to consult the market on its major decisions. Find out more at [fccvision.ca](http://fccvision.ca).





#### Clauses in the document include:

- Collection, access and use of farm data should be granted only with the affirmative and explicit consent of the farmer. This will be by contract agreements, whether signed or digital.
- Farmers must be notified that their data is being collected and about how the farm data will be disclosed and used. This notice must be provided in an easily located and readily accessible format.
- Within the context of the agreement and retention policy, farmers should be able to retrieve their data for storage or use in other systems, with the exception of the data that has been made anonymous or aggregated and is no longer specifically identifiable.

The Farm Bureau principles document became the core of ADT. Todd Janzen, a lawyer from Indianapolis, Indiana, is the ADT administrator. A company that wants to get certified has to answer 10 questions derived from the Farm Bureau's principles and provide reference for how those principles are represented in its farmer contracts. Janzen then "corrects the papers," comparing the answers to the companies' actual contracts to make sure they align with the principles.

Certification has to be renewed each year. "If a company changes their contract, they have to come back and get it approved. If changes are major, they have to re-certify," Janzen says.

As of early November, 18 companies are certified and two more are in the process. The list includes John Deere, which was certified in February 2018.

Matthew Olson, John Deere product marketing manager for precision ag, says certification will ensure a high standard of transparency, simplicity and trust in all data contracts and services. "The privacy and security principles on which the ADT certification is founded apply to agronomic, land, farm management, machine and weather data," he says.

#### WHY WOULDN'T YOU DO THIS?

Fred Wall says FCC rebuilt AgExpert Field with ADT in mind, including a right-of-exit clause and assurance that FCC will share data only with whom the farmer specifies and for a specified length of time. "We see it as the producer's choice to decide who they

share their data with and when," he says. "I don't want producers surprised by anything FCC does." As an extension of this, FCC now screens potential partners to make sure they're also ADT certified.

"Why wouldn't you go through this process?" Wall asks.

ADT is one of a kind in the world, and Janzen hopes to certify many more

non-U.S. companies. "In discussions with people in Canada and other countries, they appreciate that American farmers set this up and they're happy to just go through ADT rather than push for a similar system in their own countries," Janzen says. "There is nothing inherently American about the principles. They are geared toward farmers everywhere." ✖

## Canola performance

### – driving yields with smart input choices

*Too much early-season nitrogen (N) encourages lodging, depletes soil moisture and leaves less N for seed production. ESN technology controls N release, reducing N loss and increasing N efficiency. Additionally, it significantly reduces N loss to the environment.*

#### ESN technology and increased yield

When compared with similar N treatments of urea or UAN, using 50-75% of N with ESN technology has shown an average of 8-10% increase in canola yield. This data is derived from a number of independent research studies conducted at various locations in Western Canada.

#### Unmatched seed safety

Applied at rates up to three times higher than conventional N fertilizers, ESN won't harm growing seedlings (following safe rate guidelines and recommended percentages of ESN).

#### Wider application window

ESN provides a wider application window in both the spring and the fall, allowing you to apply fertilizer on your schedule.

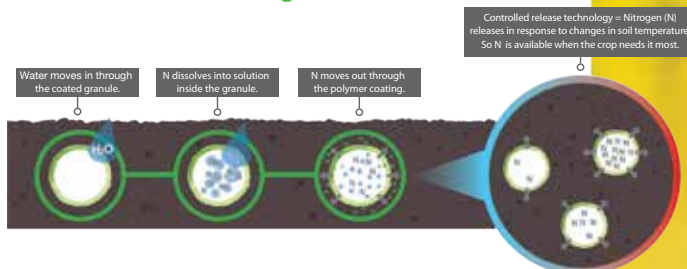
#### Convenient to use and apply

ESN is compatible with no-till operations and is easy to blend. It will not set-up in storage and therefore has a longer shelf life.

#### Environmentally responsible

ESN significantly reduces N loss, providing substantial benefits to the environment.

**Minimize N Loss. Maximize Yield.**  
**Learn more at [SmartNitrogen.com](http://SmartNitrogen.com)**



©2018 NUTRIEN Ltd.; ESN, NUTRIEN logos and designs are registered trademarks owned by NUTRIEN Ltd.  
04/18-48873-01

**ESN**  
SmartNitrogen

**Nutrien**

Marketing Canadian canola meal to the American dairy industry takes on a Midwest focus, using on-farm trials in Wisconsin to show how higher usage levels can lead to higher milk yields.

# DAIRY-DRIVEN WISCONSIN SEES CANOLA MEAL BENEFIT

BY TREENA HEIN

**W**isconsin is the ‘number two’ dairy state in the U.S., after California. No surprise then that the Canola Council of Canada (CCC) has a focus on marketing Canadian canola meal to the Wisconsin dairy industry. “Exports of canola meal to Wisconsin are steady and an important part of all U.S. canola meal exports,” explains Brittany Dyck, CCC manager of canola meal. “However, current usage levels in dairy diets can be low.”

Dyck and her team recognize that the dairy feed industry in Wisconsin is quite different than it is in California, the biggest U.S. market for canola meal. In Wisconsin at present, canola meal faces tough competition from soymeal meal, an established protein source, and from other protein sources such as dried distillers’ grains with solubles (DDGS) and cottonseed.

Numerous studies have been conducted on the inclusion of canola meal in dairy cow diets. Ken Kalscheur says results indicate canola meal can successfully replace other byproducts and protein supplements. “One meta-analysis report which compiled the results from 49 studies showed that milk production increased 1.4 kg per cow per day when canola meal was included, compared to all protein sources, but was similar when compared directly with soybean meal,” notes the scientist at U.S. Dairy Forage Research Center in Madison, Wisconsin. “More recent research completed at the Center demonstrated that when canola meal was included in the diets of high-producing dairy cows in early lactation, milk production increased 4.45 kg per cow per day.”

Kalscheur says that while more research is needed to determine where canola meal best fits in the lactating dairy cow diet, research results indicate that it has “very good potential to be included in high-producing dairy cow diets in Wisconsin and throughout the U.S.”

## TWO WISCONSIN DAIRIES RUN AN ON-FARM TRIAL

In the fall of 2017, Dyck met with a respected independent group of consultant dairy nutritionists in Wisconsin and the surrounding area (called GPS Dairy Consulting). She wanted to both gain a better understanding of how they and other nutritionists typically formulate dairy cow diets, and also to see if these nutritionists had everything they needed

“The trial was a great success, demonstrating improvements in milk yields, reduced feed costs towards the end of the treatments, and efficiencies on one farm because high-cost expeller soybean meal was no longer required to be purchased and stored.”

—Brittany Dyck







from existing research results in order to confidently incorporate canola meal in their formulations.

The nutritionists at GPS agreed to ask some of their existing clients if they would be willing to participate in a study where the value of canola meal could be demonstrated in comparison with their existing protein sources. Two large dairies agreed to come on board, and the study was carried out by GPS and CCC during the winter and spring of 2018. Dyck says the study was intended to demonstrate that high levels of canola meal can support the maintenance of milk yields, as well as potentially reducing feed costs and creating efficiencies on farm.

At the time, dairy cattle on both farms were being given rumen-bypass expeller soybean meal. Farm one was giving canola meal at eight per cent of the diet, but farm two was feeding no canola meal. For the study, all soybean meal products were removed from the diet; farm one's canola meal inclusion was bumped up to 12 per cent, while farm two was eight per cent. The cost of the two diets was almost exactly the same for this trial.

On both farms, daily milk production increased, by nearly two litres per cow on farm one and a whopping 3.5 litres per cow on farm two. Dyck notes that the diet for farm one (the higher level of canola meal) resulted in a somewhat greater milk protein and fat yield. With the second herd, milk protein yield increased, while fat yield remained the same.

"The trial was a great success, demonstrating improvements in milk yields, reduced feed costs towards the end of the treatments, and efficiencies on one farm because high-cost expeller soybean meal was no longer required to be purchased and stored," Dyck says. "With benefits like these, it is not at all surprising to me that the owners of both farms decided to keep their cattle on the trial rations after the trial ended." Dyck is not sure if that is still the case.

CCC is now working to disseminate the results of the demonstration trial to Wisconsin dairy farmers through traditional means and social media. 🌻

—Treena Hein is an award-winning science writer and educational resource consultant.

One thing attendees learned at the International Clubroot Workshop last summer in Edmonton is how widespread clubroot has become in brassica-crop-growing areas around the world. This is a follow up article to 'Global concern, local action' in the November 2018 Canola Digest.

# CLUBROOT AROUND THE WORLD

BY JAY WHETTER

**T**he clubroot pathogen *Plasmodiophora brassicae* was first detected in Europe in the 1870s, but was probably there for centuries. Clubroot disease was documented in the U.S. in 1853 and found in China and Japan about 100 years ago. The disease is now found in all brassica-growing areas of the world, and seems to be getting worse everywhere — partly due to tighter rotations and partly due to favourable (moist) conditions for higher yield and high disease. The International Clubroot Workshop included updates from various countries.



## CANADA

Canada had its first documented cases in the early 1900s in brassica vegetable crops in Eastern Canada. European settlers probably carried clubroot to North America on the fodder turnips they brought with them. On the Prairies, there were occasional reports of clubroot in home and market gardens over the decades, but the disease was not identified on canola until its discovery in 12 Alberta fields in 2003. Here are 2018 updates for the three Prairie provinces:

- **Alberta.** Cumulative counts in Alberta reached 3,035 fields as of 2018. New counties confirmed to have clubroot are Rocky View around Calgary and Greenview, Northern Sunrise and Birch Hills in the Peace region.
- **Saskatchewan.** An extensive field survey in 2018 brought the total number of fields with confirmed visible symptoms of clubroot to 37. The area where clubroot has been confirmed has expanded outside

of crop districts 9AE, 9AW and 9B (2017 findings) to include crop districts 7B, 6B, and 5B. All growers will be contacted and advised to follow the protocols outlined in the Saskatchewan Clubroot Management Plan. Find a link to the plan in the 'Regulations' section at [clubroot.ca](http://clubroot.ca).

- **Manitoba.** Fifteen new fields were confirmed to have clubroot symptoms in 2018, bringing the total number of confirmed fields up to 33 across seven rural municipalities. Dane Froese, Manitoba Agriculture's oilseeds specialist, says all newly identified fields were in the rural municipalities of Pembina, Louise, Lorne and Dufferin. "The latter two are newly identified 'hot' municipalities for clubroot," he says.
- University of Alberta researcher Stephen Strelkov says the spread of clubroot in Western Canada has been rapid for a soil-borne disease. For updates, go to [clubroot.ca](http://clubroot.ca) and click on the 'Affected regions' box.



"The spread of clubroot in Western Canada has been rapid for a soil-borne disease."

—Stephen Strelkov



## UNITED STATES

Venkat Chapara is a plant pathologist with North Dakota State University. North Dakota is the top canola-producing state in the U.S., with about 1.6 million acres in each of the past two years. In 2016, Chapara surveyed 48 fields in the state's Cavalier County and found clubroot in one field. In 2017, 10 per cent of fields in the county had clubroot. In 2018, 33 of 101 fields surveyed had clubroot and the worst samples had 13 million spores per gram of soil. Cavalier is by far the worst county for clubroot in the U.S., and the disease has become very common, especially in low pH (ranging from 4.5-6.4) soils, Chapara says. For point of reference, Cavalier County is on the Manitoba border, stretching from south of Crystal City in the west to south of Winkler in the east.

## UNITED KINGDOM

"We have a huge problem with clubroot in the U.K.," says Fiona Burnett, plant pathologist with Scotland's Rural College. Oilseed rape (OSR) is the second most profitable crop in the U.K., after wheat, she says, but more than half of arable fields in the country are infested with clubroot and pathotypes that break the common "Mendel" source of genetic resistance are everywhere.

## GERMANY

The biggest OSR-producing country in Europe has had clubroot for at least 100 years. Frequency of OSR in the rotation correlates with the incidence and prevalence of clubroot disease and has helped select for pathotypes that are virulent to Mendel, the main source of resistance in most varieties. "Unfortunately we have a big problem with clubroot nowadays," says Nazanin Zamani-Noor, researcher at the Julius Kuehn-Institute in Braunschweig, Germany.

## POLAND

Poland is the third biggest OSR-producing country in Europe after Germany and France. A survey by Malgorzata Jedryczka at the Polish Academy of Sciences found that one third of fields surveyed in 2017 had clubroot. Key factors for the increase in clubroot, she says, are tight rotations and the moderately to extremely acidic nature of most Polish soils.

## FRANCE

Clubroot is now "extreme" in France, and 68 per cent of fields have pathotypes that can overtake the resistance in Mendel.

## JAPAN

Japanese farmers grow a lot of brassica crops – cabbage and Chinese cabbage, broccoli and komatsuna – and clubroot is "their most troubling soil pest," say Japanese researchers who presented at the International Clubroot Workshop. Katsunori Hatakeyama, associate professor at Iwate University in Japan, says most Chinese cabbage varieties grown in Japan have clubroot resistant (CR) traits, but "CR is sometimes broken down."

## SOUTH KOREA

Clubroot is a significant problem in vegetable brassicas in Korea, says Strelkov from U of A. Korean researchers are active in the genetics of resistance and management of the disease.

## CHINA

Up to 10 million acres of cruciferous crops are infected by the clubroot pathogen annually in China, Strelkov says, and the disease is estimated to cause yield losses of 20 to 30 per cent.

## COLOMBIA

In a 2017 national survey, 53.6 per cent of fields tested positive for clubroot. Colombia's brassica crops are cabbage, broccoli and cauliflower, which tend to be very sensitive to clubroot. Andrea Botero-Ramirez, a Colombian and a Ph.D student working with Strelkov at U of A, says these crops have shown a 30-43 per cent yield drop with spore density of only 1,000 spores per gram of soil, and 60-75 per cent yield drop with spore density of 1,000,000 per gram. Part of the problem in Colombia is tight rotations. Fields have cruciferous crops for six months of the year then usually rotate to potatoes, lettuce, corn or carrots for six months. 🍷

—Jay Whetter is the editor of *Canola Digest*.

**"Unfortunately we have a big problem with clubroot nowadays."**

—Nazanin Zamani-Noor, from Germany.



Go to [canoladigest.ca](http://canoladigest.ca) to read Jay Whetter's article "Global concern, local action" with clubroot management tips from the International Clubroot Workshop.

# 2018 CANOLA DISCOVERY FORUM

## WHAT IS THE MOST ECONOMICAL SEEDING RATE?

The major theme at Canola Discovery Forum 2018 was canola crop establishment, with part of the discussion dedicated to seeding rates. The following article will help canola farmers think through the economics behind their target stands and the seeding rates required to achieve them.

BY JAY WHETTER

**A** uniform early-established canola stand of five to eight plants per square foot usually yields better than thinner, later or uneven stands. In a meta-analysis of more recent Western Canadian studies on hybrid canola, Murray Hartman, oil-seeds specialist with Alberta Agriculture, found that, overall, hybrid canola achieved 95 per cent of its yield potential with six to eight plants per square foot, 90 per cent of its yield potential with three to four plants per square foot and 85 per cent at two to three plants per square foot. Fewer plants than that and yield potential can drop dramatically.

A target of five to eight plants per square foot allows for the loss of a couple of plants to frost, insects or other establishment threats while maintaining yield potential. This seeding rate is extra insurance to reduce risk. This target density range is also wide enough to allow for some uncertainty due to emergence percentage and seed size variations within a seed lot.

Here are the economic considerations for five to eight versus two to three plants per square foot.

### SEED COST

Assuming 60 per cent seed survival, five grams per 1,000 seed size and \$12 per pound

seed cost, seeding to target five to eight plants per square will cost \$48.00 to \$76.80 per acre. With the same parameters, seeding to target two to three plants per square foot will cost \$19.20 to \$28.80 per acre. The difference between mid-points of the two targets would be around \$35 to \$40 per acre. Try to think beyond the immediate seed savings and remember that extra plants mean extra insurance.

### YIELD

If the higher target achieves six plants per square foot, Hartman's meta-analysis shows it will achieve 95 per cent of its yield potential. (See the graph.) If the lower target achieves three plants per square foot, this stand will achieve 85 to 90 of the crop's yield potential. While a lower stand can sometimes yield as much as a more dense stand, Hartman's analysis averages suggest the lower and more variable yield potential for the lower target basically wipes out the seed cost savings.

Lower plant stands also face other subjective factors that can reduce the profit or increase risk or both. These are subjective because they are based on varying circumstances and the true cost is harder to calculate. The following discussion is for guideline purposes only, but the dollar figures will give you a starting point for your own calculations.

### NON-UNIFORM ESTABLISHMENT

With fewer plants in a stand, the risk of dropping below two plants per square foot in patches (such as hilltops, for example) becomes much higher. Non-uniformity can result from seeding errors, variation in soil temperature, type or moisture, early season insect feeding, frost and more. In areas below two plants per square foot, yield potential is extremely variable (only 60 to 80 percent of full yield potential or a 20-40 percent average yield loss). If only 10 per cent of a 160-acre field is below this threshold, you could be shaving off at least 1 bu./ac. off the field's entire yield, reducing profits by another \$10 per acre. "I really think that having a target density with less than two to three plants per square foot is not reflecting the uncertainty in the density-yield relationship or the uncertainty in the estimate for emergence percentage," Hartman says. The result of this uncertainty can be a highly variable and highly risky stand.

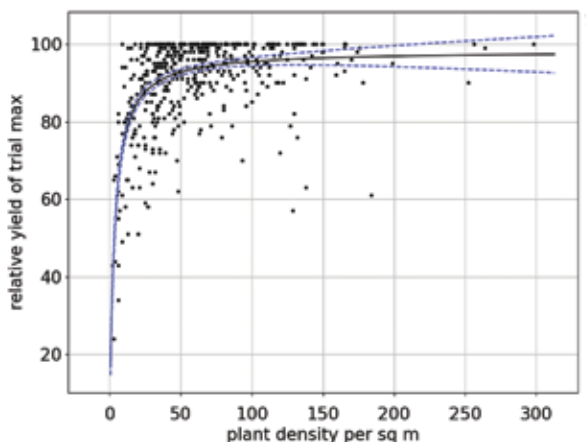
### WEED MANAGEMENT

With fewer plants per square foot, it takes a few days longer for a crop canopy to fill in. This can mean the difference between one in-crop herbicide application per season and two. If the total cost of application is \$15 and the second application is required in every second canola crop, this increases cost by \$7.50 per acre of canola each year, on average.



## INSECT RISK

Consider flea beetles alone. With the same number of flea beetles spread across fewer plants in a field, there will be more beetles (and feeding) per individual plant. This damage will increase the need for a foliar spray as thresholds will be reached sooner than if the same number of flea beetles were feeding on a larger number of plants. If a lower plant density means a spray is needed two years in 10 instead of one year in 10 and the total spray cost is \$15 per acre, this increases cost (and reduces profit) by \$1.50 per acre per year. That may sound minor, but this aggressive flea beetle feeding could also set back crop maturity or introduce disease. A foliar insecticide to control flea beetles will also kill beneficial insects in the field, potentially increasing the need for more insecticide applications in the future.



*This is the yield-by-seeding-rate graph based on Murray Hartman's meta-analysis of more recent Western Canadian studies on hybrid canola. For each study included in the analysis, the top yield result is placed on the 100% line. From there, each plot result is converted to percentage of top yield for the site and placed on the graph as a single dot. The black curved line represents the typical yield results for each plant count. (50 plants per square metre is roughly five plants per square foot.) The blue lines on each side of the black are 95-per-cent confidence bands.*

## CROP STAGING

A lower seeding rate means fewer, bigger plants per square foot. That means more branches. Fewer branchier plants expands the flowering window, which increases the at-risk period for sclerotinia. It can also delay swath timing or straight combining while waiting for seeds on side branches to reach maturity. Some years this delay will be meaningless to profit, but in 2018 would a few days earlier maturity have made a difference to frost damage, locked-in green seed and overall harvest stress for at least a percentage of canola crops? Yes. The price difference between No.2 and No.1 could be just a few cents a bushel or \$1 per bushel. The size of discount will vary by location, by month and by how much high-green canola is out there, but it is possible that high green when averaged over the years could significantly reduce revenue per acre for lower plant counts relative to the higher target.

## STUBBLE DENSITY AND ANCHORING SWATHS

Finally, with just a few stems per square foot, swaths may not anchor as securely as if they were held down by many uniform stalks. Canola plants left to stand for straight-cutting can also see some effects from wind: thicker densities will knit together and the plants will be less prone to bashing against each other and dropping seed in windy conditions compared with thinner stands. This could have no affect at all some seasons, or could be a bigger issue than people realize in high-wind events.

## CONCLUSION

All things considered, Hartman says the most economic seeding rate is likely that which produces a final harvest stand of four to six plants per square foot. The saving in seed cost at the lower density generally will not fully offset yield revenue loss, resulting in profit loss. He adds that economics can start to favour low plant density with very large seed size and very low seed survival. 🌻

—Jay Whetter is the editor of *Canola Digest*.



## Do insecticide seed treatments work?

As part of his presentation on seed treatments, Ted Labun, seedcare technical lead with Syngenta showed the following two photos to demonstrate the value of current canola seed treatments. The first is a field of SY4135 hybrid seeded 2018 near Mozart, Sask. The second is a field of SY4135 seeded 2015 near Girouxville, Alta. Wiped out areas of each field were seeded to bare (completely untreated) seed. Areas with a decent stand had seeds with insecticide and fungicide seed treatments. Labun says: "In our commercial validation trials we are finding that soil-borne diseases and insects like flea beetles both impact final stand and overall plant health. In addition, we know that later infection by soil-borne diseases may not always reduce stand but can certainly compromise the ability of canola to compensate for flea beetle damage. In the case of these two sites, flea beetles were the primary cause of crop loss. For the Girouxville site, which was almost all stem feeding on untreated seed, a seed-applied fungicide would not have made a difference in the final outcome. Losses would still be extreme."



# NON-FARMED SPACES HAVE REAL VALUE

Canola Discovery Forum 2018 in Banff included two presentations on the profit-driving diversity that shelterbelts, wetlands, fencelines and pivot corners provide to the farm.

BY JAY WHETTER

If you took time to add up the acres of non-farmed space on your farm, would you be surprised at the total? Non-farmed spaces include yards, shelterbelts, road allowances, fence rows, bluffs, pastures and wetlands. In a survey of 22 Saskatchewan fields, University of Saskatchewan researcher and associate professor Christy Morrissey found that 29 per cent of the area was non-cropped.

This sounds like a lot of wasted land, but these spaces often provide a net benefit to the farm. In a presentation at Canola Discovery Forum, Morrissey described new studies that support the “diversity-stability hypothesis” – the idea diversity increases yield and provides for a farm ecosystem that can better withstand pressures from drought, insects and disease. She referenced a U.K. study (Pywell et al, 2015) that took the lowest-producing three to eight per cent of land in various fields out of production and seeded them to diverse perennials. It increased the land’s yield relative to regional averages and with no net loss in profits.

Morrissey also pointed to an Iowa State University study (Schulte et al, 2017), which found that seeding 10 per cent of a field into perennial strips increased pollinator abundance by 3.5 times, native bird abundance by 2.6 times, phosphorus retention by 4.3 times and soil retention by 20 times.

Paul Galpern, an ecologist and professor in the Department of Biological Sciences at the University of Calgary, spoke at Canola Discovery Forum about his Alberta research. With students fanning out to survey fields throughout southern and central Alberta, Galpern found that canola yields are higher than average in fields that are more complex – meaning they have sloughs, bluffs, fence lines and other features that break up the landscape. This is not just a climate effect (we know that wetter areas have more sloughs AND higher yields) because Galpern made sure to compare results to less complex fields within the same region.

Galpern and his team found that non-farmed areas in Alberta provide habitat for hundreds of insect species that (1) increase pollination to boost yield and (2) feed on pest insects to save yield and reduce pest-management costs. These areas can also retain water to reduce yield loss from over-land flooding.

His statistical models suggest that some of the yield lost to a small non-farmed area can be made up by



increased yields in the remainder of the crop. “This model is a simplification of the real world,” Galpern says. “I wouldn’t want farmers to change their practices on this alone, but what it does say is that non-farmed areas are unlikely to be bad for crops.” He looks forward to continuing the research at the field level to measure how much of a yield boost farmers can expect, and develop recommendations on the best way to get it.

One question that needs answering, he says, is which non-farmed areas are best for yield, improved profitability and other potential benefits like carbon sequestration? Are wetlands best? Or shelterbelts? Or tame pasture? And how much non-farmed area is enough?

Galpern will apply for more funding to continue the research. Meanwhile, Morrissey is looking to ramp up her assessment of non-farmed areas, hoping to engage farmers in a “participatory science” research project.

The project, called the Canadian Prairie Agroecosystem Resilience Network (CPARNet), has the support of seven universities, 33 supporting organizations (including SaskCanola), 34 academics, 21 government and NGO scientists and nine international partners.

“CPARNet is a new way of doing research. Multiple researchers want to study the innovation that comes from farmers working the land and testing solutions. We want to move away from plot-level studies. We want farmers to try things in the real world and we’ll be there to study what they did and how it influenced yield, profitability and other environmental health factors.”

*Non-farmed spaces already account for a lot of acres in some fields.*



Lisa Schulte’s Iowa State University study is posted at [pnas.org](https://pnas.org).

Another article, “Crop pests and predators exhibit inconsistent response to surrounding landscape composition”, which demonstrates the need for more research on the benefits of non-farmed spaces, is posted to the same website.



CPARNet will collect what worked, what didn't work, and communicate results with other farmers. As recommendations become clear, she expects farmers will adopt them wholeheartedly – the same way they did with reduced tillage.

New tech could be a big help. Field sampling, mapping and data management will help farmers identify non-profitable areas that could be turned back to perennial grasses and hubs for biodiversity. On-off sensors for applicators and GPS tracking make it easier to set aside non-productive areas. Autonomy of field machinery could see a trend to small machines that can run long hours and be better suited to dodge wild spaces.

“Whatever the research discovers, the steps have to be seen to change the bottom line for farms, but once we get away from just thinking about yields and look at profits instead, the picture may change dramatically,” she says. “When you puts the idea out there, farmers will think of ways to do it,”

If you have a grain or mixed farm in Alberta, Saskatchewan or Manitoba, and want to participate in CPARNet, email Morrissey at [christy.morrissey@usask.ca](mailto:christy.morrissey@usask.ca). ✖

—Jay Whetter is the editor of *Canola Digest*.

“The steps have to be seen to change the bottom line for farms, but once we get away from just thinking about yields and look at profits instead, the picture may change dramatically.”

—Christy Morrissey

# TELLING THEM OVER AND OVER AND OVER AGAIN

The public often needs simple messages repeated often before behaviours or impressions start to change. Sometimes finding common ground with the opposition can help.

BY SARAH MUKHERJEE

One of the things that used to really amaze me when I was a journalist at the BBC was how difficult it was to communicate even the simplest messages. Myself, and the small team who worked with me, would spend hours carefully honing radio and TV scripts. We would find suitable locations and spend hours interviewing just the right person before editing a final piece for the main news bulletins. As the correspondent, I presented the piece – and would be completely perplexed when the following day a member of the public would stop me in the street and challenge the report, obviously completely misunderstanding the point. Even friends who had knowledge of the subject would “get it wrong.”

As we all know, communication is not what A says but what B hears. The truth I learned in 20 years of national and international broadcasting was that if you want a message to stick, you have to say it over, and over, and over,

and over again. You know those irritating earworms – songs that you can't get out of your head? Or TV jingles from childhood that you can still remember? Think how many times you must have heard those before they stuck. And those messages were often reinforced – TV, radio, billboards and magazines all ran the same adverts to drive the message home.

The same is true about any communications with the public. I was involved in the water industry in the U.K. in 2012 when we had an extreme drought and were welcoming visitors from all over the world in an Olympic year. Droughts come slowly (on the whole) in the U.K., floods come fast, so in this case we had time to work across the sector to ensure we had the same two or three messages about using water wisely. Government, regulators, industry and even some NGOs were all saying the same thing. The message stuck and water use moderated.

People these days are disconnected from agriculture. The sector's

understandable concern about yields and weather doesn't impact the public directly, and the public has lots of other things to be worried about. So we in agriculture need to find ways of working with friends and allies to help people understand what we do and get our point across. For example, in the U.K., we at the Crop Protection Association (similar to CropLife Canada) have been working with Greenpeace to try and stop people selling professional crop protection products to consumers online through organizations like eBay. The agriculture sector does have some catching up to do in explaining what it does and why, particularly when you compare us to environmental NGOs, but our experience is that people are willing to listen. You've just got to be willing to tell them over and over again! ✖

—Sarah Mukherjee is chief executive with the U.K.'s Crop Protection Association. She spoke at *Canola Discovery Forum 2018 in Banff*.



The agriculture sector does have some catching up to do in explaining what it does and why, particularly when you compare us to environmental NGOs, but our experience is that people are willing to listen.

# TAKE TIME NEEDED FOR NEONIC REVIEW

The comment period for the PMRA registration reviews for two neonicotinoid canola seed treatments ended November 13, but the Canadian canola industry is asking the PMRA to take time and consider incoming research results before making a final decision.

**F**lea beetle seed treatments clothianidin and thiamethoxam, both in the neonicotinoid family, are under separate registration reviews by the Pest Management Regulatory Agency (PMRA), the Health Canada agency that oversees pesticide registration in our country. Clothianidin is in Prosper and Poncho seed treatments. Thiamethoxam is in Helix and Cruiser Maxx seed treatments.

PMRA decisions on these two reviews are expected in the early months of 2019. If the PMRA moves forward with a phase-out, these two seed treatments would not be available after 2024.

The formal consultation period closed for the neonic review on November 13, 2018. The Canola Council of Canada (CCC) and Canadian Canola Growers Association (CCGA) made a submission clearly articulating why these proposed decisions should be reconsidered, highlighting how losing these products will dramatically impact competitiveness.

“The CCC got involved because we want to help ensure that growers can profitability and sustainably grow canola, and to do that, they need access to the right tools,” says Curtis Rempel, CCC vice president of crop production and innovation. “The CCC agronomy team estimates that losing neonic seed treatments would cost growers \$700 million

and jeopardize our ability to achieve our sustainability goals.”

Rempel says a targeted seed treatment is a valuable tool in canola stand establishment. The crop needs protection from flea beetles, which is the top insect pest of canola in Canada, and the alternative to seed treatment is above-ground foliar sprays. “The proposed ban on clothianidin and thiamethoxam seed treatments will result in increased frequency of foliar insecticide applications. This is never the first choice for our growers who are always looking for more targeted, more effective and less invasive pest control options,” read the CCC and CCGA letter to the PMRA.

While the formal consultation period is over, the CCC’s work continues. Additional information on effective risk mitigation strategies will be submitted and technical meetings will be organized to ensure PMRA scientists fully understand the impact on the canola industry. The CCC will continue to request that no formal decisions on clothianidin and thiamethoxam be made before the PMRA has received and fully considered all relevant scientific information, especially on how the risk to aquatic invertebrates could be effectively mitigated by our industry.

Ryan Prosser, a University of Guelph scientist who studies the impact of chemicals on aquatic and terrestrial ecosystems, was quoted in the CCC and CCGA letter saying that the water monitoring data the PMRA is currently using are overly conservative and greatly overestimate the true levels of neonics in waterways. Prosser says more research is needed.

“We understand the importance of monitoring waterways



for pesticides so regulators have confidence in the sustainability of our crop,” Rempel says.

Rempel is co-chair of the Environmental Monitoring Working Group, which coordinates the sampling and analysis of wetlands and flowing water across Canada. This pan-Canadian water monitoring program now has two years of surface water monitoring data for neonicotinoids. “What is needed is an interpretation of the data in context of cropping systems, tillage practices, local moisture events and climatic patterns, soil characteristics and other variables to determine why and how exceedances have occurred in order to effectively mitigate risk,” Rempel says. “It’s important that decisions are made with the best available information. That means we need to have sufficient time for thorough analysis and follow up experimentation in 2019.”

Rempel says the PMRA provided useful guidance and collaboration for the working group’s water sampling and analysis. “We now need the time to interpret that data,” he says. 🌻

“The CCC agronomy team estimates that losing neonic seed treatments would cost growers \$700 million and jeopardize our ability to achieve our sustainability goals.”

—Curtis Rempel (above), Canola Council of Canada vice president of crop production and innovation.





# SEED EVERYTHING AND THE KITCHEN SINK.



Get a more complete and faster burnoff when adding Aim® EC herbicide to your glyphosate. This unique Group 14 chemistry delivers fast-acting control of your toughest weeds. Aim® EC also provides the ultimate flexibility, allowing you to tank-mix with your partner of choice and no fear of cropping restrictions.

Fire up your pre-seed burnoff with Aim® EC.

**CANOLA | LENTILS | WHEAT | BARLEY | & MORE**

**Save up to \$5.50/acre with FMC Grower CashBack.**







# PARDNER®

## TAKE CONTROL.

You've identified volunteer canola as a weed.  
Now it's time to deal with it.

For control of all volunteer canola, tank mix  
Pardner® herbicide with your pre-season  
application of Roundup®.

Make Pardner your first choice.



**VOLUNTEER CANOLA**  
BRASSICA NAPUS VOLUNTEERUS



PLANT TYPE: Undesirable weed  
NATIVE TO: Western Canada  
(All growing zones)  
GERMINATION TIMING: Early Spring  
WATERING NEEDS: Unnecessary

[cropscience.bayer.ca/Pardner](http://cropscience.bayer.ca/Pardner)

1 888-283-6847



@Bayer4CropsCA

#AskBayerCrop

Always read and follow label directions. Pardner® is a registered trademark of the Bayer Group. Bayer CropScience Inc. is a member of CropLife Canada. Roundup® is a registered trademark of the Bayer Group, Monsanto Canada ULC licensee. ©2018 Bayer Group. All rights reserved.

R-66-01/18-10895366-E