

January 2017

canola DIGEST

The Source for Canada's
Canola Growers



UNLOCKING CANOLA'S GENETIC POTENTIAL FOR YIELD

INSIDE:

**Observations from
Canola Discovery Forum 2016**

**LOOKING BACK AT
THE CHINA TRADE DISPUTE**

Farmer panel on "bending tech"



You might think that when nitrogen fertilizer is in the ground, it's safe.

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THE POWER TO MAKE THINGS GROW



12

UNLOCKING CANOLA'S GENETIC POTENTIAL FOR YIELD

Average yields are just a fraction of what current hybrids achieve in plots and on top-yielding fields. So how can growers make better use of this genetic potential?

16

Profits over yields

Targeting the highest yield potential is often a sure path to bankruptcy. A better target is profit — with consideration for individual circumstances and appetite for risk.

26

Observations from Canola Discovery Forum 2016

Close to 200 researchers, growers, industry representatives and extension staff gathered to discover canola research needs and knowledge gaps.

30

Four ideas from Canola Discovery Forum

Get smarter about sclerotinia. Map acres that never make money. Select the right root for the job. GRADE the validity of evidence.

32

Looking back at the China trade dispute

The current agreement to keep dockage at 2.5 percent for canola delivered to China took many months of intense work. And it's not over.

34

Canola oil can help control blood sugar

Canola oil can improve glycemic control in people with type-2 diabetes. Canola Eat Well is working with the Canadian Diabetes Association to promote this health benefit.

36

Make dough with canola oil

Canola Eat Well used "Pizza Month" activities to encourage Canadians to make their own pizza dough using canola oil.

Credit: iStock.com/EasyBuy4u



38

Verticillium stripe: Measuring the threat

Verticillium is impossible to eradicate from the soil, but so far, yield loss from the disease is minimal in Canadian canola.

DEPARTMENTS

20

18 **Agronomist abroad** **Harvest tech lures me to Agritechnica**

Canola Council of Canada agronomy specialist Shawn Senko writes about his visit to Agritechnica in Germany to look at straight-cut headers for canola and precision yield monitors.

24 **Canola research hub** **Flea beetle management**

This article is based on the query “What are some of the impacts of and management associated with flea beetles in Western Canada?” from canolaresearch.ca.



20 **Farmer panel** **Bending tech**

Jesse Hirsh used the phrase “bend tech to suit your needs” in his presentation at CropSphere in 2016. These three farmers share experiences bending new and old technology to improve its utility on their farms.

40 **5 steps to better...** **Canola stand establishment**

Canola Council of Canada agronomy specialist Autumn Barnes looks at uniform establishment of a target canola plant population as a way to balance risk and profit.

42 **Business management** **Use your capital gain exemption**

When used to transfer land, the capital gain exemption creates tax savings and provides retiring parents with much better utilization of their assets while they're alive.

PROVINCIAL BULLETINS

6 **ALBERTA CANOLA**

Attend the Leading Edge Farm Management Conference in Red Deer, February 15-16. Access top farm-business management advisors for two days of in-depth learning about the financial and legal side of the farming business.

8 **SaskCanola**

License to Farm cleans up at the Canadian Agri-Marketing Association's annual “Best of CAMA” awards night, winning seven awards. Also...highlights from the leadership workshop and the new SaskCanola blog.

10 **Manitoba Canola Growers**

The three-day Canola Connect Harvest Camp provides a backdrop for agricultural conversations among diverse individuals – including farmers, chefs, dietitians, home economists, restaurateurs and food writers from across Canada.

CALENDAR

CROP PRODUCTION SHOW —
January 9-12, Prairieland Park, Saskatoon.
cropproductiononline.com

SASKCANOLA AGM & 25TH ANNIVERSARY CELEBRATION —
January 9, Prairieland Park, Saskatoon.
saskcanola.com

CROPSPHERE — January 10-11,
Prairieland Park, Saskatoon.
cropsphere.com

CANOLA DAY AT AGDAYS —
January 17, Keystone Centre, Brandon, Manitoba.
agdays.com

FARMTECH CONFERENCE —
January 31-February 2, Expo Centre, Edmonton.
farmtechconference.com

ALBERTA CANOLA PRODUCERS COMMISSION AGM — January 31,
2:45 p.m., during FarmTech, Edmonton.
farmtechconference.com/agenda/

TOP NOTCH FARMING — February 15,
Kerry Vickar Centre, Melfort, Saskatchewan.
saskcanola.com/news/upcoming.php

CANOLAB SASKATCHEWAN —
February 15 or 16, Regina.
saskcanola.com/news/upcoming.php

LEADING EDGE FARM MANAGEMENT SERIES — February 15-16,
Holiday Inn & Suites on Gasoline Alley, Red Deer.
albertacanola.com/event/leading-edge-farm-management-conference

CROPCONNECT — February 15-16,
Victoria Inn Hotel & Convention Centre,
Winnipeg. | cropconnectconference.ca

MANITOBA CANOLA GROWERS ASSOCIATION AGM — February 16,
7:30 a.m., during CropConnect, Winnipeg.
CanolaGrowers.com

CANOLAB ALBERTA — February 22 or 23,
Lakeland College, Vermilion.
albertacanola.com/events

FCC DOUBLE HEADER: THE 5% SECRET FOR RECORD FARM PROFITS PLUS HOW TO TAKE CHARGE OF YOUR FARM'S FINANCIAL MANAGEMENT — March 7,
Victoria Inn, Brandon.
canolagrowers.com/events

CANOLAB MANITOBA — March 15 or 16,
Credit Union Place, Dauphin.
canolagrowers.com/events

CANOLA COUNCIL OF CANADA CONVENTION — March 7-9 in Winnipeg.
convention.canolacouncil.org

Canola performance

– driving yields with smart input choices

Driving canola yields with smart input choices starts with ESN Smart Nitrogen. Just one application of this performance product gives canola crops the nitrogen (N) they need, when they need it. Too much early-season N often encourages lodging, depletes soil moisture and leaves less N for seed production. The unmatched seed safety of ESN means that growing seedlings won't be harmed, even when N is applied at rates up to three times higher than conventional N fertilizers (*following safe rate guidelines and recommended percentages of ESN*).

ESN's intelligent technology controls N release, reducing N loss and increasing N efficiency – maximizing ROI. Even in adverse weather conditions, the benefits of using ESN are more pronounced compared to traditional forms of N.

Easy to apply...

Whether you apply in the spring or fall, during a wet or dry season, you can count on ESN to deliver N to your canola crops when they need it. With just one application, canola's day-to-day N needs are met, giving you the peace of mind that the N will still be there, even after heavy rainfall. One-pass application also saves on fuel and equipment use.

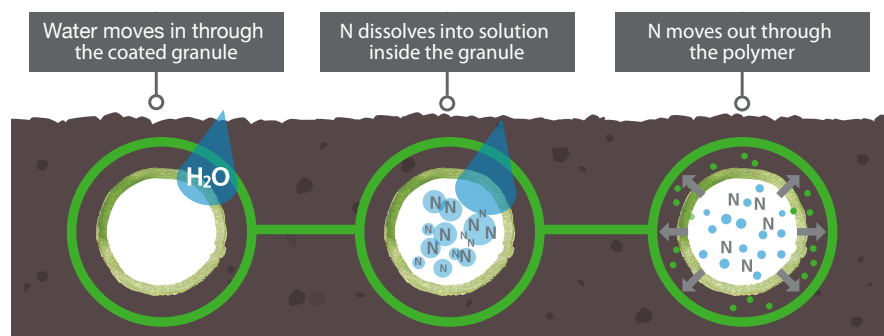
ESN is convenient to use and apply because the wide application window allows you to apply ESN on your schedule, and because it won't set-up in storage, it has a longer shelf life. Other benefits include compatibility with no-till operations and flexibility of blending options.

Yield increases between 8 – 10 per cent...

As the only controlled-release nitrogen designed for agriculture, ESN delivers a significant return on investment through increased N use efficiency and performance. On average, (across varying environments, soil types/textures, and weather) canola yields increase between eight to ten per cent when ESN is the N source applied. In addition to increased yields, the single application will save you both time and money because you don't need to reapply during the growing season.

Simply apply ESN when it's convenient for you and leave it to work throughout the growing season. Knowing your canola nutrient diet is being taken care of offers peace of mind and more time to spend on your other day-to-day business operations. *That's smart growing.*

Maximize your N investment with controlled-release technology





Disruption distraction

Online shopping disrupted the economics of bricks and mortar stores. Uber disrupted the taxi business. We had a neighbour who used to sell the World Book encyclopedia. She doesn't do that anymore because Google and Wikipedia disrupted – actually killed – the reference books business.

Inspired by a tech presentation at the Bayer Agronomy Summit, which I attended in Banff in November, I posted an @CanolaWatch tweet that said: "Disruptive tech completely changes how things are done. To me, straight-cutting #canola is not disruptive. But what would be?"

CW Jay Whetter
@CanolaWatch

"Disruptive tech" completely changes how things are done. To me, straight-cutting #canola is not disruptive. But what would be? #westcdnag

RETWEETS 4 LIKES 2

Follow

CW Jay Whetter
@CanolaWatch

What about nano factories in the soil that make N fertilizer from the air? No more applied N. That's disruptive. @Ploughboycoach

LIKE 1

Follow

It fired up a decent Twittering of ideas: Terminator genes to end canola volunteers, RNAi technology to make herbicide-resistant weeds susceptible again, perennial canola and plants with genetically-enhanced photosynthesis. @Joe_Widdup shared a link to an article, "Photosynthesis breakthrough crams millions of years of plant evolution into months," at globalfuturist.org.

I jumped back in with, "What about nano factories in the soil that make N fertilizer from the air? No more applied N. That's disruptive." In related responses, @SKweedgeek suggested rhizobia already do this and @Ploughboycoach wrote, "...until then will have to rely on legumes in rotation." Rhizobia left over in the soil after a pulse crop can provide a benefit, but they can't replace fertilizer. A breakthrough on this front would be revolutionary.

The rotation comments remind me of a chat I had with Dale Fedoruk, who is in the farmer panel in this issue. On his farm, which he says is small by today's standards, he has time to give his fields a lot of attention. Doing the basics really well has

made his farm highly profitable, he says. Yes, he uses technology, but he's not betting on a tech tsunami to improve his productivity or profitability. Instead, he doubles down on what you might call old-fashioned agronomy.

Interestingly, many of the techniques to create a big jump in canola yields, as described in the article on page 12, are not new or disruptive. What they represent are incremental adoption of agronomy techniques proven to work in other crops and other regions.

Straight combining of canola, to tie back to my intro tweet, is another technique that, though relatively new in Western Canada, is common in

other canola-growing regions. And of course our growers already straight-cut other crops.

One can achieve surprising improvement through increments. In a recent Freakonomics podcast called "In praise of incrementalism," host Stephen Dubner talked about Great Britain's cycling program. Through a to-do list of tiny one-percent improvements, including body position on the bike, installing a tire perfectly straight on the rim and attention to athletes' health and nutrition, the nation's cyclists went from middling to top of the hill. Great Britain's Team Sky went on to win four Tours de France and its Olympic cycling team won 12 medals at Rio.

Danny Klinefelter's five per cent rule for farmers is all about incremental improvement. In his research, the Texas A&M ag economist found that the top 25 per cent of producers are only five per cent above average in most categories. As a result, he recommends that farmers aim to do 20 things five per cent better, not one thing 100 per cent better. Waiting for that one disruption can be distracting. Good agronomy, attention to detail and incremental improvements reign. ✨



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ALBERTA BULLETIN

canoLAB – Agronomy Series



FEBRUARY 22 OR 23 (choose one) | LAKELAND COLLEGE, VERMILION



canoLAB is a hands-on, interactive diagnostic workshop with live plants and insects. Participants are divided into groups of 20 and will take part in eight 45-minute sessions. Instructors will be among Western Canada's top researchers and extension people.

CCA and Pesticide Applicator credits will be applied for. The event is co-hosted by the Alberta Canola Producers and the Canola Council of Canada.

Topics include: Harvest losses, herbicide action and injury, fertility, genetics, insect damage assessments, temperature inversions, blackleg misdiagnoses and management, and much more.

Attendees are divided into small groups, so attendance is limited to ensure maximum instructor interaction.

canoLAB runs from 8:30am to 4:30pm daily. Each day is identical. Lunch is provided.



Save \$50 by registering on or before February 7. **Register now at albertacanola.com/canolab**

Alberta Canola Producers Commission Annual General Meeting

FARMTECH
JANUARY 31 | EDMONTON

Join Alberta Canola for its 27th Annual General meeting at 2:45pm on Tuesday January 31, 2017 at the Edmonton Expo Centre during the FarmTech Conference. farmtechconference.com



How is Alberta Canola working for you?

We focus on market development (locally, and globally), grower relations and extension, government and industry affairs, and research on your behalf, all guided by our elected farmer directors.

For complete details, check out our annual report – available in a short video (featuring local producer directors!) on our website. albertacanola.com/annualreport



Events designed to make you more profitable!

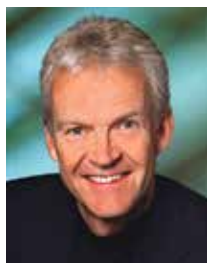
Leading Edge – Farm Management Series

**FEBRUARY 15 & 16, 2017 | 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 for two days of in-depth learning about the financial and legal side of the farming business. **Save \$100 by registering on or before February 6.** Seating is limited. Get complete details and register at albertacanola.com/leadingedge



Confirmed Speakers Include:



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The Leader's
Navigator



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Management
Consultant



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GALLIMORE**

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Chartered
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Founder,
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Key Topic Areas:

- Farm Business Taxation
- Taxation and Liability Tips and Traps
- Shareholder Loans and Land in a Company
- Wills and Estates
- Dealing with the Bank
- Succeeding at Succession
- Evening Q&A Forum with All Speakers

“

"This 2 day course was one of the best management sessions I have attended related to taxation and succession planning for farmers."

—From a 2015 Leading Edge attendee

”



SaskCanola blog, est. August 2016

With the launch of our new website last August came a few new features, one of them being a blog. SaskCanola's blog connects you to the initiatives of SaskCanola as we work both locally and globally to make Saskatchewan canola producers more prosperous. If you haven't checked it out yet, visit the 'News & Events' section of our website to catch up on the blogs we've been posting monthly. You'll find stories about trade missions, producer events, and canola projects written from the personal perspectives of our board and staff. saskcanola.com/news/blog.php

SaskCanola directors at canolaPALOOZA research supper last July. From L to R: Wayne Truman (Redvers), Brett Halstead (Nokomis) and Bernie McClean (Glaslyn).

Save the Date

SASKCANOLA AGM & 25TH ANNIVERSARY CELEBRATION

January 9, 2017
Prairieland Park, Saskatoon

CROP PRODUCTION SHOW

Stop by the canola booth in Hall B to talk with the SaskCanola Board & Staff and the Canola Council of Canada Staff & Agronomists.

January 9 – 12, 2017
Prairieland Park, Saskatoon

CropSphere
Ideas, Innovation, and Knowledge

CROPSPHERE

January 10 & 11, 2017
Prairieland Park, Saskatoon

TOP NOTCH FARMING

February 15, 2017
Kerry Vickar Centre, Melfort

SASKATCHEWAN CANOLAB

February 15 & 16, 2017
Evraz Place, Regina, SK

For the latest event details and pre-registration information, please visit saskcanola.com or call 1-877-241-7044.



SaskCanola leadership workshop

In November, SaskCanola hosted its inaugural leadership workshop that saw 15 young Saskatchewan farmers partake in a two-day event that included decision making, issues bear pit, leadership communication, and managing your buckets sessions. Under SaskCanola's strategic plan, 'Producer Engagement' is one of four key pillars and within said pillar, fostering youth in agriculture has been identified by the SaskCanola Board as a top priority. If you are interested in future leadership events and opportunities with SaskCanola, please connect with our Policy & Producer Relations Manager Tracy Broughton at tbroughton@saskcanola.com or call 306-975-0732.



Credit: Loree Photography

License to Farm wins awards at “Best of CAMA”

SaskCanola’s film project, *License to Farm*, was honoured to receive multiple awards at the Canadian Agri-Marketing Association’s annual “Best of CAMA” awards night held in Calgary on November 4. The annual gala celebrates the best in Canadian agriculture marketing, advertising and communications.

License to Farm, led by SaskCanola in partnership with the film production company Berteig Imaging and the film promo-

tion agency AdFarm, was awarded a total of seven times with three category awards, one certificate of merit and three “Best of Show” awards:

- **Winner:** Crisis Communications, Issues Management and Government Relations
- **Winner:** Video targeted to external audiences
- **Winner:** Total Campaign \$100,000 or less

SaskCanola board director Brett Halstead and SaskCanola executive director Janice Tranberg with several of the CAMA awards that License to Farm received.

- **Certificate of Merit:** Social Media
- **Best of Show:** Public Relations Programs
- **Best of Show:** Marketing and Communications Campaigns
- **Best of Show:** Electronic Media

“We are thrilled that *License to Farm* has been recognized by the esteemed Canadian Agri-Marketing Association,” says Janice Tranberg, SaskCanola executive director. “We knew the film was a quality production but never imagined the impact it would have. To see its success acknowledged by our peers is truly inspiring.”

SaskCanola is also excited to announce that several extended interviews from the *License to Farm* vault will be released in the coming months. These clips will dig deeper with several of the key experts featured in the full length film. Stay tuned!

Since its launch in January of 2016, License to Farm has been viewed over 80,000 times on YouTube in over 165 countries and has garnered over two million social media impressions. Join the #LicenseToFarm conversation by visiting the microsite at licensetofarm.com or follow @LicenseToFarm on Twitter, Instagram or Facebook. Don’t let your silence take away your License to Farm!

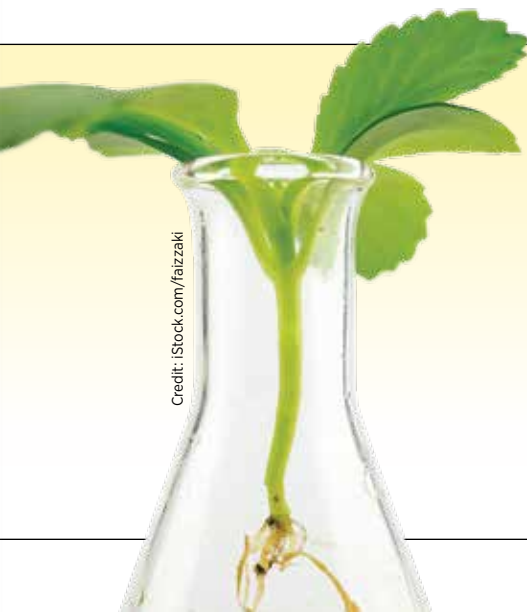
Research tax credit

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 www.saskcanola.com.



Credit: iStock.com/faizaki

Manitoba Canola Growers bridge the gap between consumers and producers



In an attempt to raise the profile of one of Canada's most overlooked professions, Canola Eat Well dedicated last September to the people who put the food on our tables – farmers!

"I Heart Farmers" month kicked off with Canola Connect Harvest Camp, a three-day event that provides a backdrop for agricultural conversations among diverse individuals. For the event's fifth year, Canola Eat Well brought together 10 campers including chefs, dietitians, home economists, restaurateurs and food writers from across Canada for a tour of western Manitoba. They visited a cattle ranch, apiary, bison operation and canola farm while sharing stories and asking questions about food production in Canada.

"Harvest Camp has the ability to create incredible bonds between people who promote, sell, cook and talk about food, to those



Canola ambassador chef Matt Basile

who grow and raise it," said Ellen Pruden, education and promotion manager, Manitoba Canola Growers. "There's a common thread found in every conversation they have together, and that is: we all want the same thing – healthy and safe food to feed ourselves and our families."

During Harvest Camp, Canola Eat Well launched its first pop-up e-store featuring a limited-edition t-shirt emblazoned with the message "I Heart Farmers". Buyers were encouraged to wear their shirts with pride and participate in conversations focusing on food in Canada.

Later in September, the Canola Eat Well team travelled to Ontario to host a media day focusing on Canadian ingredients. Led by professional home economist and television superstar Mairlyn Smith, the group visited Applewood Farm & Winery in Whitechurch-Stouffville to pick apples on the first day of autumn. Next it was on to South Pond Farms for a picnic lunch. Manitoba canola farmer Will Bergmann was along for the trip, sharing his story about growing food on the Canadian Prairies.

"I arrived in Toronto with many lovely parting gifts, the most priceless of which was a new-found respect for all the growers and producers whose hard work feeds and

nourishes us across our country," said Waleed Hafeez, who writes about Toronto's vibrant food scene at waleedhafeez.com

Throughout the month on Twitter, Canola Eat Well encouraged consumers to reach out to Canadian farmers with questions, stories and messages. During the I Heart Farmers Twitter party, tweeters were asked what they would say to a farmer if they were given the opportunity. Here's a sampling of what they had to say:

Thank you, Canadian farmers, for bringing delicious food to our tables!

—@trysmallthings

Thank you for providing us with true Canadian food, fresh, safe and yummy!

—@meu49

Perhaps the entire month's efforts were summed up by Carole Nelson Brown of The Yum Yum Factor blog after the Ontario media day.

"The highlight of the day, for me, was talking to a young, super tech-savvy farmer from Manitoba, Will Bergmann. This guy does NOT look like my idea of a Canadian farmer, and yet, there he is, looking like he would be just as at home on Toronto's trendy Queen West as he is out in the field. This articulate, passionate guy is the face of the modern Canadian farmer."



Manitoba canola farmer Will Bergmann (left) and home economist Mairlyn Smith

STAY CONNECTED.

Sign up for our Canola Crush Newsletter today! Visit www.CanolaGrowers.com



Annual General Meeting



The Manitoba Canola Growers Association's Annual General Meeting (AGM) will be held February 16 at 7:30 a.m. in conjunction with the CropConnect Conference at the Victoria Inn Hotel & Convention Centre in Winnipeg. Join us for breakfast and our AGM as we make important decisions regarding the Manitoba canola industry. Canola producers may attend the AGM without registering for the CropConnect Conference. Visit www.CanolaGrowers.com closer to the date for more information.

Save the Date

FCC DOUBLE HEADER

March 7, Victoria Inn, Brandon
The Five Per Cent Secret for Record Farm Profits PLUS How to Take Charge of Your Farm's Financial Management

CANOLAB

March 15 & 16, 2017,
Credit Union Place, Dauphin

CANOLAPALOOZA

June 22, 2017, AAFC, Portage



CropConnect Conference

February 15 & 16, 2017

Victoria Inn Hotel & Convention Centre
1808 Wellington Ave, Winnipeg, MB

- A tradeshow with access to crop specific information
- 2 intense days with more than 30 educational speakers
- Speaker: Doug Lipp
- Speaker: Glen Hodgson
- Speaker: Drew Lerner

For more information on the event or to register, visit
cropconnectconference.ca

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We know canola can yield more. Average yields are just a fraction of what current hybrids achieve in plots and on top-yielding fields. So how can growers make better use of this genetic potential?

UNLOCKING CANOLA'S GENETIC POTENTIAL FOR YIELD

BY JAY WHETTER

Canola can hit the century mark. Jonathon Sammons had a small canola field in southwestern Ontario exceed 100 bu./ac. in 2015. That same year, Florian Hagmann of Birch Hills, Sask., reported 111 bu./ac. on a quarter section. It happens.

Yet the Canadian average has cracked 40 only twice, in 2013 and 2016. Genetic potential for yield is not being realized. Not even close.

of sulphur per acre, as well as small amounts of copper, iron, manganese and zinc. Then he applied four rounds of in-crop fertilizer, including two added to the herbicide. Total in-crop nitrogen was 14 lb./ac., with smaller amounts of the other seven nutrients applied at seeding. The field had six per cent organic matter in the top six inches, adding an estimated 60 pounds of nitrogen per acre through mineralization. Including soil reserves down to 24", total available

Left: Jonathon Sammons of Ontario had a 10-acre field yield 104 bu./ac. in 2015.



Credit: Mark Nisbet

Sammons from Redickville, north of Shelburne, won Ontario Canola Growers Association's (OCGA) one-acre yield challenge in 2015 with 5,199 pounds (104 bushels) per acre. He says the whole 10-acre field yielded over 100 bu./ac.

Rains were timely that year. And that particular field had been in hayland "sod" for five years, which might have been the difference-maker. Otherwise applied nutrients — 85 lb./ac. of starter fertilizer and 350 lb./ac. broadcast — were the same as Sammons' other 600 acres of canola, which averaged 70 bu./ac.

Hagmann seeded his 111-bushel 2015 canola field May 22 into wheat stubble. The rotation had been canola-wheat since 2009. Before that, it was in alfalfa for three years.

An aggressive crop nutrition program powered his yields. At the time of seeding, Hagmann applied 102 pounds of nitrogen, 36 pounds of phosphate, 14 of potassium and 25

nitrogen was 212 lb./ac. Fertilizer cost was \$270 per acre.

While 111 bu./ac. might seem too good to be true, Hagmann has been a top-yielding grower in Pioneer's yield challenge for years, says Mark Kucharan, marketing communication specialist with DuPont Pioneer. Hagmann had an 800-acre field average 92 bu./ac. in 2016.

"We had to bump up our nitrogen rate in the 2016 field to 140 lb./ac. compared to the 2015 field because of lower organic matter, but otherwise I think this formula can produce consistently high yields as long as soil conditions and moisture are there," Hagmann says, adding, "I firmly believe this was a profitable crop."

CANOLA 100 AGRI-PRIZE

Agri-Trend's Canola 100 Agri-Prize is designed to push yields. Rob Saik, former Agri-Trend CEO, started this race to 100 bu./ac. after the Canola Council of Canada (CCC)

Above: Florian Hagmann (right) of Birch Hills, Sask., had an 800-acre canola field yield just under 92 bu./ac. in 2016 and a 147-acre field yield 111 bu./ac. in 2015. Mike Edwards (left) is an account manager with DuPont Pioneer.



DuPont Pioneer used a weigh wagon to confirm yield monitor results and validate Hagmann's yield.

Credit: Mark Nisbet

“Good uniform establishment has a huge impact on yield potential. If I do this well, that’s when I get the top yields.”

—Mike Hutton

launched its strategic plan to achieve a Canadian average canola yield of 52 bu./ac. by 2025. The CCC saw a potential market for 26 million tonnes of canola by 2025, but in order to meet that potential and maintain Canada’s share of the global canola market, yields would have to rise.

“Agri-Trend was already achieving 52 bu./ac. with a lot of our growers,” Saik says, so he started the contest to motivate a new yield benchmark. He found inspiration in Peter Diamandis’s XPrize Foundation, which drives innovation through competition. “Many of the great advances in civilization were done by people competing for prizes,” Saik says. “For example, margarine was created when Napoleon launched a competition to find a way to provide more fat for his army.”

To enter, growers pay \$100 to register a field. Then, if the field is a potential winner, they pay another \$1,000 at harvest to verify the results. The first to verify 100 bu./ac. in a continuous 50-acre block of spring-sown dryland canola wins. The contest launched in 2015 with no winner. In 2016, 80 farmers paid the \$100 to register a field and of those, 16 paid the verification fee. Results were not available at press time, but Saik says,

“If we have 10 of those achieve yields of 80 bu./ac. or more, we have a new paradigm for yield potential.”

KEYS TO HIGHER YIELD

Growers have many ways to pour money into a crop, including machinery, seed, macronutrients, micronutrients and crop protection. Which make the biggest difference?

The following seven critical factors for higher canola yields come from veteran Agriculture and Agri-Food Canada research scientists Bob Blackshaw and Neil Harker along with Alberta Agriculture and Forestry oilseed specialist Murray Hartman.

1. Adequate and timely rainfall.
2. Adequate fertilizer at the right time and place to reduce losses and limit adverse effects on seed germination.
3. Early weed removal.
4. Cool temperatures (less than 27°C by day and less than 16°C at night) during flowering and pod development.
5. Adequate control of diseases and insect pests.
6. A hybrid variety with high potential for the area and appropriate disease resistance.

7. Crop rotation. “Our research has shown that a three-year rotation is better for yield than two years and definitely better than continuous canola,” Blackshaw says. “Also we’ve seen some positive benefits to canola following a pulse crop.”

Saik emphasizes the need for a strong start. “We’ve seen lots of big yields with six plants per square foot and with as few as four, but eight to twelve is the target for top yields,” he says.

Mike Hutton, Syngenta’s Manitoba-based product evaluation scientist for canola, also emphasizes the need for a good start. “Good uniform establishment has a huge impact on yield potential,” he says. “If I do this well, that’s when I get the top yields.”

FEEDING HIGH YIELDS

“Canola yield potential strikes a balance between available nutrient and growing season moisture and temperature,” says Warren Ward, CCC agronomy specialist. “Nitrogen is the most common limiting nutrient, other than water. A 52 bu./ac. canola crop requires 130 to 150 pounds of



Breaking 100

Small-plot trials are often micro-managed and do not always reflect field-scale results, but they can provide a glimpse at canola’s yield potential under real weather conditions. This table from the Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC) shows yield averages and ranges from small plots used for variety registration purposes.

Yield average and range for WCC/RCC small plots					
	2012	2013	2014	2015	2016
Yield (bu./ac.)					
Average (all plots)	47.1	65.6	60.5	59.2	67.0
Lowest result	15.6	26.3	21.6	28.6	30.6
Highest result	93.0	121.7	109.4	95.9	115.3
Canadian average (commercial fields)	28.1	40.6	35.1	39.4	42.3



Credit: Mark Nisbet

nitrogen per acre, and in many cases producers are not applying the correct nitrogen rates to achieve these higher yield targets.”

Data published in 2001 showed that canola needs 2.9 to 3.5 pounds per acre of available nitrogen per bushel of seed yield. Research published in 2005 by Rigas Karamanos and colleagues suggested that hybrid canola varieties require two to three pounds per acre of available nitrogen per bushel of seed yield. For canola, the International Plant Nutrition Institute now recommends 2.2 pounds per acre of available nitrogen per bushel of seed yield, based upon research conducted in China and published in 2012. “This is likely your minimum value for growing a consistently high-yielding canola crop that utilizes the yield potential in current hybrids,” says Curtis Rempel, CCC vice president for crop production and innovation.

The next consideration is timing. While applying all fertilizer at or

“A 52 bu./ac. canola crop requires 130 to 150 pounds of nitrogen per acre, and in many cases producers are not applying the correct nitrogen rates to achieve these higher yield targets.”

—Warren Ward

“A split application of fertilizer has been proven season after season on my farm. It’s definitely preferable to a one-time application.”

—Florian Hagmann

before seeding is most common and most convenient and avoids the timing and logistical challenges of in-season applications, highest yields may require in-season top ups.

Saik thinks so. “A high nitrate kick on the front end leads to biomass, but not seed production,” he says. “When going for 100 bu./ac. yields, we can’t put a big dump of nitrogen at the front end. Timed release will have it evenly distributed and more tied to the uptake curve.”

Hagmann agrees. “To unlock 100 bu./ac. canola yields we have to change our way of thinking a little bit,” he says. “A split application of fertilizer has been proven season after season on my farm. It’s definitely preferable to a one-time application.” He provides these reasons:

1. A crop’s need for nutrients fluctuates. Split applications help plants at critical points in their growth cycle.
2. Split applications can address specific plant deficiencies all

season long. They give growers an opportunity to make in-season management decisions instead of having to live with what one thought was going to happen earlier in the year.

3. With all fertilizer applied at the beginning of the season, growers commit dollars that may not offer a return. In-season applications respond to specific crop needs based on changing conditions.
4. Fertilizer helps growers get more from the same land base. “I doubled my revenue for the same acres of land with same machinery cost,” Hagmann says. “My investment was higher in fertilizers, but I had a four-to-one return.”

He compares growing a crop to feeding a dairy cow. “For high-producing cows, you can’t feed them once a day and expect high yields,” Hagmann says. “The same applies to growing a crop. You have to apply rations at different timings. Machinery and technology only do a small factor to increase yield. The key to success is having a balanced fertility program and give the nutrients needed in a timely fashion during the growing stages.”

MANAGING THE UNCONTROLLABLE

Weather, of course, is the uncontrollable factor. Hagmann acknowledges this with his point three and Blackshaw, Harker and Hartman assign two of their seven high-yield keys to weather factors — rainfall and temperature.

“To appropriately alter rates or practices to maintain yield stability under less than ideal conditions, we need accurate seasonal weather forecasts,” Hartman says.

Unpredictability of rain and heat is why Sammons will not push hard to repeat his 5,199-pound yield. “We don’t farm the way grandpa did,” he

says, referring to the key-ring of tools available, “but we can’t budget to grow 5,000-pound crops because we’d go broke.”

With a hotter, drier summer in 2016, the winning yield in OCGA’s Canola Challenge was 3,691 lb./ac., a full 1,500 (30 bu./ac.) lower than Sammons’ score from the year before. However, when rains come when needed, as they did in 2015, he thinks 4,000-pound (80-bushel) canola crops should be consistently achievable. This benchmark is achievable in parts of the Prairies as well.

New weather technology may help improve forecasts and grower response to weather conditions. In late November, the National Oceanic and Atmospheric Administration (NOAA) of the U.S. launched its first in a series of advanced weather satellites. The primary purpose is improved immediate forecasting of storm movement and intensity, but more knowledge on weather patterns may someday help with long-term forecasting for agriculture.

Integration of The Climate Corporation’s weather data management into Monsanto’s philosophy is all about harvesting more from a crop’s genetic potential. As Monsanto’s chief technology officer Robb Fraley says, “We became a biotech company, we transformed into a seed company, we’re now in the process of transforming into a data science company.”

Agriculture around the world needs to find ways to produce more on the same (or shrinking) land base. Sharing high-yield experiences is an important step in capturing more from the yield potential already built into existing genetics. With this knowledge, we can discover methods that push productivity and improve profitability at the same time. ✖

—Jay Whetter is the editor of
Canola Digest.



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Canola can yield 100 bu./ac. with the right soil and weather, but targeting the highest yield potential is often a sure path to bankruptcy. A better target is profit — with consideration for individual circumstances and appetite for risk.



PROFITS OVER YIELDS

BY ANGELA BRACKENREED

Bragging rights tend to focus on yield. While yields of 100 bu./ac. are possible in near-perfect circumstances, how does a grower determine the financial risk from going too far? Keeping the focus on profit, not yield, will help.

Chris Bauer, a fourth-generation producer from Lake Lenore, Sask., shares some of his experiences with managing farm finances. The grain and oilseeds operation includes 3,000 acres that, along with some modest off-farm income, sustain his parents and his young family.

Bauer's profitability assessment involves a seemingly simple formula, but requires an understanding of their farm's goals, their five-year average yield and their true production costs. Bauer pencils those costs

at \$350 per acre for canola, excluding rent, which he averages across all of his land. His rule is: "If we can't make \$100 per acre, then a crop doesn't pass the test to grow it."

Many factors complicate this evaluation, including production practices that provide a long-term benefit but may not reap financial returns in the short term. Bauer admits that based on his formula alone, they would grow canola wall-to-wall to maximize profitability, but a strong rotation, among other things, are important for the farm.

TESTING ECONOMIC YIELD

Yields of 100 bu./ac. and gross revenue at current values of over \$1,000 per acre are undoubtedly attractive. But this emphasis on yield fails to capture the very different set of circumstanc-



"If we can't make \$100 per acre, then a crop doesn't pass the test to grow it."

—Chris Bauer

es from farm to farm. Those differences can exist because of soil type and climate, among other factors, but also because of the extreme variation in fixed costs. For instance, cash rent values, even within a small region, can realistically range from \$45 to \$150 per acre. Net profit looks quite different on either end of that spectrum.

As Scott Jeffrey, professor of agricultural business management at the University of Alberta points out, "producers' perception of risk, and response to it, varies a lot." He also suspects "significant variability in farms' profitability and balance sheets."

When it comes to production, agronomics and finances really cannot be viewed in isolation. To push the needle on yield, one must thoughtfully consider the additional costs

required for the theoretical yield gain, and have a good agronomic understanding of the probability of return for each input and rate.

Therein lies the problem and the dilemma for most producers. Probabilities tell us that theoretical yield and yield gain, while possible, cannot be achieved every time. And best prices cannot be achieved with every sale. Revenue projections therefore have to be based on reality for price and yield. What growers can do is test techniques and rates, such as fungicide or higher fertilizer rates, that can provide an incremental increase in yield. With that, they can constantly reevaluate profit potential and risk.

Bauer does see more yield potential for canola on their farm, and experiments with increased inputs. He doesn't do this on every acre, he says, "because factors that are out of my control are more limiting than I am comfortable with."

His experiments have shown that the answer on their farm might not be more nutrients. "With our fertility plan, there has been a yield plateau where the return on investment starts to shrink," he says.

YIELD CAN BE A TRAP

Profitability is multi-faceted. Growers with the *same* yields can have wildly different balance sheets. Bauer mentions, importantly, that their farm has not taken on a lot of debt. "As land prices have shot up, we haven't been buying," he says, which changes the revenue per acre required to hit their profit target and allows them to look long-term with an expanded rotation.

Bauer focuses on crop rotation and market strategy to mitigate risk. Jeffrey notes that with risk mitigation strategies like this, "typically one must be willing to give up some potential for greater returns in exchange for reduced risk."

Bauer can vouch for that. This past year, he started selling canola off the combine, picked up, for \$11.25 per bushel. By November, he was hauling it himself for a contracted \$10.75, which was below the spot price of \$11. "You can't be dwelling on that," he says. "You just have to accept that you can't capitalize at the top of the market every time because you don't know where it's going."

Risk management in Bauer's marketing strategy involves incrementally selling his crops, focusing first on times of high cash



Assuming your neighbour can afford "xyz" implement and therefore so should you, or that 100 bu./ac., or whatever high yield your neighbour achieved, should be a suitable target for your own operation can lead to very precarious balance sheets.

flow demand. With the previously mentioned rule of \$100 profit in mind, he typically tries to forward contract 20-25 per cent of their expected production, largely through cash price contracts.

Storage is a huge piece of that puzzle. "The goal is to have enough storage on farm to hold the entire crop if needed, we can't do that right now, but are trying. If (the price) isn't within an acceptable profit margin, we would just buy bins," he says.

GOOD ADVICE

An accountant and retired farmer, speaking to the author, provided some valuable advice. "Don't spend time looking over the fence," he warned, because what may work financially on one operation is likely not the right fit for another.

Assuming your neighbour can afford "xyz" implement and therefore so should you, or that 100 bu./ac., or whatever high yield your neighbour achieved, should be a suitable target for your own operation can lead to very precarious balance sheets.

The answer to the opening question — How does a grower determine the financial risk from going too far on yield? — clearly depends on a myriad of complex factors. To focus on yield alone does not capture those complexities. ✨

—Angela Brackenreed is a Canola Council of Canada agronomy specialist. She lives in Minnedosa, Man. and farms near Brandon.

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John Deere offers a straight-cut header with adjustable knife position, similar to Biso's.

Harvest tech lures me to Agritechnica

The massive farm machinery show in Germany has 30 giant galleries full of the latest tools, including straight-cut headers for canola and precision yield monitors.

BY SHAWN SENKO

Interest in straight cutting canola is growing in Western Canada and we at the Canola Council of Canada get a lot of questions on what machinery is best suited for the job. Straight cutting is the norm for oilseed rape in Europe. My trip to Agritechnica in Hanover, Germany was mainly to see what equipment European farmers use to harvest their crops and the reasons for their use.

Agritechnica spreads over 30 large buildings at the Hanover convention centre. One of the buildings alone would nearly house any one of the Western Canadian indoor machinery shows. Just under half a million visitors attend the show. With its sheer size, the show requires a minimum three to four days to see most of it. Agritechnica is held every two years in November. The next one is November 12-18, 2017.

Agritechnica showcases newly-released models as well as technology that will emerge in the coming years. Another interest for me was precision advancement in yield monitor technology. Improved yield monitoring would go a long way toward better

on-farm testing and make programs like variety testing much more precise and easier to accomplish.

HEADERS

All the manufacturers I met with had headers with extendable cutting bars or adapters to extend the knife on a regular header. I had seen these in North America and my original thought was that the bar extended out front of the reel was just to catch seed that shelled from the reel pulling it in. It turns out that is only part of the reason. Another primary benefit is reduced loss at the feederhouse. With the larger amount of material coming in from the sides and transitioning into the feederhouse, material tends to build up. Seed can be lost at the centre of the header.

Another header concept I had not yet seen in North America was a pickup-style draper belt behind the knife. This allowed for an extended knife cutting system but eliminates the feeding issues with short cereal grains.

I visited four companies that offer specialty headers or adapters for straight cutting canola. They were

John Deere is testing its new Active Yield monitoring system on corn and soybeans in North America.

Zurn (www.zuern.de), Geringhoff (www.geringhoff.de), New Holland (www.newholland.com/de) and Biso (www.biso.at).

Most of the headers are fairly similar in design, with cutting bars that can be extended for cutting canola or oilseed rape and retracted for cutting cereals. Biso has an extended cutting bar attachment that can easily be added and removed from existing headers as you change crops. All headers are auger type. The few drapers at the show were imported from North America.

YIELD MONITORS

One company I spoke with, John Deere, was just releasing in Europe a new yield monitoring system able to calibrate itself using sensors in the grain tank. This would be an important advancement as one of the primary issues with yield monitors is the lack of proper calibration. A year after my visit to Agritechnica, I spoke again with the manufacturer to find out the new system is being trialed in corn and soybeans in North America this crop year. Canola will follow in subsequent years.



Zurn (top) and Fendt (bottom) make a straight-cut header for canola or oilseed rape with a small draper between the knife and header auger. With the extended knife, the draper eliminates feeding issues with short cereal grains.

The Active Yield calibration system has three weighing cells inside the grain tank to measure the vertical forces as the filling level rises. The calibrated system compares these forces with the data supplied by the yield sensor, taking into account the moisture sensor reading.

John Deere claims the inaccuracy settles around plus or minus three per cent, adding that with the current standard yield monitor, “such a level of accuracy can normally be achieved only by skilled operators who calibrate several times a day.”

The company adds that the system also compensates for a growing inaccuracy of the readings over several harvest campaigns due to wear and tear of the elevator chain. ✖

—Shawn Senko is a Canola Council of Canada agronomy specialist.

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Bending tech

Jesse Hirsh used the phrase “bend tech to suit your needs” in his presentation at CropSphere in 2016. These three farmers share experiences bending new and old technology to improve its utility on their farms.

BY JAY WHETTER

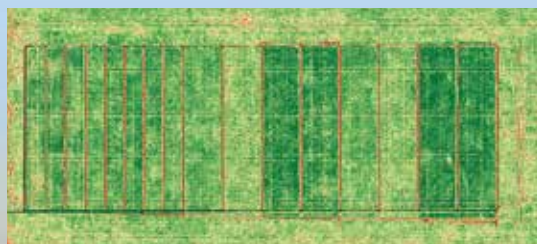


LANDON FRIESEN
CRYSTAL CITY, MAN.

Landon Friesen has software so his drone camera can do plant stand counts and read elevation. His drone is a DJI Phantom 4 quad-copter, an upgrade from his original Phantom 2, but still a relatively inexpensive model “you can buy at Staples.” With automated flight software, Friesen enters coordinates of the field or area to image and the drone takes off and does the job. No piloting required.

He tried the plant stand count program on one quarter of canola in 2016. “We then went back and ground-truthed a few areas for accuracy and it was bang on,” he says. “I’m excited to try it again in 2017. I want to compare these images with yield maps to see the correlation between plant stand and yield.” He plans to put in replicated strips for various seeding rates. He’ll use the drone to image growth patterns all season long.

Friesen used the elevation feature to create 3D images of yard sites. His brother, Derek, needed a land survey for a house he’s building. It was going to cost \$2,500 to have a surveyor do it. Instead, they took a 3D image with the drone and marked it up to show the footprint of the planned house, distance to the existing sewer and other measurements required. “We emailed it to the engineer and he approved it,” Friesen says.



“I want to compare these images with yield maps to see the correlation between plant stand and yield.”

—Landon Friesen

Right: Landon Friesen uses his drone to capture NDVI images of field trials. Dark images are areas with higher plant biomass.

They also put up a new row of bins that needed three-phase power. They sent Manitoba Hydro a detailed landscape image showing distance from the power source to the bins so utility staff knew the required measurements before coming to the site.

When making crop insurance claims for flooded acres in 2016, Friesen provided an elevation-based image of the field showing low spots and lost acres calculated at 25.34 acres for one field and 215 acres for the whole farm. “We printed off the maps, mailed them to Crop Insurance, and they accepted them,” he says.

To give one more example of the utility of 3D images, they can also provide an instant estimate of cubic yards within a gravel pile, he says.

Friesen buys his drone software online at dronedeploy.com.



DALE FEDORUK
RED DEER, ALTA.

Dale Fedoruk sees new life for two older technologies – Valmar applicator and granular herbicides. A Valmar mounted on a modern comfortable truck with new tech upgrades for

guidance and night application has become an important weed management tool for the farmer and independent crop production advisor from Red Deer.

Fedoruk has a Trimble CFX-750 controller and light-bar for guidance as well as foam markers for back up. “If I ever lose a GPS signal, the foam marker allows me to keep working,” he says. Foam also provides added help in fields with a lot of curves, bush and wet spots.

Dale Fedoruk uses this unit to custom-apply granular herbicide to thousands of acres each fall. With high-tech add-ons, he’s created new life for older technology.

Because granular herbicides have the “consistency of dust,” wind is a bigger factor with the Valmar that it is with a pressure-powered sprayer. For this reason, he has high-powered flood lights and a system of cameras for applications at night. “Well over 50 per cent of my work with the Valmar is done in the evening when the wind slows down,” he says. Infrared cameras inside the tank and on the metering wheel, metering clutch and pressure gauge allow him to monitor machine function in the dark.

The revival in granular herbicides is driven by herbicide-resistant weeds, including wild oats, cleavers and kochia, but also general increases in millet, barnyard grass, chickweed, lamb’s-quarters and hemp nettle. Fedoruk applies Edge, trifluralin, Avadex and Fortress, with Edge being the most popular.

“Granular herbicides went out of favour in the ‘90s with herbicide-tolerant canola and the launch of more convenient and improved post-emergence herbicides,” Fedoruk says. But these days, he sees very good use for fall-applied products in a no-till or minimum-till system. “With surface-applied granular pre-emergent herbicides they do an excellent job of controlling shallow germinating weeds, as long as we have sufficient moisture.”



ED KEYOWSKI
HAMTON, SASK.

Ed Keyowski is a draftsman by trade and likes tinkering in the shop. “I always have to be doing something to make tools better,” he says. “I like the satisfaction of making something work,

and I don’t care how long it takes. I make a lot of mistakes along the way, but I stay positive.”

Twenty-five years ago, when he bought his first airseeder, he built his own stand to keep the grain-tank hitch out of the mud. And because he farmed alone at the time, he wanted something to help back up the truck to the airseeder auger. So he made a sensor for the back of the truck that would alert him when he was in position. “Originally, I set it up so a light would go on in the cab, but then I thought, ‘What if the bulb is burnt out? I’ll have a bent auger,’” he says. So he reversed it. The light turned on when he activated the sensor, then went off when he was in position.

“Eighteen years later, I’m at the Farm Progress Show in Regina and a guy is selling this very thing,” Keyowski says. “He probably made a million and retired.”

This winter, Keyowski and his son Garrett will update their MacDon split-reel combine header so canola doesn’t bunch up when straight cutting. The Keyowskis have 35-foot MacDon headers on both combines — one is a straight reel, one is split. The swather has a similar split-reel heavy duty header and Keyowski likes being able to off-set the reels so one bat hits the knife about 10” before the other, which, he believes, creates a better windrow. “Improved flow from these swaths may be minute, but it makes a difference at the end of the day,” he says.

But when using a split-reel header for straight cutting, he found that in the afternoons when combining should be ideal, canola plants would catch on the middle arms of the reel. “As soon as one plant catches, crop bunches up quickly,” he says. He has a couple of ideas to improve the header, but he doesn’t want to share until he has a chance to try them. He suggests that *Canola Digest* check in with him next year for an update.

The Keyowski farm has straight cut canaryseed, wheat and oats for decades, they straight cut soybeans and have straight cut part of their canola crop for the past eight years. It has worked so well to improve canola yields, speed up harvest and reduce losses, that he expects the swather “won’t be moving out of the shed” in 2017. 🌻

“I always have to be doing something to make tools better. I like the satisfaction of making something work, and I don’t care how long it takes.”

—Ed Keyowski



PERFORMANCE THAT PAYS IN GOLD



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R4045 Sprayer



JOHN DEERE

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Flea beetle management

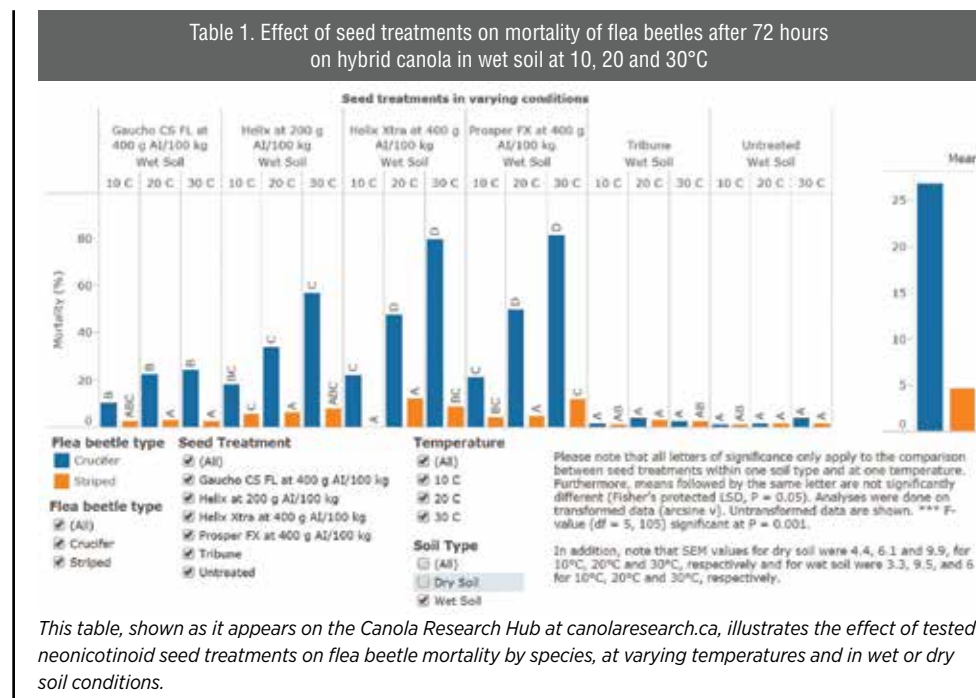
The Canola Research Hub at canolaresearch.ca has a user-interactive research database. This article is based on the query “What are some of the impacts of and management associated with flea beetles in Western Canada?” with data drawn from a number of canola agronomic studies.

BY BARBARA CHABIH

Crucifer flea beetle and striped flea beetle are significant pests to western Canadian canola. Economic impact on crop production varies with population densities, and the two species react quite differently to their environment. This is especially noticeable in their response to neonicotinoid seed treatment, with striped flea beetles less susceptible to control. Yield losses of about 10 per cent are common where flea beetles are abundant, even when the crop is protected with insecticides.

‘Mitigation of Risk to Canola from Spring Flea Beetle Injury’ was a three-year study led by Juliana Soroka with Agriculture and Agri-Food Canada (AAFC) to investigate differences in the biology of striped and crucifer flea beetles and target better management methods. Objectives were to: 1) determine factors affecting distribution, spring emergence, flight and feeding levels, and 2) investigate reasons for seed treatment failures and alternatives for flea beetle control.

Emergence timing was found to be inconsistent, with striped flea beetles typically emerging first in the spring and active at temperatures lower than crucifer species. Both species are more likely to fly from field to field when temperatures exceed 15°C. Crucifer flea beetle flight height decreased with increases in relative humidity and damage to canola cotyledons from both species increased as the temperature increased. As a result, Soroka recommends that producers inspect canola daily when temperatures reach 20 to 25°C.



SEED TREATMENT ISSUES FOR FLEA BEETLE CONTROL

Soroka and her team used growth chamber experiments and field trials to determine the effects of temperature and soil moisture on the toxicity of neonicotinoid seed treatments to striped and crucifer flea beetles.

They found these treatments to provide substantially better control and protection against crucifer flea beetles than the striped species. (See Table 1.) Therefore, seed treatment failures are more likely to occur when striped flea beetles are the most abundant. Failures were also found to be more likely with above-average rainfall and high temperatures (20 to 30°C) during germination and seedling emergence.

A second study led by Soroka, ‘Potential Flea Beetle Species Composition Shift in Prairie Canola’, shows that although the crucifer flea beetle remains the predominant species, especially in those fields where flea beetle numbers

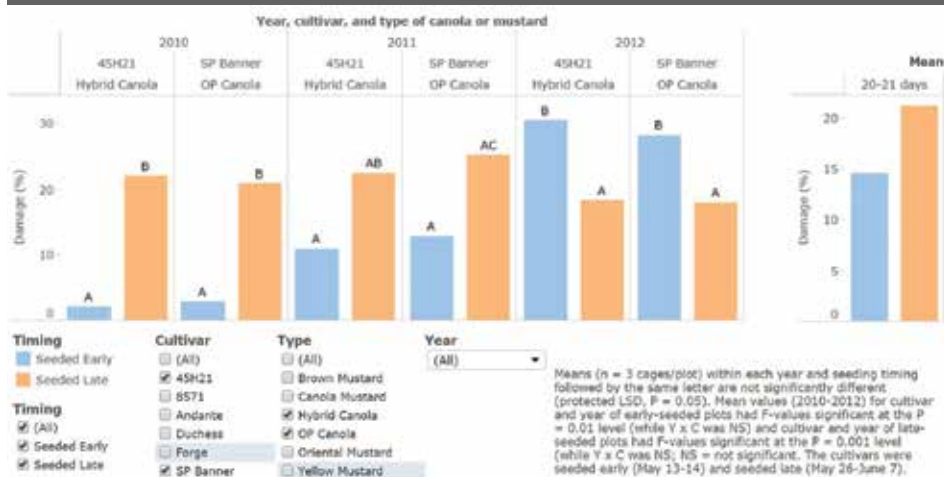
are particularly high, the striped flea beetle is expanding its range across Western Canada. The striped species is now the most frequently encountered flea beetle in the Peace River Region and central Alberta, central Saskatchewan and much of Manitoba. Spring scouting is critical to planning proper control strategies.

EFFECT OF SEEDING DATE

Flea beetles were also studied as part of another AAFC project led by Owen Olfert and Bob Elliott – ‘Detection, Surveillance and Management of Weed, Insect and Disease Pests that Threaten the Economic Viability of Crop Production and the Environmental Health of Prairie Agro-Ecosystems’.

Over three test years, flea beetle damage to canola was found to be lower in early-seeded plots (14.6 per cent) than in late-seeded plots (21.4 per cent) (see Table 2). Early seeding also improved canola yields by 12 per cent and the crucifer to striped species population shift was

Table 2. Flea beetle damage to cotyledons of six mustard and canola cultivars after 20-21 days in early- and late-seeded plots in 2010-2012.



This chart illustrates Olfert and Elliott's finding for percentage of flea beetle damage as affected by seeding date on various crop types and varieties, by each year studied.



confirmed with a greater shift seen in early-seeded plots than in late-seeded plots.

Emergence of crucifer and striped flea beetles from early- and late-seeded canola varied yearly depending on the species, planting date and temperature. Striped flea beetles emerged two to three weeks earlier than crucifer flea beetles. Both species emerged one to five days sooner in early-seeded canola than in late-seeded canola and also emerged earlier in years with

above-average temperatures than in years with below-average temperatures.

Consistent with other studies, Olfert and Elliott's field trials suggest that more effective seed treatments are needed for flea beetle control when cool, moist conditions prevail after seeding. Neonicotinoid seed treatments provide limited agronomic benefit when flea beetle damage is low and rainfall is above average throughout most of the growing season.

More details on these findings, and an expanding library of many more, can be found at the Canola Research Hub online at canolaresearch.ca. ✂

—Barbara Chabih is communications program coordinator with the Canola Council of Canada. She manages the Canola Research Hub.

Inside the Canola Research Hub

Looking for canola research and best practices in canola production? Find it at the Canola Research Hub – canolaresearch.ca

- Navigate a library of research summaries
- View and filter research data
- Watch video interviews and clips
- Access published resources
- Download multimedia materials
- Keep up to date on science-based industry news and events

The Canola Research Hub has been made possible by the canola industry's investment in agronomic research through the CCC and grower check-off dollars administered by their provincial organizations. It is supported by a \$15 million Agriculture and Agri-Food Canada canola research cluster investment under Growing Forward 2 (GF2).

The Hub's library currently houses over 100 reports from programs including AAFC's Growing Forward (GF), the Canola Agronomic Research Program (CARP), studies funded by the provincial grower groups and the Ultimate Canola Challenge (UCC). This database and the site's functionality will continue to expand with the latest in canola agronomic research as findings become available.



For more information on navigating the Hub, view a guided-tour tutorial available from the landing page.

Providing top science for the bottom line.



Canola Discovery Forum, October 25-27 in Winnipeg, brought together 150-200 researchers, growers, industry representatives and extension staff for presentations and discussions to discover canola research needs and knowledge gaps. Here are my observations.



Canola Discovery Forum 2016 attracted a sell-out crowd in Winnipeg to discuss new ideas and canola research priorities.

OBSERVATIONS FROM CANOLA DISCOVERY FORUM 2016

BY CURTIS REMPEL

Canola Discovery Forum is a key event for the Canola Council of Canada's crop production & innovation team. One of the team's major roles is knowledge and technology transfer (KTT), which at one time was called "agriculture extension". We synthesize best management practices for canola production from a variety of sources but our gold standard is well-designed trials that have been subjected to appropriate replication, statistical analysis and interpretation. However, like physicians, agronomists and farmers have to make significant decisions with incomplete information.

Canola Discovery Forum brings forward these areas where decisions are made based on incomplete information. It provides opportunities

(a) for growers, agronomists and industry scientists/specialists to provide academic researchers with gaps and opportunities, (b) for public scientists to share research results with growers, agronomists and industry specialists, (c) for researcher to researcher (and peer to peer) engagement to foster and facilitate research networks in Canada and (d) to develop and validate KTT platforms and tools.

The goal is to increase canola yields, profitability and sustainability, and reduce production risk. This is germane to the industry strategy of "52 bushels per acre by 2025" to supply forecast demand for canola in domestic and export markets.

The following highlights some of the ideas and observations from Canola Discovery Forum 2016.



One of the largest returns in precision agriculture may be removing those areas that have consistently negative return on investment for inputs.

GENETICS

Agriculture and Agri-Food Canada (AAFC) and universities have developed robust platforms for identifying genetic variability within *Brassica napus* (canola) and selecting for genetic "pieces" (individual genes or multiple genes) that can be exploited for improving canola. Traits important for canola production include resistance to insect pests, drought tolerance, improved nitrogen use efficiency and reduced secondary seed dormancy. Scientists are addressing these using a variety of "modern breeding" or genomic and phenotyping approaches.

Researchers at University of Guelph (Ian Tetlow, Michael Emes et al.) have developed a novel means of increasing vegetative biomass and oilseed production in *Arabidopsis thaliana*, which is a model plant for

B. napus. They introduced genes from corn that change the balance of starch or energy synthesis and accumulation in leaves and pods, and this significantly increased biomass and more than tripled seed yield. Researchers are now looking for funding to move from the model crop to canola and test the performance under field conditions.

The Canola Performance Trials workshop affirmed that canola growers value independent evaluation of variety performance across Western Canada. Data analysis showed that small-plot trials are a good predictor for variety performance in field trials and field-scale trials are a good predictor for variety performance in small-plot trials. Producers are keen to have independent trial data but feel that collaborative participation with life science/seed companies is the best model as industry has experience in conducting excellent variety evaluation trials.

STAND ESTABLISHMENT

Due to differences in equipment, farm size and biological factors (soil moisture, residue), we are moving into an era where no one seeding-rate recommendation works for all. Murray Hartman, oilseed specialist with Alberta Agriculture & Forestry, presented an updated meta-analysis of canola plant stand versus yield. The long-standing recommendation of seven to 10 plants per square foot might not be economically viable any longer. A move to five to seven or six to eight may be more appropriate and should satisfy agronomic concerns in most field scenarios. Growers may be ahead of science in this instance.

Growers need to set target densities based on individual fields and equipment limitations and their individual appetite for risk. Future research projects will need to assess things like weed control, seed-placed fertilizer rates, fungicides, insect thresholds and harvest management decisions at lower plant densities. The caution: When seed rate and resultant plant populations drop below a critical point (four plants per square foot), the yield declines very rapidly and significantly.

FERTILITY

Optimal nitrogen recommendations for canola have been difficult to establish. Consequently, some growers over-fertilize to “protect” yield while others under-fertilize to minimize risk. Nitrogen application rec-

ommendation is, in theory, a simple equation, but is extremely complex in practice due to many interactions in the field: nitrogen source \times rate \times canola variety \times environment \times soil properties \times microbes \times residue \times equipment.

Nitrogen applications for canola in Western Canada are “risky” as growers tend to apply the entire amount at or before planting. Applying some during the growing season may prevent loss and increase yield, but our short growing season and resulting time constraints and other factors make this logistically and biologically difficult. More research is needed but time constraints are difficult to overcome.

OBSERVATIONS:

1. One of the largest returns in precision agriculture may be removing from production those areas that have consistently negative return on investment for inputs.
2. Some of the nitrogen efficiency products optimized for corn need data for canola as the growing season is shorter than corn and critical period is different from corn.
3. Nitrous oxide emissions, especially in spring, need to be addressed for sustainability and profitability.
4. A slight increase in nitrogen use efficiency (NUE) may pay huge dividends for yield and sustainability.
5. Canola varieties differ in nitrogen (and phosphorus) uptake and NUE.

Nitrogen fertilizer products will become increasingly “smart”, responding to plant root signals and uptake sites. This fertilizer will not be cheap, so fundamental research on nitrogen requirements and NUE will be important.

INTEGRATED PEST MANAGEMENT: BENEFICIAL INSECTS

Several presentations highlighted the value of pollinators and other beneficial insects for canola production and the value of maintaining habitat for these insects.

OBSERVATIONS:

1. Canola is a fantastic crop for ecosystem insect biodiversity. We need to optimize

this for yield and integrated pest management.

2. Diverse landscapes are more resilient. Increasing biodiversity is better able to deal with insect and disease challenges.
3. Use low-yielding areas as habitat repositories.
4. Shelterbelts are more welcoming to beneficial insects than to pests.
5. Pollination deficits can be filled by native bees. These decrease exponentially based on the distance from native habitat.

INTEGRATED PEST MANAGEMENT: BLACKLEG

Provincial disease surveys show an increase in blackleg incidence in the past decade while efficacy of blackleg resistance in commercial canola varieties has decreased. Farmers have conveyed a message to CCC agronomists: “I believe I have too much blackleg in my field for an R-rated canola variety.” Research shows that this is due to widespread use of a one resistance gene (*Rlm3*) in the majority of canola varieties for sale in the market.

Knowing that resistance gene *Rlm3* (and *Rlm1*) have been or are being overcome on the Prairies means that in addition to crop rotation, growers should also be using different blackleg resistance genes in rotation. In Australia and Europe, rotation of blackleg resistance genes has shown to be effective in managing the disease. R-gene rotation is both simple and complex due to *Leptosphaeria maculans* race population dynamics. In its simplest form, if you grow a variety with resistance gene *Rlm3* for several years, rotating to a variety with another resistance gene can help reduce blackleg and resulting yield loss. In Australia, research has shown that growing a variety on its stubble in a field results in significant disease while growing a variety on the stubble of a variety containing a different blackleg resistance gene results in minimal to no disease.

Blackleg loss models developed by University of Alberta researcher Stephen Strelkov are slightly different from Australian and EU models. Australia reported no yield losses from blackleg

until 50 per cent of the stem cross-section is blackened (a “2” on the blackleg rating scale). In Canada, losses begin between “1” and “2” on the rating scale, Strelkov says, and losses are very significant when greater than 75 percent of the stem cross-section has disease symptoms.

Many Canadian canola varieties contain what is called adult-plant or quantitative resistance to blackleg. This type of resistance has proven very beneficial to Canadian growers. Breeders and pathologists are continuing to characterize and select for quantitative resistance to blackleg.

INTEGRATED PEST MANAGEMENT: SCLEROTINIA STEM ROT

The challenge for managing sclerotinia disease is good predictive models for timing fungicide applications. Predictive models for sclerotinia are feasible and will be a very useful tool for growers. Soil physical properties and soil environmental conditions have a significant impact on sclerotia germination and apothecia development and should be included in a predictive model.

OBSERVATIONS:

1. Sclerotia that are produced from a sunflower crop appear to be very aggressive on canola.
2. Sclerotia viability is affected by soil microbes. Soils with higher organic matter tend to have more microbial activity and this can play a role in reducing Sclerotia survival in soil.

3. Sclerotia deeper than four centimetres in the soil don't contribute to disease as the apothecia cannot grow more than four cm.
4. Even with good predictive models, growers will benefit from fungicide application systems that deliver product into the lower portion of the canopy for maximum efficacy.
5. Growers cannot skimp on water volume when applying fungicides for sclerotinia control.

ROOT MICROBIOME

Microbes and exudates in the soil surrounding the root and on the root itself have the ability to reduce disease, affect nutrient uptake and use efficiency, reduce environmental stress and increase yield directly by altering hormonal activity within the plant itself. We know that the root microbiome is enormous, with thousands of species of bacteria, fungi, actinomycetes and other organisms and billions of spores and cells present. When all of these are taken together, this mass of individual species and cells has a “genome” (genetic DNA) that, similar to a bee hive, can and should be analyzed together as the microbiome genome.

The discovery forum presentation stressed that with all of our current molecular tools and techniques, we now have the capacity to make sense of this massive biological community. Furthermore, we need to consider that the crop genome affects the root microbiome genome and gene expression, and the root microbiome genome impacts the crop

genome. They need to be studied together as well as separately. Understanding this can result in rotation sequences and addition or manipulation of microbial species that can increase nutrient uptake and prevent fertilizer loss, reduce root and stubble borne diseases and protect against drought or standing water.

The human body is similar. Only one tenth of the DNA in your body may be you. The rest is bacteria! The vast majority of these bacteria keep you healthy and happy, and if you did not have these, you would be sick. Several species of bacterial (example *E. coli*) should never be present and make you severely ill if they are. You can think of the soil around the root zone as the Earth's stomach. It harbours many biological organisms, the vast majority are good and necessary for agriculture, but some are bad. Sorting this out takes many types of researchers (soil scientists, microbiologists, physiologists, molecular biologists, geneticists, biostatisticians, mathematicians and, perhaps most importantly, agronomists) working together. Solutions to advance productivity and sustainability are much more involved than simply adding a “biological” product with the seed and hoping it increases yield. ✖

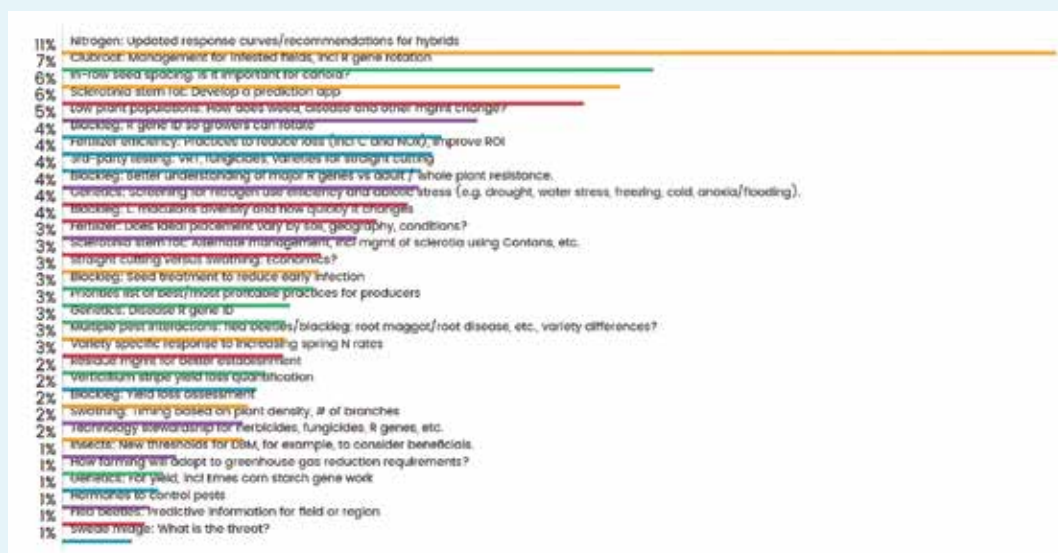
This article provides a quick overview of Canola Discovery Forum. It does not cover every topic addressed. For the detailed Canola Discovery Forum proceedings, please email Ellen McNabb at mcnabb@canolacouncil.org.

—Curtis Rempel, MBA PhD, is vice president, crop production & innovation with the Canola Council of Canada.



What are your canola research priorities?

Canola Discovery Forum 2016 provided a venue to discuss and prioritize innovation and research opportunities. Through group discussion and input, the forum came up with 30 priorities. To contribute to the ranking of these priorities, go to www.menti.com and enter the code “954068”.



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The *Canola Digest* editor looks at four ideas that captured his attention at Canola Discovery Forum: Get smarter about sclerotinia. Map acres that never make money. Select the right root for the job. GRADE the validity of evidence.

FOUR IDEAS FROM CANOLA DISCOVERY FORUM

BY JAY WHETTER

1. GET SMARTER ABOUT SCLEROTINIA

Luis del Rio, canola pathologist and associate professor at North Dakota State University, has worked with other researchers on sclerotinia in canola and other crops. The same sclerotinia species can infect many dicot crops, including canola, sunflowers and soybeans. A tight rotation that includes two or more of canola, sunflowers and soybeans is like “playing with fire,” del Rio says.

Sunflowers are particularly noteworthy for the potency of their sclerotia, the hard black resting bodies produced when sclerotinia infects plants. Not only are sunflower sclerotia much larger than canola sclerotia, but the apothecia that emerge from these sclerotinia also produce more potent spores, del Rio says. “It could be that sunflowers provide a better source of nutrient for sclerotia,” he says.

In his Canola Discovery Forum presentation, del Rio also talked about “effective transport” of spores and the lifespan of sclerotia in North Dakota and Western Canada soil conditions. While a small percentage of sclerotia spores can travel up to a kilometre or more with the right wind conditions, the amount needed to cause disease will travel only about 40 metres from the source apothecia, del Rio says. This is what he calls “effective transport”. Therefore, most sclerotinia infection will come from apothecia emerging within the field or immediately adjoining fields.

He also says sclerotia can last for two or three years in soils with high

microbial activity (rich moist soil) and longer in soils that have less microbial activity. He adds that sclerotia from last year will have the highest potency, with potency dropping over time — similar to seed germination. While sclerotia three years old could still produce apothecia, these are not likely to produce many spores. “With rotation away from host crops, growers are buying time for enemies of sclerotia to attack, weaken and kill them,” he says.

What does this mean for management? One idea is that Contans, a soil-applied biological that can kill sclerotia, might prove effective after sunflowers. Current thinking is that Contans would have to be used over a wide geographic area to provide any meaningful reduction in sclerotinia risk, given the number of host crops grown each year, but localized measures (even field by field) to reduce the potency of sunflower sclerotia might be worthwhile.

Discovery Forum also had a presentation from Lone Buchwaldt, research scientist with Agriculture and Agri-Food Canada in Saskatoon, who provided an update on genes identified in *B. napus* that contribute to sclerotinia resistance. Nine of these genes have been cloned and transformed into a susceptible canola line to measure the contribution of each gene by itself. One gene, found in a Pakistani line, is particularly interesting as it could reduce the penetration of the pathogen into the plant cell.

2. MAP ACRES THAT NEVER MAKE MONEY

Many farms have the data needed to produce profitability maps for their fields. Add grain prices to yield maps to provide a revenue map, then subtract inputs to produce a profitability map. Mapping software and consultants can help with this.

Brian Arnall, precision farming extension specialist with Oklahoma State University,

says three to 10 per cent of each field loses money every single year. Growers could turn off nutrients and fungicides in these areas, providing a relatively simple way to improve return on investment for inputs and overall field profitability.

“It blows my mind that this is not commonplace,” Arnall says. “This will be my major extension program for the 2017 calendar year.”

This tied in well with an unrelated presentation later in the program from Lora Morandin, Western Canada program manager for Pollinator Partnership Canada. She spoke about the benefits of maintaining habitat around the farm for pollinators and other beneficial insects. Perhaps unprofitable areas could be seeded to flowering plants and shrubs, creating the habitat necessary for beneficial insects that can improve yields and reduce insect management costs. Find out more at pollinator.org.

3. SELECT THE RIGHT ROOT FOR THE JOB

Like the human gut, which is full of microbes that help us digest food, expel bad germs and influence our overall health, the plant root area – the root “microbiome” – is a similarly diverse ecosystem. A gram of soil can have as many microbes as all the humans on Earth, and we’re just starting to understand how these root-zone organisms work with or against plants.

Bobbi Helgason, soil microbiologist with Agriculture and Agri-Food Canada (AAFC) in Saskatoon, spoke about new tech-driven opportunities to use DNA sequencing to discover the diversity of this ecosystem and identify organisms beneficial to canola. “We want to first understand the signals plants use to recruit and interact with beneficial organisms, and then to figure out how this beneficial niche is linked to plant genomics,” Helgason says.

Sclerotinia sclerotia
in a canola stem

Credit: Beth Hoar

While Helgason works on the soil microbe side, Sally Vail, canola breeder and genetics researcher at AAFC Saskatoon, explores the plant's perspective. "We know environmental differences exist that influence the root microbiome," Vail says. "We want to test the hypothesis that plant genetic differences are microbiome controllers as well." The microorganism community can vary by environment and location, but AAFC researchers may discover that within genetically diverse canola lines, some root traits are better suited to certain microbiome conditions or work better with specific organisms.

"It could be years down the road, but if farmers knew the soil microbial community in their fields, they could choose canola varieties with genes equipped to most beneficially take advantage of that microbial mix," Vail says.

This will also improve our understanding of "soil health". While answers may take time, Helgason recommends that farmers continue to take steps to preserve the healthy and diverse soil ecosystem currently present in their fields. Reduced tillage and crop rotation practices that promote healthy crops are two such steps.

4. GRADE THE VALIDITY OF EVIDENCE

Dr. Roger Suss provided a doctor's perspective on weighing evidence when advising patients. He gave a brief introduction to the Grading of Recommendations Assessment, Development and Evaluation (GRADE), an outline the GRADE working group developed to standardize what was meant by an "A" level of evidence, for example.

With any evidence, whether for medical health or agriculture, users need to know its validity. Internal validity of a study refers to the integrity of the experimental design. External validity of a study refers to the appropriateness by which its results can be applied to non-study patients or populations.

"Science is based on the assumption that if you repeat a process precisely, the same thing will happen each time," Suss says. "This works well when you can control all of the variables, but in medicine we never control all of the variables. We try to control as many as we can."

Agriculture would be the same, with many variables that can test the external validity of research.

"External validity is about whether extrapolation is reasonable or not, and is a

judgement call based on "experience" and other vague criteria," Suss says. "If a treatment worked in Philadelphia will it work in Winnipeg? How about in Darfur? Disease is pretty similar in all developed countries and different in poor countries. But humans are pretty similar everywhere. I am comfortable assuming that most treatments that worked in Philadelphia will work in Winnipeg. The extrapolation seems small."

Suss provides the following advice for doctors weighing harms and benefits. "If someone has done a study that weighed harms and benefits in a way that you feel has external validity to your situation, then the question is answered. But frequently evidence of harms and benefits may come from separate studies. Then, my advice is mostly to think about both sides of the balance and attempt to "weigh" each. We often fail to do that. We just look at one or the other. Or we change the question (often with the encouragement of industry) to say 'is there any benefit' rather than actually measuring the magnitude of the benefit," he says. "I imagine much of that applies to farmers, too." 🌻

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

Grade of Recommendation	Clarity of risk/benefit	Quality of supporting evidence	Implications
1A. Strong recommendation. High quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	Consistent evidence from well-performed, randomized, controlled trials or overwhelming evidence of some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk.	Strong recommendation, can apply to most patients in most circumstances without reservation
1B. Strong recommendation. Moderate quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	Evidence from randomized, controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise), or very strong evidence of some other form. Further research (if performed) is likely to have an impact on our confidence in the estimate of benefit and risk and may change the estimate.	Strong recommendation, likely to apply to most patients
1C. Strong recommendation. Low quality evidence	Benefits appear to outweigh risk and burdens, or vice versa	Evidence from observational studies, unsystematic clinical experience, or from randomized, controlled trials with serious flaws. Any estimate of effect is uncertain.	Relatively strong recommendation; might change when higher quality evidence becomes available
2A. Weak recommendation. High quality evidence	Benefits closely balanced with risks and burdens	Consistent evidence from well-performed, randomized, controlled trials or overwhelming evidence of some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk.	Weak recommendation, best action may differ depending on circumstances or patients or societal values
2B. Weak recommendation. Moderate quality evidence	Benefits closely balanced with risks and burdens, some uncertainty in the estimates of benefits, risks and burdens	Evidence from randomized, controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise), or very strong evidence of some other form. Further research (if performed) is likely to have an impact on our confidence in the estimate of benefit and risk and may change the estimate.	Weak recommendation, alternative approaches likely to be better for some patients under some circumstances
2C. Weak recommendation. Low quality evidence	Uncertainty in the estimates of benefits, risks, and burdens; benefits may be closely balanced with risks and burdens	Evidence from observational studies, unsystematic clinical experience, or from randomized, controlled trials with serious flaws. Any estimate of effect is uncertain.	Very weak recommendation; other alternatives may be equally reasonable.

This GRADE table comes from UpToDate. Watch a 20-minute tutorial at uptodate.com/home/grading-tutorial#. Find out more about the GRADE working group at gradeworkinggroup.org.

The current agreement to keep dockage at 2.5 per cent for canola delivered to China took many months of intense work. And it's not over. We need to keep working toward a long-term solution based on science.

LOOKING BACK AT THE CHINA TRADE DISPUTE

BY PATTI MILLER



It's a feeling growers know all too well: Just when things seem to be going so well, suddenly, they aren't.

That's how we felt in January 2016 when the Canola Council learned that China, one of our biggest customers, was planning to impose severe dockage restrictions on canola imports.

The news came after years of good trade relations with China. Sales were excellent, driven by increasing recognition of canola's superior value over traditional rapeseed. Cooperation was high, too. For three years, our two countries had worked together on several research projects demonstrating canola's many advantages.

Why, then, was China suddenly insisting on maximum dockage of one per cent, less than half the standard level for canola shipments in markets around the world?

At the time, China said the dockage cap was aimed at preventing the spread of blackleg from Canadian canola seed

*Above:
A Chinese
delegation
tours Canada's
grain handling
system. Patti
Miller is back
row, centre.*

*It was a
gruelling
process –
requiring over
half of my time
as president,
as well as a
significant time
investment
by our crop
production and
government
relations teams.*

to its domestic rapeseed crop. Blackleg transmission is a genuine concern, respected and shared by our industry.

However, China's position was not supported by scientific evidence or practical experience. Research had already shown that dockage level has no significant impact on the risk of blackleg transfer.

In subsequent months, there was much speculation about why China took this position, and the reasons may never be entirely clear. But as we look back at the events of 2016, we can clearly see how the efforts of the Canola Council and our allies led to a successful resolution of these issues, at least for now.

While it was a marathon undertaking, we emerged from this dispute with a renewed commitment to science-based rules that will help us deal with future market access challenges, whether they are related to blackleg or the many other complexities of international trade.

THE ROOTS OF THIS DISPUTE

This latest period of uncertainty began last January, but in fact, the canola industry has been dealing with blackleg-related issues in China for seven years. In 2009, China temporarily blocked imports of canola when Canadian and Australian shipments tested positive for blackleg, which raised concerns about potential spread to China's domestic rapeseed crop.

Since then, researchers and government officials in both countries have collaborated on millions of dollars' worth of research to better understand the disease and how to

manage the risk of transmission.

In addition, we agreed that canola exported to China would be delivered only to processing plants far from rapeseed-growing areas, which has virtually eliminated the risk of transfer.

With these measures in place, China soon became one of the biggest buyers of Canadian canola seed, with annual sales of up to four million tonnes.

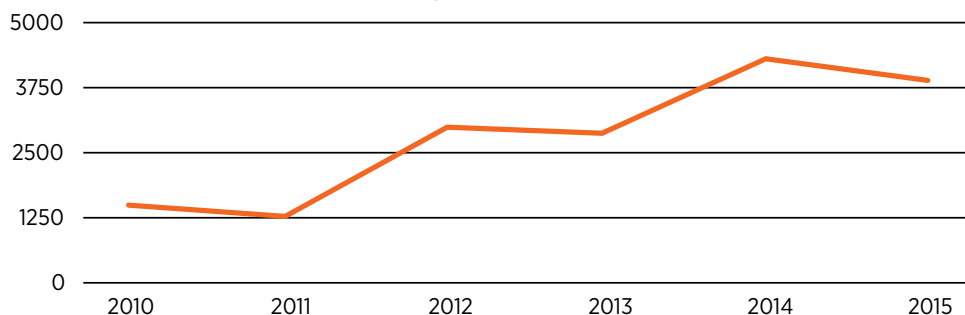
THE LONG ROAD TO RESOLUTION

When China announced its intent to restrict dockage, months of intense technical discussions followed. The group working on this issue included the Canola Council's senior staff, the Canadian Food Inspection Agency, Global Affairs Canada, Agriculture and Agri-Food Canada's Market Access Secretariat, board members, research scientists and other industry partners. All contributed their expertise as we presented powerful evidence that China's concerns were not supported by science.

It was a gruelling process – requiring over half of my time as president, as well as a significant time investment by our crop production and government relations teams.

By March 2016, we were able to convince China to delay the original deadline for the dockage reduction from April 1 to September 1 so that we could continue our discussions. But even after this extension was in place, we encountered difficulties. At one point in May, eight shipments of Canadian canola were denied entry to China because of documentation

Canadian Canola Seed Exports to China, 2010-2015 ('000 Tonnes)



The Canola Council helped to end the blackleg quarantine of 2009 and clear the way for steady growth in canola seed exports to China. After another blackleg-related dispute in 2016, Canadian canola is once again flowing into China.

issues. With the help of the Government of Canada we were able to achieve a common understanding of the required documentation, allowing \$250 million worth of canola to finally be unloaded at port.

In the midst of all this activity, some media commentators wondered aloud whether the effort was worth it. Why weren't we just complying with China's dockage demands? After all, isn't the customer always right?

In this case, we knew we couldn't let the demand go unchallenged. Our grain handling system would not be able to sustain a one per cent dockage level over the long term because it would drive up costs and drive down efficiency without adding any value. Going along with a demand not based in science would have set a precedent that could damage not just the canola industry, but our entire agri-food sector.

By July, we were making more encouraging progress. We hosted two delegations from China, including one group that spent two weeks touring Canada's elevator and grain-handling system, and another group involved with additional research on dockage.

As the September 1 deadline drew near, the trade dispute was our constant focus. In August, I made two trips to Beijing with Canadian government representatives and was in daily discussions with officials from both countries.

GOVERNMENT INTERVENTION

By late August, we had put all of the necessary pieces in place to move past this deadlock. We had leveraged the

findings of our research, enabled the Chinese to do first-hand inspections of our facilities and built a deeper understanding of the facts among government officials.

But China's position was entrenched and the Chinese government's complex and evolving power structure made the issue difficult to resolve. Officials would not completely abandon the new dockage requirement until the intervention of Canadian government officials at the highest level. We were able to break through the impasse with the direct involvement of International Trade Minister Chrystia Freeland and support from Agriculture Minister Lawrence MacAulay.

At the start of Prime Minister Trudeau's first official visit to China on August 31, Canada achieved a commitment from China to once again delay the dockage requirements while both countries continued to work towards a solution. While this meant the restrictions would not come into effect on September 1 as China had planned, there was still no long-term solution.

Intense discussions continued on a daily basis until finally, on September 22, Prime Minister Justin Trudeau stood alongside Chinese Premier Li Keqiang at a press conference in the Parliament Buildings in Ottawa, and announced that trade of canola would continue while both countries continued to cooperate on science-based risk management.

NOT OVER YET

Despite our collective sigh of relief when the agreement was announced, we aren't done yet. The agreement

signed on September 24 guarantees that we can continue to export canola to China under the same terms that were in place before this dispute began. But that agreement expires in 2020.

In the meantime, we need to keep working toward a long-term solution based on science. We are continuing to deepen Chinese officials' understanding of blackleg and are completing ongoing research on blackleg. Here at home, we are working with farmers to reduce the incidence of blackleg by facilitating proper rotation of the blackleg-resistant genetics now available. Life science companies are continuing to develop new resistant varieties.

All of this work benefits Canadian canola producers, as well as our prospects in the marketplace.

SO WHAT HAVE WE LEARNED?

Looking back, it's clear that this dispute was about a lot more than dockage and blackleg. It was about the larger need to have a science-based, mutually respectful and stable relationship with one of our largest customers. If we wish to continue building on this relationship, we need to get the ground rules right. The future of our industry depends on it.

The events of 2016 reminded us that the path forward is the same today as it has always been. We need to stay focused on the guiding principles that have served this industry well for so many years, including the pursuit of science-based policies.

As we pursue this goal, our most powerful tools are partnership, persistence and sound scientific evidence. When we can leverage these three factors, we can overcome the most difficult barriers – even when they are posed by a nation as large as China. ✿

—Patti Miller is president of the Canola Council of Canada.

PRE-EMERGENT

GROUP
14

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FMC

Research shows canola oil can improve glycemic control in people with type-2 diabetes. Canola Eat Well is working with the Canadian Diabetes Association to promote this health benefit.

CANOLA OIL CAN HELP CONTROL BLOOD SUGAR

BY RAEANNE VAN BEEK

Canola oil's versatility makes it a top choice in the kitchen. More and more however, its health advantages have people reaching for canola oil in their cooking. And now, people with type-2 diabetes have even more reasons to choose this healthy oil, thanks to a study that showed eating canola oil could help control blood sugar.

The study, led by Dr. David Jenkins, a professor in the Departments of Nutritional Sciences and Medicine at the University of Toronto, and reported in *Diabetes Care**, showed improved glycemic control (blood sugar levels) in participants with type-2 diabetes on a canola-oil enriched low-glycemic (GI) diet. The study also showed that adding canola oil to the diet lowers the risk of cardiovascular disease. Agriculture and Agri-Food Canada, the Canola Council of Canada, and SaskCanola, Alberta Canada and MCGA funded the study.



Beneficial fat profile

Canola oil's fat profile sets it apart from other cooking oils. Oils are made up of saturated, polyunsaturated and monounsaturated fats in differing amounts. The ratio of these is key. Canola oil has a highly beneficial fat profile, with the lowest amount of saturated fat and highest unsaturated fat of any of the common cooking oils. The two types of unsaturated fat are called polyunsaturated fat and monounsaturated fat. Replacing saturated fats in the diet with polyunsaturated and monounsaturated fat helps reduce bad cholesterol in the blood and lower the risk of heart disease. Polyunsaturated fat from plant sources provides omega-3 and omega-6 essential fatty acids that the body can't make on its own. Canola oil contains the most plant-based omega-3 of the common cooking oils and is also trans-fat free.

CDA EXPOS

Canola Eat Well has been working with registered dietitians Lynn Weaver and Lois Ferguson in Ontario in partnership with the Canadian Diabetes Association (CDA) at several learning expos to spread the word about these health returns.

The Canola Eat Well brand is a joint partnership with Alberta Canola, SaskCanola and Manitoba Canola Growers. Canola Eat Well works together with CanolaInfo on Canadian programming and activities.

Located in Toronto, Ottawa, Kitchener and Brampton, the educational expos were jam-packed with exciting speakers, interactive exhibits and info sessions for individuals living with diabetes and those organizations supporting them.

At each expo, people stopped by the Canola Eat Well booth to hear about how canola oil could be helpful to them and learn more about its culinary uses and benefits.

“From a nutrition point of view, canola oil cannot be beat!” says Weaver.

During nutrition breaks, Canola Eat Well provided popcorn popped in 100-percent canola oil. The Toronto Popcorn Company prepared the popcorn following CDA guidelines for fat, salt and sugar. This was accompanied by a cooking demo showing the audience how to make flavoured popcorn at home with some great recipes from CanolaEatWell.com, including lime and chili pepper popcorn.

At the South Asian Expo in Brampton, Chef Siva Swaminathan taught attendees about ‘Whole Grains for South Asian Cooking’. Canola oil and its advantages were featured throughout the cooking demonstration and also in the luncheon based on this demo.

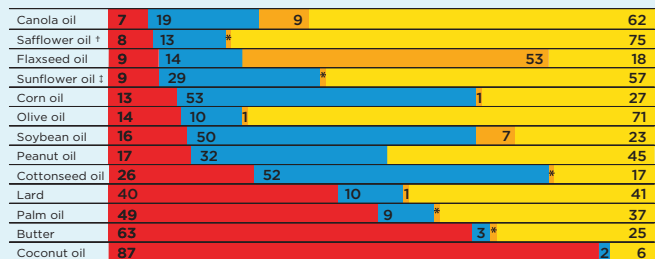
In the end, the expos were more than just a forum for learning, sharing and growing. They were also a source of inspiration and motivation, empowering people living with diabetes and offering them a chance to connect with health professionals and others who want to eat great food and live healthy lives. We at Canola Eat Well were happy and proud to be part of such a wonderful experience! ✨

—Raeanne Van Beek is the marketing and events coordinator with SaskCanola.

*Jenkins, D.J.A. et al. “Effect of Lowering the Glycemic Load With Canola Oil on Glycemic Control and Cardiovascular Risk Factors: A Randomized Controlled Trial,” *Diabetes Care* 2014; 37:1806-14.

Comparison of Dietary Fats

Dietary Fat



Saturated Fat	Polyunsaturated Fat	Monounsaturated Fat
■	■ linoleic acid (an omega-6 essential fatty acid)	■ alpha-linolenic acid (an omega-3 essential fatty acid)
		■ oleic acid (an omega-9 fatty acid)

* High Oleic † Mid Oleic * Trace

SOURCES: CANADIAN NUTRITION FILE AND USDA NATIONAL NUTRITION DATABASE. *ACCESSED MAY 2016

Fatty acid content expressed as g/100g fat

PRE-EMERGENT

GROUP 13

N CLEAVER CANOLA



Scrub out cleavers with the pre-emergent power of Command.

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FMC

Canola Eat Well used “Pizza Month” activities to encourage Canadians to make their own pizza dough using canola oil.



Alberta canola farmer Jeannette Andraszewski, front left, shared her canola story about the environment, sustainability and why she uses GMO canola seed on her farm to an enthusiastic group of young moms wanting to learn more about the farm-to-food story.

MAKE DOUGH WITH CANOLA OIL

BY ELLEN PRUDEN

Whether in a greenhouse, a master pizza baking class or through an online pizza dough video, Canola Eat Well is connecting consumers to food and to canola farmers.

The Canola Eat Well brand is a joint partnership with Alberta Canola, SaskCanola and Manitoba Canola Growers and works together with CanolaInfo on Canadian programming and activities. When we learn together, we grow together.

October was Pizza Month, and through Canola Eat Well, we took the opportunity to engage with our community, share how

to make great dough, understand why you use canola oil in pizza making and how our canola farmers grow canola in Canada.

“I feel it’s important to provide the story to people who may not have solid information about farming,” says Jeannette Andraszewski, an Alberta canola farmer.

Andraszewski is one of the Canola Eat Well farmers who actively engages with the consumer audience at culinary workshops. She shares her story about the environment, sustainability, production practices and farming methods.

“I want to share about where our food is coming from, how it’s produced and who is producing it,” Andraszewski explains.

Canola Eat Well hosted three pizza workshops (two in Manitoba and one in Toronto), had #CanolaConnect Alumni bake pizza on TV to showcase the health and versatility of canola oil and encouraged Canadians to make pizza dough at home. 🌻

—Ellen Pruden is education and promotions manager with Manitoba Canola Growers and Canola Eat Well.

RECIPE: Pizza dough

Combine whole-wheat flour, all-purpose flour and wheat germ to make whole-grain dough. If you don’t have wheat germ, leave it out.

INGREDIENTS

1 cup whole-wheat flour
1-1/2 to 2 cups all-purpose flour
2 Tbsp wheat germ
1 pkg (7 g) quick-rising instant yeast
1 cup warm water
1 Tbsp canola oil
1/4 tsp salt

DIRECTIONS

1. In a large bowl, mix whole-wheat flour, 1 cup all-purpose flour, salt and yeast. Stir in warm water and canola oil.
2. Gradually stir in enough of remaining all-purpose flour to make a soft dough. Knead on lightly floured surface until smooth and elastic.
3. Shape dough into ball. Cover and let rest for 10 minutes before rolling out.



For more recipe ideas and a classic homemade pizza sauce recipe, **go to [CanolaEatWell.com](https://www.canolaeatwell.com)**



Managing blackleg takes more than genetics.



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Growers who are tightening canola rotations and relying on the same blackleg R-rated varieties year after year are at a higher risk of blackleg infection. Your best defence is an integrated approach that includes Priaxor® fungicide. Combining the unique mobility of Xemium® and the proven benefits¹ of **AgCelence®**, Priaxor delivers more consistent and continuous control of blackleg, and helps maximize your canola crop's yield potential and growth efficiency². Keep blackleg out of your fields and save with the 2017 Canola Solution Offer. See agsolutions.ca/priaxor for details.

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Verticillium is impossible to eradicate from the soil, but so far, yield loss from the disease is minimal in Canadian canola.

VERTICILLIUM STRIPE: MEASURING THE THREAT

BY TREENA HEIN



Fungal pathogens in the verticillium genus affect over 400 plant species worldwide, and can cause major economic losses in crops such as strawberry, cotton, potato and olives. The species *Verticillium longisporum*, which causes verticillium stripe, affects a number of annual and perennial crops in both temperate and subtropical zones around the globe, including broccoli, cabbage, cauliflower, horseradish, radish and canola. *V. longisporum* is a different species from the one known to cause verticillium wilt in potatoes and sunflowers in Manitoba and other areas of Canada.

V. longisporum is present in canola in many parts of Europe as well as Japan. While early infection is capable of causing significant yield losses in Europe, severe yield losses of up to 50 per cent have been isolated.

IDENTIFICATION AND MANAGEMENT

Once the plant is fully ripe, infected stems peel back to reveal tiny black microsclerotia that resemble ground pepper. These microsclerotia remain on the plant stem and are released to soil as stems decompose. (See the sidebar for more on disease symptoms.) They can survive in soil for many years and spread from field to field or farm to farm with soil movement on contaminated equipment,

seeds or boots or soil dispersal by surface water or wind.

No foliar or seed treatment fungicides are currently registered for control of verticillium stripe in canola. Management steps include increasing the rotation frequency of non-host crops, control of host weeds, increasing soil fertility and the use of trap crops, green manures and fumigation.

Clint Jurke, agronomy director with the Canola Council of Canada, recently attended the International Verticillium Symposium in Slovenia, and reports that known resistance genes in canola are still rare. “Wherever the disease is found,” Jurke says, “verticillium stripe is pretty much impossible to get rid of.”

VERTICILLIUM IN CANADA

The first *V. longisporum* infection in Canadian canola was discovered in Manitoba in 2014. Surveys by the Canadian Food Inspection Agency followed in 2015, with infections discovered in other parts of Manitoba as well as Saskatchewan, Alberta, B.C., Ontario and Quebec.

Mario Tenuta was among the first to confirm the arrival of the disease. The first reported site was a research station on clay soil where canola is grown once every four years. “It was likely spotted because the station’s well-trained personnel noted that combining felt different in the

afflicted area,” notes the University of Manitoba professor of applied soil ecology. “It can be quite easily overlooked.”

Tenuta is not sure how *V. longisporum* arrived in Canada. It could have been present on seed, came up on soil from the U.S., or found a foothold through hybridization somewhere on the Canadian Prairies. “We definitely have *V. dahliae*, which is one of the parents required for *V. longisporum*,” he notes.

Jurke says the other parent is unknown at this point. “It makes *V. longisporum* unique,” he explains. “It doesn’t produce the same types of symptoms as *V. dahliae*, which is a true wilting verticillium. Therefore we are calling it a stripe because of its effect on stems. We don’t want the growers looking for wilt symptoms. The resulting disease caused by *V. longisporum* on canola or rapeseed is also being renamed across parts of Europe to verticillium stripe.”

No matter how *V. longisporum* reached Canada, Tenuta says it was just a matter of time. “We do not know if the disease will be serious,” he says. “Given that it is widespread and growers are not noticing a yield hit makes it seem like a minor pathogen. But it is a disease we need to know more about and to keep in mind moving forward. With successive canola crops, can the pathogen become more aggressive?”

Jurke agrees. “It comes in late and seems like a cosmetic thing, but two studies this year, one in Germany and one in the Netherlands, found a 15 to 20 per cent yield loss in both winter and spring canola,” he notes. “Yes, those countries have a longer growing season with more warmth and moisture, so that may be the upper limit of its damage, but we should not assume it will be a cosmetic disease in Canada. We need to understand the basics of this disease.”

Fouad Daayf, professor and head of the Department of Plant Science at the University of Manitoba, notes that if *V. longisporum* holds the same adaptation abilities as its relatives *V. dahliae* and *V. albo-atrum*, “we may speculate that the disease will expand more with time.” His lab first identified *V. longisporum* in residue from the research station provided by Manitoba Agriculture staff. ✿

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



When scouting for verticillium stripe in canola, look for peeling of the outer layer of the stem. Inside these peeled areas, look for striping and blackening. When rubbed, faint stripes can appear darker and more obvious. Once the plant is fully ripe, tiny black microsclerotia that resemble ground pepper will form in these peeled-back areas.

Identifying verticillium

THE EASIEST TIME TO IDENTIFY VERTICILLIUM STRIPE IN CANOLA

is at harvest when symptoms, if present, are most advanced. Look for peeling of stem surfaces with little black dots (microsclerotia) on or in the pith. If found, put some stems in a sandwich bag and contact your provincial canola or crop disease specialist for confirmation.

As written in the Canola Council of Canada (CCC)’s Canola Encyclopedia chapter on verticillium, symptoms in canola include leaf chlorosis, early ripening, stunting and, as the disease progresses, necrosis and shredding of the stem tissue.

From the encyclopedia: “Interference with the uptake of water and nutrients caused by verticillium stripe can cause the crop to show signs of stunting and premature senescence. When individual plants are closely observed, faint black (vertical) striping can be seen on the stems which, when rubbed, can appear darker and more obvious. By peeling back the epidermis and outer cortex of the stem, blackening can be seen on the inside of the stem, and eventually microsclerotia later in the growing season. The striping will become more obvious deeper into the maturation process due to the tissues dying below the stem surface. At the end of ripening and with moist conditions, the microsclerotia will begin to germinate and produce conidia spores externally, giving the outside of the stems a powdery look.”

Infection can be scattered or affect a whole field. Since some symptoms of this disease overlap with those of regular senescence, and since severity is based on plant health and environmental conditions, symptoms may be hard to notice in less severe cases. Verticillium stripe can also be mistaken at first for sclerotinia stem rot and blackleg. ✿



Find the full verticillium chapter in the “Diseases” section at canolaencyclopedia.ca



Canola stand establishment

In this series, Canola Council of Canada agronomy specialists take a particular agronomy challenge and provide solutions, with consideration for risks and costs. In this case, **Autumn Barnes** looks at stand establishment as a way to balance risk and profit.

1. THE CHALLENGE

Plant density and canola yield aren't strongly correlated, so optimum stand density is about risk management and is somewhat subjective. The Canola Council of Canada has long recommended a target plant density of seven to 10 plants per square foot at emergence to optimize agronomic benefits and provide a consistent baseline for balancing risk and profit. As seed costs have gone up, growers are trying to save money by seeding at lower rates. Emergence surveys show an average around four to seven plants per square foot. Additionally, most farmers don't target a stand density at all and fewer count plants at emergence to see how close they came to achieving their goal.

2. THE RISKS

Growers who don't set a target plant density have no idea where they may be losing or winning in the seeding operation. Should you be putting more seed in the ground? Could you save some money and lighten up your rates in a given field? Without a target density and 'report card', growers can only guess at these answers. This is arguably the most risky scenario and I strongly advise growers to re-assess this practice for the 2017 growing season.

Choosing the wrong plant density target can carry its own risks. Growers who seed too heavy spend more money on seed than necessary and miss out on profit. While this isn't as common as seeding too light, it does happen and the profit is still unrealized. Growers who seed too light open themselves to a whole host of issues:

Poor spring conditions could push emergence lower than 40 per cent and leave an even thinner or more variable stand that compounds issues like spring frost, flea beetle damage and lower weed competition (especially if in an area with herbicide resistance).

- A thin stand has more branches and often flowers longer, making it difficult to stage for fungicide.
- Harvest will be more difficult to stage.
- Additionally, more stalks can help anchor swaths in the event of fall winds.
- If that isn't enough to make growers reconsider canola seeding rates, don't forget that our current insect thresholds and fungicide spray recommendations are based on uniform stands of seven to 10 plants per square foot. Pest management practices may need adjustment with a thin and/or non-uniform stand.

3. THE SOLUTION

Planning ahead and collecting plant density data in-season can seem like a chore but it can prevent unnecessary risk and potentially save a lot of money. In a survey done in 1992 by Alberta Agriculture, almost 90 per cent of growers did not set targets for a specific plant population. Twenty-five years later, I'd be surprised if that number was much lower. In 2017, all canola growers should be setting a target plant density for each field. Growers who value crop competition with weeds and uniform, quicker-maturing stands will probably opt for eight to 10 plants per square foot. Growers who want to take on more risk or are seeding into warm, moist soil with low risk of spring frost might want to try pushing a little lower to six plants.

Regardless of the density target, calculate a seeding rate based on that target and the seed weight (thousand seed weight can vary from 4-8 grams and drastically impact the number of seeds planted per square foot), then record it. Don't forget to count plants at emergence. If not happy with results at the end of the year, bump up density plans for 2018. Or, if a thicker stand didn't offer an advantage, consider why. Growers in that situation may want to seed some test strips or fields a little thinner in the future.



This canola field in southern Alberta is within the target of seven to 10 plants per square foot and all plants seem to be about the same size, indicating uniform emergence and staging.

4. OPTIONS FOR CREATING AN OPTIMUM STAND

Buying more seed is probably the easiest way to increase the number of plants growing in a given area, but many free (or cheap) ways can make the most of the seed put in the ground. Incorporate a few of these ideas (or better yet, all of them!) to improve canola stand establishment without breaking the bank:

- Set plant density and emergence percentage targets prior to seeding, then follow up to see if targets were met. Understand why/why not.
- Keep seeding equipment well maintained and replace worn openers.
- Check soil temperature throughout the spring prior to seeding. Canola germinates quickly and evenly at temperatures above 8°C.
- Have a residue management plan in the fall for all of crops and seed canola into uniform field conditions.
- Seed shallow. If having problems getting uniform placement, try slowing down.
- Seed slowly. There is no 'right speed' for canola. Limitations will be set by equipment and conditions in each field.
- Check seed and fertilizer placement regularly and make adjustments as needed.
- Only place a maximum of 20 pounds of phosphate with the seed. All other nutrients do not need to be in the seed row.
- Consider replacing seeding implements if unhappy with placement and emergence (and it isn't operator error).
- Get comfortable calibrating seeding implement. Consult the owner's manual and calibrate often.

5. COSTS AND ROI

We know that for every dollar of nitrogen applied, growers should expect a minimum \$2 return, but investment in canola seed isn't as black and white.

The return on investment for seed can be difficult to identify until harvest time, marketing time or when future weed problems rear their ugly heads (or not).



To view the video

"Canola Stand Establishment: A Grower Q&A", go to **canolacouncil.org** and click on "Video gallery" under the Resources tab. Look in the Crop Production Videos section.

Should a dollar of seed return a dollar of profit? Do the agronomic benefits of more seed outweigh the cost? The return on investment for seed can be difficult to identify until harvest time, marketing time or when future weed problems rear their ugly heads (or not). In some years, a given field can do quite well with lower plant densities. In others, it will suffer yield losses and set back weed, pest and harvest management progress.

Growers should identify their appetite for risk and try to place a dollar value on agronomic factors like increased weed competition, shorter flowering window, and earlier harvest before seeding each canola field. With the rising cost of seed, plant density targets aren't going to be one size fits all in the future: power and profit are there to be realized for growers willing to invest time and effort understanding how density impacts different factors in their farming operations. ✖

—Autumn Barnes is the Canola Council of Canada agronomy specialist for Southern Alberta.





Use your capital gain exemption

Greg Sears and his father are using the capital gain exemption now to transfer land. It creates a tax savings in the six-figure range and provides Sears' parents with much better utilization of their assets while they're alive.

BY DONNA FLEURY

Developing the right strategies and implementing the right tools can assist farm families with succession planning and farm transfers. One tool often overlooked is the capital gain exemption to help parents save taxes and gain a tax-free pension, while transferring a portion of the farm assets to their children now. Merle Good, who runs GRS Consulting from Cremona, Alta., has provided numerous seminars through the Alberta Canola, including discussions related to succession planning, tax strategies and business structures.

"At one of our regional meetings, Merle Good talked about the large number of farmers that do not use

their capital gains exemption to their advantage. It is something that farmers specifically count on to preserve value in their farms and families," says Greg Sears, Alberta Canola chair and farmer from near Sexsmith, Alta. "He talked a lot about the number of farmers going to their death without having used this exemption, and provided strategies to try and take advantage. Based on that session, my father and I visited our accountant and have developed a plan that is working well for us."

Sears and his father have structured an agreement over 10 years, where Sears is now buying two quarters of land instead of renting, which allows his father to use his capital

"This is a long-term strategy that provides my parents with a much better utilization of their assets while they are still alive and saves them quite a bit of tax,"

—Greg Sears

gain exemption and transfer that land to Sears. As well, there will be a tax savings in the six-figure range for the family. "This is a long-term strategy that provides my parents with a much better utilization of their assets while they are still alive and saves them quite a bit of tax," explains Sears. "As a corporation, I can pay the debt down at a lower tax rate."

A number of factors tie together to make it work, Sears says, highlighting the need for succession planning. There needs to be a discussion within the family to understand everyone's needs and perceptions and how the plan will come together before talking to lawyers. "From a strict financial perspective, farmers spend

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a lot of time and energy trying to squeeze the last dime out of cost savings or the last bushel of production, but without proper tax strategies, you can throw a lot more money back to the government and out of your family by not managing that end of things properly.”

CAPITAL GAIN EXEMPTION STRATEGIES

For Good, the real question to farmers is ‘Why not use your capital gain exemption while you are alive? Why wait until you’re dead?’ Many farmers are reluctant to give up control and don’t want to do anything to trigger the exemption today, but there are options that can benefit everyone. The current capital gains deduction per person in Canada is now \$1,000,000.

“The reason capital gains exemption has become more of an opportunity is the current economic situation,” explains Good. “First, land has exploded in value (land in Alberta today is 30 times 1971 values). Second, personal taxes are increasing while corporate taxes are going down. And finally, living costs are increasing. With the value of land, farmers have an option to sell only one or two quarters and use up a significant portion of their capital gains exemption, while retaining ownership of the rest of their land. For a significant number of farmers, one of the options is to sell the land to yourself in the form of an operating company. This can help them retire on an approximate 14 per cent tax rate and look at a unique way to transfer land to the next generation, but still control it. You can transfer the family farm and keep your family.”

Farmers can sell three things to trigger the capital gains exemption: land, corporate shares and a partnership interest. If a land sale is made into a corporation, the farmer claims the capital gain exemption and then takes out a shareholder’s loan, which is tax-paid money. Options include taking out a portion of the money annually in the form of a salary or land rent — enough to keep in a low tax bracket at 14 or 15 per cent — then take out the rest against the shareholder’s loan.



Greg Sears, the Alberta Canola chair who farms at Sexsmith, has a 10-year agreement with his father to buy two quarters of land instead of rent. “This is a long-term strategy that provides my parents with a much better utilization of their assets while they are still alive and saves them quite a bit of tax,” he says.

The real benefit is the corporate tax rate is currently below 14 per cent, compared to the average personal tax rate at 30 per cent. So on a two-generational farm, this strategy can, for example, take a \$60,000-per-year living cost at a personal tax rate of 30 per cent and reduce that to 14 per cent tax rate, freeing up \$10,000 of tax-free money to help pay for the cost of living.

“This is the only industry in Canada that can do this,” Good says.

Farmers have other benefits of a shareholder loan to consider, along with creating a tax-free pension. By transferring land to the corporation, in some cases a farmer can ask to have their personal guarantee removed at the bank. With this, their personal land and assets are no longer pledged to their creditor. It also allows shareholders to purchase larger personal assets with corporate cash. More importantly, it also creates an off-farm asset for non-farm succession and estate planning. For example, it provides the opportunity to have the company take out a loan against the shareholder’s loan and give the funds to the parents. Parents can use these funds to help non-farming children purchase a house, instead of using personal high-tax cash. And it can help move excess cash and investments to purify a company.”

This strategy can also work for smaller farms or farmers to sell land to their children and use the capital gain exemption without forming a corporation. They can sell a portion of the land to their children and claim that portion as a capital-gain exemption while still retaining ownership, and convert rental payments into tax-free income for the parents.

For off-farm children, Good has a novel idea for those who wish to own land. They could make an annual

payment to their parents, just like their farming sibling, instead of putting money into a TFSA. This gives them some equity in the land they will likely inherit anyway and the parents more tax-free living money today. Their capital returns, if the parents do not have to sell their land outside of the family, for the off-farm children can usually exceed 200 to 300 per cent. This sure beats the uncertainty of the stock market! This is a different investment for the non-farming children. They develop more of an attachment to the land and, even if they are not farming, they are still eligible for the capital gain exemption when they inherit the land under the present income tax rules.

“Farmers may have good reasons to get their capital gains exemption today, either through forming a company or selling land to family directly,” Good says. “This helps convert some of the income needed for a pension or personal use on a tax-free basis, and takes steps toward a successful family farm transfer.”

The current exemption is \$1,000,000 per person for qualified farm property. For land, that means the land has to have been principally in the business of farming in Canada for at least two years, where gross income from farming exceeds off-farm income. “Waiting to use the exemption is not the best option for many people. Farmers also need to consider the possibility that current exemption levels could be reduced in the future,” Good says. “Consider your options and talk to your accountant to help make the best decisions for you and your family today. Why wait until you are dead?!” ✿

—Donna Fleury, P.Ag., is an agricultural freelance writer from Millarville, Alta.

“Waiting to use the exemption is not the best option for many people. Consider your options and talk to your accountant to help make the best decisions for you and your family today. Why wait until you are dead?!”

—Merle Good

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