

September 2016

# canola DIGEST

The Source For Canada's  
Canola Growers



## STORAGE RISK

**DO BIG BINS, EXTENDED STORAGE AND STRAIGHT COMBINING  
INCREASE YOUR STORAGE RISK?**

**INSIDE:**

**Seed to the Rescue**

FARMER PANEL: LATE CUTTING

The Continued Case for Reduced Tillage

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## STORAGE RISK

Many canola growers are putting up bigger bins, signing contracts that require longer on-farm storage periods and trying more straight combining. Each has potential to increase the risk for storage losses. Check all bins on a regular basis to keep the precious harvest safe.

30

## Seed to the rescue

Seed companies try to have multiple sources of disease resistance in the pipeline, but when diseases adapt it can take time to bring effective new sources to market. That is why management to protect existing traits is so important.

34

## Do you know your soil's character?

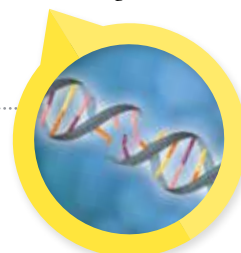
Electrical conductivity, pH, cation exchange capacity and organic matter will influence a soil's productivity. With these tests added to canola soil analysis, growers can use the results to make better management decisions.

38

## The continued case for reduced tillage

Reduced tillage reduces diesel fuel inputs, erosion and the spread of disease. It improves soil health, and builds and maintains carbon. This sustainability boost gives Canadian agriculture a competitive advantage.

42



## Meet two canola ambassadors

Cookbook author Raghavan Iyer and healthy-eating advocate Patricia Chuey share the benefits of canola oil with their large consumer audiences. They got to know canola oil better through grower-funded programs such as Canola Camp and Canola Eat Well.

## DEPARTMENTS

### 20 **Farmer panel** **Late cutting**

Swathing canola after 50 per cent seed colour change on the main stem will produce higher yield and quality than cutting earlier. In this farmer panel, four growers describe how long they wait to cut — and why.

### 27 **Canola Research Hub** **Harvest losses and their causes**

Results from the Research Hub query “What factors affect harvest losses in the Canadian Prairies?” suggest that management decisions — like combine ground speed — can significantly influence the amount of loss.

### 32 **Agronomist abroad** **The seedy side of Chile**

CCC agronomy specialist Nicole Philp was in Chile to experience “contra-season” production of canola seed for sale in Canada. Lots of space between seed crops makes Chile a great place to maintain genetic purity.

### 36 **5 steps to better...** **Fall fertilizer applications**

As fertilizer rates increase, applying all product in spring means a lot to handle at a busy time of year. A proper fall application of nitrogen can relieve pressure in the spring seeding window.

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### 46 **Business management** **Set standards, improve results**

When you clearly describe standard operating procedures (SOPs) for each major practice and piece of machinery on the farm, it helps bring consistency to performance — no matter who is doing the work.

## PROVINCIAL BULLETINS

### 6 **ALBERTA CANOLA**

Get involved! Alberta Canola seeks directors for five regions. Also... Dates and locations for regional meetings and a notice about the Alberta Farm Sustainability Extension working group.

### 10 **SaskCanola**

Explore SaskCanola's completely redesigned website at [saskcanola.com](http://saskcanola.com). Also... A call for director nominations, scholarship winners and resources to host a screening of License to Farm.

### 14 **Manitoba Canola Growers**

MCGA connects farmers with consumers through Canola Eat Well events. Also... Scholarship winners and upcoming events: Farm Women's Conference, Cover Your Assets and CropConnect.

## CALENDAR

**CANOLA DISCOVERY FORUM** — October 27-29 at the Fairmont hotel in Winnipeg. | [canolacouncil.org](http://canolacouncil.org)

**SASKATCHEWAN OILSEEDS DAYS** — Five locations from November 14-18. Canola, flax and mustard organizations hold joint producer meetings. Check for specific dates and towns on page 10 of this issue. [saskcanola.com](http://saskcanola.com)

**ALBERTA CANOLA PRODUCERS COMMISSION REGIONAL MEETINGS** — Eleven locations from November 15-December 1. Check for specific dates and towns on page 6 of this issue. | [albertacanola.com](http://albertacanola.com)

**MANITOBA FARM WOMEN'S CONFERENCE** — November 20-22 in Portage la Prairie. [manitobafarmwomensconference.ca](http://manitobafarmwomensconference.ca)

**AGRIBITION GRAIN EXPO** — November 22-23 at Evraz Place in Regina. [agribition.com](http://agribition.com)

**LEADERSHIP CONFERENCE** — November 24-25 in Brandon, Man. [canolagrowers.com](http://canolagrowers.com)

**COVER YOUR ASSETS** — December 7 & 8. Manitoba Canola Growers will hold this marketing meeting at two locations: Neepawa on December 7 and Roblin on December 8. [canolagrowers.com](http://canolagrowers.com)

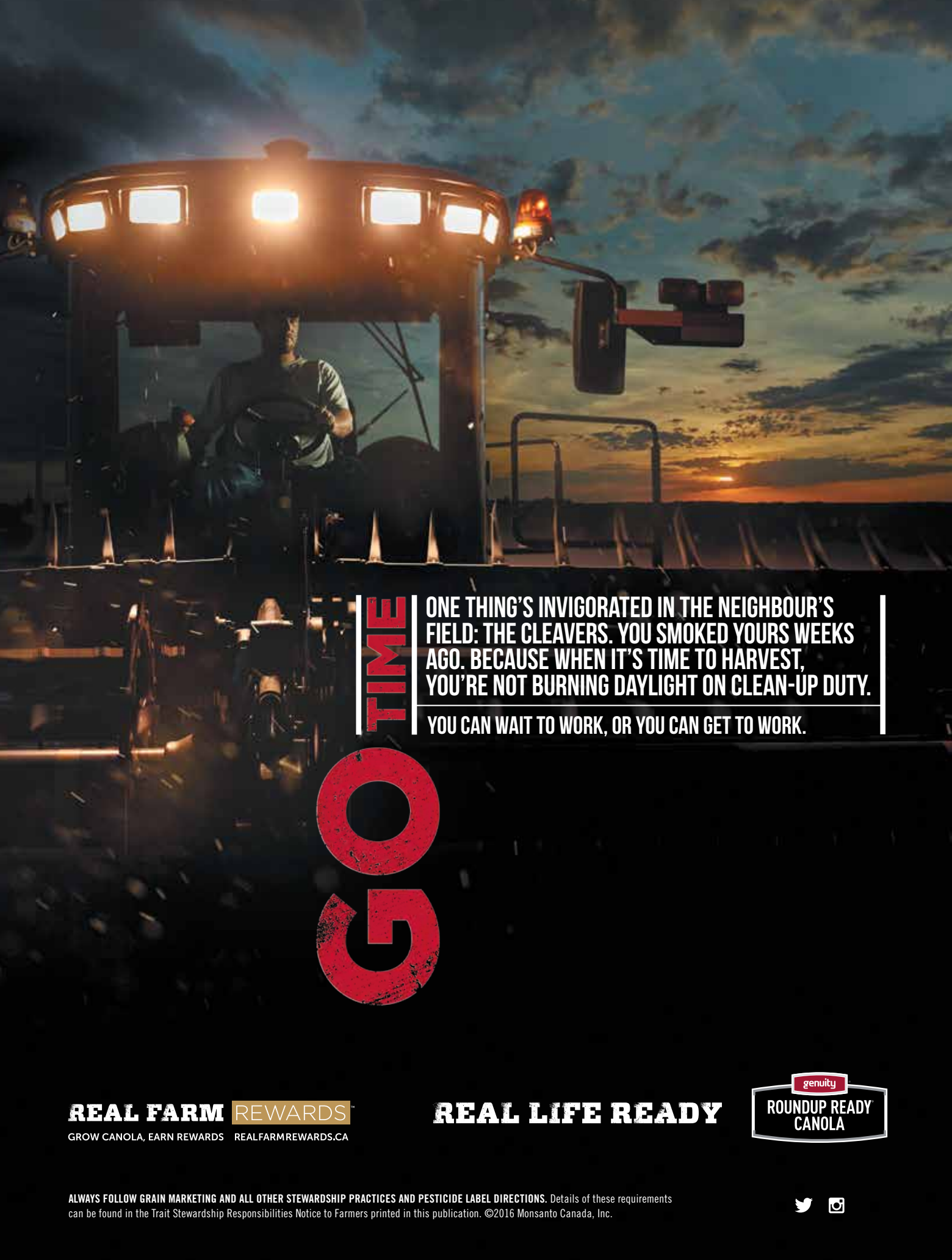
**CROP PRODUCTION SHOW** — January 9-12, 2017 at Prairieland Park in Saskatoon. SaskCanola has a booth in Hall B. [cropproductiononline.com](http://cropproductiononline.com)

**SASKCANOLA AGM & 25TH ANNIVERSARY CELEBRATION** — January 9, 2017 at Prairieland Park in Saskatoon. [saskcanola.com](http://saskcanola.com)

**CROPSPHERE** — January 10-11, 2017 at Prairieland Park, Saskatoon. [cropsphere.com](http://cropsphere.com)

**FARMTECH CONFERENCE** — January 31-February 2, 2017 at the Expo Centre in Edmonton. | [farmtechconference.com](http://farmtechconference.com)

**CROPCONNECT** — February 15-16, 2017 at the Victoria Inn in Winnipeg. [cropconnectconference.ca](http://cropconnectconference.ca)



**TIME**

ONE THING'S INVIGORATED IN THE NEIGHBOUR'S FIELD: THE CLEAVERS. YOU SMOKED YOURS WEEKS AGO. BECAUSE WHEN IT'S TIME TO HARVEST, YOU'RE NOT BURNING DAYLIGHT ON CLEAN-UP DUTY.

YOU CAN WAIT TO WORK, OR YOU CAN GET TO WORK.

**GO**

**REAL FARM REWARDS**

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**REAL LIFE READY**



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# The 24/7 Paradox

**M**ichael Boehlje, the Purdue University agronomy professor who looks well past normal retirement age, lectured — and I mean lectured — at CropConnect in Winnipeg earlier this year. With high energy and a high voice, he rattled off 10 ways farmers can respond to an economic downturn. When giving examples of things done wrong, he'd shout "That's stupid!" in a way that had people laughing and probably also squirming. After delivering a key point, he'd bend his long, thin body toward the audience and yell, "Write that down!"

Being an obedient student, I tried to keep pace. He was pretty intense about cost control. "Efficiency and productivity are critical," he said, emphasizing the need for farmers to know their costs per unit sold so they can make better marketing decisions. In a tight market, "fully-loaded costs" may not get covered, he said, so be prepared to make sales when prices at least cover cash costs.

He recommended farmers use standard operating procedures (SOPs) — which Danny Klinefelter writes about in this Canola Digest issue — to ensure precise and timely execution of tasks. He told about airline pilots. Even the most professional and experienced pilots go through the same checklist before every take off, even if they're taking off eight times a day. Whereas farmers, he said, often skip all that and "just do it the way I did it last year."

What left me hanging was a point on logistics management: "Be ready to run machinery 24/7,"

he said. "You cannot make the investment in equipment today and not do that."

This is a paradox. It seems to make sense from a machinery investment focus but is absurd from an overall agronomic perspective.

I would argue that the only piece of major farm machinery that could or should run 24 hours a day, seven days a week in Western Canada is a drill. If a farm has the manpower, a drill can work around the clock in the prime seeding window.

But the idea that a combine or tractor or sprayer should run 24/7 will only lead to bad management decisions. Ideally, the sprayer — though one of the most important pieces of machinery — should run as little as possible. It should operate only when thresholds, timing and risk assessment deem a spray worthwhile. Trying to get more use from a tractor outside the seeding season could mean unnecessary and potentially damaging tillage. And a combine really can't run 24/7 in September in Western Canada. The crop gets too tough most nights and losses get too high — especially in canola.

Yes, farms could probably do lots to improve machinery logistics. Hire custom operators when owning a high-clearance sprayer doesn't pencil out. Use SOP-driven maintenance to keep older gear working reliably. Schedule seed and fertilizer delivery so the drill-fill station is always stocked and ready.

Running equipment 24/7, while it seems a worthy goal at first glance, should not be on this list. ✿



Credit: Collin Orthner



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## Leaders wanted to represent Alberta canola growers



Credit: iovro77

The Alberta Canola Producers Commission is seeking canola growers to serve as directors on the board of directors for a three-year term. This year, five directors are needed in regions 1, 4, 7, 10 and 12.

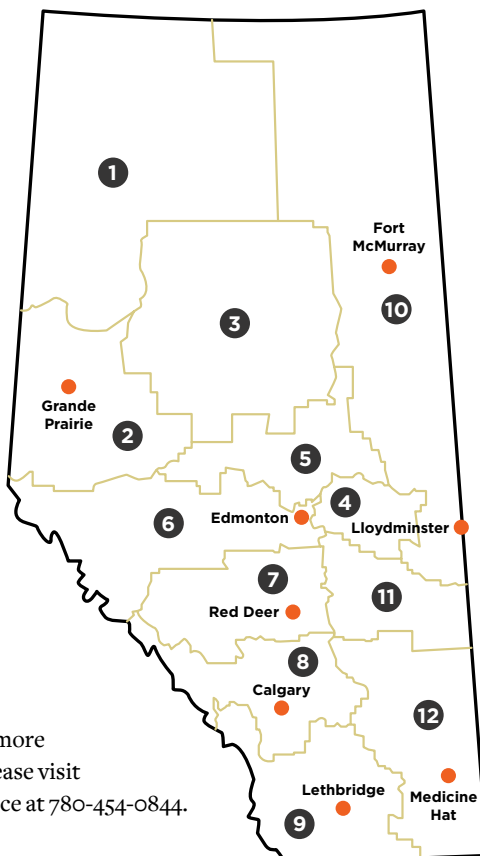
Alberta Canola divides Alberta into 12 regions, with each region electing a producer director to represent the canola growers within that region. The Board of Directors meets quarterly and is guided in decision making by five committees comprised of board members. The committees are:

- Agronomic Research
- Governance and Finance
- Grower Relations and Extension
- Government and Industry Affairs
- Market Development and Promotion

### WHO CAN BECOME A DIRECTOR?

Anyone who has paid a service charge on canola to Alberta Canola since August 1, 2014 is an eligible producer and can stand as a director. Eligible producers can be individuals or represent a corporation, partnership or organization. In order to be nominated, eligible producers must grow canola within the defined region, but do not have to reside within it.

For detailed descriptions of the regions, more information, or to make a nomination please visit [albertacanola.com/regions](http://albertacanola.com/regions) or call the office at 780-454-0844.



## 2016 Powering Your Profits tour

Get the knowledge you need to be more profitable at one of our 12 regional meetings. Topics will include agronomy, marketing and business management. Find the meeting closest to you and save the date: Details at [albertacanola.com/events](http://albertacanola.com/events).

**NOVEMBER 15**  
Strathmore

**NOVEMBER 22**  
Lacombe

**NOVEMBER 15**  
Camrose

**NOVEMBER 23**  
Stony Plain

**NOVEMBER 16**  
Lethbridge

**NOVEMBER 29**  
Fairview

**NOVEMBER 16**  
Vegreville

**NOVEMBER 30**  
Guy

**NOVEMBER 17**  
Kitscoty

**DECEMBER 1**  
Grande Prairie

**NOVEMBER 17**  
Westlock

**DECEMBER 6**  
Medicine Hat  
(Farming Smarter)



Credit: ooyoo



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# canolaPALOOZA 2016

The second annual canolaPALOOZA was June 28 at the Lacombe Research and Development Centre. We had over 500 people come through plots ranging from the history of canola to hail simulation to weed control, spray drift and everything in between!

But this was no ordinary field tour — each station featured an interactive component

to make sure your learning was memorable. From axe throwing to dunk tanks to bubble blowing and cow milking, we had it ALL!

These photos show some of what you missed. Find full details at: [albertacanola.com/connects](http://albertacanola.com/connects).



*Alberta Innovates demonstrated its hail simulator in action.*



*Keith Downey, a 'father of canola', talks about canola's close relatives — cabbage, kale, broccoli and others — at the Triangle of U and history of canola station.*



*Straight combining and tips to prevent harvest loss were hot topics at the Harvest Management station.*



*Canola Digest editor Jay Whetter hosts the canolaPALOOZA version of Family Feud.*

## ALBERTA FARM SUSTAINABILITY EXTENSION WORKING GROUP (AFSE)



Alberta Barley



The AFSE is comprised of Alberta Barley, Alberta Canola Producers Commission, Alberta Pulse Growers Commission, and the Alberta Wheat Commission. Working on behalf of our producer membership, we are committed to assessing and meeting areas of need for on-farm sustainability extension and education.

There is a growing interest in food and food production as fewer people have first hand knowledge and experience in our agriculture industry. Many suppliers are beginning to demand products that are certified through a sustainability program that includes environmental, social and economic indicators. Alberta farmers are forward thinking, innovative and dedicated to the stewardship of their land. This project will assess where farmers are ready to meet international sustainability standards and where extension resources are necessary to help take the steps to get there.

For more information, contact Jolene Noble at [jolene@albertacanola.com](mailto:jolene@albertacanola.com) or 780-887-9446.

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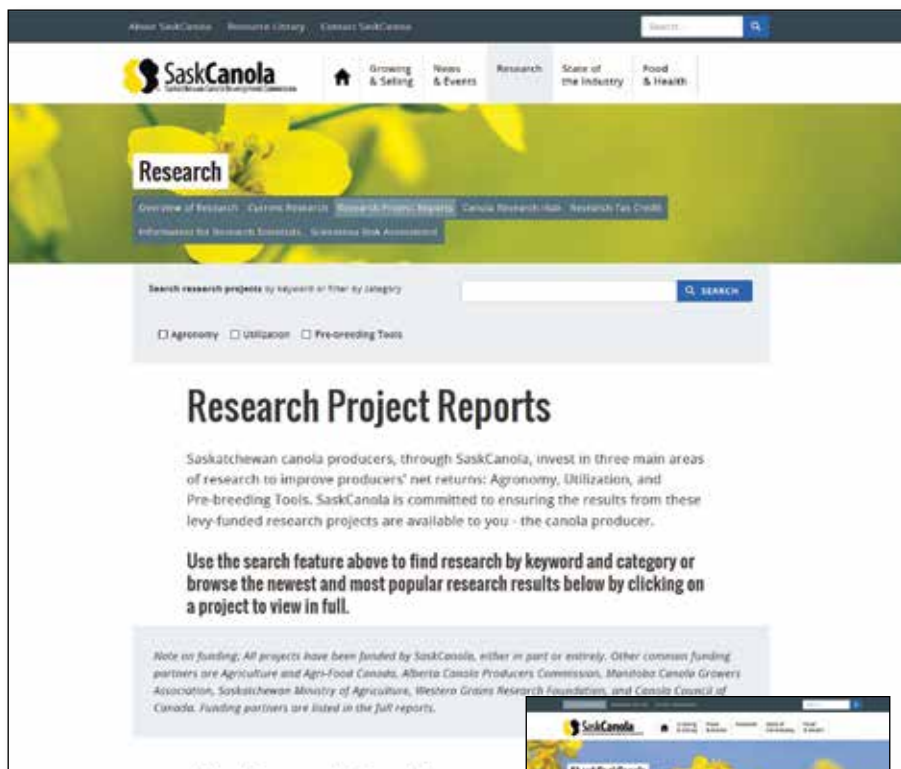
I will wake the rooster and be the one who decides when it's time to quit. I will succeed by working with whatever Mother Nature provides and place my respect where it is earned. I will actively pursue perfection.



Bayer



## SaskCanola launches new website



We've updated everything — from the design to the written word — and launched our new website in August! Visit [saskcanola.com](http://saskcanola.com) for a new online experience built with farmers in mind. New research results at your fingertips, contact info for agronomists, policy positions, a new blog... and the list goes on. Your number one resource for all of the latest canola news and information — [saskcanola.com](http://saskcanola.com)



## Save the Date

### SASKATCHEWAN OILSEEDS DAYS

Plan to attend an oilseeds producer meeting to get the latest crop production information for canola, flax and mustard.

Weyburn — November 14  
Humboldt — November 15  
Prince Albert — November 16  
Rosetown — November 17  
Swift Current — November 18

### AGRIBITION GRAIN EXPO

November 22 & 23, 2016  
Evraz Place, Regina

### 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

### CROSPHERE

January 10 – 11, 2017  
Prairieland Park, Saskatoon

### SASKCANOLA AGM & 25<sup>TH</sup> ANNIVERSARY CELEBRATION

January 9, 2017  
Prairieland Park, Saskatoon

For the latest event details and pre-registration information, please visit [saskcanola.com](http://saskcanola.com) or call 1-877-241-7044.



Since its launch in January 2016, close to **75,000 viewers** have watched the film on YouTube and we've reached more than a million people with our conversations! To keep the important dialogue going, we have created the License to Farm Screening in a Box — a package of resources to help you host a screening of the film. In addition, the film is now available in five chapters so that you can easily view or show a particular section of the film. Access these **#LicenseToFarm** resources at [licensetofarm.com](http://licensetofarm.com).



## Call for Nominations: Election for SaskCanola Board of Directors



"A director who commits their time and expertise to SaskCanola also gains invaluable experience by working together with other directors, stakeholders, partners, and staff for the purpose of advancing the interests of Saskatchewan farmers."

- Terry Youzwa

The Saskatchewan Canola Development Commission (SaskCanola) is now accepting nominations to fill four positions on the Board of Directors starting in January 2017. SaskCanola is looking for Board members who have a desire to strengthen and grow the canola industry. The call for nominations opened July 4 and closes Friday, September 30 at 12:00 PM CST.

The SaskCanola Board is comprised of a total of eight directors. Board members are elected for a four-year term and are eligible to be re-elected for a second four-year term. Nominees for the Board must be

registered canola producers. A registered producer is any producer who has sold canola in either of the previous two crop years and has not requested a levy refund in the past year.

Janice Tranberg, Executive Director of SaskCanola, commented, "Nominations are held every second year to actively seek out enthusiastic, dedicated, progressive individuals whose common goals and principles align with SaskCanola and the organization's mandate."

Terry Youzwa, Board Chairman of SaskCanola, stated, "A director who commits

their time and expertise to SaskCanola also gains invaluable experience by working together with other directors, stakeholders, partners and staff for the purpose of advancing the interests of Saskatchewan farmers."

Registered producers who wish to be elected to the Board of Directors should contact SaskCanola via email at [info@saskcanola.com](mailto:info@saskcanola.com) or toll free at 1-877-241-7044 for a nomination package. All applications must be received no later than 12:00 PM CST on September 30, 2016. For further details regarding SaskCanola's election, visit [saskcanola.com](http://saskcanola.com).

## SaskCanola awards \$72,000 in prestigious scholarships to University of Saskatchewan graduates

SaskCanola is pleased to announce that we have awarded the prestigious Dr. Roger Rimmer Award for Excellence in Graduate Research to four graduate student researchers for the 2016-17 year. The scholarship program offers \$18,000 per year for a maximum of two years to students entering or continuing studies in a M.Sc. or Ph.D. program at the University of Saskatchewan and whose thesis projects deal with an important aspect of either the development or utilization of canola.

Four deserving recipients were chosen based on both their thesis projects' suitability to SaskCanola and academic achievement.

- Adriane Good studying *Establishing canola meal as a protein supplement for feedlot cattle*.
- Asmita Poudel studying *The development of nano emulsions of phytosterols and vitamin E extracted from canola waste stream*.
- Chuyuan Zhang studying the *Effect of feeding yeast-fermented canola meal on the nutrient digestibility and growth performance of rainbow trout and Nile tilapia*.
- Miles Buchwaldt studying the *Transcriptome analysis to identify genes for tolerance of abiotic stress in B. napus*.



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## Canola Connect: Farm to Food Conversations

When your consumer audience wants to know more about farming and food production, why not connect them to best source of information, our farmers? Canola Eat Well did just that by inviting over 100 dietitians and home economists as well as 10 farmers out to Kelburn farm for the evening to *Learn. Create. Eat.*

*Learn. Create. Eat was a farm and food workshop held at Kelburn Farm on June 9 in conjunction with the Dietitians of Canada National Conference in Winnipeg. It was a joint initiative of Manitoba Canola Growers and Alberta Canola Producers Commission under the consumer brand of Canola Eat Well.*

You don't typically see a chef and a dietitian take the stage together to learn about health and food, it's either one or the other. But at the workshop, registered dietitian Patricia Chuey and celebrity chef Raghavan Iyer taught the crowd about creating delicious bites playing with flavour and cooking techniques, all while using canola oil.

Throughout the evening, guests learned from experts on to how to develop dishes using bold flavours, spices and the role canola oil plays in the kitchen, had intimate conversations with farmers on canola production and sustainability, all while networking and sharing stories.



*Registered dietitian Patricia Chuey and celebrity chef Raghavan Iyer on stage to kick off Learn. Create. Eat.*



*Brian Chorney talks with food enthusiasts at Learn. Create. Eat. about the three pillars of sustainability on his farm: environmental, financial and social.*

### WHY INVITE FARMERS TO A FOOD EVENT?

"What better way to start the farm to food conversation than to connect our food network with the people who produce their food? This event was a platform to open dialogue between farmers and consumers and create ongoing conversations," said Ellen Pruden, MCGA education and promotions manager.

Bruce and Carol Dalgarno, farmers from Newdale, Manitoba attended the event as team leaders. "We had great conversations with our group, they asked very good and interesting questions," said Bruce. "Consumers want to know more about food production than ever before, it was great to answer and share what really happens on the farm."

Another event where collaboration took place was the first-ever Manitoba canolaPALOOZA in Portage la Prairie earlier this year. Partnering with the Canola Council, the event had nearly 200 attendees including participants from all areas of the industry. CanolaPALOOZA had 11 interactive learning stations that focused on topics from spray technology, to insect management, all the way to harvest management.

### WHY ENGAGE CONSUMERS WITH AGRICULTURE?

"When we can connect with experts like Gregory Sekulic (agronomy specialist

with the Canola Council of Canada) about important topics — like honey bees— and share these connections on social media with our Canola Eat Well audience, it engages them and adds a credible source."

The Learn. Create. Eat. event and canolaPALOOZA event are only parts of the ongoing conversations and dialogue MCGA is building. Four years ago, the MCGA Board of Directors developed a Canola Leadership Conference and recruited young and established farmers to engage and become leaders in their field.

"The objective was to empower our Farm Leaders to raise their voices and elevate and contribute to the conversation with the 98 per cent of the community that does not farm," said Roberta Galbraith, MCGA member relations coordinator. "Cultivating this conversation between farmers and food, policy negotiators and rule makers has driven home the point that the conversation needs to continue."

If you are interested in learning more about these events, or how you can attend the Canola Leadership Conference, sign up for the Canola Crush newsletter at [canolagrowers.com](http://canolagrowers.com). And be part of the [#farmtofood](https://twitter.com/farmtofood) conversation online with [@CanolaGrowers](https://twitter.com/CanolaGrowers) and [@CanolaEatWell](https://twitter.com/CanolaEatWell).



*Entomologist John Gavloski with Manitoba Agriculture walks canolaPALOOZA attendees through insect scouting, identification and management.*



## STAY CONNECTED.

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



# MCGA recognizes five students with scholarships

The Manitoba Canola Growers Association is proud to announce its 2016 scholarship winners. Five \$1,000 scholarships have been awarded to deserving high school students across Manitoba.

## This year's recipients are:



**DANIEL NYCHUK**  
*Domain*

He plans to attend the University of Manitoba to attend the Asper School of Business.



**EMILY BARTEAUX**  
*Birtle*

She plans to attend the University of Saskatchewan to take Agriculture and Bioresources.



**JESSICA JOHNSTON**  
*Teulon*

She plans to attend the University of Manitoba to take Nursing.



**JESSICA MAYES**  
*Pierson*

She plans to attend McGill University to take Agriculture and Environmental Science.



**REBECCA ZIMMER**  
*Inglis*

She plans to attend the University of Manitoba in the U1 Sciences.

The \$1,000 scholarships are available to students who are from a farm that is a member of the Manitoba Canola Growers Association and plan to attend post secondary education in any field within two years of graduating.

## Save the Date:

### NOVEMBER 20-22

Manitoba Farm Women's Conference,  
Portage la Prairie

### DECEMBER 7

Cover Your Assets, Neepawa

### DECEMBER 8

Cover Your Assets, Roblin



## CropConnect Conference

# SAVE THE DATE

## February 15 & 16, 2017

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Many canola growers are putting up bigger bins, signing contracts that require longer on-farm storage periods and trying more straight combining. Each can increase the risk for storage losses.

# STORAGE RISK

BY ANGELA BRACKENREED

**R**ecent trends in the way farmers choose to harvest and store canola are raising questions about current safe-storage guidelines. Bins are getting larger, more farmers are leaving their canola stand to maturity for direct-cutting and, increasingly, farmers want the option to keep canola in the bin longer as a marketing tool.

Here's how each can add to canola storage risk and what growers can do about it:

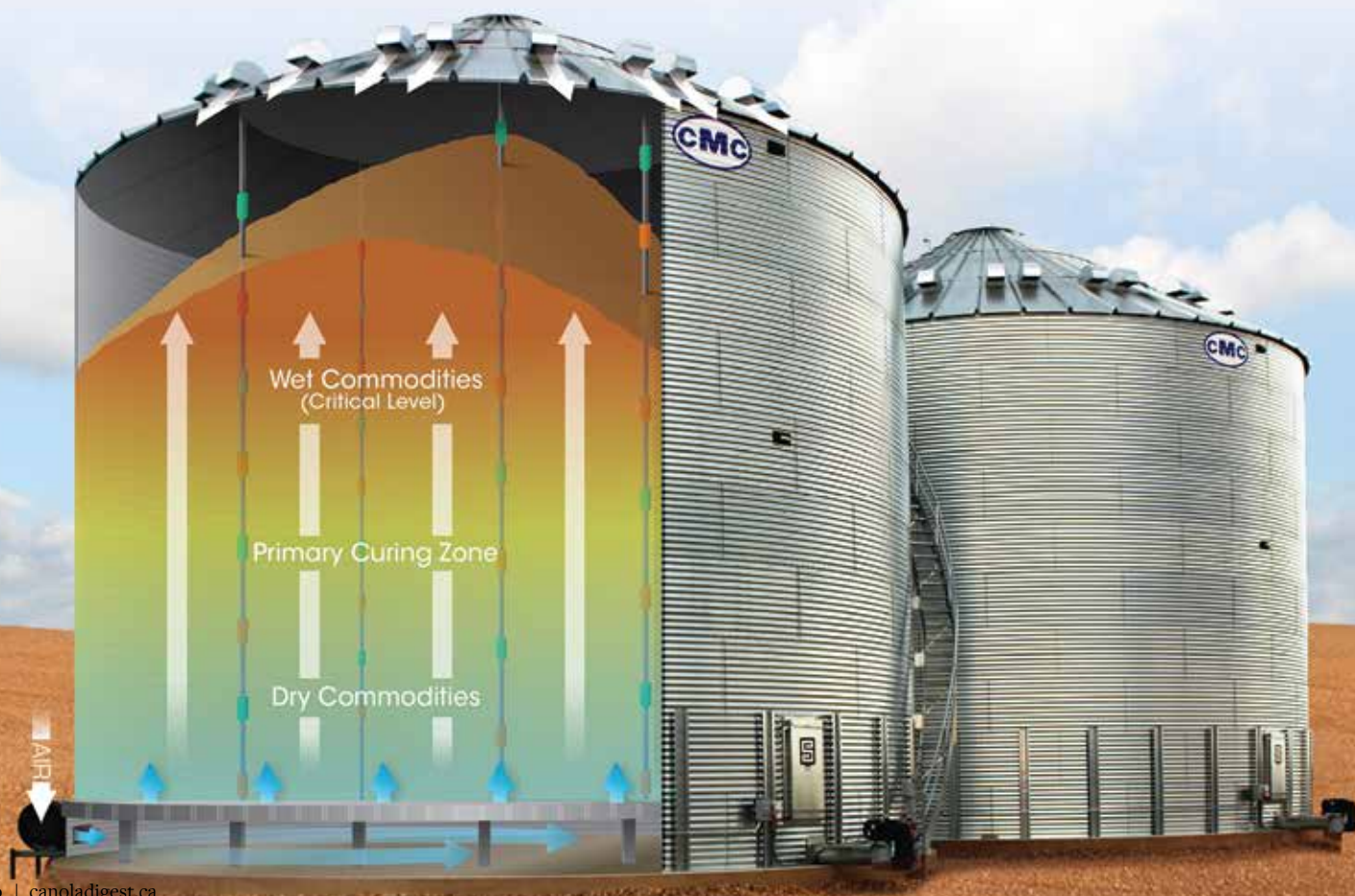
## 1. BIG BINS

Safe storage parameters were developed in smaller-scale bins, whether that be bench-scale in the lab or smaller commercial bins. These guidelines may need to be revisited to reflect

differences in the airflow dynamics of larger volume storage.

Although the risk could be seen as higher due to the sheer amount of bushels at stake, Paul Leverington, president and CEO of Custom Marketing Company (CMC) in Fargo, North Dakota, believes it isn't necessarily the amount of bushels that pose the real risk for storage, but the depth of the grain. "It wouldn't be out of the question to condition 28,000 bushels of canola to the appropriate moisture and temperature, so long as the depth of the grain is no more than 16 feet," he says.

This is one of the strict parameters CMC has for canola storage in its "Pressure Cure" bin systems. (See the sidebar for more.)



Monitoring technology has also reduced the risk for canola in large bins, Leverington adds. “Seven to 10 years ago when the grain management technology just wasn’t where

**“It wouldn’t be out of the question to condition 28,000 bushels of canola to the appropriate moisture and temperature, so long as the depth of the grain is no more than 16 feet.”**

—Paul Leverington

it is today, I don’t think I’d have been comfortable recommending larger bin types,” he says. “It was really just too hard to know what was going on in the entire grain mass.”

Depth of the grain mass is an issue for canola because of pressure and air flow. Harvey Chorney, longtime member of the Chorney family farm in Manitoba and vice-president of Manitoba operations for Prairie Agricultural Machinery Institute, says the amount of back pressure resisting the air going through a grain mass depends on seed size and the height of grain in the bin.

Being a small seed, canola has a higher resistance to airflow than most other crops stored on the Prairies. With more depth, the compaction and resistance to airflow increases.



**For more on canola storage, go to [canolawatch.org](http://canolawatch.org)**

and look for “Storage tips” under the Harvest & Storage tab.

Chaff can also complicate airflow. University of Manitoba grain storage researcher Digvir Jayas showed this in the 1980s, and Chorney wants to revisit this work using bigger bins and different harvest practices. He plans to investigate the difference in airflow of bins loaded with a spreader and those that are not. “The spreader helps to evenly distribute chaff and fines,” he says.

Without a spreader, chaff tends to concentrate closer to the walls of the bin and fines closer to the centre of the bin. This distribution exaggerates airflow problems because air tends to take the path of least resistance. “While the problem is likely almost negligible in small diameter bins,” Chorney says, “it could become much more of an issue as bin diameters increase.”

Consider the scenario of first having slightly peaked grain creating the most resistance in the centre of the bin. Add to this a concentration of smaller-than-canola fines, and you’ve increased the resistance to air flow even more in that central core. Add larger-than-canola chaff to the outside walls, decreasing the resistance to airflow, and the tendency for air to move up along the walls and around the peak has been greatly exaggerated.

Ensuring adequate aeration for the size of the bin is crucial. For

## 5 steps to safer storage

Custom Marketing Company has five components to its Pressure Cure system for grain storage. They are:

1. A “no-fines” floor which limits fines from falling through.
2. High speed fans that can push more air through a small-seeded grain that has higher static pressure. In combination with this, they recommend no more than 15-16 feet of depth for high-moisture grain.
3. Lots of roof vents, reducing back pressure against the fans. No roof at all would be ideal, but for practical purposes, the more vents the better.
4. A monitoring system using a combination of cables, sensors and fan controls to run fans only when efficient to do so. Fans also automatically stop when moisture hits the target.
5. A peak leveller. This spreader works around cables to flatten the surface of the grain to improve airflow through the whole mass.

*CMC recommends canola be stored to a depth of no more than 16 feet and have the peak levelled. Grain dries first at the bottom of your bin as it pushes your “target air” up through the roof of your bin. The wet commodities zone dries last and can actually take on moisture as the drying front moves up the bin. The deeper the grain, the harder it will be to condition the whole bin within a safe timeframe.*







natural air drying, current recommendation is air flow of one to two cubic feet per minute (cfm) per bushel. For large bins, Chorney says fans are available that can properly aerate to the top of the bin, but they require three-phase power to drive the requirement needed.

## 2. STRAIGHT CUTTING

The same principles that apply to safe storage of windrowed canola should technically apply to direct- or straight-cut canola. But certain characteristics common in a straight-cut field have the potential to lead to more issues in the bin.

These characteristics are: pockets of higher-moisture weed seeds that could be present crops that did not get desiccation or pre-harvest treatments; green stalk and pod material; and variability in the moisture content of the seed itself. These all pose risks for storing straight-cut canola.

Anastasia Kubinec, oilseed specialist for Manitoba Agriculture, wonders whether some of the anecdotal storage issues go beyond

high-moisture dockage material and have more to do with the physiological process of the seed itself. “The red flag of straight cutting to me is the unknown of how long that seed is respiring (in the bin) compared to seed that has been swathed,” she says. “Do we need to treat these bins differently? Do the fans need to be on longer? Should this canola only go into a smaller bin? And would this be different again if you desiccated the crop? I really think this is something we need to investigate.”

## 3. LONG-TERM STORAGE

Market availability and volatility and specialty contracts have increased interest in longer-term storage, potentially throughout the warm summer months. Storage through a cycle of cold and then hot seasons can increase the risk of canola spoilage.

Researchers feel that most storage issues arise from non-uniform temperature throughout the bin. In the fall, the goal is to cool the grain down to eliminate the temperature differential between the outside and inside

*Above: Harvey Chorney, vice-president of Manitoba operations for Prairie Agricultural Machinery Institute, thinks storage issues due to the concentration of chaff and fines could become more serious as bin diameters increase.*

of the bin. In the summer, researchers theorize the opposite should be true — the bulk should be warmed up to reduce the temperature differential.

Joy Agnew, researcher with PAMI in Humboldt, SK, has one year of summer storage research under her belt and a second just wrapping up. Contrary to what the theory tells us, the first year of her project indicated it is best to leave the bulk alone for summer storage. But this canola was binned at 6.5 percent moisture and cooled with the fans in the winter. Agnew’s second round will see if the recommendation should vary based on parameters like moisture, temperature and bin size.

Rather than learning hard lessons on the farm, questions around proper storage of canola that has been straight cut, put in large volume bins and kept through the summer months will hopefully be answered by controlled research. Until then, diligent monitoring is the best tool at our disposal to ensure the quality of our stored grains in any storage situation. ☘

—Angela Brackenreed is a Canola Council of Canada agronomy specialist based in Manitoba.







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# Late cutting

Leaving standing canola until at least 50 per cent seed colour change on the main stem will mean higher yield and quality than cutting earlier. These four growers wait until at least that point and are pleased with the results.

BY JAY WHETTER



**MARY-JANE DUNCAN**  
REGINA, SASK.

**M**ary-Jane Duncan learned the value of cutting canola as late as possible after straight combining a field two years ago. They had a full section of L140P, the pod-shatter tolerant variety, but “we were a little nervous about straight combining the whole thing our first time,” she says. So they swathed half of it, going in at 40 percent seed colour change on the main stem.

“We had to start swathing when the first fields reached 30 to 40 percent seed colour change because we had 2,000 to 2,500 acres of canola and just one 35-foot swather,” Duncan says. Waiting any longer would mean they swathed the last fields too late.

Around the time they swathed the one half, they applied glyphosate on (most of) the other half to prep it for straight cutting.

In the end, the straight-cut half yielded 78 bu./ac. “It was our best canola



**For more on harvest timing, go to [canolawatch.org](http://canolawatch.org), click the Harvest & Storage tab and choose “Swath timing” or “Straight combining”.**

crop ever,” Duncan says. The swathed half yielded 18 bu./ac. less.

She noted no major differences between the two halves, meaning no factor other than cut time could have influenced the yield disparity.

The Duncans will straight combine about half their acres this year — just the acres seeded to the pod-shatter tolerant variety. But straight combining some of their acres allows them to swath other acres a little later. “We’ll probably start at 50 percent seed colour change now,” she says.

As an aside, they will continue to apply pre-harvest glyphosate to straight-combined acres. Two years ago, they hired a plane to apply the glyphosate but it couldn’t finish because of wind. “The storm actually blew the neighbour’s barn roof into our field,” Duncan says. Since acres that didn’t get sprayed were so hard to combine, it was clear to them that pre-harvest glyphosate on Liberty Link L140P was a useful harvest aide.



Credit: Dmytro Bondarenko

**“The only field I have ever straight cut was one that was hailed out. The process is slow and requires a lot of patience.”**

—Doug Schmunk

greener — probably at 35-40 percent seed colour change. “We knew this wasn’t good, so we kept delaying and delaying swathing over the years,” he says. “Now we might start when the first fields reach 45 percent seed colour change and then ideally end up around 65 percent for the final field.”

Schmunk is open minded to straight combining but does not expect it to be a big part of his system any time soon.

“Yes, I have been thinking about it but basically I like swathing as our issues are reduced,” he says. “The only field I have ever straight cut was one that was hailed out. The process is slow and requires a lot of patience.”



**DOUG SCHMUNK  
LEADER, SASK.**

**D**oug Schmunk says swathing canola later has improved his yield and reduced his green counts. But he is “walking a fine line,” he says.

Last year, by swathing mostly at night and early morning or even in the rain, he was able to cut all his canola by the time the last crop reached 65-70 percent seed colour change on the main stem. A little moisture will give a tighter knit to the windrows and, importantly, reduce shattering of the those most mature pods, he says.

The year before, he had 50 acres that were swathed too late. Many pods shattered at swathing and many more shattered before the combine picked up with windrows. His evidence was the huge mass of volunteers throughout those acres.

“I should have parked the swather and left those last 50 acres for straight combining,” he says. “But once you start a job, you want to finish it.”

When looking at harvest photographs from 10 to 20 years ago, Schmunk can see they used to cut canola a lot

“I wait right to the bitter end. I’ve been caught and had to swath at night to limit shattering but I’ve never had a green problem, and higher bushel weights do mean higher yields.”

—Brian Miller



**BRIAN MILLER  
BARRHEAD, ALTA.**

**B**rian Miller usually starts swathing at 50 to 60 percent seed colour change on the main stem, which he says is three to five days later than most.

“I wait right to the bitter end,” he says. “I’ve been caught and had to swath at night to limit shattering, but I’ve never had a green problem and higher bushel weights do mean higher yields.”

Miller feels that if straight combining yields three to seven percent higher than canola swathed at 30 percent seed colour change, he’s probably half way between. Which is good enough for him.

“I don’t like straight combining canola,” he says. “I like the security of canola in the swath.”

One risk he sees with straight combining is snow. In his area, they have had wet snow in early September. This was the case in 2014, when he had 40 acres of standing canola flattened by snow. His swathed canola was OK. “I don’t want snow on my standing canola.”

Wind is another risk with standing canola. He has seen lighter crops in his area shelled out severely after an 80 km/h wind. Swaths can also roll in the wind, but he swaths east-west and usually has heavier windrows that don’t seem to roll as much.





### A tip from Doug Schmunk:

When assessing a field for seed colour change, move in from the headlands. Fertilizer doubled up in headlands can delay maturity. Seeding rates doubled up can mean more plants, fewer branches and earlier maturity. Either way, headland conditions are not usually a good representation of the whole field.

Credit: vencavolrab



**RAY REMPEL  
ROSENORT,  
MAN.**

**R**ay Rempel, who farms with his brother Herb, wants to see some shattering of the

earliest pods before swathing his canola. “I think we swath a little later than a lot of guys are comfortable with,” he says, “but I feel that waiting gives us the benefit of extra weight on the rest of the seed.”

Rempel has his canola custom swathed. Their swather was older and a neighbour had just bought a new one, so Rempel decided to sell their swather and hire the neighbour to swath for them. Meanwhile, Rempel expects to increase their straight-combined acres.

“Equipment-wise, this is how we’d like to move toward,” he says. They straight combined 80 out of 600 canola acres in 2015 and he

“I think we swath a little later than a lot of guys are comfortable with, but I feel that waiting gives us the benefit of extra weight on the rest of the seed.”

—Ray Rempel

expects to double that this year, seeding a shatter-tolerant variety with that plan in mind. “It seems to work well. I’m convinced we’re getting extra yield,” he says.

Straight combining canola is not something they’ve jumped into. “We bought an AgShield canola pusher 10 or 12 years ago with the plan to do more straight combining, but we had very little success with this technique,” he says. This experience means he’s also familiar with other issues with straight combining, including slower harvesting to put through greener stems and having to quit earlier in the day as the crop toughens up.

Using a combination of swathing and straight combining gives the Rempels some flexibility to push swathing dates back and, if too late, to leave those acres for straight combining. Decisions can be quick and last minute. “It seems that once seed colour change begins, it can advance fairly quickly, sometimes going from 40% to 60% in a day,” he says. ☘

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

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# Harvest losses and their causes

The Canola Research Hub at [canolaresearch.ca](http://canolaresearch.ca) has a user interactive research database. This article is based on the query “**What factors affect harvest losses in the Canadian Prairies?**” with data based on a study led by Rob Gulden at the University of Manitoba.

BY BARBARA CHABIH

**O**n-farm harvest losses in canola are a complex phenomenon influenced by environment and management-specific factors. Several variables suggest that, in some cases, harvest losses can be reduced by altering harvest practices.

Rob Gulden with the University of Manitoba led a survey of harvest loss in canola on 310 fields across Western Canada from 2010 to 2012. This information was used to determine whether harvest losses are similar across production areas of Western Canada, what factors strongly contribute to harvest losses, and if harvest losses in canola have changed over the past decade. Table 1 shows the overall average losses in bushels per acre for each of the four locations by year, and data on the side show fields surveyed per location per year.

In general, canola harvest losses from 2010 to 2012, as a percentage of yield, were similar to losses reported 10 years ago (Gulden et al. 2003). However, generally higher yields of modern cultivars have resulted in greater absolute total harvest losses. This represents lost revenue for producers, and adds more seed to the volunteer canola seedbank.

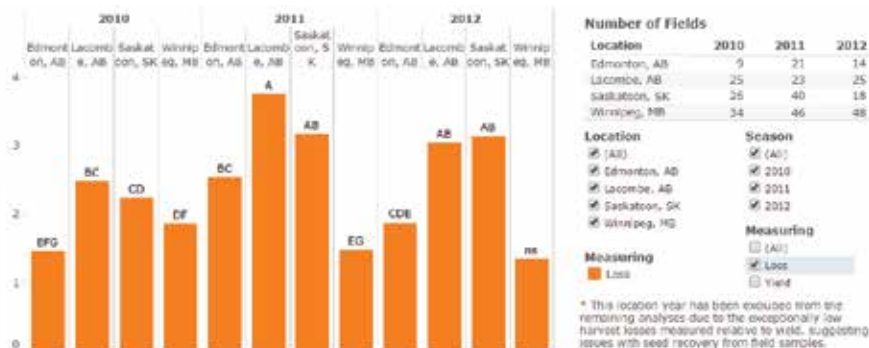
Some producers had very low losses while others had very high losses. Of the fields surveyed around Saskatoon, for example, the lowest loss was 3.8 percent and the highest was 11.2 percent. Of the producers surveyed around Lacombe, the lowest loss was 2.3 percent and the highest was 9.4 percent. These results suggest that management decisions at the producer level contribute to harvest losses in canola, and that some producers can consistently achieve lower harvest losses than others.

**PRINCIPAL INVESTIGATOR:** Rob H. Gulden, University of Manitoba, Winnipeg, MB

**COLLABORATORS:** Neil Harker, Linda Hall, Steve Shirliffe, Chris Willenborg

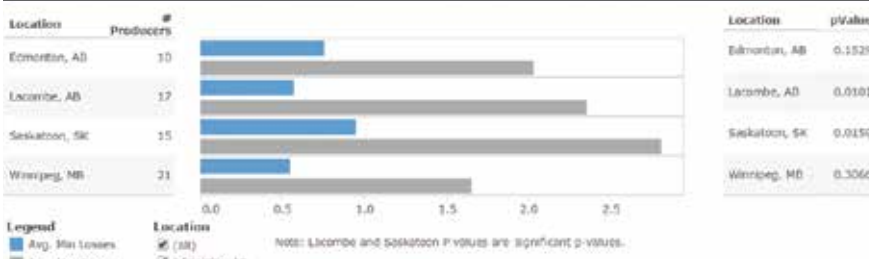
**PUBLISHED:** Cavalieri A, Harker KN, Hall LM, Willenborg CJ, Haile TA, Shirliffe SJ, Gulden RH (2016) Evaluation of the causes of on-farm harvest losses in canola in the northern Great Plains. *Crop Science* 56: 2005-2015.

Table 1. Survey information - number of fields, canola yield and yield losses (bu/ac)



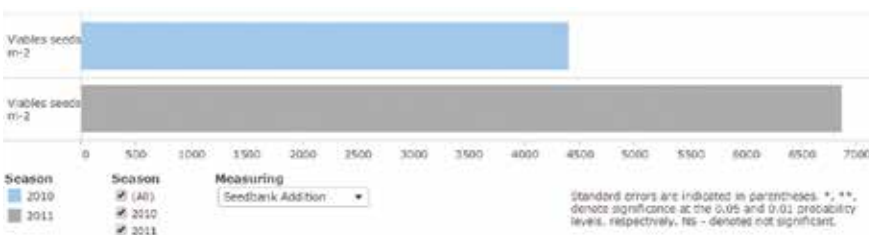
Here is table 1 as it appears on the Canola Research Hub at [canolaresearch.ca](http://canolaresearch.ca). At the Hub, users can click or un-click the boxes to view total yield as well as loss in bu./ac., or filter by location or year.

Table 2. Minimum and maximum average proportional total harvest losses among producers in each region



With P values less than 0.05, results from Lacombe and Saskatoon indicate a significant effect based on location.

Table 3. Total yield, harvest losses, TKW and seed bank additions as influenced by year



This shows only the number of viable seeds lost per square metre, on average, for years 2010 and 2011 of the study. At the Hub, users can also view harvest losses (as % of yield or kg/ha), TKW or total yield in kg/ha by changing the “Measuring” tab.



## CONCLUSIONS

Some reduction in proportional total harvest losses in canola is possible through improved management.

The survey included five Saskatchewan farms that both swathed and straight combined canola. No differences in harvest losses were observed in a side-by-side

comparison between swath-harvested and direct-harvested canola on these farms. This is an encouraging result; however, the number of producers who direct-harvested canola was low and a more thorough investigation is warranted if direct-harvesting becomes a more popular method.

While higher combine ground speed

increased harvest losses, there was no evident difference between combine brands used in these surveyed fields. Combine manufacturer and combine type (rotary or conventional) did not influence the total proportion of canola harvest losses.

Application of a fungicide at flowering did result in a reduction of proportional harvest losses of 1.4 percent, but absolute losses were not affected. This may suggest the fungicide played a role in increasing yield, or that fungicide applications were targeted only at fields with higher yield potential.

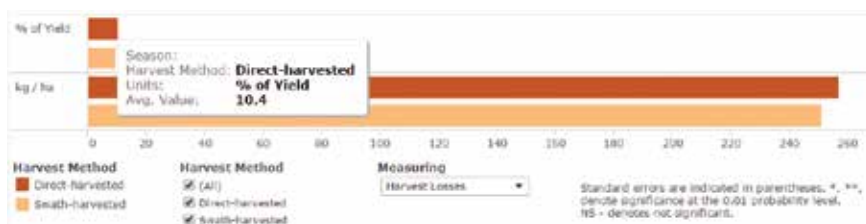
Choice of variety may play a role in canola harvest losses. Results from this survey suggest that this is not a dominant role and that other factors may be equally or more important in contributing to total harvest losses in canola.

No differences in proportional or absolute total harvest losses were attributable to the time of day of swathing. Similarly, time of day of combining, on its own, could not be identified as a significant factor contributing to total harvest losses.

Proportional harvest losses decreased with increasing canola yield. Management factors that contribute to high canola yield and earlier swathing dates, such as adequate canola plant density, resulted in proportionally lower harvest losses. ✖

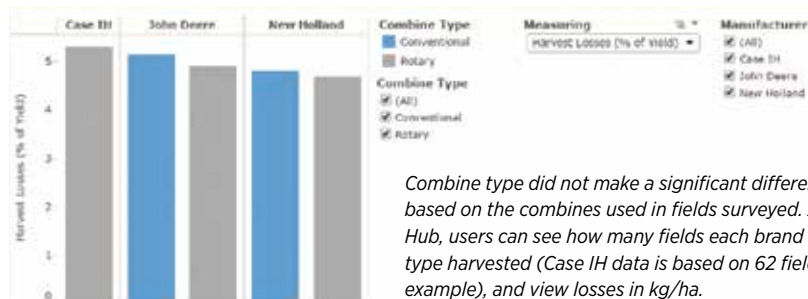
—Barbara Chabih is communications program coordinator with the Canola Council of Canada. She manages the Canola Research Hub.

Table 4. Total yield, harvest losses, TKW and seed bank additions as influenced by harvest method



This graphs compares harvest losses (total and percent of yield) for swathed versus straight combined canola. At the Hub, users can also compare the two methods based on seedbank addition (viable seeds/m<sup>2</sup>), TKW or total yield in kg/ha.

Table 5. Effect by combine manufacturer and type



Combine type did not make a significant difference, based on the combines used in fields surveyed. At the Hub, users can see how many fields each brand and type harvested (Case IH data is based on 62 fields, for example), and view losses in kg/ha.



## Inside the Canola Research Hub

Looking for canola research and best practices in canola production? Find it at the Canola Research Hub — [canolaresearch.ca](http://canolaresearch.ca)

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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.



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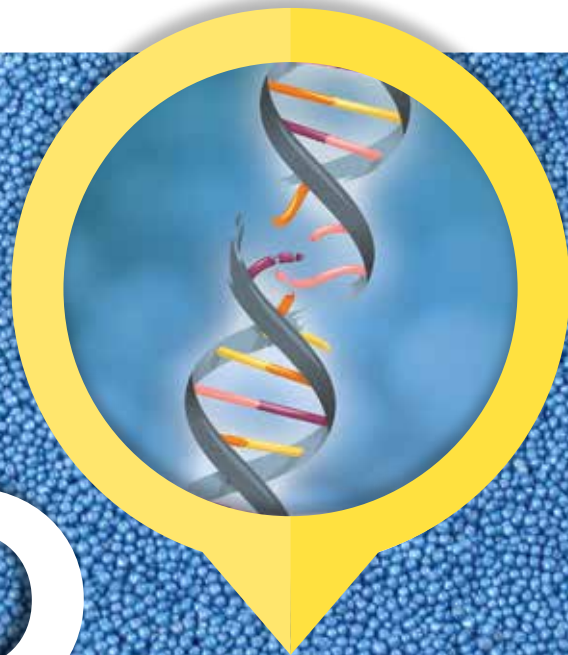
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How the canola industry prepares today for when disease resistance traits lose their effectiveness.



# SEED

## TO THE RESCUE:

### What is the response time?

BY TREENA HEIN

**B**reakdown of disease resistance is a serious concern in canola. We checked in with major Canadian seed producers about how they stay prepared and what new factors can shave seed development timelines.

It still takes at least five – sometimes over 10 – years to develop a brand new resistance trait due to issues like global testing requirements, complexity of the resistance problem and whether the seed is GMO. The cost to introduce a complex trait can be well over \$100 million.

Of course, new traits for resistance are being worked on all the time, but overall, the process is still challenging. “Identification of replacement genes is unpredictable and does not necessarily happen following a loss of efficacy of an existing trait,” says Dave Harwood, technical services manager at DuPont Pioneer.

David Kelner, canola portfolio manager with Monsanto Canada, says that while having multiple sources of resistance in the pipeline is critical, Monsanto also maximizes the durability of disease resistance traits by deploying them strategically, such as in stacked combinations, and by promoting good crop management practices, such as rotation.

Curtis Rempel, Canola Council of Canada vice president of crop production and innovation, also believes good crop management matters. “Traits such as disease resistance genes require significant

resources to develop and it’s incumbent on growers and seed developers to work together to steward these genes so they remain effective for as long as possible,” he notes. “Canola Council of Canada agronomists collaborate with growers, seed developers and government scientists to ensure we have the best stewardship practices in place. Many studies have shown that a significant component of resistance stewardship involves rotation of crops on the farm as well as rotation of the resistance genes present within varieties.”

Dane Lindholm uses a four-year rotation in his area, which he describes as “a moderate-to-high clubroot risk zone”. He manages Lindholm Seed Farm with his father, Craig, in New Norway, Alberta. As part of their resistance management, they grew Roundup Ready Canterra CS2000 canola seed with resistance to five different pathotypes of clubroot and moderate resistance to another pathotype that has been called “5x”. In four years, Lindholm says they will switch to Liberty Link canola seed to ensure disease and weed resistance don’t build up.

#### TRAIT DEVELOPMENT IN ACTION

While trait development is still a significant challenge, some factors can speed up the process.

Shaan Tsai, oilseed and pulse product development manager with Canterra, says timelines can be cut if a trait can be incorporated into



existing elite germplasm, adding that regulations and registration in Canada and beyond could be improved.

Kelner agrees that streamlining various global approval processes would be helpful for commercializing biotech traits. So does Blaine Woycheshin, manager of oilseed crops and InVigor at Bayer CropScience. “The unpredictability of regulatory processes is a growing concern when it comes to investing in potential solutions,” Woycheshin notes.

New technology is another factor that could speed trait development. High-quality, high-speed phenotyping is one example to more quickly assess how new test varieties perform under a range of growing conditions. “In the case of resistance traits, speed of development is often defined by the ability one has to screen materials under the presence of the pest,” Harwood says. “Screening must produce repeatable measurements so that one can identify heritable forms of resistance.”

Tied to high-quality phenotyping is the use of molecular markers. Once a new trait is identified, also identifying a high-quality genetic marker for the trait makes it easier and faster to

identify the plants that carry it.

Harwood adds that greenhouses and growth chambers, winter nurseries and winter seed production all contribute significantly to faster product development. Advances in information management and automation also allow for larger-scale breeding projects.

Lastly, Harwood points to global connections as important. He says having Canadian breeding programs integrated with programs in Europe (for clubroot, for example) and Australia (for blackleg) increase the likelihood of rapid identification of valuable new sources of genetic variation.

Commercial seed multiplication is also global. Seed companies work with third-party companies to produce hybrid seed with production in the U.S., Canada and contra-season multiplication in Chile. Hybrid seed production must take place in an environment that combines adequate environmental (weather) risk, good canola adaptation and low risk of uncontrolled pollination.

## SALES TARGETS

Given the cost and risk to produce hybrid seed and the challenge to meet demand for specific varieties, unexpected events can be a challenge.



## For management tips to protect resistance traits,

search for the article “How to protect clubroot resistance” at [canolawatch.org](http://canolawatch.org)

*Below: Dane Lindholm (right) manages Lindholm Seed Farm with his father, Craig, in New Norway, Alberta. They use a four-year rotation to help protect genetic traits, such as clubroot resistance, that are important to their farm business.*

One example was the million or more acres reseeded in 2015. While predicting overall seed sales volume has become slightly easier, that year was an exception, according to Tsai.

Predicting the demand for particular canola hybrids, however, remains as complex as ever. Establishing seed production targets is “a very thorough and complex process,” Tsai says. “Once we’ve assessed performance of a particular canola hybrid, we then evaluate where it best fits, where we’re at from an inventory perspective and the canola seed market at both a macro and micro level. We then develop various product mix scenarios.”

For new Pioneer canola hybrids, the company finds it prudent to produce an amount that allows wide-area introduction of the new product but not to a volume that places growers at risk, Harwood says. “The second year of commercialization is when significant sales of a product take place,” he notes. “The process for determining that volume takes into account the market’s demand for a product with the traits and performance advantage it represents.” ❀

—Treena Hein is an agricultural freelance writer based in Ontario.





# The seedy side of Chile

Chile has summer during our winter, which gives seed companies a second season for field testing and production. And with so few canola acres in Chile, genetic lines stay pure.

BY NICOLE PHILP

**M**ost people don't think about what it takes to get canola seed into a bag. While a large area in Southern Alberta is dedicated to producing the seed farmers buy, a whole other production season happens in South America – often referred to as “contra” season. I've always heard about contra season in Chile and some of the challenges that come with coordinating an entire seed-production season, but the logistics are hard to imagine until you actually spend time there.

*Below:  
Birds are one unusual pest of canola in Chile, picking the seeds right out of pods.*



Benefits to the contra season include ensuring consistent seed supply, managing isolations for genetic purity and conducting additional research on material for certified seed production. Risks include earthquakes that can affect logistics of getting seed back to Canada and some unique

pests, including pod-eating birds, that can be tough to control. Chilean regulations must be considered as well.

I had the opportunity to go to Chile in December 2015. I arranged to spend some time with HyTech Production, a seed production company for canola and other crops. The trip centred around Temuco, about 700km south of the capital, Santiago.

We spent a few days driving around the Temuco area looking at fields of parent seed production, new experimental varieties, grow-out sites and certified seed production. Between site visits, we talked about what it takes to get from a tiny amount of seed to the point where a registered, commercial variety has enough volume to sell into the market.

**Being able to separate sites by 20 or 30 km is one advantage of doing seed production in Chile, where quality and purity are the name of the game.**

Maintaining genetic purity is crucial at every step, from producing higher volumes of seed for parent lines and commercial hybrids to cleaning and packing. Every site had fencing all around to keep out livestock and documentation displayed informing inspectors about when and what pest control products were applied.

Production isn't just about volume either. Many activities are required before a hybrid is commercially available, including herbicide tolerance tests, hybridity grow-out trials, and evaluation of parent lines for time and length of flowering, pollen production and other phenotypic traits. Nicking trials ensure that the male and female parent





lines flower at the same time to maximize pollination.

One thing that really stood out during our travels around Temuco was the distance between sites. Being able to separate sites by 20 or 30 km is one advantage of doing seed production in Chile, where quality and purity are the name of the game. Isolation is vital, and Chile offers isolation in spades. Many of the sites we visited had never had canola on that land. In addition to isolation for purity standards, Chile also offers abundant irrigation opportunities, similar to those in Southern Alberta.

After touring the Temuco area, we drove to Santiago. The agricultural landscape changed many times along the 700km route. Chile has very distinct agriculture production zones, and we saw numerous crops including various fruits and vegetables, grapes (of course) and even some nuts. Once in Santiago, we sat down with the Asociación Nacional de Productores de Semillas de Chile (ANPROS), the Chilean seed producers association. During my time with them, I had the opportunity to learn about agricultural production in Chile, how important and valuable the seed production industry is to them, and about the software they use to

*Above: These strips are for hybrid parent seed production. Fencing keeps out livestock.*

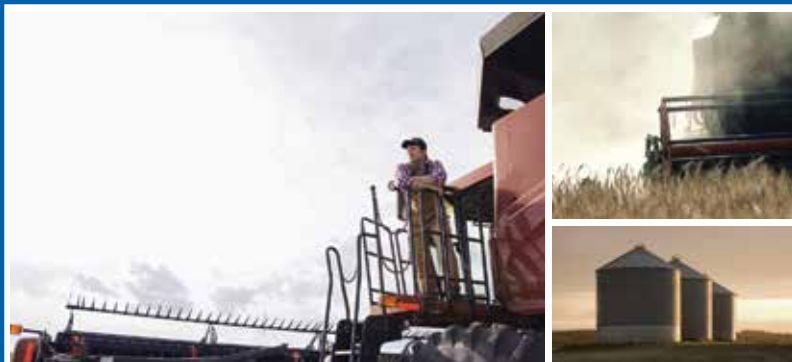
manage isolations and avoid contamination during seed production.

On a personal note, I saw many memorable things in Chile, including an active volcano called Villarrica, fields of perfectly straight crops that were planted by hand and black sand at the ocean. The landscape in Chile is lush and green everywhere you go and the mountain ranges make an excellent backdrop for flowering canola. The chance to make some new contacts with industry leaders in seed production was invaluable. It was the most important part of the whole trip. ✖

—Nicole Philp is the Canola Council of Canada agronomy specialist for southwest Saskatchewan. Her focus is on seed, Canola Performance Trials and the Ultimate Canola Challenge.



*In Chile, you can usually see the Andes Mountains in the background. This field north of Temuco is producing hybrid seed for commercial sale in Canada.*



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With fall soil tests, ask for electrical conductivity, pH, cation exchange capacity and organic matter along with the nutrient analysis. These characteristics can influence productivity decisions for each field.

# DO YOU KNOW YOUR SOIL'S CHARACTER?



Left: Soil characteristics stay fairly consistent so don't need to be checked too often, but use these tests to set expectations for new fields or fields that haven't been tested recently. Credit: Harrison Loewen

BY RICHARD KAMCHEN

**H**arvest operations may dominate farmers' thoughts in September, but keep in mind the importance of fall soil tests — including those that look beyond fertility.

Tests for electrical conductivity (EC), pH, cation exchange capacity (CEC) and organic matter may get short shrift, but shouldn't be taken lightly or dismissed.

"They may be secondary in farmers' minds, but they are very much primary as far as how that field is going to perform," says John Heard, Manitoba Agriculture's soil fertility extension specialist.

## ELECTRICAL CONDUCTIVITY

EC tests quantify a soil's salinity. Results are often given in deciSiemens per metre of soil. For each extreme, soils with an EC of lower than two dS/m is "non saline" and fields with an EC higher than eight are "severely saline".

"When planning rotations on a saline field, it may help to know that soybeans, dry beans and even corn are more sensitive to salinity than crops like cereals and canola," says Heard.

Wet years can trigger future salinity problems, as Agriculture and Agri-Food Canada research scientist Alan Moulin points out. In a wet year like this one, salts will leech down through a soil profile.

"However, when the water table comes up with prolonged rainfall plus maybe a hot spell, you'll get salts moving to the surface," Moulin says. "Salinity may not be significant in the spring, but it might become an issue later in the year."

Tile drainage is becoming the most common and effective way of managing salinity levels.

But for tile drainage to remove salinity, a field also needs surplus rain to flush it through, notes Heard. "In dry years, we don't gain much ground. If the crop is using up all the water it gets, then we don't have the excess to do the flushing that's required."

## PH

Soil pH measures acidity or alkalinity, and a 7.0 on the pH scale is considered neutral.

A 2013 Alberta Agriculture estimate said about 6.3 million acres of Western Canada soils had a pH of 6.0 or less, with another 8.5 million with a pH from 6.1 to 6.5.

Canola yields on acid soils with pH below 5.5 can be substantially increased by lime application, according to the Canola Council of Canada.

Heard points to challenges for both low and high pH soils.

"When we have acid soils — when they drop down to maybe 5 — we get very much reduced phosphorus availability, possible aluminum toxicity and rhizobium bacteria don't work very well," he says. "With high pH, nutrients like phosphorus are bound by calcium and magnesium, but this phosphorus is much more available than if bound by iron or aluminum in acid soil." That is why he promotes banding phosphorous, especially on high pH soils.

Soil pH can also affect herbicide breakdown. "Some herbicides are more persistent at high pH, and some are more persistent at low pH," notes Heard. "So farmers should be aware that if they're seeing some herbicide carryover, sometimes it can be pH related."

Acidity can change slowly over time, particularly if you're using ammonium-based fertilizers, says Moulin. Cultivation can also lead to a gradual decrease in pH.

## CATION EXCHANGE CAPACITY

Cations are nutrients with positive charges. Calcium, magnesium and potassium are the biggies. Such cations

When not refereeing, Manitoba Agriculture soil fertility extension specialist John Heard says electrical conductivity, pH, cation exchange capacity and organic matter may be secondary in farmers' minds, but they are very much primary as far as how that field is going to perform.



are held by the negative electrostatic charges on clay particles and organic matter. Fall application of anhydrous ammonia is held in the soil as a cation too, as the ammonium ion.

"Cation exchange capacity (CEC) gives you an indication of the ability of your soil to hold on to and replenish some of those nutrients," Heard says.

CEC with a value of less than 10 indicates a sandy soil, between 10 and 20 is a loamy type soil, 20 to 30 is a clay loam and more than 30 is a clay soil.

A farmer will already know the soil type in each field, but this is useful information for an agronomist who doesn't know the soil and has to make management recommendations. A sandy soil, for instance, isn't the most suited to hold cations, and applied nutrients like potassium and anhydrous ammonia won't be held as well. On the other hand, more clay means greater water holding capacity in the soil, and seed-placed fertilizer toxicity will be less damaging.

"Herbicide residue carryover is less of a problem with high cation exchange capacity," adds Heard.

## ORGANIC MATTER

Organic matter is a storehouse of nutrients and links to soil productivity. "We know that as organic matter increases, yield potential often increases," Heard says. "Part of that is because organic matter helps store more water, so you tend to have a higher yield potential."

On top of improving water holding capacity, organic matter contributes a lot to soil structure and the ability of the soils to have good aggregation, allowing for better water infiltration and a reduction in crusting and erosion.

Organic levels aren't changed much or quickly. About every one percent of organic matter represents about 20,000 pounds of organic matter in an acre.

"It can be degraded or reduced through excessive tillage and fallowing, but most researchers say building organic matter is a very slow process," says Heard, adding that a farmer's time is better served by maintaining or limiting degradation.

Moulin adds that when organic matter is mineralized, it releases nitrogen which is nitrified from ammonium forms to nitrate that goes to the plant.

Decisions on how to improve soil organic matter depends on what the deficiency is. If the goal is to help with nitrogen and phosphorus availability, fertilizers are the most efficient and economical way of dealing with it.

"However if you're dealing with issues related to salinity or cation exchange capacity, one option would be to use cattle manure," says Moulin. "The other option in that respect would be to set up a rotation that puts a lot of organic matter back into the soil — forage crops or green manure, for example."

These four tests don't need to be performed regularly as they remain rather static and change only slowly, if at all, especially CEC and organic matter. "I would consider them good characterizations for a field, but not something that is routinely measured," Heard says. "They're not going to vary to the same extent as nutrient levels would." ✖

—Richard Kamchen is a freelance agricultural writer based in Winnipeg.

## How this grower manages variable soils

**WARREN MCCUTCHEON** is no stranger to variable soil conditions. "You name the soil type, we probably have it here," says the Carman, Manitoba farmer. "Even within the same quarter sometimes, you'll go from a sandy loam to a clay loam within hundreds of metres, which makes things pretty challenging for seeding, drainage, setting depth and tillage."

Drainage is a big part of his soil management. Surface drainage is ideal for heavy clay land as it gets water off the top quickly, but tile drainage fits better with sandy soils, which saturate quickly. He initiated his drainage work during Manitoba's crop disasters in 2004 and 2005, and it has paid significant dividends.

"It has been a game changer this year with how good our crop looks given how much rain we've had in a short period of time," McCutcheon says.

McCutcheon says tile drainage actually becomes more effective with each passing year, which he attributes to the ongoing development of water passages below the surface to the pipes. "You'll get a couple inches of rain and the tile will be running instantly, whereas with the stuff that's only a year old it might take a day or two before the tile really starts to run."

He's seen better yields on fields with tile drainage than neighbouring ones without it. Wet weather has a tendency to cause denitrification, water stress and poor root development, not to mention making field work difficult if not impossible.

"We've seen none of that this year. The stand is good, the plants are healthy and rooting well. We've been able to get our work done between rains without making a mess in the field," he says.

And with less water ponding on drainage fields, he's also found a corresponding reduction in the outbreak of disease.

Different soil types have also encouraged him to broaden his crop rotation to include wheat, oats, soybeans and perennial rye grass. Perennial rye is one crop he doesn't have to worry about seeding in the spring on the typically wetter, heavier land. "It's in, established and using moisture, and it's one or two less quarters that don't have to be worried about in the spring."

Variable soils can also provide a few wrinkles for tillage, straw management and residue management. Finding the right balance to provide the right equipment every year to deal with the different requirements of sandy and clay soil can be challenging.

On the other hand, variable soils also help spread out weather risks.

"In a year when the rains were an inch or half an inch a week, some of our least productive land was our best yielding," says McCutcheon. "That's the advantage of having different soil types. When the light land maybe got a little bit dry, the heavy land held its moisture and produced a really good crop." ✖





# Fall fertilizer applications

For this new series, Canola Council of Canada agronomy specialists take a particular agronomy challenge and provide solutions, with consideration for risks and costs. In this case, **Warren Ward** looks at fall fertilizer applications as a way to meet canola nitrogen needs while stream-lining spring seeding operations.

## 1. THE CHALLENGE

Current yield potential in canola is high, and in many cases far exceeds actual nutrient applications. Yields could be improved with some basic changes to canola fertility. The logistics of applying higher fertilizer rates to meet the nutrient requirements of a high yield target are a challenge. Applying all fertilizer at seeding is the traditional approach, but with more product applied, it becomes time-consuming and means a lot of product to handle at a busy time of year. Could some of the nitrogen – which is the largest requirement in terms of bulk and cost – be applied in the fall?

## 2. THE RISKS

Consider the fate of applied nitrogen. Ideally we want to see it in nitrate form in the root zone and at a sufficient amount when a plant needs it. Risks with fall-applied nitrogen are leaching, denitrification and volatilization, which will reduce the available amount. Another risk is not being able to seed the field in spring even though the fertilizer investment has been made.

Leaching may occur when the nitrogen fertilizer converts to nitrate and moisture moves it deep into the soil profile, beyond the root zone. This can become a higher risk in the spring on fertilized fields.

Denitrification occurs when soils become saturated and the nitrogen is in the nitrate form. Under these conditions, nitrate is converted to nitrogen gases and lost to the atmosphere.

Volatilization can occur when a product such as urea converts to ammonia. Surface applications of urea or UAN would be particularly susceptible to this.

While the risk of not seeding the field is probably the most severe risk, it is hopefully the least likely to occur and is mainly out of our control.

## 3. MAKING IT WORK

Fall nitrogen applications still have a fit in our cropping system despite the risks. To reduce losses, apply when soils are cold ( $<10^{\circ}\text{C}$ ), apply the product in a band (3" deep) and avoid fields that are poorly drained or prone to flooding. Floating is a higher risk option, especially for nitrogen applications.

## 4. PRODUCT OPTIONS

Nitrogen stabilizers such as urease inhibitor, nitrification inhibitor or polymer-coated urea can provide additional protection from nitrogen losses. The right product will depend on what type of loss you are trying to prevent.

Nitrogen stabilizers come at an increased cost, so weigh the potential benefit from reduced losses to the risk of incurring those losses. If you don't anticipate high nitrogen

losses and you follow all of the best management practices, then your traditional form of nitrogen may be your most economical choice.

## 5. COSTS AND ROI OF FALL NITROGEN APPLICATIONS

The return on investment (ROI) for fall-applied nitrogen will be positive if losses are minimal and if nitrogen can be purchased cheaper at that time of year. Considering that putting all of the product down at seeding may no longer be an option, the cost of another pass over the field will likely be the same no matter when you do it. Fall banding will use more fuel than floating, but the placement can make up for that. If you want to reduce wear and tear on the seeder, you could use an old seeder or  $\text{NH}_3$  applicator. Intangibles such as time saved at seeding could make this a good investment. ✖

—Warren Ward is the Canola Council of Canada agronomy specialist for southeast Saskatchewan.



For more on nitrogen management, go to [canolacouncil.org/canola-encyclopedia/](http://canolacouncil.org/canola-encyclopedia/) and open the Fertilizer Management section.



Credit: John Heard

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# THE CONTINUED CASE FOR REDUCED TILLAGE

BY DONNA FLEURY

**R**educed tillage provides many benefits and is a great sustainability story for Canadian agriculture. Along with reducing diesel fuel and other energy inputs, improving efficiencies and sustainable land management, reduced tillage also improves soil health, reduces soil erosion, and builds and maintains carbon.

Here are five situations where tillage is often seen as a solution or risk, with tips on how or why to reduce tillage:

## RESIDUE MANAGEMENT

Reduced tillage and direct seeding are well suited to much of Saskatchewan, Alberta and parts of Manitoba. In some areas, such as the Red River Valley in Manitoba, high crop residues make reduced tillage more of a challenge. Clint Jurke, agronomy director with the Canola Council of Canada, suggests that for all growers growing cereals and following with a canola crop, paying attention to the details of the harvest operation and weather conditions can go a long way to managing residues.

“It is important to have really good choppers and spreaders on the back of the combine and to make sure to spread the chaff as evenly as possible over the width of the cut swath,” he says. “If chaff is not spread properly, it can concentrate into a windrow, making it difficult for the next canola crop to emerge through the heavy chaff layer.”

Shorter-statured cereals will lower residues. Diverse rotations with more low-straw crops help reduce accumulated residue loading. Another way to reduce the amount of material

spread over the soil surface is to cut the crop as high as possible.

If growers experience difficulties with heavy residue and feel a need for harrowing, it should be done in the fall and not the spring and with as little soil disturbance as possible. Efficacy of harrowing is still debatable, with the focus on harvest management at combining as the priority.

Some growers use tillage to help dry out fields in the spring. This action has debatable benefit. Blackened soils do heat up more in spring, but also cool more in the nights. Tillage disrupts soil structure, which may reduce micro channels that help drain standing water away and reduces traction.



*Clint Jurke, agronomy director with the Canola Council of Canada, says researchers have determined that soil erosion as a result of tillage has contributed to the spread of clubroot.*

## TILLAGE SPREADS SOIL-BORNE PATHOGENS

From a disease management standpoint, tillage provides no benefits and in many cases increases the risk of spreading pathogens.

“There aren’t any diseases that can be controlled by tillage, and in most situations tillage makes it worse,” Jurke says. “Any field operation has the potential to move pathogens, but tillage operations

physically lift and move the soil and the soil adheres to the machinery.”

Tillage also exposes soil to the elements, increasing erosion risk by wind or water action. “Researchers have determined that this is part of the clubroot problem,” Jurke says. “Although soil-borne diseases such as clubroot don’t produce airborne spores, when the soil is whipped up in the air due to wind action, those spores actually do travel a greater distance than the majority of the soil particles.” Tillage in the Edmonton area was a great way of spreading clubroot into more eastern parts of Alberta and potentially into western Saskatchewan. Air parcels received in western Saskatchewan do often originate in that Edmonton area.

Moving soil also spreads other diseases, including verticillium stripe. This new canola disease, although not quite as damaging as clubroot, is still a question mark that industry needs to address. In pulses, aphanomyces is similar to clubroot in how the pathogen moves around. With black-leg, burying residue with tillage was thought to help, but recent science has shown the opposite.

“Overall, tillage moves diseases around much more than reduced tillage or direct seeding,” adds Jurke. “Direct seeding usually uses fairly narrow openers, which doesn’t move much soil around and involves only one piece of equipment for one operation. With conventional tillage, there are typically several operations plus the planting operation and growers are opening their exposure to soil-borne pathogen movement two to four times more than with just a one-pass, zero-till drill.”

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## INTEGRATED WEED MANAGEMENT

Integrated management is important to weed control and prevention of resistant weeds. Neil Harker, research scientist with Agriculture and Agri-Food Canada (AAFC) in Lacombe, Alberta, explains that cropping-system diversity is one of the most important strategies for integrated weed management. “This requires some longer-term thinking by growers to recognize that while some rotations won’t always make the most profit in that year, they will be more profitable over the long term because they have saved irreplaceable weed management tools.” Namely, herbicides.

Other important strategies include establishing a competitive crop, growing competitive cultivars, increasing seeding rates and improving fertilizer efficiency for the crop over weeds. Using optimal agronomic practices, careful harvesting and preventing the return of viable weed seed to the field at harvest is also key.

“Think about weed management as a system, not just year to year,” says Breanne Tidemann, research scientist and Ph.D. student at AAFC Lacombe. “For example, cleavers can be difficult to control in canola, so make sure to manage it in other parts of the rotation, such as in cereals where there are more options. Also use good pre-seeding weed control, and don’t just rely on glyphosate. Tank-mix it with other herbicide groups.”

Growers need to be open about new options as issues with weed resistance continue to put pressure on existing weed management tools. Glyphosate-resistant kochia has been identified in Western Canada, glyphosate-resistant Russian thistle has been confirmed in Montana, and others potentially on the horizon are wild oat, cleavers and green foxtail— all dominant weeds in our cropping system. In some central-Alberta fields, wild oat is resistant to all major Group 1 and Group 2 herbicides as well as triallate (Avadex), leaving growers with Treflan as their only selective herbicide option.

“We used to be able to



*AAFC research scientist Neil Harker says integrated weed management will be important to protect herbicide performance. “Growers may need to consider new tools such as pulling a chaff cart, baling straw, buying a Harrington Seed Destructor or implementing some other tools such as occasional tillage to remain competitive and profitable,” he says.*

say we still had tools left, but those tools are rapidly disappearing, and once they are lost they are gone. Those resistant populations are here to stay,” Harker says. “Therefore, growers may need to consider new tools such as pulling a chaff cart, baling straw, buying a Harrington Seed Destructor or implementing some other tools such as occasional tillage to remain competitive and profitable.”

## LABOUR

Robert Nolting continuous crops 3,000 acres of canola, spring and winter wheat, oats, soybeans, plus timothy and ryegrass for certified seed near Rosser, Manitoba. He switched to reduced tillage in the early ’90s mainly because of reduced labour requirements and an effort to reduce the number of field operations to fall anhydrous banding and one-pass seeding.

“Over the years we have seen improvements in the soil and improved yields, particularly in canola,” says Nolting, who is also a director and vice president of the Northern Prairies Ag Innovation Alliance (NPAIA), formerly the ManDak Association.

Residue management can be a challenge, so Nolting replaces the knives on the straw chopper every year and makes sure the straw is spread the full width of the 40-foot combine. He also started growing soybeans about 10 years ago, which provides a low residue crop in the rotation.

He typically seeds all of the canola on the soybean stubble, and puts soybeans into cereal stubble, usually maintaining a minimum three- or four-year crop rotation.

## SUSTAINABILITY

Sustainability is related to market access, whether based on regulations, industry and buyer standards or consumer demands. “Global markets are looking for more certainty and assurances from supply chains that they are meeting sustainability requirements and can demonstrate a sustainable carbon footprint,” explains Dennis Rogoza, sustainability advisor to the Canola Council of Canada. “Different markets are asking for different criteria, but ultimately the agriculture industry in Canada is expected to be able to demonstrate they can meet the minimum benchmarks required by various global markets. Although Canadian growers and industry are believed to be meeting the highest standards, they need to be able to demonstrate that to the EU and other key markets.”

One of the positive sustainability elements for western Canadian agriculture is the significant land-use management change from conventional fallow systems to conservation tillage systems.

“The net benefit of minimum or no-till and continuous cropping is levels of carbon captured and maintained in the soil and an improved carbon footprint calculation for western agriculture for all crops,” Rogoza says. “This significant land-use management change has also dramatically increased the acreage of cash commodity crops like canola, along with farm incomes and profitability that allows growers to reinvest in continued sustainable practices to meet global demands.” ✿

—Donna Fleury, P.Ag., is an agricultural freelance writer from Millarville, Alberta, specializing in agriculture and the environment.

Rise in no-till acres in Canada	
Year	Acres in no-till (millions)
1991	4.8
1996	11.3
2001	21.8
2006	33.3
2011	41.2

Source: Statistics Canada



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Cookbook author Raghavan Iyer and healthy-eating advocate Patricia Chuey presented at a Canola Eat Well event in Winnipeg in June. These two food influencers and canola oil ambassadors show why grower investment in Canola Camp and Canola Eat Well is so important to the Canadian canola industry.



# MEET TWO CANOLA AMBASSADORS

BY JAY WHETTER

**R**aghavan Iyer's eyes opened wide the first time he saw a canola field in flower. It was 10 years ago at Canola Camp in Saskatchewan. "I thought I was in India," he says. "It was beautiful."

The Minneapolis-based cookbook author and teacher was born and raised in India and was in his 40s before this canola field encounter. It happened at Canola Camp, a four-day edu-fun event the Canola Council of Canada hosts for chefs, media and food professionals. Canola oil became "real" to Iyer the moment he saw the crop in bloom.

Indian chefs have used mustard oil for centuries, probably millennia. Mustard crops produce the same field of yellow as their canola cousins, but the oil has a zesty glucosinolate kick. Iyer prefers canola oil for frying because its milder flavour doesn't overpower the

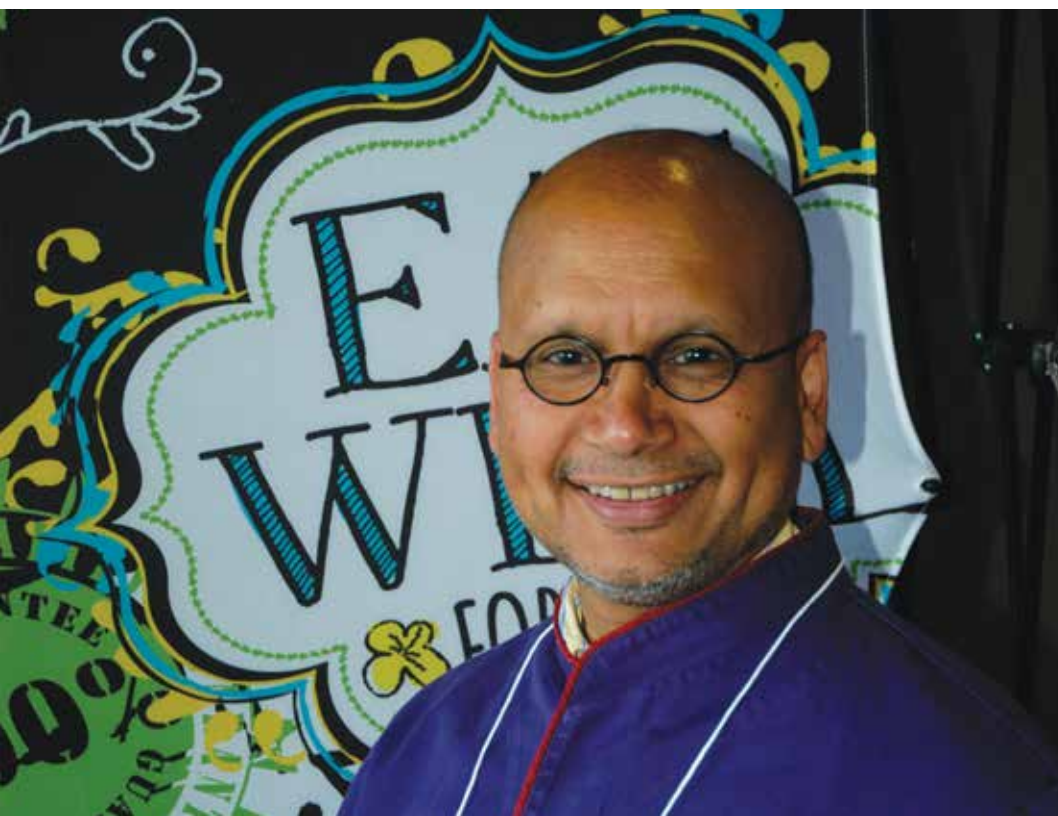
flavours of cumin, cardamom, cloves, turmeric and chiles used in Indian cooking. "Canola is the perfect backdrop to spices," he says.

Iyer had been using canola oil before Canola Camp, but that pivotal this-looks-just-like-the-mustard-of-my-childhood moment converted him from user to booster. With canola oil, he gets a healthy frying oil that is true to his Indian roots.

Some people on Iyer's side of the food business have the impression that canola is a fabricated crop, developed through genetic modification. Few know that *Brassica napus* is thousands of years old, a cross between much older species *B. rapa* and *B. oleracea*. And that, through selective breeding (not genetic modification), Canadian researchers developed *B. napus* and *B. rapa* canola with low glucosinolates and low erucic acid characteristics. Rutabaga



Credit: Geo-grafika



and Siberian kale are also *B. napus*. Cabbage, broccoli and cauliflower are *B. oleracea*. Turnip is *B. rapa*.

Given the high health value these veggies carry, canola oil can't help but benefit from this familial connection. "You need to tell people that canola is related to them," Iyer said to Canola Digest at a Canola Eat Well event in Winnipeg in June.

Manitoba Canola Growers and Alberta Canola Producers Commission hosted 100 dietitians at the Canola Eat Well promotion event at Richardson's Kelburn Farm south of Winnipeg. Dietitians were in town for their Dietitians of Canada National Conference, so it seemed like an opportunity the organizations couldn't pass up. "This event and our other Canola Eat Well promotion events are about growing our community, engaging with others, making new connections and enhancing the farm-to-food conversation while all having a canola connection – to health, farm and food," says Ellen Pruden, educa-

tion and promotions manager with Manitoba Canola Growers.

The Canola Eat Well program runs a number of events through the year, focusing primarily on building canola oil awareness and market share in Ontario. All events include food, chefs and farmers presenting to groups of influencers on the food and consumer side of the business.

The dietitians' event in Winnipeg was their biggest yet. Attendees cycled through a few learning stations. At one station, Manitoba canola grower Curtis McRae showed what canola seeds look like and how to do a crush strip to check for green. At another, MCGA director Brian Chorney explained what sustainability means to him on his farm. There was, of course, lots to eat.

During the Indian-themed supper, Iyer demonstrated how to cook the main course fish dish attendees were eating. His on-stage sidekick was another Canola Camp alum, B.C.-based food blogger Patricia Chuey.



Few know that *Brassica napus* is thousands of years old, a cross between much older species *B. rapa* and *B. oleracea*.

*Left: The People's Dietitian Patricia Chuey attended Canola Camp in Saskatoon five years ago and says the event "sets the bar with its great people, variety of learning opportunities and open dialogue."*

*Right: Cookbook author Raghavan Iyer became a big canola booster after seeing how much the yellow fields reminded him of mustard fields in his native India.*

Chuey lives on Vancouver Island but grew up in Saskatoon and her parents are from Melfort, SK. She has communicated food and nutrition to consumers for 30 years and is a regular columnist in The Province newspaper in B.C. Her community calls her "The People's Dietitian."

Chuey went to Canola Camp five years ago. One of her favourite camp moments was sitting with SaskCanola director Dale Leftwich on a restaurant patio on Broadway in Saskatoon. She and Leftwich were talking about their favourite songs and she didn't recognize his, so he started to sing it. At the end of the night, Leftwich told her, "Patricia, you're a pretty special person because I don't usually sing in a restaurant."

She was impressed with the authenticity of Leftwich and the other canola farmers who participate in Canola Camp. "There couldn't be any better ambassadors for canola farmers. They're living the dream," she says.

Chuey has been to other commodity camps, including ones with Idaho potato growers and California almond producers. "Of all the tours I've attended," she says, "Canola Camp sets the bar with its great people, variety of learning opportunities and open dialogue." ✨

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





*The aim with Canola Camp, says Shaunda Durance-Tod, is to develop canola ambassadors.*



## More about Canola Camp

**CANOLA CAMP IS ALWAYS IN SASKATOON AND ALWAYS IN JULY** so people can marvel at the fields of yellow flowers. The Canola Council of Canada hosts the four-day camp through CanolaInfo, its global canola oil promotion program. Each year 12 to 15 food journalists, health professionals, chefs and cookbook authors attend, coming primarily from the U.S. but also Mexico, China and other major canola-consuming countries. Over the 18 years of Canola Camp, the CCC has hosted 199 influencers.

Campers come together to learn about the health and culinary benefits of canola oil directly from growers and industry professionals. They also have a lot of fun, as Chuey described in the article.

“Our aim is to develop canola ambassadors,” says Shaunda Durance-Tod, registered dietitian and CanolaInfo program manager at the CCC. “As you can see with Patricia Chuey and Raghavan Iyer, the positive experience continues to pay off.”

For example, Iyer now promotes canola oil in his cookbooks (find the titles at [raghavanier.com](http://raghavanier.com)). He also does TV appearances for CanolaInfo, appearing on over 25 U.S. TV stations.

Camp alumni write about their experiences and the benefits of canola oil, and they often step in to help dispel myths about canola when they pop up. Some are hired as CanolaInfo spokespeople or recipe developers. And as Durance-Tod says, “the relationships we make help us develop partnerships with influential organizations.” ✂



## 4 Questions About Canola Eat Well

**CANOLA EAT WELL** leads Simone Demers Collins with Alberta Canola Producers Commission and Ellen Pruden with Manitoba Canola Growers answer four questions.

**1. What would you like canola growers to understand and appreciate about the work you do?**

**Simone:** Farmer levies pay for our programming, so we want them to know what we’re doing to maintain a high national market share for the product they grow. Much of what we do is influencing the influencers.

**Ellen:** Canola Eat Well is about connecting our key target audiences to the culinary and health benefits of canola oil and to our farmers. We bring canola farmers to our events to be that touch-point person consumers and influencers can ask about food production, sustainability and biotech.

**2. What was the goal of the Dietitians of Canada event you hosted in Winnipeg in June?**

**Simone:** We wanted to connect dietitians with a positive canola oil message and with canola farmers. The experiential program also introduced them to new concepts - the understanding of spices and the variety of ways these may be used to enhance the flavour of foods - that could be of benefit in their career or personal life.

**Ellen:** It was about growing our community, engaging with others, making new connections and growing the #farmto-food conversation, while all having a canola connection – to health, farm and food.

**3. How can you tell if you achieved that goal?**

**Simone:** The event was sold out, which is our first indication. It also created a lot of post-event buzz.

**Ellen:** It was our largest event ever, with over 100 people in attendance. The metrics from social media were huge, with over 2 million impressions from the evening event through Twitter, Facebook and Instagram.

**4. How do provincial organizations share market development work with the Canola Council of Canada?**

**Simone:** The CCC focuses on market development work around the world and to a global audience through programs like Canola Camp. The provincial grower organizations focus on the Canadian market.

**Ellen:** I see it as a partnership. The CCC was at the Dietitians of Canada Conference trade show, for example, engaging and reaching out to dietitians. The Canola Eat Well workshop was an “add on” to the Dietitians Conference, but we used Canola Camp alumni Raghavan Iyer and Patricia Chuey to help deliver the workshop and the canola message. The more opportunities to partner together, to grow the conversation, to share in resources, to grow the Canadian market, the better it is for our canola farmers.

Given the success of the Canola Eat Well event at Dietitians of Canada 2016, Simone Demers Collins has already started planning for an event at the 2017 conference in Newfoundland. ✂

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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.

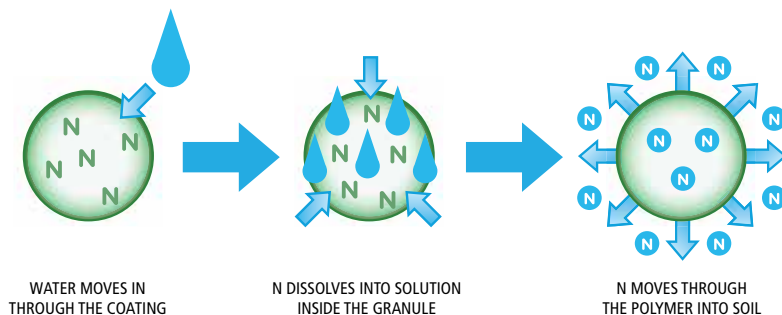
ESN is convenient to use and apply because the wide application window allows you to apply ESN on your schedule, and because it won't set-up in storage, it has a longer shelf life. Other benefits include compatibility with no-till operations and flexibility of blending options.

### 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.*

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# Set standards, improve results

When you clearly describe standard operating procedures (SOPs) for each major practice and piece of machinery on the farm, it helps bring consistency to performance — no matter who is doing the work.

BY DANNY KLINEFELTER

One of the critical differentiators in commodity agriculture is efficiency. As more of agriculture moves toward coordinated supply chains, consistency, documentation and verification will become increasingly important. For example, Walmart now insists that its suppliers don't use child labour or excess fertilizer and it wants more than promises to verify compliance. In the 1990s, livestock industry leaders also adopted standard operating procedures (SOPs) to ensure uniform products and avoid damaging

consequences such as inadvertent drug residues in the bulk milk tank.

Now I see superior grain operators integrating SOPs into employee handbooks on agronomic practices. One Midwest U.S. farm issues supervisors three type-written pages of guidelines on equipment operation and safety issues when spraying. For example, it gives detailed safety tips when employees transport sprayers on the road: "The large boom when folded for transport will cause numerous blind spots when crossing intersections, four-ways, etc. Always

try to get over and let people around as you can only go about 30 mph. Try avoid going long distances with product in the sprayer tank. You don't want to be leaking chemical somewhere on the road."

One large South Dakota operation also developed SOPs for their marketing plan: "Whenever futures markets cover break-even costs at 80 percent of historic yield, the farm has standing orders with a broker to use options to establish a price floor." That's not giving up the top of the market, the farmer says, because he still has the remaining 20 percent production to boost his profit. He credits SOPs with instilling financial discipline in his operation.

Before I dive into how to establish farm-based SOPs, I would be remiss if I didn't acknowledge two people from whom I have learned a great deal about process improvement — Idaho farmer-consultant Dick Wittman, who is a member of the TEPAP (The Executive Program for Agricultural Producers) faculty, and Dave Grusemeyer of Cornell's PRO-DAIRY program.

Six Sigma and TQM (Total Quality Management) are two well-known management programs designed to help companies maintain process and quality control. There are numerous others — HACCP, GAP, Balanced Scorecarding and Lean Manufacturing — with some of the same objectives.

Two things common to all these programs are processing mapping and the development of standard operating procedures (SOPs). Process mapping involves laying out the steps and the order (sometimes simultaneous) in which actions have to be carried out to complete a process, such as planting and spraying. SOPs describe the details, the steps, the standards and the order in which activities are to be performed in order for the process to be carried out consistently and efficiently. Essentially, SOPs are a description of the links in the chain that make up the process.

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## BENEFITS OF SOPs

They can aid in training a new hire or a person taking on a new position by providing a reference to make sure they know what, how and when things are to be done. Often there are so many things an employee is responsible for that telling, explaining or showing can lead to information overload unless there are written step-by-step instructions the employee can refer back to as they start doing the work until they have enough experience to internalize them.

1. They can serve as a reference for employees filling in on jobs they don't do on a regular basis.
2. They help reduce system variability by increasing consistency.
3. They can encourage more employee buy-in and a sense of ownership by involving experienced employees in writing the SOPs to make sure the final product is more complete and understandable.
4. They can be used in performance evaluations by providing an understanding of what needs to be done and a set of standards against which to assess performance. Having a control system in place that monitors performance also aids in documenting performance. The current technology that facilitates this process is often already in place or under development.

5. They can help improve safety and reduce environmental risk as well as provide the basis for documentation and verification as traceability and verification requirements become more prevalent.
6. Employees can coach and support each other if there is documentation available on exactly how different tasks are to be done and everyone knows what their co-workers are supposed to be doing. This can also help generate more of a team approach, including peer pressure, to make sure tasks are done correctly.
7. Development of a complete set of SOPs is time consuming. It is critical that employees understand why they are important, and are involved in their development. Management has to be supportive and committed. Prioritizing where SOPs are most needed and have potential for the most economic impact and the likelihood to produce quick successes can also generate more support and reduce frustration. It is important that the right individual is selected to lead the development effort for each SOP.

## CONTINUOUS IMPROVEMENT

Many producers feel that this approach may work for a controlled factory environment but is not suited for much of farming because of the many uncontrollable biological and environmental factors involved. But too many of the best-managed farms use this approach for it to be dismissed. A farm is basically a biological manufacturing plant and — with the drive to becoming more efficient, reducing variability and documenting the actions being taken — this approach is becoming increasingly important. In some instances, it is or soon will be required for market access.

The one big thing that I believe is being overlooked, even by those using this management approach, is the need to incentivize continuous improvement. This may be through eliminating or combining steps to improve the process, increase output and reduce inputs or time. SOPs have the risk of dumbing down the system if not reviewed and improved on a continuous basis.

I know of one instance in my own family where my son-in-law came up with software improvements that saved his company \$400,000 the first year and each year thereafter. Two weeks after the approach was implemented, he received a \$25,000 bonus. The cost was minimal compared to the impact, but it made a definite positive impression and encouraged him to keep looking for and thinking about other opportunities. Without this approach, it is too easy for SOPs to create a situation that resembles a government bureaucracy or a union mentality of just meeting the standards rather than continuously raising the bar.

It is an economic reality that success and survival require continuous management improvement at a rate set by the competition and not by your own comfort zone. ✿

—Danny Klinefelter is a professor and extension economist at Texas A&M University. He is also the director of The Executive Program for Agricultural Producers (TEPAP). This article was originally published by DTN and is reprinted with permission.

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