Breaking Ground
in Northeastern Ontario

New Liskeard Agricultural Research Station 2018 Summary

By Nathan Mountain, NLARS Cropping Systems Research Technician

The New Liskeard Agricultural Research Station conducted a range of locally- significant, yield-focused variety and management trials in 2018. For committee trial results (data), such as the Ontario Cereal Crops Committee (OCCC) and the Ontario Soybean and Canola committee (OSACC), please visit the gocereals.ca and gosoy.ca websites, respectively.

In 2018, the accumulated monthly rainfall was higher than the local 28-year average (data from 1990-2018, Figure 1) in May. A wet May was soon followed by markedly dry June (lowest amount of rainfall since 1990) and July, (compared to the 28-year average), before returning to 'near-normal' monthly precipitation amounts. With lower rainfall events throughout June and July than the average (Figure 1) and temperatures near the average (above average temp. in July and Aug., not shown), NLARS experienced drought-like conditions which impacted cultivar yields. Weather summary for NLARS over the growing season is provided in Figure 2.

Although there were fewer observations of leaf diseases in cereals and soybeans, cereals in general were shorter and showed signs of stress (i.e. oat cultivars were found to have more thins than the previous year). Planting dates, soil and air temperatures, and precipitation in May are depicted in Figure 3. Early freeze-thaw periods in 2018 and pooling of surface water in the spring led to the cancellation of the Provincial Ontario Cereals Crop Committee (OCCC) Winter Wheat trial. The following graphs (Figures 4-8) show yields results for cereal performance/intensive (Area 5 means) as well as soybean performance trials.

This article provides short overview of NLARS crops research conducted during the 2018 growing season; a more in-depth report of NLARS research activities is available at FarmNorth.com.

Spring 2019 Issue:

NLARS 2018 Summary

Malting Barley Project Update

Ag Conference Summary

OMAFRA Project Summary

Forage Show Regulations

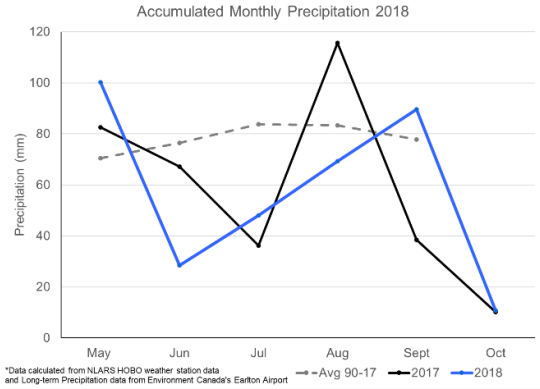

Figure 1: Accumulated monthly rainfall at NLARS

New Liskeard Agricultural Research Station
Weather Records for NLARS

Summary 2018

Month	Air Temperature			Precip (mm)	Growing Degree Days	Corn Heat Units (CHU)	Days with Precip.
	Avg °C	Min °C	Max °C				
May	12.5	-4.2	32	100.2	155	248	11
June	16.5	0.8	33	28.4	327	529	10
July	21.8	3.3	36	48.0	518	763	12
August	19.3	3.4	33	69.4	445	701	11
September	13.8	-0.4	30	89.6	266	446	10
October (Until **Oct 4** - First Frost)	8.2	-2.6	20	10.8	13	14	3
Total				**346**	**1723**	**2703**	

Note: Blue text calc. from last frost

Figure 2: 2018 weather summary at NLARS

North Eastern Ontario Soil & Crop Improvement Association

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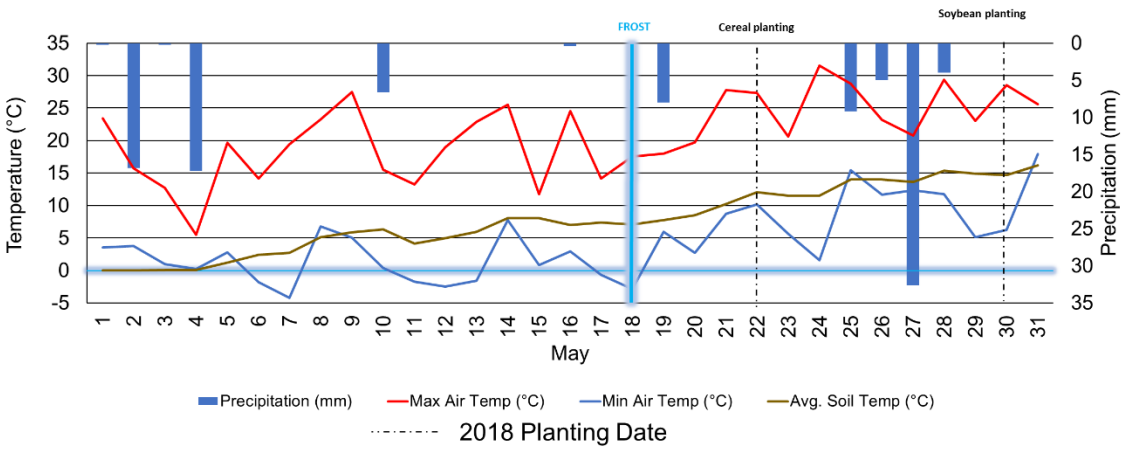
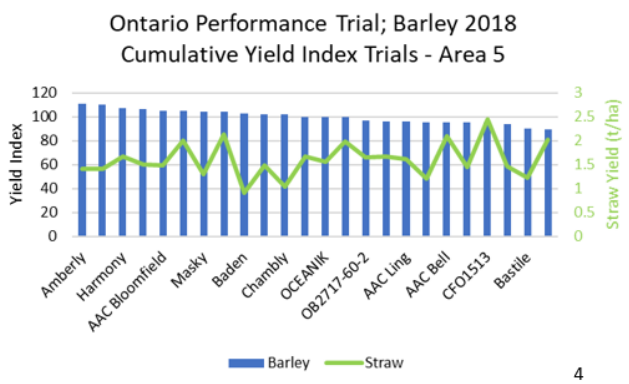


Figure 3: NLARS' May planting dates, soil and air temperatures, and precipitation



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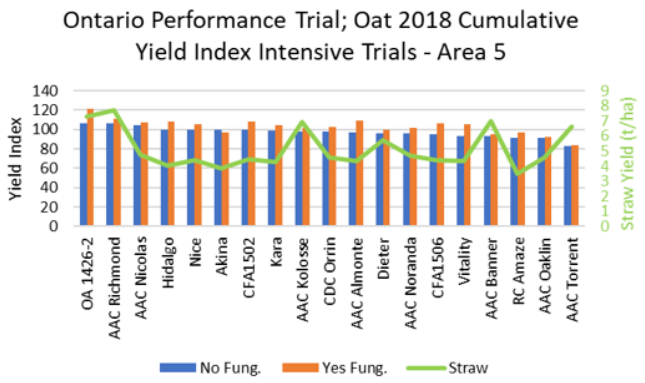

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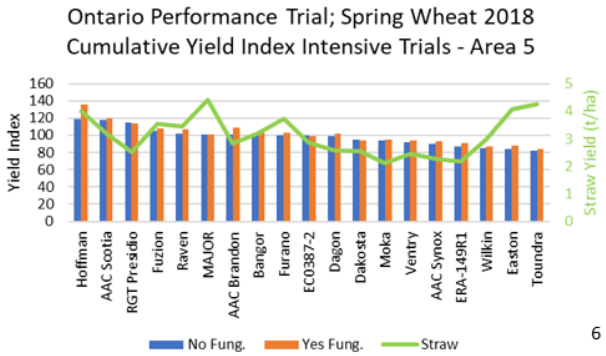

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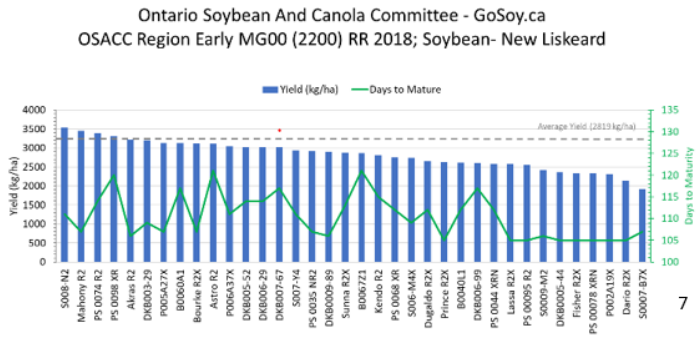

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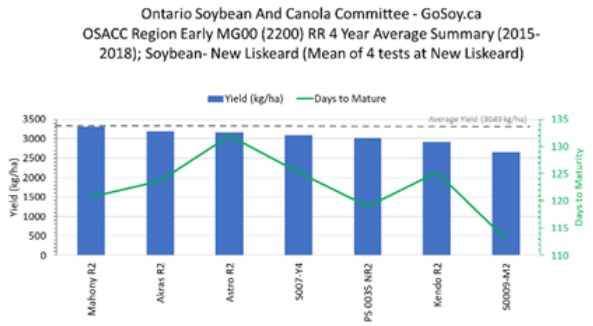


Figure 4: Graphs 4-8 depict results from OCCC cereal trials for Barley (4), Oats (5), Spring Wheat (6), and OSACC soybean results for 2018 (7) and the 4 Year Average Summary (8)

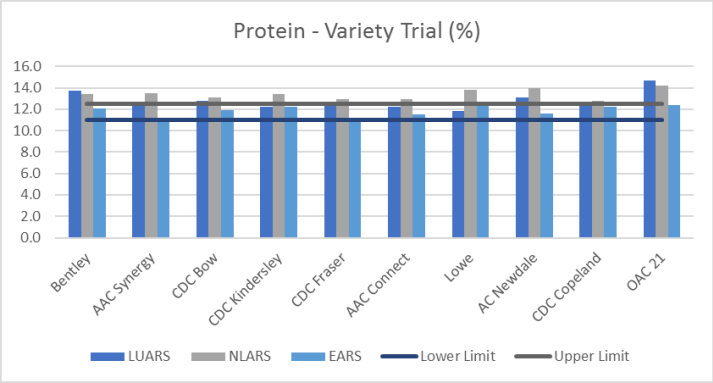
Improving Malting Barley Yield and Quality in Northern Climates

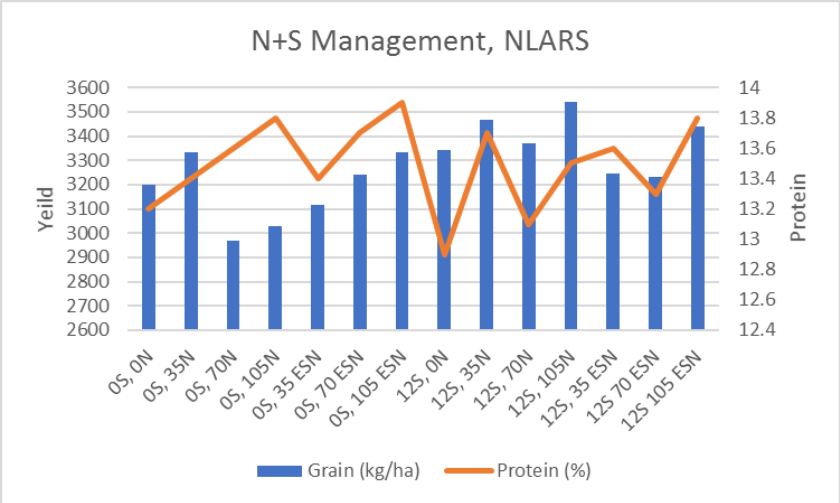
The Northern Ontario Farm Innovation Alliance is coordinating a three-year research project (2018-2021) on "Improving Malting Barley Yield and Quality in Northern Climates", in partnership with the Grain Farmers of Ontario and the Canadian Agricultural Partnership (through the Agricultural Adaptation Council). This is a pan-northern research trial evaluating malting barley varieties and best management practices in different regions across Northern Ontario. The research outcomes will help Ontario's grain farmers grow malting barley to maximum yield and quality, targeting the domestic market and adding a potential new crop to farmers' rotations.

Trials are underway at the New Liskeard Agricultural Research Station (NLARS), the Emo Agricultural Research Station (EARS) and the Lakehead University Agricultural Research Station (LUARS) to assess ten malting barley varieties and the impact of nitrogen and sulphur management strategies on yield and protein. On-farm trials are underway with the Rural Agri-Innovation Network in Algoma, assessing the potential of dual-use malting barley varieties.

The included charts outline the protein levels for all ten varieties at all three stations. The yield and protein results from the sulphur and nitrogen management trial for NLARS are also included. All the quality samples at NLARS exceeded acceptable protein levels but several of the varieties at the other two stations would be suitable to grow as malting barley. It is likely that the growing season had a significant impact, with a wet spring causing delays in planting and washouts of seedings in some plots, a hot, dry summer leading to higher protein levels, and a wet harvest, impacting the quality of malting barley in some locations.

Further analysis is currently being completed on the relationship between nitrogen, sulphur and quality indicators. Additionally, an economic analysis will be completed to determine relative return on investment for each rate of nitrogen and sulphur application. Once completed, this report will be found at www.farmnorth.com and at www.nofia-agri.com. Stay tuned for further updates.





This project was funded in part through the Canadian Agricultural Partnership (the Partnership), a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists in the delivery of the Partnership in Ontario.

Northern Ontario Agricultural Conference

The first Northern Ontario Agricultural Conference was held on February 12th in Sudbury Ontario. The event, hosted by the Northern Ontario Farm Innovation Alliance and the Ontario Soil & Crop Improvement Association, focused on agricultural business start-ups, product marketing and programs supporting the agricultural industry in Northern Ontario.

The aim of this event was to provide a unique learning opportunity for farmers in Northern Ontario and offer a place for them to network and connect with other farmers and people in the industry. It's not always easy for farmers in the north to make it to conferences held farther south, and it's nice to have an opportunity to connect with farmers from the north who understand the different challenges that are faced as a farmer in Northern Ontario.

Highlights of the day:

- Marc Rodrigue (Borealis Fresh Farms Inc. in Timmins), who spoke on the opportunities and challenges he has faced as he started his own hydroponics farm
- Members from the Click Fork group (a Northeastern Ontario online farmer's market) on taking different approaches to direct marketing
- Josh DeVries on using social media to grow your business
- Hugh Kruzel from NORCAT on prototyping and business development opportunities at their organization
- David Thompson from RAIN on branding northern foods and funding programs
- OMAFRA North team giving an update on the projects they have been working on
- Updates from NOFIA, OSCIA, and the IPM

Despite the weather, the turnout to the conference was fantastic, with participants coming from Manitoulin, Parry Sound, Nipissing, Sudbury, Algoma and Temiskaming. Participants left with new ideas on how they can improve their business, better market their products, and knowledge about funding programs that could be used on their operations. We hope to make next year's event even bigger and better. Stay tuned for presentation summaries in the next issue of Breaking Ground.

Thank you again to our speakers and sponsors for making this year's event a success!

Breaking Ground (in Northeastern Ontario)

A Path Forward for Northern Agriculture Development

Prepared by Bruce Moore, Team Lead, OMAFRA

Pierrette Desrochers and Barry Potter, Agriculture Development Advisors with OMAFRA's Northern team, recently made a presentation at the Northern Ontario Ag Conference in Sudbury. Pierrette and Barry outlined projects undertaken in 2017/18 specific to Northern Ontario. The projects were funded in part, through the Growing Forward 2 program. The highlights of the Applied Agricultural Research project, which was managed by NOFIA, will be outlined in the next issue of *Breaking Ground*. Highlights of the Meat Processing, Mentorship/Internship Options, Crop Infrastructure and Beef Benchmarking projects are below:

Meat Processing Study

The overall intention of the study was to check in on the meat processing sector in Northern Ontario. The project involved surveying meat processing facility operators and free-standing meat plants. Both Provincial and Federal facilities were included.

The objectives of the project were: to characterize the extent of meat processing and handling systems in Northern Ontario, assess gaps and develop recommendations to address the gaps. The study was undertaken by RSM (formerly known as Collins-Barrow).

37 Provincially and Federally licensed meat plants across Northern Ontario were included in the study. The sector is an important part of the value chain with development opportunities tied to: local food initiatives, production diversification (i.e. poultry) and supplying community demand for specialty product like goat, veal, lamb and further processed products like ready to eat meals, and to supply restaurants and the broader food service.

A key intent of the project was to determine the specific factors that are impacting livestock and meat processing in Northern Ontario. Several general challenges were identified through the project including: lack of throughput, adapting to provincial regulations, availability of trained labour, high input costs (including higher energy costs) and distribution restrictions.

Mentorship/Internship Options Study

The objective for this project was to review current mentorship and internship options for agri-food producers and processors. It also assessed the possible adaptation or adoption of existing programs for Northern Ontario.

Input was gathered through in person meetings, interviews and on-line polling from 80 stakeholders. The Agriculture Management Institute (AMI) conducted this study for OMAFRA.

Findings from the study generally showed producers had little interest in hosting an intern. Food processors and the horticulture/ greenhouse sector were more interested in an internship program. There was more interest in a mentoring program and continuing education for existing operations.

Those contacted suggested factors for a successful internship program, if one was to be developed, including: provide a simple application process, ensure a robust vetting of candidates to ensure participants have a strong work ethic, experience working outdoors and good time management skills. The internship program would have to be geared to the sector – for some sectors the growing season would be the appropriate length. There was also the suggestion of preparing a work plan, providing training for host farmers and a standardized curriculum. Farmers and interns emphasized that there should be a way to terminate an internship that was not going well without being financially penalized.

On the mentorship side, respondents were more interested in mentoring people with some knowledge of their respective sector and saying that it may be a more appropriate learning model for experienced farmers interested to gain new skills or to build on existing ones. Respondents identified continued education gaps including: marketing, sales, administration, accounting and planning to scale up the business.

To improve the knowledge transfer between generations, the sector could focus on developing networking between young and more mature farmers. There was also a suggestion to get more younger farmers, particularly women involved in industry organizations.

Crop Infrastructure Study

The purpose of this study was to inventory and categorize current crop system facilities and transportation services in Northern Ontario, including elevators, trucking companies, feed companies and crop-based food processors. The study looked at current system capacity including production volumes and potential capacity which included plans for expansion of the facilities. For the purposes of this study, crop handling systems was defined as infrastructure and activities that facilitate linkage across the crop production value chain. Crops included under this project were: winter and spring wheat, barley, oats, canola, soybeans, corn, flax and buckwheat. This study was also undertaken by RSM.

26 individuals and organization were interviewed – including NOFIA. In addition, statistical data and information was collected from several publicly available sources. Since 2008, Northern Ontario has experienced a major increase in overall production of corn, wheat, soybeans, oats and canola. Between 2008 and 2016, the region's acreage harvested for those crops has increased from 53,000 ha to 102,756 ha. Production has nearly doubled as well – increasing from 60,500 tonnes to 144,900 tonnes. This trend is continuing with the recent installation of tile on 41,773 acres of tile and 10,271 acres cleared.

A common theme from interviews with producers is the need to increase on-farm storage capacity which would lead to operational flexibility. This is particularly important in Northern Ontario given the shorter growing season, distances transportation companies need to travel and lack of grain elevator capacity. To that end 58% of producers interviewed indicated that they were planning to increase storage capacity within the next 2 to 3 years.

Beef Benchmarking Project

This project involved conducting research on beef cow-calf production in northern districts of Ontario (OMAFRA North Region) and Quebec (Abitibi, Temiscamingue, Lac St. Jean and Outaouais) to collect data for the determination of key performance indicators which lead to sustainability. One short term objective was to examine the similarities and differences in beef production between Ontario and Quebec.

The project was a partnership between OMAFRA, The UNIVERSITÉ DU QUÉBEC EN ABITIBI-TÉMISCAMINGUE and MAPAQ.

Factors studied included: herd size, herd health practices, pasture management, nutrition, handling facilities and marketing channels.

Outputs from the project included: a Symposium held in Rouyn-Noranda, PQ in February of 2017 - where participants from Ontario and Quebec were invited to learn about the results of the on-farm analysis, an in-depth analysis of participating operations, an Ontario/Quebec comparison report, a Benchmark document and a Best Management Practices document. Copies of the Beef Benchmarking reports are available by contacting Barry Potter at OMAFRA.

These projects were undertaken by OMAFRA North region teams based on needs identified by the northern agriculture sectors. These research projects give the northern ag sectors potential directions as projects and activities are pulled together to help move Agriculture in Northern Ontario forward.

2019 FORAGE AND SEED SHOW

N.E.O.S.C.I.A. RULES AND REGULATIONS

This show is designated the Championship Show for the Earlton Farm Show. (All exhibitors from the North Eastern Ontario Region – NEOSCIA and North Western Quebec – are invited to participate.)

All exhibitors must be a 2019 paid up member of their respective Soil and Crop Improvement Associations.

All exhibits must have been grown in 2018 by the exhibitor. All exhibits will become the property of the Show Committee.

Entries will be accepted up until **6:00pm on Friday, April 12th**, at the Earlton Recreation Centre (Hallway).

No exhibitor will be permitted to make more than one entry in any class, with the exception of Classes 26, 27 and 30.

The following classes will be available for competition:

CLASS 1 - Hay, 75% legumes or more
CLASS 2 - Hay, 75% legumes or more with analysis
CLASS 3 - Hay, 75% grasses or more
CLASS 4 - Hay, 75% grasses or more with analysis
CLASS 5 - Hay, mixed (grass/legumes)
CLASS 6 - Hay, mixed (grass/legumes) with analysis
CLASS 7 - Hay, second cut 85% or more legumes
CLASS 8 - Haylage (moisture 60% or less) 75% legumes or more
CLASS 9 - Haylage (moisture 60% or less) 75% legumes or more with analysis
CLASS 10 - Haylage, mixed grass-legumes
CLASS 11 - Haylage, mixed grass-legumes with analysis
CLASS 12 - Grass silage, 75% grasses or more (60% moisture or more)
CLASS 13 - Grass silage, 75% grasses or more (60% moisture or more) with analysis
CLASS 14 - Round or Square Bale Haylage with Laboratory Analysis
CLASS 15 - Round Bale or Square Bale Haylage without analysis
CLASS 16 - Cereal silage (long stem or chopped)
CLASS 17 - Corn Silage
CLASS 18 - Corn Silage with analysis
CLASS 19 - Grain Corn A- Dry B- High Moisture
CLASS 20 - Barley
CLASS 21 - Barley, Pedigreed seed
CLASS 22 - Oats
CLASS 23 - Oats Pedigreed seed
CLASS 24 - Wheat
CLASS 25 - Wheat- Pedigreed seed
CLASS 26 - Other Cereals (buckwheat, triticale, rye...)
CLASS 27 - Pulse crops (peas, edible beans, fababeans, lentils ...)
CLASS 28 - Soybeans
CLASS 29 - Canola Seed
CLASS 30 - Forage Seed (Timothy, Trefoil, Clover, Alfalfa, etc.)

Please visit www.farmnorth.com, About, NEOSCIA to find full rules and regulations.

Breaking Ground (in Northeastern Ontario)

OSCIA PROVINCIAL NEWSLETTER

March 2019 Edition

Message from the President – Les Nichols

I would like to thank the OSCIA membership for the honour to serve as your president for 2019. This is the 80th year of existence for OSCIA and the organization still remains very close to its original mandate – "*Facilitate responsible economic management of soil, water, air and crops through development and communication of innovative farming practices*". Our membership continues to be leaders in development and adaptation of leading-edge soil health and cropping practices. I also believe that OSCIA is unique in that although it is usually perceived as a "crop" organization, in reality it is very much a "crop and livestock" organization that values the inter-relationship between the crop and livestock sectors especially in relation to crop production.

In response to member resolutions at past annual conferences, requesting the board to investigate alternate or more central/eastern locations for our annual conference, the 2019 OSCIA annual conference was held in early February in historic Kingston. The facility was very suitable and hotel staff were very friendly and accommodating. The attendance was strong, and feedback was positive. As well as a change in venue we elected to make some changes to our typical conference format. These changes included beginning the conference at 8:15AM on Tuesday and finishing in the early afternoon on Wednesday. This meant moving the ceremony portion to the Tuesday reception dinner rather than holding a Wednesday banquet. We hope those who were able to attend the 2019 annual conference found these changes to be positive.

Delegates of the annual conference also had a unique opportunity to take part in an engaging skills development workshop led by renowned mental health researcher Dr. Andria Jones-Bitton from the University of Guelph. Her presentation was titled *Mental Health in Canadian Farmers: cultivating wellness for a stronger future.* "Helplessness and hopelessness set the stage for mental health issues," said Dr. Jones-Bitton. Overcoming these feelings requires resilience, and delegates were assured that resilience is a skill that can be learned. "It's up to us, and it's going to take some work." Dr. Jones-Bitton's presentation and a copy of the handout materials are now posted on our website: https://www.ontariosoilcrop.org/wp-content/uploads/2019/02/OSCIA-2019_reduced.pdf

The Lamplighter Inn in London is booked for the 2020 annual conference in early February of 2020. The Board will continue to investigate and assess suitable alternate venues.

OSCIA is very pleased with the recent announcement of a Canadian Agricultural Partnership (CAP) funding intake from March 22 to May 6 and for those in Lake Erie watershed a LEADS intake opens on March 22. I would encourage all members to check the OSCIA website on a regular basis for updates on these programs and other potential new opportunities.

As "Plant 2019" is quickly approaching I would like to wish you all a safe and productive planting season. I know the local and regional Soil and Crop groups from across the province are working on plans for numerous field days, demo plots, bus tours, and other events. I strongly encourage you to attend these events and take a neighbour with you. These are always great learning opportunities as well as providing a little social time with neighbours, friends and local ag-business personal.

Les Nichols, OSCIA 2019 President

A QUARTERLY NEWSLETTER, ISSUED ALONGSIDE 11 REGIONAL NEWSLETTERS AND OMAFRA CROP TALK, TO UPDATE SOIL AND CROP MEMBERS

In this Issue

Ontario Soil and Crop Improvement Association

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Website: www.ontariosoilcrop.org

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OSCIA, founded in 1939, is a unique not-for-profit grassroots farm organization, comprised of more than 50 local associations and a membership of over 4,000 producers that reflects all major sectors. OSCIA is farmers actively seeking, testing and adopting optimal farm production and stewardship practices. Our number one applied research priority is soil health.

OSCIA Soil Health Graduate Scholarship

Established in 2014 in partnership with the University of Guelph, OSCIA is proud to present an annual Soil Health Graduate Scholarship to a deserving student.

This scholarship is in the amount of $10,000 and is to be used towards research focusing on soil health. The recipient is selected by the University of Guelph and is presented their scholarship at an evening awards ceremony. OSCIA has had the pleasure of sending a representative to these ceremonies, in order to present the scholarship to the various recipients over the last several years.

Each year we invite the previous year's winner to present their initial findings at the OSCIA annual conference. As well, we invite the newly awarded recipient to the annual conference, to be introduced and welcomed to OSCIA.

The 2018 OSCIA Soil Health Graduate Scholarship was awarded to Hannagala Jeewan Kumara.

2019 OSCIA President, Les Nichols (left) presenting scholarship to Hannagala Jeewan Kumara

Jeewan's research will focus on the formation of recalcitrant soil organic matter which is the largest terrestrial carbon pool. In the coming three years he will be looking specifically at the role of soil microorganisms in forming recalcitrant soil organic matter. The knowledge he hopes to gain will be very important in planning sustainable agricultural production strategies.

Previous scholarship winners include:
2015 – Jaclyn Clark
2016 – Jordan Graham
2017 – Pedro Ferrari MacHado

Written by Amber Van De Peer, Executive Assistant

2019 OSCIA Soil Champions

The Soil Champion is an annual award that recognizes strong advocates of sustainable soil management. Individuals from one of two general groups can be nominated:

1) Those engaged in practical agriculture in developing, using and promoting management that contributes to the sustainable productivity of the soil; or,
2) Research or extension professionals whose work demonstrates a commitment to advancing soil health and productive sustainability.

This year OSCIA is proud to announce two very worthy Soil Champions, a Middlesex County farmer and a long-time provincial government soil specialist. This is the first year a winner has been selected in both eligible categories.

Jim Denys farms in Middlesex County, producing pork in a farrow to finish system and cash cropping mainly corn, wheat and soybeans. Today, the Denys family is focused on building soil structure and organic matter through the use of cover crops and strip tilling.

Anne Verhallen, Soil Management Specialist for Horticulture Crops, OMAFRA, first joined the ministry in the late 1980s and is a long-time advocate for soil health. She played a key role in launching the popular Southwest Ag Conference (SWAC) and more recently helped get the "*Soil Your Undies*" campaign off the ground as part of her extension work and ongoing efforts to help people visualize soil.

2019 Soil Champion winners Jim Denys and Anne Verhallen

You can find the full story, along with others on the OSCIA website: https://www.ontariosoilcrop.org/news/

Written by Amber Van De Peer along with excerpts from Press Release 'Ontario Farmer and Soil Extension Specialist Honoured as 2019 Soil Champions'

Timothy, The Slender Grass with Fat Economic Return

If we consider a cover crop as anything that covers the soil to make it green versus bare dirt, we can almost consider all plants as having the capability of being utilized as a cover crop. Cover crops are being utilized deliberately and proactively as a mainstream better management practice across Ontario by farmers who recognize the agronomic benefits and the province supports this. Even with cost-sharing opportunities, many producers still find themselves at odds with one common concern: how do you quantify and capture a return on investment from investing in cover crops? After listening to Chris Martin from Marhaven Agri Inc. speak recently at the 2019 OSCIA annual conference in Kingston, it really laid some considerations on the table on what we consider a cover crop and avenues of revenue for innovative integration of cover crops into a cash crop rotation.

Martin is a member of the Ontario Forage Council (OFC) and has been farming with his family in Alma for several generations. What sparked my own interest in his presentation was the idea that a cover crop could produce a direct revenue stream, not just an anecdotal agronomic benefit or observation of an enhanced return on the "cash" crop that follows. The cover crop species of choice for Martin is…timothy (*Phleum pratense)*. Why timothy you ask? I wondered the same. The answer, according to Martin, is marketability. He suggests we consider the difference between swamp forage and high-quality forage and the opportunities for each as livestock feed. Readily available nutritionally complete baled timothy forage has very hungry markets in the southern US and among the United Arab Emirates who seek the highest quality grass forages for their horses, camels, and other livestock, but due to desert like growing conditions are unable to produce the high-quality feed themselves.

Martin agrees that wheat after soybeans suits fine in a rotation and is also an excellent cover crop option; however, his recent field trial showed that when timothy replaced wheat in rotation followed by soybeans in a double crop placement, timothy beat out wheat. This slender grass noticeably fattened up Martin's revenue stream on June 11, 2018 when he harvested 5,700 lb. of solid stand dry timothy hay. As soon as the bales were removed from the field he no-tilled solid stand soybeans into the stubble and on October 12 harvested 55-bushel soybeans. Let's look at the math. I encourage everyone to do their own fertility analysis and ROI on crop, assuming market value during this time period and according to Martin's presentation, there was $684 per acre of premium high-quality timothy hay produced and $660 per acre of soybean production from one field. Why is this important? Many farmers in Ontario still

stick with continuous soybean production because the ground conditions are not suitable early enough to plant corn, therefore, including timothy in this rotation not only adds winter vegetation to the system which keeps the soil covered but it also appears to offer a financial return that can be achieved right before you plant your spring cash crop. I don't know about you, but cash on hand leading into planting a cash crop is an attractive feature for a cover crop in a rotation.

Martin admits there are challenges to producing a hay crop that brings 12¢ a pound, and intensive management and fertility is still important. Getting the soybeans into the ground can be challenging even in a dry spring within the critical window of time, and you will require good storage with a market that is willing to pay a premium for forage. Martin's operation goes as far as to store all quality forage bales out of direct sunlight to avoid bleaching and possible loss of quality. Even with these challenges Martin's slender timothy grass seems to be making it in a big way abroad, suggesting that the right kind of savvy grower who identifies and knows his target market and manages his operation intensively and proactively can reach premium returns on investment for their efforts to provide for these diverse niche markets. The suggestion I have is that growers try something new every year and perhaps this is it. Think outside of the box. What is a cover crop? What is a cash crop? Have you considered timothy lately?

Written by Matt Porter, East Central Region

Crop Advances – On-going Research Resources

Looking for applied research reports? Go straight to Crop Advances on the OSCIA website. Crop Advances is compiled annually by OMAFRA field crop specialists in partnership with OSCIA, industry and academics to inform readers of new technologies, results of field trials and research. It's only available on our website and it's the best place to find information on field crop agriculture. The reports are categorized into one of six categories (canola, cereal, corn, forage, soybeans and soil) and are presented in pdf format. All reports are conveniently organized by year, some going back to 2003. There is also a section on events that gives readers an overview of accomplishments achieved at FarmSmart, SWAC and similar activities.

Find Crop Advances under "Research and Resources" at: https://www.ontariosoilcrop.org/research-resources/crop-advances/

Don Hill Legacy Award Announcement

Ruth and Marilee Hill introduced the Don Hill Legacy Award last month at the OSCIA annual conference. This annual award will recognize an individual farm business who demonstrates innovation and ingenuity to effectively address an environmental risk associated with soil, water, air or biodiversity on their farm. On-line entries will be received throughout the year up to December 1, when the winning entry will be selected. The winner will receive their $1,000 prize at the annual conference in February.

Ruth (Right) and Marilee Hill, announcing the Don Hill Legacy Award

More details on the award as well as the entry form has been added to our website and is available at: https://www.ontariosoilcrop.org/association/don-hill-legacy-award/.

This is an initiative coordinated by OSCIA and generously funded by Ruth Hill and family. We wish to thank the Community Foundation Grey Bruce and the Rural Institute of Ontario for their expert guidance and assistance which was essential in establishing the Legacy Award.

Don's passion towards the EFP was widely known and admired. To him, the process was all about farmers sharing their experiences in support of continuous learning and discovering best management practices. He took real satisfaction in finding simple and creative solutions to environmental challenges faced on the farm. Don's passion lives on through the Legacy Award that bears his name.

Written by Andrew Graham, OSCIA Executive Director



CROP TALK

Volume 19, Issue 1 OMAFRA Field Crop Specialists — Your Crop Info Source March 2019

Table of Contents

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To Clean or Not to Clean? Managing DON in Grain Corn

Ben Rosser, Corn Specialist and James Dyck, Engineer-Field Crop Conditioning & Environment, OMAFRA

A number of growers cleaned corn this fall in efforts to reduce DON. Whether it is on the combine or at the bins, the general message is to remove as much fines or cob as possible as these harbour the highest levels of DON. Cleaning reports were variable however; some reported good luck in reducing DON, while others reported little or no change.

What Has Past Research Demonstrated for Grain Cleaning?
Some corn cleaning research was conducted by Dr. Art Schaafsma, Field Crop Pest Management Professor at University of Guelph, Ridgetown Campus in the early 2000's. Using a gravity table cleaner, which separates grain by density, Dr. Schaafsma investigated how DON levels change for various corn density fractions (Figure 1).

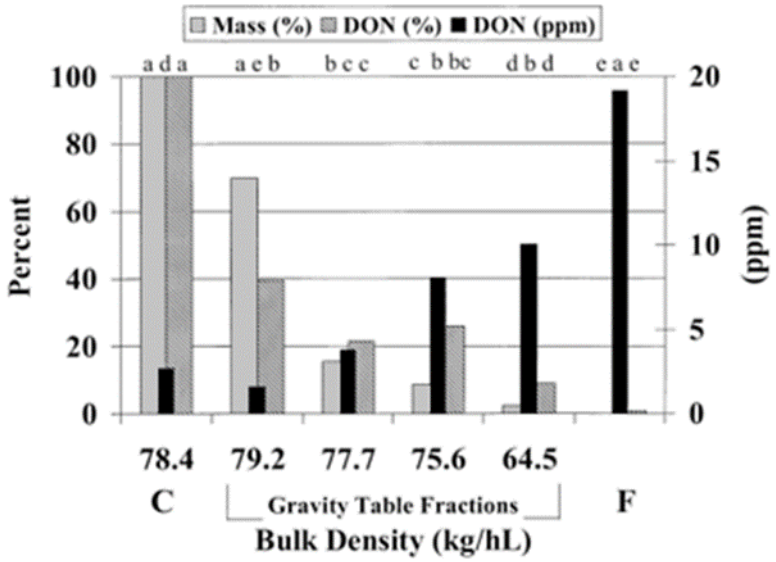

Figure 1. Percentage of precleaned grain mass (Mass (%)), percentage of total DON (DON (%)) in precleaned grain mass and DON concentration (DON (ppm)) in five density fractions from gravity table cleaner, where C represents original precleaned grain mass and F represents fines and broken materials (figure and description from Schaafsma et al, 2004)

DON concentrations increased as density decreased. The highest levels were in the fines and broken materials at over 15 ppm (F) compared to 2.7 ppm for the precleaned corn (C) (Figure 1). The heaviest corn fraction (79.2 kg/hL) had about 40% of the DON concentration, but 70% of the weight of the precleaned grain. This supports the notion that removing fines or lighter corn should also remove higher DON portions of the grain.

2018 On-Farm Grain Cleaning Trials

Dr. Schaafsma's research separated corn by density, but most on-farm grain cleaning is separating corn by size. In 2018 we conducted a couple trials to see what on-farm cleaning does for reducing DON.

We investigated both a rotary screen with aspirator (Figure 2) and a perforated auger type cleaner (Figure 3). We replicated four one-tonne lots of corn for each cleaner. To ensure our grain samples are representative of each lot, we sampled the precleaned corn, cleaned corn and screenings streams every 10 seconds as they entered or exited the cleaner. To ensure lab analysis subsamples are representative of the grain samples, each grain sample was fully ground and well mixed (in some occasions split once before grinding).

Figure 2. Rotary screen with aspirator.

Figure 3. Perforated auger grain cleaner (perforations in inset image).

Cleaning Trial Results

Both trials involved corn that was relatively high testing for DON (Table 1), with screenings testing much higher than precleaned corn. Weight of screenings removed varied. While this may have been influenced by differences in cleaners, the precleaned corn used in the rotary screen trial was from the core of a grain bin and much higher than normal for fines. Reductions in DON ranged 0.5 to 2.0 ppm, which for these samples was not enough to improve marketability.

Table 1. DON levels for precleaned, screenings and clean corn streams, as well as screening weights, and expected DON levels for rotary screen and perforated auger cleaning trials.

Trial	Precleaned DON (ppm)	Screenings DON (ppm)	Screenings (% of pre-cleaned weight)	Clean DON (ppm)	Expected* Clean DON (ppm)
Rotary Screen	9.7	18	7.5%	9.2	9.1
Perforated Auger	24.2	55	2.5%	21.9	23.4

* expected calculated by mass balance from DON in precleaned and screenings

Why Didn't We See Greater DON Reductions for Cleaning?

In these trials, cleaning by size did a good job of removing fines, broken and very small kernels and cob. While these screenings have much greater DON concentrations than the grain, they were generally a small percentage of the total mass so overall reductions tended to be small. This was evident in Dr. Schaafsma's earlier work as well (Figure 1).

There were also visibly infected kernels that were too large to be screened out that remained in the clean stream. These appear as what otherwise would have been normal sized kernels, but were off-colour, visibly infected, under-filled and lighter weight.

How Much DON Reduction Should We Expect?
We were disappointed DON levels did not drop more, but these results align with the laws of mass balance where the amount of DON remaining in the clean corn is the difference of the initial amount of DON less DON removed in the screenings. We can estimate our expected clean DON concentrations by removing the amount of DON removed in screenings (screenings weight and DON concentrations) from the initial quantity of DON (precleaned weight and DON concentration), and dividing this by our clean weight ("Expected Clean DON (ppm)" in Table 1). Our results were in the realm of these expectations.

To reduce DON more, we would have to remove screenings with higher DON concentrations, or remove a greater quantity of higher testing material. Perhaps more aggressive cleaning could have further reduced DON in cleaned grain by removing more higher-testing material, but this also would have come at the cost of greater screening losses. Any loss in weight would need to be made up for by improvement in grain value or marketability.

This testing only represents a couple of grain cleaning scenarios, and does not consider the impact of hybrid choice, DON infection levels or different screen sizes or types. It is possible type or severity of infection may impact response to cleaning. If the majority of infection is in fines and cob, or if most infected kernels are very small (ie. ear-tip only infections) perhaps there may be greater responses to cleaning by size.

Acknowledgements
Thanks to the producers and industry personnel who took the time to help us conduct these cleaning trials. Thanks to Grain Farmers of Ontario and SGS Labs for supporting analysis costs.

References
Schaafsma, A. W., J. Frégeau-Reid and T. Phibbs. 2004. Distribution of deoxynivalenol in Gibberella-infected food-grade corn kernels. Can J. Plant Sci. 84: 909–913.

Ontario Corn Committee Hybrid DON Testing in 2018

Dave Hooker and Albert Tenuta, on behalf of the Ontario Corn Committee

Purpose
Although 2018 was very challenging to growers and the rest of the corn industry, it presented an opportunity to compare hybrids for DON accumulation across several locations of the Ontario Corn Performance Trials. The main purpose of the OCC study was to provide growers with an indication of a hybrid's relative risk for accumulating the mycotoxin DON, and to provide a framework for future performance testing.

OCC Locations and Data Collection
A total of 1,225 grain corn samples were collected while machine harvesting plots for OCC Tables 4 (82 hybrids at Belmont, Exeter, Ilderton) and Table 5 (54 hybrids at Ridgetown and Tilbury) locations. There were 30 hybrids common across both Tables. Each hybrid was replicated 3 times at each location; therefore, each hybrid was represented by 9 samples across locations in OCC Table 4, and 6 samples across OCC Table 5 locations. Samples were dried and then analyzed for DON by SGS Laboratories (Guelph) using the ELISA method. Tables of results from the OCC Hybrid Corn Performance Testing, and the agronomic practices used at each location can be found in the trial management section of the 2018 OCC Corn Performance Report at www.gocorn.net.

Hybrids silked between late July and the first week of August at all locations. Frequent rains and high humidity during silking and grainfill of all hybrids across all locations resulted in favorable environmental conditions for natural Gibberella ear rot infection and DON accumulation.

Interpretation of the Rating Table
Hybrid differences for DON were statistically highly different ($P<0.0001$) within Table 4, Table 5 and across hybrids common to both Tables 4 and 5. The OCC decided to simplify the presentation of results by using a colour-coded (available on www.gocorn.net) or gray-scale rating for hybrids within OCC Table 4, OCC Table 5, and with those hybrids common across both Tables. The hybrids in the Rating Table were sorted based on their CHU rating.

As expected, there were no hybrids resistant to DON accumulation (i.e., zero ppm). In this gray-scale version of the Rating Table, zero ppm is illustrated in white. Hybrids were coded in light gray (lower than average DON) to dark gray (higher than average DON) to black (highest DON) based on the range of DON concentrations in the Rating Table columns (OCC Table 4, OCC Table 5 or 30 hybrids common to Tables 4 and 5). with a Hybrids with no rating indicates that the hybrid was not tested at the locations represented in each column or OCC Table.

Some statistics of the DON concentrations within each Table are presented in the footnote of the Rating Table. A hybrid shaded with a different shading across columns in the Rating Table may simply indicate variability in hybrid across locations, samples and/or analysis.

Acknowledgements
The OCC is grateful to Grain Farmers of Ontario (GFO) for their leadership, GFO and OMAFRA for the financial support to analyze the grain samples for DON, and to University of Guelph/OMAFRA research technicians for collecting the samples (Jonathan Brinkman, Ken VanRaay, Cheryl Van Herk, Brooke Jones and a very big thanks to Scott Jay for coming out of retirement to assist).

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David Morris, OCC Secretary, Email: dtmorris@rogers.com

OCC Hybrid DON Ratings[1] 2018 — Legend: Relatively low DON → Relatively high DON

	CHU	Hybrid	OCC Table 4 only[2]	OCC Table 5 only[3]	OCC Tables 4 and 5 combined[4]	CHU	Hybrid	OCC Table 4 only[2]	OCC Table 5 only[3]	OCC Tables 4 and 5 combined[4]	
		Zero DON				3100	P0306AM				H12
H24	2850	LS9495VT2PRIB		n/a	n/a	3100	E75K60LR		n/a	n/a	H21
H33	2850	P9621AMXT		n/a	n/a	3100	CF611		n/a	n/a	H22
H59	2850	P9608AMXT		n/a	n/a	3100	MZ4368SMX				H30
H64	2850	NK95353220		n/a	n/a	3100	LR9903VT2PRIB				H45
H71	2850	P9608AM		n/a	n/a	3100	PS3155GSXRIB		n/a	n/a	H5
H42	2875	PS2818GSXRIB		n/a	n/a	3100	DS02J57RA				H68
H61	2875	NK96593120		n/a	n/a	3100	DKC52-84RIB		n/a	n/a	H91
H78	2875	3899VT2P/RIB		n/a	n/a	3125	CF626		n/a	n/a	H101
H11	2900	LR9997VT2PRIB		n/a	n/a	3125	LR9503GENSSRIB				H14
H26	2900	P9840AMXT		n/a	n/a	3125	P0414AM				H37
H56	2900	DL4555		n/a	n/a	3125	P0574AMXT				H69
H72	2900	NK97383010		n/a	n/a	3125	DKC53-56RIB		n/a	n/a	H70
H85	2900	LR9697VT2PRIB		n/a	n/a	3125	B04R96SX				H74
H3	2925	CF487		n/a	n/a	3150	DL6207				H100
H39	2925	A6888G2RIB		n/a	n/a	3150	CF18501				H104
H62	2925	CF474		n/a	n/a	3150	CF660		n/a	n/a	H15
H7	2925	XP18099G2		n/a	n/a	3150	P0574AM				H65
H95	2925	P9840AM		n/a	n/a	3150	4488SS/RIB	n/a		n/a	H66
H28	2950	E69K50LR		n/a	n/a	3150	CF662		n/a	n/a	H84
H38	2950	DS97B47RA				3150	P0506AM				H99
H4	2950	3909SS/RIB		n/a	n/a	3175	CNX155143SD				H34
H47	2950	A6757G8RIB		n/a	n/a	3175	A7373G2RIB				H46
H48	2950	MZ3964DBR		n/a	n/a	3175	DKC54-45RIB				H53
H50	2950	4079SS/RIB				3175	DKC55-05RIB				H57
H73	2950	MZ3877SMX		n/a	n/a	3200	LR9608GENSSRIB				H105
H8	2950	P9998AM		n/a	n/a	3200	MZ4623SMX				H13
H80	2950	LR9999VT2PRIB		n/a	n/a	3200	B05N06PWE	n/a		n/a	H16
H81	2950	MZ3818DBR		n/a	n/a	3200	MZ4676DBR				H25
H103	2975	DL4902		n/a	n/a	3200	B08R85SX	n/a		n/a	H31
H94	2975	DKC49-09RIB		n/a	n/a	3200	4791AS3111	n/a		n/a	H54
H1	3000	HZ4010		n/a	n/a	3200	B06N36PWE	n/a		n/a	H88
H106	3000	CF18402		n/a	n/a	3200	MZ467X	n/a		n/a	H92
H18	3000	A7171G2RIB		n/a	n/a	3200	CF686	n/a		n/a	H93
H27	3000	PS3035VT2PRIB		n/a	n/a	3250	P0825AM	n/a		n/a	H44
H36	3000	E70G30LR		n/a	n/a	3250	A7790G8RIB	n/a		n/a	H77
H41	3000	P0157AM				3275	DKC58-06RIB				H29
H52	3000	LR9701GENSSRIB				3275	LR99A09VIP3220				H96
H86	3000	P9998AMXT		n/a	n/a	3300	4997VT2P/RIB	n/a		n/a	H35
H6	3025	HZ1040		n/a	n/a	3300	DL7250	n/a		n/a	H55
H9	3025	HXE279Y		n/a	n/a	3300	MZ5134DBR	n/a		n/a	H63
H17	3050	MZ4280DBR		n/a	n/a	3300	MZ5165DBR	n/a		n/a	H67
H19	3050	MZ4158DBR		n/a	n/a	3300	CF758	n/a		n/a	H75
H20	3050	HZ4255		n/a	n/a	3300	B10R42SX	n/a		n/a	H76
H40	3050	DKC50-26RIB		n/a	n/a	3300	P0825AMXT	n/a		n/a	H82
H43	3050	P0157AMXT				3300	P0977AM	n/a		n/a	H83
H49	3050	4188SS/RIB				3300	DKC59-50RIB				H87
H58	3050	CF610		n/a	n/a	3300	XP18108G2	n/a		n/a	H98
H60	3050	B00R25PW		n/a	n/a	3350	CF762	n/a		n/a	H10
H90	3050	B01R72SX				3350	CF18509	n/a		n/a	H97
H23	3075	A7270G8RIB		n/a	n/a	3375	DKC63-60RIB	n/a		n/a	H89
H32	3075	HXF211Y		n/a	n/a	3400	P1197AMXT	n/a		n/a	H107
H102	3100	MZ4343DBR				3400	DL9812	n/a		n/a	H51
						3400	A8303G8RIB	n/a		n/a	H79

[1]IMPORTANT: Hybrid ratings are of no guarantee for 2019. No hybrid is resistant.
[2]Ratings for OCC Table 4 = relative across hybrids at Belmont, Exeter and Ilderton (Hybrid range 1.9-21.3 ppm; average 7.1 ppm)
[3]Ratings for OCC Table 5 = relative across hybrids at Ridgetown and Tilbury (Hybrid range 1.7-8.3; average 4.3 ppm)
[4]Ratings OCC Tables 4 and 5 combined (average of 5 locations, if available) (Hybrid range 1.7-11.8; average 5.4 ppm)

Looking for Tillers? Consider Early Season Nitrogen Management!

Joanna Follings, Cereals Specialist, OMAFRA

This past fall brought challenges for many growers. Prolonged wet weather delayed soybean harvest and pushed winter wheat seeding into late October and early November for some. Before the snow fell, many fields had not yet emerged. While the seed did germinate and vernalize, the late planting meant no tiller development. As a result, nitrogen management will be important in order to maximize the yield potential of those late planted fields.

If you are dealing with a field that was planted late and did not tiller before going into winter, split nitrogen applications should be considered to stimulate tillering while minimizing nitrogen losses. The first application of nitrogen can be made in mid to late March, if the weather permits. The second application of nitrogen should then be made when the wheat reaches first to second node (GS 31-32) which is usually the first or second week of May. If you wish to apply all your nitrogen in one application, then that application should be made in late April to avoid significant nitrogen losses that may occur from wet soils earlier in the growing season.

The amount of nitrogen that should be applied to your wheat crop can vary depending on crop rotation, history of manure applications, soil type, variety being grown, etc. However, when looking at general recommendations for winter wheat in Ontario, rates can be pushed to 120-150 lbs/ac total for soft red winter wheat when using a fungicide application. If you are not planning to use a fungicide, rates should not be pushed beyond 90-100 lbs/ac in order to manage disease and lodging risk (Figure 1).

Figure 1. Risk of lodging in winter wheat, as seen here, can be reduced by splitting nitrogen applications.

When using split nitrogen applications 50-60% of your total nitrogen should be applied in the first application (mid to late March) with the remainder being applied in the second application (first to second node). This amount stimulates tiller development while avoiding significant nitrogen losses. Additionally, it is beneficial to use a nitrogen source, such as UAN, that provides some ammonium or nitrate in that first application so that when the wheat crop breaks dormancy, nitrogen is immediately available for the plants to take up.

Although early season nitrogen applications can be effective in boosting yields in later planted winter wheat, they are often applied at a time when more frequent rainfall occurs and soils are saturated. Therefore, the risk of nitrogen loss should also be considered when making these applications. Urease inhibitors can be utilized to effectively minimize nitrogen losses.

It can be difficult to determine early on whether or not a winter wheat stand should be kept. Therefore, it is important to get out and walk your fields early in the spring to assess stands for winter survival and tiller growth. After a week or two of consistent warm weather, fields should begin to green up and stand assessments can more easily be made. More information on assessing winter wheat stands for survival can be found at www.FieldCropNews.com. While you may want to delay your nitrogen applications until you are sure you are going to keep your field of wheat, delayed tiller development will have an impact on yield. Consider that a portion of the nitrogen that is applied to your wheat crop will be available to your corn crop if you chose to switch. The amount that will be available will vary; however, it is important to remember that not all is lost and to take this into consideration when making management decisions.



BULLETIN GRANDES CULTURES

19ième vol. - 1ière édition | MAAARO - des spécialistes en grandes cultures | mars 2019

Table des matières

Préparé par:

Scott Banks, spécialiste des systèmes de récolte
Tracey Baute, entomologiste, chargée de programme-grandes cultures
Sebastian Belliard, spécialiste en gestion des sols
Horst Bohner, chef de programme, soya
Christine Brown, spécialiste de la durabilité des grandes cultures
Mike Cowbrough, spécialiste de la lutte contre les mauvaises herbes, grandes cultures
Joanna Follings, spécialiste de la culture des céréales
Adam Hayes, spécialiste de la gestion des sols-grandes cultures
Ian McDonald, coordonnateur de la recherche appliquée
Meghan Moran, spécialiste de la culture des haricots comestibles et du canola
Jake Munroe, spécialiste de la fertilité des sols, grandes cultures
Christine O'Reilly, spécialiste de la culture des fourrages et des animaux de pâturage
Ben Rosser, chargé de programme, industrie du maïs en grande culture
Albert Tenuta, pathologiste, chargé de programme-grandes cultures
Anne Verhallen, spécialiste en gestion des sols—horticulture
Hugh Berges, gérant

Éditrice : Meghan Moran, spécialiste de la culture des haricots comestibles et du canola
Compilation : Julie Desrosiers

Nettoyer ou non le maïs-grain pour réduire la présence de vomitoxine (DON)

Ben Rosser, spécialiste de la culture du maïs et James Dyck, ingénieur, conditionnement pour les grandes cultures et questions environnementales, MAAARO

Un certain nombre de producteurs ont nettoyé leur maïs cet automne dans l'espoir de réduire les teneurs en vomitoxine (DON). Que ce soit sur la batteuse ou dans les silos, l'objectif est de retirer le plus possible les particules fines et les rafles puisque celles-ci peuvent présenter des teneurs élevées en DON. Les résultats de nettoyage ont, par contre, été variables; certains ont affirmé qu'ils avaient réussi à réduire les teneurs en vomitoxine et d'autres ont signalé peu ou pas de changements.

Que disent les recherches antérieures sur le nettoyage des grains?

Des recherches sur le nettoyage des grains ont été effectuées par Art Schaafsma (Ph. D.), professeur en lutte antiparasitaire dans les grandes cultures au Campus de Ridgetown de l'Université de Guelph, au début des années 2000. À l'aide d'une table densimétrique, utilisée pour séparer les grains par gravité, Art Schaafsma a tenté d'évaluer comment les teneurs en DON varient en fonction de différents poids spécifiques du maïs (figure 1).

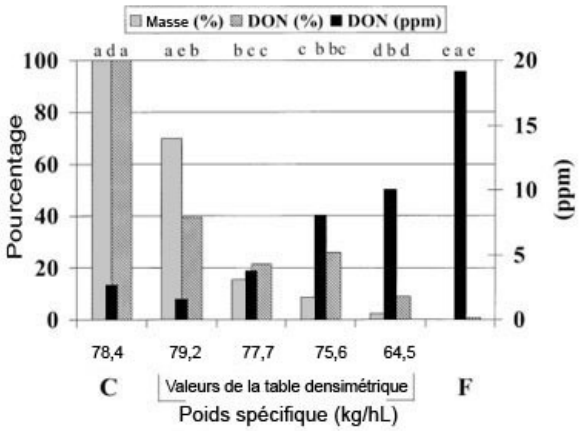

Figure 1. Pourcentage de la masse de grain prénettoyé (Masse [%]), pourcentage de la teneur totale en DON (DON [%]) dans la masse de grain prénettoyé et teneur en DON (DON [ppm]) pour cinq poids spécifiques obtenus à partir d'une table densimétrique, où C correspond à la masse initiale des grains prénettoyés, et F à celle des particules fines et des brisures (figure et description tirées de Schaafsma et al, 2004).

On a observé une hausse de la teneur en DON avec une baisse du poids spécifique. Les teneurs les plus élevées, soit celles supérieures à 15 ppm (F), ont été décelées dans les particules fines et les brisures, comparativement à 2,7 ppm pour les grains de maïs prénettoyés (C) (figure 1). La portion de maïs ayant le poids spécifique le plus élevé (79,2 kg/hL) représentait environ 40 % de la teneur totale en DON, mais 70 % du poids du grain prénettoyé. Cette observation confirme l'hypothèse que l'élimination de particules fines ou un maïs plus léger permet de retirer aussi une plus grande proportion de DON du grain.

Essais de nettoyage des grains à la ferme (2018)

La recherche d'Art Schaafsma comportait une séparation des grains de maïs en fonction de leur poids spécifique, mais dans la plupart des cas le nettoyage des grains à la ferme se fait en fonction de leur grosseur. En 2018, nous avons réalisé quelques essais en vue d'évaluer de quelle manière le nettoyage à la ferme peut contribuer à réduire les teneurs en DON.

Nous avons évalué un nettoyeur rotatif avec aspirateur (figure 2) et un nettoyeur perforé arrimé à un transporteur à vis (figure 3). Nous avons reproduit quatre essais de lots d'une tonne pour chaque type de nettoyeur. Pour nous assurer que les échantillons de grains étaient représentatifs de chaque lot, nous avons prélevé des sous-échantillons de maïs prénettoyé nettoyé, de maïs nettoyé et de criblures toutes les 10 secondes à l'entrée et à la sortie des nettoyeurs. Par ailleurs, pour s'assurer que les sous-échantillons soumis à l'analyse en laboratoire étaient représentatifs des échantillons de maïs, chaque échantillon de grains a été entièrement broyé et bien mélangé (et dans certains cas fendu une fois avant d'être broyé).

Figure 2. *Crible rotatif avec aspirateur.*

Figure 3. Nettoyeur perforé arrimé à un transporteur à vis (perforations visibles dans l'image en encadré).

Résultats des essais de nettoyage

Dans les deux essais, on a utilisé du maïs qui présentait une concentration relativement élevée en DON (tableau 1), avec des criblures dont la teneur en DON était beaucoup plus élevée que celle du maïs prénettoyé. Le poids des criblures retirées était variable. Bien que cela puisse dépendre de différences entre les nettoyeurs, le maïs prénettoyé utilisé dans l'essai avec le nettoyeur rotatif provenait du centre d'un silo à grains et présentait une proportion de particules fines beaucoup plus élevée que la normale.

Les réductions dans la teneur en DON se situaient entre 0,5 à 2,0 ppm, ce qui pour ces échantillons n'était pas suffisant pour améliorer leur qualité marchande.

Tableau 1. Teneurs en DON de sous-échantillons de maïs prénettoyé, de criblures et de maïs nettoyé ainsi que le poids des criblures, et les teneurs prévues en DON dans le cas des essais avec un crible rotatif et un nettoyeur perforé arrimé à un transporteur à grains.

Essai	Maïs prénettoyé DON (ppm)	Criblures DON (ppm)	Criblures (% du poids du maïs prénettoyé)	Maïs nettoyé DON (ppm)	Maïs nettoyé DON (ppm) prévu *
Crible rotatif	9,7	18	7,5 %	9,2	9,1
Transporteur perforé	24,2	55	2,5 %	21,9	23,4

***** la teneur prévue est calculée à l'aide du bilan massique des concentrations de DON dans le maïs prénettoyé et les criblures

Pourquoi le nettoyage n'a-t-il pas permis de réduire davantage les teneurs en DON?
Dans ces essais, le nettoyage en fonction de la grosseur des grains a assez bien permis de retirer les particules fines, les brisures, les très petits grains et les rafles. Bien que ces criblures présentent des concentrations beaucoup plus élevées de DON que les grains, elles ne représentaient en général qu'une petite proportion de la masse totale, ce qui explique que la réduction globale de la teneur en DON ait été plutôt faible. Ces résultats concordent aussi avec les travaux antérieurs d'Art Schaafsma (figure 1).

On a aussi observé la présence de grains visiblement infectés qui étaient trop gros pour passer dans le crible et qui sont restés dans le lot de maïs nettoyé. Ces grains auraient normalement été de grosseur normale, mais leur couleur n'était pas régulière, ils étaient de toute évidence infectés, insuffisamment remplis et de poids plus léger.

À quelle réduction de la teneur en DON peut-on s'attendre?
Nous avons été déçus de constater que les teneurs en DON ne diminuaient pas davantage, mais les résultats sont conformes aux lois du bilan massique puisque la teneur en DON qui persiste dans le maïs nettoyé correspond à la différence entre la teneur initiale en DON moins la proportion de DON retirée des criblures. On peut estimer les teneurs prévues en DON dans le maïs nettoyé en soustrayant les teneurs en DON éliminées dans les criblures (poids des criblures et teneurs en DON) pour diviser ensuite le résultat par le poids du maïs nettoyé (« Maïs nettoyé DON (ppm) prévu » du tableau 1). Nos résultats étaient conformes à ces prévisions.

Pour réduire davantage les teneurs en DON, il faudrait éliminer les criblures qui présentent des teneurs plus élevées de DON, ou retirer une plus grande quantité des fractions qui présentent des concentrations plus élevées. Il est possible qu'un nettoyage plus intense puisse réduire davantage les teneurs en DON dans le grain nettoyé en permettant de retirer des fractions qui contiennent plus de DON. Toutefois, en procédant ainsi, on aurait aussi entraîné plus de pertes de criblures. Toute perte de poids doit s'accompagner d'une amélioration dans la valeur et la qualité marchande du grain.

Ces essais ne constituent qu'un petit nombre d'exemples de scénarios possibles de nettoyage des grains et ils ne tiennent pas compte de l'effet attribuable au choix de l'hybride cultivé, aux degrés d'infection par le DON ni aux différents types ou grandeurs de crible. Il est également possible que le type ou la gravité de l'infection puisse avoir un effet sur l'efficacité du nettoyage. Si la majorité des infections se trouvent dans les particules fines et les rafles, ou si les grains les plus infectés sont très petits (c.-à-d. infections près des extrémités seulement), il se peut qu'un nettoyage d'après la grosseur des grains soit alors plus efficace.

Remerciements
Merci aux producteurs et au personnel de l'industrie qui ont pris le temps de nous aider à réaliser ces essais de nettoyage des grains. Merci également aux *Grain Farmers of Ontario* et aux laboratoires SGS pour leur contribution aux coûts des analyses.

Références
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Évaluations 2018 des hybrides de maïs pour les teneurs en DON par le Comité ontarien du maïs

Dave Hooker and Albert Tenuta, nom du Comité ontarien du maïs on behalf of the Ontario Corn Committee

Objectif de l'évaluation

Bien que la saison 2018 ait été très difficile pour les producteurs et les autres intervenants de l'industrie du maïs, elle nous a fourni l'occasion de comparer les hybrides en ce qui a trait à l'accumulation de vomitoxine (DON) à plusieurs sites d'évaluation, dans le cadre des essais de rendements du maïs en Ontario. L'objectif de l'étude du Comité était de procurer aux producteurs une approximation des risques relatifs pour un hybride d'accumuler de la vomitoxine (DON), et de proposer un cadre de travail pour les futurs essais de rendement.

Sites des évaluations par le Comité ontarien du maïs et collecte de données

Un total de 1 225 échantillons de maïs-grain ont été prélevés dans des parcelles récoltées mécaniquement pour le Comité; tableau 4 (82 hybrides à Belmont, Exeter, Ilderton) et tableau 5 (54 hybrides à Ridgetown et Tilbury). Ces deux tableaux présentent 30 hybrides en commun. Les essais relatifs à chacun des hybrides ont été répétés trois fois à chaque site; par conséquent, chaque hybride a été représenté par neuf échantillons dans les sites figurant à la table au tableau 4 du Comité et par six échantillons dans les sites figurant au tableau 5. Les échantillons ont été séchés puis analysés pour leur teneur en DON par les laboratoires SGS (Guelph) à l'aide de la méthode ELISA. On peut consulter les tableaux des résultats obtenus dans le cadre des essais de rendements des hybrides de maïs du Comité ontarien du maïs et les pratiques agronomiques utilisées à chaque site, à la section sur la gestion des essais (*trial management section*) du rapport 2018 sur les essais de rendement 2018 dans le maïs du Comité à www.gocorn.net.(en anglais seulement).

L'apparition des soies chez les hybrides a eu lieu entre la fin juillet et la première semaine d'août à tous les sites. Les précipitations fréquentes et l'humidité élevée durant la période d'apparition des soies et le remplissage du grain à tous les emplacements ont fourni des conditions environnementales naturellement propices à la fusariose de l'épi (par *Gibberella*) et à l'accumulation de DON.

Interprétation des tableaux d'évaluation

Les écarts entre les hybrides en ce qui a trait au DON ont été statistiquement très différents (P< 0,000 1) pour les valeurs fournies aux tableaux 4 et 5 et parmi les hybrides communs aux tableaux 4 et 5. Le Comité a décidé de simplifier la présentation des résultats en ayant recours à un code de couleur (voir www.gocorn.net) ou une échelle d'évaluation utilisant différentes teintes de gris pour les hybrides des tableaux 4 et 5 du Comité, et pour les hybrides communs aux deux tableaux. Les hybrides indiqués au tableau d'évaluation étaient classés en fonction de leur unité thermique maïs (UTM).

Comme prévu, aucun hybride ne s'est montré résistant à l'accumulation de DON (soit zéro ppm). Dans la version du tableau d'évaluation comportant une échelle de gris, zéro ppm est en blanc. Les évaluations des hybrides étaient soit en gris pâle (teneur en DON inférieure à la moyenne), en gris foncé (teneur en DON supérieure à la moyenne) ou en noir (teneurs les plus élevées en DON) selon la fourchette des teneurs en DON dans les colonnes du tableau d'évaluation (tableaux 4 et 5 ou pour les 30 hybrides en commun dans ces deux tableaux). Les hybrides non cotés n'ont pas fait l'objet d'essais aux sites représentés dans chaque colonne du tableau.

Certaines statistiques sur les teneurs en DON dans chaque tableau sont présentées sous forme de notes en bas de page sous les tableaux d'évaluation. Un hybride qui ne présente pas la même teinte de gris dans les différentes colonnes du tableau peut simplement indiquer une variabilité dans les sites, les échantillons ou l'analyse de cet hybride.

Remerciements

Le Comité ontarien du maïs remercie les Grain Farmers of Ontario (GFO) pour leur participation à ces essais, les GFO et le MAAARO pour leur soutien financier des analyses de la teneur en DON des échantillons de grain ainsi que les techniciens en recherche de l'Université de Guelph et du MAAARO pour le prélèvement des échantillons (Jonathan Brinkman, Ken VanRaay, Cheryl Van Herk, Brooke Jones et un merci spécial à Scott Jay pour être venu nous aider même s'il est à la retraite).

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Évaluations OCC 2018 – DON / hybrides

Légende : teneur relativement faible en DON → teneur relativement élevée en DON

	UTM	Hybride	Tableau 4 OCC seul	Tableau 45 OCC seul	Tableaux OCC 4 et 5 combinés
		Zéro DON			
H24	2850	LS9495VT2PRIB		S.O.	S.O.
H33	2850	P9621AMXT		S.O.	S.O.
H59	2850	P9608AMXT		S.O.	S.O.
H64	2850	NK95353220			
H71	2850	P9608AM		S.O.	S.O.
H42	2875	PS2818GSXRIB			
H61	2875	NK96593120		S.O.	S.O.
H78	2875	3899VT2P/RIB		S.O.	S.O.
H11	2900	LR9997VT2PRIB		S.O.	S.O.
H26	2900	P9840AMXT			
H56	2900	DL4555		S.O.	S.O.
H72	2900	NK97383010		S.O.	S.O.
H85	2900	LR9697VT2PRIB		S.O.	S.O.
H3	2925	CF487		S.O.	S.O.
H39	2925	A6888G2RIB		S.O.	S.O.
H62	2925	CF474		S.O.	S.O.
H7	2925	XP18099G2		S.O.	S.O.
H95	2925	P9840AM		S.O.	S.O.
H28	2950	E69K50LR		S.O.	S.O.
H38	2950	DS97B47RA			
H4	2950	3909SS/RIB		S.O.	S.O.
H47	2950	A6757G8RIB		S.O.	S.O.
H48	2950	MZ3964DBR		S.O.	S.O.
H50	2950	4079SS/RIB			
H73	2950	MZ3877SMX		S.O.	S.O.
H8	2950	P9998AM		S.O.	S.O.
H80	2950	LR9999VT2PRIB		S.O.	S.O.
H81	2950	MZ3818DBR		S.O.	S.O.
H103	2975	DL4902		S.O.	S.O.
H94	2975	DKC49-09RIB		S.O.	S.O.
H1	3000	HZ4010		S.O.	S.O.
H106	3000	CF18402		S.O.	S.O.
H18	3000	A7171G2RIB		S.O.	S.O.
H27	3000	PS3035VT2PRIB		S.O.	S.O.
H36	3000	E70G30LR		S.O.	S.O.
H41	3000	P0157AM			
H52	3000	LR9701GENSSRIB			
H86	3000	P9998AMXT		S.O.	S.O.
H6	3025	HZ1040		S.O.	S.O.
H9	3025	HXE279Y		S.O.	S.O.
H17	3050	MZ4280DBR		S.O.	S.O.
H19	3050	MZ4158DBR		S.O.	S.O.
H20	3050	HZ4255		S.O.	S.O.
H40	3050	DKC50-26RIB		S.O.	S.O.
H43	3050	P0157AMXT			
H49	3050	4188SS/RIB			
H58	3050	CF610		S.O.	S.O.
H60	3050	B00R25PW		S.O.	S.O.
H90	3050	B01R72SX			
H23	3075	A7270G8RIB		S.O.	S.O.
H32	3075	HXF211Y		S.O.	S.O.
H102	3100	MZ4343DBR			

			Tableau 4 OCC seul	Tableau 5 OCC seul	Tableaux OCC 4 et 5 combinés	
	3100	P0306AM				H12
	3100	E75K60LR		S.O.	S.O.	H21
	3100	CF611		S.O.	S.O.	H22
	3100	MZ4368SMX				H30
	3100	LR9903VT2PRIB				H45
	3100	PS3155GSXRIB		S.O.	S.O.	H5
	3100	DS02I57RA				H68
	3100	DKC52-84RIB		S.O.	S.O.	H91
	3125	CF626		S.O.	S.O.	H101
	3125	LR9503GENSSRIB				H14
	3125	P0414AM				H37
	3125	P0574AMXT				H69
	3125	DKC53-56RIB		S.O.	S.O.	H70
	3125	B04R96SX				H74
	3150	DL6207				H100
	3150	CF18501				H104
	3150	CF660		S.O.	S.O.	H15
	3150	P0574AM				H65
	3150	4488SS/RIB	S.O.		S.O.	H66
	3150	CF662		S.O.	S.O.	H84
	3150	P0506AM				H99
	3175	CNX155143SD				H34
	3175	A7373G2RIB				H46
	3175	DKC54-45RIB				H53
	3175	DKC55-05RIB				H57
	3200	LR9608GENSSRIB				H105
	3200	MZ4623SMX				H13
	3200	B05N06PWE	S.O.		S.O.	H16
	3200	MZ4676DBR				H25
	3200	B08R85SX	S.O.		S.O.	H31
	3200	4791AS3111	S.O.		S.O.	H54
	3200	B06N36PWE	S.O.		S.O.	H88
	3200	MZ467X	S.O.		S.O.	H92
	3200	CF686	S.O.		S.O.	H93
	3250	P0825AM	S.O.		S.O.	H44
	3250	A7790G8RIB	S.O.		S.O.	H77
	3275	DKC58-06RIB				H29
	3275	LR99A09VIP3220				H96
	3300	4997VT2P/RIB	S.O.		S.O.	H35
	3300	DL7250	S.O.		S.O.	H55
	3300	MZ5134DBR	S.O.		S.O.	H63
	3300	MZ5165DBR	S.O.		S.O.	H67
	3300	CF758	S.O.		S.O.	H75
	3300	B10R42SX	S.O.		S.O.	H76
	3300	P0825AMXT	S.O.		S.O.	H82
	3300	P0977AM	S.O.		S.O.	H83
	3300	DKC59-50RIB				H87
	3300	XP18108G2	S.O.		S.O.	H98
	3350	CF762	S.O.		S.O.	H10
	3350	CF18509	S.O.		S.O.	H97
	3375	DKC63-60RIB	S.O.		S.O.	H89
	3400	P1197AMXT	S.O.		S.O.	H107
	3400	DL9812	S.O.		S.O.	H51
	3400	A8303G8RIB	S.O.		S.O.	H79

[1] IMPORTANT : Les évaluations des hybrides ne sont pas garanties pour 2019. Aucun hybride n'est résistant.

[2] Évaluations OCC tableau 4 = comparaisons entre les hybrides à Belmont, Exeter et Ilderton (entre 1,9 et 21,3 ppm; moyenne de 7,1 ppm)

[3] Évaluations OCC tableau 5 = comparaisons entre les hybrides à Ridgetown et Tulbury (entre 1,7 et 8,3; moyenne de 4,3)

[4] Évaluations OCC tableaux 4 et 5 combinés (moyenne de 5 sites, si possible) (entre 1,7 et 11,8; moyenne de 5,4 ppm)

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Upcoming Events

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April 10, 2019

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April 12 & 13, 2019

Keep an eye on FARMNORTH.com *for information on upcoming events and meetings across Northern Ontario!*

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