

Breaking Ground

(in Northeastern Ontario) Summer 2016

A Publication of the North Eastern Ontario Soil & Crop Improvement Association (NEOSCIA)

2016 Earlton Farm Show a Great Success

By Norman Koch, Earlton Farm Show Chairman

The weather, the sponsors and the support of the community made the Earlton Farm Show on April 15-16 a huge success!

In addition to over 70 exhibitors offering everything from the latest in machinery to seed, feed, insurance, real estate, financial and political services, the show also had the 4H selling maple syrup, along with seminars, the Youth Ag Talk and meetings.

Over 3,000 visitors and exhibitors participated in the 2 day show along with several pre school buses from Englehart, Kerns, Elk Lake and Earlton.

Some of the attractions for visitors were the Annual Forage and Seed Show, Students Art Show and Interactive Grain Display (by Grain Farmers of Ontario) for children and small animal displays. Let's not forget about our live auctions which the equipment and supplies were contributed by the exhibitors.

A big thank you to our sponsors which help make the show a success! Desjardins, Scotiabank, Pioneer, TD, FCC, Tench-MacDiarmid, P&H Ltd., Lackner McLennan, Earlton Country

Store, Bayer, Temiskaming Shores, Cote's Variety Store, Koch Farms/Agri-Sales Inc., North Haven, OSCIA and Sights & Sounds.

Thank you to the Charlton Ag Society for the great food at our Kick off Lunch, John Phillips Memorial Breakfast and throughout the event—your service and friendly staff made this a success.



West Nipissing will be hosting the 2019 International Plowing Match! Congratulations on this exciting and ambitious endeavor to showcase the best of Northern Ontario agriculture.

This newsletter is published 4 times per year. Articles can be submitted in either English or French. Please supply translation, if available.

Material in this newsletter is based upon factual information believed to be accurate. Action taken as a result of this information is solely the responsibility of the user. We reserve the right to edit articles.

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Hemp Variety Development for Northern Ontario

Crop diversification and access to new markets is important to improve the resiliency of the agricultural industry in the North – the Northern Ontario Farm Innovation Alliance, PhytoGene Resources and the New Liskeard Agricultural Research Station have collaborated over the past year on a project to develop an elite industrial hemp variety suited to Northern Ontario.

PhytoGene Resources has been involved in hemp breeding in Northern Ontario since 2000 and have successfully developed and released two short season varieties (CanMa in 2010 and GranMa in 2014), both of which are currently grown in Quebec and Western Canada. These are dioecious varieties, meaning that there are separate male and female plants. The males degenerate soon after pollen shed and are reduced to dried out stalks by harvest time. It is these stalks that cause most of the problems at harvest, since they can become wrapped in the equipment. This problem can be avoided with the use of monoecious varieties, which have the male and female flowers on the same plant

PhytoGene Resources evaluated four new monoecious populations at New Liskeard in 2015. In addition to the agronomic evaluation, a collaborative project was undertaken to develop protocols for an innovative breeding method. This

approach should increase the efficiency of selection and reduce the time required for variety development very significantly. The goal was to develop a protocol to recover elite plants near maturity from a breeding nursery. Traditional propagation using cuttings is not effective, but tissue culture recovery has potential. The New Liskeard Agricultural Research Station has expertise in tissue culture propagation of several species, and was an obvious collaborator for this initiative.

Explants taken from 99 superior monoecious plants were used to develop protocols for sterilization, callus induction and then root and shoot initiation.

Due to systemic plant-borne contamination, a series of trials had to be initiated to select the appropriate doses and exposures of a broad-spectrum biocide. Despite this contamination challenge, over 20% of the plantlets that did form rooted within three weeks once cultured on a rooting medium. A series of recommended steps and procedures to combat the plant-borne pathogen and promote the formation of plantlets from leaf explant calli from mature hemp plants has been developed to support variety development by PhytoGene Resources.



This project was funded in part through *Growing Forward 2 (GF2)*, a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists in the delivery of GF2 in Ontario.



The Re-greening of Sudbury

By James Found, President, Sudbury West

From the beginning of mining and smelting in Sudbury the surrounding landscape was frequently subjected to ground level air pollution. Plant life near the smelters was impossible and further away difficult at best of times. When an air inversion occurred the tree leaves would change colour and delicate plants such as garden plants would wither. A large area surrounding Sudbury was devoid of healthy tree life.

However by the 1970's smelting methods had changed and people wondered if the landscape could be healed. An advisory committee of city employees, Laurentian university professors, and other interested citizens was formed to develop and implement plans to facilitate the ecological recovery of Sudbury 's industrially damaged landscape.

Residential development had occurred on the more accessible areas leaving rocks and swamps to deal with. Soil

analysis revealed the severe acidic condition of the soils. Lime was brought in and spread manually before tree planting began. Tree seedlings, varieties of pine, were purchased or donated to be planted manually by crews of summer students and other community groups such as Boy Scouts.

Areas close to the major arterial roads were targeted first. Spin off projects developed. Tree Seedlings were given away in the spring at shopping malls to residential property owners. Selected school yards were enhanced with shrubs and flower beds with the students enlisted to participate in the work and prizes awarded each year to the school that is judged for doing the best job.

After nearly 35 years the project has planted over 9 million trees with a survival success rate judged to be 97%.



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Breaking Ground (in Northeastern Ontario)

Wildlife Crop Damage—Important to Report!

At the various farm meetings across the North I have attended over the last few months the issue of wildlife damage to crops has been a regular topic of discussion. Resolutions were passed at both Northern Caucus and OFA convention to pursue the issue with government. While past estimates from various sources indicate the damage is significant province wide, the situation in the North is evolving and we need some indication now as to what the real situation is.

We need to hear from individual farmers as to the challenges you are facing. To this end we have created a wildlife damage survey on www.farmlnorth.com. You can complete it online, or send by email or regular mail to NOFIA or myself. If you are able to provide pictures so much the better.

If we are able to obtain a wildlife damage profile this season for each district we will be in a much better position to develop and present proposals to government.

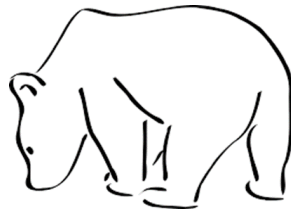
Please spread the message through your local groups and if you have any questions don't hesitate to contact me.

Mark Kunkel

OFA Director Northern Ontario

Mark.kunkel@ofa.on.ca

[705-724-2594](tel:705-724-2594)



OFA Wildlife Survey

Municipality where you farm: _____

Wildlife species responsible for the damage (list all): _____

Crops targeted by wildlife (list all): _____

Crop area damaged by wildlife (specify approximate acres or hectares): _____

Total area you farm (specify acres or hectares): _____

Estimated dollar value of the loss/losses: _____

Complete on-line at www.farmlnorth.com or mail to NOFIA at Box 2976 New Liskeard, ON P0J 1P0

NEOSCIA celebrated 50 years at the Earlton Farm Show! Big shout out to the Earlton Farm Show Committee for the delicious gift of Thornloe Cheese!

Congrats on 50!



Northern Swede Midge Moratorium Update

By Jon Williams & Dr. Rebecca Hallett, University of Guelph

In 2014 it was recommended by the OCGA that the growing of canola in the Temiskaming Shores region be ceased temporarily for at least three years beginning in the 2015 growing season. Swede midge had reached such high densities that regular insecticide applications were having little effect on damage in the 2013 and 2014 growing seasons. Average yields in heavily infested areas were just 19-27% of those in unaffected areas. Reducing canola acreage in the region aims to starve the swede midge population and reduce numbers to more manageable levels by removing its primary host.

A period of three years or more is required for the moratorium due to the variable and prolonged diapause of the swede midge. A certain percentage of swede midge that enter the soil to pupate in infested fields will emerge either within the same season, or overwinter and emerge up to two years later. This means that canola grown 1-2 seasons later can be infested by swede midge that were present in that field two years prior. A period of three years or longer will help ensure that those overwintering swede midge are no longer present to re-infest crops. This is also why a minimum crop rotation of three years is recommended in infested areas. The short life cycle of the swede midge allows for relatively rapid population build-up where host plants are present, especially in areas where large areas of crucifers are grown in close proximity. A coordinated effort to rotate to non-host crops over multiple growing seasons is likely an effective strategy for the

reduction of swede midge populations. Reducing the density and proximity of canola production in the northern region by extending rotations should also help prevent the massive annual build-up of swede midge that has been observed in the area.

Despite reductions in the acreage of canola grown in the region from 30,000 to just a few thousand in 2015, average swede midge trap captures have remained extremely high. Pheromone traps were placed in several locations in the northern region in the summer of 2015 and were monitored weekly throughout the growing season. The number of trapped swede midge was consistently above 50 males/trap/day from May until late July and reached a maximum of nearly 225 males/trap/day. This is well above the current recommended threshold of 5-10 males/trap/day. For comparison, average trap captures in southern Ontario were much lower, remaining well below 20 males/trap/day for most of the season and only reaching a maximum of 28 males/trap/day on a single date. These trap captures suggest that swede midge numbers are still too high to consider planting canola in the area in the 2016 growing season. Delaying the planting of canola for another 1-2 years is advisable to reduce swede midge numbers in the region.

Visit the [OMAFRA Swede Midge Factsheet](#) for further information.

OSCIA Summer Tour

By Mack Emiry, OSCIA 1st Vice President

As I write this message near the end of May most, if not all, of the spring crops are in the ground across the Northeast. Little precipitation since the snow melted has left soil conditions quite dry in most areas. A few showers have now fallen and it looks more encouraging for crop growth as there is still plenty of time for crops to develop. North Eastern Ontario is such a large area that it is hard to generalize about weather and soil conditions. However this spring conditions seem similar across the whole region.

In August, North Eastern Region will host the summer directors meeting of OSCIA. As 1st Vice President of OSCIA I have the opportunity to organize 2 days of tours for this event. Manitoulin District (Day 1) will include visits to an Aquaculture site, The Ojibwe Cultural Centre, a Craft Brewery and a short drive through some of the west end farming area.

Sudbury District (Day 2) will see a visit to Vale (Inco) tailings site where Terratec Environmental are applying Sewage Sludge and conducting some crop growth trials. Next will be a visit to a potato growing and storing/packing operation. We will finish the afternoon with a visit to a winery. I see this as a great opportunity to show farm leaders and others who will be attending from all across Ontario the great things that are happening in Agriculture in the Northeast.



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Breaking Ground (in Northeastern Ontario)

Measuring Pasture Yield is Key to Grazing Management

By Christine O'Reilly, RAIN Research Technician

Think of measuring your pasture like keeping an inventory of the feed available on your farm: it is a real-time assessment of your pasture's ability to feed your stock. Measuring your pasture can have a huge impact on your bottom line.

Different tools exist to measure forage yield, and their benefits and drawbacks are summarized in Table 1. Once you have selected a measuring tool, pick a day that works for you and walk your pastures once a week. Take several measurements in each paddock and average them to get a DM yield for each paddock. To turn these numbers into useful information, make a bar graph, ordering the paddocks from highest to lowest yield. This graph is called a grazing wedge because of its shape.

To assess your feed inventory, you will also need to have some targets for your grazing rotation. It is generally recommended to remove animals from a paddock once it is grazed down to 1 500 kg DM/ha (1340 lbs DM/ac) so that the grass still has enough energy to recover quickly. Typically graziers put stock into a paddock when there is between 2 500 and 3 500 kg DM/ha (2 230 and 3 120 lbs DM/ac) available so that the grass does not become too mature. Put an "x" on your grazing wedge at your target yield for fresh grazing beside your highest yielding paddock, and

put another "x" on the wedge for your target residual next to your lowest yielding paddock. Draw a line between the two, and you can see how your grass reality matches with your grazing demands (Figures 1 and 2). A more detailed explanation is available in the online version of Breaking Ground.

By comparing grazing wedges week-on-week, you can also determine the average rate the grass grew the previous week. Over time, this information will allow you to predict how your inventory will change based on previous years' data.

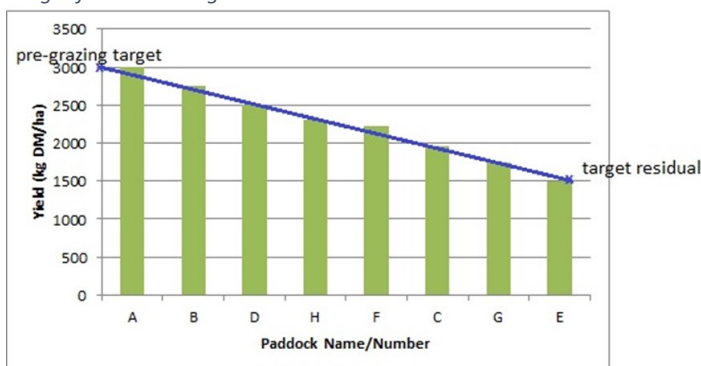
Measuring your pasture throughout the growing season enables pasture management that is proactive, and allows farmers and ranchers to maximize the productivity of their grazed forages. The Rural Agri-Innovation Network (RAIN) is in the final year of a three year pasture improvement project. This year the research team will be using a falling plate meter and a grazing wedge to assess pasture yield and inform rotation decisions.

This project was funded in part through *Growing Forward 2 (GF2)*, a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists in the delivery of *GF2* in Ontario.

Method	Advantages	Disadvantages
Ruler, rubber boot, anything that measures height	Simplest tool to use, inexpensive	Does not take sward density into account, which affects yield
Rising plate meter	Easy to use, often does the math for you	Cost, most are only calibrated for ryegrass/clover mixes
Falling plate meter	Easy to use, inexpensive	Requires some work initially to create a calibration curve
Quadrat, shears, and a scale	Most accurate measure of forage yield	Most time consuming, not practical for regular on-farm use

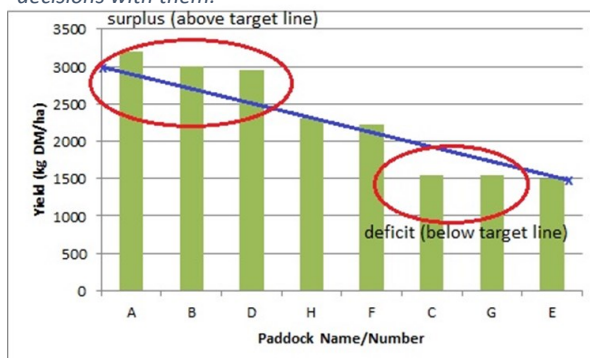
Table 1. Tools for measuring forage yield and considerations in their adoption

Figure 1. Creating your grazing wedge. This example is on target for the coming week.




Paddocks are in order from most to least grass. This is the order in which they should be grazed. Note that it is not necessarily sequential.

Figure 2. Spotting surplus and shortfall, and making management decisions with them.





If you had a surplus and everything else was on target, consider taking the paddocks with the most grass out of the grazing rotation to cut. A deficit indicates an upcoming need to supplement feed. In the scenario above, it might be wise to graze the surplus longer, in order to fill the upcoming shortfall.

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Breaking Ground (in Northeastern Ontario)

Adopting Food Traceability Systems

West Nipissing Agricultural Symposium Session, Vanessa Taylor, OMAFRA & Tom Heeman, Heeman's Strawberry & Garden Centre
By Stephanie Vanthof

A food traceability system includes an internal process to collect information and share some of that information externally in a 'one up' (trace inputs to supplier) and a 'one down' (trace outputs to first buyer) way. It is becoming a market requirement from consumers and though traceability is often linked to technology, traceability itself is merely the collecting of information – technology is one mechanism to collect the information.

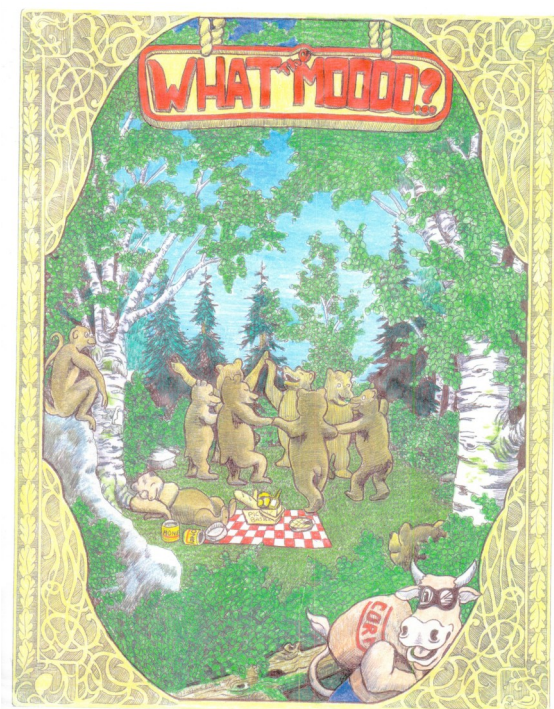
A traceability system includes 3 pillars:

1. Premise identification – can be obtained through www.ontariopr.com;
2. Animal/product ID: type of ID depends on business & customer needs and can include dangle ear tags, RFID, stickers, colour coding and barcodes;
3. Movement recording/reporting: record of what, where shipped, when/who shipped and how much.

Enright Cattle implemented an RFID traceability system in their beef operation that allows them to re-build the carcass and assess which type of carcass results in the highest profits. With their traceability system, sales are up 16%, operating costs are down 17%, labour costs are down 18% and the estimated return on investment is 37%. The time to trace 100% of the product in a mock traceability exercise went from 48 hours to less than 5 minutes.

Heeman's has implemented a traceability system that uses a barcode on each pallet to connect the pallets and respective quarts to the picker and offers the consumer an opportunity to provide feedback on their specific strawberry purchase. Heeman's has always implemented traceability, initially writing picker ID's on the primary pallet, but this improved system is quicker, less prone to error and allows pickers to self-scan. Management can now spend less time on employee management and focus more time on quality. The traceability system also collects information related to picking time per pallet, which improves internal transparency and reduces squabbles since pickers are paid a hybrid hourly-piece rate. For Heeman's, improving traceability allows them to manage risk and increases confidence with customers and suppliers.

The West Nipissing Chamber of Commerce held the 2 day West Nipissing Agricultural Symposium in March 2016 in Sturgeon Falls. This is a summary of one of the sessions—stay tuned to future editions of Breaking Ground for further information on *New Crops—Haskaps & Hops, Horticulture in Northern Ontario* and *Adding Value*.



Verner Seed Fair Winners

2015 Forage Master Competition
James Parsons

Hay and Forage Champion
Normand Venne

Cereal and Pulse Crop Champion
Ferme Cascade (Jaques Seguin)

Grand Champion All Classes
Ferme Cascade (Jaques Seguin)

Breaking Ground (in Northeastern Ontario)

NOFIA Advisory Council Update

NOFIA has spent the last few months establishing an Advisory Council to act as a conduit for information sharing between NOFIA and Northern districts and to provide direction to NOFIA's future planning and programming. Thank you to everyone who participated and to those producers who are now sitting on the Council. Feel free to chat with your district representative about potential research needs or projects.

Ken Riley	Muskoka
Patrick Connolly	Algoma
Mike Soenens	Sudbury
Joel Olivier	West Nipissing/East Sudbury
Doug Weddel	East Nipissing/Parry Sound
Jim Martin	Manitoulin Island
Amos Brielmann	Rainy River
Fritz Jaspers	Thunder Bay
Jim Johnston	Temiskaming
Eddie Haasen	Cochrane
TBD	Kenora-Dryden



FarmNorth is changing! Stay tuned this summer for a revamped website that will include a **real estate directory** for Northern Ontario ag listings and easier access to **Northern Ontario ag research**. FarmNorth will remain the one-stop shop for Northern Ontario ag info!

FARMNORTH.com

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NOFIA'S CURRENT PROJECTS

- Rapid development of forest to farmland
- Intensive oat management
- Yellow mustard trials
- Malting barley, canola, wheat & flax trials
- Biomass demonstration
- Northern Ontario dairy processing strategy

NOFIA will also be hosting two year round grazing workshops in New Liskeard & Rainy River and is working with NEOSCIA to host a Northeastern Crop Caravan this summer.

NOFIA is current administering its 5th and 6th NOHFC Tile Drainage/Land Clearing Consortium. To date, over **10,000 acres** have been improved and NOFIA has disbursed over **\$3.7 million** in NOHFC funding to local producers.

Please visit www.nofia-agri.com for more information on current and past projects.



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OSCIA PROVINCIAL NEWSLETTER

Message from the President - Gord Green



Hi Everyone,

I trust that spring planting has gone well for most of you. For the most part planting was relatively free of rain here so crops went in quickly. I think most of us could use a good rain. Haying is just starting so that should bring it on.

Your Provincial Board of Directors have been busy in March working

on activities related to the approved Strategic Plan that was started last spring. This was followed up by board governance training that all directors should go through periodically. We have identified some areas that could use improvement such as communications both internally and externally. We in Soil and Crop are guilty of not sharing enough of what we do with others either through word of mouth or through the media. We have a lot of activities going on both locally and regionally and we should do more to talk this up.

This past April the Farmland Health Incentive Program was opened up to everyone in the GLASI area. The response was amazing with the money allocated very quickly. I think this shows how environmentally responsible we farmers are when there is a problem that needs addressing and a means to address it. The Species at Risk Farm Incentive Program is now open for another year. This is a program that supports a broad range of projects that encourage wildlife while protecting the environment. Some examples are livestock fencing to keep livestock out of sensitive areas, tree planting, control of invasive species, erosion control and wetland restoration. Check our website for more information on this or any of the programs we deliver.

Earlier this spring, I was involved in an OMAFRA announcement concerning Soil Mapping. The Ministry has directed \$5.1 million from *Growing Forward 2* to Soil Mapping with a commitment to seek further funding to keep this initiative going. Some of the current soil maps are 40 or 50 years old or older. It is a well known fact that some of the maps are not as accurate as they should be. Soil maps are used to direct a lot of decisions such as land use so we at Soil and Crop are excited about this announcement.

Local counties/districts are busy planning summer events such as bus trips, field days and information meetings.

Make sure to attend some of these events. It is a great way to meet people and learn some stuff as well. Enjoy the summer and good luck with the cropping.

Yours in Agriculture,


Gord Green, OSCIA President

Special Notice - RCC Update

Recently, two of our RCCs moved onto other adventures. We would like to take this opportunity to thank Jeff Burke (NWOSCIA) and Shirley Munro (ORRSCIA) for their many years of service to OSCIA. Good luck to you both with your many adventures!

We would also like to welcome Miranda Bolt (NWOSCIA) and Barb Keith-Badour (ORRSCIA) to the RCC team.

A NEWSLETTER TO UPDATE
REGIONAL AND LOCAL ASSOCIATIONS
AND OMAFRA CONTACTS

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- SARFIP Update
- Grassland Stewardship Program Update
- OSCIA GF2 - Tim Noxon, Vicki's Veggies - Record Keeping System
- OSGA Field Day Notice
- Biomass Demo Tour

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Website: www.ontariosoilcrop.org



US Agriculture's Response to Lake Erie Algal Blooms - 2016 OSCIA Annual Meeting



- Dr. Tim Harrigan, Biosystems and Agricultural Engineering – Michigan State University

Dr. Harrigan's Research and Extension programs focus on mitigating adverse farming systems impacts on the environment and creating sustainable agro-ecosystems. His research includes the development of an innovative process that combines low-disturbance tillage, the seeding of forage and cover crops, and manure land application in one sustainable operation.

We've all heard the ongoing discussions about Lake Erie algal blooms and what Canadian farmers can do to help reduce them. Have you ever wondered what US farmers are doing to combat the problem? Dr. Tim Harrigan of Michigan State University spoke at the OSCIA Annual Meeting this past February and shared some insight into this.

On a watershed basis, current estimates are that Michigan, Indiana and Ohio farmers in the Lake Erie watershed are losing about 1.5 pounds per acre of phosphorus per year. The goal for Lake Erie is to reduce losses by about 40 percent to less than one pound per acre in the western basin. It should be noted that even small losses can have big effects, especially in large watersheds surrounded by acres and acres of nutrient rich cropland. Research studies have proven that there is a steady, long-term record of total phosphorus loading to Lake Erie.

So, what are US farmers being asked to do to help improve water quality? Because there are so many potential contributing sources of phosphorus, and losses are so greatly influenced by timing and intensity of rainfall, there really is no single change in production practice that will be most effective every year. Individual states are handling the problem in different ways. For example, in Michigan, there is a need for continued water quality monitoring, research and education. Farmers are being asked to participate in mainly voluntary educational programs such as the **Michigan Agriculture Environmental Assurance Program (MAEAP)** which is an innovative, proactive program that helps farms of all sizes and all commodities voluntarily prevent or minimize agricultural pollution risks.

In Ohio, which has been reported to have the largest total phosphorus concentration, state officials have taken the legislative approach including a ban on the spreading of manure on frozen or saturated land as well as enforcing regulated certification. In 2014, the **4R Nutrient Stewardship Certification** program was launched for agricultural retailers and stakeholders from Ohio, Indiana and Michigan agricultural communities that is geared towards the long-term improvement of Lake Erie's water quality by applying the 4R principles (using the Right Nutrient Source at the Right Rate and Right Time in the Right Place) which is administered by the Ohio Agribusiness Association on behalf of the Nutrient Stewardship Council.

Since the mid-1990s, there has been a proven increase in algal biomass along with total phosphorus concentration in the western and central basins of Lake Erie. What has caused this change? On the land, there has been an increase in broadcast fertilizers, more tile drainage, and soil P stratification from long-term no-till or reduced tillage. In the water, things like climate change, invasive species such as zebra mussels, lawn fertilizers and combined sewer overflows are linked to the change.

Today's society expects clean water and there will be ongoing and increased monitoring of water quality. In point of fact, farmers do have a direct impact on water quality and whether we like it or not, this is how society will judge agriculture. We must always keep in mind that there is a direct link between our fields and all other users downstream. Positive changes are taking place in this area but we still need to do a better job of managing our water which includes having tighter control of nutrients. Precision crop technology will play an important role in this management of nutrients. We know that most runoff occurs during the non-growing season (November to April), so we will also need to focus on implementing best management practices in order to reduce runoff during this critical time period.

Krista Gladstone, St. Clair Regional Communication Coordinator



SYLVITE TO SPONSOR FREE BREAKFAST AT CANADA'S OUTDOOR FARM SHOW



Breakfast provided daily at the OSCIA/OMAFRA demo plots from **8:30am-10:30am.**

Proof of OSCIA membership required
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OSCIA and select Industry information
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Soil Analysis Discount

5 labs now participating (Welcome **Actlabs**)
 - visit OSCIA website for more details:
<http://www.ontariosoilcrop.org/association/association-membership/>

OSCIA Tier One Grants Proving Value

We anticipated lots of interest from the local and regional associations in the new \$1,500 Tier One grant that was first introduced in 2015. OMAFRA and OSCIA were pleased to commit the investment towards a wide array of education and communication events that took place across the province. We can now look at the final reporting to realize just how successful the initiative was in terms of the dollars and time invested through the membership and many supporters of the organization.

The Ministry's willingness to make their portion of the grant dollars available with no strict requirement for matching funds from other sources, is to be applauded. We were convinced based on the track record established over the years with similar projects, there would be substantive dollars leveraged from project partners to fully justify the decision. You did not disappoint! Data gleaned from the final reports submitted for each of the 37 projects claimed paints a very encouraging picture about partnerships and a willingness to engage in grassroots events and activities.

Six of the grants supported applied research with one-year field trials. Those reports are included in Crop Advances. The other grants supported events best categorized as educational tours, guest speakers, topical workshops or broader information meetings. Applying the participation figures that were reported for typical events suggests over 4,000 producers received direct benefit from the combined efforts.

The final tally indicates \$43,340 was paid through the Tier One grant. Records submitted by the participants verify this investment triggered additional contributions of \$57,530 towards many of the same projects, for a reported total project value of \$100,870. On top of that were in-kind contributions worth an estimated \$35,000. This is outstanding performance and sets high expectations for the 2016-17 grant year.

Members measure success through what they experience and learn from the many events and applied research projects. The numbers we collect from the project reports provide clear assurances to OMAFRA that their investment in the Tier One grant structure is paying off.

Tier One applications are now being accepted in the Guelph office. Once again up to \$50,000 has been committed in total from OMAFRA and OSCIA, available on a first-come, first-served basis. If a local or regional association has a project idea, we urge you to complete the application available on the web site and get it submitted for pre-approval. This will lock up the funding so you know its there when you make a final claim.

Funding for these grants is provided through a three year agreement with OMAFRA.

Andrew Graham, OSCIA Executive Director



SARFIP Update

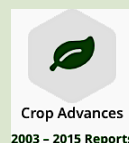
OSCIA launched the 9th season of the Species At Risk Farm Incentive Program (SARFIP) cost-share on May 16, 2016. The program offers cost-share to farms implementing habitat protection, enhancement and restoration projects (based on BMPs) that will indirectly or directly benefit species at risk (SAR) in Ontario.

OSCIA has received an encouraging number of applications since the launch and hopes to fully allocate all funds by the fall. Eligible projects started on or after April 1, 2016 could receive cost-share of 50% for providing indirect benefits for SAR, or 65% if the project provides direct benefits (i.e. SAR living on/near property).

Anyone interested in applying should review the SARFIP 2016 brochure which can be downloaded from the SARFIP webpage on the OSCIA website. Application Forms and "steps to apply" can also be viewed on the website. Stay connected with SARFIP updates throughout the season by joining the email list (through OSCIA website) and following OSCIA on Twitter at @OntarioSoilCrop.

Hayley Paquette, OSCIA Programs Assistant

CROP ADVANCES



Applied Research on Soil and Crop Management - available on OSCIA website:

<http://www.ontariosoilcrop.org/research-resources/crop-advances/>

Grassland Stewardship Program Update

Watch for the Grassland Stewardship Program, to be launched this summer. The Grassland Stewardship Program provides funding to producers who wish to complete on-farm grassland habitat (hayfield and pasture) improvement projects.

Funded practices will include:

- Pasture reseeded
- Control of encroaching trees and shrubs on pasture through mowing
- Rotational grazing systems
- Invasive plant species control
- Marginal land retirement to grasslands
- Forage harvest management (delayed haying)

Visit the OSCIA website to check for program updates, or to sign up for our mailing list: www.ontariosoilcrop.org/oscia-programs/sarpal

The Grassland Stewardship Program is funded by Environment and Climate Change Canada through Species at Risk Partnerships on Agricultural Lands (SARPAL) initiative.

Laura Van Vliet, OSCIA Programs Assistant



OSCIA GF2 - Tim Noxon, Vicki's Veggies - Record Keeping System

A new record-keeping system has helped an Ontario vegetable farm enhance and expand its business.



Cost-share support from *Growing Forward 2 (GF2)* helped Tim Noxon and Vicki Emlaw of Vicki's Veggies in Prince Edward County develop a customized database system for their fresh and value-added vegetable business.

Growing from about an acre of crops 15 years ago to producing around 30 different crops on 20 acres has meant a lot of changes for the organic farm, which is particularly known for growing more than 150 varieties of heirloom tomatoes.

Including Tim and Vicki, the business employs the equivalent of eight full time staff year round with about a quarter of sales coming from a roadside stand on the farm, another quarter from a Saturday market in Toronto, and the remainder from sales to restaurants and specialty shops through a Toronto distributor.

“The need for the record-keeping system came as a result of not knowing what crops we were making or losing money on. We knew some were doing better than others but had no clue how that broke down,” explains Tim. “We also wanted to do a better job of tracking employee hours so we could tell how much time we were spending on which tasks on the farm.”

Their solution was a database program that allows for easy data entry and gives Tim and Vicki records by the crop, employee, and field. Employees can input data on an iPad as they finish tasks and the information syncs up with a desktop computer on the Vicki's Veggies local area network. The system can also track information related to payroll, cropping data, and organic inspections. At the end of the year, a large spreadsheet details all the farm activities, which they then use to start their analysis.

“With the data we can evaluate how productive each crop is and help us determine its profitability,” says Tim. “We knew we were losing money on some crops, but this gives us the ability to see the exact breakdown.”

With their newfound knowledge, Tim and Vicki dropped a few of their most unprofitable crops and reduced production in others. Recognizing that part of their business thrives on the variety of crops they can offer, they didn't want to streamline their offering too much, so they also made changes to some of their practices to be more efficient.

The biggest surprise, admits Tim, is seeing the impact value-added products have on the business' bottom line. They started small scale with frozen soups and hot sauces throughout the growing season to use up produce that

**ATTENTION SEED GROWERS
OSGA Field Day - JUNE 28, 2016**

~~~~~  
**Location: Szentimrey Farms**  
508 St. George Rd., R.R. #1, Branchton, ON N0B 1L0  
~~~~~

Register:
<http://www.ontariosoilcrop.org/osga-field-day/>

couldn't be sold on the fresh market, and have been expanding that to include condiments and pickles as well. “On a crop of fresh hot peppers we weren't making money because the competition is too strong, but by turning them into hot sauces, we've extended our season for hot peppers from one month into a whole year,” he says. “We've also stretched out the cash flow from that crop over the whole year.”

Growing their value-added business also means they're now able to offer year round employment to some of their workers; that's a welcome bonus as hiring and training staff is costly and time-consuming, particularly in a seasonal business.

“The *Growing Forward 2* funding has made a huge difference to us. It offers a big incentive, knowing that we're not on our own, that there is some help out there, and that everyone is sharing in the cost of growing their food,” he adds. The project was funded under the production efficiencies category of *GF2*, under the Business and Leadership Development focus area.

Growing Forward 2 is a federal-provincial-territorial initiative. The Ontario Soil and Crop Improvement Association delivers educational workshops and funding assistance supported by *GF2* to farmers. More information about *GF2* funding opportunities for farmers is available at: <http://www.ontariosoilcrop.org/oscia-programs/growing-forward-2/> or by contacting the OSCIA regional program leads at: <http://www.ontariosoilcrop.org/association/contact-us/oscia-field-staff/>

By Lilian Schaer, for OSCIA



**BIOMASS COMBUSTION FOR
GREENHOUSE HEATING DEMO**

~~~~~  
**June 21, 2016 - 9:30am-1:00pm**  
**Forman Farms**

4040 Brewer's Mill Rd., Seeley's Bay, ON K0H 2N0  
~~~~~

Itinerary: [Biomass Demonstration Agenda](#)
Register at: <http://www.ontariosoilcrop.org/biomass-demonstration/>

- Tour biomass heating project - 2 hydroponic heaters for Greenhouse vegetable production; Presentation on equipment and results





CROP TALK

Volume 16, Issue 2

OMAFRA Field Crop Specialists — Your Crop Info Source

June, 2016

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A Recap on PSNT Sampling and Revised PSNT Recommendations

Ben Rosser, OMAFRA Corn Specialist

The beginning of June marks the window for the Pre-Sidedress Nitrate Test (PSNT). The PSNT measures the amount of nitrate-nitrogen in the soil just prior to traditional sidedress time and provides an indication of the soil's N supplying potential. The PSNT value may be influenced by field characteristics (soil organic matter, previous crop) as well as weather (temperature, precipitation) which impact soil nitrate release and loss. Quantifying soil N provides an opportunity to adjust N rates based on expected N supply. The delayed sample timing associated with PSNT may also help detect nitrate that has mineralized from organic N sources (manure, legumes). Because many of the factors included in the general N recommendations (or N calculator) will influence the soil nitrate levels, it is important to view PSNT recommendations independent of those general recommendations.

A Review on PSNT Sampling Procedure

Sampling is conducted just prior to traditional sidedress time when corn is 6-12" in height, typically the first to second week of June. Nitrate is more mobile than other nutrients and requires deeper sampling to better quantify supply. OMAFRA recommendations are calibrated to a 12" sampling depth, which is important to maintain for all samples pulled. Sampling should be conducted with a soil sampling probe to ensure depth is representatively collected throughout the entire sample profile (Figure 1).



Figure 1. Collecting PSNT samples with soil sampling probe to 12" depth.

Any broadcast N will increase soil nitrate levels and underestimate PSNT requirements, resulting in invalid recommendations. PSNT should not be used under these practices. A modest amount of N (e.g. 30 lb-N/ac) applied with starter fertilizer is reasonable if applied in a starter band that allows for sampling to be conducted mid-row to avoid bands.

Sample submissions generally consist of 1 lb of soil placed into a sample bag or box. Collect several samples in a clean plastic pail, and ensure the sample submitted is

representative of all cores collected for that submission. This often requires thorough hand crumbling and mixing of soil cores. Sample and submit different areas of fields separately if you believe differences in N supply may exist due to past management, soil types, topography etc.

To prevent further N mineralization by soil microbes, samples must be kept cool. It is a good practice to carry a cooler while sampling in field and during transport of samples. Submit to the lab as soon as possible for most accurate results.

Revised PSNT Recommendations

The original PSNT recommendations were released in 1993 and suggested a nitrogen application rate based solely on the soil nitrate value. While the sampling process has not changed, the PSNT recommendations were revised in 2015 with more recent Ontario N response research to incorporate both soil nitrate levels and expected yield into a sidedress N recommendation (Table 1).

Table 1. Revised Pre-Sidedress Nitrate Test (PSNT) recommendations incorporating soil nitrate level and yield.

Soil Nitrate (PPM)	Expected Yield (bu/ac)					
	120	143	167	191	215	239
0	176	197	218	240	261	282
2.5	163	184	205	225	246	267
5	151	171	191	211	231	252
7.5	138	158	177	197	216	236
10	126	144	163	182	201	221
12.5	113	131	149	168	187	206
15	99	117	135	153	172	190
17.5	83	102	120	138	156	175
20	57	86	105	123	141	159
22.5	0	60	88	107	126	144
25	0	0	63	90	110	128
27.5	0	0	0	66	92	111
30	0	0	0	0	68	93
32.5	0	0	0	0	0	69
35	0	0	0	0	0	0

Wide Row Soybean—Are They Good Option for Ontario Growers?

Horst Bohner, OMAFRA Soybean Specialist

The majority of soybeans in Ontario are seeded in narrow rows (7 - 15"). The main issue with wide rows (30") is they often yield less than narrow rows in our climate. Research by the University of Guelph in the late 90's showed they yield 3-5 bu/ac less than narrow rows. Yield on 15" rows were equivalent to 7.5" rows. However, it may be possible to overcome this yield lag by promoting early season vegetative growth through starter fertilizer and other management strategies with newer varieties. When using wide rows it also becomes possible to fertilize in a 2X2 band which is an effective way to increase yields in a low soil testing field. Another strategy that could reduce the yield drag is the application of foliar fungicides. Tramping losses are reduced on wide rows, and fungicide efficacy may be improved due to better spray penetration. With the widespread adoption of auto steer systems, strip tillage could play an important role in helping growers overcome the challenge of lower yields with wide rows.

Why consider wide rows? Wide rows have a number of advantages, including the need for only one piece of planting equipment for corn and soybeans, lower seeding rates, less lodging, and reduced disease pressure. It may also be possible to establish a late season cover crop in wide rows. Wide row (30") soybeans typically have less white mould because of increased air movement, sun penetration, and lower plant populations.

Replicated field trials were established at Elora, Bornholm, Ridgetown and Winchester in 2015. Pioneer Seeds also evaluated wide rows across a number of locations in Eastern Ontario. The results varied depending on the test site.



Figure 1. Spring strip tillage in 30" rows.

At the Elora research station the yield lag associated with wide rows could be won back through strip tillage in 2015 (Table 1). Fertilizer and fungicides also increased yields. However, the narrow rows were also highly responsive to management at that site. Overall yields were excellent, which likely contributed to the performance of wide rows.

Table 1. Closing the Yield Gap (Elora 2015)	
	Yield Bu/ac
15" no-till (170 000 seeds/ac)	58.8
30" no-till (170 000 seeds/ac)	54.0
30" no-till (120 000 seeds/ac)	52.6
30" strip-till	58.6
30" strip-till + P K (2x2)	62.7
30" strip-till + foliar fungicide	65.0
30" all practices	68.4
15" all practices	66.4
Treatments 3-8 = 120 000 seeds/ac 2 replicates, P = 11 ppm, K = 82 ppm	

The yield lag could not be closed completely through management at the Bornholm location (Table 2). The highest yields were achieved in narrow rows with long season varieties. DS04-D3 have a relative maturity (RM) of 0.4 while Titanium's are a 1.3 RM.

Table 2. Closing the Yield Gap (Bornholm 2015)	
	Yield Bu/ac
15" no-till (170 000 seeds/ac)	56.3
15" no-till (120 000 seeds/ac)	55.8
30" no-till (170 000 seeds/ac)	51.9
30" no-till (120 000 seeds/ac)	48.1
30" strip-till	50.4
30" strip-till + P K (2x2)	54.3
30" strip-till + fungicide	54.2
30" all practices	54.0
15" all practices	60.8
15" no-till (variety P12T82R)	65.3
30" strip-till (P12T82R)	54.8
30" all practices (P12T82R)	59.1
15" no-till (variety Apex)	67.1
30" strip-till (Apex)	62.5
30" all practices (Apex)	61.8
15" no-till (variety RR2 Titanium)	69.3
30" strip-till (RR2 Titanium)	61.4
30" all practices (RR2 Titanium)	62.5
Treatments 1-7 = variety NK S04-D3, Treatments 4-8,11,12,14,15,17,18 = 120 000 seeds/ac 3 replicates, P = 15 ppm, K = 119 ppm	

At the Winchester location (Table 3) the yield gap of wide rows could be gained back for the most part through management. This site was conventionally tilled.

Table 3. Closing the Yield Gap (Winchester 2015)

	Yield Bu/ac
15" (170 000 seeds/ac)	68.7
15" (120 000 seeds/ac)	70.4
30" (120 000 seeds/ac)	65.7
30" (170 000 seeds/ac)	64.8
30" (120 000 seeds/ac) + 80 lbs/ac 11-52-0,3 gal 6-24-6	68.4
30" + 50 lbs/ac N	66.0
30" + foliar fungicide	67.5
30" + foliar fungicide + foliar feeding	69.3
30" all practices	67.6
4 replicates	

The Pioneer Seeds study showed no yield deficit to wide rows in eastern Ontario in 2015. On average the 30" rows yielded 62.1 bu/ac while the 15" rows yielded 60.1 bu/ac. It should be noted that these fields were highly productive and had white mould. The sites in western Ontario did not have white mould.

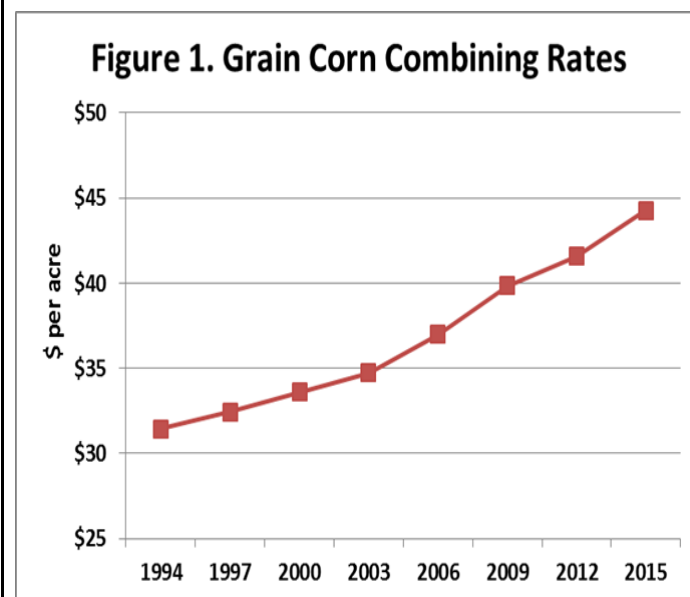
On average, the yield lag associated with wide rows was relatively small in 2015 and depended on trial location and variety. Since 2015 was an excellent soybean year with many treatments yielding over 60 bu/ac, these trials will be repeated in 2016. When there was a yield lag in wide rows it could potentially be won back with various management strategies including strip tillage, fertilizer, or foliar fungicides at most of the sites but not all. There was no evidence that wide rows responded more to these inputs than narrow rows. Overall, with adequate heat units and in fields that grow tall, bushy soybeans there may not be a yield lag associated with wide rows if the correct variety is planted. Success with wide rows will depend on good fertility, early planting, and excellent weed control. Wide rows are a good management choice for growers that have consistent white mould pressure and high yield potential. They are not a good choice for fields with lower yield potential, limited heat units, or late planting.

Custom Rates Increased Again In 2015

John Molenhuis, OMAFRA Business Analysis and Cost of Production Program Lead

Continuing a long standing trend with custom farmwork, 2015 custom rates rose from the previous report in 2012. Figure 1 shows an example of grain corn combining rates from 1994 to 2015.

Combining rates have been on a steady increase over the past 20 years, which is true of most field crop operations. Overall, per acre rates increased 8.5% across all operations from 2012 to 2015, a 2.8% increase per year.



Hiring custom farmwork allows farm managers to purchase fieldwork and other services instead of owning the equipment and doing the work. For equipment owners, providing custom farmwork services can be the focus of a business, a sideline farming enterprise that spreads equipment ownership costs over more acres, or a marketing tool to complement the sale of other farm inputs.

Every three years custom farmwork operators in Ontario are asked what they charged for custom farmwork operations. The results are reported in the **Survey of Ontario Custom Farmwork Rates Charged in 2015** (www.omafra.gov.on.ca/english/busdev/2015customrates.htm).

Averages shown in the tables of this report are a simple average of the rates charged in 2015 across Ontario. There is no assurance that using the average rates reported will cover the cost of providing the service. Before setting prices for yourself, carefully calculate all your costs and returns.

An interesting side note on demographics, in 1994 a total of 772 custom operators responded compared to 220 in 2015. There are fewer custom operators now just as there are fewer farmers.

The custom rate year over year increases may not be as high as one would expect given that machinery prices and costs in general have increased at higher rates. There could be a number of reasons for that including sample size changes over time, it is not always the same custom operators included in summary and custom operator supply and demand factors. Another possible reason could be the size of equipment they are operating and how many acres they are covering. Machinery size has been increasing over time, and covering more acres will spread the fixed costs of the machinery over more acres. For example, in 2006 the common corn planter size was 8 rows and in 2015 it was 12 rows. The work rates increased from 8 acres per hour to 10 acres per hour from 2006 to 2015. Custom operator machine size data is not available for years earlier than 2006 but the trend of increasing machinery size over time would likely hold true.

The costs to own and operate machinery are increasing and custom rates reflect this. Table 1 shows the increase in custom rates for grain corn operations from 2009 to 2015. Rates increased \$12 - \$13 or 8% between each survey period. It's important to know your machinery costs to help you make the decision whether owning your own equipment or hiring custom operators is the best option.

Table 1. Custom rates comparison			
Corn operations	2009	2012	2015
Plow	\$24	\$25	\$29
Cultivation (2x)	\$24	\$26	\$28
Plant	\$19	\$22	\$22
Spraying	\$9	\$9	\$10
Fertilizing	\$8	\$8	\$9
Harvest	\$40	\$42	\$44
Trucking	\$32	\$32	\$35
Total	\$152	\$164	\$177

The OMAFRA Factsheet **Guide to Custom Farmwork and Short-term Equipment Rental** (www.omafra.gov.on.ca/english/busdev/facts/13-039.htm) provides decision-making tools for farm managers and custom farmwork operators to manage the use of equipment and work time to meet production and profit goals. There are also Excel-based **Farm Business Decision Calculators** to help calculate custom farmwork and short-term equipment rental rates (www.omafra.gov.on.ca/english/busdev/downtown.htm).

Reducing Mycotoxins in Corn Silage with Application of Fungicides

Scott Banks, OMAFRA Emerging Crops Specialist

Fungi that infect crop plants and produce mycotoxins can reduce grain quality and profits, but they can also affect the performance of livestock who consume infected feed. There are a number of mycotoxins that can be found in Ontario crops, and the one we discuss most often goes by a few names: deoxynivalenol, vomitoxin or DON. We typically have greater levels of DON when there are cool, wet conditions during pollination and grain fill.

In corn, DON is produced by *Gibberella zeae* (the name of a specific life cycle of *Fusarium*) and presence of DON can cause cattle to refuse feed. At DON levels above 0.5 ppm in feed there can be cause for concern of animal health and productivity, and at levels above 2.5 ppm feed containing DON can cause harm to cattle. Livestock may refuse to eat contaminated feed, and research conducted by Pennsylvania State University has shown that at levels as low as 0.56 ppm animal performance can be reduced.

Field Trials with Proline®

A 3 year study was conducted from 2013 to 2015 on farms in Eastern Ontario to assess the use of the fungicide Proline® on corn silage to reduce mycotoxin levels. Proline® was applied at the tasselling stage in plots with 2 replications. Silage weight and moisture were measured, and samples were tested for the presence of the following mycotoxins: aflatoxin (types B1, B2, G1 and G2), fumonisin (B1 and B2), ochratoxin A, zearalanone, T-2, HT-2, 3-acetyl-deoxynivalenol, 15-acetyl-deoxynivalenol, and DON.



Figure 1. Photo courtesy of John Nanne, Pakenham

In each year of the three years, the main mycotoxin present was DON. Other mycotoxins found at minimum levels were 3-acetyl-deoxynivalenol, 15-acetyl-deoxynivalenol, T-2, HT-2 and zearalenone. Overall, when Proline® was applied there was an average 66% reduction in DON levels and a modest 4% average increase in silage yield (Table 1). Based on corn silage valued at \$35/tonne and the cost of Proline® fungicide of \$32/ac + \$10/ac for application, a 1.2 tonnes/ac silage increase is required to break even. This does not include the value of improved animal performance from reducing the level of mycotoxins.

Note that the fungicide Caramba™ is also registered for use on field corn for suppression of *Gibberella zeae*.

Table 1. Summary of mycotoxin levels and corn silage yield in untreated and Proline®-treated plots

Harvest Year	Average DON (ppm)		Reduction of DON	Average Yield (mt/ac)*		Yield Increase with Fungicide
	Untreated	Proline		Untreated	Proline	
2013	0.5	0.1	-73%	16.6	17.0	2%
2014	0.5	0.2	-61%	20.5	20.8	1%
2015	1.4	0.5	-65%	18.9	19.8	5%
Average	0.7	0.3	-66%	18.0	18.7	4%

*Silage yield is in metric tonnes per acre adjusted to 65% moisture.

Weather Conditions and Mycotoxins

The weather, particularly the amount of rainfall during pollination and grain fill, impacts the growth of fungus and the mycotoxins they produce. Above normal rainfall in August 2015 may be the reason for the highest DON level over the 3 years, which was recorded in the untreated check. In general, rainfall was normal in 2013 and 2014, resulting in lower DON levels. Figures 1 and 2 show the Percent of Normal Rainfall for the months of July and August in 2015, respectively. The red circle indicates the area where the on-farm trial sites were located.

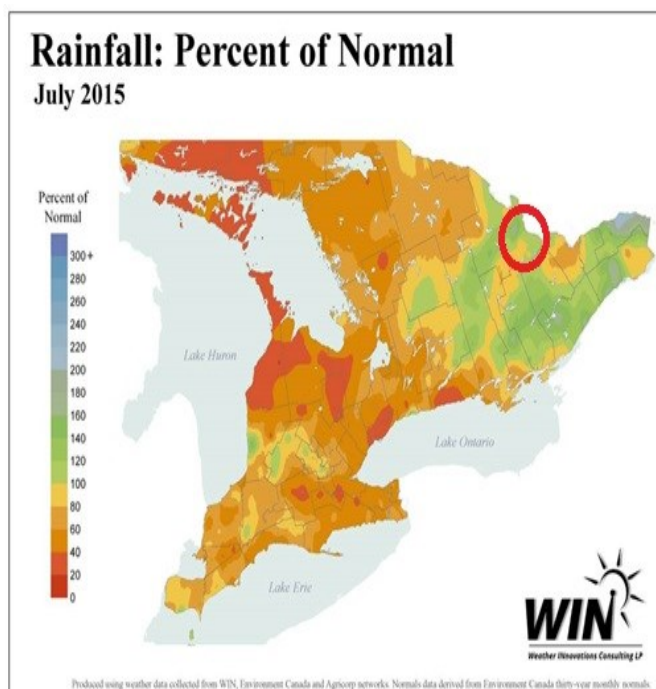


Figure 1: Rainfall Percent of Normal for July 2015

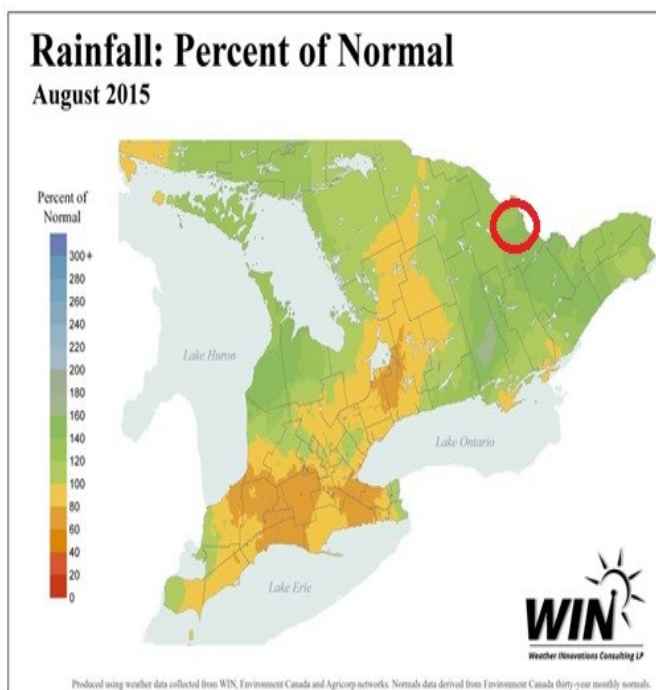


Figure 2: Rainfall Percent of Normal for August 2015

Is Recalibration Needed? Our Role in Providing Habitat and Fostering Biodiversity

Ian McDonald, OMAFRA Field Crops Applied Research Coordinator

One of the many benefits of being an OMAFRA field cropper, is travelling the roads of Ontario as I visit farmers, conduct applied research, and speak at meetings. I have always enjoyed viewing the many farm properties that dot the countryside. I have always been impressed with the efforts that people make to present their farms with pride and it is abundantly obvious that many take pride in their farms.

Over the last two summers though, I have wondered if our pride is blinding us from something. Are we inadvertently doing a dis-service to our surroundings with some of the practices we traditionally have thought of as showing our pride? I refer to the many miles of field road frontage I see mowed like a city lawn. This can be found up and down the country roads right across the province (Figure 1).



Figure 1. A typical scene of mowed roadsides along the rural roads of Ontario.

My colleague Tracey Ryan from Grand River Conservation Authority suggests that the initial notion of the “manicured lawn” comes from early settlers and their need to “push back the bush”. The ability to “tame” the land was seen as people’s ability to be successful.

From some of the things that have been happening both globally and locally, it is obvious that we should be concerned about biodiversity and the loss of habitat. This is habitat for a diverse plethora of creatures including micro-organisms, plants, insects, birds and mammals. This diverse complex of creatures need these wild areas for food, reproduction and protection, in other words “habitat”! These wild roadsides are also important corridors for travel of species that need this shelter as they forage in the environment. I think most us in rural Ontario put significant importance on habitat but maybe have lost sight about what that really means.

The importance of biodiversity to our everyday lives is not something that gets much thought. Biodiversity in the ecosystem appears to be undervalued by people despite how important it is to our lives. Tracey points out that “biodiversity is of vital importance because it underpins the functioning of the ecosystem which we depend on for food, water, health and recreation”. Biodiversity’s important biological functions include:

- regulating the chemistry of the atmosphere and water supply;
- recycling nutrients crucial to the maintenance of the earth’s soil fertility;
- providing ecological services such as the mass pollination of the world’s food crops; and supplying genetic variants for crop development and the creation of new medicines; and
- supplying genetic variants for crop development and the creation of new medicines.

When you consider the increasing size of farm fields accompanied by fence line removal, and the increasing acreage of corn, soybeans and hopefully winter wheat or spring cereals, maybe even with red clover or other cover crops, and the loss of forage and pasture in recent years, our fields are still becoming less diverse (<http://bitly.com/OMAFRAFarmStats> or <http://bit.ly/1LN44sT>). Do we need to rethink how we contribute to biodiversity by allowing “wild spaces” in as much of the remaining uncropped and forested areas of the province as possible to give these creatures the habitat they need to flourish? Although we don’t think about or often see many of these creatures, they are there and they are important in the overall ecology of our environment.

By mowing these public areas along roads are we removing habitat without thinking about the consequences? Is our view of what “looks good” becoming out of tune with the realities of our environment?

As well, when you consider the amount of fuel, exhaust, GHG’s etc that are put into the environment in our zest to make things “look good”, is it something that we have to rethink?

In recent travels across Ontario and the Maritimes I was thinking about these “wild spaces”, and observed the following examples of how these areas can be magnificent as habitat and a visual pleasure.



Figure 2. Lupins and other Species in PEI roadsides, July 2014



Figure 3. Wild natural roadsides in rural Ontario, July 2015



Figure 4. Wild natural roadsides in rural Ontario, July 2015



Figure 5. Lupins and other Species in PEI roadsides, July 2014

We in agriculture often consider ourselves the “first environmentalists”, as we play an important role in managing the ecology of the province, especially in southern Ontario. I would suggest that with little effort, we can provide significantly more contribution by thinking about and managing roadsides more ecologically to all of our collective benefit. The literature is full of interesting information on this subject and I draw your attention to a couple of good sources:

<http://bitly.com/RoadSides1>

<http://bitly.com/RoadSides2>

<http://bitly.com/RoadSides3>

The Facts on Swede Midge in Canola

Tracey Baute, OMAFRA Field Crop Entomologist

Meghan Moran, OMAFRA Canola and Edible Bean Specialist

Swede midge, *Contarinia nasturtii*, first appeared in Ontario on canola in 2003. Yield impact on canola has been variable and is strongly dependent on midge population levels, timing of infestation relative to plant stage and timing of insecticide application. Extreme swede midge populations in Northeastern Ontario have been a significant challenge for canola producers, and in 2014 resulted in recommendations to avoid growing canola for 3 years in the New Liskeard area in an attempt to suppress swede midge population.

This pest requires intensive monitoring and management to protect the crop from injury. An infosheet on swede midge has recently been posted online at <http://fieldcropnews.com/2016/05/swede-midge-in-canola-infosheet/>. Refer to this infosheet for more information on the swede midge life cycle, how to use swede midge pheromone traps, and cultural practices that can contribute to mitigation of swede midge damage.

Life Cycle

There are four to five overlapping generations per year in Ontario starting in mid-May until October. First adult emergence is in mid- to late May, though not all swede midge emerge at the same time. There are two initial cohorts with peak emergence approximately 10-14 days apart in late May to early June. Rainfall totaling 6mm or more over a 7 day period triggers emergence. Adults are considered to be relatively weak fliers, but they are capable of moving several hundred meters and can be carried much further by wind. Females lay eggs in clusters of 20-50 eggs on the youngest, most actively growing tissue of the plant where larvae feed for 1 to 3 weeks, depending on temperature. Once mature, the larvae drop to the top few centimeters of soil to pupate for two weeks until emerging as an adult. Some larvae from each of the 4-5 generations will enter the soil and overwinter, and some midges (2-10%) remain in the soil in diapause for two years, possibly more.



Figure 1. Swede midge life cycle.—Photo credits: Adult - D.K.B Cheung; Eggs, Larvae and Pupae - L. Des Marteaux

Risk Factors and Damage

Canola grown in areas with a history of swede midge or in close proximity to last year's canola, cauliflower or broccoli fields are at risk. Swede midge is also hosted by cruciferous weeds and cover crops such as mustards, stinkweed, shepherd's purse, radish species and volunteer canola so proximity to these plants is a concern. Fields planted in late May to mid-June are most at risk because they will be in the younger, vulnerable stages during peak swede midge activity. Early planted fields that bolt quickly will typically not experience as much damage.

Enzymes in the saliva of the larvae break down plant tissue, resulting in swollen and distorted leaves, shoots and flower buds. On young plants, the main growing point of the plant may die, preventing bolting and producing blind heads. Secondary racemes may develop from the destroyed primary shoots which prolongs days to maturity. If the canola plant is beyond the bolting stage (GS 30-39 or 2.1-2.10) before the midge infests the plant, the impact is usually not as extreme, but any developing bud tissue in the leaf axils will be susceptible to infestation.

Scouting and Managing Swede Midge

If damage is found on canola plants, it may be too late for adequate control of swede midge. Larvae are also very small and difficult to see, so monitoring of the crop must be done through trapping of adults. Begin trapping in early May, as soon as seedlings have emerged in order to determine when first adult emergence or arrival has occurred and when thresholds are reached. Start monitoring traps when plants have one true leaf and continue until the crop is in full bloom. As swede midge

numbers can increase to threshold levels quickly, it is important to check traps regularly (every 2 days) to determine the number of adults captured per trap per day. Traps can be purchased from www.solida.ca.

When a total of 20 adults have been captured from the start of trapping, threshold has been reached and the first insecticide application is required. Subsequent insecticide treatments may be necessary if an average of 5 adults per trap per day are caught and the canola is still in pre-flowering stages. Insecticides should be applied as soon as thresholds are reached.

Matador/Silencer (ai: lambda-cyhalothrin) and Coragen (ai: chlorantraniliprole) are registered for swede midge on canola. Matador and Silencer are pyrethroids and should not be sprayed during the heat of the day; efficacy decreases as temperature increases. If using Coragen, a surfactant must also be used. Do not use Coragen within 60 days of planting with either Lumiderm or Fortenza (also from Group 28 diamides) seed treatments that season. Check the product labels for further information and precautions.

Thorough coverage is important for optimum control. High water volumes (greater than 200 litres/ha) and smaller droplet sizes ensure good coverage and penetration of crevices where swede midge larvae are feeding. Multiple treatments are likely necessary, with a minimum interval of seven days between treatments.



Figure 2. Swede midge damage in canola at various crop stages; (a) GS 50 or 3.1; (b) GS 50 or 3.2; (c) GS 51 or 3.3

Slurry Seeding Cover Crops Following Wheat Harvest

Christine Brown, Nutrient Management Lead, OMAFRA

Regular manure applications combined with forage-based rotations are the envy of crop producers when soil organic matter (SOM) levels and soil resilience are considered. Cover crops planted with an application of manure after wheat harvest may be the next best option.

Manure application during the growing season is preferred for several reasons:

- Nutrients from manure can be utilized by growing crops
- Risk of compaction is reduced and the addition of cover crops can further reduce existing compaction and help increase water infiltration
- Risk of phosphorus loss from manure is lower during the growing season. Phosphorus loss from soils during the non-growing season represents about 80% of the annual loss.
- Soil micro-organisms respond to the nutrients from manure, especially when applied with growing crops, and often result in increased biomass production. A variety of cover crop species will add diversity while soil micro-organisms will enhance root systems.

There are a variety of methods for seeding cover crops before or after manure application. Conventional methods have manure applied followed with a tillage pass to incorporate manure and the broadcast cover crops. In recent years, slurry seeding has become popular and is being done by mixing cover crop seed with manure in the tanker; adding a seeder to the tanker (pictured below) that can place cover crop seed into the injection strip and/or other innovative equipment designs. One pass application, improved seed placement and reduced compaction risk are all benefits. The interaction of manure nutrients with cover crop growth and the benefits to the soil microbial populations and increased biomass production can be significant.



Figure 1. Cover crops applied in the same pass as the manure application saves a trip over the field and can improve placement. This design can also seed cover crops into standing corn with a side-dress

A side-by-side study done in 2015 after wheat harvest compared several different cover crop species mixes with and without manure (in this case digestate, which is similar in composition to liquid hog manure). A multi-species mix with 10 different cover crop species was compared to a mix with 3 species. The results are shown in the image below and in Table 2, *Approximate Biomass Yield of Three Cover Crop Mixes with and without Organic Amendment*. The areas that had the digestate applied were easy to distinguish. Biomass yield (average dry matter yield measured from three 1m² sections per treatment) shows the impact from the organic amendment and approximate difference from the various species.



Figure 2. Synergistic effect of manure on cover crop growth. Nutrients from manure increase microbial activity that increases cover crop top

In each treatment, the cover crop with added organic amendment had a higher biomass yield, however the multi-species mix with 10 species did not yield as much biomass relative to the 3-species mix or oats alone. Observations at harvest would suggest that where the digestate was applied, there was more growth of nitro radish. The radish have a lot of top growth and large root, but dominates over the other species so that there are very few other cover crop species growing near the radish. Multi-species mixes seems to give a bigger benefit where an organic amendment is not applied, while species that include mainly cereals (oats, barley, cereal rye, etc) and a smaller amount of radish and/or legume will give higher biomass yield where manure is applied.

Table 1—Approximate Biomass Yield of Three Cover Crop Mixes with and without Organic Amendment

Cover Crop	With Manure	Without Manure	Increase from manure
	Approximate Yield (ton/ac)*		
Oats	3.6	2.8	33 %
Multi-Species Mix: Planted at 40 lbs/ac 33% Oats, 4% Nitro radish, 2% Brassica, 2% Sorghum Sudangrass, 1% Phacelia, 2% Sunflowers, 4% Sun hemp, 5% Turnips, 25% Crimson Clover, 23% Austrian Peas	2.10	1.75	17 %
3 Species Mix: Planted at 30 lbs/ac 14% Nitro Radish, 16% Crimson Clover, 70% Oats	2.85	1.83	36 %

* biomass yield that includes top-growth and comparative root mass
The above data represents one site –one year
3,500 gal/ac digestate was applied in mid-August. The nutrient composition of digestate is similar to hog manure.

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Retour sur l'échantillonnage PSNT et la version révisée des recommandations PSNT

Ben Rosser, spécialiste de la culture du maïs, MAAARO

Le début juin est la fenêtre du test préalable à l'épandage d'azote en bandes latérales (PSNT). Ce test mesure la quantité d'azote des nitrates du sol juste avant le moment traditionnel de l'épandage en bandes latérales, et il fournit une indication sur le potentiel d'apport d'azote (N) du sol. La mesure de PSNT peut être influencée par certains paramètres propres au champ (matière organique du sol, culture précédente) et par les conditions météorologiques (température, précipitations) qui ont un effet sur la libération et la perte des nitrates du sol. Cette mesure quantitative du N du sol est l'occasion d'ajuster les taux de N à partir des apports prévus. Le retard d'échantillonnage lié à l'analyse PSNT permet aussi parfois de détecter des nitrates qui ont été minéralisés à partir des sources de N (fumier, légumineuses). Comme de nombreux facteurs pris en compte dans les recommandations générales pour N (ou la calculatrice d'azote) ont une influence sur les teneurs du sol, il est important de considérer les recommandations PSNT indépendamment de ces mêmes recommandations générales.

Revue de la méthode d'échantillonnage PSNT

On effectue l'échantillonnage juste avant le moment traditionnel de l'épandage en bandes latérales, lorsque le maïs a atteint une hauteur de 6 à 12 pouces, généralement pendant la première ou la deuxième semaine juin. Le nitrate est plus mobile que les autres éléments nutritifs, et pour mieux le quantifier il faut faire un échantillonnage plus profond. Les recommandations du MAAARO sont étalonnées pour une profondeur d'échantillonnage de 12 pouces, que tous les prélèvements doivent respecter. L'opération doit être effectuée avec une sonde d'échantillonnage qui assure la représentativité de l'ensemble des prélèvements (Figure 1).



Figure 1. Prélèvement d'échantillons PSNT à 12 pouces à l'aide d'une sonde d'échantillonnage.

Tout épandage d'azote à la volée fait augmenter les teneurs en nitrate du sol, ce qui mène à une sous-estimation des besoins et par conséquent à des recommandations erronées. On ne doit pas effectuer de prélèvement PSNT conjointement avec ces pratiques. Il est raisonnable d'épandre des quantités modestes de N (p. ex. 30 livres de N/acre) avec un engrais de démarrage si cet épandage est fait dans une bande permettant d'échantillonner au milieu du rang pour éviter les bandes.

Les échantillons envoyés sont souvent constitués d'une livre de sol contenue dans un sac ou une boîte. Placer plusieurs échantillons dans un seau de plastique propre et veiller à ce que l'envoi soit représentatif de l'ensemble des carottes prélevées. Pour ce faire, il faut souvent bien briser les échantillons individuels et les mélanger à la main. Envoyer séparément les échantillons prélevés dans différentes parties du champ entre lesquelles vous avez des raisons de croire que les méthodes culturales passées, les types de sol, la topographie ou d'autres facteurs ont pu produire des écarts de teneur en N.

Garder les échantillons au frais pour prévenir la minéralisation ultérieure de N par les microbes du sol. Au cours de l'échantillonnage sur le terrain et pendant le transport des échantillons, il est préférable d'avoir une glacière. Pour obtenir des résultats précis, faire parvenir les échantillons au laboratoire aussitôt que possible.

Version révisée des recommandations de l'analyse PSNT

Dans les premières recommandations PSNT publiées en 1993, on suggérait une dose d'épandage calculée seulement en fonction de la teneur du sol en nitrates. La méthode d'échantillonnage n'a pas changé, mais les recommandations PSNT ont été révisées en 2015 à la lumière des dernières recherches sur la réponse à N en Ontario; elles mènent à une recommandation d'épandage de N en bandes latérales calculée à la fois à partir des teneurs en nitrates et des rendements prévus (Tableau 1).

Tableau 1. Version révisée des recommandations du test préalable à l'épandage d'azote en bandes latérales (PSNT) en fonction des teneurs en N du sol et du rendement prévu.

Nitrate du sol (PPM)	Rendement prévu (boisseaux/acre)					
	120	143	167	191	215	239
	Recommandations d'épandage d'engrais azoté en bandes latérales (livres de N/acre)					
0	176	197	218	240	261	282
2,5	163	184	205	225	246	267
5	151	171	191	211	231	252
7,5	138	158	177	197	216	236
10	126	144	163	182	201	221
12,5	113	131	149	168	187	206
15	99	117	135	153	172	190
17,5	83	102	120	138	156	175
20	57	86	105	123	141	159
22,5	0	60	88	107	126	144
25	0	0	63	90	110	128
27,5	0	0	0	66	92	111
30	0	0	0	0	68	93
32,5	0	0	0	0	0	69
35	0	0	0	0	0	0

La culture de soya en rangs espacés - Une bonne option pour les producteurs ontariens

Horst Bohner, spécialiste de la culture du soya, MAAARO

En Ontario, les cultures de soya sont le plus souvent ensemencées en rang étroits (7 à 15 pouces). Sous nos climats, on reproche principalement aux rangs espacés (30 po) de donner souvent de moins bons rendements que les rangs étroits. Selon des recherches menées par l'Université de Guelph à la fin des années 1990, l'écart est de 3 à 5 boisseaux/acre. Les rendements des rangs de 15 po étaient équivalents à ceux des rangs de 7,5 po. Cependant il est possible de combler cet écart en favorisant la croissance végétative de début de saison par l'emploi d'engrais de démarrage et d'autres stratégies appliquées à de nouvelles variétés. En présence de rangs espacés, il est également possible d'épandre un engrais par bandes de 2 x 2, une méthode efficace pour accroître les rendements là où les résultats d'analyse des sols sont médiocres. L'épandage de fongicides foliaires permet aussi de réduire l'écart de rendement. Dans les rangs espacés, les pertes par piétinement sont moindres et la meilleure pénétration du produit accroît l'efficacité des fongicides. Avec la généralisation des systèmes de direction assistée, les producteurs pourraient aussi s'appuyer en grande partie sur le travail du sol par bandes pour combler les pertes de rendement en question.

Pourquoi les rangs espacés? Ils présentent plusieurs avantages : possibilité d'ensemencer le maïs et le soya avec le même appareil, densité des semis plus faible, verse moindre et réduction de la pression exercée par la maladie. Ils permettraient également de mettre en terre une culture de fin de saison. Les cultures de soya en rangs espacés (30 po) sont habituellement moins touchées par la moisissure blanche parce que l'air y circule mieux, le soleil y pénètre bien et les peuplements sont moins denses.

Des essais au champ avec répétition ont été effectués à Elora, Bornholm, Ridgetown et Winchester en 2015. Pioneer Seeds a également évalué les cultures en rangs espacés dans plusieurs localités de l'Est ontarien. Les résultats obtenus variaient selon les sites considérés.



Figure 1. Travail du sol par bandes au printemps sur des rangs de 30 pouces.

À la station de recherches d'Elora, en 2015, le travail du sol par bandes a permis de rattraper la perte de rendement associée à la culture en rangs espacés (Tableau 1). L'emploi d'engrais et de fongicides a également permis d'accroître les rendements. Cependant, dans cette localité, les cultures en rangs étroits ont également très bien répondu aux pratiques culturales. De façon générale on a obtenu d'excellents rendements, ce qui a probablement contribué aux bons résultats des rangs espacés.

Tableau 1. Réduction de l'écart de rendement (Elora 2015).

	Rendement Boisseaux/acre
15 po, sans travail du sol (170 000 graines/acre)	58,8
30 po, sans travail du sol (170 000 graines/acre)	54,0
30 po, sans travail du sol (120 000 graines/acre)	52,6
30 po, travail du sol en bandes	58,6
30 po, travail du sol en bandes + P K (2 x 2)	62,7
30 po, travail du sol en bandes + fongicide foliaire	65,0
30 po, toutes les méthodes	68,4
15 po, toutes les méthodes	66,4
Traitements 3 à 8 = 120 000 graines/acre 2 répétitions, P = 11 ppm, K = 82 ppm	

À Bornholm, les pratiques culturales n'ont pas permis de rattraper la perte de rendement (Tableau 2). C'est dans les rangs étroits et avec les variétés de saison longue qu'on a obtenu les meilleurs rendements. DS04-D3 a une maturité relative (MR) de 0,4 et Titanium une MR de 1,3.

Tableau 2. Réduction de l'écart de rendement (Bornholm 2015).

	Rendement Boisseaux/acre
15 po, sans travail du sol (170 000 graines/acre)	56,3
15 po, sans travail du sol (120 000 graines/acre)	55,8
30 po, sans travail du sol (170 000 graines/acre)	51,9
30 po, sans travail du sol (120 000 graines/acre)	48,1
30 po, travail du sol en bandes	50,4
30 po, travail du sol en bandes + P K (2 x 2)	54,3
30 po, travail du sol en bandes + fongicide	54,2
30 po, toutes les méthodes	54,0
15 po, toutes les méthodes	60,8
15 po, sans travail du sol (variété P12T82R)	65,3
30 po, travail du sol en bandes (P12T82R)	54,8
30 po, toutes les méthodes (P12T82R)	59,1
15 po, sans travail du sol (variété Apex)	67,1
30 po, travail du sol en bandes (Apex)	62,5
30 po, toutes les méthodes (Apex)	61,8
15 po, sans travail du sol (variété RR2 Titanium)	69,3
30 po, sans travail du sol (RR2 Titanium)	61,4
30 po, toutes les méthodes (RR2 Titanium)	62,5
Traitements 1 à 7, variété NK S04-D3, Traitements 4 à 8, 11, 12, 14, 15, 17, 18 = 120 000 graines/acre 3 répétitions, P = 15 ppm, K = 119 ppm	

À Winchester (Tableau 3), les pratiques culturales ont permis de combler en grande partie la perte de rendement liée aux rangs espacés. À cet endroit, on a effectué un travail du sol conventionnel.

	Rendement Boisseaux/acre
15 po (170 000 graines/acre)	68,7
15 po (120 000 graines/acre)	70,4
30 po (120 000 graines/acre)	65,7
30 po (170 000 graines/acre)	64,8
30 po (120 000 graines/acre) + 80 livres/acre 11-52-0,3 gal 6-24-6	68,4
30 po + 50 livres/acre N	66,0
30 po + fongicide foliaire	67,5
30 po + fongicide foliaire + fertilisation foliaire	69,3
30 po, toutes les méthodes	67,6
4 répétitions	

L'étude de Pioneer Seeds ne montre aucune perte de rendement dans les cultures à rangs espacés dans l'Est ontarien en 2015. Le rendement moyen des rangs de 30 po était de 62,1 boisseaux/acre contre 60,1 boisseaux/acre pour les rangs de 15 po. À noter que ces champs étaient très productifs et étaient touchés par la moisissure blanche. Les sites de l'Ouest de l'Ontario étaient exempts de moisissure blanche.

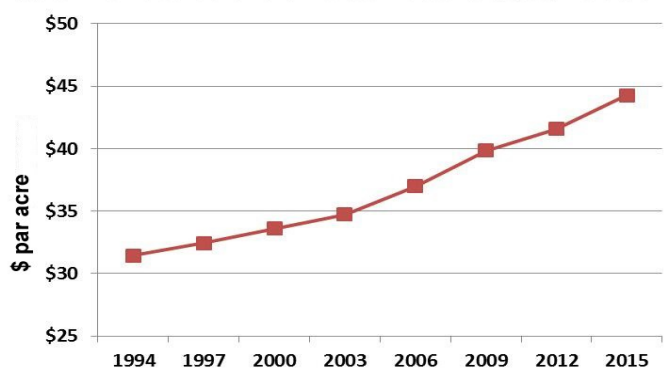
En moyenne, en 2015, la perte de rendement associée aux rangs espacés était relativement modeste et variait selon le lieu de l'essai et la variété cultivée. Étant donné que 2015 était une excellente année pour la production de soya, de nombreux traitements ayant produit plus de 60 boisseaux par acre, on répétera ces essais en 2016. Là où les rangs espacés étaient associés à une perte de rendement, diverses pratiques culturales (labour en bandes, épandage d'engrais, emploi de fongicides foliaires) ont permis de combler cet écart dans la plupart des localités, mais pas partout. Rien ne permet de penser que les cultures en rangs espacés répondaient mieux à ces intrants que les cultures en rangs étroits. Globalement, si le nombre d'unités thermiques reçues est suffisant et dans les champs où l'on produit des plants de soya hauts et buissonneux, la culture en rangs espacés peut ne pas s'accompagner de perte de rendement si l'on choisit la bonne variété. Les résultats de cette méthode dépendent de la fertilité du sol, de l'ensemencement précoce et d'une excellente maîtrise des mauvaises herbes. La culture en rangs espacés constitue un bon choix là où la moisissure blanche exerce une pression constante et où le potentiel de rendement est élevé. Ce n'est pas un choix à recommander pour les champs à faible potentiel de rendement, là où le nombre d'unités thermiques est limité ou là où l'ensemencement est tardif.

Les tarifs de travail à forfait ont encore augmenté en 2015

John Molenhuis, chargé de programme, analyse des activités commerciales et des coûts de production, MAAARO

Entre la date de production du rapport de 2012 et 2015, les tarifs de travail à forfait ont augmenté, ce qui s'inscrit dans une tendance à long terme dans ce domaine. La Figure 1 montre des tarifs de travail à la moissonneuse-batteuse pour le maïs-grain de 1994 à 2015. Ils accusent une augmentation constante depuis les 20 dernières années, et cela vaut aussi pour la majorité des grandes cultures. Globalement, de 2012 à 2015, les tarifs par acre ont augmenté de 8,5 % pour l'ensemble des exploitations, soit de 2,8 % par an.

Figure 1. Tarifs du travail à la moissonneuse-batteuse, maïs-grain



Le recours aux travaux agricoles à forfait permet aux exploitants d'acheter du temps de travail aux champs et d'autres services, ce qui leur évite d'acquérir le matériel et de faire le travail eux-mêmes. Pour ce qui est des propriétaires de matériel, l'offre de services de travaux agricoles à forfait peut être l'activité principale d'une entreprise, une activité agricole secondaire qui permet de répartir le coût du matériel sur une plus grande superficie ou un outil de mise en marché complémentaire à la vente d'autres intrants agricoles.

Tous les trois ans, on demande à des entrepreneurs offrant du travail agricole à forfait en Ontario quels ont été leurs tarifs. Les résultats sont consignés dans l'**Enquête sur les tarifs perçus en 2015 pour les travaux agricoles à forfait** (<http://www.omafra.gov.on.ca/french/busdev/2015customrates.htm>). Les chiffres qui apparaissent dans les tableaux du présent rapport sont de simples moyennes des tarifs facturés dans l'ensemble de l'Ontario en 2015. Rien ne permet d'assurer que les tarifs moyens qui apparaissent ici permettront de couvrir les coûts de la fourniture du service en question. Avant d'établir vos propres tarifs, calculez soigneusement tous vos coûts et vos revenus.

En passant, une note intéressante d'ordre démographique : en 1994, au total, 772 entrepreneurs ont répondu à l'enquête contre 220 en 2015. Les entrepreneurs offrant du travail à forfait sont de moins en moins nombreux, tout comme les agriculteurs.

L'accroissement annuel des tarifs des travaux à forfait n'est pas aussi important qu'on aurait pu le croire étant donné que les prix des machines et les coûts en général augmentent encore plus rapidement. Il pourrait y avoir plusieurs raisons à cela; par exemple la taille de l'échantillon a changé au cours du temps, l'étude ne porte pas toujours sur les mêmes entrepreneurs et il existe divers facteurs qui influencent l'offre et la demande dans ce secteur. Une autre raison possible pourrait être la taille des machines qu'ils utilisent et les superficies qu'ils couvrent. Avec le temps, les machines sont de plus en plus grosses, ce qui permet de couvrir une plus grande superficie et donc de répartir plus largement les coûts fixes. Par exemple, en 2006, le semoir à maïs ordinaire couvrait 8 rangées de large, contre 12 rangées en 2015. La superficie couverte est passée de 8 acre/heure en 2006 à 10 acre/heure en 2015. Il n'existe pas de données sur la taille des machines des entrepreneurs offrant des travaux à forfait avant 2006, mais il est probable qu'ils refléteraient aussi une tendance à l'augmentation au cours du temps.

Les coûts de propriété et d'exploitation des machines augmentent et cette tendance se répercute sur les tarifs de travail à forfait. Le Tableau 1 montre l'accroissement des tarifs de travail à forfait pour la production de maïs-grain de 2009 à 2015. Entre les périodes de sondage, l'augmentation était de 12 à 13 \$, soit 8 %. Avant de déterminer si la meilleure option est d'acquérir votre propre matériel ou de faire appel à des entrepreneurs à forfait, il faut bien connaître les coûts liés à la machinerie.

Exploitations productrices de maïs	2009	2012	2015
Labour	24 \$	25 \$	29 \$
Sarclage (2 x)	24 \$	26 \$	28 \$
Mise en terre	19 \$	22 \$	22 \$
Pulvérisation	9 \$	9 \$	10 \$
Épandage d'engrais	8 \$	8 \$	9 \$
Récolte	40 \$	42 \$	44 \$
Transport par camion	32 \$	32 \$	35 \$
Total	152 \$	164 \$	177 \$

La Fiche technique du MAAARO intitulée **Guide to Custom Farmwork and Short-term Equipment Rental** (www.omafra.gov.on.ca/english/busdev/facts/13-039.htm, en anglais seulement) contient des outils de prise de décision à l'intention des gestionnaires d'exploitations agricoles et des entrepreneurs offrant des travaux agricoles à forfait, en ce qui concerne l'utilisation du matériel et le temps de travail requis pour atteindre les objectifs de production et de profits. Il existe également des **outils informatiques pour la gestion** sur Excel pour le calcul des tarifs de travail agricole à forfait et de location du matériel à court terme (<http://www.omafra.gov.on.ca/french/buseddowntown.htm>).

L'épandage de fongicides pour réduire les mycotoxines dans l'ensilage de maïs

Scott Banks, spécialiste des cultures émergentes, MAAARO

L'infection des cultures végétales par des champignons qui produisent des mycotoxines peut avoir pour effet de réduire la qualité du grain et les profits, et elle peut également nuire au rendement du bétail qui consomme les aliments infectés. Plusieurs mycotoxines peuvent se retrouver dans les récoltes produites en Ontario, et celle dont il est question le plus souvent a plusieurs noms : désoxynivalénol, vomitoxine ou DON. Les teneurs en DON sont habituellement plus élevées si le temps a été frais et humide au moment de la pollinisation et du remplissage des grains.

Dans le maïs, le DON est produit par *Gibberella zeae* (nom qui désigne un cycle vital spécifique de *Fusarium*) et en sa présence, le bétail peut refuser de se nourrir. Dans les fourrages, les teneurs de DON de plus de 0,5 ppm peuvent se répercuter sur la santé et la productivité du bétail; lorsqu'elles dépassent 2,5 ppm, elles peuvent aussi nuire aux bovins. Les animaux peuvent refuser de consommer des aliments contaminés, et des recherches effectuées par la Pennsylvania State University montrent que des teneurs aussi faibles que 0,56 ppm peuvent réduire le rendement du bétail.

Essais de terrain avec la Proline^{MD}

Une étude de 3 ans menée dans des exploitations de l'Est ontarien de 2013 à 2015 visait à évaluer l'utilisation du fongicide Proline^{MD} sur le maïs d'ensilage en vue de la réduction des teneurs de mycotoxines. Dans les parcelles traitées, on a effectué un épandage de Proline^{MD} au stade de la floraison mâle, avec deux répétitions. On a mesuré le poids et la teneur en humidité de l'ensilage et on y a recherché la présence des mycotoxines suivantes : aflatoxine (types B1, B2, G1 et G2), fumonisine (B1 et B2), ochratoxine A, zéaralénone, T-2, HT-2, 3-acétyl-désoxynivalénol, 15-acétyl-désoxynivalénol et DON.



Figure 1 : Photo John Nanne, Pakenham

Chacune de ces trois années, la principale mycotoxine présente était le DON. Les autres mycotoxines présentes à des teneurs faibles étaient le 3-acétyl-désoxynivalénol, le 15-acétyl-désoxynivalénol, T-2, HT-2 et la zéaralénone. Globalement, à la suite d'un épandage de Proline^{MD}, on constatait une réduction moyenne de 66 % des teneurs en DON et un accroissement moyen modeste du rendement de l'ensilage, soit 4 % (Tableau 1). Si on part d'une valeur de 35 \$/tonne d'ensilage de maïs et d'un prix de 32 \$/acre pour le fongicide Proline^{MD} + 10 \$/acre pour l'épandage, on calcule qu'il faut un gain de 1,2 tonne/acre d'ensilage pour atteindre l'équilibre. Ce calcul ne tient pas compte de la valeur du gain de rendement du bétail à la suite de la réduction des teneurs en mycotoxines.

À noter que le fongicide Caramba^{MC} est également homologué pour l'emploi au champ en vue de la maîtrise partielle de *Gibberella zeae*.

Tableau 1. Sommaire des teneurs en mycotoxines et du rendement de l'ensilage de maïs dans les parcelles non traitées et traitées à la Proline^{MD}.

Année-récolte	Moyenne DON (ppm)		Réduction de la teneur en DON	Rendement moyen (tm/acre)*		Gain de rendement en présence du fongicide
	Non traité	Proline		Non traité	Pro-line	
2013	0,5	0,1	-73 %	16,6	17,0	2 %
2014	0,5	0,2	-61 %	20,5	20,8	1 %
2015	1,4	0,5	-65 %	18,9	19,8	5 %
Moyenne	0,7	0,3	-66 %	18,0	18,7	4 %

* Le rendement à l'ensilage est exprimé en tonnes métriques par acre et corrigé pour un taux d'humidité de 65 %.

Conditions météorologiques et mycotoxines

La croissance des champignons et les quantités de mycotoxines qu'ils produisent dépendent des conditions

météorologiques, et en particulier des quantités de pluie tombées pendant la période de pollinisation et de remplissage des grains. La teneur en DON la plus élevée des trois années, qui a été mesurée dans la parcelle-témoin non traitée, s'explique peut-être par les quantités de pluie supérieures à la normale qui sont tombées en août 2015. De façon générale, en 2013 et 2014, la pluviométrie a été normale et par conséquent les teneurs en DON étaient plus faibles. Les Figures 2 et 3 montrent la pluviométrie en pourcentage des valeurs normales pour les mois de juillet et d'août 2015 respectivement. Le cercle rouge indique le secteur où les essais à la ferme ont eu lieu.

Pluviométrie : pourcentage des valeurs normales juillet 2015

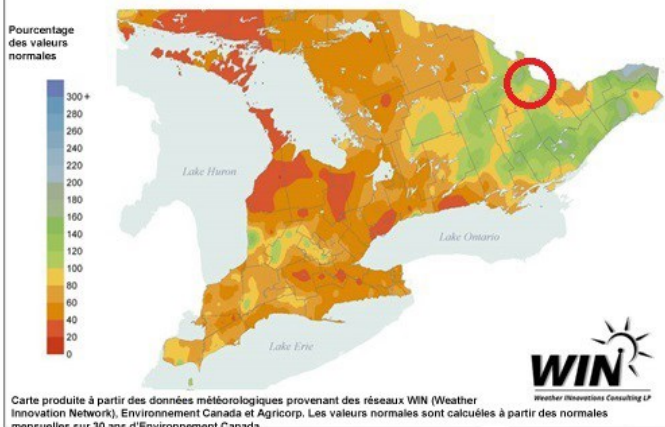


Figure 2 : Pluviométrie en pourcentage des valeurs normales pour juillet 2015.

Pluviométrie : pourcentage des valeurs normales Août 2015

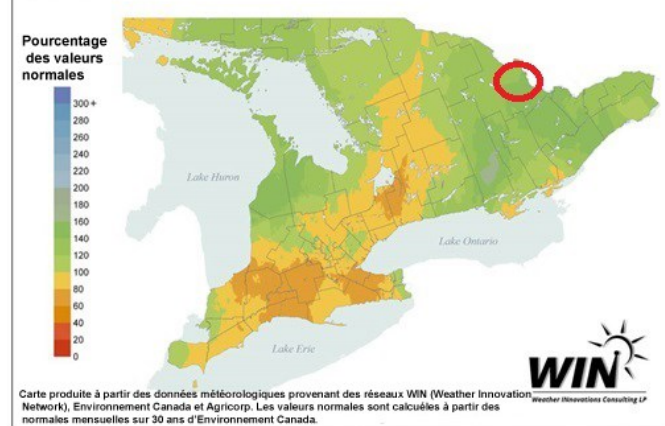


Figure 3 : Pluviométrie en pourcentage des valeurs normales pour août 2015.

Vers un changement de mentalité? Notre rôle comme protecteurs des habitats et défenseurs de la biodiversité

*Ian McDonald, coordonnateur de la recherche
appliquée, grandes cultures, MAAARO*

Le travail de coordonnateur des grandes cultures du MAAARO présente de nombreux avantages; entre autres, il offre l'occasion de parcourir les routes de l'Ontario pour rendre visite aux agriculteurs, effectuer de la recherche appliquée et prendre la parole à des rencontres. Pour moi le spectacle des nombreuses exploitations agricoles qui agrémentent le paysage rural est un plaisir renouvelé. Je suis toujours impressionné par la somme de travail que les gens font pour donner une image soignée leurs fermes dont, de toute évidence, ils tirent une grande fierté.

Cependant, au cours des deux derniers étés, j'ai commencé à me demander si cet état d'esprit ne nous empêchait pas de voir une partie de la réalité. Sans que nous le sachions, certaines des pratiques que nous suivons depuis toujours par pure fierté seraient-elles nuisibles à notre environnement? Je pense aux innombrables kilomètres d'accotements routiers adjacents à des cultures qui sont tondues comme des pelouses urbaines. C'est ce qu'on peut voir sur les routes rurales de toute de la province (Figure 1).



Figure 1. Paysage typique d'accotements tondues le long des routes rurales de l'Ontario.

Selon ma collègue Tracey Ryan de l'Office de protection de la nature de la rivière Grand, la notion de « pelouse soignée » remonte aux premiers colons qui éprouvaient le besoin de « déboiser ». À leurs yeux, le potentiel de réussite de toute personne se reflétait dans sa capacité à « dompter » la nature.

Mais à la lumière de certains événements survenus à l'échelle mondiale et locale, il est devenu évident que

nous devons nous soucier davantage de biodiversité et de la perte d'habitats. Les accotements routiers abritent une multitude d'êtres vivants (micro-organismes, plantes, insectes, oiseaux et mammifères) qui ont besoin de cet espace pour se nourrir, se reproduire et se cacher; autrement dit, c'est leur « habitat »! Les accotements routiers laissés à l'état naturel constituent également d'importantes voies de déplacement pour les espèces qui s'y abritent tout en recherchant leur nourriture. Il est vrai que de façon générale, dans les régions rurales de l'Ontario, nous accordons une grande importance à l'habitat, mais je crois que nous avons en oublié la véritable signification.

Dans nos vies quotidiennes, nous ne pensons pas souvent à l'importance de la biodiversité. Il semble que l'on sous-évalue son rôle dans l'écosystème, malgré la place qu'elle tient dans nos vies. Tracey souligne que « la biodiversité est essentielle parce qu'elle constitue le point de départ du fonctionnement de l'écosystème qui nous fournit nos aliments et notre eau, et dont nous sommes tributaires pour notre santé et nos loisirs ». Voici quelles sont les principales fonctions biologiques de la biodiversité :

- régulation des paramètres chimiques de l'atmosphère et des réserves d'eau;
- recyclage des éléments nutritifs essentiels au maintien de la fertilité du sol;
- fonctions écologiques telles que la pollinisation de masse des cultures alimentaires à l'échelle mondiale;
- fourniture de variantes génétiques pour la création de nouvelles cultures et de nouveaux produits pharmaceutiques.

Avec l'accroissement de la taille des champs cultivés et l'élimination des clôtures, avec l'augmentation des superficies consacrées aux cultures de maïs, de soya et, on l'espère, de blé d'automne et de céréales de printemps, peut-être même avec du trèfle rouge ou d'autres cultures de couverture, et avec la réduction des cultures fourragères et des pâturages ces dernières années, nos champs ont perdu une partie de leur diversité (<http://bitly.com/OMAFRAFarmStats> ou <http://bit.ly/1LN44sT>). Devons-nous concevoir autrement la façon dont nous contribuons à la biodiversité et, dans la mesure du possible, laisser place à des « espaces naturels » sur les surfaces non cultivées et boisées qui restent dans la province? Nous offririons ainsi à ces organismes l'habitat dont ils ont besoin pour prospérer. Bien que nous ne pensions pas souvent à eux et qu'ils se montrent rarement, ils sont bien là et ils jouent un rôle important dans l'écologie globale de notre environnement.

Lorsque nous tondons ces espaces publics qui longent les routes, est-ce que nous détruisons un habitat sans penser aux conséquences? Étant donné les réalités de notre environnement, notre conception de ce qui a « belle allure » est-elle dépassée?

Et il y a la consommation de carburant, les gaz d'échappement et les gaz à effet de serre que nous produisons dans un but purement « esthétique »; devrions-nous donc repenser tout cela?

Lors de mes derniers déplacements en Ontario et dans les Maritimes je pensais encore à ces « espaces naturels »; j'ai aussi remarqué les endroits suivants, qui sont à la fois de magnifiques habitats et un plaisir pour l'œil.



Figure 2 : Lupins et autres espèces présentes sur les accotements routiers de l'Île-du-Prince-Édouard, juillet 2014.



Figure 3 : Lupins et autres espèces présentes sur les accotements routiers de l'Île-du-Prince-Édouard, juillet 2014.



Figure 4 : Accotements routiers laissés à l'état naturel dans des régions rurales de l'Ontario, juillet 2015.



Figure 5 : Accotements routiers laissés à l'état naturel dans des régions rurales de l'Ontario, juillet 2015.

Dans le domaine de l'agriculture, nous nous considérons souvent comme les « premiers environnementalistes » parce que nous jouons un rôle important en matière de gestion de l'écologie de l'Ontario, en particulier dans le Sud de la province. Avec quelques efforts, nous pouvons améliorer grandement notre contribution; il nous suffirait d'y penser et d'assurer un entretien plus écologique des accotements routiers, pour le bien de tous. La documentation existante regorge de renseignements intéressants sur ce sujet; je vous recommande en particulier ces quelques bonnes sources d'information (en anglais seulement) :

<http://bitly.com/RoadSides1>

<http://bitly.com/RoadSides2>

<http://bitly.com/RoadSides3>

Les faits concernant la cécidomyie du chou-fleur dans le canola

Tracey Baute, entomologiste des grandes cultures, MAAARO et Meghan Moran, spécialiste de la culture des haricots comestibles et du canola, MAAARO

En Ontario, la cécidomyie du chou-fleur (*Contarinia nasturtii*) est apparue pour la première fois en 2003, dans du canola. Ses effets sur les rendements du canola sont variables; ils sont fortement liés à l'importance des populations de cet insecte, au moment de l'infestation par rapport au stade végétal, et au moment du traitement à l'aide d'insecticides. Dans le Nord-Est de la province, les populations extrêmement nombreuses de cécidomyies du chou-fleur ont gravement nui aux producteurs de canola; en 2014, il a même été recommandé d'éviter la culture du canola pendant 3 ans dans la région de New Liskeard pour tenter de réduire ces mêmes populations.

On doit soumettre ce ravageur à des mesures intensives de contrôle et de lutte pour protéger les cultures. Une fiche technique sur la cécidomyie du chou-fleur a récemment été mise en ligne à l'adresse <http://fieldcropnews.com/2016/05/swede-midge-in-canola-infosheet/> (en anglais seulement). Ce document contient d'autres informations sur le cycle vital de cet insecte, sur l'utilisation des pièges à phéromones pour la cécidomyie

du chou-fleur et sur les pratiques culturales qui peuvent contribuer à réduire les dommages qu'elle cause.

Cycle vital

En Ontario, chaque année, quatre ou cinq générations se chevauchent de la mi-mai à octobre. La première émergence d'adultes se produit au milieu ou à la fin de mai, mais tous les individus n'émergent pas en même temps. On observe 2 premières cohortes dont les pics d'émergence sont décalés de 10 à 14 jours, de la fin mai au début juin. L'émergence est déclenchée par des pluies atteignant un total de 6 mm sur une période de 7 jours. Les adultes volent mal mais ils peuvent parcourir plusieurs centaines de mètres, ou beaucoup plus s'ils sont portés par le vent. Les femelles pondent des amas de 20 à 50 œufs sur les tissus végétaux les plus jeunes et dont la croissance est la plus active, où les larves se nourrissent pendant 1 à 3 semaines selon la température. Arrivées à maturité, les larves s'enfoncent à quelques centimètres sous la surface du sol où leur pupaison dure deux semaines, puis elles émergent sous forme d'adultes. Certaines larves de chacune des 4 ou 5 générations pénètrent dans le sol où elles passent l'hiver, et certains individus (2 à 10 %) restent dans le sol en diapause pendant 2 ans, peut-être plus.

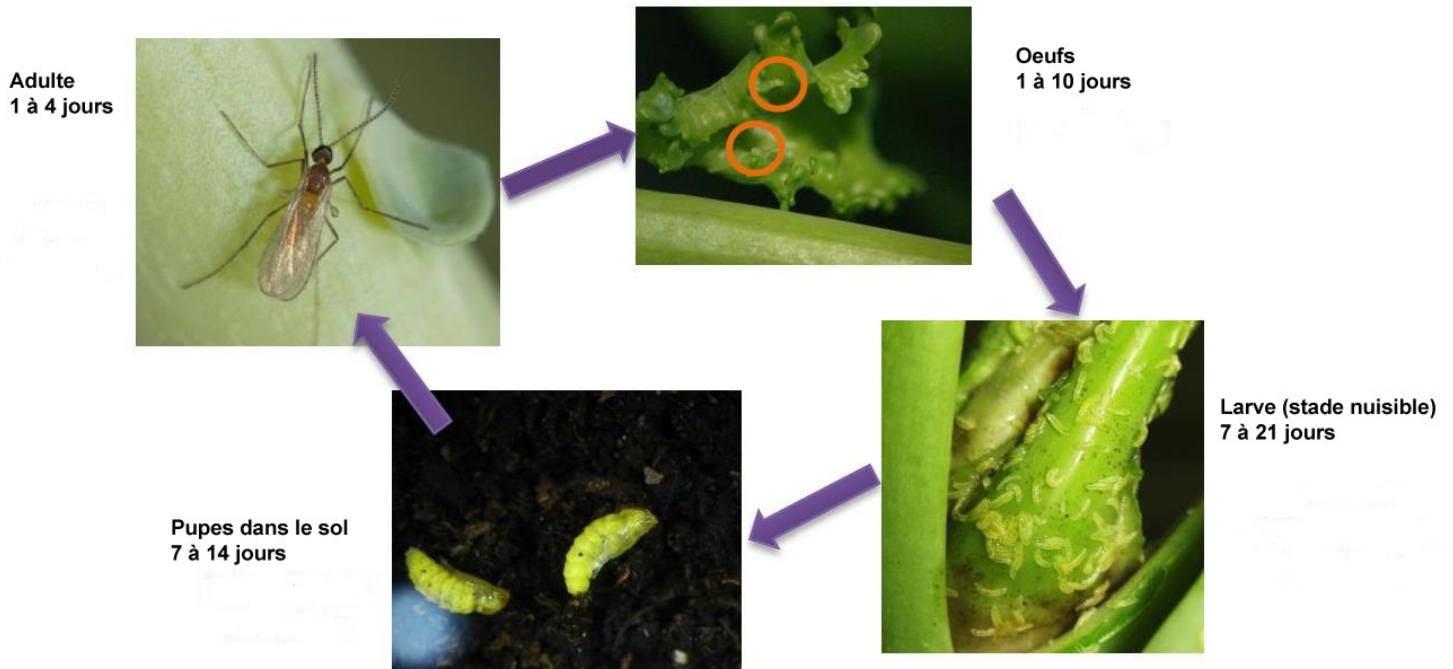


Figure 1. Cycle vital de la cécidomyie du chou-fleur

Photos : Adulte - D. K. B. Cheung; œufs, larves et pupes - L. Des Marteaux

Facteurs de risque et dommages

Les cultures de canola sont à risque si elles se trouvent dans des régions où la cécidomyie du chou-fleur a déjà été présente, ou si elles sont à proximité de cultures de canola, de choux-fleurs ou de brocoli. Les mauvaises herbes et les cultures de couverture de la famille des crucifères (moutardes, tabouret des champs, bourse-à-pasteur, radis et canola spontané) sont également des hôtes de la cécidomyie du chou-fleur, et il faut donc éviter la proximité de ces espèces. Les cultures les plus à risque sont celles qui sont mises en terre à la fin mai ou au début juin parce qu'elles seront à leurs stades les plus précoces et les plus vulnérables au moment du pic d'activité de la cécidomyie du chou-fleur. Les cultures mises en terre précocement qui montent rapidement en fleurs ne subissent généralement pas autant de dommages.

Les enzymes présents dans la salive des larves dégradent les tissus végétaux, ce qui produit une enflure et une déformation des feuilles, des pousses et des bourgeons floraux. Sur les jeunes plants, le principal point végétatif peut mourir, ce qui empêche la montée en fleurs et produit des pousses borgnes. Des racèmes secondaires peuvent se former à partir des pousses primaires détruites, ce qui retarde la maturation. Si le plant de canola a dépassé le stade de la montée en fleurs (GS 30-39 ou 2.1-2.10) avant l'infestation par la cécidomyie, les effets de celle-ci ne seront généralement pas aussi prononcés, mais les tissus de tous les bourgeons à l'aisselle des feuilles seront susceptibles d'être infestés.

Dépistage de la cécidomyie du chou-fleur et lutte

Lorsqu'on constate des dommages sur des plants de canola, il peut être trop tard pour lutter efficacement contre cet insecte. Comme les larves sont également très petites et difficiles à voir, la surveillance doit se faire par piégeage des adultes. Commencer le piégeage au début de mai, dès l'émergence des semis, pour pouvoir déterminer le moment de la première émergence d'adultes ou de l'atteinte des seuils d'intervention. Commencer le contrôle des pièges lorsque les plants ont une vraie feuille, et continuer jusqu'à ce que la culture atteigne la pleine

floraison. Comme les populations de cécidomyie du chou-fleur peuvent atteindre rapidement les seuils d'intervention, il faut vérifier les pièges régulièrement (tous les deux jours) pour calculer le nombre d'adultes capturés par piège par jour. On peut acheter les pièges à www.solida.ca.

Lorsqu'on a capturé un total de 20 adultes depuis le début du piégeage, le seuil d'intervention est atteint et c'est le moment du premier traitement insecticide. Des traitements ultérieurs pourront être nécessaires si on capture en moyenne cinq adultes par piège par jour et si le canola est encore aux stades de pré-floraison. Les traitements insecticides doivent être effectués aussitôt que les seuils ont été atteints.

Matador ou Silencer (matière active : lambda-cyhalothrine) et Coragen (matière active : chlorantraniliprole) sont homologués pour la lutte contre la cécidomyie du chou-fleur dans le canola. Matador et Silencer sont des pyréthroïdes, et on ne doit donc pas les épandre pendant les heures chaudes de la journée; en effet leur efficacité décroît avec l'augmentation de la température. Avec Coragen, on doit employer un surfactant. Dans les 60 jours qui suivent la mise en terre, ne pas employer Coragen sur des semences traitées avec Lumiderm ou Fortenza (également des diamides du groupe de mode d'action 28) pendant la même saison. Voir sur l'étiquette du produit les autres informations et les précautions à prendre.

Il est important d'assurer une couverture complète pour obtenir un effet optimal. L'utilisation de grands volumes d'eau (plus de 200 l/ha) et la formation de petites gouttelettes permettent une bonne couverture et la pénétration du produit dans les interstices où les larves de cécidomyie du chou-fleur se nourrissent. Dans la plupart des cas il faut plusieurs traitements espacés d'au moins sept jours.



Figure 2. Dommages causés par la cécidomyie du chou-fleur dans le canola à plusieurs stades de développement; (a) GS 50 ou 3.1; (b) GS 50 ou 3.2; (c) GS 51 ou 3.3

Ensemencement de cultures de couverture combiné à l'épandage de purin, après la récolte de blé

Christine Brown, chef du programme de gestion des éléments nutritifs, MAAARO

Les épandages réguliers de purin combinés à un système de rotation incluant des cultures fourragères produisent des teneurs en matière organique et une résilience du sol qui font rêver les producteurs de cultures végétales. Une autre option, presque aussi bonne, peut être l'ensemencement de cultures de couverture combiné à l'épandage de purin après la récolte du blé.

Il est préférable d'effectuer l'épandage de purin pendant la saison de croissance pour plusieurs raisons :

- Les éléments nutritifs présents dans le purin peuvent être absorbés par les cultures en croissance;
- Le risque de tassement du sol est moindre, et l'ajout de cultures de couverture a pour effet de réduire le degré de tassement existant et d'accroître l'infiltration de l'eau;
- Le risque de perte de phosphore du purin est plus faible pendant la saison de croissance. Les pertes de phosphore qui surviennent entre les saisons de croissance représentent environ 80 % du total des pertes annuelles;
- Les micro-organismes du sol répondent à l'apport d'éléments nutritifs du purin, surtout lorsque l'épandage est effectué dans des cultures en croissance, ce qui mène souvent à un accroissement de la production de biomasse. L'ensemencement d'une combinaison d'espèces de plantes de couverture ajoute à la diversité pendant que les micro-organismes du sol stimulent la formation des systèmes racinaires.

Il existe plusieurs méthodes d'ensemencement de cultures de couverture avant ou après l'épandage de purin. Dans les méthodes conventionnelles, l'épandage de purin est suivi d'un passage de travail du sol qui incorpore le purin et les semences de couverture épandues à la volée. Depuis quelques années, on combine l'ensemencement et l'épandage en une même opération, c'est-à-dire qu'on mélange les semences avec le purin dans la citerne juste avant l'épandage; l'ajout à la citerne d'un dispositif de placement des semis de couverture dans la bande d'injection, et d'autres modes de configuration du matériel, ont fait apparaître de nouvelles possibilités. Il en résulte plusieurs avantages : passage unique, meilleur placement des semences et réduction du risque de tassement du sol. Cependant on ignore ce que sont les interactions des éléments nutritifs du purin avec la croissance des cultures de couverture

ainsi que les avantages qui en découlent pour le sol.

Dans une étude comparative côte-à-côte effectuée en 2015 après la récolte du blé, on a étudié plusieurs mélanges d'espèces ensemencées avec et sans épandage d'un digestat anaérobie dont la composition était voisine de celle du purin de porcs. La comparaison portait sur un mélange de 10 espèces de plantes de couverture et sur un mélange de 3 espèces. Les résultats sont présentés dans l'image ci-dessous et au Tableau 1, Rendement approximatif de biomasse de trois combinaisons de plantes de couverture avec et sans amendement organique. Il était facile de reconnaître les endroits où le digestat avait été épandu. Les résultats du rendement de biomasse (rendement moyen de matière sèche mesuré à partir de sections de 1 m² pour chaque traitement) montre l'effet de l'amendement organique et les écarts approximatifs entre les diverses combinaisons.



Figure 1 : L'ensemencement des cultures de couverture et l'épandage de purin en une même passe permet d'éviter un passage sur le champ, et il permet d'améliorer le placement des semences. Cette configuration permet également de semer les cultures de couverture dans le maïs debout avec un épandage de purin en bandes latérales.



Figure 2 : Effet synergique de l'épandage de purin sur la croissance des cultures de couverture. Les éléments nutritifs du purin favorisent l'activité microbienne, qui stimule la croissance de la biomasse aérienne et racinaire des cultures de couverture.

Dans chacun des traitements, la culture de couverture combinée à l'amendement organique a produit un rendement de biomasse plus élevé; cependant la combinaison de 10 espèces n'a pas produit autant de biomasse que le mélange de 3 espèces ou que l'avoine seule. Les observations effectuées à la récolte suggèrent que là où on avait épandu le digestat, la croissance des radis Nitro était plus importante. Ces radis ont des parties aériennes très développées et une grosse racine, mais ils dominent les pousses des autres espèces, qui sont très peu nombreuses dans leur voisinage. Là où aucun épandage de matière organique n'a été effectué, les mélanges de plusieurs espèces semblent apporter plus d'avantages; par ailleurs les mélanges qui contiennent principalement des céréales (avoine, orge, seigle céréalière, etc.) et des radis et (ou) des légumineuses en plus petite quantité donnent un meilleur rendement de biomasse là où l'on a épandu du purin.

Tableau 1. Rendement approximatif de biomasse de trois combinaisons de plantes de couverture avec et sans amendement organique.

Plante couvre-sol	Avec du purin	Sans purin	Gain dû au purin
	Rendement approximatif (tonnes/acre)*		
Avoine	3,6	2,8	33 %
Mélange de plusieurs espèces : ensemencement à raison de 40 livres/acre 33 % avoine, 4 % radis Nitro, 2 % crucifères, 2 % hybrides sorgho-soudan, 1 % phacélie, 4 % chanvre de Bengale, 5 % navet, 25 % trèfle incarnat, 23 % pois d'Autriche	2,10	1,75	17 %
Mélange de 3 espèces : ensemencement à raison de 30 livres/acre 14 % radis Nitro, 16 % trèfle incarnat, 70 % avoine	2,85	1,83	36 %
* Rendements de biomasse incluant les parties aériennes et une mesure comparative de la masse racinaire. Les données ci-dessus représentent un site pour une année. On a épandu 3 500 gallons/acre de digestat à la mi-août. La composition du digestat est voisine de celle du purin de porc.			

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N.E.O.S.C.I.A

North Eastern Ontario Soil and Crop Improvement Association

Serving the Northern Agricultural Community since 1966

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Upcoming Events!

Crop Caravan



Northeastern Ontario
July 18th-22nd

For more information, contact:

July 18 Manitoulin	John McNaughton- mcnaugjs@gmail.com
July 19 Algoma	David Trivers- david.trivers@ontario.ca
July 20 Sudbury	Mack Emiry- mackbeth@hotmail.ca
July 21 Temiskaming	Brittany Roka- broka@farmnorth.com
July 22 Verner	Norm Delorme- normdiane@hotmail.com

Temiskaming Crop Tour

10:30 am Board the Bus at Koch's
11:00 am BBQ Lunch at Grant Farms
12:00 pm Tour of Grant Farm Plots
2:00 pm Tour of NLARS with John Kobler
4:30 pm Dinner at Koch Grain Elevators
6:30 pm Twilight Crop tour
9:30 pm Evening snack at Koch's
10:00-3:00 Open house at Grant Farms

Muskoka Farms Matter!

Farm Family Fund Day & BBQ

August 28, 2016 10:00—4:00

Please contact Steve and Becky at 705-789-4872 or
info@blanketsecurity.ca for more info or to
register!



Sept 17th 2016
Johnson Twp. Community Centre

Visit the events calendar at **FARMNORTH.com**