

Breaking Ground

(in Northeastern Ontario) Fall 2016

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

Northeastern Crop Caravan Summary

By: *Stephanie Vanthof*

The Northeastern Crop Caravan was held from July 18th-July 22nd with 6 OMAFRA specialists visiting a number of sites across Northeastern Ontario, including:

- ⇒ Manitoulin Island—switchgrass, pasture demonstration, corn & hullless barley
- ⇒ Algoma—organic fall spelt, field peas, barley, silage corn, pasture, soybean & canola
- ⇒ Sudbury—Poulin Potatoes, Valley Grower Packers
- ⇒ Temiskaming—Grant Farms, NLARS, canola, faba beans, green peas, wheat, soybeans
- ⇒ Verner—canola, winter wheat, faba beans

Approximately 400 people participated in the week and the OMAFRA specialists gained an increased understanding of agriculture in Northeastern Ontario. We'd like to thank all the districts that participated and the local organizers that worked with NOFIA & NEOSCIA to make this week possible! Further details about the event will be posted on the NEOSCIA page on www.farmnorth.com.



Manitoulin



Verner



Sudbury



Algoma

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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The following information is from the Temiskaming portion of the Northeastern Crop Caravan:

Grant Farms 2016 Test Plot Tour

By Stephanie Vanthof

Grant Farms, in New Liskeard ON, currently has a number of test plots, including nitrogen rates for spring wheat and oats, variety trials for barley and winter wheat, flax seeding rates, soybean seeding dates, a barley fungicide trial and a forage pea inoculant and humic acid trial.

Soybean Seeding Dates: This trial assesses the response of soybeans to seeding date. Half the soybeans were planted on May 26 and half were planted on June 9 (HS 006RYS24 CHU 2400). Despite difficult early conditions including a June 5 frost and extremely dry conditions in early June, the yield difference between the two seeding dates is evident: though all strips have good nodulations, the early plant date has resulted in a healthier stand and earlier maturation. This could be attributed to the fact that the early plant date was seeded into moisture, while seeding at the later plant date was in extremely dry conditions so germination terminated in some cases. However, the benefits of an early plant date have to be balanced with the risk of frost – ensure that soil temperatures are at least ~5 Celsius.

Flax Seeding Rates: Chemical weed control options are limited for flax so this trial assesses the use of seeding rate as a deterrent to weeds. Flax plots were seeded at 3 rates (35 lbs/ac, 45 lbs/ac & 55 lbs/ac) and it appears that visually, a higher seeding rate results in less weeds per square metre. The economics of changes in yield compared to seeding costs will be assessed upon harvest. Flax is very tough against early frost and is suggested as one of the 1st crops to plant.

Results from the test plots will be made available when completed.



Temiskaming Twilight Tour

By Stephanie Vanthof

Highlights of the Temiskaming Twilight Tour include:

Continued canola production – Grant Farms has continued with canola production in 2015 and 2016 and has been looking at different management techniques for controlling swede midge populations. Seeding rates and seeding dates resulted in no observable difference in swede midge populations. Tillage techniques might impact populations and further work will be done on tillage management and ways to decrease pesticide application. Other fields have seen spikes in swede midge – one field, its 3rd year not in canola, saw decreasing swede midge numbers until June 23 (likely due to heat) with another spike on July 14 with 48/trap/day. Another field, planted on May 19, had very little swede midge with 8/trap/day until late July when the count was 95/trap/day, spiking after the canola bolted.

Increased acreage in green peas – approximately 2,500 – 2,800

acres of green peas were contracted in Temiskaming in 2016. Anticipated yields are ~1.7 ton/acre and although the heat and lack of moisture during the summer was stressful for the plant and can cause termination, the field visited during the tour looked healthy. Green peas need to be harvested as soon as ready and usually come off in August, which works well if incorporated with winter wheat.

Faba bean production – seeded from May 15th to May 20th, applied with 10-12 pounds of sulphur, 50 pounds of phosphorous and 30 pounds of potash. The seeding rate was 265 pounds/acre, but based on the seed size this year, 300 pounds/acre might be better. 2016 crop is developing pods throughout the plant compared to 2015 which just developed pods at the base.

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The Irish Beef Industry— a Major World Exporter

By: Neil Tarlton

Bord Bia The Irish Food board, reports that Ireland exports over 90% of its beef production. It is the largest net exporter of beef in the northern hemisphere, and the 4th largest beef exporter in the world, after Australia, Brazil, the Netherlands and USA. The vast majority goes to the high-value EU marketplace, especially with exports to the UK, mostly England, at almost 322,000 tonnes, valued at \$2.2 billion, in 2015. Prior to BREXIT the movement was tariff free, both England and Ireland being in the Euro zone.

A number of Irish food and drink companies have processing facilities in Northern Ireland. They currently have close synergies with their neighbours in the Republic of Ireland in terms of further processing, final packaging, marketing etc. Any restrictions on access or new border controls could significantly impact on the potential for such synergies to remain in place.

Ireland, which in the last few years has had the greatest increase in GDP of any European country, is extremely concerned for the future marketing of their products especially the agricultural sector. The results of the BREXIT vote in the UK and how could affect Irish agricultural exports are being studied intently.



A quarterly newsletter representing one of 11 Regional newsletters produced 4 times a year in conjunction with the Provincial Newsletter and OMAFRA Crop Talk.

Breaking Ground (in Northeastern Ontario)

New Speciality Crop: Hops

By Stephanie Vanthof

During the West Nipissing Agricultural Symposium, a session on new and specialty crops was held with a focus on hops production. Laurie Craig, owner and operator of Clear Valley Hops, spoke about her experiences with hop production. Evan Elford, the New Crop Development Specialist with OMAFRA, provided further information on hop agronomy.



Hops are a climbing herbaceous perennial native to temperate growing zones. The female plants are used in commercial production because the market demands a seedless core. In 2008, an increase in the price of hops due to a drop in supply opened up a window in the supply chain. Combined with an increase in the demand of hops from the craft brewing industry, domestic hops production has increased over the last 5 to 7 years. Ontario is the 3rd largest hops producing province in Canada by acreage, with approximately 60 acres in 2014. This acreage has since increased with new producers entering the market and existing producers expanding. Despite this increase, approximately \$7.1 million hops were imported in Ontario in 2014. Between 30-40 varieties of hops can be grown in Ontario and this could meet the supply needs of all craft brewers in the province – demand would likely max out at approximately 300 acres of commercial production at commercial densities (optimal yields).

As the industry has matured, small scale (1-2 acres) is no longer sustainable unless aggregating for processing. A sustainable business model needs to be established due to high input costs, which will likely require 10-20 acres of commercial production. Field costs can vary from \$7,000 - \$20,000 (trellis, plant, irrigation) plus processing costs, which are estimated at \$50,000+. Clear Valley Hops has 13 acres of hop production and has invested over \$1 million in harvesting, processing and storage equipment. For Clear Valley Hops, a gross income of \$250,000/year is necessary and availability of labor is key, especially during spring and fall.

Producers need to determine which cultivar to plant to meet market needs. Hops prefer well-drained soils with a pH in the range of 6.5-7.5. 50% less hop yields have been seen in clay vs.

loam/sandy soils because of drainage in high rain years. Hops need supporting infrastructure to climb, such as coconut fibre hooked to aircraft cables held up with recycled hydro poles. The trellis should be between 18 and 21' high, with 3-4' spacing between plants and 8-10' between rows. Hop plant material should be ordered early (November-February) and planted late in spring (late planting can result in up to 80% winter kill). Viruses are systemic in the plant so virus indexed plants should be sourced if possible. Irrigation is critical with 55-60 litres/plant/week necessary during the growing season. Hops are typically found in Growing Zone 3, but require 35-55 degrees latitude because they need changes in day length. A newly established hops operation requires 3-4 years for full harvest.

Hops need to be managed and processed properly because the brewing industry has been dealing with the same product/quality for decades. Clear Valley Hops constantly works to pull brewers from a buying model that has existed for years. Breweries need the hops dried and pelletized – Clear Valley Hops uses a cold press to pelletize the hops, which preserves the oils and makes cleaning easier, but is time consuming and labor intensive. The final product will degrade with oxygen and UV light, so Clear Valley Hops packages it, flushes with nitrogen and flash freezes within 24 hours. Product will be stored in a walk-in freezer until shipped.

If people want to get into producing hops, they need to ensure they develop their market first and connect with other hop producers to learn from their mistakes. There could be an opportunity for agri-tourism as hops are unique and visually impactful. In areas like Nipissing, the photoperiod is suitable but the vegetative growth prior to summer solstice will very much affect yields.

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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.



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The 'Origin Green' Agricultural Program in Ireland

By: Neil Tarlton

The EU's role in environmental policy has been quite positive Ireland took up this challenge of sustainable "green" farming by creating the Origin Green program in 2012. Irish food and drink exports have experienced a period of continuous and unparalleled growth, reaching a new high of €10.5 billion in 2014. This marked a cumulative increase of 45% over a five year period.

It is a national sustainability program for the Irish food and drink industry. It is the only sustainability program in the world which operates on a national scale, uniting government, the private sector and food producers, through Bord Bia, the Irish Food Board. Independently verified at every stage, Origin Green enables Ireland's farmers and food producers to set and achieve measurable sustainability targets, reduce environmental impact and serve local

communities more effectively. The overall ambition of the program is that every farm and food manufacturing business throughout Ireland will be on the road to sustainable production by the end of 2016. Over 80% of farmers are currently enrolled. 95% of food processors are involved.



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Breaking Ground (in Northeastern Ontario)

Diagnostic Team Work

Notes by Terry Phillips

Recently a farmer in Temiskaming spotted a new Soybean disease within his field and submitted pictures to Diane Hall from BASF and Terry Phillips CCA-ON. Terry forwarded the photos on to Horst Bohner, OMAFRA Soybean Specialist to see if he could diagnose the disease. Daniel Tasse, local OMAFRA business lead also followed up with samples and sent them to the Guelph Pathology Lab.

Horst initial diagnosis was Brown Stem Rot, Rhizoctonia Stem Rot or Phytophthora Root Rot. Horst forwarded the pictures to Albert Tenuta, OMAFRA Field Crop Pathologist to help confirm the diagnosis. The lab results came back two days later confirming Phytophthora Root Rot, Pythium Root Rot and Fusarium Root Rot. Follow-up will be soil samples to determine what race of Phytophthora Root Rot is in the field. Soybean varieties have resistance to different races, so planting the proper variety will reduce infestation.

The second problem was from a farm in Quebec, the grower called thinking he had Spider Mites. Upon entering the field, Terry Phillips CCA-ON took pictures and sent them to DEKALB Agronomist, Sean Cochrane. Sean was able to confirm that the problem was Downey Mildew. Once Terry returned to the office he searched the history and symptoms for Downey Mildew on the internet. Typical history/ symptoms for Downey Mildew is wet spring conditions followed by drought and use of untreated seed. Downey Mildew can be soil borne or seed borne. The usage of untreated seed may have been the underlying cause.

In both cases, our local team of certified Crop Advisors (CCA) Terry Phillips, Ben Schapelhouman and Kevin Runnalls along with our Regional Economic Development Lead Daniel Tasse, were able to use their collective contacts to get the answers for the growers.

'Working together works'



Muskoka Farms Matter!

By Ken Riley

We had a truly amazing 2nd Annual Muskoka Farms Matter event on Sunday, August 28th at the Old Oxbow Ranch. We figure more than 300 people attended, with lots of comments like "this is amazing" "it's great to visit a farm like this!".

Thanks to the Directors and all others for the hard work needed to make this event a success (even an hour before the event started, we didn't know if we could pull it off!). Becky and Steve were fantastic hosts. The Farm Animals all cooperated- from the chickens and baby chicks to the horses, goats and cattle. Great music from Blue Country; Great horse and wagon rides; Fantastic local food- brilliantly prepared; Great participation of vendors (Veggies, Maple Syrup, Honey, Meats and Face painting); and Great games for the Kids. A big

thanks to all those from the North in their official and personal capacities who gave us such strong support. Thanks to the generosity of The District Of Muskoka- Pay it forward Fund, the OFA -Proud to Lead Fund, Muskoka Springs for the generous donation of Spring water and juices, Call of the Wild for the port-a-potties, the local press for their ad discounts, and last but not least to all the incredible volunteers who made this wonderful event a resounding success.

Please check out all the fabulous photos from the event that will be posted on the Muskoka Farms Matter facebook page. Please like and share.

Breaking Ground (in Northeastern Ontario)

OSCIA Summer Meeting

By Brittany Roka

OSCIA holds a Summer Meeting every August. The summer meeting travels to a different part of the province each year, by visiting the region of the 1st Vice President of that year. The summer meeting is generally three days, and begins on a Sunday. It is an opportunity for the Past Presidents to visit the 1st Vice Presidents home region, meet with OSCIA'S current Board of Directors and network over delightful meals and informative tours.

This year the OSCIA Summer Meeting kicked off on Sunday, August 14th at Emiry Farms in Massey. Past Presidents, Board of Directors and special guests were greeted by Mack and Beth Emiry upon arrival. Over the course of the three days, guests got to experience a variety of activities. On Monday, August 15th Past Presidents and special guests boarded the bus and headed towards Manitoulin Island. The group toured La Cloche Island for a fish farm tour, learned about some of the different cultures on the Island at Ojibwe Cultural Centre and finished up at Split Rail Brewery.

Farm Manager Rob Pennie toured the group around North Wind Fisheries. North Wind Fisheries is a rainbow trout farm, located on Great Lacloche Island, on the North Channel of Lake Huron. The fish live in 50x50 foot cages or net pens submerged in the water to a depth of about 45 feet. The cages are covered in a protective netting to keep the hungry wildlife from feasting. It takes between 12-15 months, on average, for a rainbow trout to reach a market weight of 2.5-3.0 pounds.

On Tuesday, August 16th the Board of Directors joined the group and quenched their thirst at Boreal Winery. Boreal Winery is the only certified organic berry processing facility in Ontario! They are also the only pure Haskap winery in the world and are Canada's coldest climate winery. One of the wines that the group got to sample was their 2014 Haskap Reserve. The wine is dark red and has a plush nose, featuring dark berry and vanilla notes. The palate follows with complex arrays of dark fruit, creamy oak and well integrated tannins.

Boreal Winery grows Arctic and Boreal region Northern hardy berries, Haskap, Tart Cherry, Saskatoon, Lingonberry, Aronia and Sea Buckthorn. Their cold climate super berries grow in rich northern Canadian loam soils and are some of the highest antioxidant fruits in the world. Haskap Berries have been known by the ancient Japanese as, "The fruit of life longevity and Fruit of Vision". Haskap's are high in Vitamin A, C and have high fibre and potassium.

While in Sudbury District the group also toured Vale Mine tailings site in Copper Cliff and Don Poulin Potatoes production in Azilda.

1st Vice President's Message

By: Mack Emiry

As OSCIA 1st Vice President for 2016 it has been my privilege to organize the Summer Director's Meeting and Tours, held August 14 to 16. All but one of the eleven Provincial Directors made it to Massey and Sudbury for the event. We also had several Guelph office staff present and, of course, our Regional Communications Coordinator, Brittany Roka. 12 Past Presidents and their spouses took part in the 2 tour days as well as the events in Massey. My thanks goes out to all who attended.

The largest thank you goes to the businesses and individuals who gave of their time and talents towards hosting the events on Manitoulin Island and in Sudbury District.

Manitoulin tour on Monday, August 15 included visits to Blue Goose Aquaculture's fish farm on Lacloche Island, Ojibwe Cultural Centre at M'Chigeeng and Split Rail Brewery in Gore Bay. Brian Bell, OMAFRA Agriculture Development Advisor acted as tour host for this day. Thanks Brian!

Sudbury District on Tuesday, August 16 had visits to Vale mine tailings site in Copper Cliff to see the application of sewage sludge from Terratec Environmental, Poulin Potatoes production and grading/packing operation in Azilda and Boreal Berry Farm and Winery in Hagar. Neil Tarlton, retired OMAFRA Agricultural Representative assisted in hosting this tour day. Thanks Neil!



September 2016 Edition

OSCIA PROVINCIAL NEWSLETTER

Message from the President - Gord Green



Hi Everyone,

I hope everyone is well and surviving the weather that we have been dealt this year. Everywhere I go, the ongoing drought is the hot topic of conversation even among urban people. Some have fared a lot better than others and my heart goes out to those in severe circumstances. It is hard to believe under these conditions that water erosion could have ever been a problem. It looks like the drought has finally lifted.

The Provincial Directors have just finished their summer meeting hosted by the North Eastern Ontario Region. We were the guests of 1st Vice President Mack Emiry and his family. We had tours of the Emiry Family Farm in Massey, as well as tours in the Manitoulin and Sudbury areas.

In July the Executive had an outreach meeting in the Rainy River area in the North Western Region. There again we were shown great hospitality by members from the district. There has recently been a movement to develop agriculture in the northern regions of our province and I have been impressed by the quality of farming and the entrepreneurial spirit that I have witnessed. Yes, these areas have unique challenges but nothing that can't be solved with some changes or development. Our province is vast, beautiful and bountiful and it makes me proud to be part of it.

This summer has seen lots of crop tours, meetings and bus trips. One of the strengths of our membership is the inquisitive nature of our members to discover new or better ways of farming and to check out the latest technologies. We are always striving to do better and we are willing to share our ideas with others.

Canada's Outdoor Farm Show (COFS) this year was September 13-15. I hope you were able to swing by our booth and say hello. Again this year members were eligible for a free breakfast courtesy of Sylvite. The COFS committee members, consisting of people from OMAFRA and OSCIA, do a great job of plots and demonstrations with lots of good information to share. This is only one of many projects we work on with OMAFRA. Together we make a great team.

Fall Harvest is just starting so I wish everyone a safe and successful harvest.

Yours in Agriculture,

Gord Green, OSCIA President

Opportunity to participate in the Agroclimate Impact Reporter (AIR) Survey

AAFC is looking for individuals who are interested in weather and climate to report on their agroclimate conditions. All it takes is 2-5 minutes of your time to fill out a quick survey based on the impacts weather and climate are having on agriculture in your area. These surveys are used to inform various levels of government about what is happening on-the-ground in agricultural operations across the country.

AAFC is asking you to please fill out the August survey available from the following link:

<http://air.agr.gc.ca/air/public/submit.html?lang=en>

Select "Submit Report", choose your reporting location and then fill out the questionnaire.

You will also have an option to "Subscribe Now". By doing so, you will be added to their monthly list, where you will be able to communicate your agroclimate impacts to AAFC. Your participation is greatly appreciated.

Participants in the survey are currently confined to western provinces and it is the desire of AAFC to be more national in scope.



A QUARTERLY NEWSLETTER, ISSUED
ALONGSIDE 11 REGIONAL NEWSLETTERS AND
OMAFRA CROP TALK, TO UPDATE
REGIONAL AND LOCAL ASSOCIATIONS
AND OMAFRA CONTACTS

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Soil Health Given Boost by Cover Crop Research

The Ontario Soil and Crop Improvement Association supports cover crop research through its Soil Health Graduate Scholarship fund. For her graduate thesis the 2015 recipient Jaclyn Clark, explores June cover crop planting into standing corn. By the time harvest is finished in September/October, the cover crop will have a head start on plant growth.

“Cover crop research across Ontario must be at record levels this year,” says Gord Green, President of the OSCIA. “Most counties across southern Ontario will have a handful of farmers with experiments of cover crop to capture left over nutrients at the end of the season and also improve soil health, which contributes to better water holding capacity.”

“With drought extending across southern Ontario for much of June and July in 2016, soils that have a long history of best management practices have been showing more resilience to drought,” says Dr. Bill Deen, soil scientist in Plant Agriculture at the University of Guelph and supervisor of Ms. Clark’s research. “It is believed that cover crops can play an important role for soil to fulfill all its functions over time and also improve the diversity of soil biota to support soil as a vital living system.” says Deen.

“My research involves inter-seeding two cover crop species singly and in combination into corn at the V5 growth stage at three locations across southern Ontario,” says Clark in describing her research. “There will be two harvest treatments, one for silage (all corn residue removed early in the fall) and one for grain (cobs removed, residues remain in field late in the fall). Two planting methods of the cover crops will be investigated: drilling and broadcasting. These factorial treatments help to fill multiple gaps in the literature on the potential for cover crop inclusion in a corn-soy rotation. Corn yields (involving grain or silage dry matter) and above ground biomass of cover crops will be measured, as well as soybean yields in the subsequent season. Data collected can be combined with known soil and weather data to make interpretations based on seasonal or locational context, accounting for the variability inherent to agriculture.”

This research is being done in collaboration with Dr. Dave Hooker from Ridgetown Campus and Dr. Mehdi Sharifi from Trent University.

The Soil Health Graduate Scholarship was established by the OSCIA to support expanded research on soil health. OSCIA is committed to a new Soil Health Graduate Scholarship each year for four more years. Private funding is supporting this scholarship, launched in 2015 with contributions from Past-Presidents’ and other individuals associated with the organization.

More information about funding opportunities through OSCIA’s Sustainability Fund can be found at: <http://www.ontariosoilcrop.org/soil-and-crop-sustainability-fund/>



Photo credit: Jaclyn Clark

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by Lilian Schaer, for OSCIA

Pollinator Health Research Speaker Available

Dr. Art Schaafsma and his research team at Ridgetown College, University of Guelph have been busy investigating many aspects of seed treatment, dust mitigation from planters and environmental impact.

Dr. Schaafsma has offered to visit local and regional association meetings this fall/winter (when schedules permit) to communicate the results to date.

Dr. Schaafsma’s Contact Info:

Email: aschaafs@uoguelph.ca; Phone: (519) 436-2624

Members Updates



<http://www.ontariosoilcrop.org/news/>

Soil Analysis Discount

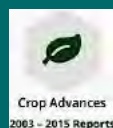
5 labs participating - visit OSCIA website for details:

<http://www.ontariosoilcrop.org/association/association-membership/>

CROP ADVANCES

Applied Research on Soil & Crops - available on OSCIA website:

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



Development of an Agricultural Soil Health and Conservation Strategy

The Discussion document “*Sustaining Ontario’s Agricultural Soils: Towards a Shared Vision*” is now available for public feedback.

Healthy soil is extremely important for all of us. That’s why Ontario is committed to working collaboratively with farmers, industry and community partners and indigenous communities to develop a strategy that will sustain and support healthy soil so our land can be productive for us and well into the future.

The discussion document is intended to start the process. Part I provides a framework to help guide the public conversation around developing the strategy. Part II provides the technical background and analysis that support the framework laid out in Part I.

OMAFRA developed this proposal in collaboration with the agricultural industry (including OSCIA), as they have long shared a commitment to the sustainable management of Ontario’s agricultural soils. Public feedback on these ideas will help shape a provincial Soil Health and Conservation Strategy. A new strategy will build on the extensive soils work by both stakeholder organizations and OMAFRA, and ensure that both government and industry are doing the right things to address soil issues.

Ministry staff will be consulting with stakeholders over the coming months. The Ministry would appreciate your assistance with raising awareness on this matter to help maximize participation. The Ministry is planning several engagement sessions, which will be advertised on the ministry’s website, once confirmed. Ministry staff would also be pleased to provide outreach at board meetings and industry events upon request.

Ways to participate and provide feedback:

1. Environmental Bill of Rights Registry at: ontario.ca/ebri
2. Email: soilhealth@ontario.ca
3. Fax: 519-826-3492
4. Mail:
Agricultural Soil Health and Conservation Strategy
Ministry of Agriculture, Food and Rural Affairs
1 Stone Road West, 2nd Floor
Guelph, ON N1G 4Y2

Deadline to respond: November 27, 2016

Excerpts taken from OMAFRA website:
<http://www.omafra.gov.on.ca/english/landuse/soilhealth.htm>

Special Notice - RCC Update

Mel Luymes, our Heartland RCC can now be found full-time with Farm and Food Care in Guelph. We would like to say thank you for her contributions to OSCIA.

We would also like to welcome Mary Feldskov to the RCC team, representing Heartland SCIA.

Keep Eligibility Criteria Up to Date to Maximize Your Funding Opportunities

OSCIA is pleased to deliver a wide variety of funding programs to farmers in Ontario. While the goals of these programs range from farm business planning to helping species at risk to improving water quality in the Great Lakes, they have one thing in common: most of the OSCIA delivered programs require completion of a workshop, and in the case of the Environmental Farm Plan or Growing Your Farm Profits workshops, the workshop must have been completed within the last 5 years. If you live in southwestern Ontario and are interested in soil health, the GLASI Farmland Health Incentive Program will be rolling out again for 2017; you will also need a Farmland Health Check-Up to access this opportunity. New funding opportunities are always coming available—not having these basic eligibility criteria in-line could mean you miss the opportunity.

The eligibility criteria of the EFP and FHCU (depending on your geography) are more than just check-boxes on the application form. They help you self-assess your farm and its management to see where improvements can be made. These are all planning documents, and it simply makes sense to plan using current information. After 5 years you have changed your management and likely addressed some of the critical action items of your plan. That means it’s time to redo it to bring the planning document in-line with the realities of your farm. And while you do that you are making sure you are able to apply to programs without scrambling to find an open workshop.

written by OSCIA Programs staff

Growing Forward 2
A federal-provincial-territorial initiative

Get Moving

ATTENDING an **Environmental Farm Plan (EFP)** or a **Growing Your Farm Profits (GYFP)** educational workshop every 5 years will help you stay on top of best management practices for a successful business*.

*Completion of these OSCIA workshops within the last 5 years may be a requirement for Growing Forward 2 funding assistance applications. See Program Guide at ontariosoilcrop.org for details.

Sign up NOW.
Visit ontariosoilcrop.org for workshop schedules and additional information.

Ontario Canada

OSCIA 2016 Summer Meeting - Massey, ON

The OSCIA Summer Meeting is an annual event hosted by the 1st Vice President. This year, that was Mack Emiry representing the North Eastern Ontario Soil and Crop Improvement Association. This is a great way for the 1st Vice to show off their farm as well as their local community. A tremendous amount of work goes into the event by the host's family, the local association, and a few key Guelph office staff!

The Summer Meeting is not only an opportunity for the Board and some of the Guelph office staff to meet face to face, it also draws in OSCIA members as well as many past presidents and a number of spouses. It's a time to tend to association business, and to reminisce and catch up with friends.



This year, the event started in Massey, about a 1.5 hour drive west from Sudbury, at the Emiry Family Farm. The family dairy farm is operated by Mack and wife Beth, his brother, sons and even some help from the

grandkids. In addition to the dairy operation, the family grows a variety of crops, the most notable being Emiry's Pick Your Own Strawberry operation.

At the Emiry farm the group toured the barns, crops and field trials. This was followed by a visit to the local Museum. A Sunday night dinner with entertainment formally kicked off the event. This year, Massey exhibited some of its finer comedic flair and writers with a local comedian and a story-teller providing some laughs.

While the Board and staff met for the formal business meeting on Monday, the other guests enjoyed the sights and sounds of the Region. The tour led to Manitoulin Island, and included a fish farm, the Ojibwa Cultural Centre and the Split Rail Brewery.

Tuesday is the day the entire group tours together. This allows the Board, staff and other guests to enjoy a few additional sites, usually with a bit more of an OSCIA spin than the Monday tour.

This tour began with a visit to the Vale Canada Ltd. mine tailings site in Copper Cliff, on the western edge of Sudbury. Historically, the acidic tailings were reclaimed at great expense using high rates of lime and fertilizer to allow vegetation to grow. By using municipal biosolids (some of which are sourced from the Kitchener-Waterloo area) mixed with compost, the pH of the tailings can be brought up to near neutral, and sufficient fertility is restored to allow plant growth. This is far more cost effective than the traditional methods, and also helps manage the waste product in a productive manner. These efforts are in a trial phase, and are looking quite optimistic. Vale uses a lot of hay in their reclamation work (up to 30,000 round bales annually), and one of the goals of this project is to restore sufficient quality to the ground to be able to produce some of their own hay.

The next stop was Poulin Potatoes, located in "The Valley" north of Sudbury. This is one of the few relatively large agricultural landscapes in the area. Don Poulin uses precision agriculture to manage his potato crop, precisely tailoring the use of inputs to the needs of very small areas of his crop. Once harvested and bagged, he makes use of traceability technology to identify his potatoes back to the grower, the field they were grown on, the day they were picked and the storage location. In case of a recall, this allows Don to very accurately collect only the affected potatoes.

The final stop was the Boreal Berry Farm and Winery. Their flagship wine is made from the Haskap berry, which is one of the few berries that grows better in the north than it does in the south. Greg Melien, the owner and winemaker, told stories of winter thaws and early berry sets followed by a return of normal freezing temperatures. Haskap is so well suited to the northern climate most of the berries thawed and continued their growth cycle in the spring, with no noticeable loss in yield. Haskap has higher levels of anti-oxidants than blueberries, and makes delicious wine (as we can attest). Anyone who sampled the wine at the 2014 OSCIA AGM and found it rather tart should try it again. The Boreal Berry Farm and Winery is located east of Sudbury, in an area where the landscape is dominated by rock and small pockets of agricultural land.

All the tours were informative, interesting and provided a great opportunity to mingle with members and staff. Seeing how agricultural production is practiced in an area known more for scenic vistas, copper and nickel mining than growing food, was a great experience for those of us from the south. Next year's summer meeting will travel east to the farm of Peter McLaren in the Ottawa Rideau Region.

Photos from some of the mentioned tour stops:



The active tailings at the Vale copper mine



Inactive mine tailings reclaimed using biosolids and compost. Giant "stack" in the background



Don Poulin explains growing potatoes in the north



The Boreal Berry Farm and Winery

Written by Guelph Office staff





CROP TALK

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Brought to You by the Following OMAFRA Crop Specialists

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 Christine Brown, Field Crop Sustainability Specialist
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 Joanna Follings, Cereals Specialist
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 Ian McDonald, Crop Innovation Specialist
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 Jake Munroe, Soil Fertility Specialist - Field Crops
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Fall Weed Management Tips

Mike Cowbrough, OMAFRA Weed Management Specialist - Field Crops

Many farmers have witnessed the value in applying herbicides in the fall to perennial weeds, especially perennial sow-thistle and dandelion (Figure 1). Often they will see a reduction in their population the next year as well as a delay in their shoot emergence. This allows the planted crop to have a competitive advantage over those perennial weeds. Unfortunately weather conditions around the time of application can be quite variable and can influence a herbicide's effectiveness. Let's go through three "top tips" to make the most of this application window.

1. Choose the most effective products, rate and tank-mixes for the perennial weed that you are targeting. Table 1 outlines what public researchers in Ontario have found to be most effective at controlling perennial plants in the fall.

Table 1. Best herbicide option for each targeted perennial plant based on research conducted by the University of Guelph, Department of Plant Agriculture.

Perennial Plant	Product(s)	Product Rate	Average Control (Range in control)
Dandelion	Glyphosate (540 g/L)	1.34 L/ac	90% (84 - 100%)
Perennial Sow-thistle	Glyphosate (540 g/L)	1 L/ac	90% (85 - 100%)
Canada thistle	Glyphosate (540 g/L)	1.34 L/ac	90% (85 - 100%)
Alfalfa	Glyphosate (540 g/L)+ 2,4-D Ester (564 g/L)	0.67 L/ac + 0.5 L/ac	95% (90 - 100%)
Wild carrot	Glyphosate (540 g/L)	1.34 L/ac	82% (49 - 100%)
Burdock	Glyphosate (540 g/L)	1.34 L/ac	90% (85 - 100%)
Red clover	Glyphosate (540 g/L)+ Distinct	0.67 L/ac + 200 g/ac	99% (96-100%)

2. Apply when air temperatures are above 8°C for a minimum of two hours after application. This is best accomplished by applying during late morning or mid-day so that the targeted plant is taking up glyphosate during the heat of the day.

3. After a frost event, wait 2-3 days before evaluating weed growth and if the target plants look fine and air temperatures are above 8°C then resume applications. For example, milkweed is very sensitive to frost. Figure 2 shows a milkweed plant 3 days after an evening where the air temperature reached a low of -3°C. It would not make sense to apply glyphosate on a weed species in that state since its leaves are unlikely to absorb any herbicide. Alternatively, dandelion and wild carrot were not affected by the same frost event (Figure 3 and 4) and one could resume fall applications to those species based on the condition of their leaves.
4. Wait a minimum of 72 hours after application to perennial weeds if you want to till the soil. The longer that you can wait after application before making a tillage pass, the more the herbicide will translocate within the plant and do a more effective job controlling the species.



Figure 1. The spring following a fall application of glyphosate (left) compared to no application (right)



Figure 2. Milkweed plants in wheat stubble 3 days after a frost where the night time temperature was -3°C



Figure 3. Dandelion unharmed 3 days after a frost event.



Figure 4. Wild carrot unharmed 3 days after a frost event.

Utilizing Moisture Stressed Corn as Feed

Thomas Ferguson, OMAFRA Forage and Grazier Specialist

With the dry weather this year and low forage yields across much of the province, many producers are looking for alternative forages. There is a lot of stressed corn that could be utilized as forage for livestock. The amount of moisture stress that the corn has been through can affect the quality of the silage and there can be great variability between fields and even within a field. In fields that were dry during tasseling or pollination and have reduced grain fill, the energy content of the silage will be reduced but forage quality should remain constant. When feeding this forage to animals, it is very important that a feed test is done so that the nutritional composition of the silage can be adjusted for in the ration.

When negotiating the price for selling standing corn as silage, the final price is typically somewhere between the net income that could be received from the grain and the value of the forage.

The minimum price for corn silage would be the net income that could be obtained by selling the grain, and the value of the phosphorus and potassium that are being removed by the stover. When estimating yield, it is best to be realistic and look at different points in the field to take into account any variability. Corn silage pricing may also take into account the availability of other forage sources in the area, distance from field to storage, storage costs, and anticipated losses from fermentation and storage.

Sellers with a potential Crop Insurance claim should contact Agricorp (1-888-247-4999) before harvest to determine how selling corn as silage will impact the claim.

Moisture stressed corn can be harvested either by grazing, green chopping or fermenting into corn silage. If the corn field has a good perimeter fence, then grazing moisture stressed corn may be an option. When grazing animals on corn stalks, they will eat the cobs first and then the stalks, so the paddock size should be adjusted for the number of animals in the group. It is important to ensure that animals grazing corn stalks have mineral available and an adequate water supply. In certain cases it may be necessary to supplement with grain and/or hay. Any animals grazing corn need to be monitored for grain overload or acidosis.

When chopping stressed corn for silage, it is important that it is harvested at the right moisture level. Typically moisture level can be estimated from the milk line, but with the dry weather this year, the whole plant moisture will not correlate with milk line as closely as in a normal year. In order to obtain accurate moisture levels, at least 10 random plants should be sampled, chopped and then tested using a Koster tester, microwave test, or an accredited lab. Harvesting corn silage when it is too dry can result in insufficient packing, poor fermentation, heating, mould and spoilage. Moisture contents greater than 70% can cause seepage and clostridia fermentations that produce butyric acid, resulting in high fermentation losses, lower intakes, ketosis and poor cow performance.

When working with moisture stressed corn, it is necessary to monitor it for nitrate levels. Nitrate poisoning occurs when there are high levels of soil nitrates and environmental conditions that cause them to accumulate in plants. **Nitrate poisoning is particularly high risk during the 5 - 7 days following a rain that ends a severe dry period.** Avoid grazing or green chopping during this period. Making silage from drought stressed corn can greatly reduce the risk of nitrate poisoning as the levels of nitrates are reduced during fermentation. When nitrate levels are high, they increase the level of nitrogen dioxide (silo gas) that is produced when corn is ensiled.

When animals consume nitrates, the rumen will convert them to nitrites. High levels of nitrites impair the ability of blood hemoglobin to carry oxygen. Symptoms of nitrate toxicity include rapid breathing, fast and weak heartbeat, difficult breathing, muscle tremors, staggering and death. If you suspect nitrate poisoning, keep the animals quiet and comfortable and call your veterinarian immediately. Less affected animals may be listless and show more subtle symptoms including poor appetite, reproductive problems (including abortion) and poor performance.

Feed samples can be taken to test for nitrate (NO₃) or nitrate-nitrogen (NO₃-N). As a general rule nitrate-nitrogen levels should be less than 1,000 ppm (NO₃ levels <0.44%) to be without risk. Levels greater than 4,000 ppm NO₃-N (>1.76 % NO₃) are potentially toxic and should not be fed. Rates between these two levels are somewhat toxic and should be carefully managed. Corn should not be grazed unless the nitrate levels are within safe levels. More information on nitrate levels can be found by checking the factsheet: Potential Nitrate Poisoning and Silo Gas When Using Corn Damaged by Dry Weather for Silage, Green Chop or Grazing (<http://ontario.ca/cwol>).

Planning for Big Wheat Yields!

Joanna Follings, OMAFRA Cereals Specialist

Despite the dry year and stripe rust infestation, we saw some big winter wheat yields across the province this season. Many growers are giving credit to a strong stand establishment last fall thanks to the excellent planting conditions. So as we get into the full swing of winter wheat planting, here are a few things to keep in mind that will help you get those high winter wheat yields and break another provincial record!

Know your optimum planting date and seeding rate

As we saw with the early planted crop last fall, wheat is very responsive to planting date. This was evident in 2006 when there were record yields due to early planting the previous fall. There was also a significant response to planting date in 1993, when a late planted winter wheat crop resulted in low yields. Given that planting date has a significant impact on yield, make sure you plan ahead and ensure you are targeting the optimum planting date for your area as outlined in Chapter 4 of Publication 811: Agronomy Guide for Field Crops, *Optimum Date to Seed Winter Wheat Across Ontario*.



Figure 1. Optimum date to seed winter wheat across Ontario

Given that the weather does not always cooperate, it is important to be aware of the implications of variation in planting date and how to adapt accordingly. Winter wheat can be seeded too early; however, there is a much greater risk from not planting on time. At the optimum timing, winter wheat should be seeded at 1.5 million seeds/acre. This can vary slightly depending on the variety so check the label for the particular variety you want to grow.

When seeding winter wheat too early there is an increased risk of lodging and snow mould. To reduce these risks decrease the seeding rate by 25% if seeding more than 10 days before the optimum planting date for your area. When planting winter wheat later than the optimum timing there is reduced fall tillering. To compensate for this, increase the seeding rate by 200,000 seeds/week to a maximum of 2.2 million seeds/acre.

Plant at the right seeding depth

Similar to planting date, winter wheat is also very responsive to seeding depth so the more accurate the seeding depth the better chance for winter survival and higher yields. Having the proper seeding depth results in the development of a secondary root system well before winter begins and encourages quick emergence. If winter wheat is planted too deep emergence is delayed resulting in a yield reduction;

however, there is often a greater yield reduction due to planting wheat too shallow.

Ensure you are planting at a depth of 2.5 cm (1 in.). Moisture availability is a very important factor so although 1 in. is an ideal depth, ensure you adjust your depth accordingly so that you are placing the seed into moisture. You can also reduce seeding depth variation by using seed firmers and reducing your planting speed.

Choose the right variety and use quality seed

Select a variety that is suited to your growing area. A number of factors should be considered when choosing a variety, these include: the farm location, winter survival, insect and disease resistance, lodging potential and yield. Utilize the Ontario cereals performance trial data on the www.GoCereals.ca website. When looking at the data, select varieties that perform well in your area across a number of sites and years. Use high quality seed with excellent germination as well as a seed treatment to help protect against seedling diseases.

Seed Corn Maggot in Soybeans

Horst Bohner, OMAFRA Soybean Specialist

Seedcorn maggot was a significant problem for soybeans in the spring of 2016. Wellington County was particularly hard hit. In some cases fields were completely decimated and the crop had to be re-seeded.



Figure 1. Soybean field completely decimated in 2016

Seedcorn maggots feed on germinating corn and soybean seeds and young seedlings. Damage can range from minor feeding which delays emergence to seed death. Seedlings that do survive are often severely weakened and may not fully

recover. Seedcorn maggot damage is often spread across the entire field and is not isolated to specific parts of a field. Damage is often worse in a cool wet spring because the adult flies are attracted to decaying plant material. Cool, wet conditions, delay crop emergence, which allow the maggots to feed longer. Seedcorn maggot infestations are difficult to predict but the mild winter likely increased populations in the spring of 2016. To verify that it's actually seedcorn maggot that has reduced a plant stand it's necessary to dig up seed. Look for small maggots burrowing and feeding in the seed.

Description

The maggots are very small, less than 6 millimeters in length. The larvae are light yellow, headless, and legless. The body tapers with a black mouth that has two small mouth hooks. The adults resemble a very small housefly but are more slender and light grey in colour.



Figure 2. Maggot feeding results in hollowed out seed with small dark channeling.

Life Cycle

The seedcorn maggot overwinters in the soil. In early spring as soil temperatures increase, adults emerge and mate. Females look for a site to lay their eggs from April to June. Flies are attracted to the odour of decaying organic matter, such as freshly tilled soils, decaying plant residue, lightly tilled cover crops, and manured fields. The eggs are laid in moist soil and once hatched begin to feed on germinating seeds. The eggs only take a few days to hatch and the maggots feed from two to three weeks. The maggots enter the pupal stage and adults hatch within a week or two. The whole life cycle may be as short as three weeks. Therefore a number of generations in a given year are possible.

Management

Avoid incorporating any plant material (ie. weeds or cover crops) or manure within three weeks of planting, to decrease the risk of seedcorn maggot infestations. Once damage begins on germinating seed or seedlings there is no rescue treatment. If plant stands are reduced substantially re-seeding is the only option. Those who experience significant stand loss due to seedcorn maggot, can have an [Inspection of Crop – Pest Assessment](http://ontario.ca/cwpl) (<http://ontario.ca/cwpl>) completed by a professional pest advisor. If the damage to the soybean field reaches the 30% stand loss threshold, a pest assessment report can be used to purchase and plant a neonicotinoid insecticide seed treatment for that farm property. Insecticide treated seed should be used when re-seeding since maggots are still likely to be present in the field. No-till fields are less prone to seedcorn maggot damage. Later planted fields that emerge quickly due to warmer conditions are also less vulnerable. For growers that consistently experience seedcorn maggot damage an insecticide seed treatment is the only reliable control option. It's also important to note that treated seed may not give complete protection under extreme insect pressure so higher seeding rates should be used.

More information on Ontario's neonicotinoid regulations and pest assessment guidelines can be found at: <https://www.ontario.ca/page/neonicotinoid-regulations>,

Interpreting Your Soil Test Results

Jake Munroe, OMAFRA Soil Fertility Specialist – Field Crops

Regular soil testing is a critical component of good crop production. It allows you to monitor soil fertility levels, identify potential for nutrient deficiencies, and make fertilizer decisions based on the best possible information. This time of year provides an excellent opportunity to soil sample your harvested wheat fields before the busy fall harvest. Perhaps you have already had samples taken and sent off, and have received the soil test report back (see Figure 1 for an example). Whether you opted for grid sampling, zone sampling, or just a regular composite sample, it can sometimes be a challenge to understand exactly what those numbers mean and how to use them to make decisions. Also, if you've been given a fertilizer recommendation, it is useful to be able to double check to make sure it's in the right range.

Soil Test Report

OMAFRA-accredited soil tests are shaded

(1) Sample Number	(2) Organic Matter %	(3) Phosphorus, P ppm ^a		(4) Potassium K ppm	(5) Magnesium Mg ppm	(6) Calcium Ca ppm	(7) pH		(8) CEC Meq/100g ^c	(9) % Base Saturation		
		Olsen (Bicarbonate)	Bray-1				pH	Buffer pH BpH		K	Mg	Ca
TT01	3.0	22 LR ^b	34	193 RR	319	1701	7.3		12.9	3.9	20.7	66.1

(1) Sample Number	(10) Sulphur S ppm	(11) Zinc Zn		(12) Manganese Mn		(13) Micronutrients ppm			(14) Nitrate Nitrogen ppm	(15) Additional reported tests and values
		Zn ppm	Zn Index	Mn ppm	Mn Index	Iron Fe	Copper Cu	Boron B		
TT01	8	3.4	26	18.1	16.1	22.5	0.5	0.5		Many commercial soil laboratories report additional tests and values as a service to their customers.

(16) Recommendation (kg/ha)														
Sample Number	Crop	Yield goal	Lime	N	P ₂ O ₅	K ₂ O	Mg	Ca	S	Zn	Mn	Fe	Cu	B
TT01	Corn	180 bu/ac	0		20	0								

^appm = parts per million
^bRating of probability of profitable crop response from added fertilizer based on the extracted nutrient level:
 VR = very high response, HR = high response, MR = medium response, LR = low response, RR = rare response, NR = no response
 OR may also be rated based on extracted nutrient level as VL = very low, L = low, M = medium, H = high, VH = very high, E = excessive
^cmilli-equivalents per 100 g soil (meq/100g)

Figure 1. Example soil test report, with OMAFRA-accredited soil tests shaded.

Making sense of the numbers

When a soil sample is submitted to the lab, it is dried and ground and a variety of extractions are performed on small “sub-samples”. It’s important to bear in mind that these sub-samples may be as little as 2 grams of soil, so it is critical to obtain as representative a sample as possible. The extractants pull the easily available and some of the moderately available nutrient from the soil. The soil test value for a given nutrient does not give you the total amount of that nutrient in the soil; it instead provides an index of nutrient availability that is correlated with plant response. For the base cations (potassium, calcium, magnesium), the value represents the “exchangeable” form of the nutrient – the portion that is attached to clays and organic matter and available to move into soil solution.

Soil test values are reported in parts per million (ppm), which represents 1 milligram of extracted nutrient for each kilogram of soil. If you want to estimate the value in pounds per acre, you can simply multiply the ppm value by two. For example, a potassium soil test value of 193 ppm equates to 386 lbs/acre of “exchangeable K” in the top six inches of soil.

Depending on the lab you use, each OMAFRA-accredited test value should also have a code associated with it. The code will give you a sense of how likely you are to have a profitable response to an application of that particular nutrient

(e.g. LR means that there is a low likelihood of response to addition of that nutrient, since the background level is relatively high).

In terms of which values to focus on, soil pH should always be a starting point. Refer to Table 9-2 on pg. 158 of Publication 811: Agronomy Guide (<http://ontario.ca/cwp1>) to determine when lime is recommended. Percent organic matter is another critical measurement – monitoring its value over time can tell you quite a bit about how well your soil management practices are working to maintain or build it (see Chatham-Kent Agri-Development article <http://bit.ly/2bf1IYS>).

Fertility guidelines

OMAFRA fertilizer guidelines, which can be found in Publication 811, are based on the sufficiency approach, which provides the greatest potential economic response in a given year based on crop and soil test level. Depending on your situation, you may want to invest in raising soil test levels for phosphorus or potassium. A recent review of decades’ worth of Ontario research showed that when phosphorus was within the range of 12-18 ppm, starter fertilizer rates (i.e. 20-30 lbs P₂O₅/acre) achieved the most economic response for phosphorus. The same was true for potassium when levels were between 100-130 ppm.

Generally speaking, the following amounts are required above crop removal to move soil test values up by 1 ppm (for OMAFRA-accredited P and K tests): 35 lbs/acre P₂O₅ and 20 lbs/acre K₂O

These values will vary depending on soil type and initial soil test level. For example, if you had a field sitting at 10 ppm P and 80 ppm K, P and K above crop removal could be applied over a number of years to reach targets of 15 ppm P and 115 ppm K. Variable rate technology is available to apply these nutrients.

It is important to bear in mind that nutrients behave differently in soil. Because of how reactive phosphorus is in the soil, as much P as possible should be banded to provide

optimal benefit to the crop in the growing year. If phosphorus is broadcasted, it should be done so during a time period when risk of soil and nutrient loss due to runoff is low (e.g. late summer after wheat harvest).

Consider alternative nutrient sources as well if they are available in your area. Sources such as municipal compost, stabilized bio-solid products, and manure (if available), can be used to address fertility levels and have the added benefit of contributing to soil organic matter and improving soil structure over the long-term.

Harvest Aid Treatments In Edible Beans

Meaghan Moran, OMAFRA Canola and Edible Bean Specialist, and Mike Cowbrough, OMAFRA Weed Management Specialist - Field Crops

Harvest aid treatments in dry edible beans will provide a more even dry down of the crop and any escaped weeds, making harvest more efficient. Controlling escaped weeds can also reduce seed stain, improving bean quality. There are six products registered for pre-harvest use in edible beans in

Ontario, the label rates and application timing are provided in Table 1. Aim, Reglone, Valtera and Ignite are contact herbicides that require higher water volumes and good coverage, and will provide rapid dry down of plant material. Eragon is translocated within plants, and provides control of weeds as well as dry down of bean plants. Glyphosate is slower acting, and is primarily used to control weeds or prevent crop regrowth. Consult with your bean dealer before selecting a pre-harvest treatment; at this time some dealers may have restrictions on the use of glyphosate on beans exported to the EU.

Table 1. Pesticide label rates and guidelines around harvest aid treatments for dry edible beans

Harvest Aid	Rate	Timing
Aim EC + Non-ionic surfactant	47 mL/ac +0.25% v/v	Apply to dry bean when 80-90% of bean leaves have fallen and pods are mature.
Eragon LQ + Merge	29.5 – 59 mL/ac + 0.5% v/v	Apply when 90% of pods have changed from green to yellow to brown. Harvest can commence within 3 -10 days after application.
Glyphosate (360 g/L)	1 L/ac	Apply when stems are green to brown in colour; pods are mature (yellow to brown in colour); 80-90% leaf drop (original leaves).
Ignite 150 SN	1 – 1.2 L/ha	Apply when 50 -75% of the bean pods have changed colour from green to yellow or brown. Allow 9 days before harvesting.
Reglone + Non-ionic surfactant	0.5 – 0.92 L/ac + 0.1% v/v	Apply when at least 80% of the pods have turned yellow. Harvest can commence within 4 -10 days after application.
Valtera + MSO Concentrate	42 g/ac + 1 L/ac	Product label does not specify a specific timing other than a statement of “Do not harvest within 5 days of application”.

Timing of harvest aids is critical to maximize the quality and yield of dry bean seed. Herbicide labels provide guidance around timing, but it can be tricky to visualize exactly what “80% of pods have turned” actually looks like. Figure 1 is an example of black bean plants at 60% and 80% pod change. Black beans pods turn from green to a red colour when mature.



Figure 1. Staging black bean plants for application of pre-harvest herbicides. Photo credit: BASF

Pre-harvest herbicides will not speed the maturity of the plants or decrease seed moisture, but can shorten the time between crop maturity and harvest. Pod colour change is the best indication of maturity; leaf drop and leaf colour are not good indicators. Once a herbicide is applied, late pods will not continue to mature so ensure the beans have the desired colour before application and are not green when split open. Different edible bean class have different pod colour when beans are fully mature, see examples in Figures 2, 3 and 4.



Figure 3. Pod colour and associated seed colour for adzuki beans; brown pods contain fully mature seed. Photo credit: BASF



Figure 2. Optimal white bean pod colour timing for application of pre-harvest herbicides. Photo credit: BASF



Figure 4. Dark red kidney bean pod colour and associated seed colour; pods are light brown when seeds are mature.

How effective are different pre-harvest treatments at “drying down” common weeds?

There is limited public research comparing performance of pre-harvest treatments on different weed species. Dr. Peter Sikkema has conducted six trials over three seasons on edible beans and his results are summarized below. Regardless of treatment used,

the expectation should be that the pre-harvest treatment will improve harvest efficiency but it will not result in a complete “dry down” of target weeds.

Table 2. Visual Control of lamb’s-quarters, ragweed, pigweed and foxtail 8 days after application of various desiccant treatments

Pre Harvest Treatment	Visual Control (%) 8 days after application			
	lambquarter	ragweed	pigweed	foxtail
Aim EC (47 mL/ac) + NIS ¹ (0.25% v.v)	30	12	29	7
Eragon LQ (59 mL/ac) + Merge (0.5% v.v)	46	73	64	26
glyphosate (1L/ac)*	29	17	38	63
Ignite (1.2 L/ac)	70	66	65	52
Reglone (0.92 L/ac) + NIS ¹ (0.1% v/v)	73	80	78	47
Valtera (42 g/ac) + MSO Concentrate (1 L/ac)	38	52	41	32

* glyphosate rate per acre is based on a product concentration of 360 g/L (e.g. Roundup Original)

¹ NIS = Non ionic surfactant (numerous products/trade names are available)

Source: Dr. P. Sikkema, 6 Trials: DB10D1A, DB10D1B, DB11D1A, DB11D1B, DB12D1A, DB12D1B. Weed Control Trials Research Report, 2010, 2011 and 2012. University of Guelph, Ridgetown Campus.

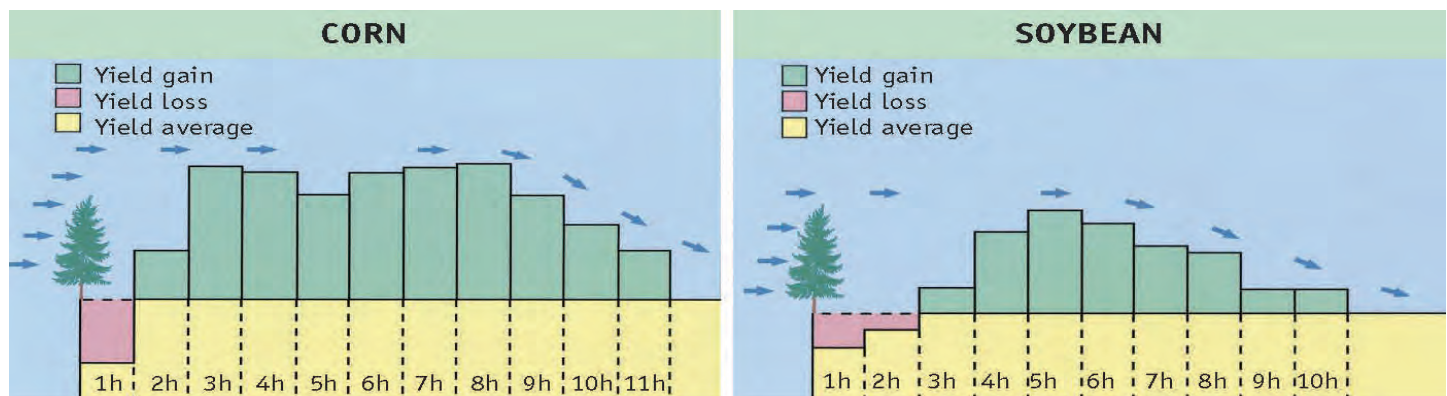
Do You Want to Increase Crop Yields and Reduce Soil Erosion?

Jennifer Jarvis, OMAFRA Stakeholder Communications and Marketing Advisor

Windbreaks can increase crop yields up to 15 per cent, more than making up for the amount of land they use. How? Windbreaks improve a field’s microclimate by reducing wind speeds, increasing temperatures and reducing the amount of moisture loss.

Have you considered planting a windbreak? Windbreaks can also:

- reduce soil erosion
- decrease odour and spray drift
- offer alternative income options
- save you up to 30 per cent in heating and energy costs shelter livestock from the wind and sun



LEGEND h = tree height

Graph: Each bar represents yield average, as studied by the University of Guelph Ridgetown Campus. Yields increased on the downwind side of the windbreak over distances of up to 12 times the height of the windbreak. Crop yield increases vary by crop type. Taken from [Establishing Tree Cover](#)

What are the costs associated with planting windbreaks?

There are costs when planting a windbreak, such as site preparation, purchasing the trees and planting. Some conservation authorities in Ontario have cost-share programs that can help you with these costs. Contact your local [conservation authority](#) to see how they can help you plan and plant a windbreak.

What type of windbreak should you plant?

The type of windbreak you plant and how you plant it depends on the purpose for the windbreak.

- One to three rows of trees are most often planted to protect field crops from the wind and to reduce soil erosion. Multiple row windbreaks often include at least one row of conifers.
- Think about planting at least one row of hardwood trees for future alternative income sources, such as wood for fence posts, fuel and lumber.
- Plant a shelterbelt (more than three rows of trees) around your home and farm buildings to save on energy costs.
- Plant a conifer windbreak to [provide livestock with wind and sun protection](#).
- Windbreaks deflect odours upward if properly situated to the barn.
- The taller the windbreak, the greater the area it protects. Consider the maximum height of the tree species you choose and determine if it will provide you with the protection you need.
- Keep in mind the crops that you plan to plant beside the windbreak, and the winter hardiness and typical lifespan of the selected tree species.
- Some trees may be better suited for areas with tile drains than others, an important, and potentially money-saving, consideration.

The type of soil of your land and the region of the province you're in will also affect the type of trees you can plant. Trees can thrive and provide maximum protection when they're matched with the right soils. Visit the Ministry of the Environment and Climate Change's [Tree Atlas](#) to determine the best trees for your situation.

Need help?

For help with planning and planting a windbreak, contact your local [conservation authority](#). They may be able to visit your planned windbreak site and help you with your planting plan, site preparation, choices of tree species, and appropriate spacing and planting, as well as windbreak maintenance.

The Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has many resources to help you with windbreak planning. Visit [our website](#) to watch four windbreak videos on planning, planting, maintenance and farmer windbreak success stories. Our free Best Management Practices book, "[Establishing Tree Cover](#)," provides a step-by-step guide for planning and planting a windbreak and includes maintenance tips. Contact OMAFRA's Agricultural Information Contact Centre at 1-877-424-1300 or ag.info.omafra@ontario.ca for more information.

Meet the New Member of Our Team



Thomas Ferguson is the new **Forage and Grazier Specialist** with the Field Crop Unit of **OMAFRA**.

Thomas has a B.Sc. in Agriculture with a Major in Animal Science from the University of Guelph. Thomas brings both knowledge and experience to the provincial Forage and Grazier Specialist role. Through experience in the agricultural industry and as a Certified Crop Advisor, Thomas has gained strong knowledge of forage production systems in Ontario. His experience in managing an intensive grazing program and organic Jersey farm has provided him with practical experience in grazing management. Thomas has worked for Northumberland Grain Inc. and as Multi-Program Inspector for CFIA. He is experienced in technology transfer and taught forage production as part of the Dairy Herdsperson Apprenticeship Program for the University of Guelph at the Kemptville Campus.

Thomas joined OMAFRA on May 30th, and works out of the Lindsay office.



Agricultural Information Contact Centre:
1-877-424-1300

E-mail: ag.info.omafra@ontario.ca
www.ontario.ca/omafra

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Préparé par:

Scott Banks, spécialiste des systèmes de récolte
 Tracey Baute, entomologiste, chargée de programme- grandes cultures
 Horst Bohner, chef de programme, soya
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 Thomas Ferguson, spécialiste de la culture des fourrages et des animaux de pâturage
 Joanna Follings, spécialiste de la culture des céréales
 Adam Hayes, spécialiste de la gestion des sols-grandes cultures
 Ian McDonald, coordonnateur de la recherche appliquée
 Meghan Moran, spécialiste de la culture des haricots comestibles et du canola
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 Ben Rosser, chargé de programme, industrie du maïs en grande culture
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 Hugh Berges, gérant

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

Conseils sur le désherbage automnal

Mike Cowbrough, spécialiste de la lutte contre les mauvaises herbes—grandes cultures, MAAARO

De nombreux producteurs ont constaté l'utilité de faire des traitements d'herbicides en automne contre les mauvaises herbes vivaces, surtout le laiteron vivace et le pissenlit (figure 1). Ils observent souvent une réduction des peuplements l'année suivante ainsi qu'un retard dans la levée des pousses. Cela donne à la culture semée un avantage concurrentiel sur ces mauvaises herbes vivaces. Malheureusement, les conditions au moment du traitement peuvent être très variables et avoir un effet sur l'efficacité de l'herbicide. Examinons ensemble quelques suggestions pour tirer profit au maximum de cette période d'épandage.

1. Choisir les produits, les doses et les mélanges en cuve les plus efficaces pour lutter contre les mauvaises herbes vivaces ciblées. Le tableau 1 résume ce que les chercheurs du secteur public ontarien estiment le plus efficace pour lutter contre les vivaces l'automne.

Tableau 1. Meilleurs choix d'herbicides contre la plante vivace visée, selon des recherches menées par le Département de phytotechnie de l'Université de Guelph.

Plante vivace	Produit (s)	Dose	Efficacité moyenne (seuil d'efficacité)
Pissenlit	Glyphosate (540 g/L)	1,34 L/ac	90%
Laiteron vivace	Glyphosate (540 g/L)	1 L/ac	90% (85 – 100%)
Chardon des champs	Glyphosate (540 g/L)	1,34 L/ac	90% (85 – 100%)
Luzerne	Glyphosate (540 g/L)+ 2,4-D Ester (564 g/L)	0,67 L/ac + 0,5 L/ac	95% (90 – 100%)
Carotte sauvage	Glyphosate (540 g/L)	1,34 L/ac	82% (49 – 100%)
Bardane	Glyphosate (540 g/L)	1,34 L/ac	90%
Trèfle rouge	Glyphosate (540 g/L)+ Distinct	0,67 L/ac + 200 g/ac	99% (96-100%)

2. Traiter quand les températures de l'air sont supérieures à 8 °C pendant au moins deux heures après l'application. Il est donc suggéré de faire les traitements tard en matinée ou au milieu de la journée, afin que la plante visée assimile le glyphosate durant les périodes chaudes de la journée.
3. Après un épisode de gel, attendre deux à trois jours avant d'évaluer l'état des mauvaises herbes; si la plante ciblée semble en bon état et que les températures de l'air sont au-dessus de 8 °C, reprendre alors les traitements. Ainsi, l'asclépiade est très sensible au gel. La figure 2 montre un plant d'asclépiade trois jours après qu'un soir les températures aient atteint un minimum de moins 3 °C. Il serait inutile d'appliquer du glyphosate sur une espèce de mauvaise herbe dans cet état, puisque ses feuilles ne sont probablement pas en état d'assimiler aucun herbicide. Par contre, le pissenlit et la carotte sauvage n'ont pas été affectés par le même épisode de gel (figures 3 et 4); on peut donc dans ce cas reprendre les traitements d'automne contre ces espèces en se fiant à l'état de leurs feuilles.
4. Si l'on souhaite travailler le sol, attendre au moins 72 heures après l'application d'herbicide contre des plantes vivaces. Plus on attend pour travailler le sol après un épandage d'herbicide, plus la translocation de l'herbicide dans le plant sera efficace à le combattre.



Figure 1. Effet d'un traitement automnal au glyphosate (à gauche) le printemps, comparativement à aucun traitement (à droite).



Figure 2. Plants d'asclépiade dans du chaume de blé trois jours après un gel où les températures nocturnes sont descendues à moins 3 °C.



Figure 3. Pissenlit en bon état trois jours après un épisode de gel.



Figure 4. Carotte sauvage en bon état trois jours après un épisode de gel.

Utilisation du maïs soumis à un stress hydrique dans l'alimentation animale

Thomas Ferguson, spécialiste de la culture des fourrages et des animaux de pâturage, MAAARO

Avec le temps sec de cette année et les faibles rendements de cultures fourragères dans la plus grande partie de la province, de nombreux producteurs sont à la recherche d'autres fourrages. De grandes quantités de maïs ayant manqué d'eau pourraient être utilisées comme fourrages pour le bétail. L'ampleur du stress hydrique subi par le maïs peut affecter la qualité de l'ensilage, ce qui occasionne une grande variabilité entre les champs et même à l'intérieur d'un même champ. Dans les champs qui étaient trop secs durant la floraison mâle ou la pollinisation et dont les plants présentent un faible remplissage du grain, la teneur énergétique de l'ensilage obtenu sera diminuée, mais la qualité des fourrages devrait être uniforme. Quand on donne ces fourrages aux animaux, il est très important de les faire analyser afin de corriger la composition nutritionnelle de l'ensilage pour la ration.

Au moment de négocier le prix pour la vente de maïs sur pied destiné à l'ensilage, le prix final se situe habituellement entre le revenu net qui peut être perçu du grain et la valeur des fourrages.

Le prix minimum pour le maïs à ensilage correspond au revenu net qui peut être généré par la vente du grain et la valeur du phosphate et du potassium prélevés par la tige. Lorsqu'on estime les rendements, il est préférable de faire preuve de réalisme et d'observer différentes parties du champ pour tenir compte de la variabilité. Le prix du maïs à ensilage peut aussi dépendre des autres sources de fourrages offerts dans la région, de la distance entre le champ et le lieu d'entreposage, des coûts d'entreposage et des pertes prévues en raison de la fermentation et du stockage.

Les vendeurs de maïs susceptibles de présenter une réclamation à l'assurance-récolte doivent communiquer avec Agricorp (1 888 247-4999) avant la récolte, afin de connaître les répercussions de la vente de maïs d'ensilage sur leur réclamation.

Le maïs ayant subi un stress hydrique peut être récolté sous forme de pâture donnée aux animaux, de fourrage vert ou pour fermentation en ensilage. Si le champ de maïs est entouré d'une bonne clôture, on peut envisager de le faire brouter. Les animaux vont d'abord consommer les épis, puis les tiges et il faudra adapter les dimensions de l'enclos au nombre de bêtes qui s'y trouveront. Il est important de voir à ce que les animaux qui consomment les tiges de maïs aient des minéraux à leur portée ainsi qu'un approvisionnement suffisant en eau. Dans certains

cas, il peut être nécessaire d'ajouter du grain ou du foin. Chez tout animal qui consomme du maïs au pâturage, il faut surveiller les risques d'acidose et de surcharge par le grain.

Lorsqu'on prévoit hacher du maïs affecté par un stress hydrique à des fins d'ensilage, il est important de le récolter à la bonne teneur en eau. On peut habituellement évaluer cette teneur à partir de la ligne d'amidon; cependant, avec la saison sèche que l'on vient de connaître, la corrélation entre la teneur en eau de l'ensemble du plant et la ligne d'amidon ne sera pas aussi étroite que durant une saison normale. Pour obtenir des taux d'humidité précis, on doit prélever au moins 10 plants de maïs au hasard, puis les hacher et les analyser à l'aide d'un testeur Koster, un four à micro-ondes ou par un laboratoire agréé. Si le maïs à ensilage est récolté trop sec, il se peut qu'il se tasse mal, que la fermentation soit médiocre, qu'il chauffe, moisisse et se dégrade. Une teneur en eau supérieure à 70 % peut donner lieu à un suintement et à une fermentation clostridiale qui produit de l'acide butyrique et provoque d'importantes pertes dues à un excès de fermentation, une réduction de la prise alimentaire, de l'acétonémie et une piètre performance des vaches.

L'utilisation de maïs ayant subi un stress hydrique exige une surveillance des teneurs en nitrates. Les intoxications aux nitrates se produisent en présence de teneurs élevées en nitrates du sol et de conditions environnementales qui favorisent leur accumulation dans les plants. **L'intoxication aux nitrates est particulièrement risquée durant les cinq à sept jours suivant une pluie qui met fin à une période de sécheresse prolongée.** Éviter de faire brouter les animaux ou de leur donner du fourrage vert durant cette période. La production d'ensilage à partir de maïs endommagé par la sécheresse peut grandement réduire les risques d'intoxication aux nitrates étant donné que la fermentation réduit les teneurs en nitrates. Quand ces dernières sont élevées, les quantités de dioxyde d'azote produites durant l'ensilage augmentent.

Quand les animaux ingèrent des nitrates, le rumen les transforme en nitrites. Des concentrations élevées en nitrites affectent la capacité de l'hémoglobine sanguine à transporter de l'oxygène. Les symptômes d'intoxication aux nitrates comprennent notamment un halètement excessif, un battement cardiaque rapide et faible, des difficultés respiratoires, des tremblements musculaires, la perte d'équilibre et la mort. En cas de soupçon d'intoxication aux nitrates, garder l'animal au calme et l'installer confortablement, puis appeler immédiatement le vétérinaire. Les animaux qui sont moins gravement atteints peuvent se montrer apathiques et présenter des symptômes plus discrets comme une diminution de l'appétit, des problèmes de reproduction (incluant l'avortement) et de faibles rendements.

Des échantillons de fourrages peuvent être prélevés pour établir leur teneur en nitrates (NO_3) ou azote des nitrates ($\text{NO}_3\text{-N}$). Habituellement, les concentrations en azote des nitrates devraient être inférieures à 1 000 ppm (concentrations de $\text{NO}_3 < 0,44 \%$) pour ne présenter aucun risque. Des concentrations supérieures à 4 000 ppm $\text{NO}_3\text{-N}$ ($>1,76 \%$ NO_3) sont potentiellement toxiques et ces fourrages ne devraient pas être destinés à l'alimentation animale. Les fourrages présentant des concentrations entre ces deux limites sont relativement toxiques et devraient faire l'objet de surveillance. Le maïs ne devrait pas être brouté à moins que les concentrations en nitrates se situent dans des limites sûres. Pour en savoir davantage sur les concentrations en nitrates, voir la fiche suivante intitulée *Risque d'intoxication au nitrate et formation de gaz d'ensilage associé à l'utilisation de maïs affecté par la sécheresse et qui est destiné à l'ensilage, à l'affouragement en vert ou au pâturage* (http://www.omafra.gov.on.ca/french/livestock/dairy/facts/info_beware.htm).

Planifier des rendements élevés de blé d'automne!

Joanna Follings, spécialiste de la culture des céréales, MAAARO

Malgré le temps sec cette année et l'infestation de rouille jaune, on a constaté des rendements élevés de blé d'automne dans la province cette saison. De nombreux producteurs estiment que cela est dû à l'établissement vigoureux des parcelles l'automne dernier, attribuable à d'excellentes conditions de semis. Donc, comme nous arrivons à la période des semis de blé d'automne, voici quelques rappels pour tenter d'obtenir des rendements élevés et de battre de nouveaux records provinciaux!

Connaître les dates et les taux de semis optimaux

Comme on l'a constaté avec les cultures qui ont été semées tôt l'automne dernier, la date de semis exerce un effet important sur le blé. Cela a été particulièrement marquant en 2006 quand on a observé des rendements records dus à des semis hâtifs l'automne précédent. Ce fut également le cas en 1993, mais de façon inverse, lorsque du blé d'automne semé tardivement avait donné de faibles rendements. Étant donné que la date de semis a tant d'effet sur le rendement, il est important de planifier cette date en fonction des dates indiquées au chapitre 4 de la publication 811F : Guide agronomique des grandes cultures : **Dates de semis optimales du blé d'automne en Ontario.**



Figure 1. Dates de semis optimales du blé d'automne en Ontario

Puisque les conditions météorologiques ne coopèrent pas toujours, il est important de tenir compte des conséquences que peuvent avoir les variations dans les dates de semis ainsi que des mesures à prendre pour s'y adapter. Il peut arriver que le blé d'automne soit semé trop tôt; le risque est toutefois beaucoup plus grand de ne pas le semer à temps. À la date optimale, le blé d'automne doit être semé à raison de 1,5 million de semences/acre. Ce taux peut légèrement dépendre de la variété, d'où l'importance de consulter l'étiquette de cette dernière.

Le blé d'automne semé précocement présente un risque accru de verse et de moisissure nivéale. Pour réduire ces risques, diminuer le taux de semis de 25 % si les semis sont effectués plus de 10 jours avant la date optimale recommandée pour la région. Le tallage à l'automne est réduit dans le blé d'automne semé plus tard que la période optimale. Pour contrer ce désavantage, augmenter le taux de semis de 200 000 semences/semaine jusqu'à un maximum de 2,2 millions de semences /acre.

Semer à la bonne profondeur

Comme pour la date de semis, le blé d'automne réagit beaucoup à la profondeur des semis. Donc, plus les semis sont faits à la bonne profondeur, meilleures sont les chances de survie à l'hiver et de rendements élevés. Une bonne profondeur de semis stimule le développement d'un système racinaire secondaire bien avant que l'hiver commence et favorise une levée rapide. Si le blé d'automne est semé trop profondément, la levée est retardée, ce qui réduit les rendements; les diminutions de rendements sont toutefois plus marquées quand les semis ont été faits à une profondeur insuffisante.

Semer à une profondeur de 2,5 cm (1 po). L'humidité est un facteur très important; bien qu'une profondeur de 2,5 cm soit idéale, il faut aussi s'assurer que la semence est mise en place dans un terreau humide. On peut aussi réduire les fluctuations dans les profondeurs des semis en utilisant des dispositifs tasseurs et en diminuant la vitesse d'ensemencement.

Choisir la bonne variété et utiliser des semences de qualité

Choisir une variété qui convient à la région. Un certain nombre de facteurs doivent être pris en compte dans le choix d'une variété, dont : l'emplacement de l'exploitation agricole, la survie à l'hiver, la résistance aux insectes et aux maladies, la sensibilité à la verse et les rendements. Se servir des données sur les essais de rendements de l'Ontario sur le site Web de www.GoCereals.ca (en anglais seulement). Examiner les données et choisir les variétés qui donnent de bons résultats dans la région à plusieurs sites et au cours des années. Utiliser des semences de qualité supérieure présentant un excellent taux de germination et traitées contre les maladies des jeunes pousses.

Mouche des légumineuses dans le soya

Horst Bohner, spécialiste de la culture du soya, MAAARO

La mouche des légumineuses a causé d'importants problèmes dans les cultures de soya au printemps 2016. Le comté de Wellington a été particulièrement touché. Dans certains cas, des champs ont été complètement décimés et on a dû les réensemencer.

La mouche des légumineuses s'alimente sur les semences de maïs et de soya en germination et sur les jeunes pousses. Elle peut causer des dommages mineurs qui ne font que retarder la levée ou carrément causer la mort des semis.



Figure 1. Champ de soya complètement décimé en 2016

Les jeunes pousses qui survivent sont souvent gravement affaiblies et peuvent ne pas s'en remettre entièrement. Les dommages dus à la mouche des légumineuses se répandent souvent dans tout le champ et ne sont pas restreints à certaines parties du champ. Les dégâts sont souvent pires au cours des printemps frais et humides, car les mouches adultes sont attirées par les résidus végétaux en décomposition. Le temps frais et humide retarde la levée, ce qui permet aux mouches de se nourrir plus longtemps. Les infestations de mouches des légumineuses sont difficiles à prédire, mais l'hiver plus doux a probablement contribué à accroître les populations au printemps 2016. Pour savoir si c'est vraiment la mouche des légumineuses qui a réduit les peuplements, il faut retirer la semence et vérifier la présence de petites mouches qui s'enfouissent dans la semence et s'y nourrissent.

Description

Les mouches sont très petites, mesurant moins de 6 mm de longueur. Les larves sont jaune pâle, sans tête et apodes. Leur corps est fuselé et leur bouche de couleur noire possède deux petits crochets. L'adulte ressemble à une très petite mouche domestique, mais elle est plus élancée et de couleur gris pâle.

Cycle biologique

La mouche des légumineuses hiverne dans le sol. Au début du printemps, quand la température du sol augmente, les adultes apparaissent et s'accouplent. Les femelles cherchent un endroit pour pondre leurs œufs d'avril à juin. Les mouches sont attirées par l'odeur de la matière organique en décomposition, comme celle qui se dégage des sols fraîchement travaillés, des résidus végétaux en décomposition, des cultures de couvertures légèrement hersées et des champs recouverts de fumier.

Les œufs sont pondus dans le sol humide et une fois éclos, leurs larves commencent à se nourrir des graines en germination. Les œufs ne prennent que quelques jours à éclore et les larves se nourrissent pendant deux à trois semaines, puis elles entrent dans le stade pupal et les adultes apparaissent une semaine ou deux après. Le cycle biologique peut ne durer que trois semaines, ce qui peut donner lieu à plusieurs générations par année.



Figure 2. En s'alimentant, la mouche des légumineuses creuse les graines de semence et laisse de petits tunnels foncés.

Stratégies de lutte

Éviter d'incorporer du matériel végétal (comme des mauvaises herbes ou des cultures de couverture) ou du fumier dans les trois semaines suivant les semis, afin de réduire les risques d'infestations par la mouche des légumineuses. Une fois que les dommages sont apparus sur les semences en germination ou sur les jeunes pousses, ils sont irréversibles. Si le peuplement est considérablement réduit, il ne reste plus qu'à recommencer les semis. Les producteurs qui subissent d'importantes réductions de peuplement en raison de la mouche des légumineuses peuvent demander une [Inspection de la culture – Rapport d'évaluation parasitaire](https://www.ontario.ca/fr/page/reglementation-des-neonicotinoides-pour-les-producteurs) (<https://www.ontario.ca/fr/page/reglementation-des-neonicotinoides-pour-les-producteurs#section-10>). Le

rapport doit être rempli par un conseiller professionnel en lutte antiparasitaire. Si les dommages dans le champ de soya atteignent le seuil de réduction de peuplement de 30 %, un rapport d'évaluation parasitaire peut être utilisé en vue de se procurer et planter des semences traitées aux néonicotinoïdes pour cette exploitation agricole. Les

semences traitées aux insecticides devraient être utilisées pour le réensemencement, étant donné que les mouches sont probablement encore présentes dans le champ. Les champs en semis directs sont moins vulnérables aux dommages causés par la mouche des légumineuses, tout comme les champs ensemencés tardivement où la levée survient rapidement en raison du temps plus chaud. Le traitement insecticide des semences est la seule stratégie fiable pour les producteurs dont les champs subissent constamment des dommages causés par la mouche des légumineuses. Il est également important de noter qu'il est possible que les semences traitées n'offrent pas une entière protection lorsque la pression exercée par l'insecte est très forte; on doit alors augmenter les taux de semis.

Pour en savoir davantage sur la réglementation ontarienne relative aux néonicotinoïdes et sur les directives en matière d'évaluation antiparasitaire, voir : <https://www.ontario.ca/fr/page/reglementation-des-neonicotinoides-pour-les-producteurs>

Interpréter les résultats d'analyse de sol

Jake Munroe, spécialiste de la fertilité du sol, grandes cultures, MAAARO

Les analyses de sol effectuées régulièrement sont très importantes en production culturale. Ces analyses permettent de surveiller la fertilité du sol, de découvrir les risques de carences nutritionnelles et de prendre des décisions de fertilisation fondées sur les meilleures données. La présente période de l'année constitue une excellente occasion de prélever des échantillons du sol dans les champs de blé récoltés avant les gros travaux des récoltes d'automne. Il se peut que vous ayez déjà prélevé et expédié des échantillons de sol et que vous ayez déjà reçu le rapport d'analyse (voir la figure 1 à titre d'exemple). Que vous procédiez par quadrillage, par transect ou seulement avec un échantillon composite ordinaire, il peut parfois être difficile de comprendre exactement la signification de tous ces chiffres ainsi que la manière de les interpréter pour prendre de bonnes décisions. De plus, si on vous a fourni des recommandations d'engrais, il est utile d'être en mesure de les vérifier afin de s'assurer que les valeurs fournies se situent dans des limites convenables.

Rapport d'analyse de sol

Les résultats d'analyse du MAAARO sont dans les cases ombrées

(1) Numéro de l'échantillon	(2) % de mat. org	(3) Phosphore, P ppm ³		(4) Potassium K ppm	(5) Magnésium Mg ppm	(6) Calcium Ca ppm	(7) pH		(8) CEC
		Olsen (Bicarbonate)	Bray-1				pH	pH tampon	
TT01	3,0	22RF ^b	34	193RTF	319	1701	7,3		12,9

(1) Numéro de l'échantillon	(9) % de saturation en bases			(10) Soufre S ppm	(11) Zinc Zn		(12) Manganèse Mn	
	K	Mg	Ca		Zn ppm	Indice Zn	Mn ppm	Indice Mn
TT01	3,9	20,7	66,1	8	3,4	26	18,1	16,1

(1) Numéro de l'échantillon	(13) Oligoéléments ppm			(14) Azote des nitrates ppm	(15) Analyses et résultats additionnels
	Fer Fe	Cuivre Cu	Bore B		
TT01	22,5	0,5	0,5		Dr nombreux laboratoires commerciaux offrent des analyses et des résultats additionnels à leurs clients.

(16) Recommandations (kg/ha)														
(1) Numéro de l'échantillon	Culture	Rendement Ciblé	Lime	N	P ₂ O ₅	K ₂ O	Mg	Ca	S	Zn	Mn	Fe	Cu	B
TT01	maïs	180 boiss./ac	0		20	0								

- ³ppm = parties par million
- ^BCotes indiquant la probabilité que la fertilisation soit rentable selon les concentrations mesurées dans les analyses de sol :
RÉT = probabilité de rentabilité très élevée; RÉ = probabilité élevée; RM = probabilité moyenne; RF = probabilité faible; RTF = probabilité très faible; RN = probabilité nulle
- OU les cotes basées aussi sur les résultats d'analyse de sol peuvent être notées ainsi : TF = très faible; F = faible; M = moyenne; H = élevée; TÉ = très élevée; E = excessive.
- ^cmilli-équivalents par 100 g de sol (méq/100g)

Figure 1. Exemple de rapport d'analyse de sol, avec les résultats des laboratoires accrédités en Ontario dans les cases ombrées.

Interprétation des chiffres

Quand un échantillon de sol est soumis à un laboratoire pour analyse, il est séché et broyé et une série d'extractions sont effectuées sur de petits « sous-échantillons ». Comme ces sous-échantillons peuvent contenir aussi peu que deux grammes de sol, il est indispensable que l'échantillon initial soit le plus représentatif possible. Les produits utilisés pour l'extraction retirent les éléments nutritifs les plus facilement disponibles du sol et une partie de ceux qui le sont modérément. La concentration obtenue pour un élément nutritif donné n'indique pas la quantité totale de cet élément dans le sol ; elle fournit plutôt un indice de la disponibilité de l'élément nutritif qui est reliée à la réaction de la plante. Pour les cations de base (potassium, calcium, magnésium), la valeur obtenue représente la forme « échangeable » de l'élément nutritif, soit la portion fixée aux argiles et à la matière organique qui est en mesure de se déplacer dans la solution du sol.

Les résultats d'analyse de sol sont indiqués en parties par million (ppm), ce qui représente un milligramme d'élément nutritif extrait pour chaque kilogramme de sol. Si vous souhaitez estimer le résultat en livres à l'acre, vous pouvez simplement multiplier la valeur en ppm par deux. Par exemple, une concentration en potassium de 193 ppm correspond à 386 lb/acre de « K échangeable » dans les six pouces supérieurs du sol.

Les résultats doivent avoir un code qui peut varier selon le laboratoire qui effectue les analyses ; chaque résultat provenant d'un laboratoire accrédité du MAAARO doit aussi avoir un code qui lui est associé. Le code vous donne une idée de la probabilité que l'apport de cet élément nutritif soit rentable (ex. : RF signifie que la probabilité que l'apport de cet élément soit rentable est faible, puisque la concentration existante dans le sol est relativement élevée).

La première donnée dont il faut tenir compte est le pH du sol. Voir le tableau 9-2 de la publication 811F : Guide agronomique des grandes cultures (<http://www.omafra.gov.on.ca/french/crops/pub811/9fertilizer.htm#tableau9-2>) afin d'établir à quel pH le chaulage est recommandé. Le pourcentage de matière organique dans le sol est une autre donnée importante ; un suivi des teneurs en matière organique dans le sol peut en dire long sur l'efficacité de vos pratiques culturales à maintenir ou améliorer les quantités de matière organique dans le sol (voir l'article de Chatham-Kent Agri-Development <http://bit.ly/2bf11YS>) (en anglais seulement).

Recommandations d'engrais

Les recommandations d'engrais du MAAARO, que l'on peut trouver dans la publication 811F du MAAARO, sont formulées en fonction des concentrations convenables, et permettent de minimiser les coûts des engrais par rapport

au rendement pour une année donnée, en fonction des analyses de sol et de la culture. Selon l'endroit où se situent les champs, il est possible que vous souhaitiez investir pour hausser les concentrations de phosphore et de potassium dans le sol. Les résultats obtenus pendant des décennies en Ontario montrent que lorsque les résultats d'analyse de sol donnent des concentrations en phosphore se situant entre 12 et 18 ppm, ce sont les doses de démarrage (soit 20 à 30 lb de P₂O₅/acre) qui ont été les plus rentables économiquement. La même conclusion vaut aussi pour le potassium quand les concentrations dans le sol se situent entre 100 et 130 ppm.

De manière générale, les quantités suivantes au-delà des prélèvements faits par les cultures sont requises pour hausser les concentrations d'un ppm (dans le cas des analyses sur le P et le K par les laboratoires accrédités du MAAARO) : 35 lb/acre de P₂O₅ et 20 lb/acre de K₂O.

Ces valeurs vont varier selon le type de sol et les résultats initiaux des analyses de sol. Par exemple, pour un champ dont la concentration du sol en P est de 10 ppm P et de 80 ppm en K, on peut épandre des quantités de P et de K au-delà de la quantité prélevée par la culture pendant un certain nombre d'années pour atteindre les teneurs ciblées de 15 ppm de P et de 115 ppm de K. On peut aussi avoir recours à la technologie à taux variable pour épandre ces éléments nutritifs.

Il est important de se rappeler que les éléments nutritifs ne se comportent pas tous de la même façon dans le sol. En raison de la manière dont se déplace le phosphore dans le sol, il faut épandre le plus possible de cet élément en bande, pour que la culture en retire le plus d'avantages possible durant la saison de croissance. Si le phosphore est épandu en pleine surface, cela doit se faire durant une période où les risques d'érosion du sol et de pertes d'éléments nutritifs par ruissellement sont faibles (soit à la fin de l'été après la récolte du blé).

Vous pouvez aussi envisager d'utiliser d'autres sources d'éléments nutritifs selon leur disponibilité dans la région. Les composts d'origine municipale, les biosolides stabilisés et le fumier (si disponible) peuvent être employés pour améliorer la fertilité des sols tout en offrant l'avantage additionnel d'accroître la quantité de matière organique et d'améliorer la structure du sol à long terme.

Agents facilitateurs de récolte pour les haricots secs comestibles

Meghan Moran, spécialiste de la culture des haricots comestibles et du canola, MAAARO, et Mike Cowbrough, spécialiste de la lutte contre les mauvaises herbes, grandes cultures, MAAARO

L'utilisation d'agents facilitateurs de récolte pour les haricots secs comestibles permet un assèchement plus uniforme de la culture et des échappés de mauvaises herbes, ce qui améliore l'efficacité de la récolte. La maîtrise des échappés de mauvaises herbes peut également réduire les taches sur les graines, améliorant ainsi la qualité des haricots. Six produits sont homologués

pour utilisation en pré-récolte pour les haricots secs comestibles en Ontario. Les doses recommandées sur les étiquettes et les périodes d'application sont indiquées au tableau 1. Aim, Reglone, Valtera et Ignite sont des herbicides de contact qui demandent de plus gros volumes d'eau et un bon recouvrement, et qui permettent un assèchement rapide des végétaux. Eragon est diffusé à l'intérieur du feuillage et offre une maîtrise des mauvaises herbes ainsi qu'un assèchement des plants de haricots. Le glyphosate agit plus lentement et il est surtout employé contre les mauvaises herbes ou pour prévenir la repousse de la culture. Consulter le fournisseur de semences de haricots avant de choisir un traitement de pré-récolte; actuellement, certains courtiers peuvent avoir des restrictions relativement à l'utilisation de glyphosate sur les haricots secs exportés en Union européenne.

Tableau 1. Doses de pesticide mentionnées sur l'étiquette et lignes directrices sur les agents facilitateurs de récolte pour les haricots secs comestibles

Agent facilitateur de récolte	Dose	Période d'application
Aim EC + Surfactant non ionique	47 mL/ac +0,25 % v/v	Appliquer sur les plants de haricots secs quand 80 à 90 % des feuilles sont tombées et que les gousses sont à maturité.
Eragon LQ + Merge	29,5 – 59 mL/ac + 0,5 % v/v	Appliquer quand 90 % des gousses sont passées du vert au jaune puis au brun. La récolte peut commencer dans les trois à 10 jours qui suivent le traitement.
Glyphosate (360 g/L)	1 L/ac	Appliquer quand les tiges sont vertes à brunes, que les gousses sont à maturité (jaunes à brunes) et que 80 à 90 % des feuilles sont tombées (feuilles initiales).
Ignite 150 SN	1 – 1,2 L/ha	Appliquer quand 50 à 75 % des gousses ont changé de couleur, de vert à jaune à brun. Attendre au moins 9 jours avant de récolter.
Reglone + Surfactant non ionique	0,5 – 0,92 L/ac + 0,1 % v/v	Appliquer quand au moins 80 % des gousses ont viré au jaune. La récolte peut commencer dans les 4 à 10 jours qui suivent le traitement.
Valtera + MSO Concentré	42 g/ac + 1 L/ac	L'étiquette du produit ne mentionne pas une période précise et dit seulement de ne pas récolter les haricots dans les cinq jours qui suivent le traitement.

La période d'application des agents facilitateurs de récolte est déterminante pour maximiser la qualité et le rendement des haricots secs. Les étiquettes d'herbicides donnent certaines lignes directrices concernant la période du traitement, mais il peut être assez difficile de visualiser ce que signifie concrètement « quand 80 % des gousses ont viré au jaune ». La figure 1 fournit un exemple de plants de haricots noirs parvenus à un stade de changement de couleur de la gousse de 60 % et de 80 %. Les gousses de haricots noirs passent du vert au rouge lorsqu'elles atteignent la maturité.

la maturité de la culture et la récolte. Le changement de couleur des gousses est la meilleure indication de maturité; la chute des feuilles et leur couleur ne sont pas de bons indicateurs. Une fois que l'herbicide est appliqué, les gousses tardives ne mûrissent plus; il faut donc s'assurer que les haricots ont atteint la couleur désirée avant le traitement et qu'ils ne sont pas verts lorsqu'on ouvre les gousses. Les diverses catégories de haricots secs comestibles ont des gousses de couleur différente quand les haricots sont parvenus à maturité. Voir les exemples aux figures 2, 3 et 4.

Les herbicides appliqués en pré-récolte ne hâteront pas la maturité des plants et ne diminueront pas la teneur en humidité des graines, mais ils peuvent réduire l'écart entre



Figure 1. Préparation de plants de haricots noirs pour l'application d'herbicides en pré-récolte. Avec l'aimable permission de BASF.



Figure 2. Couleur optimale des gousses de haricots blancs pour l'application d'herbicides en pré-récolte.
Photo : BASF



Figure 3. Couleur de la gousse et couleur correspondante de la graine pour des haricots adzuki; les gousses brunes contiennent des graines parvenues à pleine maturité.
Photo : BASF



Figure 4. (à droite) Gousse rouge foncé de haricot rognon et couleur correspondante de la graine; les gousses sont brun pâle quand les graines sont à maturité.

Efficacité des différents traitements en pré-récolte à assécher les mauvaises herbes courantes

Les recherches réalisées par le secteur public qui visent à comparer l'efficacité des traitements en pré-récolte sur les différentes espèces de mauvaises herbes sont peu nombreuses. Le chercheur Peter Sikkema a réalisé six

essais étalés sur trois saisons sur les haricots secs comestibles et ses résultats sont résumés ci-dessous. Quel que soit le traitement employé, on s'attend à ce que les applications en pré-récolte améliorent l'efficacité de la récolte, sans toutefois assécher entièrement les mauvaises herbes ciblées.

Tableau 2. Efficacité visuelle contre le chénopode blanc, l'herbe à poux, l'amarante et la sétaire huit jours après l'application de produits desséchants.

Traitement en pré-récolte	Efficacité visuelle (%) 8 jours après l'application			
	Chénopode blanc	Herbe à poux	Amarante	Sétaire
Aim EC (47 mL/ac) + SNI ¹ (0,25 % v.v)	30	12	29	7
Eragon LQ (59 mL/ac) + Merge (0,5 % v.v)	46	73	64	26
glyphosate (1L/ac)*	29	17	38	63
Ignite (1,2 L/ac)	70	66	65	52
Reglone (0,92 L/ac) + SNI ¹ (0,1 % v/v)	73	80	78	47
Valtera (42 g/ac) + MSO Concentré (1 L/ac)	38	52	41	32

* La dose de glyphosate à l'acre est basée sur une concentration du produit de 360 g/L (ex. : Roundup Original)

¹ SNI = Surfactant non ionique (nombreux produits et marques commerciales sont offerts sur le marché)

Source : P. Sikkema, 6 essais : DB10D1A, DB10D1B, DB11D1A, DB11D1B, DB12D1A, DB12D1B, *Weed Control Trials Research Report*, 2010, 2011 et 2012, Université de Guelph, Campus de Ridgeway.

Voulez-vous augmenter les rendements de vos cultures tout en réduisant l'érosion du sol?

Jennifer Jarvis, MAAARO

Les brise-vent peuvent augmenter les rendements de vos cultures jusqu'à 15 %, ce qui compensera largement la quantité de terrain nécessaire à leur installation. Comment? Les brise-vent améliorent le microclimat qui existe dans un champ en réduisant la vitesse des vents, en augmentant les températures et en réduisant les pertes d'humidité.

Avez-vous envisagé de planter des brise-vent? Les brise-vent peuvent aussi :

- réduire l'érosion du sol;
- minimiser les odeurs et la dérive des pulvérisations;
- procurer une source supplémentaire de revenus;
- réduire jusqu'à 30 pour cent vos coûts de chauffage et d'énergie;
- Abrisser le bétail du vent et du soleil.

Quels sont les coûts associés à la plantation de brise-vent?

Des coûts sont associés à la plantation de brise-vent, notamment la préparation du terrain, l'achat et la plantation d'arbres. Certains offices de protection de la nature de l'Ontario possèdent des programmes de partage des coûts qui peuvent vous aider à atténuer ces coûts. Communiquez avec l'[office de protection de la nature](#) de votre région pour découvrir comment il peut vous aider à planifier et à planter un brise-vent.

Quel type de brise-vent devriez-vous planter?

Le type de brise-vent que vous plantez et la manière de procéder dépendent de l'objectif que vous recherchez.

- On plante le plus souvent d'un à trois rangs d'arbres pour protéger les grandes cultures du vent et pour réduire l'érosion du sol. Les rangs multiples de brise-vent comprennent souvent au moins un rang de conifères.
- Envisagez de planter au moins un rang d'essences de feuillus pour de futures sources de revenus supplémentaires, comme du bois pour des piquets de clôture, du carburant et du bois d'œuvre.

- Plantez un rideau abri (plus de trois rangs d'arbres) autour de votre maison et vos bâtiments agricoles afin d'économiser sur vos coûts énergétiques.
- Planter des brise-vent de conifères pour abriter le bétail du vent et le protéger du soleil.
- Les brise-vent peuvent dévier les odeurs vers le haut s'ils sont adéquatement situés par rapport à l'étable.
- Plus le brise-vent est grand, plus vaste est la zone qu'il protège. Tenez compte de la hauteur maximale des espèces d'arbres que vous choisissez et vérifiez s'ils vous fourniront la protection dont vous avez besoin.
- Gardez à l'esprit les cultures que vous comptez planter à côté du brise-vent, ainsi que la résistance à l'hiver et la durée de vie typique des espèces d'arbres sélectionnées.
- Certains arbres peuvent mieux convenir que d'autres pour des zones où on retrouve des drains en tuyau, un facteur important et qui peut avoir un impact économique.

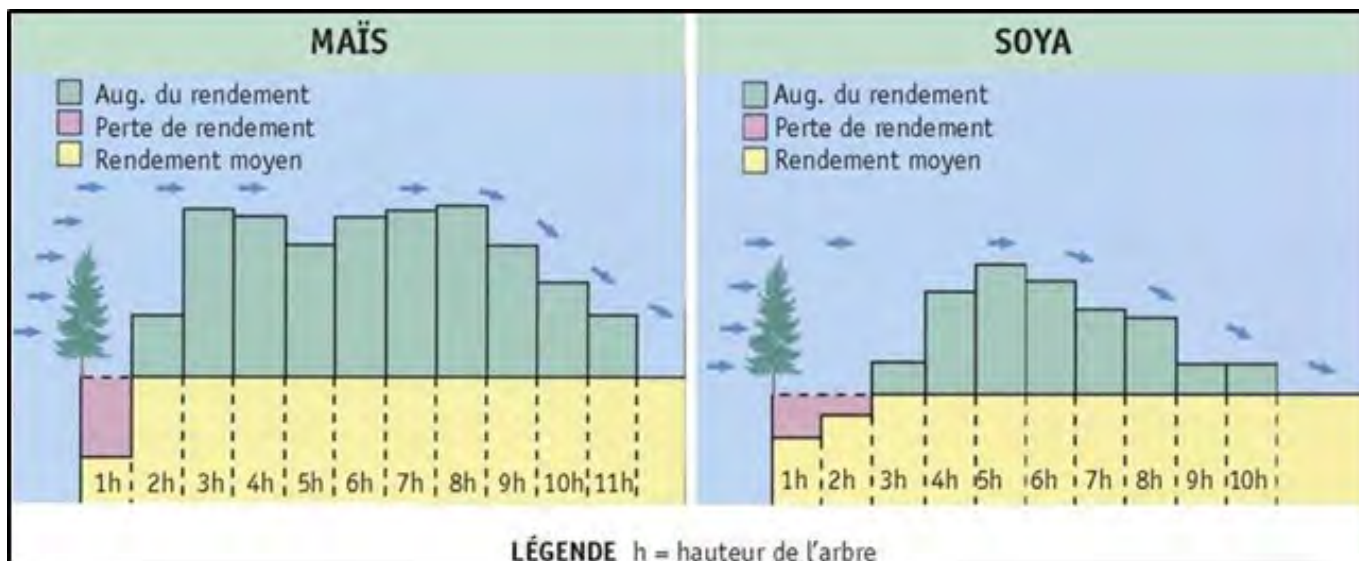
Le type de sol de votre terrain et la région de la province où vous vous trouvez se répercuteront aussi sur le type d'arbres que vous pouvez planter. Les arbres peuvent s'épanouir et offrir une protection maximale lorsqu'ils sont jumelés aux bons sols. Consultez l'Atlas des arbres du ministère de l'Environnement et de l'Action en

matière de changement climatique afin de trouver les arbres qui conviennent le mieux à votre situation.

Besoin d'aide?

Pour obtenir de l'aide pour planifier et planter un brise-vent, communiquez avec l'office de protection de la nature de votre région. Un représentant pourra visiter l'emplacement où vous comptez planter un brise-vent et vous aidez à en faire le plan, à préparer le terrain, à choisir les espèces d'arbres, à prévoir l'espacement adéquat et la plantation, ainsi qu'à entretenir le brise-vent.

Le ministère de l'Agriculture, de l'Alimentation et des Affaires rurales (MAAARO) possède plusieurs ressources pour vous aider à planifier votre brise-vent. Consultez notre site Web pour visionner nos vidéos sur la planification, la plantation, l'entretien des brise-vent, et pour découvrir les réussites d'agriculteurs en cette matière. Notre fascicule intitulé *Les pratiques de gestion optimales : Établissement du couvert forestier* fournit une marche à suivre détaillée sur la planification et la plantation d'un brise-vent et contient aussi des conseils d'entretien. Pour de plus amples renseignements, veuillez communiquer avec le Centre d'information agricole du MAAARO au 1 877 424-1300 ou au ag.info.omafra@ontario.ca.



Graphique : Chaque bande représente un rendement moyen, tel qu'étudié par l'Université de Guelph, campus de Ridgetown. Les rendements augmentaient du côté sous le vent du brise-vent sur une distance jusqu'à 12 fois la hauteur du brise-vent. Les augmentations du rendement des cultures variaient en fonction du type de culture. Tiré du fascicule *Établissement du couvert forestier*.

Présentation du nouveau membre de notre équipe



Thomas Ferguson est le nouveau **spécialiste de la culture des fourrages et des animaux de pâturage** à l'Unité des grandes cultures du **MAAARO**.

Thomas Ferguson détient un baccalauréat en sciences de l'Agriculture, avec une majeure en sciences animales, de l'Université de Guelph. Thomas apporte ses connaissances et son expérience dans ses fonctions de spécialiste de la culture des fourrages et des animaux de pâturage. Il a en effet acquis de l'expérience au sein du secteur agricole à titre de conseiller agréé en cultures où il a perfectionné ses connaissances sur les systèmes de production des cultures fourragères en Ontario. Son expérience de gestion d'un programme de pâturage intensif et d'une ferme laitière biologique de vaches Jersey

lui a donné une expérience pratique de la gestion des pâturages. Thomas a aussi travaillé pour l'entreprise Northumberland Grain Inc. et à titre d'inspecteur de programmes multiples pour l'ACIA. Il possède en outre de l'expérience dans le transfert des technologies et a enseigné la production de cultures fourragères dans le cadre du programme d'apprentissage pour les préposés aux soins des troupeaux laitiers de l'Université de Guelph au campus de Kemptville.

Thomas s'est joint au MAAARO le 30 mai dernier et travaille à partir du bureau de Lindsay.

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	Food Safety	Nov 19 th & Nov 26 th
	Environmental Farm Plan	Nov 30 th & Dec 7 th
Verner Area	Bio Security Generic	Oct 7 th
	Food Safety	Oct 14 th & Oct 21 st
	Growing your Farm Profit	Nov 1 st & Nov 8 th
	Environmental Farm Plan	Nov 15 th & Nov 22 nd
Powassan area	Bio Security Generic	Oct 6 th
	Growing your Farm Profit	Nov 18 th & Nov 25 th
	Environmental Farm Plan	Dec 2 nd & Dec 9 th
Earlton area	Food Safety	Oct 13 th & Oct 20 th
	Growing your Farm Profit	Oct 31 st & Nov 7 th
	Bio Security Generic	Nov 9 th
	Environmental Farm Plan	Nov 14 th & Nov 21 st
Sudbury area	Bio Security Bee	Oct 15 th
	Bio Security Generic	Nov 10 th
	Food Safety	Dec 3 rd & Dec 10 th
Algoma	Food Safety	Nov 5 th & Nov 12 th
Rainy River	Environmental Farm Plan	Oct 24 th & Oct 25 th
	Food Safety	Oct 26 th & Oct 27 th

