



Heartland

March 2016

Soil & Crop News



Full Circle: Growing with Biosolids
+ OMAFRA Crop Talk | OSCIA News | Local Events

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I'm sure you're just as happy as I am that meeting season is over and planting is just around the corner! Don't get me wrong, the meetings were great though. FarmSmart had a record attendance of 1300 on January 23rd. Perth and Huron had great Annual General meetings, gaining a few new directors each. And Heartland's Soil Workshop was a great success and you can read all about Frank Gibb's message on page 6-7.

But my season highlight was meeting Temple Grandin. She gave a hilarious and hard-hitting keynote talk after lunch at FarmSmart. "Agriculture must become totally transparent," she says. We need to be honest with people and show the public how we grow food. And she admits that there are some practices we will simply need to change to make agriculture more humane and more sustainable.



Farmers are constantly improving towards environmental sustainability; it is what the Ontario Soil & Crop Improvement Association is all about. But let's not stop there. Let's make sure we get out of our agriculture bubble and build connections with the public so they can be a part of our story too.

Waterloo, Wellington, Huron and Perth are planning some great events for this year and you can stay tuned by checking the website at www.heartlandsoilcrop.org

See you out and about!



Proudly serving the members of Huron, Perth, Waterloo and Wellington County Soil and Crop Improvement Associations

(Heartland Soil & Crop News is published 4 X a year)

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**“Your soil is frickin’ dead man! I’m sorry,
but you need to get some life in there!”**

- Frank Gibbs, Soil Health Workshop

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After a busy winter of meetings spent enhancing our knowledge and contacts it looks like spring is just around the corner. For the OSCIA board of directors at least one more meeting of importance remains. The board will gather in Guelph for some important governance training to give ourselves a valuable refresher on the finer points of this sometimes taken for granted topic.

Following the Annual General Meeting in London it was decided that this would be a good idea going forward. We have been hearing from the locals for quite some time now that with younger and less experienced directors at the county level it certainly couldn't hurt to offer some information that would make for smoother operating and more seamless transitions at this level. And not to single out the more youthful among us, there are more experienced members including myself who could benefit as well.

We decided the OSCIA board of directors should undergo the process first before expanding the opportunities to county and regional directors. This is the key strategy as the local groups are the real strength of the Association

and anything that can be done to support and improve their function will benefit everyone.

Keeping in mind some of the goals of the OSCIA Strategic Plan this exercise will definitely improve communication within the locals and hopefully provide stronger connection among the different tiers of the Association. Improved strength in local boards can only enhance the ability to attract new members which is another focus of the strategic plan and a major goal here in Heartland after our work with the Advanced Agricultural Leadership Program.

Please keep watching for opportunities to become involved in this initiative and if you have input or ideas let me know. The provincial board is well aware that you are looking for support in this and it is their desire to provide it. With that thank you for all your work this winter and may you have nothing but good luck and good weather this spring. And remember work hard but work SAFE!

SAVE THE DATE:



Perth Soil And Crop Improvement Association's TWILIGHT TOUR



More details to follow at www.perthsoilandcrop.ca or contact Thelma Smith at 519-271-5190 / eandtsmith@golden.net

Tools for Solving Great Lakes Issues

Building soil health is a win-win for farmers and the environment, says Gibbs

Soil health guru Frank Gibbs headlined two events in the region during his Ontario tour in February. On Feb 15th, he spoke at Huron Soil & Crop's Annual General Meeting in Varna and then spent the next day speaking to a group of 120 farmers packed into the Listowel Agricultural Hall for Heartland's Soil Workshop. In Listowel, he was joined by OMAFRA's Gabrielle Ferguson who kicked off the day by laying out the Great Lakes Phosphorus situation and drawing the link between soil health and water quality. He joined a lively panel after lunch with Anne Verhallen, Blake Vince and Wellington county farmer, John Winger.

Gibbs is optimistic that farmers can solve the problem of phosphorus loss on-farm, and that we will do it with a whole toolbox of conservation practices. "Everything is changing," says Gibbs. "We're having these heavy rains, but still there is one basic principle of soil conservation that resounds—Get the water in the ground folks, and don't let it run off."

He starts his presentation comparing fields on and around his Ohio farm. After a rain, he captured video footage of chocolate-brown water streaming out of his neighbour's field and across the road. "When I saw that," says Frank, "I rushed back to my farm to see how bad it was, but nothing was running off!"

That field hadn't seen tillage in 48 years, he says. "The soil hadn't been touched with anything more than a planter and an anhydrous knife." His next slide showed a single square yard in which he had marked all the earthworm middens. There were 101 holes there. "These are the macropores that create infiltration," says Gibbs.

"I used to do a presentation where I took a box of soil around to try to demonstrate this but people weren't impressed," says Gibbs, as he plays a video of smoke eerily curling up through a

cornfield. He had pressurized a tile and blown smoke through it to show water's pathways to the tile.

"The smoking tile demonstration, on the other hand, can really show the power of what these earthworms can do for you," explains Gibbs. "They open the ground up. Think about it, those night crawler holes have everything in it that a root needs: they've got air, they've got water, there are nutrients in there and they don't even have to push. They can follow them down deep into the ground, to sustain your crops through dry periods in August."

Gibbs learned a lot about earthworms in doing this demonstration, because he found that the smoke blows through nicely in the morning, but not in the heat of the afternoon, and not through areas in which the crop has just been cut. "The earthworms regulate the soil temperatures just like we do our houses. They open their holes up overnight when it is cool and close them when there is a big storm or when it is hot, or if there is sunlight on it," says Gibbs. "They are amazing!"

His own farm is systematically tilled and is managed with cover crops and zero tillage. The field across the road is also tilled at every 35 feet but his photos showed it to be in critical condition. "It is because this guy plows and has destroyed the soil structure of this field so that water can't even reach the tile," says Gibbs, who compared the situation to running a sewer but not connecting your house to it.

"You spend all this money on tile, but if you don't open the ground up for the water to get down there, if you do excessive tillage, it'll seal the ground off and you've wasted your money," he says. "We had such a long fall that farmers my way were tilling everything, and they even got out their



finishing tools this year,” Gibbs laments. “In Ohio this spring, we’re set up to put more phosphorus in the lake than any other year.”

Gibbs had a long and successful career with the USDA’s National Resources Conservation Service as a soil scientist and still consults with farmers on how to improve soil quality and drainage. “The principles of soil health are simple,” he says. “You’ve got to limit soil disturbance, increase soil microbiological diversity, grow living roots year-round, keep the soil covered, and reduce compaction. It is all about management.”

“My dad taught me lots of really good things,” says Gibbs, “but I remember him saying he would skim up a bit of the subsoil to build topsoil. *But that was not right.* It took 10,000 years to build this beautiful topsoil and there is a process called alluviation in which that crappy clay is washed down out to the subsoil, because it is not supposed to be there. So plowing up any subsoil is putting you back literally thousands of years.”

Gibbs says most farmers that say they are no-till are actually ‘rotational no-till’ because they will still disturb the soil every three years. That is not no-till, he stresses. Gibbs admits that the first few years of transition to a truly no-till system will create yield lags and he says that is when most farmers will give up and say it doesn’t work. But he stresses that cover crops are crucial to the system. “If you have cover crops in the system, you won’t have that yield dip,” he says.

Keeping residue on the surface is also important for attracting earthworms. “You’re not going to get them unless they have

something to eat,” he says. Gibbs sees high residues and cover crops that are completely consumed by the end of a season because there is so much life in the soil. “They were eating it all up.”

“I had a big farmer come up to me at this kind of meeting, grumbling and saying he tried no-till once but there was so much residue that he couldn’t do anything with it and he says he wants to talk to me after the meeting. What do you say to somebody like that?” asks Gibbs. “Well, I said it. Your soil is frickin’ dead man! I’m sorry, but you need to get some life in there!”

Limiting compaction through controlled traffic is another part of the system that he emphasizes. He shows an aerial photo of a field with stripes running every way across it and he points to where the farmer went through with the chisel plow on an angle and even showed where he could see the split duals where they planted it. “If you don’t think you’re doing that, stand back and look at what’s going on,” says Gibbs.

“There’s so much we don’t know about this. There is a synergy with diversity that we are just starting to understand,” concludes Gibbs. And he is hopeful that farmers can change things around, though he admits he is still frustrated with many of his neighbours. “I don’t go to the coffee shop anymore,” he says. “I surround myself with people that are innovative.”

From the discussion over lunch and in the afternoon’s panel, it is clear to see that farmers in the Heartland region are taking soil health to heart and driving innovation in our area.

Have you completed a Farmland Health Check-Up?

Use this Coupon for a FREE Farmland Health Check-Up

For more information and a list of eligible CCAs visit the GLASI page of the OSCIA website (www.ontariosoilcrop.org). Don't see your regular CCA listed? They might not yet be participating in the delivery of the Check-Up. All CCAs interested in completing Farmland Health Check-Ups are able to do so by attending a brief orientation session offered by OSCIA. Email GLASI@ontariosoilcrop.org for additional details or to sign up.



FULL CIRCLE

Biosolids in the Heartland Region



It was once a dirty word, but now hundreds of farmers are seeing that, when biosolids are properly treated and utilized, there can be many benefits with land application of this resource. Even Heartland Region's Provincial Director, Stuart Wright, has jumped on the bandwagon, applying the LysteGro™ product to 170 acres last year.

"I did my homework first," says Wright, who cash crops 1500 acres near Kenilworth with his family. He talked with his agronomist, other farmers and also with Christine Brown, the Nutrient Management Field Crops Program Lead at OMAFRA. He started with 70 acres in 2014 and applied LysteGro to dry ground in a cover crop after wheat.

"We use the product because it has a good balance of nutrients," continues Wright. "Our soil tests are trending down on K, because with only 60 cows we can't get enough manure. LysteGro has a good level of potash and that is hard to find in a soil amendment." But Wright suggests that interested farmers pencil out the extra costs for haulage if fields are further from a plant, and he cautions farmers to talk with landlords before applying the product to rented land.

For farmers that are interested in application of biosolids, there are many options out there: Wessuc (Brantford), Terratec (Hamilton), Bartels (Ancaster), and in the Heartland region, Lystek International, Inc. is making its mark with a processing plant near Dundalk, and smaller centres in Elora, Guelph and St. Marys. What sets LysteGro apart, is that the patented and proven process utilized to treat the biosolids, eliminates pathogens and boosts the potassium in the material, allowing it to qualify as a federally registered (CFIA), biofertilizer product.

"It just makes sense," says Simon Meulendyk, Lystek's Southgate OMRC Plant Manager "Farmers send all the nutrients in food to the city, so we are closing the loop and bringing the nutrients back to where they came from."

Last year, the Georgian Central Region partnered with Lystek to test the product in corn and compare it to commercial fertilizer. They compared the OMAFRA recommended rate for 160 bu/corn, which is 4500 gallons/acre, to a rate of 3000 gallons/acre and correlated the same ratio of NPK to a third strip on the field (120-80-80). They ran five sites (one in Wellington) with three replications each. The team was led by OMAFRA's Brian Hall, Christine Brown and Andrew Barrie, with the legwork done by summer student Derek Hutchinson. They conducted soil samples, tissue samples at pollination, weighed the yields and sampled stalks and grain at harvest as well.



Above: Mike and Simon at the OSCIA AGM, Andrew Barrie's presentation to OSCIA, land application (credit: Lystek).

The results varied across the test sites but, on average, the LysteGro applied plots out-yielded the commercial fertilizer treatments by 16.5 bushels an acre. They found that the 4500 gallon rate only increased yields by an average of 3.3 bushels over the lower rate, so the extra 1500 gallons was not found to be economical in this case.

The research determined that not all nutrient sources are equal. "LysteGro is more of a complete material than commercial fertilizer, because of micronutrients like magnesium, calcium, sulphur and zinc," says Mike Dougherty, Director of Product Management. "As well, 75% of the Nitrogen is in the organic form, meaning that a large portion of it will be made available throughout the year through mineralization as the crops need it," he continues.

As for the potassium, it is a beneficial by-product of the pasteurization process. It is a process that was patented at the University of Waterloo in 2000

and involves heating the material to 73 degrees C, adding potassium hydroxide to increase the pH to 9.5 and a high speed shearing process (called lysing) that kills pathogens. The technology can be retrofitted into existing municipal Wastewater Treatment Plants, Dougherty explains, as is the case in Guelph, Elora, St. Marys, Iroquois and North Battleford, SK. Their processing plant in Southgate, close to Dundalk can process 150,000 cubic metres a year and accepts material from Toronto, Guelph and other smaller municipalities. Lystek is currently building a similar processing plant in Fairfield, California.

"The process creates a consistent product that contains 15 percent solids. It is uniform, meterable, and it is a CFIA registered fertilizer," explains Dougherty. "It isn't considered a NASM (Non Agricultural Source Material) and it isn't regulated under the Nutrient Management Act (NMA). Nonetheless, it is Lystek's policy to base our internal setback requirements on the NMA because it is in everyone's best interest to ensure these products are being utilized properly." The company recommends it be applied just before planting or to a living crop and, unless a farmer has the proper injection equipment, application is contracted out to ensure the job is done well, including deflating tires in the field to 15 psi.

Lystek now works with about 100 farmers across the region, applying product to thousands of acres annually.

Simon Meulendyk says that customers might start with 20-50 acres one summer and then they want 200 acres for the next. "They realize the benefits of the product and, once they see the results, are fully on board," he says.

"When we started though, it was a harder sell because of some historical practices,, but the industry has advanced and the results are speaking for themselves," says Dougherty. "Farmers may be hesitant because of heavy metals and 30 years ago that may have been a real issue in some cases but now the controls on the municipal side are much stronger." Lystek tests for heavy metals and includes their numbers on their product data sheet, along with Ontario's maximum allowable concentration levels. "as long as the materials are

managed properly and according to agronomic rates, specific to the soil and crop, the addition of heavy metals to the soil will have no to very little affect on the concentrations naturally occurring in the soil," he says.

Stuart Wright admitted that the

issue of heavy metals was also his primary concern. "But it would take a tremendous overload of biosolids to see any risks there," he says.

There are still programs whereby municipalities pay farmers to fallow their land and take untreated biosolids in the summer. "But treated, Class A quality biosolids that meet the federal, CFIA registration criteria are different," says Dougherty. "It provides growers with a cost effective tool to fertilize their crops and improve organic matter in their soils, while also ensuring the product is safe and of high quality.

This is still an emerging industry and will only get stronger as the Waste Free Ontario Act rolls out. "It's the way of the future," agrees Dougherty. "The challenge is, how does industry, regulators and growers work together to ensure the materials are utilized properly and effectively? There is real opportunity here for a win-win-win, but it has to be done right"

And so the research continues. This year, Lystek is working with Christine Brown to research side-dressing the LysteGro product into corn and into cover crops. She is also looking at extending the application season by using drag lines into corn in the summer and using the product with N inhibitors. The team is looking for cooperators in and around Wellington County. Interested farmers can contact:

Mike Dougherty (mdougherty@lystek.com; 519.731.5702)

"Farmers send all the nutrients in food to the city, so we are closing the loop and bringing the nutrients back to where they came from."

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Sustaining our Soils - Soil Erosion Workshop



2016 Spring Meeting of the Huron Soil and Crop Improvement Association
Held in partnership with the Maitland and Saugeen Valley Conservation Authorities

10 am – 2:30 pm Thursday March 31st at the Holmesville Community Centre

Agenda

10:00 am	Doors Open
10:30 am	Welcome – GLASI overview and Control Trap Treat
10:45 am	Dr. Rick Cruse – Are our erosion rates sustainable?
11:45 am	Catered Lunch
1:00 pm	Kevin McKague – Approaches for Controlling Erosion Rates in Ontario
1:30 pm	Panel “To till or not to till”
2:30 pm	Closing Remarks

Special Guest Speakers!

Dr. Richard Cruse, Professor at Iowa State University

Kevin McKague, OMAFRA Water Quality Engineer

Location

Holmesville Community Centre
190 Community Centre Rd.
Holmesville, ON

Registration

<https://oscia.wildapricot.org/event-2193139>

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Growing Forward 2 



Challenges in Agriculture

Thoughts from our Deputy Minister



OMAFRA's Deputy Minister, Deb Stark, headlined Perth Soil & Crop's annual meeting on January 21st and addressed agricultural issues head on, taking half an hour of tough questions from farmers after her presentation.

"With minimum wage and hydro rates going up and changing pesticide regulations, farmers must feel that the government doesn't want their sector to be growing," she starts. "So what is the disconnect here?"

She stresses that the issues are not just about the economy and are much more complex, because the government's job is to balance the competing interests of all citizens. "And it is never done, it is always a work in progress," Stark adds.

She admits that it is quite difficult to understand what Ontarians want, but points to three ways we can gain some clarity. The first way to know is to look at survey data and she points to Farm & Food Care's consumer surveys. "The data will tell you that people want answers, they are confused about food and how it is produced. They want to know what the impact of their food choices are on their health, on the environment, and on animals. People want clarity," she says.

Secondly, she looks to where the government puts public money and with the millions of dollars invested in Business Risk Management and Growing Forward 2 programs, along with research and extension, she stresses that agriculture is still very important. Funding for agriculture is strong, especially when compared to other ministries, she says. Stark stresses that "agriculture is still around the decision making table because what is happening out here on the farms matters to all of us."

Thirdly, she listens to global perspectives and points to the Canadian Agri-food Policy Institute's conference in November 2015 that brought in international speakers to address Canadian agriculture. Stark says that Canadian food has a global brand and with future climate changes and our rich natural resources, Canadian agriculture will continue to be a key player in the world's food system. "The world needs Canadian farmers," she says.

We want agriculture at the table, she says, but it is not the only voice at the table and we don't all have to be farmers in order to understand agriculture. Citizens are concerned about food systems and they can either go the local food route or they come to the government and say 'you need to make sure that you have your eyes on this and that there are standards and oversight in agriculture.'

From there, Stark dives right into the neonicotinoid pesticide issue. "The story that tipped the conversation was the one that farmers appear to be using it when they don't need to be using it, and that some of them don't even know they are using it," she says. "For me, as I watched the whole thing unfold, that story is what really made people uncomfortable, more than the huge debate about the science. So that is why the government's message to farmers is now, 'you can use it if you prove that you need it'."

Stark then challenges the agricultural industry to become more unified, transparent and have a clear vision. "It is easy to say that the government doesn't listen," she says. "But from where I'm sitting, agriculture doesn't always make it easy." She explains that OMAFRA deals with 50 key farm organizations that all want time to meet with them and they all have something different to say. While she knows that Ontario agriculture is varied, she says "there's a difference between being diverse and being fragmented." She points to the cross-commodity collaboration happening, notably at the President's Council, and urges the sector to become more unified and send clear messages.

Next, she commends Ontario for taking a lead on building public trust and social license, by working to prove that farmers are walking the talk. She brings up the work of Farm, Food and Beyond, but notes that such things like Animal Care Codes of Practice and Environmental Farm Plans are still only voluntary.

Lastly, Stark says that we are missing the 10-second elevator speech that creates a common vision for farmers work towards. Throughout history, it has been phrases like "supporting the troops" or "feeding the world," but she wonders what it is now.

Though Stark knows full well that farmers would rather see government just leave them alone, she knows her responsibility is to *all* Ontario citizens. She concludes, "I hope the message you hear me saying is that you really are wanted and valued, by Canadians and by the world."



CROP TALK

Volume 16, Issue 1

OMAFRA Field Crop Specialists — Your Crop Info Source

March, 2016

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Integrated Pest Management (IPM) Course for Corn and Soybeans

Offered online or in a classroom free of charge until August 31, 2016

Starting on August 31, 2016, successful completion of the Integrated Pest Management (IPM) Course for Corn and Soybeans will be required in order to purchase and plant neonicotinoid-treated corn and soybean seed. Following successful completion of the course, farmers will receive a certificate number. Farmers will need to provide proof that they have successfully completed this training by submitting their certificate number to a sales representative, vendor or custom seed treater.

Farmers are able to take IPM training in a classroom at various locations or online through the University of Guelph, Ridgetown Campus.

The **online course** requires four hours of commitment over two days. High speed internet, competence with a computer and being a self-directed learner are requirements for success.

The half-day **classroom course** is offered in a traditional classroom setting with an instructor. The classroom course is offered in various locations across Ontario. Instructors will present course material following the manual using PowerPoint, videos, handouts and will answer your questions to aid in your understanding of the topics.

IPM training is designed to be flexible, accessible and convenient and will be delivered **free of charge until August 31, 2016**.

Register today for the online course or find a course near you at: www.ipmcertified.ca

To learn more about the neonicotinoid-treated corn and soybean seed regulation, visit: www.ontario.ca/neonics

Neonic Regulation Requirements “To Do” List

Tracey Baute, Entomologist Field Crop Program Lead, OMAFRA

With the 2016 growing season approaching, it is a good time to review what the requirements are for using Class 12 pesticides (neonic treated corn and soybean seeds) in Ontario. Here is a “To Do” list for anyone wanting to purchase and plant neonic treated corn and soybean seed in Ontario.

Before seed delivery in spring of 2016:

For seed delivery for this spring’s crop, all paperwork needs to be in to your seed vendor(s)/rep(s), including:

- A. **Seed Declaration Form** if you are not planting more than 50% of your corn and soybean acres with neonic treated seed
- B. **Inspection of Soil – Pest Assessment Report** if you are planting more than 50% of your corn and soybean acres with neonic treated seed

During the 2016 growing season and preparing for 2017 growing season:

1. Complete the mandatory **IPM Course for Corn and Soybeans** before this fall, prior to ordering **ANY** neonic treated corn or soybean seed for 2017. The course is free if taken by August 31, 2016. More info at www.ipmcertified.ca
2. Complete and submit your **IPM Written Declaration Form** to your seed vendor(s)/rep(s) that states IPM principles have been considered, and
3. Complete and submit the **Inspection of Soil – Pest Assessment Report(s)** for every 100 acre (or smaller) field/plot in which you intend to plant neonic treated corn or soybean seed in 2017. Neonic treated corn or soybean seed can only be planted in the application areas on the farm property(ies) identified in the pest assessment reports. Information on how to conduct a Pest Assessment can be found in the Pest Assessment Guide at <https://www.ontario.ca/document/pest-assessment-guide>.
4. If you experience any stand loss this spring in untreated (non-neonic) areas of the field, get an **Inspection of Crop-Pest Assessment Report** completed by a Professional Pest Advisor.

You can find links to the above mentioned PDF forms by visiting www.ontario.ca/neonics and clicking on the section titled “Information for growers”.

Do We Have Palmer Amaranth in Ontario and How Do I Tell It Apart From Other Pigweeds?

Mike Cowbrough, Weed Management Field Crops Program Lead, OMAFRA

Thankfully we do not have palmer amaranth, a pigweed species that in the United States is resistant to 5 different herbicide modes of action (Table 1). However, we do have waterhemp, another pigweed species that is often confused with palmer amaranth and is resistant to three herbicide modes of action (Table 2). Waterhemp has only been found in Essex, Lambton and Bruce counties. It should be pointed out that when the species was identified in Bruce county, the landowner aggressively removed all plants before they set seed. Subsequently this species has not been seen in the area since it was first discovered in 2002.

So how would you know if you have either waterhemp or palmer amaranth instead of the more common redroot and green pigweeds? Let’s break it down.

Step 1: Does the stem have hair? If yes you can rule out either waterhemp or palmer amaranth. Redroot pigweed has a very hairy stem (Figure 1). Green pigweed’s stem is comparatively less hairy but a cluster of fine hairs exists near the top of the plant (Figure 2). Both waterhemp and palmer amaranth have hairless stems (Figure 3).

Step 2: If the plant’s stem is hairless, is the leaf’s stem (called a petiole) longer than the leaf? If the answer is yes, it’s most likely palmer amaranth (Figure 4).

Step 3: Send it to a taxonomist to confirm. If you really think you have palmer amaranth, that would be a very significant find and it’s a species that we would not want to spread very easily. You can contact me and I will coordinate having the plant identified by a taxonomist.

Table 1. Herbicide and Herbicide groups that populations of palmer amaranth are resistant to in the United States (source: weedsience.org)

Herbicide	Herbicide Group
Pursuit, Classic, Pinnacle	2
Treflan, Rival, Prowl H2O	3
atrazine, Sencor	5
glyphosate	9
Reflex, Valtera, Authority	14

Table 2. Herbicide and Herbicide groups that populations of waterhemp are resistant to in Ontario

Herbicide	Herbicide Group
Pursuit, Classic, Pinnacle	2
atrazine, Sencor	5
glyphosate	9



Figure 1. The hairy stem of redroot pigweed



Figure 2. The sparsely short-haired green pigweed stem



Figure 3. The hairless stem of waterhemp



Figure 4. The long petiole (leaf stalk) of palmer amaranth which is much longer than other pigweed species found in Ontario

The Advantages of Seeding Early

Meghan Moran, Canola and Edible Bean Specialist, OMAFRA

There are some clear advantages to seeding canola early, including high yield and mitigating pest issues. This spring ensure that your planting equipment is ready to go early in the season and get your canola crop off to a quick start.

Ideal planting dates in Ontario are typically in late April and early May. Germination can occur at soil temperatures as low as 1 or 2° C, but emergence will be more rapid at higher temperatures. Data posted by Canola Council of Canada suggests that if temperatures stay at 3°C it may take up to 14 days before full germination is achieved. At 6° C it will take only 8 days. However, beginning seeding at 3 or 4° C soil temperature is a reasonable target if soil conditions are fit for planting and temperatures are expected to rise. Even though soil conditions may be cool, early seeding will typically result in higher yields as long as adequate plant stands are established.

Soil conditions are, of course, of primary importance. Good soil moisture in the seed zone and adequate seed-to-soil contact are important for emergence. Residue should be evenly distributed and a firm seed bed will improve seed placement. With late seeding there may not be adequate moisture to seed at the recommended 1/2" to 1" depth, and deeper seeding will reduce emergence rates.

Spring frost can be an issue because the growing point is above ground and exposed between the cotyledons (seed leaves). However, a light frost may be tolerated, particularly if canola has reached the 3-4 leaf stage. If plants have "hardened" over several days of cold weather, they may be more tolerant of frost than rapidly growing plants. On the other hand, seeding late in May can lead to flowering during hot weather in late June and July and this temperature stress can have a huge impact on yield.

Good stand establishment and rapid, early growth is ideal for mitigating issues caused by insect pests. Flea beetle emergence from overwintering sites will peak at soil temperatures of 15° C, and it may take up to 3 weeks for all adults to emerge. Insecticide seed treatments control flea beetle for about 3 to 4 weeks, but slow early growth can mean that protection is lost before canola has passed out of the susceptible growth stage. At the 3-4 leaf stage, canola should be better able to outgrow the feeding damage.

Rapid, early growth is also ideal where swede midge is a concern. Swede midge adults emerge from the soil in mid-May to early June and larvae feed on the growing

point at the center of the plant. A crop that bolts early may escape significant damage, and risk of damage is not a concern after flowering is initiated on secondary branches. Canola planted in late May or early June in areas with a history of swede midge faces high risk of damage.

Consider what the ideal seeding rate is for the given conditions. In an average year somewhere between 40 and 60% of the planted seeds will emerge. The ideal plant population is 7-13 plants/ft² or 4.5-6 plants per foot of row on 7.5" rows. There are benefits to having a dense stand, including increased light capture, mitigating losses to insect pests, and less branching leading to earlier and more even maturity. Your seeding rate should factor in the seed size, compensate for low emergence rates, and provide a final stand well within the ideal population for the best final yield results. Note that at a seed size of 4.75 g and seeding rate of 5 lb/ac, a typical 60% emergence rate will result in around just 4 plants per foot of row. For very early or very late plantings the seeding rate could be bumped up by 5 to 10%.

A uniform stand will likely yield more than a non-uniform stand, even at the same plant population. In uneven stands the plants will compete for soil and light resources, and will branch more in thin areas causing delayed and uneven maturity. After the crop emerges, determine the plant population and percent emergence, and note the uniformity of the crop. If there is a regular pattern across the field, uniformity may be affected by issues with your planting equipment. Take notes so you can make further improvements next year.

Assessing for Winter Wheat Survival

Joanna Follings, Cereals Specialist, OMAFRA

This year's winter wheat crop was off to a great start thanks to excellent weather conditions this past fall which gave many growers the opportunity to get the crop in early. Many fields had excellent stands that were well tillered going into winter; however, February brought some unusually warm days making fields vulnerable to winter kill.

The winter wheat crop should be assessed in late April to early May with the replant decision being made as late as possible. When evaluating wheat stands you need to count the number of plants per foot of row. Table 1 shows the yield potential for various plant stand counts.



Figures 1 and 2. A well-established, healthy winter wheat stand on the left and a field with winter kill on the right.

Table 1. Determining Yield Potential for Various Plant Stand Counts

Number of Plants		% Yield Potential	Planting Date	
Per metre of row	Per foot of row		Yield t/ha (bu/acre)	
			Oct. 5	Oct. 15
66	20 ¹	100	5.34 (80)	4.84 (72)
33	10	95	5.11 (76)	4.57 (68)
23	7	90 ²	4.84 (72)	4.37 (65)
20	6	85	4.57 (68)	4.10 (61)
16	5	80	4.30 (64)	3.90 (58)

Source: Smid, Ridgetown College, University of Guelph, 1986-90.

¹Full stand.

²23 plants/m (7 plants/ft) of row, healthy and evenly distributed plants.

It is also important to assess the health of the plants themselves to determine whether plants are actually going to survive or not. Are the plants well anchored into the ground or is the seed lying on the soil surface with the plant holding on by a single root (Figure 3)? If plants are not well anchored do not include them in your stand counts as they are less likely to survive.

When making assessments do not focus only on bad spots in the field. Do a number of stand counts and plant health assessments throughout the entire field to get a broader perspective of what is happening. If 5% of the field is in poor condition and the remainder of the field is in good condition, do not take the wheat out. Also, be sure to consider the planting date. If the wheat was planted early, it has more yield potential.



Figure 3. A winter wheat plant not well anchored into the soil

Sulphur Response in Forages

Ben Rosser and Ian McDonald, OMAFRA

The need for sulphur (S) supplementation is becoming more obvious. The concerted efforts to reduce acid rain over the last 30 years have resulted in an overall reduction in atmospheric S deposition from 22-27 lb/ac/yr in 1990 to 9 lb/ac/yr in 2010 according to Environment Canada. In light of reductions in free atmospheric S, recent research has been conducted in corn in Ontario which demonstrated variable and inconsistent responses to S. Similar work has been conducted in alfalfa which has demonstrated some very large yield responses.

Sulphur is an essential plant nutrient, important to plants in the building of 2 of the 21 amino acids, and the development of enzymes and vitamins utilized in chlorophyll formation. In legume crops, S has also been demonstrated to play an important role in N fixation.

Alfalfa Case Study

A 5 year-old alfalfa stand at the FarmSmart Expo site at the Elora Research Station received an application of 200 lb/ac of potassium sulphate (~36 lb S/ac) in three replicated strips in June 2014 compared to unfertilized plots. No other fertilizer had been applied to this stand since it was planted. While no yield measurements were made in 2014, there was a clear response to the fertilizer with the fertilized strips being taller, thicker and much darker green relative to the areas of the field which received no S. These fertilized strips were still visible in the spring of 2015 (Figure 1). Fertilized strips had higher alfalfa content compared to unfertilized, lighter green strips which were mostly grass. Yields were collected from the plots at second cut (July 20). Dry yield and the percentage of grass and alfalfa dry matter were measured and reported in Figure 2.

A strong yield response was observed for the addition of potassium sulphate, with dry-matter yields more than doubling at the Elora site. The yield response was primarily associated with alfalfa, as the alfalfa composition increased from 68% of dry matter in the control (no fertilizer) to 100% in the potassium sulphate treatment.



Figure 1. 2015 alfalfa response to 2014 applied potassium sulphate, Elora Research Station, University of Guelph, May 25, 2015.

For response diagnostic purposes, 6" soil samples were pulled in May of 2015 while tissue samples were taken during the late bud stage of regrowth after 2nd cut (Table 1).

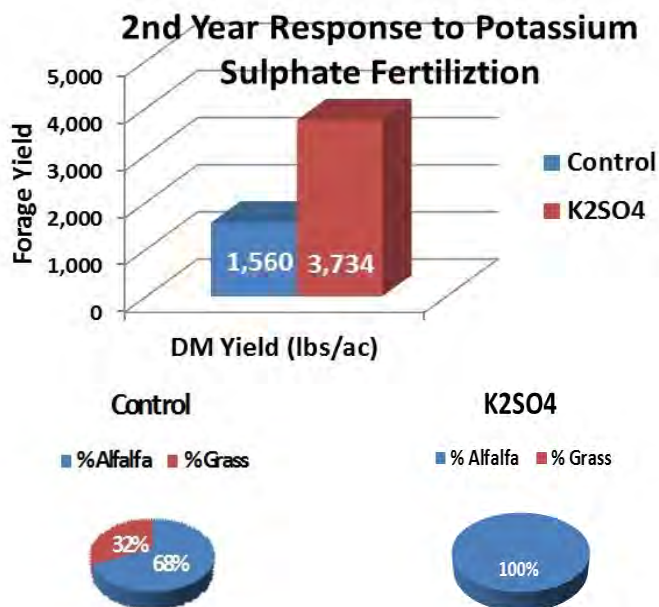


Figure 2. Forage Yield (2nd Cut) Following Previous Year Fertilization with 200 lbs/ac Potassium Sulphate

Table 1. Average Soil Sulphate and Alfalfa Tissue Sulphur Concentrations Under Unfertilized and Fertilized Plots at Elora

Treatment	Soil Sulphate (ppm)	Tissue S (%)
Control (No Fertilizer)	0.51	0.20
0-0-50-18S @ 200 lb/ac	0.10	0.28

Table 2. Tissue Test Results from Fertilized and Unfertilized Plots

Element	No Fertilizer	0-0-50-18.5S 200 lbs/ac	Significance
S	0.21	0.28	*
N	3.81	4.45	*
CA	2.52	2.46	ns
P	0.46	0.42	ns
K	2.49	2.01	*
MG	0.48	0.51	ns
ZN	56.13	48.76	ns
MN	28.48	27.87	ns
CU	12.21	14.4	ns
FE	75.52	82.78	ns
B	58.72	46.15	ns

* the value in the fertilized plots was significantly higher than in the unfertilized plots.

ns the value was not significantly different between fertilized and unfertilized plots.

Soil sulphate sampling in May did not appear to be a good predictor of S response at this location, as the non-fertilized plots had higher sulphur levels than the fertilized plots. Large differences in tissue S concentrations were apparent between the fertilized and unfertilized strips, where the unfertilized samples were slightly below the critical concentrations of 0.22% (OMAFRA Agronomy Guide) and the fertilized strips were well above.

Further Research

Separate research conducted by Dr. John Lauzon at the Elora Research Station also demonstrated a strong yield response to S as well as a residual S effect the following year. In 2014, S was applied to plots at rates ranging from 5 to 50 lb S/ac, for which strong yield responses were observed. In 2015, higher alfalfa yields were still observed in plots where S had been applied in 2014. Interestingly, yields of these residual plots increased further when an additional 36 lb S/ac was applied to half of each plot in 2015. This suggests that in fields highly responsive to S, annual applications may be necessary to maximize yields.

During the year of application, the form of fertilizer was also shown to be important. When applied in equal amounts, applications of plant-available sulphate fertilizers were able to elicit much greater yield responses than elemental S which must first be converted to sulphate by soil microbes.

While these locations at the Elora Research Station have clearly demonstrated yield response to S, it is not unique. On-farm research conducted by OMAFRA has demonstrated significant yield response to applications of S on alfalfa in some instances at other locations.

A Little More on S Management

Due in part to its transient nature in soil, no soil tests have been calibrated for sulphur for field crops in Ontario.

Similar to nitrogen, plant available sulphate is also released by mineralization from soil organic matter, and in sulphate form is also susceptible to leaching. Conditions which may favour yield response to S may include fields with fast drainage (ie. sand soils), and those with low organic matter and/or those that do not receive S-containing amendments (ie. manure).

Bottom Line

- Free atmospheric sulphur supply in Ontario has been greatly reduced over the past several decades
- S response has been observed in forages where historically it had not been
- Yield response is typically alfalfa related (increased proportion or yield of alfalfa)
- Sulphate forms of fertilizer provide greatest response during year of application
- Annual applications appear necessary to maximize yield

If you are a forage grower, try some fertilized test strips in your forage fields, particularly if your fields are likely to experience reduced S supply or higher incidence of S loss as described above.

Does Your Soil Have Problems?

Adam Hayes, Soil Management Specialist – Field Crops, OMAFRA

Soil Degradation

It can be small areas of a field or it can be a whole field; soil degradation can take many forms. It is something that happens over time and can have a significant negative impact on crop yields. A fairly common type of soil degradation can be seen on eroded shoulder slopes of rolling topography. Tillage erosion is the major contributor to topsoil loss on these knolls and shoulder slopes. In severe cases the A horizon or topsoil layer is depleted or is no longer present. Sometimes the B and some of the C horizon may be exposed as well.

A second form of soil degradation is poor soil structure and/or soil compaction. Poor soil structure is apparent by the large chunks of soil dug up by a shovel or brought up with tillage. The soil aggregates in these soils do not stay together when hit by water and are subject to crusting. In the case of soil compaction a dense layer is formed in the rooting zone. Both these types of degradation negatively impact water infiltration, drainage, air exchange in the soil as well as root growth.



Figure 1. A poorly structured soil.

Low soil organic matter levels are a third form of degradation. Low organic matter levels impacts water holding capacity, soil structure, nutrient cycling, and aggregate stability. And finally, nutrient or pH levels above or below the ideal range for the crop can affect productivity. Nutrient deficiencies and sometimes excesses can impact crop growth, while pH outside the ideal range can affect crop growth and nutrient availability.

What to Look For

An eroded soil profile, as mentioned above is usually found on shoulder slopes and knolls although severe water erosion can also erode the profile in water runs through the field. Look for areas of the field with poor growth and lighter surface soil colour. Use a shovel or a soil probe (the kind used for taking a fertility sample) to determine the depth of the A horizon (topsoil layer) on knolls and shoulder slopes.

The A horizon is typically 6 to 12" (15 to 30 cm) but varies by soil type. Compare the topsoil depth to non-cropped areas such as a fence row or bush, or with the soil map report to see what the original depth would have been.

Poor structure can be identified by digging up a shovelful of soil and looking at the soil to see if it has lots of pores and breaks apart easily into smaller aggregates, as opposed to staying in one or more large chunks. A compacted layer in the soil can be seen by digging a hole up to 60 cm (2 feet) deep and looking at the side of the hole to see if there is a compacted layer (a dense layer which is harder to stick a knife into). Another method involves using a tile probe. The probe is pushed slowly into the soil surface to feel if there is more resistance at a certain depth. For more information on detecting soil compaction see Agronomy Guide for Field Crops, OMAFRA Publication 811, or visit the OMAFRA website.

A soil fertility sample can be used to determine soil organic matter levels – just ask for organic matter analysis to be done. A light colour to the soil is also a good indicator of low organic matter levels. A standard soil fertility analysis can be used to determine fertility or pH levels of a soil.

What Will Improve It?

If the A horizon is severely eroded on a knoll, putting soil back may be an option. Soil that has accumulated in depressions can be moved back up to the knoll. It is recommended to have a soil consultant identify the areas where soil can be taken from and to determine how much can be removed without affecting crop growth.

A knoll that has minimal to moderate erosion can be improved by adding organic matter in the form of manure, compost, biosolids or other organic material. The fertility of the knoll may also have to be considered after adding the amendments. Once the soil has been added, use no-till or minimal tillage on those areas to prevent further erosion, loss of organic matter and to keep the soil in place.

If the area has a steep slope or other factors that make it difficult to produce a good crop it may be best to retire that area from annual crop production. It could be put into a perennial crop, shrubs or trees.

Poor soil structure can be improved by adding organic matter. Use cover crops and longer crop rotations especially those that include cereals and perennial crops – living roots promote biological glues that keep soil well-structured and can break up compacted layers. Avoid tillage as it destroys soil structure and contributes to reduced organic matter levels. Soils with extremely poor soil structure may require a little more tillage for the first few years until organic matter is incorporated and the soil life recovers. Fertility and pH may need to be adjusted as part of the remediation.

Soil compaction can also be improved with the addition of organic matter, including crops and cover crops in the rotation with fibrous roots and tap roots. Deep tillage can



Figure 2. Living roots improve soil structure.

help break up compaction if targeted to the depth of the compacted layer and is done when the soil is relatively dry. To prevent compaction from returning avoid the practices that caused it in the first place.

Low organic matter levels can be improved by adding organic amendments such as manure, compost, biosolids and other organic materials. Pay attention to the dry matter as higher dry matter levels will add more organic matter per unit of material. Also watch the nutrient content of the material so as not to over apply nutrients. Organic matter levels take a while to increase depending on soil management practices and application rates of organic amendments. Improve crop rotations, reduce tillage, and continue with organic matter applications to maintain organic matter levels once they have been improved.

Nutrient and pH levels can be corrected with commercial fertilizer, organic amendments and lime.

Soil problems can be corrected/ improved with a few changes. It is important to consider the whole cropping system when making a change. The more soil improving practices implemented the faster and more significant the improvement will be.

Validating Variable Rate Nitrogen Strategies for Corn in 2016

Ben Rosser, Corn Industry Program Lead, OMAFRA

March may seem early to talk about validating variable rate nitrogen strategies, but a few pre-season preparations can help have a plan in place come nitrogen application time. As adoption of variable rate application equipment grows, more growers are trying variable rate nitrogen prescriptions on their farms. There are a range of data layers some may use as a basis to change application rates across a field (long-term average yield maps, topography/landform, soil sensor measurements, canopy sensor measurements). Wanting to understand if any given variable rate strategy helps make the right decisions is a common concern.

Validating Prescriptions

An increasingly common practice with prescription maps is to include “check blocks” in each prescription zone to evaluate how yields actually respond to inputs in those areas (Figure 1a). Check blocks may consist of single or multiple rates, and can be incorporated into the prescription map with precision ag software. Blocks are positioned in line with equipment passes and set to a width that complements both N applicator and combine header widths. Block lengths must allow for sufficient yield monitor data collection.

The prescription map in Figure 1a represents an example where two rates of nitrogen will be applied – the grower’s “normal” rate in the green zone, and a reduced rate in the red zone where the grower expects a lower yield response to nitrogen (different soil type, topography etc.). To validate if this strategy is correct, the normal rate would be applied in a few blocks in the lower rate zone while the lower rate would be applied in a few blocks in the normal rate zone.

Using precision ag software following harvest, the yield monitor data layer would be laid over the as-applied rate map from the N application. Yield monitor data points would be averaged from an inset area within each rate block, avoiding rate transitions at the beginning and end of each block. Yields of the low rate blocks would be compared to yields of the high rate blocks for each pair of blocks (6 in the example shown). If the prescription worked well, one would generally expect to see a yield reduction for the lower rate blocks relative to the normal rate blocks in the normal rate zone, but little or no reduction in the lower rate zone. While presented in regards to nitrogen, this concept can be used to validate other variable rate inputs as well.

Estimating MERN through “Delta Yield” with the N-Rate Evaluator Tool

Going one step further, the “N Rate Evaluator Tool” has been developed in Ontario and can estimate the Most Economic Rate of Nitrogen (MERN) by comparing yields between a “Low N” block (30 lb N/ac max) and a “High N” block (non-limiting rate of nitrogen) (Figure 1b). Beyond identifying just yield response, this tool also allows us to compare estimated MERN across each set of blocks. Because we are calculating the difference in yield between a “High N” block and a “Low N” block, this is also commonly known as the “Delta Yield” approach.

True MERN is calculated by fitting a nitrogen response curve across several N rates ranging from zero to a non-limiting rate, which is often intensive to implement and analyze. The “N-Rate Evaluator Tool” available at www.GoCorn.net (Figure 2a) reduces this workload by estimating MERN from only two application rates (“Low N” and a non-limiting “High N”). Calculations are based on relationships between yield response and MERN derived from the Ontario nitrogen database, and has been shown to be a reasonable predictor of MERN when validated on multi-rate trials.

In the example below (Figure 2b), we assume we applied 30 lb N/ac on our “Low N” block (ie. planter starter only) and 200 lb-N/ac on our “High N” block. Assuming hypothetical yields of 120 bu/ac for the “Low N” block and 200 bu/ac for the “High N” block were observed in one pair of “Delta Yield” blocks (ie. “1.” In Figure 1b) the N-Rate Evaluator Tool would estimate MERN to have been 125 lb N/ac for this area of the field during this growing season. This process would be repeated for each set of delta yield blocks. It is important to stress that these results should only be interpreted as the estimate of MERN for that location during that growing season. Because MERN can vary from year to year, you would ideally want multiple years of data to get a feel for what response typically exists in any given spot.



Figure 1. Representation of validation of variable rate nitrogen prescription through “Check Block” concept (a) and “Delta Yield” concept (b).



Ontario Corn Nitrogen Rate Estimator

	N Rate (lb-N/ac)	Yield (bu/ac)
Enter Low N Rate and Corresponding Corn Yield	30	120
Enter High N Rate and Corresponding Corn Yield	200	200
Difference or Response	170	80
Enter Expected Corn Price (\$ / bu)	4.50	
Enter Cost of Nitrogen (\$ / lb of N)	0.70	
Application Timing	Sidedress	
Estimated Maximum Economic N Rate (lb-N/ac)	125	

Figure 2. Icon for downloading N-Rate Evaluator tool on GoCom.net (a) and inputs and output on N-Rate evaluator spreadsheet (b).

If you are interested in using the N-Rate Evaluator tool, there are a few key requirements that must be followed:

- “Low” N plot must be no more than 30 lb N/ac (ie. starter N only); there is no confidence in MERN estimates made with “Low” N plot rates above this
- “High” N rate plots must be a non-limiting rate where no more yield response to additional N is expected

Final Notes

These concepts could also be used prior to implementing variable rate practices for evaluating response in different parts of fields based on an expected strategy, or for evaluating nitrogen application rates. Rate block areas would have to be accurately applied and recorded with GPS for summarizing yield monitor data.

If you are not familiar with using precision ag software but would still like to try these validation concepts, there are consultant and industry providers in Ontario who deliver these services.

Regional Association Responsibilities

	Region	Lead Contacts
1	St. Clair	Adam Hayes, Albert Tenuta
2	Thames Valley	Ben Rosser, Tracey Baute
3	Heartland	Horst Bohner, Joanna Follings
4	Georgian Central	Meghan Moran, Mike Cowbrough
5	Golden Horseshoe	Chris Brown, Jake Munroe Ian McDonald to continue to lead Farm Smart and Farm Smart Expo
6	East Central	Ian McDonald, Forage/Grazier
7	Quinte	Scott Banks, Forage/Grazier
8	Eastern Valley	Scott Banks, Joanna Follings
9	Ottawa Rideau	Scott Banks, Joanna Follings
10	North Eastern Ontario	Meghan Moran
11	North Western Ontario	Forage/Grazier



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OSCIA PROVINCIAL NEWSLETTER

Message from the President - Gord Green



Hi Everyone,

I would like to welcome you to our first newsletter of the New Year.

Meeting season is winding down and spring is just around the corner. This last winter we had excellent attendance at the various county, district and regional meetings around the province. Events such as FarmSmart and South West

Agricultural Conference (SWAC) had record attendance.

The agricultural industry is fully engaged in gathering information on new ideas and how to do things better. Our program workshops are enjoying a large increase in uptake which has kept local and provincial staff hopping to keep up. These are excellent workshops and the increased interest demonstrates our concern for the environment and agriculture in general.

Our Provincial Annual Meeting was a success with very good speakers and presentations. The Tier 1 and Tier 2 presentations given at the Annual Meeting were great and they demonstrated the diversity of the projects being done across the province. I would encourage the locals and regions to apply for a Tier 1 project for this coming year. It is very easy to do but pre-approval is required. It is a very broad-based grant so just about any membership enhancement project will qualify. We now have a new OSCIA Soil Champion in the person of Tyler Vollmershausen from Oxford County. Dean Glenney, the 2015 Soil Champion from Haldimand County, gave an excellent presentation on his farm operation at the Annual Meeting. Another great presentation was from the 2015 Forage Master Chris Brown from Lennox & Addington. Cover crops and phosphorus algae blooms were the main guest speaker topics. It is interesting that the solution to the problems of phosphorus leaving our fields, greenhouse cap and trade credits, and overall soil health improvements all have the same solutions. These would be reduced tillage or no-till and the use of cover crops. Just something to think about.

On a bit of a sad note, we have decided to suspend the Ontario Forage Masters program for this year. We are in the process of retooling the program to give it a new face and try to address some of its shortcomings. A weakness of the

current program is that it was addressing forage that pertained solely to the dairy industry. As a grassroots association, we recognize the importance of all the forage-based livestock industries out there and would like to come up with something that is relevant to all sectors. If you have thoughts on improving the program, please contact your provincial director. We have a great group of provincial directors across the province who, besides representing their own areas at the provincial level, also represent the province on various committees pertaining to agriculture. In some cases these people are the only farm representatives at the table.

I wish everyone a good planting season and a prosperous cropping year. Be safe out there and enjoy the experience.

Yours in Agriculture,

Gord Green, OSCIA President

*A NEWSLETTER TO UPDATE
OSCIA MEMBERS, PRESIDENTS, SECRETARIES,
TREASURERS, DIRECTORS,
AND OMAFRA CONTACTS*

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Blake Vince Talks Cover Crops at the 2016 OSCIA Annual Meeting (AGM)

Blake Vince has never plowed a field in his life. His father and former OSCIA President, Elwin Vince, went no-till in 1983 and the family hasn't looked back. The Chatham area farmer is innovating on their 1,300 acres and shared his thoughts on agriculture and conservation with AGM participants on February 10, 2016 in London, Ontario.

He starts his presentation with the all too familiar photo of a green Lake Erie, but draws a poignant connection as he points to an area in the lake. "This is a water intake pipe, this is my family's drinking water, my wife, my kids and myself," he starts.

Vince was selected as a Nuffield Scholar and wrote on the topic: Conserving farm land with cover crops and the importance of biodiversity (2014). He traveled to Europe and South America exploring soil, cover crops and no-till farming practices.

He points to the vast array of technology and the pace at which things are changing, and wonders why young people are still taught to plow. Vince believes the technology of the plow is obsolete now that our understanding of soil has evolved over the years. He quotes Edward Faulkner who said, all the way back in 1942, "There is no scientific evidence to support the need for tillage."

Active on Twitter, Vince coined the now-popular 'hashtag' #RootsNotIron and it was based on a conversation he had with an Ohio farmer and mentor, Dave Brandt. "I can do more with roots than you can with any machine," Brandt had challenged. And from then on, Blake Vince was hooked on the notion of incorporating cover crops into his no-till system.

He says that when no-till was first conceptualized here in Ontario, it focused only on the iron and didn't include the most important piece. "Almost all advantages of the no-till system come from the permanent cover of the soil and only a few from not tilling the soil. Always aim at full cover," Vince quotes Rolf Derpsh, a farmer from Paraguay that he visited on his Nuffield trip.

On his trip he found people using various methods to use living roots to transform soil, including planting cover crops into soybeans at senescence, or growing crops and grazing animals between rows of eucalyptus. In France he met Frédéric Thomas, who struggled with soils that were sandy on the top with a clay layer below. While other farmers used deep tillage to invert the soil, Thomas was having much better results using plant roots to transform the soil.

Vince flips to a slide of him planting corn in 2014. It is a photo that now has farmers across Ontario intrigued, because Vince is taking his John Deere 7000-series planter through a field that is knee high with hairy vetch, cereal rye and crimson clover. "There is no fertilizer in the tank and nothing special on the planter, just heavy duty down-pressure springs and notched closing wheels on the back. There is no lead coulters," says Vince, who has tinkered with his planter to make it work on his operation.

"I had all the neighbours watching me," he says, as he crossed his heart and plunged into a green field. Vince often speaks to the fear that farmers have of change and says that the largest compaction zone on a farm is usually between the ears.

But to Vince, this is a no brainer. He is visibly improving soil health and water infiltration, reducing erosion and making money. He says that we often focus on increasing production to make a profit, but rarely talk about a reduction of consumption. He was dumbstruck when Dave Brandt first told him that he used only 90 lbs of nitrogen to grow 180 bushel corn, because Vince was using almost twice that much. Since then, Vince has been increasing organic matter and reducing fertilizer application rates with no yield losses. But a salesman won't tell you that. Vince argues that "If it isn't in a jug, if it isn't in a bag, if it isn't covered in shiny paint, then the industry isn't interested in talking about it."

Vince has been experimenting with different cover crop mixes and concludes that it's not about density but diversity. With more varieties of seed in the mix, he gets better cover of the field and while there may not be as much biomass in the above-ground portion of some plants, he is more concerned with their roots and exudates that benefit the soil.

Last year, OMAFRA's Anne Verhallen used his field to do the cotton test with a pair of cotton briefs and the results were undeniable. The cotton had been consumed by micro-organisms; whereas the pair buried just a few feet over in the neighbor's field was nearly intact. "While this isn't the most scientific method, we can clearly see that something is happening beneath the soil that most of us don't understand," he says.

Vince quotes Einstein who said, "Those who have the privilege to know, have the duty to act." And he goes on to say, "I know that we, collectively as an industry, can do better than what we are doing today. We need to stop treating soil like dirt and start treating it like the living and breathing organism it is."

By keeping his fields green, Blake Vince is capturing solar energy and feeding soil biology, increasing organic matter, infiltration rates and water holding capacity and fertilizer application rates. By decreasing soil and nutrient losses, he is improving the quality of the Great Lakes. And that's something we will all benefit from.

Melisa Luymes, Heartland Regional Communication Coordinator



OSCIA Members

Find all the latest news and updates at:
<http://www.ontariosoilcrop.org/news/>

A great place to get all the latest
Association news and start the
conversation



2016 OSCIA Soil Champion Award Winner

OSCIA is proud to announce the 2016 OSCIA Soil Champion Award winner, **Tyler Vollmershausen, of Vollmershausen Farms.**



Tyler Vollmershausen (2nd from the right) and his father, Larry (centre), pictured with OSCIA 2016 President, Gord Green (right), Lillie Ann Morris and Don Lobb (Sponsors).

Tyler, a sixth generation cash crop farmer from Oxford county, is the third recipient of the OSCIA Soil Champion Award. This annual award was initiated by Don Lobb and Lillie Ann Morris who are both very well known for their passion towards soil conservation and soil health. Researchers, extension staff and conservation-minded farmers are increasingly concerned about soil erosion. It is important to direct attention to those who have excelled in the use and promotion of best management practices.

The OSCIA Soil Champion Award was given to Vollmershausen Farms for their passion for improving soil health, and their use of cover crops, to name just a few reasons. For the full article on Tyler Vollmershausen and his family farm, please visit our website at: <http://www.ontariosoilcrop.org/association/association-soil-champion-award/>

Do you know someone worthy of the title Soil Champion? The submission deadline for the 2017 Award is September 1, 2016.

For the application form and more details, visit: <http://www.ontariosoilcrop.org/association/>

Amber Van De Peer, Executive Assistant, OSCIA



Crop Advances

2003 - 2015 Reports

CROP ADVANCES
Applied Research on Soil &
Crop Management information
available on the OSCIA
website:
[http://www.ontariosoilcrop.org/
research-resources/crop-
advances/](http://www.ontariosoilcrop.org/research-resources/crop-advances/)

SARFIP Update

The Species at Risk Farm Incentive Program (SARFIP) was delivered by your Association for the eighth consecutive season in 2015.

Under this year's SARFIP, 113 on-farm projects were completed and received cost-share support. From alternate watering systems to keep livestock out of natural areas, to human-made habitat structures for Species At Risk (SAR) like bat boxes or barn swallow structures, SARFIP provided up to 80% to producers.



Stay tuned for new opportunities through SARFIP in the 2016-17 program year starting this spring.

For more information, visit: www.ontariosoilcrop.org



Farmland Health Check-Up Update

Farm businesses in the Lake Erie and Lake St. Clair watersheds, and the Lake Huron southeast shores watershed, now have the opportunity to work with a Certified Crop Advisor (CCA) to complete a Farmland Health Check-Up. The Check-Up represents \$500 value but the service is provided to the farm business at no charge thanks to the Great Lakes Agricultural Stewardship Initiative (GLASI). Cost-share funding will be available to implement best management practices identified in the assessment by the CCA beginning April 4, 2016. The coupon is valid as annual program budgets allow, through January 2018.



GLASI is supported through *Growing Forward 2*, a federal, provincial, territorial initiative.

For more information, visit: www.ontariosoilcrop.org or email: GLASI@ontariosoilcrop.org



GF2 Cost Share Funding Available for Improved Nutrient Management

New manure spreader technology is helping farmers take advantage of the benefits of applying livestock nutrients on the land, while also reducing their environmental impact.

Responsible use of these nutrients contribute to the healthy soils that farmers need to grow crops, allowing them to be recycled and reused in a beneficial manner.

Solid manure spreaders with vertically arranged beaters—instead of the more conventional horizontal system—have a wide-spread pattern and are good at breaking up material before it goes on the field. This results in better, more even distribution, and lower nutrient application rates.



Russell Clark is a dairy farmer near the small town of Woodville in the Kawartha Lakes area west of Lindsay, Ontario. His farm is in the Lake Simcoe watershed, meaning all creeks, streams and rivers in that region ultimately drain into Lake Simcoe.

With over 400,000 residents in the watershed and the lake providing safe drinking water to seven municipalities, maintaining good water quality is important. This includes ensuring that livestock manure and the valuable nutrients it contains for crop production and soil health stay on the fields and out of the watercourses.

When it came time to buy a new manure spreader for his farm, Clark made the decision to use vertical beater technology and turned to *Growing Forward 2* for cost-shared assistance with his investment.

“We use a lot of straw for bedding and the vertical beaters chew up manure really finely without any big lumps, giving us fine and even application on the field,” he explains, adding the wide-spread pattern distributes manure in a range of 25 to 30 feet or approximately seven to nine meters.

Traditional horizontal beaters have a narrow spread width and the vertical beater’s wider spread pattern results in fewer tractor passes over a field. This helps reduce emissions, fuel consumption, and soil compaction.

A research study by the AgTech Centre in Lethbridge, Alberta comparing types and models of solid manure spreaders showed that the manure method of application is

very important when it comes to getting the most out of spreading manure or compost on the land.

A uniform spread pattern means manure and its nutrients are evenly spread on the field; non-uniform patterns can impact crop germination and cause crop burn or nutrient deficiency from too many or not enough nutrients in one spot.

Clark says that in his experience, the fine consistency of manure spread with a vertical beater makes it easier to work into the ground after application. This makes the technology well-suited to reduced or no-till systems.

Program Coordinator Barb Caswell with the Ontario Soil and Crop Improvement Association (OSCIA) says farmers can access cost-shared support for nutrient management projects under the Environment and Climate Change Adaptation focus area of *Growing Forward 2*.

Vertical beaters and slurry guards for manure spreaders are examples of items eligible for support through the Land Application of Manure project category.

So are expenditures for rate monitors, sensors and flow meters for liquid manure equipment; scales to weigh solid manure spreading equipment going to field; spreader tank agitators to keep solids in suspension; remote shut-off devices for direct flow manure application systems; and surface inlet control valves, sentinel tiles, tile outlet markers, and monitoring equipment to detect and prevent manure from moving into tile drains.

To be eligible, farms must be located in the Lake Erie, Lake St Clair, Lake Huron or Lake Simcoe Watersheds or a designated source protection area such as a Well Head Protection Area A or B, Intake Protection Zone 1 or 2 or a Remedial Action Plan area.

As well, farmers must have completed a third or fourth edition Environmental Farm Plan workshop and Action Plan Review within the last five years. A project has to be identified as an action in that plan to move a “1” or “2” rating to a “3” or “4” (best) rating in order to be considered eligible for cost share, adds Caswell.

Growing Forward 2 is a federal-provincial-territorial initiative aimed at encouraging innovation, competitiveness, market development, adaptability, and industry capacity in Canada’s agri-food and agri-products sector.

The Ontario Soil and Crop Improvement Association administers *Growing Forward 2* educational workshops and funding assistance to farmers.

More information about *Growing Forward 2* funding opportunities for farmers is available at: www.ontariosoilcrop.org/oscia-programs/growing-forward-2/

or by contacting the OSCIA’s regional program leads at: www.ontariosoilcrop.org/association/contact-us/oscia-field-staff/

or by emailing: GF@@ontariosoilcrop.org

Lilian Schaer, Freelance writer for OSCIA





Growing Forward 2

A federal-provincial-territorial initiative

Canada-Ontario Environmental Farm Plan (EFP)

Producers are invited to attend FREE EFP
(Fourth Edition) Workshops to:
Learn about best management practices
Develop an action plan for their farm
Learn about cost-share funding opportunities

Growing Your Farm Profits Planning for Business Success

Start the business planning process by attending
this FREE two-day interactive workshop.
You will: • Assess business management practices
• Determine priorities and key goals
• Develop realistic action plans
• Learn about cost-share funding opportunities

Biosecurity Workshop

At this one-day workshop, an experienced veterinarian or certified
crop advisor will show you the benefits of having an on-farm
biosecurity program, and identify key practices which will enhance
biosecurity measures on your farm.

Maximizing Your Traceability Investment Workshop

This in-class workshop will focus on how you can gain a competitive
advantage and improve your bottom line with your traceability
system. Real life examples and business profiles focused on
traceability best practices will be examined throughout the workshop.

Food Safety Workshops/Webinars

Looking to keep up to date on the latest food safety practices and help
strengthen your Growing Forward 2 application? The Food Safety
Workshop is a two-day in-class workshop to help you formalize your
food safety program, or you can take advantage of a series of six, 1.5
hour webinars which cover the same topics (see schedule online).

Workshops and Webinars in your area

EFP Workshop Schedule

Harriston	Day 1 - Apr. 1	Day 2 - Apr. 8
Elmwood	Day 1 - Apr. 15	Day 2 - Apr. 22
Listowel	Day 1 - Apr. 20	Day 2 - Apr. 27
Markdale	Day 1 - Apr. 29	Day 2 - May 6
Wingham	Day 1 - May 24	Day 2 - May 31
Elmvale	Day 1 - May 25	Day 2 - June 1
Elora	Day 1 - June 7	Day 2 - June 14

GYFP Workshop Schedule

Mitchell	Day 1 - Apr. 5	Day 2 - Apr. 12
Chesley	Day 1 - Apr. 13	Day 2 - Apr. 20
Creemore	Day 1 - Apr. 18	Day 2 - Apr. 25
Arthur	Day 1 - May 10	Day 2 - May 17
Clinton	Day 1 - May 12	Day 2 - May 19
Orangeville	Day 1 - June 15	Day 2 - June 22
Brodhagen	Day 1 - June 28	Day 2 - July 5

Biosecurity

Bee	Apr. 4	Markdale
Dairy	Apr. 7	TBD

Traceability

TBD

Food Safety

TBD

Register Online at www.ontariosoilcrop.org



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Try this at home! Here's a cheeky take on the Cotton Test. Bury 100% cotton briefs in your field and see how much is left after two months. Higher levels of decomposition indicate higher levels of microbiological activity. Share your results on Twitter at #soilyourundies

Photo: OMAFRA's Anne Verhallen demonstrates the cotton test across the Ridgetown Trials in 2015.

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