

Heartland

November 2017

Soil & Crop News

Huronview Farm: Sustainability In Action
Nutrient Smart & Farm Smart 2018
Conservation Corner



+ OMAFRA Crop Talk | OSCIA News | County Updates

Publications Mail # 40046341



Grassroots Innovation
Since 1939

Annual General Meeting



HURON SOIL AND CROP IMPROVEMENT ASSOCIATION

Libro Community Hall, 239 Bill Fleming Drive, Clinton, Ontario

Wednesday, December 13, 2017

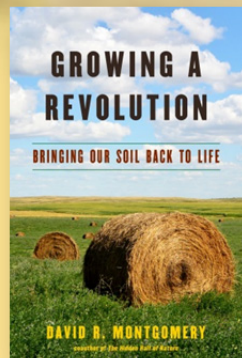
Ticket Price: Only \$20

Meal

Speakers:

Dr. David R. Montgomery

Author of *Growing a Revolution:
Bringing Our Soil Back to Life*



Dr. Rene Van Acker

Professor and Dean of the Ontario
Agricultural College (OAC) at the
University of Guelph



For tickets, contact HSCIA Secretary Sharon Devine or visit this link:

<https://oscia.wildapricot.org/event-2726369>

Please register by December 4.

Continuing education unit (CEU) credits are available for participants.

Join us for a good meal.

Enjoy fellowship with old friends.

Make some new acquaintances.



Be part of the valuable work of the
Huron Soil and Crop Improvement Association (HSCIA).

Learn about soil and agronomy from speakers
known worldwide.

For those whose memberships are not current, this is a wonderful opportunity to
sign on from one to three more years.

- Keep up-to-date with the latest in work to preserve valuable soil resources.
- Be a part of the projects HSCIA is sponsoring.
- Join us for bus tours, soil days, and other sponsored events.
- New members welcome! Bring your spouse. Bring a friend. Bring a fellow farmer.

For those renewing their memberships online, you can now pay by credit card.

Agenda

Doors open: 5 p.m.
Business: 5:30 p.m.*
Dinner: 6:30 p.m.*
Speakers: 7:15 p.m.*

**These times are approximate.*

Huron Soil and Crop Contact:

Secretary: Sharon Devine
Email: sharondevine@tcc.on.ca
Phone: 1-519-868-8946

*A big thank you to all those who made
this year a success.*

*Without you, this association
wouldn't be possible!*

Thanks go to the sponsors of
David Montgomery's talk!

Government of Ontario
Huron Soil and Crop Improvement Association
County of Huron
Maitland Conservation
Ausable Bayfield Conservation



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



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)

John Poel | President

Bill Miller | Vice-President

Horst Bohner & Jonna Follings | OMAFRA Reps

Stuart Wright | Provincial Director

Doug Walker | Huron County President

Kaye McLagan | Perth County President

Aaron Stevanus | Waterloo County President

Carl Israel | Wellington County President

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For more information on membership or anything at all, please contact John Poel at 519 860 7639 or at president@heartlandsoilcrop.org. Comments, ideas and sponsorship welcome!

Please return undeliverable mail to:

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4 Eldale Road, Elmira ON
N3B2C8

Publications Mail Agreement 40046341

UPCOMING EVENTS

December 1: Wellington County AGM, Alma Bible Church, Alma. 9:00 a.m. Hot lunch, \$15. Guest speaker include Blake Vince along with Ben Rosser, Jake Kraayenbrink & the Luymes family, and more! For more information or to register contact Linda McFadden, 519-362-2094 (please leave a message) or by email to: linda.mcfadden@wightman.ca.

December 4: Waterloo County AGM, Floradale Mennonite Church, 10:00 a.m. —3: p.m. Hot lunch and membership, \$35. Guest speaker is Anne Verhallen from OMAFRA along with a grower panel discussion. For more information contact Lynn Strenske, wlstrenzke@gmail.com.

December 13: Huron AGM, Libro Community Hall, Clinton, 5:00 p.m. Hot dinner, \$20. Guest speaker Dr. David R. Montgomery. For more information, see advertisement on p. 2.

January 25: Save the date! Perth County AGM at the Stratford Rotary Complex. Details and speaker TBA.

January 3 & 4: Southwest Ag Conference, more information at www.southwestagconference.ca.

January 19: Nutrient Smart, Manulife Financial Sportsplex, RIM Park, Waterloo. More information at farmsmartconference.com.

January 20: FarmSmart, Rozanski Hall, University of Guelph. More information at farmsmartconference.com.

February 13-14: OSCIA AGM, Best Western Lamplighter Inn, London.

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Waterloo SCIA

President: Aaron Stevanus

Secretary: Lynn Strenske, 519-648-2436
wlstrenzke@gmail.com



From the editor

As I wrap up this edition of Heartland News, the first snow fall of the year is on the ground outside my window. The toddlers in my household think it's great; I'm a little less enthused. But the first snow fall is a reminder of what's to come — and in the agricultural world, when the snow flies, farmers meet! There are lots of events coming up through the late fall and winter for you to meet with your neighbours, enjoy a good meal, and hopefully learn something along the way.

It's also time for you to renew your membership in your local Soil & Crop Improvement Association. You can do so at your local association's AGM (see page 4 for a list of dates and times), by contacting your local secretary (see page 4 for contact info) or you can renew online from the comfort of your own home by visiting <https://oscia.wildapricot.org/>.

Will I see you at an upcoming AGM or FarmSmart? I certainly hope so!



Mary Feldskov, Regional Communications Coordinator
heartland.scia@gmail.com



OSCIA Provincial Director's report **Stuart Wright**



These are interesting times for the Ontario Soil and Crop Improvement Association. On the local and regional level it's business as usual and let me commend you all on your outstanding work this summer. At the provincial level however, with the ending of the Growing Forward 2 program, there is an air of uncertainty as we can never take for granted that our excellent service will be

rewarded with the opportunity to deliver new programs. Having said that, as someone who at this point is getting to be a veteran of Soil and Crop affairs, I think the Association can forge ahead confident that there will be new opportunities that present themselves in some form and we should be diligent in preparing ourselves to serve our members and others in the Ag industry.

Thanks to all in Heartland who supported the amazing events that took place in our region this summer with the Soil Conservation Council of Canada holding their Soil Summit here as well as the IFAO Compaction Action Day. Perth, Wellington, Waterloo, Wellington and Heartland Region especially helped with these events. Thanks to Huron for the outstanding display at the Outdoor Farm Show. In some

of these cases the Farmland Health Grant was used to support soil health information that brought important ideas to many producers inside Heartland and beyond. RCC Mary Feldskov was such a valuable resource in accessing the grants. Speaking of positive resources please make use of the talents of Brittany Roka Association Development Advisor to strengthen our locals.

On a personal note I owe the Waterloo SCIA Board of Directors debt of gratitude. Anne Leoffler of Grand River Conservation Authority was kind enough to nominate me for a Watershed Award for the work in establishing the Board a few years ago. Waterloo and GRCA have done great things together spreading the word about soil health and water quality. I remember at the original Waterloo AGM in Floradale wondering who was happier, me or Anne. I see now why she was so excited. And I see the positive connection all across OSCIA with CA's working together with locals and regions with similar goals in mind. It's been a great year and while we all have challenges ahead I think we can look back on 2017 with satisfaction and gratitude and as something to give us confidence going forward.

HURONVIEW FARM

Sustainability. In Action.



The Huronview Demo farm is located just south of Clinton, Ontario at 77722 London Road. It was acquired by Huron County in 1895, as the site for the county's House of Refuge and was a working farm for the area's poor, disabled and elderly. Over the years, the facilities evolved into a county nursing home and the 50 acres of undulating land, sloping down to the Bayfield River, were rented to area farmers on a three-year basis.

Over the years, the Huron Stewardship Council and the Ausable Bayfield Conservation Authority worked to enhance the property by planting trees to act as buffers along the river, creating diversion berms and grassed waterways to reduce soil erosion and constructing wetlands at the base of the field to intercept and filter field runoff before discharging to the Bayfield River.

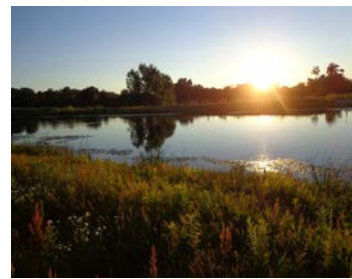
Then Huron county councillors, many of them farmers themselves, went a step further. In 2014, they agreed that instead of continuing to rent the field to the highest bidder, they would rent it to the Huron Soil and Crop Improvement Association for a 10-year lease. The purpose was to use this field to demonstrate sustainability in action.

The farmer-led board of directors now takes responsibility for the field operations, bringing their own equipment in to do the job or hiring custom operators. Three more grassed waterways have been installed over the gullies that were forming down slopes. They have planted cover crops that

overwinter and keep soil in place until planting. They are transitioning to a continuous no-till system in order to build soil health and aggregate stability, reducing nutrient loss to the Bayfield River and to beautiful Lake Huron.

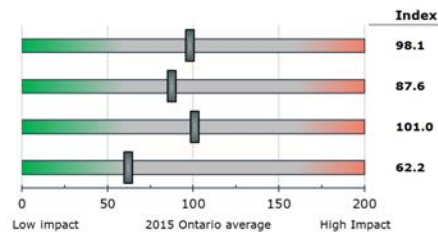
Sustainability. In Demand. For agriculture to be sustainable, it must be environmentally responsible, economically viable and socially accountable. The largest food companies are starting to take a hard look at the entire value chain and demanding new production standards that will build consumer trust, initiating a number of farm assessment tools like the SAI Platform, the Roundtable on Responsible Soy and the Canadian Field Print Initiative (CFPI). The CFPI's calculator is a field level tool to document field operations and confidentially assess and benchmark environmental performance across provincial and national data. It measures soil erosion risk, energy use, climate impact and land use efficiency.

In summer 2017, Huron Soil & Crop accessed an OSCIA grant to demonstrate and communicate their efforts at the Huronview Demo Farm at the Outdoor Farm Show. They input the cropping and field operations into the calculator and shared the results through a brochure and a video. See the video at www.huronsoilcrop.org.



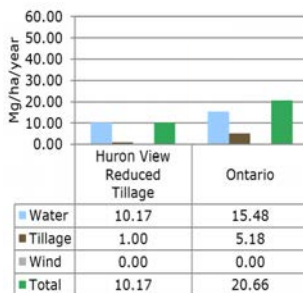
Huronview's 2015 soybean data was compared with Ontario-wide info to benchmark 4 key environmental parameters.

Fieldprint Indicator	This Field	Ontario
Land Use Efficiency	0.32 ha/tonne	0.32 ha/tonne
Energy Use	0.94 GJ/tonne	1.07 GJ/tonne
Climate Impact	0.25 t CO ₂ /tonne	0.25 t CO ₂ /tonne
Soil Erosion Risk	10.17 Mg/ha/yr	16.35 Mg/ha/yr

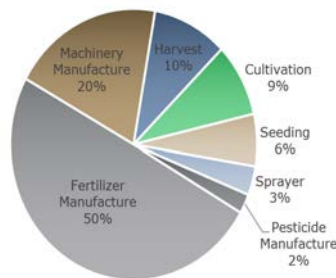


Soil erosion risk

Erosion risk is estimated at about 10 tonnes/hectare (4 tonnes an acre) per year. Erosion risk is minimized due to reduced tillage and use of cover crops.

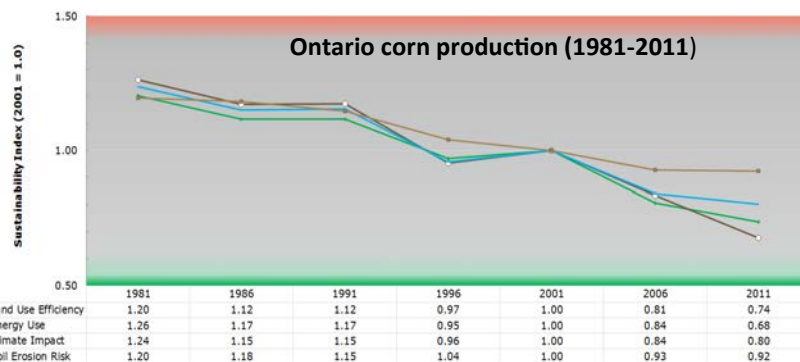


Breakdown of energy use



Using 12% less energy than the Ontario average of 1.1 Gigajoules, this chart illustrates that a significant amount of energy is spent in the manufacturing of equipment and fertilizer.

Using census data, the Canadian Field Print Initiative tracked sustainability indicators over time. Ontario farmers are using less land to grow the same yields, while reducing energy use, climate impact and soil erosion risk.



Canadian Field Print Initiative Try it yourself at
www.fieldprint.ca

Conservation Corner

Huron County's farmers grow cover crops and grow cover crop incentive category of Huron County Clean Water Project

Huron County's farmers have shown leadership by planting cover crops with incentives from the Huron County Clean Water Project. There has been more than \$100,000 provided for cover crop incentives over the incentive category's first two years in the county. The total project value is more than that.

Agricultural producers jumped on board in a big way in 2015 when the county program introduced a cover crop incentive category. Farmers in Huron County then outdid themselves in 2016 by planting even more cover crops with support of the county program. The Huron Clean Water Project provided support for 71 completed cover crop planting projects for a total of 4,637 acres in the first year of the cover crop category. That was a pretty successful first year. The next year was even better. Huron's farmers completed 81 cover crop planting projects in 2016 and planted more than 6,000 acres with grant support from the county program.

The cover crop incentive category is now back for its third year in 2017. A phone call or email to the conservation authority is all it takes to get an application started, according to staff delivering the program. Most application forms can be completed over the phone. Grants are \$10 per acre to a maximum of \$1,000 per farm operation per year. The cover crop mix needs a minimum of three species and the field must have a minimum 50 per cent residue before next year's crop is planted.

Landowners, residents, and community groups in Huron County have completed more than 2,400 projects with support of the Huron Clean Water Project. To learn about grant rates and eligible projects through the Huron County Clean Water Project you are invited to phone Maitland Conservation at 519-335-3557 or Ausable Bayfield Conservation at 519-235-2610 or toll-free 1-888-286-2610. You may also find out more online at huroncounty.ca or mvca.on.ca or abca.on.ca.

For a CTV news report about cover crops and the Huron County Clean Water Project visit this link: <https://www.facebook.com/scott.ctv/videos/1862958060387817/>



Cover crops are turning heads in Huron County

Cover crops are turning heads in Huron County, whether it's a crop no one has seen before, or it's a colourful field with sunflowers or crimson clover. The County of Huron is helping agricultural producers to adopt these new practices to conserve soil through the incentive category of their county program.

What's above the ground is eye-catching but the roots below the ground are also doing their job. "Cover crops help to improve soil structure, increase organic matter, prevent erosion, maintain topsoil, protect water quality, and help to make food production more sustainable over the long term," said Kate Monk, Manager of Stewardship, Land and Education at Ausable Bayfield Conservation Authority (ABCA). While most producers plant cover crops after wheat harvest, an increasing number plant after soybeans or into standing corn. Wherever it fits into the rotation, the practice is catching on quickly in Huron County. "Cover crops help protect soil from erosion from heavy rains and they work well with windbreaks year-round," said Doug Hocking, Water Quality Specialist at Maitland Valley Conservation Authority (MVCA).

Heavy Rains and Healthy Soils: Keeping your soil on the farm



The Grand River Conservation Authority (GRCA) is hosting a free workshop to share ideas on what you can do to help protect your fields from heavy rains.

It will take place at the St. Jacobs Lions Hall at 31 Parkside Drive, St. Jacobs on January 16, 2018 from 1 to 4 p.m.

Heavy rains can move soil and nutrients within fields and into nearby watercourses. This workshop will feature speakers from GRCA and OMAFRA as well as local producers who can provide insight and practical information on how to build soil resilience and keep soil in place. Topics include a recap of significant local rainfall events and their impacts, water quality trends in the Grand River and Lake Erie, improving soil resilience through best management practices, and resources available to help farmers implement projects.

The event is being organized by the Conservation Services team at the GRCA, as part of the Great Lakes Agricultural Stewardship Initiative's Growing Forward funding. To register for this workshop, email ruralwater@grandriver.ca or call Anne Loeffler at [1-866-900-4722](tel:1-866-900-4722) x2242.

Grand River Watershed Awards



Businesses, families, groups and individuals who have put a lot of time, energy and resources into improving their local watershed have been recognized, since 1976, as Grand

River Conservation Authority “watershed heroes” through their Watershed Awards. This year, Heartland Provincial Director and

Wellington County member, Stuart Wright, was named one of the recipients at their October awards nights.

Stuart was recognized for his commitment to supporting the work of the four county associations in Heartland Region, and in particular the re-establishment of Waterloo Soil and Crop.

To learn more about the awards or to view the awards video, visit <https://www.grandriver.ca/en/learn-get-involved/Watershed-Awards.aspx>

OSCIA soil sample discount program extended for 2017

As a benefit of membership, take advantage of a 10% discount on soil sampling at the following laboratories. To obtain a coupon, contact your county secretary or your RCC.

Valid for current OSCIA members only until December 31, 2017

Discount applies to regular priced fees only, on applicable tests and services listed. Not available in conjunction with other discounts or programs, retailers/consultants may offer other discounts. Discount applicable to all samples received on a single submission. No cash value. This coupon must be submitted with samples and grower/field information.

SGS

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LABORATORIES**

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1-800-265-7175
www.sgs.ca/en/Agriculture-Food

10% off soil analysis (not including non-soil samples
such as manure, feed, tissue etc)
Producer submitted samples only



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www.stratfordagri.ca/

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www.alcanada.com/

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producer submitted samples only



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analysis packages



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10% off all agricultural services



Manure and Biosolids Program Launched

A new funding program being delivered by the Ontario Soil and Crop Improvement Association (OSCIA) aims to improve soil health through investments in nutrient application equipment. With 60 per cent cost-share support, up to a maximum of \$25,000 per business, this is a significant opportunity for Ontario's nutrient applicators.

The Manure and Biosolids Management Program, available to all Licensed Custom Applicators in Ontario, seeks to enhance soil health across the province. Adding organic matter to the soil is a key piece of building soil health, particularly when applied using precise and innovative spreading techniques.

"It's the multiplier effect that is so significant within the Manure and Biosolids Management Program" said Andrew Graham, Executive Director of Ontario Soil and Crop Improvement Association. "Each implemented Best Management Practice can benefit soil health on many farm properties. The potential impacts are exponential."

The Manure and Biosolids Management program encourages the use of Best Management Practices (BMPs) that enhance soil health, improve application accuracy to reduce phosphorus loss from the field edge, and protect water quality. Improving soil health is also an important part of the agri-food industry's work to mitigate climate change. Funding is available to customize spreading equipment to allow in-crop application, or to allow slurry seeding of cover crops. There is also an Innovative Approaches BMP that allows businesses to invest in up-and-coming technology that is not yet available in Ontario.

"There are new ideas coming forward from around the world for precision manure application and data management," says Mack Emiry, President of OSCIA. "The Innovative Approaches BMP encourages businesses to invest in these technologies, raising the bar for nutrient management here in Ontario."

Funding for the Manure and Biosolids Management Program is available on a first-come, first-served basis. Eligible

applicants must have an up-to-date Nutrient Application Technician Licence and/or an up-to-date Prescribed Materials Application Business Licence. Applications can be made immediately. Projects must be complete, and claims submitted by January 15, 2018.

Funding is provided through Growing Forward 2, a federal-provincial-territorial initiative. For more information on the Manure and Biosolids Management Program, visit the OSCIA website at ontariosoilcrop.org or contact OSCIA directly at [226-706-8669](tel:226-706-8669) or MBMP@ontariosoilcrop.org.

"Canadian farmers are great stewards of the environment and of our agricultural soils. This new program is part of the Government's commitment to conserve soil health, improve water quality, and address climate change. Investments like this encourage innovation in farm technology and processes to ensure we are world leaders in developing and implementing sustainable farming practices."

- Lawrence MacAulay, Minister Agriculture and Agri-Food Canada

"We all know that healthy soils are the basis for a strong, sustainable agri-food system. That's why our government is proud to be providing \$1 million through Growing Forward 2 to help support new investments in environmental stewardship. These investments will benefit soil health, support climate change mitigation and improve water quality, improving the lives of generations to come. By working together, we are ensuring programs like this continue to meet the needs of our producers, helping strengthen businesses and boost our economy."

- Jeff Leal, Ontario Minister of Agriculture, Food and Rural Affairs

Media Contact:

Karen Jacobs

Programs Coordinator

(519) 826-4340, Karen.Jacobs@ontariosoilcrop.org



November 2017

OSCIA PROVINCIAL NEWSLETTER

Message from the President - Mack Emiry



I think Fall is my favourite season and it probably has something to do with the completed harvest and many fine weather days with fewer insects buzzing around. I suppose looking forward to a time on the farm when it is less busy also helps.

The Soil and Crop Executive and Directors have kept busy with various activities since the last newsletter. Peter

and Suzanne McLaren hosted the summer directors meeting and tour in the Ottawa-Rideau Region. They were most gracious hosts and had lined up a tour which showed various agricultural operations and agriculture related industries. These opportunities in different Soil and Crop regions serve to highlight the tremendous diversity of agriculture in Ontario.

Staff was busy at the OSCIA/OMAFRA tent at the Canadian Outdoor Farm Show in September. An added feature to the OSCIA section this year were displays featuring soils and farming activities in six different OSCIA regions. These displays can now be used by the regions for meetings and other events going forward.

A new promotional banner measuring 6'x3' has been prepared and distributed to all 11 regions for use at any county or district events. Also on the promotion side, the special price for gate signs was so successful that the stock was quickly depleted. Gate signs and window decals are still available, albeit at the original price.

The Executive discussed the grant structure for 2018 and beyond. Tier 1 and Tier 2 projects have been very successful and will continue. The current Tier 2 research projects are in the final year of the 3-year approval. In anticipation of funding being available, the call for new Tier 2 projects will go out early in 2018. Submissions will be received for consideration by March 15, 2018. Successful projects will thus have more time to prepare for establishment for the 2018 crop season. All of this is, of course, is dependent on funding being available for a new 3-year program. Look for the final reports on the current Tier 2 projects at the OSCIA 2018 Annual Conference in London.

Details of the agenda for the OSCIA Annual Conference are being finalized. Keep tuned for some interesting speakers and

topics. Consider attending to represent your local association. This may be the last year for a while at the London location as delegates will be given the opportunity to vote on an "East of 400" location for 2019.

Local annual meeting season will soon be starting. This is an opportunity to see the results of in-field research projects and other activities. Plan to attend because your county and district associations need your involvement!

Until next time.....

Mack Emiry, OSCIA President



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

In this Issue

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- o Canada's Outdoor Farm Show
- o Member Profile
- o Welcoming OMAFRA Specialists
- o Inter-Seeding Cover Crops
- o New Horizons: Ontario's Draft Agricultural Soil Health and Conservation Strategy

Ontario Soil and Crop Improvement Association

1 Stone Road West, Guelph ON N1G 4Y2
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Fax: (519) 826-4224

Website: www.ontariosoilcrop.org

Forage Masters Regional Winners

OSCIA members will know that a fresh new format for the Forage Masters Competition was introduced earlier this year. The competition centered on the completion of a self-assessment booklet that ranked current forage practices as “Best”, “Good” or “Needs Improvement”. There were 45 questions in total covering aspects of forage establishment, harvesting, storage, and feeding. Participants answered only the questions that applied to their farm. The responses were submitted to the Guelph office by the deadline and were subsequently scored and tallied.

Opinions on the new format covered a broad spectrum. Some expressed concern over the time required to complete the self-assessment and the paperwork involved—especially over a spring and early summer period that presented many weather challenges. There were others who pined for the inclusion of judges that would visit each site to score the stand and were hesitant to throw support behind an alternative approach. Others expressed full approval with the on-line option and recognized the new format provided a better snapshot of practices displaying strong management skills and those areas requiring more attention.

Although participation numbers fell below expectations, the committee responsible for the re-tooling was enthusiastic about the high caliber of the submissions received and remain resolved to see the competition grow in future years. Don Oliver, Director for East Central and Chair of the Committee said, “We have listened to concerns and ideas expressed by members on the new format. The new Forage Masters Competition has a solid foundation to work from and we’ll continue to introduce changes that lead to greater participation across all eleven regions.”

We are very pleased to declare the first-place winners for 2017. Each will be awarded a \$150 seed certificate from General Seed Company at an upcoming SCIA meeting:

Heartland Region

Doug Johnston, Maplevue Farm, Perth County

East Central Region

E. Gordon, Kilty Farms, Peterborough County

Georgian Central Region

Harold Zettler, Z5 Farm, Bruce County

Golden Horseshoe Region

Larry Davis, Daveland Farm, Brant County



The final stage to determine the provincial Forage Master Champion is the Speaking Competition. Competitors will speak at the OSCIA Annual Conference in London the evening of February 13, 2018. The speaking competition is sponsored by ProRich Seeds Inc. Each participating regional winner will be given up to 20 minutes to make a presentation on their forage program. Delegates will vote by secret ballot to determine the overall winner, who will be introduced after a panel discussion and question period. It promises to be an informative and exciting evening of events!

Written by Andrew Graham, Executive Director



Member Profile

In October, OSCIA launched a new social media campaign designed to highlight young, enthusiastic members in our organization. Each month, a region will be chosen to select one member they wish to highlight at the provincial level. That member will be interviewed and showcased on all OSCIA social media platforms.

Favorite Crop: Corn

Why did you become a member: My dad is a long time member of OSCIA and he encouraged me to attend our local SCIA meeting. Not long after joining, a few of my cousins and I got nominated to sit as directors on our local board. After serving as a director for several years, I am now the 2nd Vice-President for Northumberland SCIA.

Advice to young farmers: Don't be scared to get involved, lots of people do it! Being part of OSCIA is a lot of fun, and it's a great opportunity to network.

Next Step: We are building a new grain system that includes 2 new elevators, a wet bin and a dryer. I also registered for a farm data management system. I'm pretty excited about both!

Travis Greydanus
Age: 27
Acres: 3,200
Commodity: Cash Crop
Local SCIA: Northumberland
 Grafton, ON

By Brittany Roka, Association Development Advisor

Welcoming OMAFRA Specialists

Christine O'Reilly is the new Forage and Grazier Specialist with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). Originally from Huron County, Christine was a member of the local 4-H Beef Club. She is a University of Guelph alumnus, with a bachelor's degree in Bio-Resource Management and a M.Sc. in Environmental Science. Following graduation in 2014, Christine worked on livestock farms in the United Kingdom, and obtained a certificate in Grassland and Forage Crops Agronomy. She also worked as a research technician with the Rural Agri-Innovation Network in Sault Ste. Marie, Ontario.

Christine is currently based out of the Lindsay office and is available to assist producers with questions relating to grazing and forage crops and can be reached at 705-324-5855 or christine.oreilly@ontario.ca. Christine is the primary OMAFRA contact for the Quinte and Northwest Regional Associations and the alternative contact for East Central and Northeast.

Sebastian Belliard is the new Soil Management Specialist with OMAFRA's Field Crops unit. Based in Kemptville, his territory includes Eastern Ontario and parts of Northern Ontario.

Most recently, Sebastian worked with OMAFRA's soil survey to renew soil maps in Ottawa and Peterborough, digging over a hundred soil pits for classification. He was a co-owner of a profitable diversified farm business in Peterborough where he furthered his soil management knowledge and built experience in cropping practices, rotation planning, cover crop integration, and business management. Prior to that he was a research assistant with the Soil Ecology Research group at McGill. Sebastian also spent time with the Smithsonian Tropical Research Institute and worked in Quebec monitoring horticulture pests.

In his current position, Sebastian will work on various soil management and soil health-related projects and issues, including tillage systems, making cover crops work, and the Ontario Soil Health Assessment, as well as organizing workshops with local experts and researchers to bring soil knowledge to local producers. As many who have met him have experienced, Sebastian is a soil nerd at heart and looks forward to helping growers who share this interest explore all that is yet to be known about soil and answer soil-related questions on their farms.

Written by Christine O'Reilly & Sebastian Belliard

Canada's Outdoor Farm Show

Local Soil and Crop Improvement Associations from across the province took advantage of a grant opportunity to showcase their commitment to the topics of soil health, water quality and pollinator health at the 2017 Canada's Outdoor Farm Show.

A walk around the display area gave show-goers a real feeling for the range of Ontario agriculture. People saw how the approach from each area changed to suit local geography, climate, and the interests of the local associations. For example:

Elgin County, known for hands-on work and demonstrations, was outside of the tent showcasing a soil pit. This demonstrated infiltration through micropores in the soil profile using diluted paint.

Huron County, known for its demonstration farm, created a video explaining a soil health assessment that had recently been completed.

Quinte Region brought forward a video for call-to-action about agriculture in the area.

The North East Region created miniature soil monoliths to show the differences in northern soils, while the North West Region focused on pollinator health, and some of the unique opportunities pollinators have in that area.

Chatham-Kent brought their Environmental Farm Plan dioramas to highlight environmental actions on the farm.

Thank you to all the local associations who participated in the 2017 Farm Show. The show was a great success, and we could not have done it without you.

Written by Karen Jacobs, Programs Coordinator

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Research in Progress: Opportunities for Inter-Seeding Cover Crops into Corn Preceding Soybeans

Jaclyn Clark is the first recipient of the Soil Health Graduate Scholarship Fund and is currently an M.Sc. candidate in Plant Agriculture at the University of Guelph, studying with Bill Dean and David Hooker. She is looking to enhance the resiliency of the corn/soy cropping system by investigating opportunities for inter-seeding cover crops. Her approach is based upon the premise that corn and soybeans dominate the agricultural landscape and there is evidence for concern in the literature regarding these simple rotations. The introduction of cover crops into a corn/soy rotation has the potential to add some needed diversity to this type of system.

The objectives of Jaclyn's work are to: 1) Quantify the impact of inter-seeding cover crops on silage corn, grain corn or soybean yield; and 2) Analyze above ground biomass achieved by cover crops singly and in combination, as well as drilled and broadcast.

Cover crops were drilled or broadcast at the 4-6 leaf stage. They were overwintered, terminated with glyphosate and no-till soybeans planted the following spring. Silage dry matter, grain yield, and cover crop and weed biomass were the measured parameters.

As of February 2017, Jaclyn's work covered two field seasons (2015 and 2016) on three sites in Elora, Ridgetown, and Trent. Investigations included two harvest treatments of silage corn and grain corn. The five cover crop treatments were: Annual Ryegrass drilled, Red Clover drilled, Annual Ryegrass plus Red Clover drilled, Annual Ryegrass plus Red Clover broadcast, and control (no cover crop).

Yield results indicated that, while silage dry matter and corn grain yield varied by location, no cover crop treatment effect was noted. At the Ridgetown site, soybean yields did not change with timing of corn harvest nor cover crop treatment. These results are similar to research performed in the U.S. midwest.

In terms of biomass, more biomass was measured in silage corn than grain corn. This was more pronounced at the Ridgetown site, likely as a result of poor cover crop establishment in 2015 caused by 8 dry weeks in August. At the Ridgetown site in 2016, inter-seeded cover crops had higher biomass than broadcast, likely due to lack of moisture in the dry 2016 growing season.

Jaclyn's work concluded that inter-seeding was used successfully and without a negative impact on corn grain or silage yield. The degree of cover crop establishment, and ultimately biomass accumulation, was affected by the competitive interference of corn and dry conditions following planting. However, spring cover crop biomass was greater following silage corn than grain corn.

Jaclyn also shared that while biomass is not a comprehensive measure of cover crop success, current resources to evaluate cover crops are limited, particularly with respect to published

data about soil biota and cover crop impacts. Farmer practice with cover crops is outpacing the research, and some catch up from the research community is needed. In order to facilitate this, there is a need for ongoing and continuous working relationships between all of the stakeholders: producers, research scientists, extension workers, policy makers, insurance providers, conservation organizations, and more.

Watch for more of Jaclyn's work as she completes her M.Sc. and continues her career in Ontario agriculture.

Written by Janice Janiec, Golden Horseshoe RCC



New Horizons: Ontario's Draft Agricultural Soil Health and Conservation Strategy

The PDF of the draft strategy can be accessed directly at: <http://www.omafra.gov.on.ca/english/landuse/soil-strat-2017.pdf>

Healthy soil is the basis for a strong, sustainable agri-food system. Wise management can ensure that soil is fertile and full of the living organisms that are essential to grow food and other agricultural products. That's why Ontario is committed to working with Indigenous communities, farmers, industry and community partners to develop a strategy that will sustain and support healthy soil so our land can be productive today and well into the future.

The Ministry would like to hear your thoughts and feedback on the draft strategy. Your input will help guide the development of a final Soil Health and Conservation Strategy for Ontario which will be released in spring 2018.

How to participate

Your feedback on the draft strategy is welcomed by December 30, 2017. For ways to submit comments visit: <http://www.omafra.gov.on.ca/english/landuse/soilhealth.htm>

Open Houses

The Ministry also invites you to join OMAFRA Soil Staff to talk about the Soil Strategy at one of their public open houses. Pre-registration is not required at these drop-in events:

November 22	St. Isidore
November 27	Woodstock
November 28	Dover Centre
December 14	Codrington
December 15	Flesherton

Exact locations and times of these events can be found at <http://www.omafra.gov.on.ca/english/landuse/soilhealth.htm>

Information provided by OMAFRA Staff



FARMSMART AGRICULTURAL CONFERENCE

Saturday January 20, 2018
Rozanski Hall, University of Guelph,
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www.farmsmartconference.com
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2018

FARMSMART - FRIDAY

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Friday January 19, 2018
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Please see Registration
Details on the back

The What, When, Where and How to Apply Crop Nutrients

NutrientSmart is a dedicated day to exploring a holistic and integrated approach to nutrient management on a whole farm basis. The program will include speakers from academia, business, extension and producers who will help us build an approach to nutrient planning that will optimize profitability and lessen nutrient losses. It will explore the relationship between soils, plants and nutrients to help us understand the 4R's of nutrient stewardship. NutrientSmart will provide various options for practical nutrient planning and help the audience better appreciate its value. The day will feature Dr. Ray Weil from the University of Maryland, who has literally "written the book" on soils.

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FARMSMART HIGHLIGHTS

FarmSmart & NutrientSmart Registration:

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\$90.00	OSCIA Member
\$125.00	Regular Fee
(Includes 1 year local OSCIA Membership)	
\$45.00	Student Fee
\$45.00	Youth Program
\$90.00	Faculty/Extension

FARMSMART ONLY: \$20.00 discount for each additional adult registration from the same farm operation.

After January 15, 2018

NutrientSmart: Pre-registrations Only
No more Registrations will be accepted

FarmSmart: Add a \$35.00 late fee to the above registration amounts. There is no OSCIA Membership benefit for late or walk-in registrations. Walk-ins Welcome.

For on-line registration, please print and save your receipt when registering.

No refunds will be given; however, if you cannot attend, you may transfer your registration to another person.

Registration: 8:30am

Program runs from **9:00am to 4:15pm**
and includes a hot lunch and refreshments

YOUTH PROGRAM

Register your children for our Youth Program for ages 8-16. The highlights of this year's fully supervised daylong session include: Soil Microbiology, a Crazy Chemistry Lab, Bio Bus Insect Fun, Ag Innovations and Agvocating 101. Led by University of Guelph and OMAFRA experts this a must-not-miss day of hands-on learning and interactive activities. Check our website for updates.



5% Rule - Baby steps to Bigger Profits

Feature Presentations by

Kristjan Hebert
Managing Partner
Hebert Grain Ventures &

Dr. Melody Chan
Senior Manager
Veterinary Services –
Cattle, Equine & Genetics
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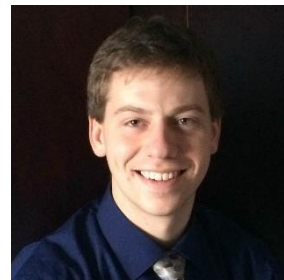


Agriculture from a City Girl's Perspective

Other Speakers (check website for a listing of all speakers)



Edward Usset,
University of Minnesota on Five Common Mistakes in Grain Marketing



Adam Paul Gaspar, Sandwich, IL on Where soybean physiology and management meet.



Ray Weil, University of Maryland on Improving soils with organic matter management



Franklin Famme, Stratford on Death & Taxes - It's never too early to plan & Farm Tax Update - Are you ready for the new changes?



Warren Schneckenburger, Morrisburg and Henry Denotter, Kingsville
Producer Success with Banded Fertilizer



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CROP TALK

Volume 17, Issue 4 OMAFRA Field Crop Specialists — Your Crop Info Source

November 2017

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Editor: Meghan Moran, Canola and Edible Bean Specialist
Compiled by: Ann Payne

Effectively Managing Stripe Rust

Joanna Follings, Cereal Specialist and Albert Tenuta, Pathologist—Field Crops, OMAFRA

In 2016 the milder winter conditions resulted in early leaf and stripe rust infections in Tennessee and Kentucky. This resulted in rust spores being blown into Ontario earlier than we typically see. By mid-May 2016, stripe rust was prevalent in most areas of southwestern Ontario. Growers who selected tolerant varieties or applied a foliar fungicide were able to keep the disease at bay. However, growers that selected susceptible varieties and did not apply a foliar fungicide saw significant yield reductions where the disease was present. In 2017, stripe rust again arrived early in southwestern Ontario and was found in one field in Essex County the first week of May. Although we have not historically seen stripe rust at significant levels in Ontario in the past, it is important to have a plan in place in 2018 for managing this disease.

The optimal temperatures for stripe rust development are 10-15°C with periods of high relative humidity but as we observed in Ontario, stripe rust can develop at higher temperatures. Windy days will also help with spore dispersion. Stripe rust causes yellow to orange, blister-like lesions that are arranged in stripes on the leaf of the wheat plant (Figure 1). If left untreated, stripe rust can cause significant yield reductions. In 2016 and 2017, where growers had a high incidence of stripe rust that was not controlled through appropriate variety selection or fungicide application, yields were reported to be as low as 45 bu/ac.



Figure 1. Stripe rust infection on winter wheat in Ontario.

Integrated Stripe Rust Management

The best defence against stripe rust is a combination of variety selection, scouting and timely fungicide applications. In Ontario winter wheat varieties, there are large differences in variety susceptibility to the disease. Growers should check with their seed supplier and the Ontario Cereal Crops Committee performance trials for specific variety ratings (www.gocereals.ca). If a variety has a rating of 6 or higher the variety is susceptible to stripe rust and will benefit from a fungicide application if stripe rust is present. If a variety is rated 3 to 5 then it is considered moderately resistant and should be scouted for stripe rust regularly during the growing season. If stripe rust is present and appears to be challenging the upper leaves of the canopy in these moderately resistant varieties you may want to consider a fungicide application, particularly if the wheat is just at flag leaf. As we saw in 2017, some growers got caught with a severe disease infestation 10 days before the T3 fungicide application timing and had significant yield losses as a result. However, if stripe rust incidence and severity was low on these tolerant varieties and growers were less than a week away from fusarium fungicide timing then they were able to wait. If a variety in your area has a rating less than 2 then this indicates that the variety is resistant against stripe rust and will likely not benefit from an early season fungicide application.

Spring may seem like a ways away but as we move into the 2018 growing season, scout fields early particularly when disease is being detected early in the season in neighbouring US states. Regular scouting assists in determining if fungal disease infection is progressing up the plant and is critical in determining if a fungicide application is needed, and at what timing. A lot depends on the level of infection, environmental conditions and crop susceptibility but by selecting resistant varieties and with regular crop scouting this disease can be managed effectively.



Figure 2. Stripe rust successfully managed with a fungicide in a susceptible variety in the foreground compared to no fungicide in the background.

What Will Corn Nitrogen Yield Response Be Like in 2017?

Ben Rosser, Corn Specialist, OMAFRA

With the spring of 2017 arriving cooler than normal, and Pre-Sidedress Soil Nitrate (PSNT) tests coming in lower than what is typically observed, many were wondering if 2017 was going to be a more responsive year for nitrogen (N).

OMAFRA has traditionally tried to gauge year to year differences in expected soil nitrogen supply by conducting an annual PSNT survey, where several dozen fields across the province are sampled for background (non-fertilized) soil nitrate levels.

The PSNT test involves pulling 12" soil nitrate samples from unfertilized (starter only) corn fields just prior to sidedress timing. Because they are non-fertilized fields, these samples are only measuring N that has mineralized from the soil, and give an indication of the relative N supplying capability of that field. PSNT recommendations combine the soil nitrate measurement with yield expectation to provide an N recommendation (visit <http://bit.ly/1SNkEM8> for more information). For example, using an expected yield of 170 bu/ac, each increase of 5 ppm in the PSNT reduces N recommendations by around 30 lb/ac (Table 1).

Table 1. Example of the change in nitrogen recommendations at a range of PSNT values, with an expected yield of 170 bu/ac

PSNT (ppm)	PSNT N-Rec. @ 170 bu/ac (lb-N/ac)
0	218
5	191
10	163
15	135
20	105
25	63
30	0

From 2015 to 2017, OMAFRA has been conducting an “N-Sentinel” project with funding from Grain Farmers of Ontario and Growing Forward 2, which takes the traditional survey a step further with additional goals of:

1. Tracking background soil nitrate levels from May-July across a range of geographies and soil types
2. Measuring nitrogen yield response at each location
3. Determining if including a rainfall factor could increase the accuracy of nitrogen recommendations

When compared across years, the PSNT survey helps identify years where soil N supply may be lower or high than normal. For instance, soil nitrate levels were lower in 2017 than what has typically been observed in past PSNT surveys (Figure 1), possibly due to slower soil N release during the cooler spring. On the other hand, soil N supply appeared much higher than normal in 2015.

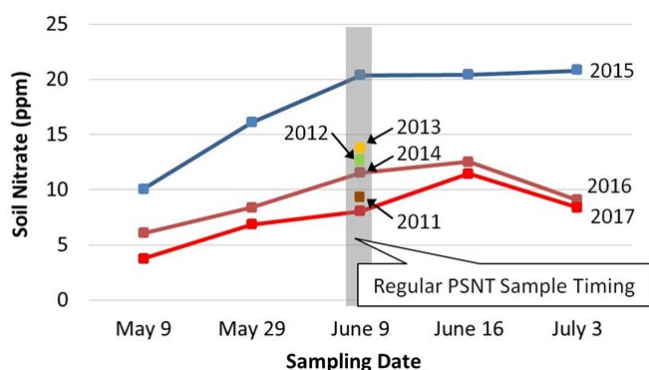


Figure 1. Soil nitrate values for various sample dates from 2011 to 2017

Nitrogen Accounting

Table 2 gives a breakdown of soil nitrate and yield measurements so far across the N-Sentinel project.

Table 2. "N-Sentinel" summary across all locations, 2015-2017				
		2015	2016	2017
Number of Locations		8	23	23
PSNT Measurement	(ppm)	20	12	8
Zero-N Yield	(bu/ac)	162	143	
Non-Limiting N Yield	(bu/ac)	234	192	
Delta Yield	(bu/ac)	+72	+49	
Estimated MERN	(lb-N/ac)	158	135	

Zero-N Yield is the yield where no N was applied, with the exception of up to 30 lb/ac of starter N. Zero-N yields reflect the natural N supplying ability of the soil, so the more N that mineralizes from soil organic matter, the higher zero-N yields will be. The PSNT can be a proxy for estimating zero-N yields: the higher the PSNT, the higher the soil N mineralization, and the higher zero-N yields are expected to be.

Non-Limiting N Yield is the yield where a non-limiting rate of N was applied (i.e. 200+ lb/ac). This is important as it reflects the maximum yield attained when nitrogen is no longer a limiting factor.

Delta Yield is the difference between the zero-N and non-limiting N yields. This is important because this is the yield we are trying to capture with fertilizer N, the difference between what we receive naturally and what we need to meet our yield potential. Delta yield is generally proportional to N need, so the larger the difference, the more N that is required. Similarly, a smaller delta yield means less N is required to meet yield goals.

This concept has been incorporated into the 2015 revised PSNT recommendations which includes a yield expectation component. The PSNT value helps suggest what our zero-N yield will be, while our yield expectation will determine how much yield (i.e. delta yield) we need to capture with fertilizer N. Of course the challenge with N management is that we don't know what our actual delta yield will be at the time of N application, as zero and non-limiting yields may vary year to year even within a field.

Estimated MERN is the estimated Most Economic Rate of Nitrogen (MERN) using the N-Rate Evaluator tool at www.gocorn.net (Figure 2). Calculating actual MERN requires an N response curve with several N rates. This tool estimates MERN using only zero-N yield and non-limiting N yield based on relationships derived from the Ontario Corn Nitrogen Database.



Figure 2. "N-Rate Evaluator" tool icon from www.gocorn.net.

Relationships in 2015 and 2016

It's surprising how much yield can be made with the starter-only (zero-N) treatments; 162 bu/ac in 2015 and 143 bu/ac in 2016 (Table 2). These zero-N yields also reflect the average PSNT measurements across those years.

It's also interesting to note the importance of yield expectation in the revised PSNT recommendations. For example, soil nitrate levels at the test sites in 2015 were very high (20 ppm), therefore using the traditional PSNT approach (no yield expectation factor), the recommendation would only have been 30 lb/ac of additional nitrogen. Non-limiting N yields at the 2015 test sites were exceptionally high however (234 bu/ac), so delta yield (+72 bu/ac) and estimated MERN (158 lb-N/ac) were actually still relatively large, despite the high PSNT. This compares to 2016 where PSNT values were closer to the long-term average (12 ppm), which using traditional PSNT recommendations would have suggested more N than the 20 ppm in 2015.

In 2016 however, non-limiting N yields were also much lower (192 bu/ac) which actually resulted in a smaller delta yield (+49 bu/ac) and smaller estimated MERN (135 lb-N/ac) than 2015.

The 2017 PSNT value is 8 ppm which is lower than normal, suggesting zero-N yields may be lower than typical. If we were to still expect average yields, 2017 may have been a more N responsive year than average. Of course we won't know until we complete harvest of our plots, which is currently underway. Stay tuned for yield results this winter.

Compaction in Forage Fields

Sebastian Belliard, Soil Management Specialist and Christine O'Reilly, Forage and Grazier Specialist, OMAFRA

Frequent rains during haying forced many producers to harvest on wet fields. With little inventory to carry over from 2016, there was added pressure to put up forages. Rutted fields are the most visible damage from this year's harvest, but soil compaction can have more severe and lasting consequences.

Compaction is recognized as a concern in row crops, yet the percentage of a row crop field that sees wheel traffic is less than that of a hay field during a given year¹. There are a few reasons for this:

- Row crops are only harvested once, while forages may be cut 2-4 times per year;
- Forages are more likely to receive multiple manure applications per year; and
- In Ontario, it is more common to find controlled traffic systems in row crop fields rather than perennial forages

Compaction in forage fields is likely to take the form of ruts, topsoil compaction, or subsoil compaction. Producers can decide their own level of comfort with ruts and surface compaction, so this article will focus mostly on subsoil compaction. See <http://fieldcropnews.com/2017/05/soil-compaction-stay-off-the-field-until-the-soil-is-ready/> for an overview of the causes of compaction and a discussion of variables such as soil moisture, tires and pressure, and axle loads.

Effects of compaction on forages

The effects of soil compaction often go unnoticed in forage fields, but compaction can have a huge impact on yield. Research has shown that compaction causes between 6 and 74% yield loss in perennial forage stands². Heavy equipment, high tire pressures, and multiple passes create more severe compaction. One study saw grass yield losses increase between 5 and 15% as the pressure exerted by the tractor on the ground rose from 10 to 30 psi³. The study also showed a 33% reduction in yield when comparing a 3-pass system to a single pass.

Yield impacts from compaction are primarily the result of decreased pore space within and between soil aggregates or clods. This reduces water infiltration and drainage, aeration, root growth, and nutrient availability and uptake. Low aeration can decrease nitrogen availability because of denitrification, and reduced root respiration can restrict potassium uptake. Phosphorous uptake can also be reduced by up to 40% if rooting is significantly impeded⁴.

Identifying compaction

The first step in addressing compaction is to confirm the existence, location, and severity of the problem. Plant growth and water infiltration problems can be clues, but the most reliable way to identify compaction is by looking at the soil profile in a pit or trench. A trench can be dug across a suspected compaction zone, such as a wheel track. Alternatively, a pit in the field can be compared to a pit in a non-compacted area, like a fencerow. Take undisturbed shovelfuls of soil from the side of the pit at different depths and break them apart by hand to assess root development and the presence of macro-pores. A lack of macro-pores is an indication of compaction.

Alleviating Compaction

Where compaction has been identified, a choice must be made between relying on root activity and shrink-swell processes (freeze/thaw or wet/dry cycles), or attempting tillage to fix it. This decision will depend on the severity of the compaction problem and the crop rotation plan. Weigh tillage decisions against the economics of reduced yield from compaction: if the cost to purchase feed to replace lost yield is less than the cost of tillage, addressing compaction might wait until yields decline further, or the crop rotation provides a better opportunity to address the problem.

Thick tap-rooted plants, such as forage radish, are used in row crop systems to break up soil compaction. If the hay field is ready to be re-seeded or rotated into a different crop, this could be a valid option.

Subsoiling or deep ripping is another option, but results are highly variable and there is significant risk of making the problem worse if it is done improperly. The goal of deep-ripping is to create or reopen cracks through the compacted zone between soil aggregates (not the same as tine leg slots) to restore rooting and drainage, with minimum disturbance to the remainder of the soil profile and maintaining its bearing capacity. It is important to consider working depth, shank geometry, tine geometry, wing lift height, and critical depth before attempting to deep rip. If you are considering subsoiling, have a look at this comprehensive guide to successful subsoiling developed in Quebec by CETAB: <http://bit.ly/2x5mkNT>.

Note that the soil improvements of deep ripping are usually limited to 1-6 years following the intervention, due to recompaction. Ripping is a remedial action, and where compaction is concerned, prevention is better than cure. Compaction can be prevented by not driving on wet soils, reducing axle loads, lowering tire pressure, and minimizing the number of passes over a field.

Summary

- Soil compaction can cause major yield losses in forages
- Properly identifying compaction is crucial to deciding what to do about it
- Weigh tillage decisions against the economics of reduced yield from compaction
- Biological alleviation requires thick, strong taproots of plants such as forage radish, which can be included as a cover crop in rotation after cereals
- Subsoiling can be used to address compaction problems, but must be done correctly to avoid worse problems down the line

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Inspection of Soil Pest Assessment Report (PAR)

Farmers who demonstrate need for Class 12 pesticides (neonicotinoid-treated corn and soybean seeds) must complete an Inspection of Soil PAR form and submit it to a treated seed vendor. Inspection of Soil PAR forms can now be completed online.

Required sketches can be created using AgMaps, a mapping tool linked in the online form.

Visit <https://omafra.secure.force.com/PAR>

A PDF/paper version of the Inspection of Soil PAR form continues to be available on the Ontario Central Forms Repository.

Questions?

Call toll-free 1-877-424-1300

or e-mail ag.info.omafra@ontario.ca

Key Learnings From 2017 in an Ongoing Effort to Manage Glyphosate Resistant Canada Fleabane

Mike Cowbrough, Weed Management—Field Crops, OMAFRA; Dr. Clarence Swanton, Dr. François Tardif and Peter Smith, University of Guelph

When learning from agronomists and farmers about their experience with managing glyphosate resistant Canada fleabane, there is consensus that multiple strategies are needed and that simply tank-mixing another mode of action will not be a good long-term approach. Since 2016 we have evaluated different management tactics for Canada fleabane. We have observed the following at our Oxford and Norfolk county field locations:

1. Tillage needs to be done multiple times (both fall and spring) to eliminate the majority of plants. Although a single tillage pass to a high population environment did result in fewer plants, the survivors were often 10-15 cm taller and branched (Figure 1) most likely because they did not have to compete with plants removed by the single tillage pass. These larger plants were more difficult to control with herbicides.
2. Fall applied herbicides did not provide acceptable Canada fleabane control because a new flush of seedling plants germinated in the spring. Spring applied herbicides were much more effective with both Eragon LQ (Figure 2) and dicamba (Figure 3) providing the best level of control, however the lowest labelled rate of both herbicides failed to deliver acceptable control.
3. There was no Canada fleabane anywhere cereal rye was planted in the fall (Figure 4), regardless of herbicide or tillage treatment. This is an exciting observation that will require follow-up to understand how a cereal rye cover crop should be managed to optimize control of Canada fleabane.



Figure 1. Canada fleabane plants the following spring after surviving fall tillage. Note the plants have multiple branches at the base and were often 10-15 cm taller than plants not exposed to fall tillage.

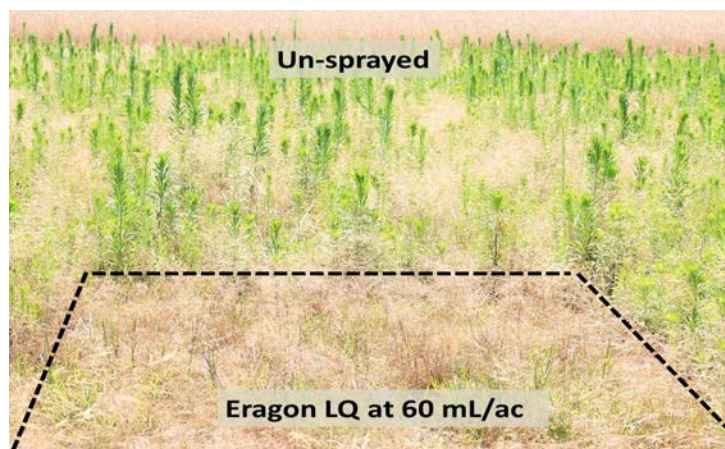


Figure 2. Canada fleabane control with Eragon LQ at 60 mL/ac compared to the un-sprayed control. The lower 30 mL/ac rate failed to deliver acceptable control at the one field location.

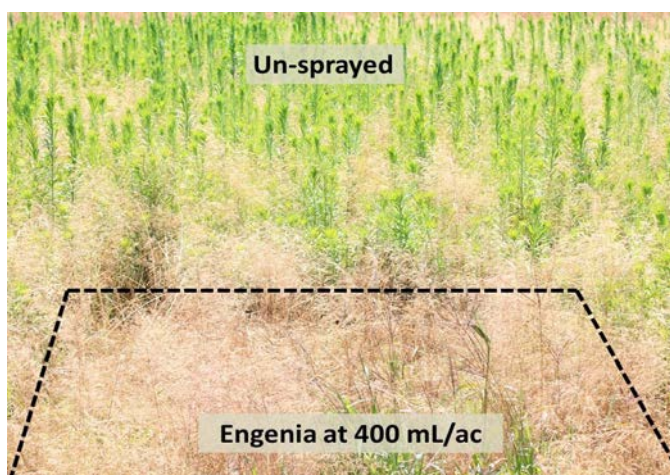


Figure 3. Canada fleabane control with the 400 mL/ac rate of Engenia (dicamba) compared to the un-sprayed control. The lower 200 mL/ac rate failed to deliver acceptable control at the one field location.



Figure 4. Fall planted cereal rye was very effective at inhibiting the germination of Canada fleabane seedlings (left) compared to where it was not planted (right).

Considering Crop Rotation in Nutrient Balancing

Christine Brown, Field Crop Sustainability Specialist, OMAFRA

A function of 4R stewardship is to maximize the timing and placement of nutrients for crop efficiency and environmental protection. Crop rotation becomes an important consideration if application timing can match the crop that can maximize the utilization of nutrients.

Nutrient balancing compares the nutrients applied to a crop rotation to nutrients removed over a crop rotation. In order to balance nutrients, soil fertility levels, yield goals and crop needs are required information to determine proper fertilizer application rates. Corn and wheat have greater response to applied nutrients (especially seed-placed phosphorus), and applying to crop needs allows producers to follow the principles of right rate, right time and right place.

A recent news article (*Ontario Watershed Study Shows Over-Application of Phosphorus*) reported on research that indicates phosphorus is over applied by 40% for corn and wheat. If 50 lbs of phosphorus is applied to each of corn and wheat in a rotation, then 40% would represent 40 lbs P_2O_5 or about a 1 ppm soil test increase in soil test phosphorus levels. The research quoted in the article gives no indication of soil fertility levels or crop rotation, both of which are essential to nutrient balancing.

In Ontario a general guideline is that it takes approximately 35 lbs of P_2O_5 to increase/decrease soil test levels by 1 ppm and it takes about 20 lbs of K_2O to increase/decrease potassium levels by 1 ppm. There are variations based on soil characteristics, however these amounts give producers an indication of how closely they are increasing or decreasing soil fertility in their fields.

Nutrient management planning, crop needs/recommendations are always the first priority, especially on soils with low fertility levels. For livestock farms with adequate soil fertility levels and where nutrient recommendations are low, manure application rates are set to match the nutrients removed by a crop. Manure is most often applied to meet the nutrient needs of a corn crop, followed by wheat and forage crops. Manure and fertilizer application does not often occur on a soybean crop since soybeans do not make efficient use of the manure nitrogen (the root nodules supply the plant's nitrogen needs), however the soybean crop does remove significant nutrients from the field. Manure nutrient management plans generally have manure and/or commercial fertilizer applied 1 or 2 times in the rotation to meet the crop needs for a full rotation of crops. Therefore if 40% more phosphorus is applied to 1 crop in the rotation, it may be providing nutrients for the crop year where no nutrients are applied. From an environmental perspective this means manure and fertilizer are applied less frequently and from an economic perspective it allows a grower to follow 4R principals that maximize economic nutrient efficiency.

The tables below show the crop needs and crop nutrient removal for a corn-soybean-wheat rotation with average yield goals. In one scenario, the soil fertility levels are low, where nutrient needs are higher than crop removal, while in the second scenario the soil fertility levels are adequate and fertilizer needs are lower and are often met with a commercial fertilizer starter.

Typical Example of Nutrient Balancing for a 3-crop rotation

Nutrient Balancing with Low Soil Fertility Levels (P=6 ppm and K = 35 ppm)						
Crop (yield bu/ac)	Nutrients Recommended			Nutrients Removed		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Corn (175)	161	80	125	145	73	51
Soybeans (45)	0	45	80	175*	38	63
Wheat (90)	100	45	27	177	63	147
Rotation Total	261	170	232	(500-175) 320	175	260

Nutrient Balancing with Adequate Soil Fertility Levels (P=30 ppm and K = 120 ppm)						
Crop (yield bu/ac)	Nutrients Recommended			Nutrients Removed		
	N	P₂O₅	K₂O	N	P₂O₅	K₂O
Corn (175)	161	18	27	145	73	51
Soybeans (45)	0	0	27	175*	38	63
Wheat (90)	100	18	18	177	63	147
Rotation Total	261	36	72	(500-175) 320	175	260
Approximate Change in Soil Fertility levels (over rotation if no fertilizer was applied)				---	5 ppm	13 ppm

*nodulation of legumes (e.g. soybeans) results in a 0 balance for N removal

Over the rotation the nutrients recommended will help ensure maximum economic yields, while the nutrients removed give an indication of how quickly fertility levels will decrease (or increase). Soil testing gives an indication of nutrients available for a crop, and are only a fraction of a “soil bank” of nutrients which are influenced by many physical and biological factors. Responsible crop production should not mine the nutrients from the soil. Healthy soils with good infiltration capacity, good aggregate stability and diverse microbial populations will be the best defense for minimizing environmental impact from nutrient loss.

Human nutrition is important to overall health and the Canada Food Guide gives suggested best practices. Similarly, food production requires good crop nutrition. Nutrient Management planning tools help Ontario producers to manage and apply nutrients based on soil fertility levels, crop rotation and crop needs accounting for field conditions that could impact environment. Tools, such as the NMAN software, allow producers to see what impact decisions such as timing of application or application rate could have on nutrient availability.

Nightshade berries contaminating livestock feed: worry or don't worry?

Mike Cowbrough, *Weed Management—Field Crops, OMAFRA*

Q: Find enclosed a sample of oats that I harvested with a considerable amount of eastern black nightshade berries. Is it alright to feed this to my beef cows?

A: If your desire is to have no risk of negative health impacts on your livestock, then do not feed the contaminated oats to your beef cows. However, we can draw on past experience with feed samples contaminated with eastern black nightshade to provide some indication of potential risks.

Plant species from the nightshade family often contain glycoalkaloids, which are bitter tasting and poorly absorbed from the gastrointestinal tract, causing gastric irritation and symptoms that range from “tummy rumbling” to vomiting and diarrhea. Many of you have seen green parts of a potato, or a potato chip with a tinge of green. When a potato has green skin, it contains the glycoalkaloid “solanine”. Many of us though, don’t toss out a potato with green skin but rather cut the green part off and use the rest. After all, a University of Nebraska, Lincoln report indicated that one would have to consume 1% of our body weight in green potatoes to get sick¹, which for many of us would represent well over 1 lb of green potatoes. In 2015 an oat sample was sent to me that contained dried up eastern black nightshade berries at 1% of total sample weight (Figure 1 & 2). Previous reports have indicated that dried berries of black nightshade do not contain toxic alkaloids while the immature green berries of eastern black nightshade may contain small amounts of toxic alkaloids² so presumably the risk of feeding this sample would be low given the berries in the sample were mature and dried. Nonetheless the feed sample was sent to a diagnostic lab to see if any toxic alkaloids could be found. While awaiting results from a diagnostic lab, the farmer decided to feed a small amount of the contaminated oats to his cattle. He reported back that “the calves’ manure became loose and some bloody, so (I) backed off the amount fed and have slowly increased the amount but not to the levels I would normally feed with and have seen no side effects”. When the lab report came in, it had tested positive for toxic alkaloids, which would seem consistent with the side effects observed by the farmer. Once again, this illustrates that “the dose makes the poison” but the challenge with poisonous plants contaminating animal feed is that there is little information available as to what dose will cause problems.

Therefore, it's best to be cautious. Either compost the oats so that you have a chance at killing the viability of the weed seeds or clean the seed as best you can to remove the berries and re-purpose as cover crop seed, keeping a keen eye on any germinating nightshade plants so that you can remove them when young.



Figure 1. Sample of oats sent in that contained “nightshade” berries



Figure 2. Berries were sorted out of the oat sample and weighed, revealing that the nightshade berries comprised 1% of the total sample weight.

¹ O'Connor, A. (2007, July 3). The Claim: Green Potatoes Are Poisonous. New York Times. Retrieved from: <http://www.nytimes.com/2007/07/03/health/nutrition/03real.html>

² Canadian Biodiversity Information Facility. (n.d.) In: Black nightshade (common name). Retrieved December 3, 2015, from <http://www.cbif.gc.ca/eng/species-bank/canadian-poisonousplants-information-system/all-plants-common-name/black-nightshade/?id=1370403267063>

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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
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Looking to keep up to date on the latest food safety practices and help
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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

Alliston	Day 1 - January 4	Day 2 - January 11
Elmvale	Day 1 - January 19	Day 2 - January 26
Linwood	Day 1 - January 23	Day 2 - January 30
Elora	Day 1 - February 2	Day 2 - February 9
Markdale	Day 1 - February 6	Day 2 - February 13
Chesley	Day 1 - February 20	Day 2 - February 27
Orangeville	Day 1 - March 8	Day 2 - March 15
Wingham	Day 1 - March 21	Day 2 - March 28
Mount Forest	Day 1 - March 22	Day 2 - March 29

GYFP Workshop Schedule

Wingham	Day 1 - Jan. 11	Day 2 - Jan. 18	Day 3 - Jan. 25
Elora	Day 1 - Jan. 15	Day 2 - Jan. 22	Day 3 - Jan. 29
Alliston	Day 1 - Jan. 16	Day 2 - Jan. 23	Day 3 - Jan. 30
Markdale	Day 1 - Jan. 25	Day 2 - Feb. 1	Day 3 - Feb. 14
Orangeville	Day 1 - Feb. 9	Day 2 - Feb. 16	Day 3 - Feb. 23
Brodhagen	Day 1 - Feb. 15	Day 2 - Feb. 22	Day 3 - Mar. 1
Clinton	Day 1 - Mar. 2	Day 2 - Mar. 9	Day 3 - Mar. 16
Mount Forest	Day 1 - Mar. 6	Day 2 - Mar. 13	Day 3 - Mar. 20
Chesley	Day 1 - Mar. 20	Day 2 - Mar. 27	Day 3 - Apr. 3

Food Safety

Markdale	Day 1 - February 5	Day 2 - February 12
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Biosecurity

Wingham	March 19
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