Heartland Soil & Crop eNews

MARCH 2015

ONTARIO'S FORAGE MASTER

OMAFRA Crop Talk | OSCIA News | County Updates | SoilSmart Highlights

OSCIA Grassroots Innovation Since 1939

Ontario

Meet Mel

Welcome to a new year of Heartland Soil & Crop News and a new Regional Communications Coordinator (again)! I'm Mel and I hail from a busy family farm in Wellington County, where I've lived most of my life… well except for the decade that I left for the big city, worked in Korea and then traveled a few bits of the world. Now I am back and its all about soil and crops!

(This is me before I went no-till!)

On top of being your new RCC, I work on agricultural stewardship projects with a Conservation Authority -don't judge me! :) and I'm involved with the Innovative Farmers Association of Ontario, the Wellington Federation of Agriculture and the Agriculture Adaptation Council, and I occasionally write for the Rural Voice... if I get the time.

I'm really excited to join Heartland and bring you this newsletter. I started in January and just dove right in, to SoilSmart and FarmSmart, to OSCIA's AGM and the Perth and Huron's AGMs, along with county meetings. Phew! Thank goodness I didn't have to go too far to interview Ontario's Forage Master, because Simon and Kristina Signer live right across the road from me!

Heartland is hosting a Regional Production Meeting on March 25th at Premier Equipment in Elmira and Perth has graciously taken the lead in organizing the meeting. Log on to www.oscia.wildapricot.org to register. And if your membership has expired, don't forget to renew.

I'll be looking out for more story ideas and local members to profile, so if you have any ideas please be in touch! My contact information is to the right.

See you out and about!

Mel

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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Website Under Construction

For more information on membership or anything at all, please contact Mel at heartland.SCIA@gmail.com or 519 820 2358. Comments, ideas and sponsorship welcome!

Please return undeliverable mail to:

Heartland SCIA c/o Melisa Luymes
8458 12th Concession
RR#1 Moorefield, ON N0G 2K0

Highlights from "Meeting Season"

OSCIA AGM in London

Terry Daynard and Bill Miller, Perth AGM

Expert panel at SoilSmart

800 attend FarmSmart

Cover photo: Simon and Kristina Signer (and Felicity) with Allan Mol, former OSCIA President [courtesy of Cobi Sharpe]

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"Wanna go broke?
Farm like your neighbour.
Wanna make money?
Farm like nature."

Ray Archuletta | SoilSmart

Stuart Wright | *Heartland Provincial Director*

First off let me welcome new RCC Mel Luymes to our team. We feel very fortunate to have such a bright young person working with us in Heartland. Next I'd like to touch on a couple of subjects, the first being some exceptional people working to benefit OSCIA and, second, the exciting new grant structure coming our way in 2015.

It is a great pleasure working with all the provincial directors and I'm always impressed with their dedication. My colleague in Georgian Central, Les Nicholls, is a good example as he is not only OSCIA's rep on Farm and Food Care, he is also the *chairman* of that valuable farm organization. Les has been very busy dealing with the neonic issue and has handled his duties exceptionally well. Our incoming president Alan Kruszel is the rep for the Soil Conservation Council of Canada and has worked tirelessly for that organization, helping to host the World meeting in Winnipeg a couple years ago and he was still active with SCCC despite the time consuming job of hosting the last Summer Meeting in August. Both of these gentlemen deserve great credit for representing OSCIA so well.

Next, the new grant structure should make it much easier to access funds and Tier 1 will better serve the locals. Valuable field trials will be able to take advantage of more opportunities in Tier 2. Another exciting new opportunity was announced at the OSCIA AGM. The Great Lakes Agricultural Stewardship Initiative (GLASI) will supply cost share for areas in watersheds that flow into Lake Erie and Southern Lake Huron with the important goal of reducing nutrient load in these vital assets.

And one more thing, if I may. I'd like to thank Karen Jacobs, our former RCC. She has now moved on to a full time position in the head office. I've been to many OSCIA AGMs over the years and find there is always a special or defining moment. Strangely enough in 2015, for me anyway, it wasn't the GLASI announcement by the Minister (although that is an exciting challenge for OSCIA.) It was the follow-up presentation by Christine Schmaltz and Karen Jacobs and if you allow me a moment I will explain. I remember Karen when she joined Heartland as RCC and took on the challenge of making Heartland whole again, adding boards of directors in Huron and Waterloo. She was a hard worker but was much more comfortable in planning, organizing and working behind the scenes. Part of her job however was to give RCC reports at AGMs which was a little stressful in the beginning. I think I heard Karen's knees knocking in churches and community halls from Alma to Milverton to Holmesville to Floradale. But when I heard her in that big room in London, she was poised, confident and to the point. And I realized I had witnessed a real personal development and I believe Karen has taken the proper step to not only bring extra value to her family with a full time job but also to bring maximum value to the Association. Thank you Karen for all you brought to Heartland and all you're

Thank you Karen for all your work and we wish you all the best in the future!

Production Day

Hosted by Perth Soil and Crop at Premier Equipment - ELMIRA

March 25, 2015

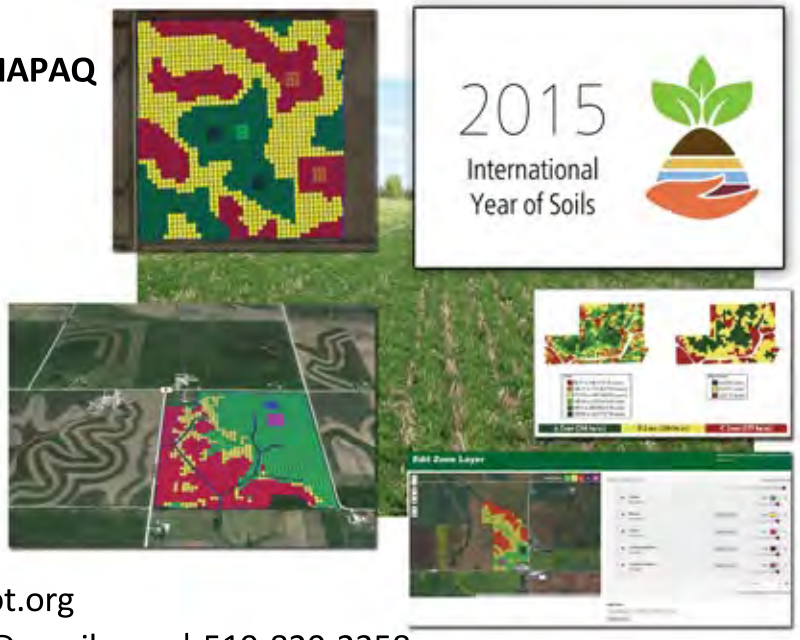
9:00 am - 3:30 pm | Premier Equipment - 275 Church Street West, Elmira

Speaker line-up:

Kevin McKague, Rural Environment Engineer, OMAFRA
Phosphorus in Lake Erie - What's the Problem?

Mark Pierce, Account Manager, Premier Crop Systems, Des Moines, IA
Delivering on the Promise of Precision Ag

Odette Menard, Agricultural Engineer, MAPAQ
What moves beneath your soil?

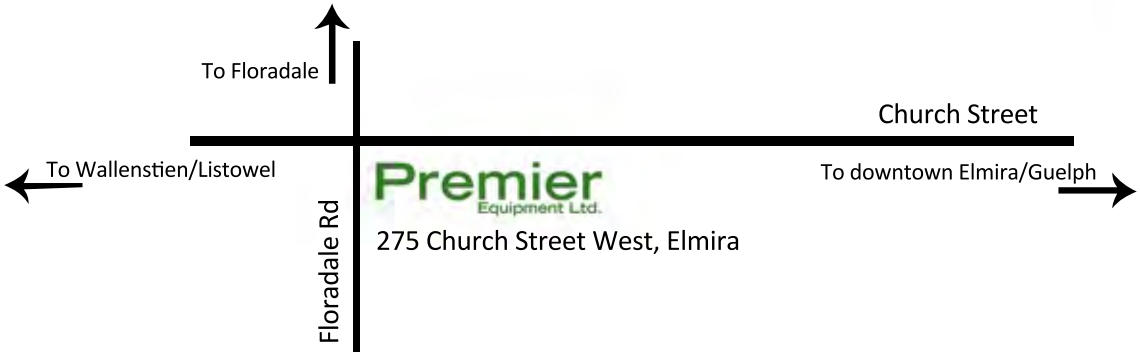


CEU CREDITS

Registration information:

Registration: $25
Registration Deadline: March 22
SPACE is LIMITED. No Walk-ins.

TO REGISTER visit http://oscia.wildapricot.org
or contact Mel Luymes - Heartland.SCIA@gmail.com | 519-820-2358



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Update: Waterloo County

Photo: Andrew Taylor

This year, Waterloo will be busy hosting the **Ontario Forage Expo** on July 7th at Ryan Martin's farm at 2600 Northfield Drive.

Ontario Forage Council

They will also be running their **Forage Master Competition** and the deadline to register is April 15. More info on back page. Contact Lynn Strenzke and you could be the next winner! 519 648-2436 wl.strenzke@hsfx.ca

Waterloo held their AGM on December 17th in Floradale. Provincial Director Stuart Wright updated the membership on crops advances and grant updates and OSCIA's Executive Director, Andy Graham gave a report on Growing Forward 2 and PED program updates. Anne Loeffler of the Grand River Conservation Authority, spoke about the Rural Water Quality Program that offers grants for manure storages, milk house waste treatment, Nutrient Management Plans, fencing, windbreaks, water crossings, cover crops and more.

OMAFRA's Ian McDonald, the day's featured speaker, started his presentation by stating that Canadians are the most blessed people in the world, with financial security, health care and great infrastructure. Opportunities for farmers include biomass and biofuels. McDonald went on to say that getting that extra moisture in the soil will bring our improved corn and soys up to their potential and he explored the possibilities of subsurface drip irrigation (SDI) in corn. The Judge Farms SDI project yielded them 110 more bu/ac than their neighbours and the literature shows that SDI is 30% more efficient than overhead irrigation. Especially given the looming global water crisis, we may need to explore new ways of farming.

Pat Lynch gave his thoughts looking back on 2014. With full season hybrids and a shorter crop season, we saw a few issues, and he recommended having a Plan B *and* a Plan C if the area gets a late planting due to weather. He advised choosing soybean varieties based on when one would want to plant wheat (ie early!) and he emphasized frequent fertility assessment. "Which approach do you want to take?" he asks. "Do you want to mine, maintain or build your soil fertility levels?"

The day concluded with a panel after lunch, with Pat Lynch, Peter Johnson and Stewart Cressman sharing their challenges and lessons learned from their many years of experience.

Photo: Romy Schill

GROWING GREAT HAY

2014 Ontario Forage Master Tells All

The more value you get out of your forages, the happier your cows will be.

Last year's Ontario Forage Master Champion was Wellington's own Simon Signer of Sigview Farms Ltd., a dairy farm near Moorefield. This past January, Simon and his wife, Kristina, travelled to St. Louis, Missouri to represent Canada at the American Forage and Grassland Council's Forage Spokesperson Competition. Signer says that he's always been passionate about forages, but that public speaking pushed him outside of his comfort zone. Simon and Kristina, with help from Simon's parents Hans and Margareth, milk approximately 47 head of Brown Swiss and farm 200 acres.

In 2014, there were 200 entries for the Forage Master from 24 counties across Ontario. The Signers were familiar with the program, but they say it was John Beer that encouraged them to participate. The original competition was free and easy to do, says Simon. He took a sample of his first cut of haylage and put it in the freezer. John Beer came to judge the field just before second cut, checked his storage and took the frozen sample to the lab.

When he took first place at Wellington's competition, Simon decided to move on to the provincial competition and he put together the 20-minute presentation that gave him the provincial title. Since then, he's given the presentation a number of times, including the OSCIA Annual General Meeting this past February.

Simon and Kristina Signer are a young family with two children, Sawyer and Felicity, but they've both been farming all their lives. Simon grew up on the Moorefield farm that he and Kristina took over in 2012 and Kristina came from a dairy farm near Woodstock. "Growing up, I always wanted to take over my parent's farm," says Kristina and, though she swore she would never leave, that all changed when the couple met in their first months at Ridgetown. "We love farming," she continues. "We love the day to day life of it and I love raising our kids here."

"At Sigview farms, we aim to produce high quality, high yielding forages. It's the foundation of our dairy farm," begins Simon in his presentation to the OSCIA. He isn't worried about keeping his forage secrets to himself. He says he's like most farmers. "If we have something that works, we share it."

In prepping a field into hay, they cultivate, pick stones and put on fertilizer before cultivating again and packing. They plant an 80 / 20 alfalfa hay mix (with 7% Timothy and 3% Orchard Grass) at 19 pounds to the acre with a Brillion 12-foot planter. "Essentially, we're packing that field three times to make sure there's good seed to soil contact and a level seed bed." For weed control, they spray as soon as possible at the first trifoliate stage with MPCA and Cobutox.

They use a sickle bar mower and rubber conditioner rollers, getting two cuts off a field in the first year,

coinciding with the 2nd and 3rd cuts of their established fields. After the first cut, they apply potash and follow the second cut with manure or fertilizer if required.

They will take a fourth cut only if they feel they might be short on feed. "What is out there for a fourth cut you will more than get back on your first cut the following year if you just leave it there. It also catches a lot of snow and helps insulate the ground."

Last spring they put up a 20x100 storage structure, still seeing the advantages of the silo over bunkers as it saves them 5-10% dry matter loss. They also recently installed an automatic ration mixer that will run at night when there is cheaper hydro and has a precise mix ready to go in the morning.

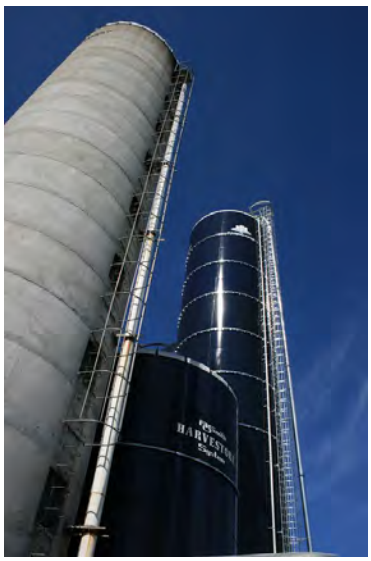
But why does he go through all the trouble? Because it pays, Simon argues. "I wanted to figure out what it was worth to me to produce quality forages. Along with my nutritionist, (Virginia Rogers) we came up with three different rations to compare the difference in quality of forages we were making."

They mixed the ration on a protein level average of 17.5%. The first sample was the one used to eventually win the forage master competition, and the second one was taken from another farmer's field. Signer says he was quite surprised at how the numbers worked out.

And while a few dollars doesn't seem like much, he shows the numbers projected on a 100-head herd and finds that the additional expenses to make up the second ration would cost him $3500 a month. On top of that, he notes, the added concentrates cause stomach problems and acidosis for his cattle. Signer puts it simply, "the more value you get out of your forages, the happier your cows will be."

Simon concludes his presentation by thanking the competition's sponsors: Pickseed, SGS, and the Royal Agricultural Winter Fair. And he says a big thank you to OSCIA for the opportunity to learn and to compete in Missouri as well. "We had a great time," says Signer. "It was very grazing focused, but I have lots of ideas for my 2 acres of pasture now," he laughs.

Ration	soymeal 47% (kg/hd/day) $500/ton	Dry corn (kg/hd/day) $200/ton	Total Cost (hd/day)
80% haylage (20 % protein, 151 rfv)	2.4	8.4	$2.88
80% haylage (14% protein, 99 rfv)	4.3	9.5	$4.05
40% haylage (1st sample) 60% corn silage	4.1	6	$3.25




Photos: Simon Signer

Update: Perth County

The Perth County SCIA held their AGM and banquet on Thursday, January 22nd in Milverton. After a buzzing hour of socializing and meeting with the ag business reps around the room, President Bill Miller opened the meeting. After a quick business meeting, dinner was served.

Terry Daynard addresses a crowd of 150 farmers and sponsors at the Perth SCIA Annual General Meeting on January 22nd in Milverton. He speaks candidly about his views on population growth, sustainability and advocating for agriculture.

Daynard begins by admitting that there is a growing population and a growing demand for food in the developing world, but says that we're not going to be the ones to feed them. "They won't be our customers, they will be our competitors," he says. Daynard goes on to say that our problem is that we're too good at what we do, that Canadian farmers are over producing right now. "Thank goodness for biofuels," he says, and argues that we are going to need to find other ways to use agricultural products, like bioplastics and the like.

He moves on to the topic of sustainability, and discusses the large retailers (ie. Walmart, McDonald's, Uniliver) that are committing to buy sustainably farmed products. He sees an opportunity for farmers to be at the table and participate in defining sustainability and in creating a certification process. A European-based Sustainable Agriculture Initiative (SAI) has already made headway on a Farm Sustainability Assessment that can be found online at www.saiplatform.org.

People no longer trust in science, says Daynard. But they might trust in people and in groups. With only a small percentage of us actually involved in the production of food, we're going to have to proactive. "We need to get better at explaining our story and why it is important to them." He emphasizes that farmers should listen to the concerns of consumers and talk about how they are addressing these concerns. "Consumers care about food quality and variety," says Daynard. And he says they are just as concerned about the concentration of large players in the agriculture sector as the rest of us.

To keep up on what Terry's thinking, he blogs at www.tdaynard.com

To conclude, Bill announced the winners of their Forage Master competition. In first place Pedro Slits, 2nd Jim Robinson and 3rd Doug Johnson.

Perth will be hosting another forage competition this year, and please contact Thelma Smith if you are interested. Also be sure to renew your membership if you haven't yet. Thelma's number is 519-271-5190 or you can email her at eandtsmith@golden.net

#SoilSmart15

Ray Archuleta starts Soil Smart 2015 off with a bang, addressing a crowd of 400 farmers in Waterloo with the charisma and passion of a Southern preacher. But his gospel is the soil. Archuleta says he was 20 years into his career in agronomy before he saw the light, so to speak, and has been working ever since to unlearn the reductionist science he was taught in university. He argues that modern agriculture is built on the wrong premise and that we need to be putting the soil systems first.

He calls up farmers from the crowd to demonstrate the difference between the aggregate stability of soil taken from a tilled field, a no-tilled field, a pasture and a forest. Test after test he concludes, "tillage is not your friend."

Archuleta believes that our agricultural systems should mimic nature as much as possible. Nature is a product of 3.8 billion years of R&D, he jokes. When earthworms will move 18 tons of soil a year, he wonders why anyone would till. "I don't have to put diesel in them, they don't complain and they always come to work on time."

Archuleta dives into the science of the soil, discussing organic matter and bio-glues exuded from earthworms. He also highlights the importance of mycorrhizae for both plant and soil health. Obviously fungicide destroys beneficial fungi, and so does tillage, says Archuleta. As a result, our soils are dominated by bacteria, and weeds thrive in a bacterial dominant system.

"The plant and soil are one," exclaims Archuleta, as he describes a moment of epiphany. He explains that plant sugars are exuded from the roots and feed the soil, which in turn feeds the plant. "Once you understand what feeds the soil, cover crops are not optional," he says.

He also emphasizes the importance of digging up the soil to see what is happening, and of frequent soil testing. However, he doesn't believe that our conventional soil tests are cutting it, arguing that they are not picking up other forms of nitrogen. He recommends the Haney test, as it most accurately describes soil fertility in terms of nutrient availability to the plant.

Jeff Rasawehr, a farmer from Michigan, picks up where Archuleta leaves off and shares how he has made these principles of soil health work on his farm. "Respect God's army," he says, referring to the earthworms and biology in the soil. 70% of organic matter restoration begins with the roots, says Rasawehr. He argues that if there aren't living roots for microbes to eat, they will start to eat each other. That's why if he sees that a cover crop has high levels of winterkill, he will frost-seed *more* cover in the spring. "Keep it green," he emphasizes. "And never till." He argues that even a shallow pass with tillage equipment will "tear the roof off the house."

"Diversity is more forgiving," says Rasawehr, and Dr. Bill Deen of the University of Guelph agrees. He shares results of decades of research on production systems at the Elora Research Farm. "We need longer and more diverse rotations," says Deen. "It will mean your field will be more likely to survive hot, dry conditions predicted in the coming years."

Ontario farmers, Earl Elgie and Ken Nixon, described the secrets to their systems. They plant cover crops, reduce their tillage and have longer rotations. Elgie also uses windbreaks on his farm to control erosion and never stops trying new things in the field. Nixon focuses on minimizing compaction, whether it is through keeping equipment smaller with low tire pressure, or putting his grain carts on tracks.

All the day's presenters came back to the stage for the last hour of the day to participate in a lively Q&A panel and farmers lined up at the mic to ask practical questions for our Ontario context.

Soil Smart was presented by the Farm Smart Agricultural Conference, which is a partnership of the Golden Horseshoe and Heartland Regional Soil and Crop Improvement Associations, OMAFRA, the University of Guelph and other organizations and sponsors. Soil Smart 2015 was sponsored by DuPont Pioneer.

Introducing Bio-K™

A Superior Source of Potassium for Soybeans

NEW HAMBURG, ONTARIO – As Ontario soybean growers look for ways to push their crop yields higher, they will soon have access to a new, more efficient source of potassium (K) that offers the highest plant absorption rate of any potash fertilizer on the market.

Bio-K – an extremely safe form of K for seed and foliar application due to its low salt index – is being unveiled across Ontario this fall as the newest addition to the ALPINE brand of liquid fertilizers, says Tommy Roach, Director of Specialty Products & Product Development for Nachurs Alpine Solutions.

Five Times Faster K Uptake

What makes Bio-K so different from other K sources is that it's a K acetate, says Roach. "Plants produce acetate naturally. It's a building block for many vital plant functions. That's why Bio-K is absorbed by plants so much faster and more efficiently than other forms of K – because plants recognize the acetate as a natural organic acid they produce themselves," he explains.

Roach points to an independent study published in the Journal of Plant Nutrition that showed the foliar absorption rate of K acetate on soybeans was 47.1 per cent compared to 9 per cent or less with other forms of K. "Plants don't produce chlorides, nitrates, or sulphates, so those K sources are far less efficient at getting into the plant," he explains, noting that Nachurs Alpine Solutions is the only company that manufactures K acetate for the agriculture market. The ALPINE manufacturing plant in New Hamburg, Ontario, produces Bio-K for Ontario growers.

Best Solution for K-Deficient Soils

Many Ontario growers have been discovering that their soils are running low in K, adds Roach. "Bio-K gives them a safe and effective method of getting K into their plants – both in-furrow and as a foliar product," he says, noting trials have shown that Bio-K doesn't harm seeds or burn leaves. K is especially important for soybeans, which have a long reproductive stage, he adds. K helps in the formation of starches, sugars, and proteins, and aids in seed production.

Field trials testing Bio-K on soybeans were conducted at multiple sites across Ontario this year. "We applied Bio-K with our ALPINE HKW6® seed-placed starter, and also tested a foliar product, ALPINE K20-S™, containing Bio-K," says Ken Brett, ALPINE Sales Manager for Eastern Canada.

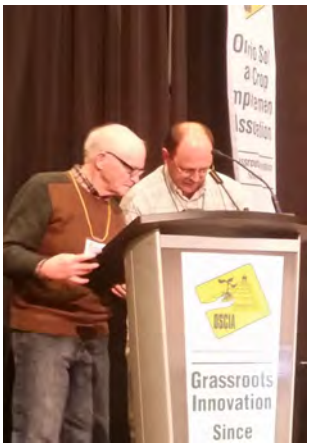
"Those trials compared Bio-K to check strips with no starter, and to strips treated with ALPINE G24® and ALPINE G20®. We're expecting the results to be similar to US trials conducted over the last few years that have shown quicker and more even emergence, better plant health, excellent tank mixability, and higher yields," says Brett.

Growers who use traditional ALPINE liquid starters – ALPINE G24 and ALPINE G20 – on soybeans already see an average two-bu/acre yield advantage, says Brett. "Because Bio-K is such an efficient form of potash, we anticipate it will exceed the performance of our existing starters on soybeans and give Ontario growers additional advantages on their crops next spring."

For More Information, Please Contact:
Ken Brett
ALPINE Sales Manager, Eastern Canada
(519) 939-1171

Update: Wellington County

Photos: (Top) Bob Kerr an Matt Coffey present to the OSCIA AGM on their Twilight tour and strip till trials. (Middle) Jake Kraayenbrink speaks at the July 3rd Twilight Tour on applying cover crops into standing corn while side dressing manure. (Bottom) Results of Greg Stewarts trials in Fall 2013/ Spring 2014.



Wellington's AGM was held on December 5th 2014 in Alma.

OSCIA Regional Program Lead Lois Sinclair updated the group on GF2 workshops and education, implementation and capacity building programs. Provincial Director, Stuart Wright touched on program and staffing updates as well as new grant structure changes. Ontario Forage Masters winner Simon Signer gave his winning presentation, which is featured in this issue

Mike Dougherty from the new Lystek plant in Dundalk spoke about the processing of human biosolids into a commercial fertilizer for injection applications. He noted that the heavy metal count of this fertilizer is well below MOE regulation standards and the NPK rates are 4.5 - 7 - 2.5 on average. Jerry Winnicki of Clark Agri-Services talked about her trip to Brazil last year.

Horst Bohner reported on the challenges to growing soybeans. In 1984, the five year provincial average was 34 bu/ac and last year the average was 44 bu/ac, so he says we are slowly improving. Last year, many farmers had trouble getting beans out of the ground and potassium deficiency was affecting stalk strength and causing some lodging issues. "The only way to do it wrong is not to put it on," he says. In his trials, spring or fall applied P and K gave him the same results. He also found Acapela and Priaxor worked well suppressing white mould and applying on a no-till field after a bad mould year made a huge difference.

Greg Stewart reported on a couple of his projects, especially the spring / fall strip till plot that was highlighted at the Twilight Tour last year (see right)

Tillage	Strip N	Planter N	Side N	Yield
Spring Strip	0	30	106	144
Fall Plow	0	30	106	141
Spring Strip	136 ESN	0	0	140
Fall Strip	0	30	106	140
Fall Disc Rip	0	30	106	138

This year, Wellington will be running the Forage Master Competition again, and to get involved call John Beer at 519 848 2503 or jonshar@bell.net. Stay tuned to the newsletter for more events to come!

Woodrill Farms
ESM
Agriculture Solutions
Speare Seeds
Pioneer
Harkness Farm Equipment

Sponsorship helps support the annual meeting (hall rental, speaker costs), twilight meeting (plots and refreshments), advertising throughout the year, and FarmSmart Expo. Wellington County Soil & Crop would like to recognize the above sponsors for 2014.

Seaforth, ON: Wayne Cantelon and his family received the BASF Innovative Farmer of the Year Award at the Innovative Farmers conference on February 24-25. Wayne has been making conservation tillage work across Huron County for decades and is innovating with cover crops as well. Heartland Soil & Crop would like to congratulate the Cantelons and thank them also for their contribution to their Huron SCIA throughout the years.

Update: Huron County

Huron SCIA hosted their AGM in Varna on February 11 and drew a room full of 80 farmers.

The directors have had quite a successful (and busy!) year. Joe Vermunt updated the members on the Huronview site near Clinton. HSCIA secured a 10-year lease from Huron County for 30 rolling acres in exchange for a buck a year and an annual presentation to the council. HSCIA's intention is not to create small demonstration plots, but to run this land as a farm and to build the soil health through conservation agriculture. Their lease began in September and they have tried to cover in some rill erosion and planted a cover crop. Monsanto has donated soybean seed for the 2015 growing season and Hill & Hill Farms will donate the harvesting and trucking.

Chris Van Esbroeck presented the Soil Management Day, hosted on Claussen/ Mulder's farms near Brucefield on September 3rd. About 100 people attended the afternoon workshops put on by OMAFRA staff, along with a tillage demo after dinner. Lastly, Stefan Zehetner updated the members on the first year of Cover Huron, a cover crop program that was fully subscribed with 16 producers. In the future, Cover Huron is considering a program with less farmers, but with more innovative techniques.

Stefan took the mic again after dinner with a presentation on cover crops, detailing the pros and cons of warm and cool season grasses and legumes, along with brassicas and described the merits and drawbacks of underseeding and over-seeding in wheat, beans and corn. With most information coming from the States, it is important to foster our own home-grown wisdom of cover crops.

Don Good wrapped up the meeting with a presentation on his marketing outlook and provided some food for thought for commodity traders in the crowd.

The board will be busy again this year, with the Huronview field and cover crop programs. They also hope to host a bus tour to visit some cover crop trials in the area and a few further afield. Stay tuned to the next newsletter for more details. For membership, log on to oscia.wildapricot.org or contact the secretary, Sharon Devine at sharondevine@tcc.on.ca or 519-868-8946



CROP TALK

Volume 15, Issue 1 OMAFRA Field Crop Specialists — Your Crop Info Source **March, 2015**

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A New and Improved Soil Nitrate Test For Corn!

Greg Stewart, Corn Specialist, OMAFRA and K. Janovicek, University of Guelph

What's New?

Measuring the amount of nitrate-nitrogen in the surface 30 cm (12.in.), usually in the first two weeks of June, has proven to be a reasonably good indicator of potential soil nitrogen (N) supply for a corn crop. This test is commonly referred to as the Pre-Sidedress Nitrogen Test or PSNT and was first introduced into Ontario in 1993.

Over the last twenty years we have examined the PSNT nitrogen fertilizer recommendations for corn and now, in 2015, we have arrived at a superior recommendation approach using this test. This new approach or calibration will be significantly more accurate than the older recommendation, especially in higher yielding corn fields.

What's Different?

The main difference in the new PSNT recommendation system is that sidedress fertilizer N rates will hinge not solely on the soil nitrate value (i.e. 15 PPM) but will also factor in the expected yield for the field or part of the field. In the former PSNT approach this was always a concern and some of you have called over the years to express this concern. How could a 15 PPM soil nitrate test mean the same amount of recommended nitrogen regardless of whether it came from a field where the yield expectation was 135 bu/ acre or from a field that was going to yield 235 bu/acre? Thanks for those calls; they inspired us to keep working at improving the PSNT.

So now Table 1 illustrates the new recommendations for sidedress N application rates based on both the soil N test and yield expectations.

What's Not Different?

The actual testing procedure has not changed just the recommendation system. So all of the old rules still apply:

1. Samples must be from a depth 30 cm (12 in.).
2. It is important that all cores in a field be taken to the same depth.
3. It is very important to ensure that sampling avoids any previously broadcast nitrogen fertilizer or starter fertilizer bands.
4. Sampling should occur when corn is 6-12 inches (15 – 30 cm) tall, usually in the May 25 – June 15 window.
5. Soil nitrate samples tend to be less accurate when sampled after periods of significant rainfall. If possible allow a day or two for the soil to dry before taking PSNT samples.
6. Place soil cores in a clean plastic pail, crushed by hand and well mixed.
7. Microbial action in the sample can change the nitrate content quickly if it is not handled properly. Chill or freeze samples as soon as possible. For shipping, pack samples with insulating material to keep them cool and send them by courier to ensure quick delivery to the lab.

Other Considerations

Spilt applications of nitrogen are generally considered to offer environmental and profitability advantages over approaches where all the N is applied at planting. However, we are convinced that the real advantage to split applications comes when sidedress rate fine-tuning is accomplished. Measurement of soil nitrate-nitrogen concentrations is one tool for accomplishing this. Our research to date suggests that properly conducted PSNT testing combined with this new recommendation schedule can result in N recommendation improvements compared to the general N recommendations derived from the N Calculator.

The other exciting option that now exists with this tool is the potential for site specific variable rate N applications. A field that is divided into yield zones could then be PSNT sampled by those zones, a yield expectation applied to each zone, and then a variable rate prescription derived from Table 1. Something great to try in 2015!

Table 1. Pre-Sidedress Nitrogen Soil Test (PSNT) fertilizer N recommendations based on soil nitrate concentration (PPM) and expected yield (bu/acre).

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

Permit—Guidelines For Use In Field Corn

Mike Cowbrough, Weed Specialist, OMAFRA

The 2014 registration of Permit (active ingredient: halosulfuron) in Ontario provides a nice tool for the management of yellow nutsedge in corn. Permit will also provide residual control of certain broadleaf weeds. For those two reasons, many growers will consider tank-mixing glyphosate and Permit for use in glyphosate tolerant corn. Here are 5 key points to consider when using this tank-mix.

1) **When do I apply Permit?**

When tank-mixed with glyphosate, it can be applied up to the 8-leaf stage of corn. (Permit can be applied on its own up to the 10-12 leaf stage of corn). Since Permit will often be tank-mixed to improve yellow nutsedge control, application timing should target yellow nutsedge when it is 8 to 30 cm (3-12″) tall.

2) **What rate of Permit should be used for yellow nutsedge?**

The label provides two rate ranges depending on the size of yellow nutsedge.

- Nutsedge that is 8-15 cm (3-6″) tall: 35 – 47 g/ha (14-19 g/ac)
- Nutsedge that is 8-31 cm (3-12″) tall: 70 – 93 g/ha (28 – 37.7 g/ac)

When control of yellow nutsedge was evaluated at the Elora Research Station, the 47 g/ha (19 g/ac) rate provided very effective control More recently, Dr. Peter Sikkema has evaluated yellow nutsedge control at different rates and more consistent control was achieved at the highest labeled rate. I believe that different field populations of yellow nutsedge vary in their susceptibility to herbicides and therefore you will see a range in their level of control. Ultimately, you may choose to experiment with Permit rates on your farm to come up with a rate that works best. Ideally, you start with the highest rate and scale back the rate depending on the level of control achieved. Lastly, visual control of nutsedge top growth will occur slowly, so don't be surprised if the control is not impressive two or three weeks after application.

3) **Is an adjuvant required?**

The manufacturer (Gowan) is recommending that a non-ionic surfactant (i.e. Agral 90) be added at 0.25% v/v (2.5 L/1,000 L of water) even when tank-mixing with a glyphosate product.

Example: Visual control of yellow nutsedge at 2 weeks after an application of Permit (19 g/ac) + Agral 90 (0.25% v/v) (right) compared with the untreated control (left).

4) **Does Permit provide residual weed control?**

Yes, according to the label it will provide control of the following un-emerged species. (I have condensed the list to focus on species that are typically found in corn):

- pigweed species (not group 2 resistant biotypes)
- chickweed
- cocklebur
- hairy galinsoga
- Canada fleabane (not group 2 resistant biotypes)
- jimsonweed
- lady's-thumb
- lamb's-quarters
- flower-of-an-hour
- wild mustard
- yellow nutsedge (supression of un-emerged shoots)

5) **Do I need to worry about crop safety?**

2013 University of Guelph trials (Ridgetown campus) demonstrated acceptable levels of crop safety with a glyphosate + Permit + 0.25% v/v tank-mix. However, since Permit is a sulfonylurea herbicide (in the same family as Accent, Option, Peak, Ultim etc.) the potential for crop injury may be increased when applications are made:

- during periods of large swings in air temperatures (i.e. going from a low of 7° C to a high of 30° C).
- to sensitive hybrids (historically, certain seed corn companies published this information, but I have been unsuccessful in finding any specific guidelines, so ask your seed supplier).
- during very hot and humid conditions (above 28° C)
- if a soil or foliar applied organophosphate insecticide has been used (an unlikely scenario).

White Mould In Soybeans

Albert Tenuta, Field Crops Pathologist, OMAFRA

There was a lot of white mould in the Ontario soybean crop in 2014. Conditions that favour white mould growth and what can be done to reduce it is summarized below.

Factors Favoring White Mould

1. High yield potential crop / field
2. Field history of white mould
3. Susceptible variety
4. Short soybean rotation
5. Dense canopy - High plant population, narrow rows and early planting
6. Poor weed control (hosts)
7. In- season weather conditions – cool and moist are favourable for white mould

IPM for White Mould Management

- Keep good field records of disease levels
- Variety Selection
    - A. Best available level of tolerance
    - B. Appropriate maturity
    - C. Upright, non-bushy with good lodging tolerance
- Cultural practices such as:
    - a. Reduce plant populations and increase row width
    - b. Rotate with non-host crops (2 to 3 years non-host such as corn and wheat)
    - c. Reduce tillage but avoid soybeans on soybeans – high risk situation
- Fungicides – target fields at risk (above)
    - a. Many chemical / biological options
    - b. Proper timing and coverage critical –
        - i. First spray at R1 (first flower) with 2nd application at R3 (pod forming) if necessary

Figure 1. A soybean field in August showing significant white mould damage

Figure 2. Apothecia: Sclerotia in the soil will produce mushroom-like structures called apothecia that eject spores onto the soybean plant

Figure 3. Sclerotia stem: after the spores inoculate the plant, the fungal pathogen grows and consumes plant nutrients which cause the stems to girdle, this kills any plant tissue above and results in injury as shown in Figure 1.

Figure 4. Selerotia pod: the black sclerotia, as seen here attached to a soybean seed within the pod, which when re-introduced to the soil will start its life cycle all over again.

Establishing A New Pasture

Jack Kyle, Pasture Specialist, OMAFRA

Reasons to establish a new pasture include moving from annual crops to perennial pasture or forage, or to improve an existing pasture that is not producing very well. When planning to seed new pastures there are a few questions that you should ask yourself before actually starting the process. An existing pasture that is not very productive may respond to the application of fertilizer, but the response will not be nearly as significant or long term as reseeding and getting productive species established in the field.

What is the intended purpose of the new seeding?

- Do you want early-season grazing or late-season grazing?
- Are you going to cut it for stored forage sometimes ?
- Is this pasture going to stay down for many years or is it part of a farm crop rotation plan and will be planted to another crop in less than 10 years?

Pasture Species

If you want late-season and stockpiled grazing to be the main use of this pasture, then trefoil and tall fescue should likely be your predominate species. If you want early season pasture, then clovers, alfalfa and orchard grass should form the basis of the mix. Alfalfa will do very well on well drained soils, while poorly drained soils are better to be seeded to clovers and trefoil.

Many people are overly cautious about including alfalfa in a pasture. With proper management, an alfalfa based pasture will give you the best animal performance along with the highest yields of quality forage. Alfalfa's deep roots and heat tolerance make it the obvious choice for mid - to late-summer grazing. With a good rotational grazing system and best management practices, it will be very successful.

There are a number of grass species that should be considered. My preference is for orchard grass because of its early spring growth, rapid regrowth, and once the seed head is removed it stays vegetative for the rest of the growing season. Meadow brome is also an excellent pasture species. Timothy is often found in mixes but it has poor summer re-growth. Other grass species that warrant consideration include ryegrass (especially for a short duration pasture), reed canary grass, festolium (cross between ryegrass and fescue) and possibly bluegrass (especially for a long term pasture). There is a good description of forage species in the OMAFRA Publication 811, Field Crop Agronomy Guide at http://www.omafra.gov.on.ca/english/crops/pub811/3species.htm

Soil Fertility

Soil fertility is a major consideration. The new seeding will not perform very well if the pH is too low, or if the phosphorous and or potassium levels are low. Pasture fertilizer rates based on soil tests are also in the Agronomy Guide. http://www.omafra.gov.on.ca/english/crops/pub811/3fertility.htm

Seeding

Forages can be no-tilled or planted into a tilled seed bed. The seed bed should be firm enough to allow for good depth control and seed-to-soil contact. Forage seeds are very small and should be planted 7-10 mm (1/4 – ½ in) deep. The use of a companion crop is optional. If using a companion crop, consider using oats harvested as haylage or baleage at the boot to very early heading stage. This will eliminate the competition effect from the companion crop and allow the new seedling every opportunity to grow during July and August. The field should not be grazed until the forage plants are well rooted. Cattle tear the pasture plants off, and if they are not fully anchored in the soil they will be pulled out!

Planting the appropriate species into a reasonably fertile seed bed should give you a productive pasture for many years.

Making the Most of Your On-Farm Trials

Gilles Quesnel, Field Crop Integrated Management Specialist and Ian McDonald, Applied Research Co-ordinator, OMAFRA

A well-planned and run on-farm trial is a great way to test new ideas, products, and equipment. But, to provide meaningful information, even a simple on-farm trial takes time to plan and carry-out.

For an on-farm trial to provide useful information, two basic requirements need to be met. First, the trial has to be set up in a way that all the production variables (e.g. drainage, fertilizer, tillage, etc.) are kept constant across the plot, with the exception of the treatment (e.g. hybrids, fungicide, plant population, etc.) being tested. Second, to have confidence in the results generated, the trial has to be set up in a way that the data collected can be statistically analyzed. This is mostly code word for the need to replicate and randomize (arranged each treatment in a different order in each replication) the trial.

The following are guidelines for setting up on-farm trials:

Planning

Determine the objective of the trial and identify the information which will need to be collected (e.g. variety, planting date, yield, % residue cover, etc.). Without replicates, it is impossible to know if measured treatment differences are real or just due to random chance or error. Designing a simple plot with only 2 or 3 treatments (e.g. a foliar fungicide on corn compared to a non-treated check) will make it easier to replicate each treatment at least twice, but preferably 3 or 4 times in the field.

To be confident that there is sufficient data for real and defendable analysis of the results, a minimum of 6 plots is required for a trial, which can be a combination of treatments and replicates. Therefore, if you only compare 2 treatments, then you need 3 replicates (2 x 3 = 6). The exception to the 6 plot minimum would be for some of the corn hybrid plots, like the ones done by the seed industry, where each location is used as a replicate, with the same hybrids entered at multiple locations. This will provides sufficient location replications for proper data analysis.

Actual block widths should be based on the width of the equipment used (planter, sprayer, combine header, etc.). Each treatment plot (strip) should be at least 500 feet long and large enough to yield at least 1,000 lbs of harvested crop to minimize the impact of inherent measurement and weighing errors. When comparing inputs such as fertilizer rates, the rate difference between treatments needs to be large enough to produce a measurable impact on yield (e.g. a difference of at least 30 lbs/acre of actual nitrogen for corn).

Field Selection

Ideally, the field should be uniform in slope, drainage, and fertility, and of a soil type that is representative of your farm. If the field has a slope, orient the plot so the treatments run vertically up and down the slope. Locate plots at least 100 feet away from fence rows and up to 200 feet away from large trees. When possible, the trial should be planted perpendicular (90° angle) to known sources of potential variables such as tile lines, primary tillage or dead furrows and field operations (e.g. fertilizer, manure application). This reduces the potential for added variability that may be associated with overlaps or misses of crop inputs.

The goal is to reduce inherent or applied variation in the whole plot to ensure observed treatment differences are real and not due to unrelated underlying variations. It is critical to observe the field over the course of the season. Be prepared to use your best judgement as to whether there are things happening in the field that could impact the results that weren't associated with treatment differences. You have to be prepared to abandon the plot results if it is obvious that there is something wrong with the overall project site.

Plot Layout

Design the plot on paper or electronically, including replication and randomization positions, ensuring that sufficient field space is available for the trial. Ensure that treatments are well marked, which will make treatment position obvious throughout the season.

Figure 1 is an example of a replicated (3 replications and randomized) plot for 3 treatments.

Rep 1	Plot 1	Treatment 1
	Plot 2	Treatment 2
	Plot 3	Treatment 3
Rep 2	Plot 4	Treatment 2
	Plot 5	Treatment 3
	Plot 6	Treatment 1
Rep 3	Plot 7	Treatment 3
	Plot 8	Treatment 1
	Plot 9	Treatment 2

Figure 1 . Plot Replication (3 treatments X 3 replications)

Figure 2 is a block layout option for a plot with 2 treatments and 4 replications. This layout works well when using wide equipment such as a 100 ft boom sprayer (e.g. foliar fungicide application).

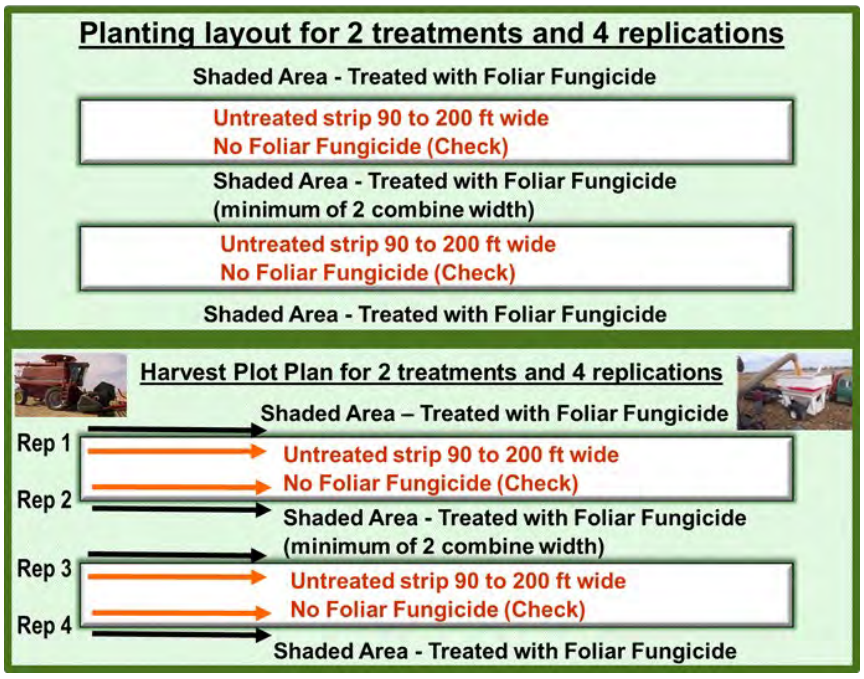

Figure 2 . Block layout option for a plot with 2 treatments and 4 replications

In figure 2, a strip is harvested and weighed from each of the side-by-side treatments (e.g. with and without fungicide on both sides of the block), for a total of 8 data points.

Harvest
Weigh wagons are more accurate than yield monitors to collect harvest weights. If using a yield monitor, the monitor should be calibrated and all the plots should be combined in the same direction and at the same speed to reduce error.

Making Use of the Data
Individual farm data is more valuable when combined with plot results from other sites. If you take the time to plan, plant and harvest a plot, make the time to analyse and share your results. Compile the data in a readable format and send it for analysis and aggregation to you Soil & Crop Director, OMAFRA specialist or Agribusiness representative as soon as possible after harvest.

On-farm trials can answer important questions, but requires significant planning and lots of attention to detail. Sound plot design plus statistical analyses can isolate background "noise" to help detect true treatment effects and improve your success in answering questions.

Bacterial Blight In Dry Beans Goes Airborne

Brian Hall, Edible Bean & Canola Specialist, OMAFRA

With the late start to planting, wet weather and late harvest, 2014 was a year many farmers are glad to have behind them. Despite this, many edible bean growers ended the season with good to excellent yields, but an increase in bacterial disease. Bacterial blights are worrisome when they strike as they typically can hurt both yields and seed quality.

There are three major bacterial blights of edible beans:
- common bacterial blight(CBB) ,
- halo blight (HB), and
- bacterial brown spot (BBS).

The adzuki bean crop was especially hit hard in 2014 by a serious outbreak of bacterial brown spot. Infections were first noticed in late July when hot spots spread quickly as wet, high humidity, windy weather prevailed. The disease continued to spread in fields until drier mid-August. By then, widespread infections of leaves, stems, and pods had occurred that resulted in poor yields and quality.

CBB is the most commonly occurring blight in dry beans. This was the first time BBS has been found in any edible bean type in Ontario. Other bean types can host the disease, but adzuki beans appear to be especially susceptible. Some Ontario snap bean growers also reported damage from BBS in 2014.

Where Does Blight Come From?
Infected seed is the initial source of bacterial infection in an area. Infected bean residue and weather play an important role in its spread. Serious outbreaks of CBB and HB develop when contaminated seed is planted. BBS can become established through infected seed, but can also survive on healthy plants for a long time without causing disease symptoms when conditions are not favourable. Unlike CBB and HB, these 'resident' BBS are considered the main source of infection. Other 'resident' host plants for BBS include corn, soybeans, other dry bean types and hairy vetch. Thus, it is possible for BBS to exist in an area before an outbreak occurs.

How Is Bacterial Disease Spread?
Long distance dispersal can occur on storms. The bacteria are thought to be able to travel in the atmosphere up to 100 miles. Spread from host plants can also occur by people, equipment, animals, insects and rain splash. When infected seed is planted and emerges, bacteria ooze from leaf surface and spread through rain splashed onto other plants. A severe epidemic can occur from only a few infected planted seeds and spread in a field with favourable weather conditions. Bacteria multiply rapidly and can more than double in as little as 30 minutes. Bacteria enter plants through natural openings (stomata) and through wounds caused by hail, driving rains, wind damage, blowing soil injury, insects, or equipment injury. Hard, intense rain storms have been shown to be especially conducive to the spread and multiplication. Localized thunder cells can be the source of infection in one field but not another just a few kilometers away.

Once introduced into a plant, the bacteria easily spread systemically though the leaves, stem, pod and into seed. HB is favoured by rainfall, high humidity and moderate temperatures (18^0 - 22^0 C), while CBB and BBS thrive under high temperatures (28^0 - 32^0 C).

Symptoms
Symptoms of CBB and HB can appear very similar. Initial leaf symptoms of all 3 blights appear as small (3-5 mm), water soaked spots that later turn pale green and eventually brown. With CBB and HB, the lesions enlarge, with the center becoming dry and may be surrounded by a yellow margin. Leaves can become ragged. Pod lesions start as water soaked spots that enlarge, merge and form sunken reddish-brown blotches. Cankers can appear greasy as bacteria ooze, and later dry to form a crust.

Leaf lesions of BBS often don't appear water soaked, and are much smaller than CBB and HB. When the disease becomes systemic, tan and sunken lesions with reddish brown border develop on stems and petioles. Pods may appear bent or have water soaked lesions with a reddish brown margin.

Figure 1 . Common Bacterial Blight (CBB) mature lesions

Figure 2. Bacterial Brown Spot (BBS) - Adzuki beans

Figure 3. Bacterial Brown Spot (BBS) - Adzuki pod infection

How Effective Are Copper Bactericides?

Fungicides have no effect on bacteria blight diseases. Copper based bactericides can reduce growth of bacteria on foliage and limit spread to healthy foliage and pods. Applications are most successful when applied as an early preventative treatment during vegetative stage, because bacteria multiply and spread rapidly. Only poor to moderate control is achieved once an outbreak occurs because of the high level of bacteria inoculum usually already present in a field.

The first application should occur before symptoms appear and repeated every 7-10 days if conditions are favourable. Optimum application timing is following a rainstorm. In fields damaged by hail or violent storms, application of a bactericide can help protect plants if conditions are favourable for infection. Research has shown that copper bactericides are generally not as effective against CBB as BBS and HB.

What Else Can You Do?

1. Plant certified seed from a known source! Seed that has been grown in semi-arid regions (i.e. western grown) has very low risk of being infected.
2. Plant white beans resistant to CBB. White bean varieties are resistant to HB. Current white bean varieties with CBB resistance include OAC Rex, Lighthouse, Mist, Apex and Rexeter.
3. Streptomycin seed treatment will reduce or eliminate surface contamination, but it does not control infections in cracks or under surface of seed.
4. Do not grow beans (edible or soybeans) in the same field more than once every 3 years.
5. Tillage of infected residue will speed breakdown and reduce pathogen survival. Bacterial pathogens survive longer on bean residue left on the surface after harvest.
6. Sanitize cultivators, sprayers or other equipment between fields.
7. Stay out of fields while foliage is wet.
8. Avoid planting edible beans next to fields where beans were infected the previous year.
9. Closely check bean fields beginning at the mid-vegetative stage, especially during periods of high humidity. Infections following violent storms with strong winds, or hail often begin to become visible 7-10 days later.
10. Control volunteer adzuki beans.

Consider Seeding Red Clover In Spring Wheat

Scott Banks, Emerging Crop Specialist, OMAFRA

In recent research, red clover underseeded into spring wheat provided up to an extra $100/acre in grain corn yield the following year without reducing spring wheat yields!

A four year study (2009 – 2013) was initiated at the Winchester Research Station to look at the effect of underseeding red clover into spring wheat and its impact on the spring wheat yield as well as the corn yield the following year. The red clover was broadcast seeded at four different times:

1. At planting
2. At herbicide application (Zadok's 26-30)
3. Flag leaf emerged stage, (Zadok's 37-39) and
4. After wheat harvest.

Single-cut and double-cut red clover was broadcast into the spring wheat at 7 lbs/acre. Nitrogen was applied to all treatments at 90 lbs/ac in the spring wheat crop and at 100 lbs/ac in the corn crop the following year.

Results

Table 1 summarizes 3 year average corn yield for each of the previous year's red clover treatment. Based on a corn value of $4.50/ bushel, red cover added $33 - $100 per acre as compared to where no clover was underseeded in the spring wheat. As expected, red clover underseeded at earlier spring wheat stages (at planting or at herbicide application) rather than at flag-leaf or after harvest, provided more yield benefit to the following corn crop.

Due to the high yield variability the 2013 corn yield, it is not included in the above table.) Single cut red clover appears to have greater yield advantage in corn than double cut red clover, however the difference was only statistically significant in 1 of the 3 years.

Spring wheat growers are often reluctant to underseed red clover in spring wheat due to concerns that the red clover will compete and suppress the spring wheat grain yield. Table 2 summarizes the average spring wheat yield of each treatment.

Although the yield numbers showed that the inclusion of red clover slightly increased wheat yield, statistically there was no difference in yield of the spring wheat with or without red clover.

Summary

1. Underseed red clover in spring wheat.
2. The best time to seed red clover is with the spring wheat
3. Use either single cut or double cut red clover

Table 1: Average Corn Yield (2010, 2011 & 2012) following red clover underseeded in previous year at various spring wheat stages.

Treatments (Timing of Red Clover Seeding)	3 Year Average Yield (bu/ac)	Yield Difference from No Clover (bu/ac)	Additional Value of Red Clover Per acre with Corn @ $4.50 per bushel
No clover	144		
Single Cut - @ planting	167	23	$102.47
Double Cut - @ planting	163	18	$80.64
Single Cut - with herbicide	160	15	$68.96
Double Cut - with herbicide	157	12	$53.60
Single Cut - flag leaf emerged stage	161	17	$74.90
Double Cut - flag leaf emerged stage	152	7	$33.71
Single Cut - post-harvest	154	9	$39.81
Double Cut - post-harvest	157	12	$54.14

Table 2: Spring Wheat Average Yield (2009, 2010, 2011 & 2012) with red clover underseeded at various spring wheat stages.

Treatments (Timing of Red Clover Seeding)	Average Yield (bu/ac)	Yield Difference to No Clover (bu/ac)
No clover	53.9	
Single Cut - @ planting	58.4	4.5
Double Cut - @ planting	55.5	1.6
Single Cut - with herbicide	58.4	4.6
Double Cut - with Herbicide	57.7	3.8
Single Cut - flag leaf emerged stage	57.5	3.6
Double Cut - flag leaf emerged stage	57.5	3.6
Single Cut - post-harvest	59.4	5.5
Double Cut - post-harvest	58.1	4.2

Do Soybeans Require Insects For Pollination?

Horst Bohner, Soybean Specialist, OMAFRA

Soybeans are considered to be a self-pollinating legume. This means that pollen produced within a flower fertilizes the ovary of the same flower on the same plant. Therefore insects are not required to pollinate a soybean crop. Since soybean flowers do not readily attract insects like the flowers of other legumes, crosses in nature between two soybean plants are rare. Field experiments have shown that cross pollination is usually less than 1% in soybeans.
Soybean flowers are often fertilized by the time the flower opens and may occur a full day before the flower fully opens.[1] Some cultivars are entirely "cleistogamous", which means that the flower buds do not open at all and fertilization takes place with self-pollen. With some cultivars, flowers only open under the right environmental conditions. In a study of 12 soybean cultivars where both honey bees and indigenous insect populations were present, cross-pollination varied from as low as 0.09% to as high as 1.63% based on a two year average.[2] Therefore insects including honey bees are not required to pollinate soybeans and the presence of insects would not be expected to significantly improve yields.

Does A Lack of Fertilization Cause Flower Abscission?
The soybean plant produces many more flowers than will actually develop into pods. Over 80% of the flowers may abscise (fall away) producing no yield. There has been speculation that soybean flowers abscise because they have not been fertilized. However, failure of fertilization is not the cause for floral abscission since almost all abscised flowers are already fertilized and contain proembryos that have undergone two or three cell divisions.[3]

Do Insecticide Seed Treatments Result In Contaminated Soybean Pollen?
If pollinators do happen to feed on soybean flowers does the insecticide placed on the seed contaminate the pollen? Research conducted to evaluate the potential exposure of pollinators to neonicotinoid insecticides used to treat seed analyzed 560 samples from various crops for concentrations of clothianidin, imidacloprid, thiamethoxam, and their metabolites. They concluded that "there was no detection of neonicotinoid insecticides in flowers collected from four soybean tests where neonicotinoid seed treatments were being evaluated.[4]

Is There Research That Shows Bees Can Increase Soybean Yields?
Anecdotal evidence has been reported that the presence of honey bees may increase soybean yields under certain conditions. These reports are difficult to verify. There have been a few trials that showed increased yields under specific circumstances.[5] A recent study from Brazil purported yield increases of 18% from the introduction of honeybee colonies to a soybean field.[6] However, this trial was only conducted one year with limited replication, a small experimental area with a tropical soybean variety. The benefits of either cross- or self-pollination appear to be highly depend on cultivar, temperature, moisture, and the number of insects present. Studies that have shown yield increases from bees have often employed "caged" bees, forcing them to forage on soybeans or excluding them from the crop. These limited trials with unique research circumstances should not be considered representative of what may happen in an Ontario soybean field. No link between soybean yields and the presence of bees has been demonstrated under Ontario growing conditions. If bee hives are placed next to soybean fields it is important to communicate with the soybean grower. A foliar insecticide application to control soybean aphids or spider mites will cause harm to bees.

[1]Dzikowski, B. 1936. Studia nad soja *Glycine hispida* (Moench) Maxim. Cz. 1. Morfologia. Mem. Inst. Natl. Pol. Econ. Rurale 254: 69-100.

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[4]Environ Sci Technol. 2014 Aug 19;48(16):9762-9. doi: 10.1021/ es501657w. Epub 2014 Jul 23.

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[6]Marcelo de O. Milfont, Epifania Emanuela M. Rocha, Afonso Ode´rio N. Lima, Breno M. Freitas. Higher soybean production using honeybee and wild pollinators, a sustainable alternative to pesticides and autopollination. Environ Chem Lett (2013) 11:335–341

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OSCIA NEWS

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

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www.ontariosoilcrop.org
&
https://oscia.wildapricot.org

Message from the President - Alan Kruszel

Hi Folks,

Welcome to my first message as President of OSCIA. It is indeed a great honour for me to have been selected for this position! As always, your OSCIA Board, Executive and staff have been working very hard to keep the association running smoothly. The board will be getting together in early April for a Strategic Planning session. The last plan was developed ~ 5 years ago so it's about time to refresh it. If you have some comments on where you'd like to see the association headed, please feel free to contact your local provincial director who would be pleased to pass on your thoughts.

As many of you are aware, we have revamped our Grant Structure for this year. Applications are now being accepted for the Tier One (small one year demonstration type projects) and Tier Two(multi-county/district/region & multi -year research type projects) grants. We are hearing lots of discussion going on across the province and we anticipate several Tier Two applications to come in for funding. Please feel free to share your ideas on our Grant Blog @ https://osciagrants.wordpress.com Also, all the forms and guidelines can be found there as well.

Please be aware, there is limited (but substantial) funding available. For Tier One, approval will be on a first come, first served basis while for Tier Two, applications will be rated/scored and only the top projects will be approved. Deadline for application for Tier Two is March 31, 2015 so don't delay!

With 2015 being declared by the United Nations as the International Year of Soils, we all should be thinking of ways to better protect our soils. As such, our recent AGM focused a lot on soil health and we had an excellent group of speakers provide some insight on what we could be doing. Reduce or eliminate tillage, leave more residues on

the soil surface, practice better crop rotations, plant cover crops, practice 4R nutrient stewardship... the list goes on and on.

So this year, dare to be different, try something new that will benefit soil health on your farm. Get together with a few neighbours and try something different as a group, then maybe you can even get a Grant to host a plot tour so many more folks can see the innovative things you've tried. That's part of what Soil and Crop is all about!

All the best for a safe and successful planting season!

Alan Kruszel, President, OSCIA
email: alan.kruszel@ontariosoilcrop.org

OSCIA Launches Soil and Crop Sustainability Fund - $75,000 raised to date!

The launch occurred recently at the Ontario Soil and Crop Improvement Association's (OSCIA) annual meeting on February 4, 2015. The primary purpose of the OSCIA Fund will be to support applied research relating to soil and crop management. For the first initiative of the fund, OSCIA partnered with the University of Guelph to establish the Soil Health Graduate Scholarship, where funds will be used to support student research relating to improving soil health.

"We are very interested in practical, applied, on-farm research so alignment with scientists and their graduate students will benefit all parties," stated OSCIA President Alan Kruszel. "We are delighted that the Soil Health Graduate Scholarship at the University of Guelph meets a number of our objectives – including tax receipts for those who contributed to the scholarship."

"The OSCIA efforts to contribute to the Soil Health Graduate Scholarship will elevate our research capacity to support sustainable soil practices", says Dr. Rob Gordon, Dean of the Ontario Agricultural College. "Healthy soils are critical for optimal crop production, environmental protection, and support sustainable communities."

With 2015 declared 'International Year of Soils' by the United Nations, it was only fitting that OSCIA seize the opportunity to launch the Soil and Crop Sustainability Fund. For several years, the OSCIA board has been investigating opportunities for individuals and organizations to invest in projects related to OSCIA's mission to "facilitate responsible economic management of soil, water, air and crops through development and communication of innovative farming practices."

In launching the fund, an invitation to become a Founding Partner went out to Past-Presidents of the association. The response was outstanding with the launch raising $75,000.

"Once word got out about what we were planning, several local and regional soil and crop associations wanted to get involved," Kruszel added. Several friends of the association have also contributed.

The OSCIA is most appreciative of support from the Founding Partners and looks forward to the enhanced commitment by University of Guelph for soil health research and student training.

OSCIA Soil Champion Award

Dean Glenney, a cash crop farmer from Haldimand county is the second 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 soil management practices.

The OSCIA Soil Champion Award was given to Dean for his exceptional career accomplishments in building and promoting soil health within the agriculture industry.

Dean's unique approach to growing corn and soybeans using what he calls "fence row farming" has been turning heads in recent years. It has also won him a slew of awards from Dupont-Pioneer corn yield champion to Halidmand County Farmer of the Year, to Haldimand Farm Enterprise of the Year, as well as National No-Till Association Soil Practitioner of the year, and now he's been named the 2015 Soil Champion by OSCIA.

Left to Right: Andrew Graham, Lillie Ann Morris, Dean Glenney (recipient) and Alan Kruszel

Do you know someone worthy of the title Soil Champion?

The submission deadline for the 2016 Award is April 30, 2015.

For the application form and more details, visit:
www.ontariosoilcrop.org/en/resources/sca.htm

2015 International Year of Soils

"Dirt: Soil Health and what is at stake" - David Montgomery

"A nation that destroys its soils, destroys itself," says Dr. David Montgomery, quoting Franklin D. Roosevelt as he kicked off the OSCIA Annual General Meeting in London this past February. Dr. Montgomery is a geologist at the University of Washington and is the author of the book *Dirt: The Erosion of Civilizations*.

"Soil is a strategic resource that we don't tend to talk about as a society," he argues. "We tend to talk about oil or water. But as a species that makes its living by farming the soil, we simply cannot afford to degrade it at a global scale."

He believes that soil erosion is the most under-appreciated environmental crisis that we are facing in this century and provides some alarming statistics as he summarizes a 1992 study: "Over the last 40 years soil erosion and degradation has caused farmers to abandon about 430 million hectares of arable land, an area equivalent to about one-third of all present cropland. The estimated rate of world soil erosion in excess of new soil production is 23 billion tons a year or about a 0.7 percent loss of the world's soil inventory each year (Pimental, et al.)"

Montgomery states that historians have long believed that the demise of civilizations was based on deforestation that led to soil erosion. But he argues that the problem was not the axe, but the plow. "The plow fundamentally altered the balance between soil production and soil erosion," he says.

His book carefully traces the rise of the plow and the fall of civilizations over the past 10,000 years. He notes that civilizations lasted for periods of 500-1000 years, which is the amount of time it would take for the area's top soil to be lost and degrade. He notes that the longest lasting civilizations are those that sprung up in floodplains, like Egypt. Montgomery argues that Sudan and Ethiopia subsidized the growth of Egypt for centuries, through sending their topsoil down the Nile.

Montgomery recently compared 1,400 studies on erosion rates in both nature and agriculture, and found that an average conventionally-tilled field will lose an average of 3.939 mm of top soil a year; whereas a natural area loses 0.053. Bare soils don't exist in nature, he argues. "Nature covers soil with plants and plants build soils."

However, he found that the rates of erosion under no-till systems are more similar to those in nature, which is in balance to the rate of soil production. He concludes that, "agricultural soil loss is not because humanity farms but arises from *how* we farm – from using the plow."

Montgomery continues with examples from his next book, which will outline how civilizations around the world were successful in *building* soil. "There are really good examples in Europe and South America," he says. "The Dutch built some of Europe's most fertile soils on top of what was essentially beach sand that they reclaimed from the ocean."

"How did they do it?" he asks. "Intensive mulching, the return of organic matter to the land and the promotion of life in the soil."

Montgomery says he is convinced that building soil health is the secret weapon that will address some of society's biggest challenges of our century.

Firstly, he notes that commercial fertilizer use has driven global yield increases but that we won't have access to cheap fertilizer in a post-oil world. Soil fertility will need to be built through other means.

Secondly, he argues that agriculture is currently contributing to global carbon emissions, but there is potential for it to do the opposite. He introduced the concept of biochar, which is made from burning organic matter in a low oxygen environment. This produces energy while creating an inert form of carbon (charcoal) that doesn't degrade, and provides a net carbon reduction of about 20%. It is an energy source that is actually carbon *negative*, he says, and it will endure in soils for centuries.

Next, he argues that restoring soils in urban environments will solve public health issues. There is potential for city dwellers to grow their own vegetables, which will benefit both their social and nutritional well-being.

Lastly, he argues that the environmental crisis stemming from a loss of biodiversity can also be addressed by building soil health. "It all starts with the ground beneath our feet."

And Montgomery goes on to make soil political. "Humanity as a whole has a stake in the outcome," he says. "I can't think of any other one thing to suggest to senior policy makers that would help solve the full palette of environmental problems that we face in this century."

"We have to stop treating soil like dirt," Montgomery concludes, as he commended the members of the OSCIA for their work on building and researching soils here in Ontario.

Mel Luymes, Heartland RCC

ATTENTION SEED GROWERS

~ ~ ~ ~ ~

OSGA Field Day - 'Seed Care'
at Connell Seeds
R.R. #3 Palmerston, ON

~ ~ ~ ~ ~

June 30, 2015

~ ~ ~ ~ ~

New Technology on Site:
Low Temperature dryer
Planters modified for seed dust control (deflectors)
New Seed Treatment Plant under construction

Water Flow Monitoring Systems Investigated

OSCIA partnered with the Environmental Management Branch Engineers of OMAFRA to research and trial a number of precision water flow sensors for the accurate measurement of field tile water flow and volume. Nine different types of water flow sensors with data loggers were tested. Based on the testing results, the best water flow sensor available for these objectives was determined.

The successful water flow sensor and data logger:
- operated in partially filled pipes
- operated in low level water with low velocity
- operated in extreme weather conditions (-20C to 40C)
- required minimal supervision
- able to record data and transmit data remotely
- able to trigger automatic water sampler
- able to work on 12 volt batteries
- does not have any moving parts to measure and record water flow data all year
- able to measure water flow at a minimum depth of 2 inches with a minimum of 0.03 m/s;
- able to measure depth of water at a minimum depth of 1 inch

The benefits of this equipment are:
- greater time efficiency
- greater applied in-field accuracy
- defendable data collection
- improved defendable results

The use of this water flow sensor is essential for improved science based defendable policy development. From the testing results, the best sensor and data logger was determined to be the Hach FL900 with the electromagnetic flow sensor Flo-Tote3. The results of the testing and data logger review has resulted in adoption of the same technology by Agriculture and Agri-Food Canada scientists and some Conservation Authority technicians.

This system allowed the study of phosphorous losses from three on-farm field scale agri-environmental projects within Ontario. Operated all year round, this research provides more thorough and complete picture of phosphorus losses moving beyond agricultural fields.

Harold Rudy, Executive Officer, Research and Business Development

2014 CROP ADVANCES

Premier Website for Applied Research on Soil & Crop management

2014 Crop Advances is now available on the OSCIA website at:

http://www.ontariosoilcrop.org/cropadvvol11.htm.htm

New OSCIA Grant Structure Brings New Opportunities for Local/Regional Associations

2015 brings the introduction of a new grant structure. After careful review of past accomplishments, comments received from members, and consultation with Ministry representatives, the new structure will present enhanced opportunities for local and regional associations to engage with project partners in a broad array of one-year activities including education and demonstrations, and three-year in-depth investigations involving applied research.

Four components comprise the new structure. Two remain virtually unchanged from previous years (though there are new application and claim forms) and include the Regional Communication Grant, and the Seed Fair Grant. It is the new one-year Tier One Grant, and the three-year Tier Two Grant that are garnering considerable attention.

Tier One offers up to $1,500 per county/district or region per year, at 100% reimbursement of eligible costs. Multiple submissions can be made throughout the year until the maximum per local/region is reached, or funding is fully committed. Typical projects include one-year field trials, bus tours, and guest speakers at events. Pre-approval of proposed projects is required.

The opportunities are really ramped up in Tier Two. Multiple local and regional Associations are encouraged to collaborate on three-year projects that fit into one or more of the four focus areas. This is a competitive process; a few large-scale projects will be selected for funding based on merit. Up to $30,000 per project per year is available. The Tier Two submission deadline is March 31, 2015

Go to the blog (**https://osciagrants.wordpress.com**) to find out more and retrieve the applications. You will also find a list of responses to frequently asked questions, and a long list of suggested topics. Look them up, continue the discussion, and get planning!

Andrew Graham, Executive Director

Farmland Health Check-Up

In April the Farmland Health Check-Up will become available to farmers in the Lake Erie, Lake St. Clair and southeast shores of Lake Huron Watersheds. Offered at **no cost to the farmer,** this program takes its cue from the Environmental Farm Plan but is focused entirely on soil and pollinator health. OMAFRA and OSCIA are partnering with Certified Crop Advisors to deliver this initiative.

The Check-Up will identify Best Management Practices (BMP) to strengthen soil health. Merit-based cost-share will be available in 2015 to support the implementation of these BMPs.

Watch the OSCIA website for details about this exciting opportunity www.ontariosoilcrop.org/en/programs.htm or email GLASI@ontariosoilcrop.org.

Christine Schmalz, Environmental Program Manager

Neonicotinoid Seed Treatment Efficacy Study
On-Farm Corn and Soybean Trials - 2015

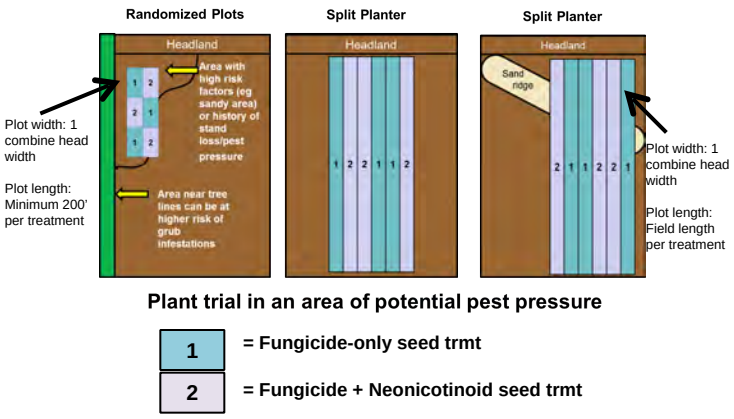
Objectives:

- To determine the key early season pests, develop risk maps, and measure the efficacy of neonicotinoid seed treatments in corn and soybeans in Ontario.
  - ☐ If you participated in the 2014 corn study, please place your 2015 soybean trial in the same field as your 2014 corn trial. The soybean trial is not required to be planted on the exact same spot as the 2014 corn treatments; however, this is desired if this is possible with your equipment.
  - ☐ In order to continue our study of Ontario corn pests, are we are asking participants to plant a corn trial in 2015 as well if possible.

Study Design:

- Each trial contains at least **6 plots** (**2** treatments of the same hybrid/variety repeated **3** times)
  - Trt 1: Fungicide-only
  - Trt 2: Fungicide + Neonicotinoid (e.g. Poncho or Cruiser)
- Trial planted and harvested by OSCIA members. Planter type does not matter.
- Early season assessments done by UGRC/OMAFRA – 2 early season field visits will be completed
  - Plant stand & vigour
  - Soil sample/Crop History/GPS
  - Pest presence/identification
  - Crop pest damage rating
- Yield data to be collected by OSCIA members (dry bu/ac)
  - Each **individual** plot weight measured using calibrated yield monitor or weigh wagon
  - Submit yield results to onneonicstudy@gmail.com within 2 weeks of harvest

Example Planting Configurations:



Plant trial in an area of potential pest pressure

1 = Fungicide-only seed trmt

2 = Fungicide + Neonicotinoid seed trmt

UoG and OMAFRA staff will carry the following checklist when making the first field visit to determine if the site is suitable to be included in the study:

- ❑ Directions, field map and accurate record of planting
- ❑ Plot corners clearly marked and of minimum size
- ❑ Fungicide only and insecticide treated seed of same corn hybrid or soybean variety
- ❑ Both planted same day with same planter
- ❑ 3 replications, following a randomized scheme or using split-planter configuration
- ❑ Plots not planted in a headland
- ❑ Plot located in highest pest risk area of field

NOTE: Should any one of these items fail then the site will be excluded.
Top quality, accurate data are required and poor quality data will harm the objectives.

To Participate In This Study:

- Identify an appropriate field location.
- Contact your local seed supplier as soon as possible to determine the availability of insecticide treated and fungicide only treated seed of the same corn hybrid/soybean variety for your maturity area.
- If insecticide treated and fungicide only treated seed of the same hybrid/variety is not available from your preferred supplier, check with other seed suppliers in your area.
- Contact Jocelyn Smith to register your field location: onneonicstudy@gmail.com

THANK YOU for your participation and attention to detail in this very important study.

Jocelyn Smith
Research Associate, Field Crop Pest Mgmt
University of Guelph Ridgetown Campus
519-674-1500 x63551
Fax 519-674-1555

UNIVERSITY of GUELPH
RIDGETOWN CAMPUS

2015 International Year of Soils

Growing Forward 2

A federal-provincial-territorial initiative

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

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

Biosecurity Workshop

At this one-day workshop, an experienced veterinarian 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 Webinars

Looking to keep up to date on the latest food safety practices and help strengthen your Growing Forward 2 application? Join us for any or all of the food safety workshops, covering a variety of important food safety topics. All workshops are online as webinars, taken from the comfort of your home or business.

Workshops and Webinars in your area

Tentative workshop dates & counties for Heartland and Georgian Central Regions

Most of the workshop locations will be determined closer to the workshop dates and the registered producers will be notified of the location.

Lois Sinclair - Regional Program Lead
519-955-3139 email: lsinclair@ontariosoilcrop.org

GYFP Workshop Schedule

Angus	Day 1 - April 15	Day 2 - April 22
Fergus	Day 1 - May 5	Day 2 - May 12

EFP Workshop Schedule

Markdale	Day 1 - March 18	Day 2 - March 25
Wingham	Day 1 - April 2	Day 2 - April 9
Elora	Day 1 - April 14	Day 2 - April 21
Utopia	Day 1 - May 13	Day 2 - May 20

Traceability Workshop Schedule

Markdale	March 24

Register Online at www.ontariosoilcrop.org

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JOIN YOUR LOCAL FORAGE MASTER COMPETITION

- Be an OSCIA member
- Have a 10+ acre field of legume based mixture
- Provide an up-to-date soil test report
- Provide sample of hay/haylage from 1st cut
- Provide the seed variety
- Meet with the judge prior to 2nd cut

1st Prize: $300 Pickseed gift certificat & gloves, $75 analysis through SGS/Agri-Food Labs

2nd Prize: $150 Pickseed gift certificate & gloves

3rd Prize: $50 Pickseed gift certificate & toque

Winners have the option to advance to the provincial selection and the Royal Agricultural Winter Fair!

Waterloo: Contact Lynn Strenzke
519 648-2436 | wl.strenzke@hsfx.ca

Wellington: Contact John Beer
519 848 2503 | jonshar@bell.net.

Perth: Contact Thelma Smith
519-271-5190 | eandtsmith@golden.net

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