PRAIRIE STEWARD

FARMING FOR YOUR FUTURE ENVIRONMENT

The Newsletter of the Saskatchewan Soil Conservation Association Issue 72—Winter 2019

ENHANCE SOIL HEALTH WITH FERTILIZER?

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We can agree that healthy soil is essential for sustainable and productive agriculture. While we have a general understanding of what soil health means, it can be difficult to define and even more difficult to agree on the best was to measure it. A definition certainly includes aspects of physical, chemical, and biological properties of soil. Some proponents envision an undisturbed prairie or forest soil as providing the archetype of an ideal healthy soil. However, in real life, agriculture by its very nature is a disruptive human activity that we engage in to meet our existential need for farm products. Just harvesting a crop will subtly change soil properties. We can agree that maintaining soil in its top possible condition will require careful stewardship, conservation, and greater appreciation of its unreplaceable value.

Chemical Properties

Soil pH is probably one of the most important attributes of a healthy soil. Soil acidity is especially important for determining both the microbial population and the distribution of microbial community structure. For farmers, soil acidity presents a pernicious attack on crop yields that is generally best addressed by application of lime. Applications of ammonium and urea fertilizer, when not buffered, gradually lower soil pH. When soil pH drops below 5, microbial biomass generally decreases. However, when pH is maintained near neutral, the input of N fertilizer does not seem to have longterm negative effects on microbial biomass in annual cropping systems.

Inside This Issue:

Physical Properties

Soil compaction is damaging for health, and is often exacerbated by the traffic of heavy equipment across the field at an inappropriate time. Certainly, a soil in good physical condition allows better root growth and recovery of nutrients and water. An interesting study from long-term research showed that root access into a soil is an important part of improving P availability to crops[1]. The importance of soil microaggregates is becoming more appreciated[2]. Root channels also make an important contribution to water infiltration that improve soil properties and reduce runoff.

Biological Properties

Many short-term studies have been conducted to measure the effect of fertilization practices on soil biology. Most of this work shows that

nitrogen (N) fertilization has little impact on microbial communities[3] apart from any acidity that may be produced during nitrification. However, long-term studies are needed to provide a full understanding. A recent literature review concluded that long-term N fertilization of agricultural soil results in increased microbial content, most likely due to associated greater input of organic carbon (C) resulting from higher crop productivity. The measured increases in soil microbial biomass carbon (Cmic) in fertilized soils under annual crops contrasts with some observations in natural ecosystems, where N inputs may decrease Cmic[4]. Another recent report from long-term research reported that applications of organic manure (which is more diverse in nutrient content and organic content than fertilizer) resulted in strong enhancement in soil microbial biomass and diversity[5]. The use of inorganic fertilizers alone resulted in a slight increase in microbial biomass, but strongly enhanced the activity of specific soil enzymes. They concluded that a combination of manures and inorganic fertilizers may be the most beneficial for microbial health. However, the authors do not suggest where the large quantities of manure could be obtained or where the nutrients in the manure likely originated. An unanswered question is how much biological activity is optimal for soil health. Farming practices that support soil health provide benefits but may also come at a price (such as yield penalties). For example, tillage generally has a negative impact on earthworms, but may be beneficial for improving the crop root zone, incorporating nutrients deep in the profile, and reducing the susceptibility of some nutrients to be lost through runoff. Too frequently it is parroted that any fertilizer inputs are automatically detrimental for soil health. It's just the opposite. When properly managed, appropriate addition of fertilizer stimulates plant growth and results in greater biomass returned to the soil, a healthy plant canopy that quickly covers and protects the soil, and an extensive root system that provides a habitat for beneficial organisms. Many of these relationships have received insufficient attention. Instead the discussion is too often dominated by polarizing debates over the merits of organic or inorganic nutrient sources. There is no doubt that the proper use of nutrients has a great benefit on soil health and helps us to sustain agricultural production. Let's use whatever nutrient resources are available to carefully protect and enhance our valuable soil resources.

References

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3. Yu, H. et al., 2016. PLoS ONE 11(3):e0151622. doi:10.1371/journal.pone.0151622
4. Geisseler, D. and K.M. Scow. 2014. Soil Biol. Biochem. 75:54-63.
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ASSESSING THE COST OF SALINITY

Larry Durand, PAg

It's no secret that farming profitably in this day and age doesn't happen by accident. Farmers need to do everything right from production, marketing, and proper financing to keep profitable and even then it can be challenging. In recent years, increasing salinity problems in many areas has caused challenges on the production side and has consequently adversely affected profitability. Several years of excess moisture has resulted in higher water tables which bring more salts closer to the soil surface where they negatively affect crop yield and quality.

On most cropland, producers tend to farm right through these saline areas, applying seed, fertilizer, crop protection products and all other inputs. There is no doubt that most producers realize that they will not get adequate yield returns in these areas to cover their input costs but, especially where large equipment is concerned, it just seems easier and more efficient to treat saline areas the same as more productive areas. However, I suspect that most producers have not stopped and estimated what farming these areas actually costs their farms.

As an agronomist, I try to find ways to assist producers in making crop management decisions that will, among other things, make them more profitable. With this in mind, I attempted to place a dollar value on the cost of farming marginal land such as these saline areas.

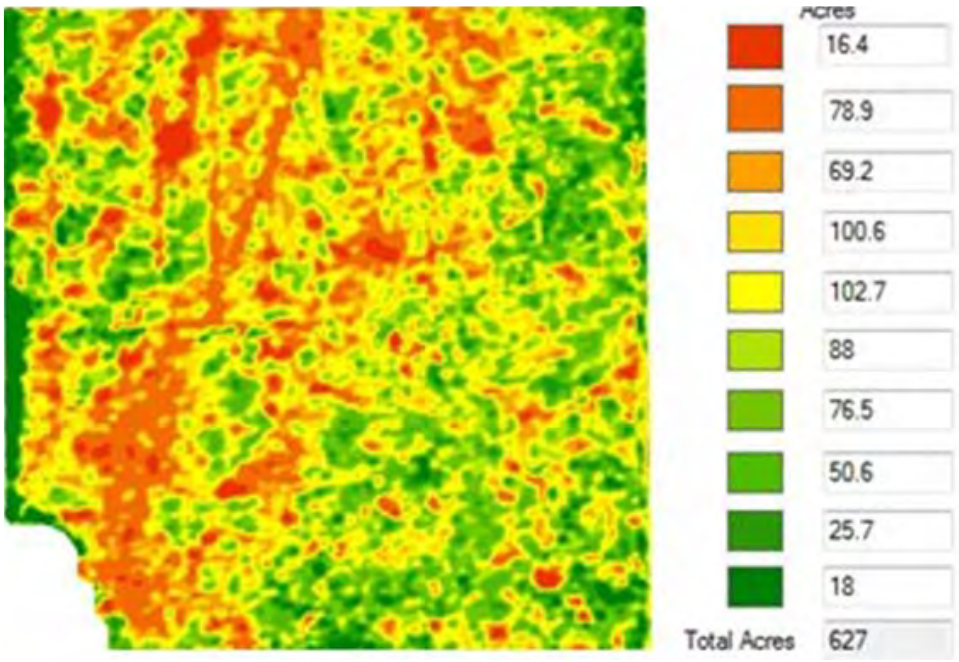


Figure 1. Approximately 3% of acres with extreme salinity with virtually no yield and another approximately 8% of acres with yield significantly impacted by salinity.

Figure 1 illustrates a field located in central Saskatchewan. The dark green areas in this processed map are the most extreme saline areas of this field with salinity decreasing going from green to yellow and red. The darkest green areas (18 acres) typically have no yield each year regardless of the crop grown. The next two areas, combining for another 76.3 acres, typically have some production which varies depending on crop sensitivity to salinity and how favourable the growing conditions are. Barley will grow reasonably well whereas crops like canola and peas will usually struggle. But there is still a significant yield penalty for all crops in these areas.

One way to manage these saline areas is to convert them to a salt-tolerant forage. Using information published in the Saskatchewan 2017 Crop Planning Guide, we can begin to do an analysis of the costs and revenues associated with making this shift.

Let's begin with the following example. The field in Figure 1 is located in the Black Soil Zone. In our example we will convert only a portion of the most saline areas to forage. For practical purposes, the areas we will convert are along the field margins where they won't be a nuisance to work around when conducting other field operations. These areas comprise approximately 8% of this 627 acre field which is about 50 acres. According the Crop Planning Guide, a typical wheat crop in the Black Soil Zone will yield 54 bushels/acre (Table 1). At $6.01/bushel the total revenue is $324.54. Typical variable costs for this same wheat crop are $240.00/ac yielding a net revenue of $84.54/ac (note that fixed costs are not a part of this analysis).

After removing these 50 acres, we can expect the average yield on the remaining acres to be higher. In my experience, this can easily increase overall yield average by 3 bushels in a wheat crop. If we consider the cost of establishing the forage at $75.00/acre, assume the stand will last 10 years, and average that over the entire field the cost increases are only $0.60/acre ($75.00/ac X 50 ac/627 total acres/10 years). Table 1 shows that, by removing 50 acres from production, we can expect to have a decrease of total gross revenue of $5824. However, this is more than offset by the decreased variable costs resulting in a net benefit of over $5800 on this section of land.

Table 1. Economic analysis of converting saline acres to forage in a wheat crop.

	Before Forage	**After Forage**	**Difference**
Acres	627	577	-50
Estimated Yield (bus/ac)	54	57	
Estimated Price ($/ac)	$6.01	$6.01	
GROSS REVENUE ($/ac)	$324.54	$342.57	$18.03
TOTAL GROSS REVENUE ($/ac)	**$203,486.58**	**$197,662.89**	**-$5,823.69**
Forage establishment	$0.00	$0.60	
Seed & Treatment	$30.44	$30.44	
Fertilizer	$52.06	$52.06	
Crop Protection Products	$97.82	$97.82	
Equipment Fuel & Repairs	$23.91	$23.91	
Custom Work/Hired Labour	$19.00	$19.00	
Crop Insurance	$6.48	$6.48	
Utilities & Misc.	$4.83	$4.83	
Interest Costs	$5.46	$5.46	
TOTAL VARIABLE EXPENSES ($/ac)	$240.00	$240.60	
TOTAL VARIABLE EXPENSES	**$150,480.00**	**$138,826.20**	**-$11,653.80**
REVENUE OVER VARIABLE EXPENSES	**$53,006.58**	**$58,836.69**	**$5,830.11**

Conducting the same analysis on barley which is less sensitive to salinity than both canola and peas, we find that there is still a slight financial benefit in the barley crop and more substantial benefits in the latter two crops (Table 2).

Table 2. Financial benefits of converting saline acres to forage from barley, canola, and pea crops.

	Barley	Canola	Pea
Yield Change (bus/ac)	2.3	3.1	3.4
Total Gross Revenue Change	-$ 9,088.06	-$ 3,505.15	-$ 1,086.89
Total Variable Costs Change	-$ 11,822.80	-$ 13,149.80	-$ 11,822.80
REVENUE OVER VARIABLE COSTS CHANGE	**$2,734.74**	**$9,644.65**	**$10,735.91**

Viewing this analysis, it quickly becomes clear that farms can improve their bottom lines quite easily with the introduction of a bit of forage in targeted areas. It should also be noted that the analysis did not include any revenue for the sale of this forage. This was deliberately omitted recognizing that there may not be a local market for forage in all areas. However, if there is a market available, producers can easily add on some revenue to this analysis to reflect this. Also, there are a number of conservation programs available to producers who want to convert cropland to perennial forage. This could potentially reduce the costs of establishment.

Besides the financial benefits of converting marginal acres to forage, there are a number of other benefits that are difficult to place a price on. There are many environmental benefits including avoiding over-applying crop protection products and fertilizers, having healthy riparian areas, providing wildlife habitat, and increased carbon sequestration. Agronomically, producers may see a decrease in problem weeds such as kochia and foxtail barley and, over time, a well-established forage can draw down water tables along with associated salts.

Although it is obvious that there are some significant potential financial benefits demonstrated in these analyses, caution should be exercised in taking these numbers at face value. Every farm is different regarding the degree of salinity on fields, what typical yields are, and what costs of production are. However, the example presented here will hopefully motivate producers to try and estimate what the true costs of salinity are on their farm.

SSCA STUDENT MEMBERSHIP

The SSCA now offers a “Student Membership” for a fee of just $10 to encourage students to learn about our organization and its role in Saskatchewan’s history of soil conservation, and perhaps to contribute to its future goals. This membership is available to students at either undergraduate or graduate levels, and also allows them to attend the annual SSCA conference for the membership price offered to all SSCA members.

If you know any students who may be interested in this offer, please direct them to the Student Membership Form under “What’s New” on our website at http://ssca.ca/images/pdf/Student_Membership_Form.pdf.

PRAIRIE SOIL CARBON BALANCE PROJECT – PHASE 4

(or "How to Sample 90 Sites Across Saskatchewan in Three Weeks")

The cropland "Prairie Soil Carbon Balance" (PSCB) research project was established in 1996 in part to answer long-term evaluations of soil organic carbon (SOC) change such as whether or not western Canada soils are losing or gaining SOC in absolute terms (i.e. not relative to a baseline) and also whether SOC change is different on commercial farm fields as in small-plot experiments. The cropland PSCB research project was originally a collaborative venture of Greenhouse Gas Emission Consortium (GEMCo), Agriculture and Agri-Food Canada (AAFC), and Saskatchewan Soil Conservation Association (SSCA).

In 1996, scientists within the PSCB installed a network of 137 benchmarks on commercial farm fields that were converted to direct seeding. Sites which still remained in the network were resampled in 1999, 2005, and 2011 to determine the overall changes in SOC. (The report from the 2011 PSCB project can be read on the SSCA website here: http://ssca.ca/images/new/PSCB.pdf).

Due to our work with the bureaucrats working on the government's climate change and carbon pricing strategy, the SSCA's Carbon Committee, along with our support groups, felt it was extremely important to continue the PSCB research project to add to the knowledge about how land management practices continue to affect both SOC removals and sequestration. Our application for funding through the Agriculture Development Fund (ADF) was only approved in January, so we had to scramble to get things in place for the spring sampling season.

The first step was to contact the landowners of the original 137 sites to get permission to take samples from their land. By 2011, only 82 of the original 137 sites were available to be resampled, and we needed to keep as many of them as possible to have a large enough dataset. SSCA 1st Vice-President, Mark Nickolayou, took on the challenging task of finding the current land owners – challenging because some land had changed hands numerous times, many phone numbers on our spreadsheet from 2011 were out of service or were fax lines, some producers went south for the winter, etc. A late spring worked in our favour for this project, however, and we finally had 90 landowners who agreed for their sites to be sampled.

Then, two sampling crews were tasked with travelling in punch trucks to find the buried site locators and take core samples at the 90 sites, from Alameda in the southeast to Dorintosh in the northwest – all within a tight three-week period, after the frost was gone (mostly) and before seeding (mostly). (See Figure 1)

Team AAFC – Elijah and Blair.
Sampling pros, selfie beginners.

Team U of S – Ryan and Ranjan.
Out standing in their field.

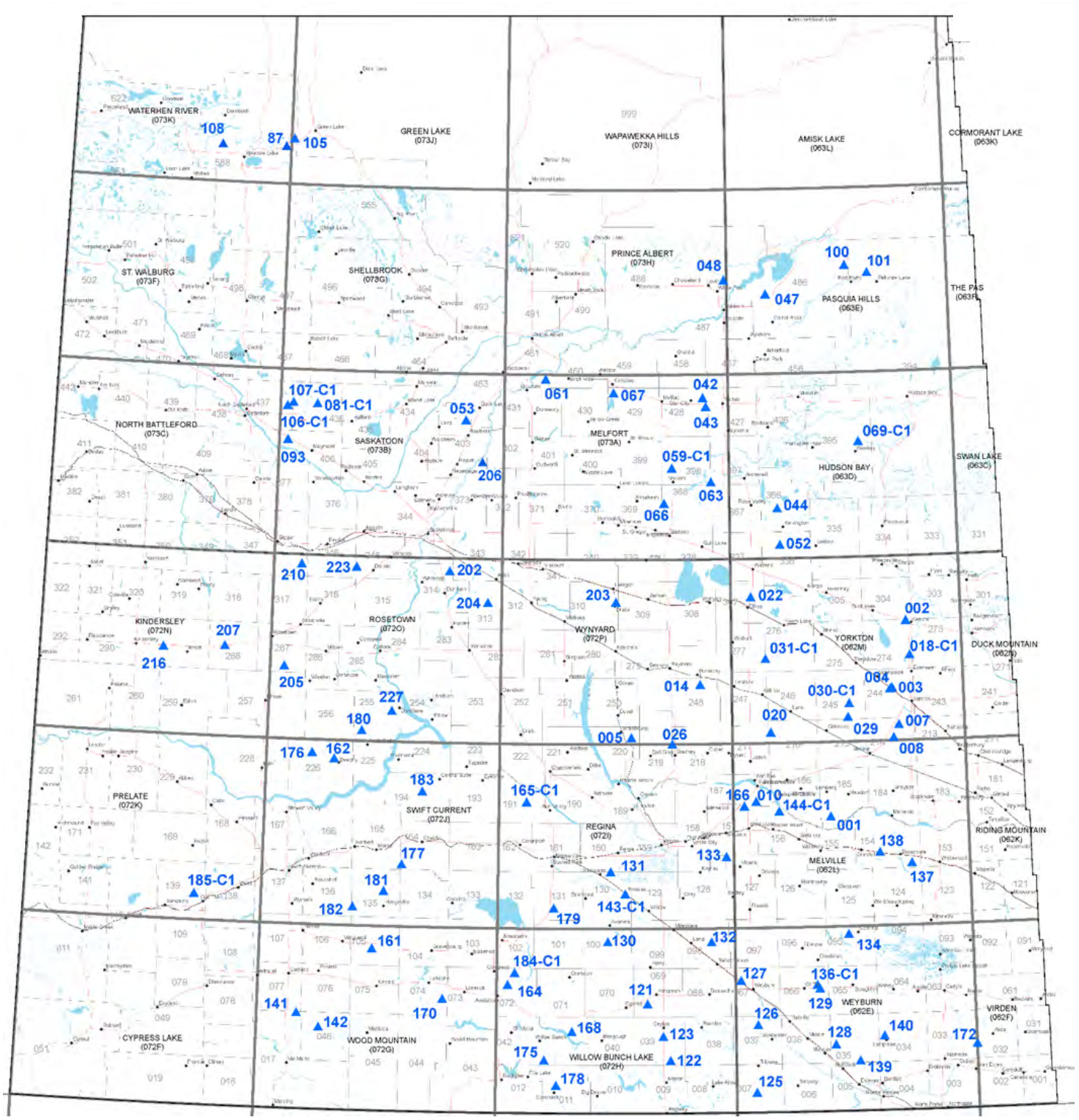


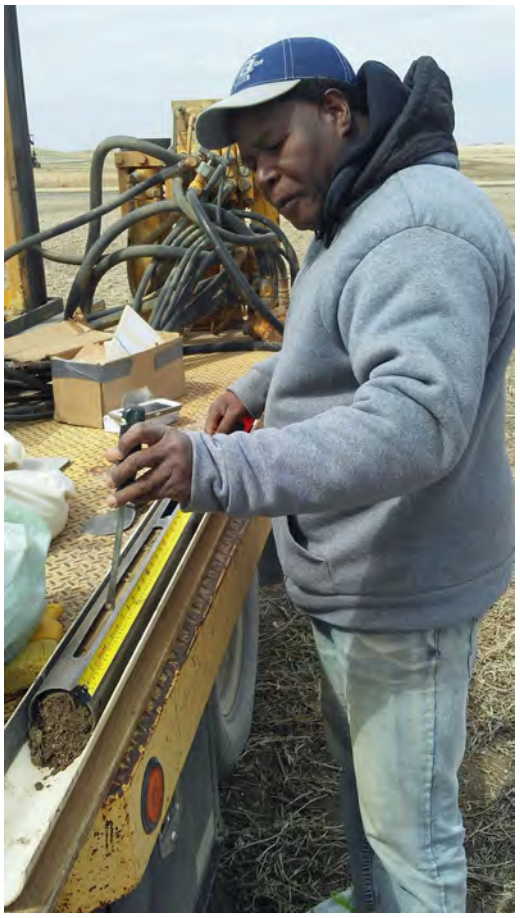
Figure 1: Map of the PSCB-Phase 4 sites that were sampled in the spring of 2018.

This research project is large and requires the cooperation and expertise of many people:

- project administration by the SSCA
- cooperator contact by Mark Nickolayou
- soil sampling by the AAFC team and the U of S team
- overall technical/scientific operations led by Dr. Brian McConkey of AAFC
- additional sampling and testing led by Dr. Jeff Schoenau with the U of S
- the 90 landowners who gave their permission for the sampling to take place on their land

GPS is crucial to finding sites after all these years.

Typical site with the sampling grid marked out.



Some photos from life on the road with the sampling crews…

Sometimes you find little surprises – like ice or earthworms.

Site 008 – Orthic Black Chernozem (Oxbow Association) – Textbook Ap, Bm, Cca and Ck Profile.

The Prairie Soil Carbon Balance—Phase 4 research project would not be possible without the generous joint funding from ADF, SaskPulse, SaskCanola, SaskWheat, SaskBarley, SaskFlax and SaskOats. We are thankful for their belief in and support of this project.

SSCA COVER CROP FIELD DAY 2018

Jocelyn Velestuk, MSc, PAg, SSCA 2nd Vice-President

AUGUST 9TH, 2018
COVER CROP FIELD DAY

Bangor Hall, Bangor, SK

9:30AM – 4PM

The SSCA received funding for a two year ADOPT (Agriculture Demonstration of Practical Technologies) project focused on cover crops that began in the Fall of 2017. As part of the project, the SSCA hosted a cover crop field day on August 9, 2018 to highlight findings so far. The objectives of the ADOPT project are:

1. To evaluate the benefits of polyculture cover crops for enhancing soil biological diversity, activity and nutrient cycling.
2. To identify and demonstrate the effect on soil health with long-term crop rotation that includes both polyculture cover crop and annual cropping.

Fall soil sampling took place in October of 2017. Four polyculture forage fields were chosen for the project based on a different stage each field is at in a multi-year crop rotation. One conventionally farmed field was chosen as a benchmark to compare the fields that had polyculture forage crops. Soil samples were analysed using PRS (plant root simulator) probe analysis to obtain soil supply rate of nutrients in functioning soil. Soil samples were also taken in Spring 2018 and were sent for conventional soil analysis as well as the Haney Soil Health test.

The SSCA cover crop field day began with a line-up of speakers and 43 people in attendance at the hall in Bangor, SK (about 45 minutes south of Yorkton). SSCA Vice-President, Mark Nickolayou, kicked off the day with an introduction to the SSCA.

Next on the agenda was Garry Richards, SSCA Director, who spoke about his family's farm and about how they have embraced regenerative farming practices and holistic farming as a focus in their operation. Garry explained how low-input farming can be profitable long-term, and part of that is improving the functioning of the soil and making decisions that better not only the profitability of the farm, but also family life and the long-term sustainability of the farm. These decisions on Garry's farm include growing polyculture crops for grazing cattle in between growing cash crops.

Jocelyn Velestuk, an agronomy consultant and SSCA Director, presented on the findings from the ADOPT project so far. Four sites were sampled as part of the demonstration project; each site in a different stage of the polyculture rotation. As an example, on one site barley was grown following a 2-year grazed polyculture crop. This site had a higher available nitrogen supply compared to other sites, demonstrating that a flush of nutrients (mainly nitrogen) is available for subsequent crops following a grazed polyculture cover crop in this demonstration. Polyculture crop roots plus manure from grazing livestock increase microbial available organic matter and enhance microbial activity as shown by results of the Haney Test. Results on the long-term conventional land has a higher total organic carbon level, however, the respiration data points to the polyculture cropped land having more microbial available carbon.

Dr. Kate Congreves from the University of Saskatchewan wrapped up the morning presentations with one on soil health that included some results of ongoing research and the direction of her next soil health projects, and outlined four principles of soil health:

1. Maximize continuous living roots.
2. Minimize disturbance.
3. Maximize biodiversity.
4. Maximize soil cover.

Dr. Congreve's research on soil health is exploring the effect of different management practices on soil quality measurements including different chemical, microbial, and physical properties. She is finding that soil amendments (including manure, biochar, compost, etc.), cover crops, and zero tillage all have positive effects on soil chemical properties, while soil amendments had a strong effect on the soil physical component. Dr. Congreves noted also that adding a carbon 'food' source to the soil system can prime the microbes to increase activity. She stressed the importance of farmers sharing their information on soil health with the research community and vice versa. Dr. Congreve's work on developing soil health indices for the Prairies is greatly anticipated!

After lunch, when the temperature soared well past 30 degrees, the field day attendees and speakers visited some nearby sites from the ADOPT project at the Richards Family Farm and Livestock. Everyone was able to observe the soil profile from a large pit dug in one of the sites. There were great discussions about the practicalities and logistics of doing cover crops, including questions about weed control and seeding.

It was a great day of networking among farmers with different operations, all of whom have the common goal of improving the health of their soil. SSCA looks forward to continuing conversations within the soil health community and to delivering soil health information to members. To learn more about soil health, please contact the SSCA (directors' email addresses listed on the next page) or Dr. Congreves at the College of Agriculture (kate.congreves@usask.ca).

The project was supported by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canada – Saskatchewan Growing Forward 2 bi-lateral agreement.

The cover crop field day was also generously sponsored by the following organizations:

2018 SSCA BOARD OF DIRECTORS			
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2018 SSCA CONFERENCE SPONSOR ACKNOWLEDGEMENT

We would like to acknowledge and thank our 2018 Conference Platinum Sponsor, SaskCanola, without whose support the SSCA would not be able to host this valuable event.

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SSCA's mission is "to promote conservation agriculture systems that improve the land and environment for future generations."

SSCA's vision is "to be the recognized driver and facilitator of change that leads to conservation agriculture being practiced on prairie agriculture land."

Disclaimer: The opinions of the authors do not necessarily reflect the position of the Saskatchewan Soil Conservation Association.

CONFERENCE HOTEL – BLOCK OF ROOMS FOR SSCA MEMBERS ONLY

The Comfort Suites Regina (http://www.comfortsuitesregina.com/) is the official hotel for the SSCA conference speakers and attendees. This modern hotel is conveniently located off Highway 11 at 4300 Diefenbaker Drive, and 5 minutes from our conference venue, the Turvey Centre. There is a cardio centre, a pool with a waterslide, a hot tub for relaxing after a long day, parking and Wi-Fi is free, and a great hot breakfast buffet is also included!

Rooms with either one king bed or two queen beds are available.

SSCA Members qualify for a reduced rate of **$132 per night** (before taxes and fees).

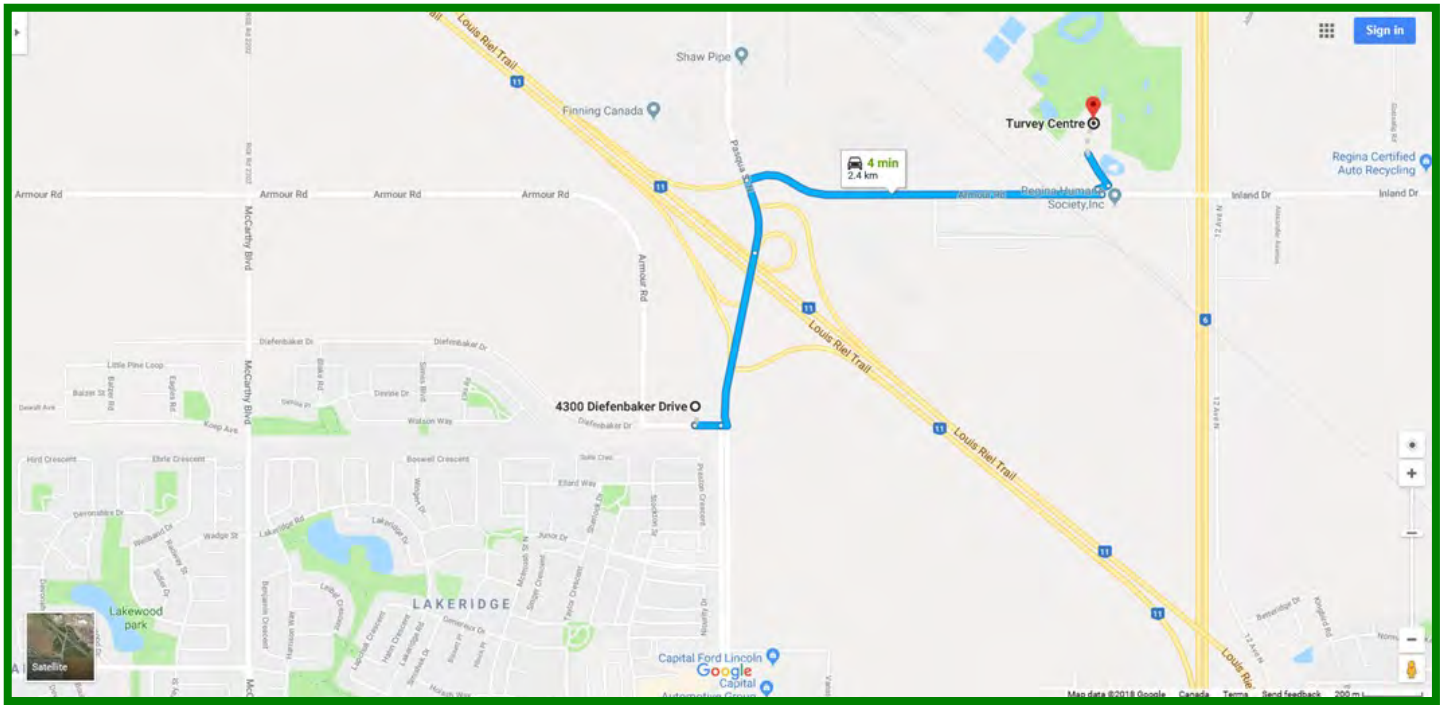
There are two options for booking:

Phone: 306-949-4000 and make sure to request a room under

Group Name: SSCA Members
Group Code: MJ88Z1

Online: https://www.choicehotels.com/reservations/groups/MJ88Z1

A limited number of rooms will be held **until January 15th only,** so book now!



Conservation Agriculture 2019

RESILIENCE THROUGH DIVERSITY

The 31st Annual Conference of the
Saskatchewan Soil Conservation Association
Tuesday, February 5th, 2019
Turvey Centre—100 Armour Road, Regina

8:00 am	**Registration Opens**
8:45 am	**Welcome and Opening Remarks**
9:00 am	**Benefits of Legume Pastures in Beef Cattle Systems** Dr. H.A. (Bart) Lardner, PAg, Animal and Poultry Science, University of Saskatchewan
9:30 am	**Climate Policy and the Changing Economics of Soil Management** Dr. Tristan Skolrud, Agricultural and Resource Economics, University of Saskatchewan
10:00 am	**Understanding Soil Variability** Lyle Cowell, MAg, PAg, CCA, Manager of Agronomy Services, Nutrien Ag Solutions
10:30 am	**Refreshment and Networking Break**
10:45 am	***Keynote Speaker:*** **Regenerative Agriculture Builds Resilience Through Soil Biology** Dr. Kris Nichols, Soil Microbiologist and Founder, KRIS Systems, Mertztown, Pennsylvania
12:05 pm	**Luncheon**
1:00 pm	**Mixed Grain Intercropping - The Value Proposition** Lana Shaw, PAg, MSc, Research Manager, South East Research Farm, Redvers, SK
1:30 pm	**Working to Improve Soil Health on Our Farm** Cody Straza & Allison Squires, Producers, Upland Organics, Wood Mountain, SK
1:50 pm	**Sustainability and Advocacy on Our Farm** Adrienne Ivey, Producer, Ituna, SK
2:10 pm	**Cattle and Regenerative Agriculture on Our Farm** Duane Thompson, Producer, Tee Two Land and Cattle, Kelliher, SK
2:30 pm	**Producer Panel** Moderated by Jocelyn Velestuk, Producer, Agronomy Consultant, SSCA Director
3:00 pm	**Refreshment and Networking Break**
3:15 pm	**Are Farmers the New 1%: Reflections on the Social Licence Movement in Agriculture** Dr. Rene Van Acker, Professor & Dean, Ontario Agricultural College, University of Guelph
3:45 pm	**Wrap-up**
4:00 pm	**SSCA AGM**

CCAs: Approved for 5.5 CEUs **NM 2.0 SW 2.0 CM 1.0 PD 0.5**	**CCCSCs: Approval pending for 5.5 CEUs**

For more information, please phone 306.371.4213 or email info@ssca.ca

Conservation Agriculture 2019

RESILIENCE THROUGH DIVERSITY

The 31st Annual Conference of the
Saskatchewan Soil Conservation Association
Tuesday, February 5th, 2019
Turvey Centre – 100 Armour Road, Regina

KEYNOTE SPEAKER

Kris Nichols, PhD

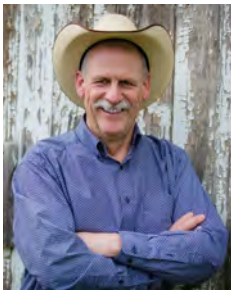
"Regenerative Agriculture Builds Resilience Through Soil Biology"

Dr. Kris Nichols is a leader in the movement to regenerate soils for healthy crops, food, people and a planet. She is the founder and principal scientist of KRIS (Knowledge for Regeneration and Innovation in Soils) Systems Education & Consultation and has given over 250 invited presentations, authored or co-authored more than 25 peer-reviewed publications, and has numerous videos on-line.

Dr. Nichols' focus is to address current and future agricultural needs by building upon a soil health foundation to identify biological methods for agricultural production and tools and practices to reduce pest issues, soil erosion, fossil fuel use, and greenhouse gas emissions. These systems are resilient and adapt to climatic uncertainty by increasing nutrient and water use efficiencies; improving pollinator activity and food security; and providing long-term solutions to agricultural economic viability, food insecurity, and the loss of ecosystem services. Kris continues to develop and evolve methodology and tools farmers, home-owners, and students may use to examine and appreciate their soil. Her work on carbon movement from plant to microbes and nutrient and water cycling have led her to also expand her research into exploring the similarities between the soil and gut microbiomes to improve soil and animal including human health.

Dr. Nichols presentation at the SSCA Conference will be about taking a systems approach to regenerate soils to increase profitability by maximizing nutrient and water use efficiencies. A systems approach will utilize integrated, dynamic principles to synergize biologically-based practices to address fertility, pest and disease issues. The soil is the foundation for any system to work while the management practices are the tools which means that this presentation will discuss crop diversity including perennials and annuals as well as cover and companion crops, reduced soil disturbance, and managed grazing.

MORNING SESSION



Bart Lardner, PhD, PAg—Animal & Poultry Science, University of Saskatchewan

For the past 20 years, Dr. H.A. (Bart) Lardner has worked at Western Beef Development Centre focusing on cow-calf and forage production research. Dr. Lardner is a Professor in the Department of Animal and Poultry Science at the University of Saskatchewan where he supervises undergraduate and graduate students and teaches classes in forages, ruminant nutrition and beef cattle management. His expertise lies in forage and water management in cow-calf systems, summer and winter grazing systems, grazing ruminant nutrition, beef cow reproductive efficiency, co-product supplementation, heifer development and applied genomic programs. His research program works closely with producers to ensure applicability of results back to industry.

"Benefits of Legume Pastures in Beef Cattle Systems" Sod-seeding either new cicer milkvetch or sainfoin varieties into a long-established pasture increased biomass, pasture quality and grazing animal utilization of the available forage. Percent composition of cicer milkvetch increased two fold over a 3 year period, suggesting increased contribution of high quality forage. Steer performance also increased when grazing sod-seeded legume stands compared to grazing non sod-seeded pasture. Finally sod-seeding legumes into an old pasture stand - requires suppression of existing forage species and timely precipitation for rejuvenation success.

Dr. Tristan Skolrud—Assistant Professor, University of Saskatchewan, Saskatoon

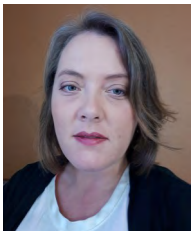
Tristan Skolrud is an assistant professor in the Department of Agricultural and Resource Economics at the University of Saskatchewan. His work focuses on the intersection between agricultural production and environmental policy. He has published several papers in peer-reviewed journals on the welfare impacts of revenue-neutral energy taxation, consolidation in agriculture, and the impact of proposed carbon tax legislation on agricultural output.

"Climate Policy and the Changing Economics of Soil Management" In this presentation, Dr. Skolrud will discuss how recent proposals to mitigate greenhouse gas emissions may influence farm management incentives. He will also present research detailing the efficiency of policy alternatives aimed at reducing greenhouse gas emissions from the agricultural sector.

Lyle Cowell, MAg, PAg, CCA—Manager of Agronomy Services, Nutrien Ag Solutions

Lyle Cowell is a regional agronomist with Nutrien Ag Solutions covering northeast Saskatchewan, and he has been working with farmers in this position for 22 years. His previous role was with the Department of Soil Science at the University of Saskatchewan.

"Understanding Soil Variability" This will provide a bit of background and a case study to demonstrate the variability of our glaciated prairie soils and its impact on crop yield and field management. The case study that I will present is a field that is owned by the U of S and which the class soil sampled - a field that is significantly affected by salinity. This then leads to discussion of soil variability = crop variability = fertilizer requirement variability and weed control, and then to some discussion of the need to better focus on our 'best land' in each field and accept that some land should be seeded to grass. It is about soil conservation, (soil) diversity, and the need to better use our soil and monetary resources on a farm.

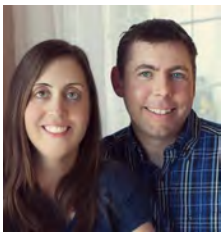


Lana Shaw, PAg, MSc—Research Manager, South East Research Farm Inc

Lana has a MSc. Plant Sciences and a BSc Agriculture from the University of Saskatchewan. She has worked in pulse and other crop agronomy since 1999. Lana has worked as research manager of the South East Research Farm for 8 years designing and conducting agronomic field crop trials with a considerable emphasis on novel techniques like intercropping.

"Mixed Grain Intercropping - The Value Proposition" Recent developments in crop research trials and commercial production of mixed grain intercrops will be explored with reference to the various potential advantages and obstacles to adoption of mixed grain intercropping on the prairies.

PRODUCER PANEL



Cody Straza and Allison Squires—Producers, Upland Organics, Wood Mountain, SK

"Working to Improve Soil Health on Our Farm" Cody and Allison will discuss how they use the five soil health principles, with an emphasis on soil biology, to improve the condition of their soils. In the past few years they've used tools such as roller crimping, intensive grazing, cover crops, pollinator strips and reduced impact tillage.

Adrianne Ivey—Producer, Ituna, SK

"Sustainability and Advocacy on Our Farm" Adrienne will share an overview of her farm, as well as tips and tricks on how to share your farm stories, and also why it is so important to bridge the gap between those purchasing food and those who are raising it.

Duane Thompson—Producer, Tee Two Land and Cattle Co, Kelliher, SK

"Cattle and Regenerative Agriculture on Our Farm" With several young adult children that want to be involved on the farm, regenerative agriculture and managing our multi-enterprise operation holistically is a high priority so we can support more households.

FINAL SPEAKER

Rene Van Acker, PhD, PAg—Ontario Agricultural College, University of Guelph

Dr. Van Acker is Professor and Dean of the Ontario Agricultural College at the University of Guelph and a co-founder of the Food Institute at the U of G (now the Arrell Food Institute). Prior to this, Rene was a professor at the University of Manitoba for 10 years. His research interests include weed management and agronomy. He has published over 130 peer-reviewed works, over 300 non-peer reviewed contributions, and his research on coexistence and genetically modified crops has led to work all over the world.

"Are Farmers the New 1%: Reflections on the Social Licence Movement in Agriculture" The number of farmers in Canada continues to decline. In addition, we are at a point now in Canada that well over 90% of all agricultural production is delivered by less than 10% of farmers. This poses significant challenges to farmer voice and farmer power and it begs questions about the future of farmer organizations and whether farmer organizations need to adjust to maintain voice and power on key issues including social licence. Options may include new partnerships that cut across food chain lines and that create new alliances on common and key issues including environmental protection, food safety and care for animals.

Conservation Agriculture 2019

RESILIENCE THROUGH DIVERSITY

The 31st Annual Conference of the
Saskatchewan Soil Conservation Association

Tuesday, February 5th, 2019

Turvey Centre—100 Armour Road, Regina

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