Prairie Steward

Farming For Your Future Environment

The Newsletter of the Saskatchewan Soil Conservation Association Inc. Fall Issue No. 63, 2012

President's Message - SSCA's 25th Annual Conference

By Tim Nerbas, PAg
SSCA President

On Jan 9, 2013 the SSCA will hold its 25th annual conference. What were your farming practices like 25 years ago? 1988 turned out to be a very dry year for most of Saskatchewan. Dust clouds were a common occurrence and damage from wind and water erosion were evident everywhere. Fast forward 25 years and soil erosion has been greatly reduced. Wheat is no longer King. And by having solid crop rotations not only do we hedge our bets on the crop markets, but we also play a critical role in minimizing weeds, insects and disease problems.

At this year's conference our keynote speaker is Dr. Dwayne Beck. He is a researcher from South Dakota well known for his unique systems approach to no-till farming. Dakota Lakes Research Farm was one of the first research sites dedicated to understanding cropping rotations using only no-till techniques. Dwayne is a dynamic speaker that challenges producers on the intensity of their crop rotations. At a time when many producers are looking to shorten their rotations, Dwayne emphasizes that good crop rotations are extremely important to overall profitability.

"Conservation Agriculture has truly changed the landscape of Saskatchewan. Instead of mining our soils' nutrients, we have actually begun to build and enhance our soil's productivity."

Conservation Agriculture has truly changed the landscape of Saskatchewan. Instead of mining our soils' nutrients, we have actually begun to build and enhance our soil's productivity. We have a group of well-known Saskatchewan researchers who will present data showing how our soil resource has changed. Stu Brandt will speak on soil phosphorus and variability within the landscape. Brian McConkey will present the latest findings from the Prairie Soil Carbon Balance project. This project was initiated in 1996 to measure the changes in soil carbon resulting from changes in management. The sites across Saskatchewan have now been sampled several times over the last 15+ years.

Enhanced soil productivity has been a direct result of management changes over the last 25 years. Continuous cropping, improved fertilizer management, and diversity of crop rotations have improved the soil's nutrient supplying power. Jeff Schoenau will show his latest findings on the soil's ability to meet the crop's nutrient requirements, and Guy Lafond will show that over time we are approaching the soil carbon levels that exist in the neighbouring grass land soils.

During our lunch break, we will take a moment to reflect back on 25 years of Conservation Agriculture in Saskatchewan, from a time when early adopters were ridiculed to today where a system of conservation has become widespread and adopted around the world. It truly is a Saskatchewan success story.

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In This Issue

Memories of SSCA's First President

By Brett Meinert

Twenty five years ago, the Saskatchewan Soil Conservation Association was created. I became the founding president almost by accident. About ten of the founding directors, including myself were sitting around a table at the end of the conference which was held as a potential kickoff for an organized soil conservation group in Saskatchewan. I was sitting at the end of the table as we discussed our next moves when a representative of the press asked for a quotation describing our new association. Being the closest to the mike, I summarized our discussions on tape. I must have sounded okay because that simple accident of seating arrangement made me the de facto spokesperson and eventually the first president of SSCA. Most of the others sitting at the table became in their turn presidents of our great organization.

I have tons of wonderful memories of the people involved and the important work we did. Our determination to advocate for the soil and our refusal to take any partisan position gave us a great deal of credibility with the politicians of the day. That credibility gave us opportunity to give input to back-room discussions concerning soil issues with both the Conservatives and the New Democrats. It culminated in our contract to provide professional support to the soil conservation effort, developing and delivering programs through our staff of ten agrologists. These agrologists were placed in each of the regional "Ag Rep" offices as well as in the provincial Department of Agriculture offices in Regina. I believe our impact on the business of farming was huge.

"Over the years, SSCA has been proactive regarding many issues that affect the soil. However, the most important action has been the promotion within the farming community of conservation practices."

"Our determination to advocate for the soil and our refusal to take any partisan position gave us a great deal of credibility with the politicians of the day."

Over the years, SSCA has been proactive regarding many issues that affect the soil. However, the most important action has been the promotion within the farming community of conservation practices. As I look back to the soil conservation concerns we were facing in the 80's and 90's, I am amazed at how much change and improvement there has been. The face of agriculture has changed drastically in the last 25 years.

I am particularly proud of our organization and its successes. I wrote a newspaper article soon after SSCA was formed. The opening paragraph read,

"Soil conservation is an attitude. It's not a particular practice or series of practices. It doesn't necessarily involve the use of expensive, complicated machinery. Soil conservation can be free. Soil conservation is the basis of the future of the Prairies and anywhere agriculture is practiced."

SSCA has done a wonderful job over time of maintaining a vision something like this, and an even better job of promoting this vision to not only its members, but through them, to all producers in Saskatchewan and beyond. Congratulations on 25 years of conservation. ●

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 recognised driver and facilitator of change that leads to conservation agriculture being practiced on prairie agricultural land.

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

Repeated Nitrogen Fertilization and No-Till Duration Effects on Soil Nitrogen Supply Power and Greenhouse Gas Emissions

By R.D. Hangs[1], J.J. Schoenau1, G.P. Lafond[2], and Eric Bremer[3]

[1]Department of Soil Science, University of Saskatchewan, Saskatoon, SK; [2]Agriculture and Agri-Food Canada, Indian Head, SK; [3]Western Ag Innovations, Saskatoon, SK.

Introduction

Soil organic matter (SOM) content is often considered the key measure of 'soil quality', because it is intimately associated with all essential physical, chemical, and biological properties controlling soil productivity. The SOM levels in cultivated prairie soils have decreased significantly since the breaking of the prairie sod due to accelerated SOM oxidation and losses from wind, water, and tillage erosion. Over the last few decades, however, with the introduction of conservation agriculture, the SOM level within degraded agricultural soils is increasing. Additionally, the use of continuous multi-crop cropping systems combined with nitrogen (N) fertilizers have been shown to further increase SOM levels in no-till managed soils. A correlation between increasing fertilizer N addition and elevated N2O emissions from soil is often reported. Nitrous oxide (N2O) emissions can offset the greenhouse gas mitigating benefit of sequestering more carbon dioxide (CO2)-carbon (C) in soil organic matter. However, on the positive side, applications of N fertilizer over time can potentially increase the N supplying power of soil for crops by building up mineralizable organic N.

The objective of this study was to determine the effect of varying fertilizer N rates on soil N availability and N2O and CO2 emissions of soils collected at adjacent locations with contrasting management histories: 1) native prairie, 2) short-term (10 years), and 3) long-term (32 years) no-till continuous cropping systems (wheat-canola) receiving five fertilizer N rates (0, 30, 60, 90, and 120 kg N/ha) for the previous nine years. We hypothesized that there would be more efficient retention and recycling of fertilizer N with increasing duration of no-till, through the build-up of potentially mineralizable N from the SOM, thereby restoring the N supply power of the soil to levels measured in the native prairie soil.

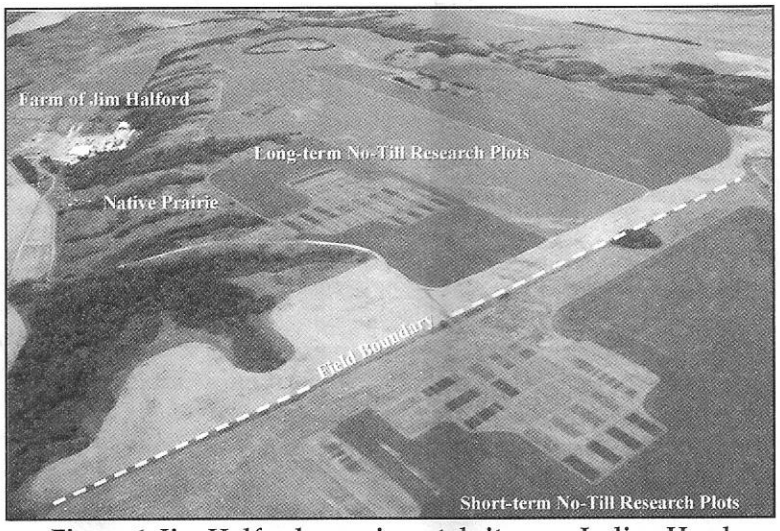

Figure 1. Jim Halford experimental site near Indian Head

Methods

The soil samples used in this study were collected from the Indian Head Agricultural Research Foundation's Jim Halford experimental site (located approximately 19 km south-east of Indian Head). The study site consists of two neighbouring fields differing in their duration of no-till continuous cropping system: either short-term (10 years; STNT) or long-term (32 years; LTNT), which are adjacent to a native prairie (Figure 1). Prior to this, the management of both fields consisted of a fallow-crop system involving frequent tillage operations. The soil at the site is a sandy loam Orthic Black Chernozem of the Oxbow Association. Within each no-till duration field, five fertilizer N rates (0, 30, 60, 90, and 120 kg N/ha) were imposed on plots. The fertilizer N treatments consisted of side-banded granular urea repeated on the same plots for nine consecutive years. An intact soil core was collected from the center of each STNT and LTNT treatment plots, using sectioned PVC pipe inserted into the ground and excavated. Four intact cores were also collected from the adjacent native prairie. All of the soil cores were placed inside of sealed chambers for measuring N2O fluxes and CO2 (Figure 2) along with N supply rates using PRS™-probes over a six-week incubation period (Figure 3).

Results and Discussion

Soil Nitrogen Supplying Power

Repeated annual applications of urea increased the residual soil extractable inorganic N levels in the cultivated soils compared to the

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What is Soil Compaction and Where Does It Occur?

ByRoss H. McKenzie PhD, P. Ag.
Agronomy Research Scientist
Alberta Agriculture and Rural Development
Lethbridge, AB

Soil compaction occurs when particles are compacted and the soil becomes more dense. In a normal soil, the soil particles and pore spaces are very close to 50/50, but through agricultural practices, cultivation and wheel traffic, those soil particles can become compressed closer together, in the same volume you have more soil and less pore spaces. When soil particles (sand, silt, clay) and soil aggregates are forced closer together, the balance between solids, air-filled and water-filled pore spaces are dramatically altered. When the density of the soil is increased, water infiltration and root penetration are compromised. The more severe the soil compaction, the less water can infiltrate and the harder it is for roots to grow and spread.

There are a couple of farming practices that can contribute significantly to soil compaction - tillage and wheel traffic. When farmers cultivate fields when the soil is on the wet side, the cultivator shovels put quite a bit of pressure on the soil and a compacted zone or plow pan will form at the base of the cultivar shovel. In the case of wheel traffic compaction, the weight of the equipment, especially if the soil is wet, can actually cause compaction down to a depth of 18 to 24 inches.

To minimize soil compaction, farmers schedule farm operations to avoid working fields or using heavy equipment on fields when the soil is wet. Ideally, the soil should break easily and crumble at the deepest depth if it is to be tilled.

Reducing or eliminating tillage will help to keep soil compaction to a minimum as every tillage pass reduces soil aggregate structure and if wet, can potentially increase soil bulk density. Farmers should also remove excess weight from their equipment and only use enough ballast to reduce wheel slippage. Another way to reduce surface pressure is by reducing tire pressure or by using lighter axle loads.

Improved surface drainage can help reduce risk of being forced to work wet fields. Fields need to be handled individually to ensure that the correct drainage methods are employed for the area, the soil type and the slope of the field.

Good crop rotations can be a long-term beneficial practice that can help reduce soil compaction. Crop rotations should include deep rooting crops such as alfalfa

Sub-soiling or ripping to alleviate soil compaction problems should be used ONLY when soil is dry and crumbles to the tillage depth. The operating depth should be no more than a few centimeters below the zone of compaction; any deeper uses more energy and increases the potential of deeper compaction.

Use deep tillage with great caution. Although deep tillage can be beneficial under specific soil conditions, its use can also have very serious negative effects on soil quality. Therefore, the use of deep tillage must be considered carefully. Some potential concerns:

- Some rippers cause greater mixing of surface soil with subsoil, which results in the deterioration of soil structure, reduction in soil organic matter, reduced soil fertility and increased potential for surface soil crusting. These conditions can be much worse than minor soil compaction problems.
- Loss of plant available moisture can occur.
- Soluble salts in subsoil can be intermixed with surface soil, increasing salt levels and reducing crop yield potential.
- Subsoiling can make the ground surface rough and lumpy and can pull rocks to the surface. This potential outcome includes implements that claim to cause lower surface soil disturbance.
- A subsoiled field will often have a poor seedbed the following year due to an uneven and soft surface soil and reduced soil moisture conditions.
- If high or excessive amounts of moisture are received after subsoiling, the fractured soil zones can become waterlogged and unmanageable until dry.

Before attempting to deep rip a field, a producer must carefully consider the potential negative consequences. Ideally, a producer should try ripping in several test strips in a field to evaluate the benefits and risks over one or even two years before deep ripping an entire field.

Ideally, farmers should design their soil management and cropping practices to ensure the prevention of soil compaction:

- Use direct seeding practices to increase soil organic matter content, which will optimize soil structure.
- Reduce the potential for the development of compacted soils by eliminating cultivation and reducing traffic in fields, which will increase crop yield potential.
- Take advantage of the natural soil processes of "wetting-drying" and "freeze-thaw" cycles to minimize the effects of soil compaction.
- Use a combination of fibrous and taprooted crops in a rotation to penetrate soils, develop deep root channels and add organic matter to soil

For more information on soil compaction see Alberta Agriculture Agdex 510-1: Agricultural Soil Compaction: Causes and Management
Available on-line at: http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex13331/$file/510-1.pdf?OpenElement

Effect of Fungicide on Leaf Spot Diseases and Yield of Infinity and AC Barrie Wheat at Melfort, 2010

By Kirkham C, Kutcher H R
Northeast Agricultural Research Foundation, Melfort Research Farm, Agriculture and Agri-Food Canada, Melfort, SK

CROP: Wheat (Triticum aestivum L.), cvs. Infinity and AC Barrie

PEST: Tan spot (Pyrenophora tritici repentis (Died.) Drechs), Septoria complex (Septoria spp.)

MATERIALS: Check, Tilt 250E (propiconazole 125 g. ai/ha), Headline EC (pyraclostobin 148 g. ai/ha) and Quilt (azoxystrobin and propiconazole 148 g. ai/ha) Products were applied in 100 L water /ha, except for Tilt 250E, which was applied in 200 L water/ha.

METHODS: Wheat cultivars Infinity and AC Barrie, rated good and poor, respectively in the Saskatchewan Varieties of Grain Crops 2010, were direct seeded into standing canola stubble on June 2nd using an Edward's hoe drill with an 8 inch row space. Fertilizer was applied at soil test recommendations: side-banded urea at 93 kg/ha of actual N and seed-placed 14-20-10-10 at 100 kg/ha. Target seeding rate was 300 plants per meter square. Plots of 4 X 10 meters were arranged in a randomized complete block design with four replicates. Infinity (37.5g/L pyrasulfotole + 210 g/L bromoxynil) and Axial (100 g/L pinoxaden) herbicide were tank mixed with Adigor adjuvant and applied in crop at the 3-4 leaf stage (label rates) to control broadleaf and grassy weeds.

Fungicides were applied at flag leaf fully emerged on July 19th using a 2 meter boom mounted on the front of a 4 wheel ATV. Plots were monitored for leaf spot symptoms and assessed on August 24th at the late milk growth stage using a 0-11 point scale (Horsfall-Barratt) converted to a percentage leaf area diseased for flag and penultimate leaves. Plants were also assigned a rating between 0-11 (McFadden scale) based on assessment of disease symptoms on foliage of the whole plant. Yield measurements were made on harvested samples taken from a 1.3 x 10 meter strip from the centre of each plot on September 27th with a Wintersteiger plot combine. Quality was assessed on harvested samples, data analyzed using analysis of variance procedures, and treatment means different from the mean of the unsprayed check determined with the Dunnett's t test.

RESULTS: See Table 1.

CONCLUSIONS: Conditions were wet and very cool at Melfort in spring and early summer 2010. Both wheat cultivars emerged through the wet ground but were slow to progress. A severe weather event on June 25th (hail and over 50 mm of rain) flooded some plot areas and these had to be drained manually. Disease development at the time of fungicide application was very light; plots were monitored weekly for disease progression and while the disease pressure during late July and early August was low, by mid August conditions were conducive to the rapid advancement of foliar diseases.

Check plots of each cultivar had 60 percent of their upper leaf area covered with leaf spot symptoms and whole plants were rated >10 out of 11. Therefore plots were rated for disease at the late milk stage instead of the usual soft dough due to the rapid onset of symptoms. Leaf disease severities on the upper leaves (flag and penultimate ratings combined) and over the whole plant were significantly reduced from

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Table 1. Effect of fungicide treatment of Infinity and AC Barrie wheat on foliar disease symptoms (flag and penultimate leaves and whole plant), yield, test weight (TW) and thousand kernel weight (TKW) at Melfort, 2010. Treatments different from the unsprayed check indicated by asterisks using the Dunnett's t test.

	Yield (kg/ha)	TKW (grams)	TW (kg/hl)	Leaf spot severity flag & penultimate leaves (%)	Leaf spot severity whole plant (0-11) (kg/hl)
AC Barrie					
Tilt	4305	36.8	74.0	30.5 *	8.2 *
Headline	4189	37.2 *	74.0	4.1 *	3.2 *
Quilt	4487	36.2	73.4	14.1 *	6.4 *
Check	3234	33.8	74.1	74.3	10.6
Infinity					
Tilt	4401	34.0	74.5	25.3 *	7.1 *
Headline	4717	34.7 *	74.6	2.8 *	2.9 *
Quilt	4453	34.4 *	74.7	4.6 *	3.4 *
Check	4310	32.1	75.2	64.1	10.3

Importance of Soil Research

By Ross H. McKenzie PhD, P. Ag.
Agronomy Research Scientist
Alberta Agriculture and Rural Development, Lethbridge, AB

Soils in Western Canada formed and developed over the last 10,000 years after the retreat of the last glaciation. Over the past 100 years, agricultural practices have had a huge impact on the soil eco-systems across the prairies.

.In the 1930s, also remembered as the Dirty Thirties, decline in soil quality was recognized as a critically important issue of concern across the prairies of Canada and the U.S. This was a period of extreme soil erosion and deterioration. Since that decade of soil destruction, agricultural scientists and prairie farmers have long focused on soil conservation and farming techniques to improve soil quality and increase crop production. Soil and crop research scientists have focused on plant breeding to develop crops better adopted to our prairie environment and develop improved agronomic practices including sustainable crop rotations, development of direct seeding technology, development of fertilizer and nutrient management practices and improved management to control weeds, insects and disease.

Many prairie farmers have realized that conventional tilling of their soil does more long-term harm than good. Traditionally, cultivation was used for weed control and for preparation of land for seeding. However, cultivation dries out the soil and leaves soil susceptible to wind and water erosion. Fortunately, direct seeding research across the prairies and engineering advances by agricultural machinery companies have led to dramatic improvements in seeding technology available to prairie farmers.

Researchers across Western Canada and innovative prairie farmers are setting the standard for the world in soil conservation management practices. In the past 25 years, many prairie farmers have gradually adopted new research technology including direct seeding of crops, which is a very sustainable cropping practice. This has led to greatly reduced wind and water erosion and improved soil moisture conservation. Further, elimination of cultivation has also led to increased soil quality. Research has shown that soil organic levels increase using direct seeding management and this in turn improves soil fertility and nutrient levels. Soil organic matter is a storehouse of plant nutrients that are released slowly to meet crop nutrient requirements. Organic matter also acts as the glue to bind soil particles together to cause soils to have an excellent granular structure, allowing good water infiltration into soil, increased soil water-holding capacity and reduced water runoff potential from agricultural lands. The result is that when farmers improve their cropping system management, the long-term benefit is improved quality of the soil.

"On a global scale, however, soil quality continues to decline as development of sustainable cropping systems have either not occurred or not been adopted in many other regions of the world."

With the advances in direct seeding and soil moisture conservation, many farmers in the drier regions of the prairies have been able to reduce their dependence on summerfallow, the practice of leaving the land idle for one growing season to store moisture, and shift away from a monoculture wheat-fallow system to more diverse crop rotation systems. In the long-term, the practice of using summerfallow led to a decline in soil quality as a result of declining soil organic matter levels, increased salinization, increased wind and water erosion and depleted soil nitrogen and other nutrient reserves. The adoption of direct seeding, continuously cropping land every year and using diverse crops in a crop rotation have had the combined effect of significant improvements in soil quality.

On a global scale, however, soil quality continues to decline as development of sustainable cropping systems have either not occurred or not been adopted in many other regions of the world. The food production potential of these areas is declining as soil quality declines. Unfortunately, some of the most severely affected soil degradation areas in the world presently cannot produce enough food to meet their own local requirements.

Prairie soil and crop scientists continue to work with farmers to focus on ways to protect and improve the soil. In Alberta, long-term research by the University of Alberta at the Breton Plots has been on-going since 1930. Agriculture and Agri-Food Canada Research Centre at Lethbridge has a number of long-term cropping trials, some that were established in 1912, 100 years ago. Research by Alberta Agriculture and Rural Development at the Bow Island Substation established in 1991, has clearly demonstrated that reduction of summerfallow frequency, adoption direct seeding, use of commercial fertilizers, improved weed management, inclusion of forage crops and legumes in crop rotation are all important to making farms more profitable and to making farming practices more sustainable.

All of these practices protect the soil and aid in improving and enriching soil quality. These long-term research trials provide a tremendous amount of value to understand the effects of different cropping systems on soil quality and crop production - it is absolutely critical we continue to conduct long-term cropping system studies to understand the effects of agricultural practices on the various soil ecosystems across the prairies.

It is important for everyone to reflect on the importance of soil on human well-being, and acknowledge and remember the extraordinary efforts of dedicated soil and crop research scientists across the prairies and the leading edge prairie farmers to develop and adopt soil conservation technologies over the past 70 years. Their cumulative efforts have helped to rebuild, maintain and improve soil quality across Western Canada.

Effect of Fungicide on Leaf Spot Diseases and Yield of Newdale and Harrington Barley at Melfort, 2010

By Kirkham C, Kutcher H R and the Northeast Agricultural Research Foundation,
Melfort Research Farm, Agriculture and Agri-Food Canada,Melfort, SK

CROP: Barley (Hordeum vulgare L.), cvs. Newdale and Harrington

PEST: Net blotch net form, spot form (Pyrenophora teres Drechs.), Spot blotch (Cochliobolus sativus),

MATERIALS: Check, Tilt 250E (propiconazole 125 g. ai/ha), Headline EC (pyraclostobin 148 g. ai/ha) and Quilt (azoxystrobin and propiconazole 148 g. ai/ha). Products were applied in 100 L water /ha, except for Tilt 250E, which was applied in 200 L water/ha.

METHODS: Barley varieties Newdale and Harrington (both 2 row malt) were chosen for their resistance or susceptibility to leaf spot diseases. Newdale was considered one of the most resistant varieties and listed as fair/good/fair for net-form of net blotch, spot-form of net blotch and spot blotch, respectively (Saskatchewan Variety of Grain Crops 2010 Guide), while Harrington is susceptible to all. Varieties were direct seeded into pea stubble on June16 using an Edwards hoe drill with an 8 inch row space. Fertilizer was applied following soil test recommendations: side-banded urea at 93 kg/ha of actual N sidebanded and seed-placed 14-20-10-10 at 100 kg/ha. Target seeding rate was 300 plants per meter square. Plots of 4 X 10 meters were arranged in a randomized complete block design with four replicates. Frontline XL (4 g/L florasulam + 280 g/L MCPA LV ester) and Axial (100 g/L pinoxaden) herbicides were tank mixed with Adigor adjuvant and applied in crop at the 3-4 leaf stage (label rates) to control broadleaf and grassy weeds.

Fungicides were applied at flag leaf fully emerged on July 28th using a 2 meter boom mounted on the front of a 4 wheel ATV. Plots were monitored weekly for disease. By August 6th, check plots of Harrington showed symptoms, while only light disease pressure was observed in Newdale. Ten plants per plot were then assessed on August 11th at the early milk stage growth stage and again on August 27th at soft dough using a 0-11 point scale (Horsfall-Barratt), converted to a percentage leaf area diseased for flag and penultimate leaves. Plants were also assigned a rating between 0-11 (McFadden scale) based on assessment of disease symptoms on foliage of the whole plant.

Yield measurements were made on harvested samples taken from the centre of each plot on September 27th with a Wintersteiger plot combine. Quality measurements were taken from harvested samples and data were analyzed using analysis of variance procedures and fungicide treatment means deemed significantly different from the check using Dunnett's t test.

RESULTS: See Table 1.

Table 1. Effect of fungicide treatment on Newdale and Harrington barley on foliar disease severity, yield, thousand kernel weight (TKW), test weight (TW), plump (%) and thins (%) at Melfort, 2010. Treatments different from the unsprayed check indicated by asterisks using the Dunnett's t test.

	Yield (kg/ha)	TKW (grams)	TW (kg/hl)	Plump (%)	Thin (%)	Leaf spot severity flag & penultimate leaves (%) (August 11)	Leaf spot severity whole plant (0-11) (August 11)	Leaf spot severity flag & penultimate leaves (%) (August 27)	Leaf spot severity whole plant (0-11) (August 27)
Harrington									
Tilt	4064 *	39.8 *	54.6 *	89.9	2.6	6.9 *	5.6 *	68.9	10.3
Headline	4012 *	42.8 *	55.7 *	95.8	2.0	3.2 *	2.8 *	29.5 *	7.3 *
Quilt	4030 *	40.2 *	55.5 *	90.7	5.0	4.0 *	4.5 *	35.9 *	9.0
Check	2912	31.8	47.4	83.9	10.0	30.2	9.1	96.9	11.0
Newdale									
Tilt	5225	43.9	58.5	94.6	1.1	2.2 *	1.9 *	7.6	5.0 *
Headline	5003	44.5	59.4	95.8	1.3	1.8 *	1.6 *	3.5 *	3.0 *
Quilt	5030	43.0	58.6	93.7	0.7	2.2 *	1.4 *	4.8 *	3.5 *
Check	4969	41.3	58.3	91.4	1.5	3.1	3.1	32.6	8.0

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Conservation Agriculture 2013

The 25th Annual Conference of the Saskatchewan Soil Conservation Association

January 9, 2013, Saskatoon Inn, Saskatoon, SK
In conjunction with Crop Production Week

WEDNESDAY, JANUARY 9, 2013 SASKATOON INN: BALLROOM B

8:00 a.m.	**Registration Opens**
8:45 a.m.	**Welcoming & Opening Remarks**
9:00 a.m.	**Keynote Speaker - The Key behind successful No-Till** - Dr. Dwayne Beck - Dakota Lakes Research Farm
10:00 a.m.	**Refreshment and Networking Break**

BENEFITS OF CONSERVATION AGRICULTURE

10:30 a.m.	**Soil Health Checkup** -Stewart Brandt, AAFC, Scott (retired)
10:50 a.m.	**Prairie Soil Carbon Balance project** -Dr. Brian McConkey, AAFC, Swift Current
11:10 a.m.	**Conservation Agriculture and Soil Nutrient Supply Power** - Dr Jeff Schoenau, University of Saskatchewan
11:30 a.m.	**Long-Term No-till Benefits: How much can we expect?** - Dr. Guy Lafond
11:50 p.m.	**Luncheon and Awards Presentations** - Founding Member Panel - 25th Anniversary

PRECISION FARMING

1:15 p.m.	**Back to Basics for Precision Agriculture** - Les Henry, University of Saskatchewan (retired)
1:45 p.m.	**Fertilizer Management - the 4 R's** -Dr. Rigas Karamanos, Viterra
2:15 p.m.	**Increasing Crop Competiveness** -Dr. John O'Donovan, AAFC, Lethbridge
2:45 p.m.	**Refreshment and Networking Break**

EMERGING ISSUES

3:00 p.m.	**Glyphosate and other resistance issues** -Eric Johnson, AAFC, Scott
3:30 p.m.	**Smart Phone Apps for Saskatchewan Producers** -Dr. Ralph Deters, University of Saskatchewan
4:00 p.m.	**Fungicides - Risk vs Reward** -Dr. Kelly Turkington, AAFC, Lacombe
4:30 p.m.	**SSCA AGM**

ATTENTION CCA'S:

Conference Approved for 6.0 CEU's:
(SW - 1.0, CM - 1.5, NM - 2.0, PM - 1.0, PD - 0.5)

KEYNOTE SPEAKER:

Dr. Dwayne Beck

Beck serves as a Professor, Plant Sciences Department, South Dakota State University since February, 1983. He received his B.S. Chemistry - Northern State Univ. (1975), and his Ph.D. Agronomy - South Dakota State Univ. (1983). From 1983-1990, he was the Research Manager, James Valley Research Center, SDSU. And from 1990-present, he is the Research Manager, Dakota Lakes Research Farm. From 1985 until now, his emphasis has been on developing no-till systems for irrigated and dryland areas in central South Dakota.

Primary achievements deal with development of programs that have allowed producers to profitably adopt notill techniques in a large portion of central South Dakota. Identification of the extremely important role played by crop rotation in minimizing weed, disease, and insect problems while increasing potential profitability was the key contribution of this project.

The Dakota Lakes Research Farm consists of 850 acres of owned land of which 280 acres is irrigated. An additional 380 acres of land is rented for research purposes. The entire operation is managed using no-till techniques.

ACCOMMODATION: SASKATON INN (306-242-1440)

Rooms must be reserved before December 7, 2012 to receive the conference rate.

Room	Single Rate	Double Rate
Standard Two Queens	122	122
Standard One King	122	122

2013 SSCA Annual Conference Registration Form

Fax to SSCA at (306)695-4236 or
Mail to: SSCA, Box 1360, Indian Head, SK S0G 2K0

Name 1: _____

Name 2:

Address: _____

City: _____ Postal Code/Zip Code: _____

Telephone: _____ Fax: _____

E-mail: _____

Producer: YES / NO (circle one)

SSCA Member: YES / NO (circle one)

For More Information
1-800-213-4287
www.SSCA.ca

Conference Fees: Check appropriate boxes

SSCA Members			Non-Members		
Before/On January 04, 2013 additional farm unit member	$45.00 $40.00		Before/On January 04, 2013	$70.00	
After January 04, 2013 additional farm unit member	$50.00 $45.00		After January 04, 2013	$75.00	

1 Year membership	$100.00	
3 Year membership	$250.00	
Additional Farm Unit Membership (one time fee)	$25.00	

Total Enclosed $_____

GST Exempt (Reg.# 137200515 RT001)

Method of Payment : Check one

Visa ☐ MasterCard ☐ Cheque ☐

* Make cheque payable to SSCA

Cancellation:
SSCA will provide refunds if notified before 12 noon, January 4, 2013

Card #_____ Expiry Date_____

(Note: 5% processing fee will be applied on credit card payments)

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Signature _____

native soil. More importantly, however, after 32 years of no-till management, the N supplying power of the unfertilized LTNT control plot soil was restored to near that of the native soil (Figure 4a), while annual additions of 120 kg N/ha for the previous nine years to the STNT plot soil were required to achieve the same N supply rate of the undisturbed native prairie soil (data not shown). As incubation time progressed, the contribution of mineralization vs. residual inorganic N becomes apparent in the cumulative soil available N supply rate, with greater mineralization contribution in the native prairie, followed by the LTNT soil (Figures 4a and b). Despite continued N removal from the cropping system through grain removal, there appears to be a build-up of potentially mineralizable (i.e., active) fraction of soil organic N that contributes to a high N supply rate in the unfertilized LTNT soil initially. Additionally, larger annual contributions of decomposable root biomass occur within the cropping system that could contribute to enhanced mineralization in the spring, compared to longer-lived roots and lower turnover rates characteristic of temperate perennial grassland ecosystems.

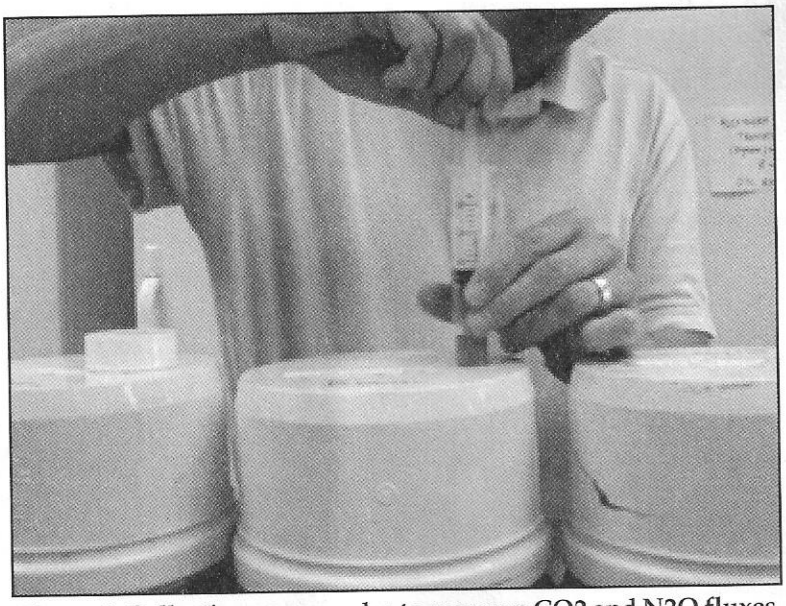


Figure 2. Collecting gas samples to measure CO2 and N2O fluxes

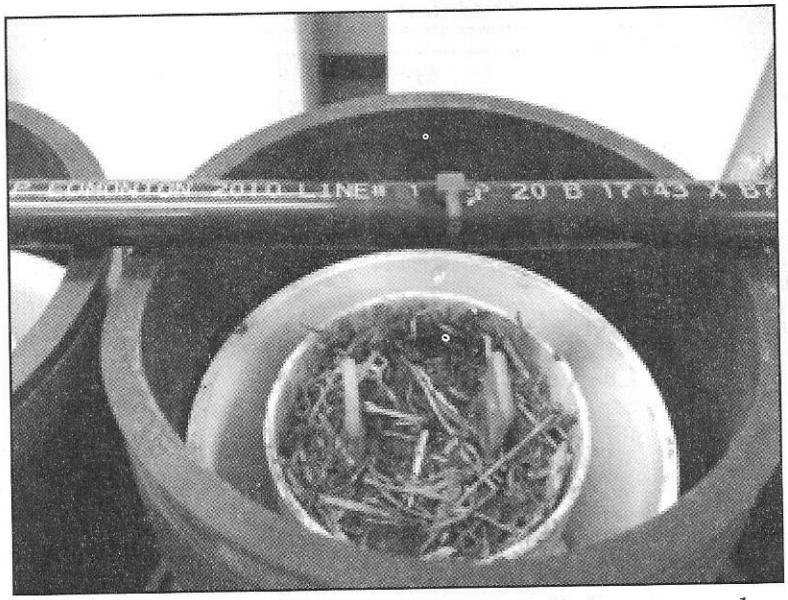


Figure 3. Using PRS™-probes to measure soil nitrogen supply

Greenhouse Gases

The greater residual inorganic N in the long-term no-till soil supported initially larger N2O-N fluxes compared to the native prairie soil, but was not sustained in subsequent weeks (Figure 4c). This effect appeared to be more pronounced with fertilizer N addition, but was not significant due to large variability in measured N2O fluxes among soil cores (Figure 4d). Minimizing residual inorganic N in soil by properly balancing crop N requirement for optimal yield with adequate soil N supply can serve to reduce N2O emissions. We found that repeated applications of ? 60 kg N/ha over the long-term supported larger background levels of N2O flux compared to the unfertilized control. These findings agree with earlier N budget work done at this site by Guy Lafond who found that repeated applications of ? 60 kg N/ha lead to surplus N (i.e., fertilizer N additions in excess of crop growth requirement) in the LTNT plots. A balanced nutrient management strategy is not only beneficial from an environmental perspective, but also economically beneficial for the farmer, considering that fertilizer inputs are often the largest variable input cost for production agriculture systems. An interesting result of this study was the estimated N2O emission from the native prairie soil, especially when compared to the N2O fluxes from the LTNT and STNT soils that received repeated fertilizer N applications at typical agronomic rates (e.g., 90 kg N ha-1; Figure 4d). There were few differences in CO2 flux among the soils, with the largest emissions from the native soil compared to the STNT soil (Figures 4e and f), consistent with its high SOM content, microbial activity, and contributions from root respiration. The similarity in CO2 fluxes among the fertilized and unfertilized STNT and LTNT soils reflects the comparable SOM levels

CONTINUED PAGE 11

and microbial activity among them.

Conclusions

The use of modern no-till continuous diversified cropping systems, along with repeated applications of fertilizer N are capable of returning the N supplying power of degraded agricultural soils back to pre-cultivated conditions (as represented by adjacent undisturbed native prairie soils), by enhancing the soil N supplying power over the long-term through the build-up of mineralizable N. However, a balanced fertilizer N management strategy is essential to properly match crop N requirement with plant available soil N levels, in order to minimize the amount of residual inorganic N lost from the system as N2O through denitrification. Such losses are not only deleterious to the environment, but also adversely affect the economic return for the farmer.

The funding support of the Saskatchewan Agriculture Development Fund for this project is gratefully acknowledged.

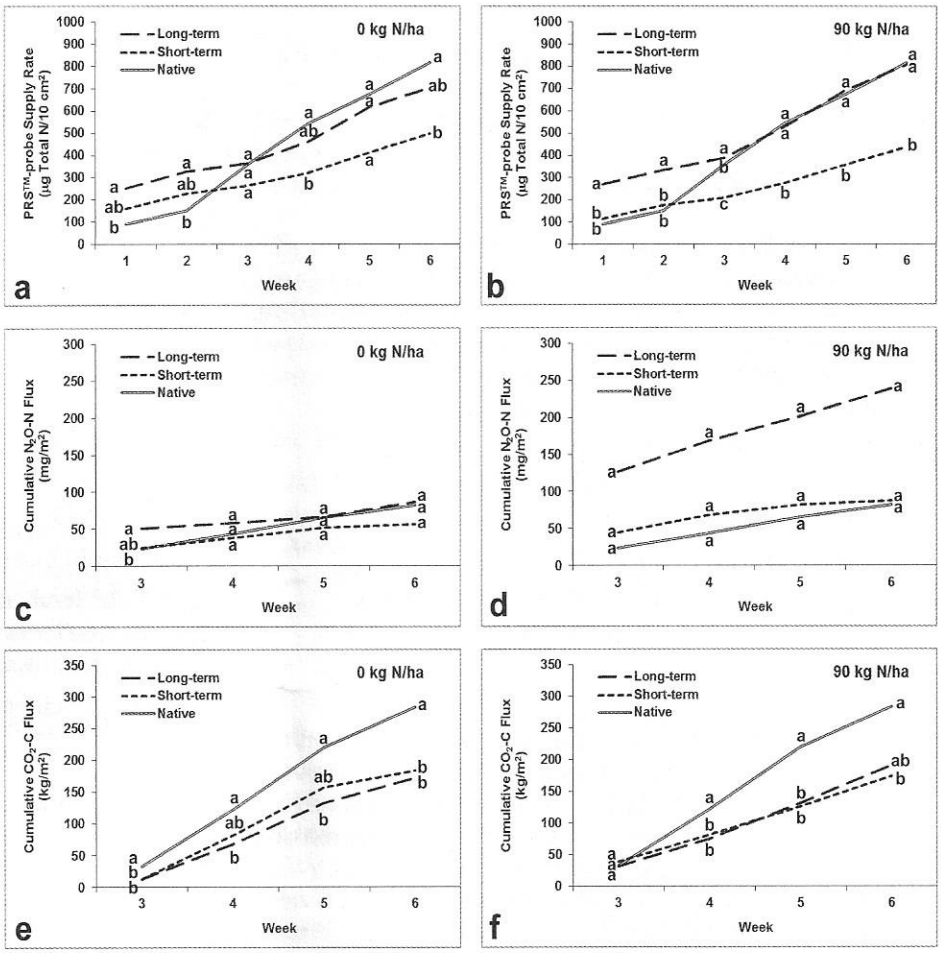


Figure 4. Average cumulative total N supply rates and N2O and CO2 fluxes during a six-week incubation of soils with contrasting management histories: native prairie (no fertilizer N) or short-term (10 years) and long-term (32 years) no-till continuous multi-crop cropping systems, receiving either no fertilizer N or 90 kg N/ha for the previous nine years. For each week, total N supply rates

Soil - Our Most Important Natural Resource

By Ross H. McKenzie PhD, P. Ag.
Agronomy Research Scientist
Alberta Agriculture and Rural Development, Lethbridge, AB

On the Canadian prairies, there is an abundance of land and as a result its importance is often taken for granted.

Soil and water are essential to sustain human life and to produce food. In the long-term, soil and water, not oil and gas, are the prairie's most important natural resources.

The dwindling freshwater supplies across the prairies have received increased attention, but society simply does not seem to recognize the importance of soil. The land and our soil resources are critical to maintaining a viable society.

Urban, rural and industrial developments often take prime agricultural lands out of production for other uses. Many communities across the prairies are expanding at an accelerated rate, permanently removing land from agricultural production. There are numerous examples of this along the Highway #2 corridor between Edmonton and Calgary in Alberta. The energy sector also takes agricultural land out of production to meet the growing demand for oil and gas.

Preserving the agricultural land base for crop and livestock production is paramount for food production. The rapid loss of the soil resource by urban expansion, rural developments and the energy sector uses, must be kept in check. Agricultural lands must be preserved and protected for future generations.

Unfortunately, many urbanites on the prairies don't recognize the critical role soil plays in food production and therefore do not consider preserving soil as being critically important. Society is starting to recognize the importance of water as a scarce resource, but also must recognize the importance of our soil resource.

Conserving and maintaining healthy, productive soils is essential to human well-being. The bottom line is soil is life and we all are responsible for protecting it. We need to celebrate and acknowledge the extraordinary role that soils play in our lives. Let's make sure we make every effort to conserve and protect our most important natural prairie resource - our SOIL.

2012 SSCA Member Survey

Introduction

Dear SSCA Members,

The Board of Directors conducts an annual survey to maintain awareness of our members' views on a number of our activities. In 2012, the Board, office manager, journal editors, sponsors, newsletter contributors, conference speakers and friends of the SSCA have helped the Association accomplish the following:

- host the annual conference,
- print 2 issues of the Prairie Steward,
- e-mail 4 issues of TOPsoil,
- upgrade the e-journal website,
- release Vol. 5 of the Prairie Soils & Crops journal,
- hold 3 Board meetings and several conference calls
- set and conduct a survey of the membership!

The Board of Directors is asking all members to reply to this survey. Your opinion matters. Every comment on every survey will be included in the results the Board studies. The Board will read every suggestion made in the survey to use in making decisions for the Association. The survey is anonymous.

The Board values the feedback from the members and is very grateful for the time and effort each SSCA member takes to fill out the survey or online at http://surveymonkey.com/s/TFRTXLR.

Thank you for participating in this survey

Tim Nerbas, President

Feedback on SSCA Activities

1. Have you read articles in the current or past issues of the on-line Prairie Soils & Crops Journal (www.prairiesoilsandcrops.ca) ?

☐ Yes
☐ No

2. Should the Board invest time and money to upgrade and update our website (www.ssca.ca) ?

☐ Yes, this is a high priority
☐ Some activity needed - the content needs updating
☐ No, the Board should focus on other activities

Comments on the Website: (Use additional paper if required)

3. TOPsoil , the Association's e-newsletter attempts to keep members updated on the business of our Association and news about conservation agriculture. To that end TOPsoil is:

☐ Awesome
☐ OK, but limit to one page and once a month
☐ Junk mail I delete

Comments: (Use additional paper if required)

4. The focus of the Prairie Steward newsletter is conservation agriculture. Should the newsletter keep the focus on conservation agriculture?

☐ Yes
☐ No

If you answered 'No', what should the focus be?

5. The articles are sourced mostly from researchers in the field. Should more articles come from:

☐ SSCA Members
☐ Other farmers
☐ Agri-business and other contributors

Please specify other contributors

6. There would be a significant cost savings if the Prairie Steward was e-mailed as a PDF file. How important is it to you to receive a printed copy of the Prairie Steward in the mail?

☐ Very Important
☐ Somewhat important
☐ Not important

7. The Board is always looking towards the future of the Association and open to suggestions from members with new ideas. Do you have an idea for:

☐ new project?
☐ new service?
☐ new product?

8. The position of SSCA director requires a significant commitment of time and effort. Would you be interested in joining a committee to become involved with one SSCA project (e.g. conference speakers, e-journal, TOPsoil, Prairie Steward)?

☐ Yes (please call Marilyn @ 695-4233)
☐ No, not at this time

I suggest the SSCA invite the following person to join the Board: (Please state name of suggested person)

9. The mission of the SSCA is "to promote the conservation agriculture systems that improve the land and environment for future generations."

Do the current activities of the Association reflect our mission?

☐ Yes
☐ No
☐ I was not aware of the mission statement

If 'No', please specify suggested new activities or new mission

10. The SSCA now has a Facebook page and a Twitter account. Would you visit Facebook or Twitter for information or interaction with other members?

☐ Yes
☐ No
Comments:

Smartphone Use

The SSCA has been awarded a grant to develop smartphone apps for agriculture. An app is a small program that runs on a smartphone to help with a specific task. We are currently working with a programmer to identify potential apps and need to better understand our members' use of smartphones and tablets. Apps might be a mobile version of the Guide to Crop Protection, a spray nozzle selector, an area calculator, or a fertilizer blend calculator.

11. Do you currently use a smartphone (BlackBerry, iPhone, Android, etc.)?

☐ Yes
☐ No, and not planning to own one
☐ No, but considering it in the near future
Comments:

12. Which smartphone do you use or are you considering? Check all that apply.

☐ BlackBerry Bold
☐ BlackBerry Torch
☐ BlackBerry Curve
☐ Waiting for Blackberry v.10
☐ Android
☐ Windows Mobile
☐ BlackBerry Style
☐ BlackBerry Pearl
☐ BlackBerry Storm
☐ BlackBerry Tour
☐ iPhone

Other (please specify)

13. Do you currently use a tablet computer?

☐ Yes
☐ No, and not planning to own one
☐ No, but considering it in the near future
Comments:

14. Which tablet do you use or are you thinking of getting in the near future?

☐ iPad (regular size)
☐ Android (regular size)
☐ BlackBerry Playbook
☐ iPad (7")
☐ Android (7")

Other (please specify)

15. Do you have any ideas for agricultural apps that you would find useful on your farm?

Production Questions

The number of members in the Association does not entirely measure the size of the Association. In speaking to sponsors, funding agencies, government, industry and partners the Board would be in a much stronger position, if we had the following information about the SSCA membership as a whole.

We ask the following questions with confidentiality and anonymity in mind. The electronic survey is anonymous and we have additionally disabled our ability to track the responses. Please do not identify yourself on the survey to ensure privacy.

16. How much area do you currently farm?

Total Farm/Ranch Acres	
Acres in Cropland	
Acres in Pasture	
Acres in Hay	
Other (specify)	

17. Acres seeded

	2012	2013
Wheat		
Durum		
Winter Wheat		
Barley		
Oats		
Rye		
Canary seed		
Canola		
Mustard		
Flax		
Sunflower		
Lentils		
Peas		
Chickpea		
Forage		
Corn for winter grazing		
Annual crops for grazing		
Swath Grazing		
Other (specify)		

18. Livestock numbers 2012

Cattle		Horses	
Sheep		Chickens	
Hogs		Other (specify)	
Turkeys			

19. Do you have a question or comment to share with the SSCA Board of Directors?

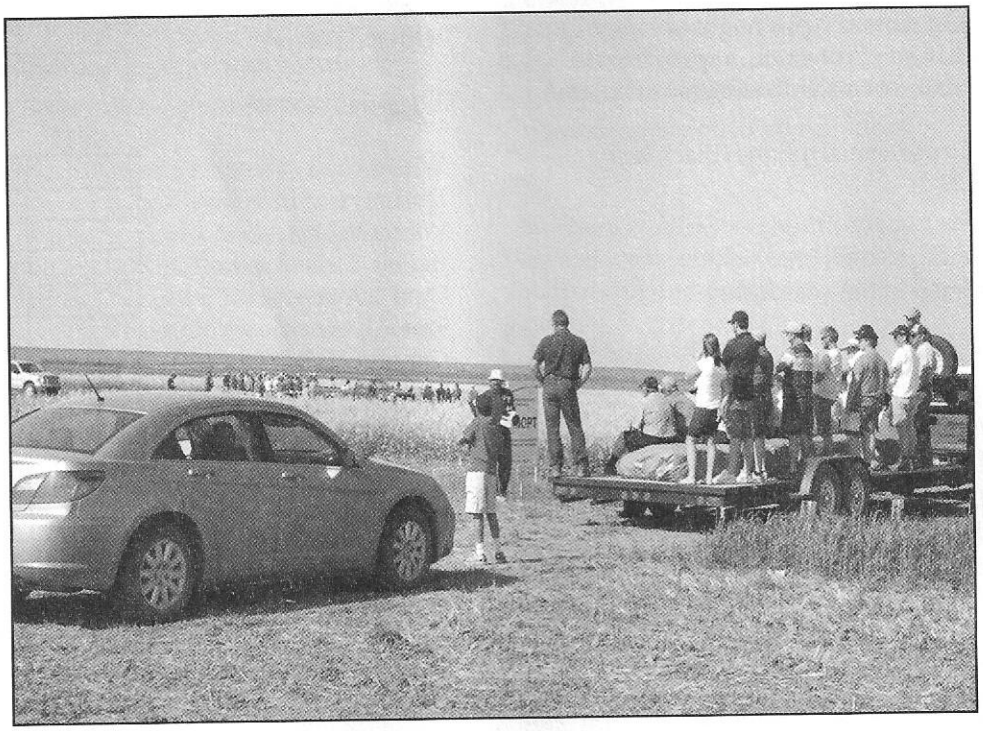
Thank you for completing this survey!
Please mail this survey to:
SSCA
Box 1360
Indian Head, SK
S0G 2K0

To keep the survey anonymous, it can be mailed with no return address on the envelope.

Wheatland Conservation Area Update

By Bryan Nybo, PAg
Farm Manager
Wheatland Conservation Area
Swift Current, SK

2012 was a very busy season for Wheatland Conservation Area. We are the Agri-ARM (Agriculture-Applied Research Management) site for southwest Saskatchewan. For the most part operations went on time and as planned. Spring precipitation and soil moisture was higher than average and the trials got off to a good start. These conditions continued into June. Precipitation ended on June 25th, followed by the driest three consecutive months on record. Fortunately, crops were advanced enough to tolerate the drought. Overall yields were slightly above average with grain quality being very good. This was generally the case for area producers who experienced similar conditions resulting in similar yields. Along with the last rainfall event on June 25th, there was moderate hail damage that may have affected some early canola in the bolting stage. The satellite location near Hodgeville was seeded later than the main site and recieved less overall precipitation.



Field tour at Wheatland Conservation Area, July 12, 2012

Wheatland conducted 46 trials for 2012, which include 17 ADOPT (Agriculture Demonstration of Practices and Technologies) projects, 16 industry trials, and 13 trials for commodity groups and with AAFC. As a result, the staff at Wheatland were kept very busy. Some of these trials were conducted at multiple sites including Swift Current, Hodgeville, Tompkins, Gull Lake, and Beechy.

Extension activities reached a large number of producers from a variety of activities, ranging from speaking engagements at conferences and workshops and numerous field tours. With additional resources from the Saskatchewan Ministry of Agriculture, we were able to host a very successful summer field tour in conjunction with Agriculture and Agri-Food Canada (SPARC) on July 12. Over 100 participants were treated to presentations involving Wheatland ADOPT projects and other research projects from Wheatland and SPARC. With continued collaboration with Shannon Chant, the SW Regional Crops Specialist, and the Ministry of Agriculture, we will again host Cropportunities 2013 where attendance exceeded 200 participants for each of the past three years and a SPARC (Semi-arid Prairie Agriculture Research Centre) Research Update in November. In addition, Wheatland, along with three other Agri-ARM sites; (Indian Head Agriculture Research Foundation (IHARF), Western Applied Research Corporation (WARC) and the Northeast Agriculture Research Foundation (NARF), will together host a day of meetings at Crop Production Week at the Saskatoon Inn on January 11, 2013.

Wheatland has also been involved with a weekly radio program on CKSW called "Walk the Plots." This program is a series of 1 minute discussions on a variety of topics and trials of interest to producers, based on trials at the Wheatland site.

One new aspect that we are waiting for funding approval is to set up a Crop Diagnostic School series of plots at the Wheatland site for the 2013 season. This would be an excellent opportunity for local agrologists and farmers to hone their skills at diagnosing agronomic issues in crops. Although it will be a lot of work to set up, and the various treatments have not yet been finalized, we are excited at the prospect of how this can help the agriculture industry as a whole.

For more information, please contact Bryan Nybo at wcanybo@sasktel.net or 306-773-4775.

PRESIDENT'S MESSAGE - SSCA'S 25TH ANNUAL CONFERENCE...CONTINUED FROM PAGE 1

Our first session after lunch will be on the fundamentals of Precision Farming. Les Henry will lead us through some of the basics that should be considered before we start varying inputs and producing fancy maps. Rigas Karamanos will explain the 4R's of fertilizer management, making sure we are using the right fertilizer source at the right rate, at the right time, and in the right place.

Our last session will be on emerging issues. Glyphosate resistance is a growing issue. Are there new herbicide chemistries coming? What are the best methods to minimize resistance issues on your farm? Eric Johnson will share the latest recommendations on this serious threat to Conservation Agriculture.

For the past year the SSCA has been developing Apps for Saskatchewan producers. Our first App will be rolled out at the conference. Ralph Deters from the U of S has been working on the development of these Apps. The Guide to Crop Protection App will be available for use on smart phones and tablets. SSCA's goal is to provide agricultural Apps that help producers make well informed agronomic decisions.

Our final speaker of the day will be Kelly Turkington. Kelly is a crop disease specialist from Lacombe. There is growing interest in using fungicides to protect crops from disease. Kelly will tackle the risk versus reward issues of deciding when a fungicide application is warranted.

We will hold our annual general meeting immediately following the last speaker. I encourage you to stay and take part in your organization. If you're interested in getting involved with the SSCA, the AGM is an excellent way to get your feet wet.

I look forward to seeing as many of you as possible at our 25th annual conference.

EFFECT OF FUNGICIDE ON LEAF SPOT DISEASES AND YIELD OF INFINITY AND AC BARRIE WHEAT AT MELFORT, 2010...CONTINUED FROM PAGE 5

the checks on both cultivars by fungicide treatments, this did not translate to any detectable yield improvement or increase in test weight.

For AC Barrie wheat, yield differences between fungicide treated plots and the unsprayed check appeared substantial (on average almost 1100 kg/ha or 16 bushel/acre); however, due to high variability among plots differences could not be detected statistically. This may have resulted from the adverse conditions of 2010, such as the saturated soils. As a result yields in some replicates were much greater than in others. Small increases in TKW were noted for both AC Barrie and Infinity treated with Headline, and Quilt on Infinity also improved the TKW over the check. Test weights for AC Barrie and Infinity were not enhanced by any of the fungicide treatments.

Under the conditions at Melfort in 2010, a variety of wheat with good resistance to leaf spot diseases such as Infinity, did not appear to warrant foliar fungicide application,. However, on a leaf spot susceptible variety such as AC Barrie, further research is required to determine the benefit of foliar fungicide.

EFFECT OF FUNGICIDE ON LEAF SPOT DISEASES AND YIELD OF NEWDALE AND HARRINGTON BARLEY AT MELFORT, 2010..CONTINUED FROM PAGE 9

CONCLUSIONS: Cool wet conditions in early spring through mid- to late-June delayed seeding operations. Soil was nearly saturated and much of the surrounding farmland remained unseeded. Plots emerged 8-9 days after seeding but were slow to develop mainly due to cool wet weather. At the time of fungicide application the check plots of both cultivars showed very little or no disease, within two weeks foliar disease progression had advanced to much higher severity levels and assessments were done on a per plot basis. Very strong winds during this time period caused most of the plots to lodge quite heavily regardless of variety or fungicide treatment. The Newdale barley appeared to recover well from the lodging and was much easier to harvest than Harrington, which remained lodged and difficult to harvest. As with other fields in the area both cultivars remained green and took over 103 days to reach maturity, 12 days longer than normal.

A significant reduction in foliar disease symptoms from that of the check was observed for all fungicides at the August 11th rating for both varieties. At the later disease assessment date (August 27th), Headline and Quilt treatments resulted in less severe leaf spot symptoms on flag and penultimate leaves of both varieties, but Tilt treatments were not different from the check. On the whole plant evaluation at the late assessment, all fungicide treatments resulted in reduced leaf spot symptoms on Newdale barley, but only Headline reduced symptoms on Harrington.

None of the fungicides applied in this trial had an impact on the yield or quality of Newdale barley. For Harrington, yield, thousand seed weight and test weights were all improved with the application of each fungicide; however, % plump and thins were not affected. Fungicide treatments of Harrington barley resulted in an average yield (average of the three fungicide treatments) of 4035 kg/ha, which was a 38.6% or almost 21 bushels per acre increase over the check. The average yield of Newdale (all fungicide treatments) was 5057 kg/ha which was a 73% improvement over the untreated Harrington check) and 25% greater than fungicide treated Harrington.

These results indicate that all fungicides were effective to increase the yield and quality of the leaf spot susceptible barley variety under the conditions at Melfort in 2010, but were not warranted for Newdale barley, a variety with improved leaf spot disease resistance.

IHARF Fall Update

By Danny Petty, AAG
Executive Manager

In 2012, the Indian Head Agricultural Research Foundation (IHARF) was involved in an unprecedented number of research activities. Small-plot trials accounted for the bulk of this research, with 39 separate small-plot field trials being carried out over the growing season. Some of the research topics included variety testing, investigating wider row spacing, fertility trials, fungicide response trials, intercropping oilseeds and pulses, along with many others covering a wide array of topics and crop types. The next few months will entail the processing of thousands of harvest samples, followed up with data analyses and reporting. Be sure to visit www.iharf.ca from time to time over the winter months as projects are completed and results become available.

Another part of IHARF's small-plot research program is the Yield-Busters project, which was created as a means to engage producers and agronomists in the process of establishing research and demonstration activities and determining what areas of study are most important to producers. IHARF is continuously looking for new trial ideas and we ask anyone with concepts for potential studies to please forward them on to us.

In addition to the small-plot research, IHARF also manages the land not being used for small-plot trials in order to maintain a proper crop rotation and provide the necessary stubble types for small-plot trials in the future. This land is owned by AAFC, IHARF as well as rented from area farmers, and, in 2012, totalled close to 1,200 acres. Whenever possible, large scale replicated field trials are then overlaid onto these fields. In 2012, large-scale trials looked at topics such as foliar fungicide efficacy for various crops and the micro-climate effects of various stubble heights. In addition to a large number of fungicide trials, past field-scale studies have evaluated different harvest methods for canola, field pea response to granular inoculants, pre-seed surface applications versus side-banding urea ammonium-nitrate, zone delineation for site-specific management and variable rate post-emergent nitrogen applications. Managing these 'fill' acres also provides IHARF with the necessary grain required for our natural aeration grain drying project, which is providing new insights into the way that producers manage the storage of tough grain.

Be sure to join IHARF at our next two events this winter:

Agri-ARM Research Update - January 11, 2013, Saskatoon, SK. IHARF, along with the Western Applied Research Corporation, the Northeast Agriculture Research Foundation and the Wheatland Conservation Area are joining to host a day of meetings as part of Crop Production Week at the Saskatoon Inn.

IHARF Soil and Crop Management Seminar - February 6, 2013, Melville, SK.

Please visit www.iharf.ca/events.php for more information on both events.

www.ssca.ca

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