Prairie Steward

Farming For Your Future Environment

The Newsletter of the Saskatchewan Soil Conservation Association Inc. Spring Issue No. 44, 2005

Lawrence Farms - Variable Rate Fertilizer Application Study

By Rich Szwydky, PAg
Conservation Agrologist

The first of a three year variable rate fertilizer application study has been completed on the Gary and Stuart Lawrence farm, located in the dark brown soil zone 12 miles south of Rosetown. This study is one of many projects emphasized under the national Greenhouse Gas Mitigation program to help promote agricultural Best Management Practices that either sequester carbon or reduce nitrous oxide emissions. The Lawrence farm and SSCA have been the major partners involved to date, with Greenfield Ag based in Rosetown playing a secondary role.

The objective of this project is to try and determine a sound nitrogen application program based on stored soil moisture, residual soil nutrient status and expected rainfall. Since moisture and nutrient usage are directly related, we anticipate being able to determine an economical and environmentally sound nitrogen application program on the Lawrence farm at the end of this project. The results will be measured by the yield and protein data collected at the end of each year.

Lawrence's 1984 Case 4894 and 1996 Bourgault 5710 air drill.

Stuart says it's easier to make decisions regarding spring nitrogen rates when the soil profile is saturated with water. The challenges of farming in a drier soil zone south of Rosetown, however, usually mean soils are only partially recharged heading into spring seeding. He believes that knowledge of the stored soil moisture status across the entire field, as well as using soil tests and previous yield maps, are all tools that can help to delineate management zones on the farm and begin variable nitrogen application. This project also allows us to dribble band extra nitrogen if spring moisture far exceeds expectations, based on the presumption that each part of the 160 acre field generally receives the same amount of rain.

One key to the success of this project is the ability to collect yield data across the entire field. The Lawrences have been generating yield maps of this particular field since 1996, when they purchased a Case IH 2188 combine with the

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In This Issue

Zero Till: Define It

By Blair McClinton, PAg
SSCA Executive Manager

What is the definition of zero tillage? It seems like a simple question but how various tillage systems are defined will become more important if soil sinks are included as part of an offset trading system. This winter, AAFC staff are holding a series of producer consultation meetings across Canada to help define this question and learn about the challenges zero till producers face. Two meetings with Saskatchewan producers were held in mid-January.

Past definitions of zero and reduced tillage have not adequately considered all environmental and economic impacts. For example, traditional definitions rely primarily on a specified amount of crop residue cover for erosion protection, and do not adequately consider the idea of minimizing soil disturbance. These definitions also do not adequately address the ability to accommodate other farm practices such as manure management, crops that produce little residue (eg. pulses), and harvesting hay, silage, and straw. So how much soil disturbance is too much? How often can you bale straw? Can you burn flax straw? Can fertilizer or liquid manure be injected in a separate operation?

"Past definitions of zero and reduced tillage have not adequately considered all environmental and economic impacts."

In the Pilot Emission Reductions and Removals Learnings (PERRL) initiative, zero tillage was defined very narrowly. Soil disturbance was limited to less than 33% (eg. 3" wide opener on 9" shank spacing). Greenfeed, silage, straw removal and residue burning were not permitted. Chemfallow was restricted to the Brown and Dark Brown soil zones. And of course tillage was not permitted.

"As the federal government develops programs to promote increased and continued adoption of practices like zero tillage, I think it very important that the definition used is not so inflexible that it excludes a wide range of people."

As the federal government develops programs to promote increased and continued adoption of practices like zero tillage, I think it very important that the definition used is not so inflexible that it excludes a wide range of people. A rigid definition like one used for PERRL would likely limit it mostly to grain growers. As well, it could also create "Leakage." Leakage is a term used where reducing emissions in one area would indirectly result in increased emissions somewhere else. A common example is with forestry, where reduced deforestation in one country results in increased deforestation in another country. Using the PERRL definition, if removing straw from a field is effectively an emission, leakage would occur if a zero till farmer stopped removing straw from his fields and instead bought straw from a conventional till neighbour.

These issues are going to become more important to refine as the Kyoto Protocol comes into effect and the Canadian Government (GOC) needs to make decisions on how to meet its goals. ●

The Prairie Steward is published three times a year by the Saskatchewan Soil Conservation Association with support from: Saskatchewan Agriculture, Food and Rural Revitalization

President's Message

By Darryl Reynolds
SSCA President

For the five years I've been an SSCA board member, I've been involved with the carbon issue. Numerous meetings have moved us slowly along a path where we hoped to one day see some benefit from our efforts. Between the time I write this report, and its arrival in your hands, there will have been more change regarding carbon than over those entire five years. We have reached a time of change but many questions remain unanswered.

There are three key components to the carbon issue:

1. **Our PERRL II submission.**

We are currently preparing the PERRL II submission. It will be in the hands of the Government of Canada (GOC) by February 3 and we should know if our application is accepted or not by the time you read this.

2. **National C Trading Policy**

The Kyoto Protocol comes into effect on February 16. The GOC are starting to realize how difficult it will be to reach their targets. Many rumors abound about the role Ag sinks will play and who actually owns the carbon in the sink. Our position is simple - farmers are expected to create, pay for and maintain the sink and therefore they should own the carbon in the sink! International climate change agreements allow Canada to claim ALL carbon sequestered during the Kyoto period regardless of when management practices creating the sink started. Any regulations that move the start date forward are national policy. My greatest fear has been that the bureaucrats will make us the "sacrificial lamb", placing the Ag sink at the feet of their political masters as a gift with little or no political ramifications. We plan one more trip to Ottawa to try to influence policy before it's written in stone.

3. **International C Trading Potential**

We are sending our third delegation to Washington, D.C. to meet with our U. S. counterparts to discuss carbon trading south of the border. We have been invited (expenses paid) to attend meetings attended by both government and industry representatives and continue an open dialogue as to future trade potential.

With so much of our time being spent on the carbon issue, some members might question if we have lost sight of our purpose as an association and become a "one issue" organization. We are fighting to retain ownership of the Ag sink as we feel some responsibility for the high rates of adoption of conservation tillage which the GOC feels inclined to penalize. Also, the more value we keep from the sink, the higher the rate of adoption of future conservation farming practices. If the GOC retains half the sink value, adoption rates will be much lower than if they turn the full value over to the farm sector. *I find it somewhat ironic that the Ag Minister has sent Mr. Easter out to explore the "Farm Income Crisis" at the same time they are proposing to appropriate sink value from the farmers (who already own the sink) they want to help!!.*

"Our position is simple - farmers are expected to create, pay for and maintain the sink and therefore they should own the carbon in the sink!"

"International climate change agreements allow Canada to claim ALL carbon sequestered during the Kyoto period regardless of when management practices creating the sink started. Any regulations that move the start date forward are national policy."

Once we know the results of our PERRL bid, we need to explore our role in carbon trading on the national and international levels. Please feel free to submit your suggestions, as we would like feedback on our efforts and ideas on future directions. And yes, I do feel that we are still achieving our goal. Our mission statement reads, *"promote conservation production systems that improve the land and environment for future generations."* We have achieved a 50% adoption rate of direct seeding in Saskatchewan and may need the incentive of carbon value to encourage the other half to convert. We must also try to protect the carbon value already created by our members or that value will be used to reduce costs for the large emitters and public at large.

By the time you read this, many of my questions will be answered. I hope there is some good news and I promise, no matter what the outcome, it won't be for a lack of trying on our part. I would like to thank the following organizations for their support on this issue and apologize if I have missed someone: Soil Conservation Council of Canada (SCCC), Canadian Federation of Agriculture (CFA), APAS, Saskatchewan Stock Growers, SARM, Western Canadian Wheat Growers and the Province of Saskatchewan. I know from meetings I attend that many farmers and industry reps support our position and recognize the unfairness of the federal proposal to appropriate part of the Ag sink in order to meet their own targets.

Finally, as we are in such a state of flux regarding carbon and as we are starting down a new road on several ventures, I have decided to let my name stand for a second term as president. It's also kept me busy so I don't stew about all the feed wheat in my bins! Have a good spring!

How Safe is Your Rate?

By Tim Nerbas, PAg
Conservation Agrologist

This past year's late harvest means a lot of fertilizer will be applied this spring. For some producers, finishing harvest, baling, and dealing with residue such as flax straw are just a few of the jobs that will require attention. Obviously time is going to be of the essence. So how are you going to apply this year's soil fertility?

For many producers the primary advantage of fall banding nitrogen is that it helps minimize the amount of product they have to handle in the spring. Fall banding provides this advantage for the fertilizer industry as well. Therefore this spring the producer / supplier logistics will be put to the test. For producers who have been one-pass direct seeding, many of these logistical nightmares have already been addressed. For others, it may mean spring banding, post emergent applications, or trying to place all the fertilizer at seeding.

Before you begin applying this year's crop inputs, you should consider soil testing. I know it is another job that has to be completed. But a soil test can be an important tool to know what is actually needed to target a specific yield. Once you know the amount of nutrients required, you're ready to proceed to the next step: determining how to apply the required nutrients.

There are a number of ways to apply fertilizer. One way is to apply all your fertilizer at seeding. Many direct seeders have a seeding tool that allows them to separate at least part of their fertilizer requirements from the seed. Placing too much fertilizer in close proximity to the seed can cause seedling damage resulting in poor crop establishment. Ammonium toxicity is the main problem causing seedling damage. Excess salinity in the seed row can be just as damaging and tends to be more severe under dry conditions. When you exceed safe rates of fertilizer in the seed row, plants that do emerge can exhibit poor vigor and maturity can be delayed.

If you are planning to seed place your fertilizer requirements, it is important to follow some guidelines (Table 1). The key is determining your seedbed utilization (SBU) which is nothing more than the amount of seedbed over which the seed and fertilizer will be spread. For instance, a seeding implement on 10 inch row spacing using knives which spread the seed and fertilizer over 1 inch would have an SBU of 10%. The higher the SBU, the more fertilizer that can be safely placed with the seed. But remember these guidelines: apply only if the **seedbed soil moisture is good to excellent**.

As seeding progresses, if the seedbed dries out, it is important to further reduce the amount of seed placed fertilizer.

Therefore depending on your required rate of fertilizer you may not be able to meet your fertility requirements at the time of seeding with your present equipment. So what are the options? It may mean a spring banding operation to apply the additional nutrients. However spring banding dries out the soil which may cause germination difficulties particularly with small seeded crops such as canola. If equipment and / or time are not available, a pre-seed dribble of liquid N as UAN may also be an option to meet your fertilizer requirements. This option allows more acres to be covered in a day and much lower fuel consumption. The pre-seed dribble works for mobile nutrients such as nitrogen and sulphur, but phosphorus and potassium should still be seed placed.

Another method that is gaining popularity particularly during dry years is applying only the safe rates of fertilizer with the seed. If soil N is not severely

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Table 1: Revised guidelines for safe rates of fertilizer applied with the seed. (Farm Facts, 1995) (Be aware that spread is affected by a number of factors such as air flow, soil moisture and texture)

Soil Texture	1" spread			2" spread			3" Spread		
	Row Spacing			Row Spacing			Row Spacing		
	6"	9"	12"	6"	9"	12"	6"	9"	12"
	SBU			SBU			SBU		
	17%	11%	8%	33%	22%	17%	50%	33%	25%
Light (sandy loam)	20	15	15	30	25	20	40	30	25
Medium (loam to clay loam)	30	25	20	40	35	30	50	40	35
(sandy loam) Heavy (clay to heavy clay)	35	30	30	50	40	35	60	50	40

Annual Legumes as an Option

By Eric Oliver, PAg
Conservation Agrologist

In the last edition of the Prairie Steward, Tim Nerbas wrote an article "Can we afford 50 cent nitrogen?" He discusses the rising cost of nitrogen and whether producers can still have a positive net return with 50 cent per pound nitrogen. He used a number tables to provide some "what ifs" on amounts of nitrogen applied, the associated costs and the net return. Using these tables, comparisons between crops and the net return from 40 or 50 cent nitrogen could be made. In many cases, it can still be profitable when nitrogen costs 50 cents per pound. But how high does the cost of nitrogen go before farmers say "That's too expensive" and will cut back on this input? Very likely, a lot of producers are at that point now and a lot more will be in that situation by the time nitrogen approaches the 50 cent mark. Unfortunately, many farmers will simply use less nitrogen to reduce the cost of this input. However, limiting the amount of nitrogen supplied will only serve to limit the potential yield of that crop. So what sort of alternatives do farmers have?

Table 1: Dry forage yields (Tons/ac) taken between full flower and flat pod, 2001-2004.

	Greenfix	Grande	40-10	40-10 / oats
2001	0.89	1.23	1.45	0.86
2002	0.85	2.11	2.92	1.90
2003	0.55	0.84	1.12	0.85
2004	1.59	2.29	4.58	3.54
Ave	0.97	1.62	2.52	1.79

One alternative is to use pulse crops in the rotation. Although they won't replace the nitrogen fertilizer, they can certainly help reduce the amount of nitrogen required. However, it may not be desirable or possible for a pulse crop to precede every crop. Using a perennial legume for a few years in the rotation can also provide a good supply of nitrogen for a few years after termination of the perennial legume. Although this can work well in the Black Soil Zone, more research is needed for regions like the Brown Soil since there is a higher risk associated with the practice in this zone.

Using annual legumes is another option for those who include a fallow treatment in their rotation. Using fallow is still not uncommon in the southwest and anything that reduces tilled fallow is a good thing. I have been conducting a study over the past four years at Aneroid (located an hour southeast of Swift Current) in conjunction with Wheatland Conservation Area, with funding from the local District #4 ADD Board. This study compared three annual legumes (a chickling vetch called AC Greenfix, Grande peas and 40-10 silage peas) and a mix of 40-10 peas taken as a forage, then left as a fallow treatment for the rest of the season. The following year the foraged stubbles are re-cropped to durum and compared with respect to yield and protein. Another set of treatments involve the same three annual legumes but they are desiccated at full flower or the early flat pod stage. This practice is used a lot in organic farming systems as a nitrogen supply, but has rarely been used in conventional farming systems. After desiccating, these treatments are also left as fallow until the following spring when they are re-cropped to durum. During the re-crop stage, the re-cropped treatments are compared to the durum cropped on chem fallow, tilled fallow treatments and a four year cereal-pulse rotation.

Over the four years of the study, there were two drought years (2001 and 2003), one wet year (2002), and one monsoon year (2004). It became apparent that not all annual legumes are created equal. Although AC Greenfix was bred for nitrogen fixation as greenfallow, the crop does not develop well in cold soils. In addition, because the seedlings develop slowly, they are not very competitive with weeds. Once temperatures climb, however, Greenfix can grow very rapidly. The amount of nitrogen fixation is related to the amount of top growth produced. Even though peas have hollow stems as compared to the solid stemmed Greenfix, the peas produced significantly more forage dry matter (Table 1). In all years the 40-10 silage peas provided the highest forage yields and the best weed control with its very dense canopy. The total nitrogen fixed by these annual legumes averaged between 58 lbs / ac with the Greenfix to a high of 126 lbs / ac with the 40-10's. About 75% of the

Table 2: Durum yields (bu/ac) on various foraged stubbles and fallow treatments, 2002-2004.

	Direc Seeded Durum	Greenfix	Grande	40-10	40-10 / oats	Chem Fallow	Tilled Fallow
2002	26.97	22.30	18.36	16.34	19.47	21.12	17.77
2003	12.22	16.30	22.56	23.20	15.31	21.60	24.99
2004	41.41	41.88	40.86	46.23	45.95	45.27	37.44
Ave	26.87	26.83	27.26	28.59	26.91	29.33	26.73
2003 & 04 Ave	26.81	29.09	31.71	34.71	30.63	33.43	31.22

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Grain Farmer and Conservationists Work Towards a New Common Goal

By Juanita Polegi, PAg
Assistant Manager & SE Conservation Agrologist

1998. The year of the flood. 1998 might have been the year for many events but Rick Poirier, a farmer from Antler, in southeastern Saskatchewan, remembers it as the year that heavy rains caused extensive local flooding and many other associated problems. "After one very heavy rain, the creek started to flood. I couldn't believe how fast the water could run!" said Rick. In the years previous, he had dug drainage ditches on a few fields. Once the rains ended, it didn't take long for the neighbours downstream to let him know how they felt his draining practices affected them. Soon after, Rick got involved with a group that eventually became the Four Creeks Watershed Advisory Committee.

At a recent meeting in Redvers, Rick shared how his involvement in the Committee has made him more aware of the many different points of view people have regarding the wetlands scattered across the area. This heightened awareness has given him an appreciation for the consequences of the various methods for managing wetlands. He has, therefore, implemented a number of measures that enable him to farm the land with drainage and yet control downstream flooding. "We were open to trying things that would let us crop the land and keep the neighbours happy;" said Rick.

The first project undertaken by the Poiriers was to create small dams* on the main runs on the land with gated culverts. These dams slow the water and can even stop the flow. This has helped with the neighbours' problems downstream. The potential exists for the dams to back up and flood about 40 acres but Rick indicated that hasn't yet happened.

The Poiriers have also installed tiling (4 – 6 inch pipe) on certain areas of land. This slows the water flow and helps to get rid of saline areas. In the past, the crop there never made it to maturity. However, once the tiles were installed, Rick indicated that the following fall, they actually combined those areas!

On one of his fields, Rick had water erosion concerns. "The water flowed out of a draw and then there was a 1% slope down to the slough. Every spring and every time we had an inch of rain, we lost soil," he said. To control the erosion, he ran a pipe down to the slough. The installation of the pipe cost about $500 – 600 but Rick feels it's a worthwhile investment since the soil now stays in the field.

Installation of the tiling pipe in saline areas

Salinity is an issue that farmers in the Antler area have to contend with. If the water is left to stand around some of the large sloughs, 100 – 150 feet can be severely affected by salinity. Rick believes this is a situation where drainage* is warranted. "We know that by getting rid of the standing water, we see an increase in productivity and profit", he said. "We have verified that with yield monitors".

On the other hand, Rick has adopted some of the Beneficial Management Practices (BMPs) promoted by the Advisory Committee. He has identified those areas on his farm which are too salty, too sandy or too rocky to produce a profitable crop year after year. These areas have either been seeded down to grass or allowed to go back to the native state. "We will sacrifice these acres because they were creating problems for annual cropping each year anyway", said Rick. "In many years, we couldn't even harvest enough to get back our seed." He added that little areas of about 1 – 1.5 acres, such as those found across a ravine, create only headaches for a grain farmer anyway. "These have been allowed to go back to grass," he said.

Rick has enjoyed serving on the Four Creeks Watershed Advisory Committee. It has enabled him to hear other view points and learn about alternative practices. "The Advisory Committee has enabled everyone involved to express their concerns and work towards finding compromises and resolutions. It works for the benefit of the farmers and wildlife." The Poiriers know that they, too, have to find balance in their own operation. "We love to farm but we farm for profit. We also love water, wildlife and Nature", stated Rick. Recognizing these interests, Rick still believes drainage is an important tool for landowners in southeastern Saskatchewan but that it has to be managed properly.

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total nitrogen fixed by the plant is in the top growth. In the forage treatments, most of this top growth is removed, but there is still a quarter of the total nitrogen fixed remaining below ground. The combination of this nitrogen carry over, the stored moisture from early July until seeding time the following spring, and the rotational benefit to the durum re-crop on that stubble, resulted in durum re-crop yields quite comparable and in some cases, even higher yields as durum on chem fallow or tilled fallow (Table 2). The durum re-crop on desiccated annual legume stubbles have had only two years of data due to implementing the annual legumes to be desiccated in 2002, so the first re-crop on the stubble was in 2003. However, they have shown to have produced a slightly higher yield for the Greenfix and Grande treatments, but a significant yield increase on the 40-10 stubble.

As can be seen in Tables 2 and 3, the durum re-crop on foraged annual legumes and desiccated annual legumes have yields that are similar or even a bit higher (in some cases). So how does the bottom line look? To compare the economics, the costs for the durum re-crop include the cost of a glyphosate burn off, seeding, fertilizer, in-crop herbicide, and harvesting. In the case of the durum on tilled fallow, the cost of seeding was half that of direct seeding, but there was an additional pre-tillage cost. For the foraged treatments, the costs included a glyphosate burn off, seeding and cutting and baling.

Table 3: Durum yields (bu/ac) on desiccated annual legume stubble, 2003-2004.

	Greenfix	Grande	40-10
2003	25.96	23.44	26.48
2004	44.01	43.78	52.70
Ave	34.98	33.61	39.59

Table 4: Net return ($/ac) of average dry forage yields of annual legumes at three prices for forage.

	Greenfix	Grandes	40-10	40-10 / oats
	2001-04 Ave DryForage Yield (tons / ac)			
	0.97	1.62	2.52	1.79
$35 / Ton	5.16	27.87	59.44	33.74
$55 / Ton	24.54	60.23	109.84	69.45
$85 / Ton	53.60	108.76	185.43	123.02

The forage can provide the producer with some significant value (Table 4). It is evident that annual legumes need to yield more than 1 Ton / ac to make any money selling the forage at $35 / ton. However, if the producer is using the forage for his own use, then the annual forage produced saves the producer from buying that amount of hay. Even with forage prices at $35 / ton there can be reasonably good returns if the yields are more than 1.5 Tons / ac. At $55 / ton, the returns look pretty good. In dry years, the value of the forage has to be in that $55 / ton or better to have a reasonable net return.

When calculating the economics of the durum seeded treatments, an average of $3.50 / bu was used. At first glance, the durum in the four year direct seeded rotation doesn't look too good, with only a net return of $29.97 / ac. However this

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GRAIN FARMER AND CONSERVATIONISTS WORK TOWARDS A NEW COMMON GOAL ... CONTINUED

Etienne Soulodre is a Rangeland Agrologist with the Saskatchewan Watershed Authority (SWA). Etienne became involved in the Four Creeks Watershed Advisory Committee as part of SWA's watershed planning process. He believes the Committee plays a vital role in ensuring the success of the overall planning process. "I see the Committee as a forum for the local people to interact with many agencies as they work towards a common understanding of the issues and solutions for local land and water stewardship," he said.

Etienne's role is to deliver stewardship programming in the watershed. He has focused on riparian area management and wildlife habitat and grazing management and stock watering. More recently, his focus has shifted to annual crop land. He anticipates that by offering similar tools to the grain producers as those offered to the livestock producers, the straight grain farmers will see the wetlands in a new way.

The success of the watershed planning process to date has been the development of strong relationships between the Advisory Committee members and agency personnel. For example, the Four Creeks Advisory Committee has worked with Ducks Unlimited Canada (DUC) to deliver a Salinity Seed program. DUC provided grass seed to producers who have marginal land affected by salinity such as that found around sloughs and creeks.

Etienne is pleased by the progress of the Watershed Committee. "Since the formation of the Committee, progress has been made in recognizing the issues and the need to work together to find solutions," he said. "Agriculture and Conservation can work together."

**Editor's note*: The intent of this article is to show how one farmer is trying to manage his land while keeping the interests of other parties in mind. The following comments were received from SWA: *It should be noted that permits from Saskatchewan Environment (SE), clearances from Department of Fisheries & Oceans (DFO,) and approvals from SWA are necessary prior to implementing drainage and constructing small dams. Small dams need to be properly designed and constructed in order to function properly and lessen the likelihood of failure which could cause downstream damage.*

If an illegal ditch or dam is complained against and is shown to have an impact, the structure will likely be removed. By having the project designed, approved and properly constructed, potential for future disagreements is unlikely. ●

The Story of the SSCA

By Gerry Willerth, a Past President and former Board Member

During the November Board meetings, the Board held a Strategic Planning session at which Gerry Willerth, a former member of the Board and Past President of SSCA, provided an overview of the history of the organization. The Board and Staff enjoyed Gerry's presentation so much that we asked Gerry if we could be print it in the Prairie Steward so that it could be shared with our members. We hope you enjoy it, too.

Prior to 1987, there was no voice for soil conservation in Saskatchewan. The Alberta Conservation Tillage Society (ACTS) had been formed a few years earlier and from its beginning, some Saskatchewan farmers attended its meetings. The Man Dak Zero Till Association was also organized sometime in the early '80s. It attracted a number of farmers from Saskatchewan but as we weren't from either Manitoba or North Dakota, we had no voice in their organization.

In 1987, some informal talks were held among some producers about the possibility of forming a Saskatchewan based soil conservation organization. Jim Halford & Glen Hass worked out a course of action. A grant was received from the Saskatchewan Department of Agriculture to hold six informal meetings across the province to gauge the interest in forming an organization. The feedback from the meetings was very positive. We then asked Man Dak to hold its Zero Till Annual Conference in Regina. It did and approximately100 people at that meeting indicated an interest in forming a Soil Conservation group in Saskatchewan.

Glen Hass, a professor at the University of Saskatchewan's Extension Department was appointed as the first Executive Director. In 1988, the first Annual meeting was held in Saskatoon and the organization was named the Saskatchewan Soil Conservation Association (SSCA). The organization's bylaws were passed by the 80 founding members and then a Board of Directors was appointed. Brett Meinert was elected the first President. He served on the Board with 6 volunteer directors.

At the time, the mandate of the SSCA was focused on ideas and concerns about soil only; there was no mention of water or air. There were no concerns about delivering an extension program or lobbying government.

In 1989, the second annual meeting was held in Swift Current, hosted by the Wheatland Conservation Association. The meeting lasted for a half day. Later that year, Saskatchewan Agriculture approached the SSCA about delivering the Canada – Sask. Soil Conservation Agreement's extension program, Save Our Soils. If we accepted, the SSCA would have a $3 million budget and 3.5 years in which to deliver an education and extension program. It wasn't expected that SSCA could "really deliver the goods". But no one was expecting the Board of SSCA to hire such dedicated, visionary & enthusiastic staff.

John Kiss, the Soils Specialist with Sask Agriculture was seconded from that department and became our new Executive Director. We then hired 6 Regional Soil Conservation Specialists, a Shelterbelt Specialist, a Rangeland Specialist, an Economist and an Office Manager. A Communications Specialist was hired at a later date.

Field shelterbelts being planted near Buchanan through the SOS program

Sask Agriculture provided offices to the Regional Specialists in each of their 6 regional offices, while the Head Office Staff were located in Regina in the Walter Scott Building.

The Regional Staff were well accepted by the producers in their areas. As a result, the SOS program, through the SSCA, was very successful. Many miles of field shelterbelts were planted, many acres of marginal land were seeded to forages, tillage was abandoned in favour of chem fallow, and direct seeding was just beginning to garner some interest.

Nancy Fraser, SSCA's former Rangeland Agrologist discussing grass management with a producer (June 1990)

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was due to a very low yield in 2003 as compared to the other durum re-crop treatments. If the 2003 yield was comparable to the other treatments, the net return would have been about $45.35 / ac. It is still lower than the other treatments, but one needs to consider the net returns of the other crops in this rotation also. The grain protein, however, was usually the highest of all the treatments.

The net return on the two fallow treatments looks pretty good, but one has to remember that there was a direct cost (not to mention an opportunity cost that wasn't calculated in here) in the fallow year. If one takes into account the cost of an average of three chem fallow treatments from the previous year that the crop has to cover this year, it results in a net return of $47.57 / ac (shown in brackets in Table 5). The same applies for three tillage operations in the conventional fallow treatments. As a result, the net return on the tilled fallow treatment is $48.30 / ac.

Durum on foraged stubbles compares very well, especially the pea treatments. The protein content of durum on 40-10 foraged stubble tends to be higher than the other foraged treatments and the pea / oat mixture tended to have the lowest grain protein (data not shown). Using annual legumes for forage produces a product with value during the fallow year and provides very good cereal re-crop the following year. This practice looks very promising for producers.

Although the durum grown on desiccated annual legume stubble has the highest net return, like the other fallow treatments, there is a cost from that fallow year that needs to be accounted for in this net return. The desiccated treatments do have a higher overall cost than the other fallow treatments, costing $24.75 / ac for the glyphosate burn off, the seeding operation and desiccation. Once this cost is deducted from the net return, shown in brackets in Table 4, only the 40-10 treatment is in the same net return range as the durum on foraged pea treatments.

Table 5: Net return ($/ac) of durum on various stubbles and fallow treatments 2003-2004.

	Gross Returns ($ / ac)	Costs ($ / ac)	Net Returns ($ / ac)
DS Durum	93.87	63.9	29.97*
Durum on Chem Fallow	117.01	54.44	62.57 (47.57)
Durum on Tilled Fallow	109.27	45.97	63.30 (48.30)
	Durum on Foraged Stubbles		
Greenfix	101.82	54.44	47.38
Grande	110.99	54.44	56.55
40-10	121.49	54.44	67.05
40-10 / oats	107.21	54.44	52.77
	Durum on Desiccated Treatments		
Greenfix	122.43	49.47	72.96 (48.21)
Grande	117.64	49.47	68.17 (43.42)
40-10	138.58	49.47	89.10 (64.35)

To summarize, use of annual legumes, particularly a long-vined silage pea like 40-10 as a forage crop, with the forage cut in the first couple weeks of July, can provide producers with an alternative to traditional tilled fallow and chem fallow, except in drought years. Wheat grown on chem fallow in years of average to above average moisture, tends to have lower grain protein as compared to wheat in a continuous cropped direct seeded system or tilled fallow system. Annual legumes provide forage during the fallow year, allow time for soil moisture re-charge and will leave about 25% of the plant's fixed nitrogen in the soil. The cereal re-crop the following

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SSCA Staff Mark Service Milestones

They say "time flies when you're having fun" and that has certainly been the case for many of the SSCA Staff.

The SSCA hired its first staff in January 1990. Blair McClinton and Juanita Polegi were members of that first staff team. Blair was the Regional Soil Conservationist in the North West and Juanita took on that role in the East Central Region. Fifteen years later, Blair and Juanita are still members of the Staff. In 1994, Blair moved to Indian Head when he was appointed Assistant Manager. He became the Executive Manager in 2000. Juanita currently wears 2 hats – those of Assistant Manager and Soil Conservation Agrologist for the South East.

Two members of the Staff have celebrated 10 years of service to the SSCA. Eric Oliver became a member of the Staff in August, 1994. He's the Soil Conservation Agrologist based in Swift Current. In addition to his regular duties, Eric sets up the newsletter, readying it for the printer. Garry Mayerle, our Soil Conservation Agrologist in the North East stationed out of Tisdale, joined the team in October of 1994. He, too, has extra duties and for several years, was in charge of the Trade Show at the Conference.

At our Annual Conference banquet held in February, a vest for 10 years of service was presented to both Eric and Garry. For 15 years of service, Blair and Juanita each received a jacket. **The Board appreciates the dedication of all the Staff members and thanks them all for their commitment to the Association.** Without them we could not have achieved all that we have. Congratulations to Blair, Juanita, Eric and Garry and thank you to all our staff for your hard work and dedication. ●

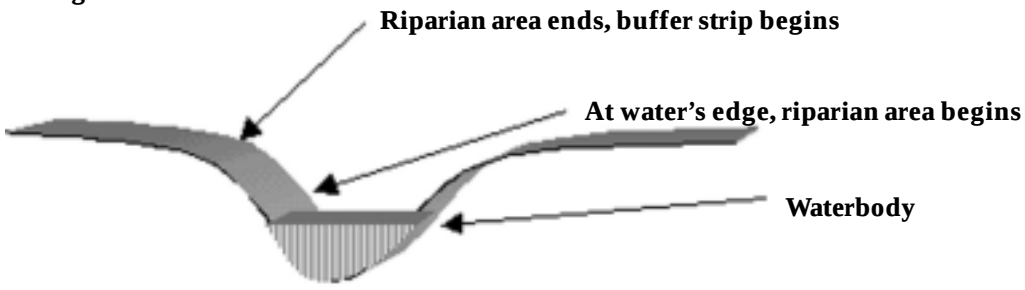
Benefits of Healthy Riparian Areas In Cultivated Landscapes

By Garry Mayerle, PAg
Conservation Agrologist

Part II in the series on riparian management in an annual cropping system.

If you are like me, you need to hear more than several times what a riparian area encompasses to really have a lasting understanding. A good definition for a riparian area is that it is the vegetative zone surrounding and directly under the influence of a water body. It stretches to the flood plain of the water body and the vegetation is distinct because it taps into the water table established by the water body (see Fig. 1). The area next to that and just upland of the riparian area should be the buffer strip which is vegetation that further protects the riparian area from runoff and sedimentation.

Figure 1



These areas aren't just some pesky water runs to flatten out and crop through so you can continue making complete passes all the way across the ¼ section. Although even I, who usually gets to run around the farm yard telling everyone else what to do over the radio, fixing their flat tires, hauling fuel to them, moving augers and being general go-for, have spent enough time in a tractor to know that at 6 minutes on a ½ mile, you can do a lot of calculating on just how many more acres you could cover if you could just go straight through the run with the 40 ft. drill. And just how could we shape this ditch so it would be dry enough to seed along with the rest of the quarter next spring.

To be convinced that you shouldn't ditch, spray, till and seed through your water runs, you will probably really need to understand how a healthy riparian area functions and the potential benefits for you. If your riparian area is a creek that only runs in the spring or a stream that can trickle all year, you may be thinking even more drastically. It may have crossed your mind to push bush, blow beaver dams, and straighten channels to get rid of that 10 or 20 acres of flooded land you are continually pulling the hired hand out of every spring.

Water is one of earth's resources we have been given. It continually cycles and is used over and over again. We need to do our part to use it wisely and to protect it for users down the line. We hear rumblings more and more frequently that water could be the oil of the future. Canada has been blessed with an abundance of fresh water. You have probably heard that we need to make sure we don't sell it short of what it is really worth. Do we realize that in our day- to-day operations we can establish practices that will enhance or deteriorate this resource?

If water will be so valuable in the future, most grain producers probably need to revaluate their approach to managing water, especially spring runoff. Most grain farmers in the northeast region, and I dare say the bulk of them in the prairie provinces, think that any spring runoff that doesn't soak into the ground where the snow fell should be channelled away from taking surface area on their land. After all, the profit margins per acre are getting smaller every year so we need all the acres we can scrounge.

However, there is value to creeks, potholes, water runs, and riparian areas that can't be measured directly in lost production from those areas. One of these benefits is increased opportunity for biodiversity. Grain producers in the business of honing monocultural production to a feverish pitch don't often think much about biodiversity. The portfolio of biodiversity in riparian areas stretches from aesthetics to microbial organisms enhancing or protecting plant production to the tune of bushels per acre.

Aesthetics to me means pointing out that graceful whitetail bounding across the field to my 9 year old daughter as we head to town or seeing that snowy white owl perched on the power pole. Whose heart doesn't race as a red fox flashes across the road in front of the truck as you head out to the drill at 5 am? What about hearing the familiar drumming of a grouse as you work on equipment in the yard next spring? Sure we need positive returns from every acre but at the expense of smelling these kinds of roses along the path of life? We can all sacrifice a few acres to provide the habitat that will keep these pleasures in life around for generations to come.

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Protecting Our Water: Watershed Advisory Committees

By Juanita Polegi, PAg
Assistant Manager & SE Conservation Agrologist

"People want to do the "right" thing but often don't know what that is. That's why education is so important", said Jeff Olson, Senior Watershed Analyst with the Saskatchewan. Watershed Authority (SWA), when asked about the need for Watershed Advisory Committees. Jeff has been involved in Watershed Advisory Committees for several years and believes the Committees play a vital role in ensuring the health of watersheds. "The Committees are made up of local people who want to take action on the issues in their own watersheds," he said. "In essence, they are in control of their own destinies."

The Lower Souris Watershed is located in southeastern Saskatchewan. Since the late 1990's, the people in that area have recognized the need to be aware of the issues and concerns of all who depend upon the water from the region's rivers and creeks. With some help from SWA, Watershed Advisory Committees were established for the Pipestone Creek, Antler Creek and Four Creeks (Jackson, Stony, Graham and Gainsborough). It is these 3 committees in which Jeff has been most involved. Jeff explained that with the formation of the Advisory Committees, SWA saw this as an opportunity to assist the groups as they developed and to work on an overall watershed plan for the Lower Souris. "The local people identify the issues and concerns around water and we provide some technical assistance as they develop their solutions," he said.

Over the years, the various committees have held a number of educational events. Meetings have been held to discuss source water protection and management within the watershed. Jeff noted that all who attend these meetings understand the importance of water and recognize the need to develop a plan. Seminars have covered such topics as the value of wetlands and the importance of proper water well decommissioning. Tour sites have included off-site watering systems, reservoirs, dams and water treatment plants. Viewing channel clearing projects, stream bank rejuvenation projects and learning to assess ecological health have also been part of the tours. A couple of the Advisory Committees have instituted Stewardship awards and developed newsletters.

At first, the focus for the seminars and tours was on the livestock owner. Historically, grazing riparian areas and stream banks and watering livestock in streams and creeks have been common practices. Though common, these practices can be very damaging. By demonstrating the many Beneficial Mangement Prctices (BMPs) that protect the water and the soil, it was hoped the livestock owners would make changes and begin to implement new methods of grazing and watering. Jeff feels that this approach has been very successful. "My experience is that the majority of livestock operators want to change once potential problems have been identified and recognized," he said.

Jeff is pleased to see that because of the Advisory Committees' efforts to educate everyone in the region, the straight grain farmers are now beginning to appreciate the wetlands as well. "The grain farmers are looking at wetlands in a new way. The farmers are seeking ways to work with the wetlands on their farms, rather than finding ways to eliminate them."

Another benefit of the educational process is that the public is also becoming aware of the importance of the water and soil resource in the watershed. "We're seeing that urban people also

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4 Creeks Watershed Advisory Committee on tour at Miles McNeil's ranch near Alameda, viewing his remote watering system.

LAWRENCE FARMS - VARIABLE RATE FERTILIZER APPLICATION STUDY ... CONTINUED FROM PAGE 1

advanced farming system option. This option includes a yield monitor to gather yield, moisture and elevation data, as well as a GPS receiver to locate the position of that data within the field. The SS Toolbox software package gathers all of the data and then constructs a yield map.

To collect the necessary data for this project, the 160 acre field was divided into 33 - five acre cells. The soil moisture depth was measured on all 33 cells, using a soil moisture probe. Nine random cells were chosen for soil nutrient analysis (Table 1). We decided not to soil sample all 33 cells for two reasons; the cost of soil sampling 33 cells and that we predicted these random cells would provide enough data to determine the representative nutrient status for the entire field.

Table 1 shows the division of 33 cells on the entire 160 acre field. The stored soil moisture was measured in each cell using a 3/8" steel soil moisture probe. The stored soil moisture depth recorded (top figure in each cell in Table 1) shows that the range in stored soil moisture varied from cell to cell across the entire field. The variability measured between adjacent cells across the entire field ranged anywhere from zero to six inches. The extra six inches of moist clay soil equates to about one extra inch of moisture for crop use. The most significant soil moisture variation was 16 inches, which occurred on two adjacent cells on the west headland of the field. The significant difference could signify variations in snow depositions from winter.

Table 1 - Soil moisture depth + soil nitrate levels, Spring 2004

36	38 N = 48 lbs	35
37	35	34
34	36	31 N = 42 lbs
30 N = 47 lbs	32	29
30	36	30
30	32 N = 93 lbs	36
32	32	34 N = 34 lbs
36 N = 54 lbs	32	38
32	32	36
32 N = 42 lbs	26	36 N = 43 lbs
32	24 N = 32 lbs	40

The results from the nine random soil samples showed some variation in nitrate levels (bottom figure in random cells) where 8 of the 9 cells tested had nitrate levels that varied from 32 to 54 lbs / acre N. We did, however, have one cell near the centre of the field that recorded 93 lbs / acre N. This cell could be an anomaly and therefore does not fairly represent the field. The status of the other nutrients tested showed that P, K and S levels displayed insignificant variation across the entire field, with K and S nutrient levels in sufficient amounts.

Management zones were constructed according to yield maps of previous years. We decided to proceed with three nitrogen treatments - low, medium and high rates. The area of each nitrogen rate encompasses approximately 15 acres, which would be repeated three times across the entire length of the field. The nitrogen rates include:

Low rate = N application at 80% of soil test recommendations - equates to 29 lbs / acre.

Med rate = N application at 100% of soil test recommendations - equates to 35 lbs / acre.

High rate = N application at 120% of soil test recommendations - equates to 42 lbs / acre.

With the residual soil N and the addition of the 35 lbs / acre (the soil test recommendation), our yield goal for durum wheat was about 38 bu / acre. The experience on the Lawrence farm suggests that 1 bu / acre of durum wheat will utilize about 2.2 lbs of nitrogen.

Table 2 – Treatment yield response (all reps)

Rep 1			Rep 2			Rep 3		
Low rate (bu / ac)	Med rate (bu / ac)	High rate (bu / ac)	Low rate (bu / ac)	Med rate (bu / ac)	High rate (bu / ac)	Low rate (bu / ac)	Med rate (bu / ac)	High rate (bu / ac)
7.5	10.4	11.9	10.7	9.6	10.6	9.7	9.5	3.5

Table 3 – Treatment yield and protein response (averaged)

Treatment	Yield (bu / ac)	Protein (%)
Low rate	9.3	18.2
Med rate	9.8	18.2
High rate	8.7	17.7

The field was direct seeded on May 25, using Bourgault's 5710 mid row bander on a 9.8 inch row spacing. The mid row coulters on the drill were used to apply the liquid N. Bourgault's narrow spoon opener was used to place the durum seed with 25 lbs / acre of actual 12-51-0-0.

The crop had decent emergence and establishment while the spring rains seemed to advance the crop at a significant rate. In fact, up to the end of June, the Lawrence farm had

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THE STORY OF THE SSCA ... CONTINUED FROM PAGE 8

In1993-94, SSCA began delivering a Direct Seeding program, funded by TransAlta Utility Corp, Monsanto and Sask Agriculture. The focus of the program was to encourage farmers to adopt direct seeding in order to conserve soil and retain soil Carbon. With roughly 50% of the province's farmers now direct seeding, we rarely see black skies in the spring due to the blowing soil. As direct seeding has evolved, we see more emphasis on fine tuning Direct Seeding methods and more interest on soil quality (worms and microbes).

Since that time, the Kyoto Accord has been signed. The SSCA is now delivering programs through the Greenhouse Gas Mitigation Program for Canadian Agriculture. Its emphasis is more on air and water as well as soil. If another program is developed, it will likely include incentives for GHG projects.

A grassroots, producer based organization delivering an extension and awareness program across the province has proven to be a highly successful formula. In fact, the Soil Conservation Council of Canada (SCCC) has recognized SSCA's success, holding it up as an organizational model for other soil conservation groups across the country.

Remember the SSCA Field Days held just before Farm Progress Show? We could always count on a rain just prior to the Field Day!

The SSCA can be proud of its many accomplishments. It has played a major role in the adoption of direct seeding – an environmentally sound farming practice. It has also led the charge on the carbon sink issue, striving to ensure the farmer is credited for the carbon he / she has stored. It continues to educate farmers. To date, 17 Annual Meetings have been held across the province - Swift Current, Yorkton (on the arena ice), Regina (in conjunction with SCCC), Prince Albert (there was food poisoning), Moose Jaw (this was the beginning of the large conferences), Lloydminster twice (when 1100 people were fed in 17 minutes!) and the last nine meetings alternating between Regina and Saskatoon.

From its humble beginnings with 80 members, the SSCA's membership has grown to nearly 1000, a reflection of the need for a producer group that can represent the needs and interests of the producers. With continued support from farmers, government and industry, the future is bright for the SSCA. ●

HOW SAFE IS YOUR RATE? ... CONTINUED FROM PAGE 5

Table 2: **Wheat yield (bus/ac) impact of split applications of N where it is all dribble banded in crop at low rates (25 and 37.5 kg/ha) or at higher rates where 25 kg/ha is seed placed followed by dribble banding on 25 or 75 kg/ha compared with similar rates where all the N is side banded at seeding. (Brandt et al., 2004)(3 site-years of data).**

Location / Placement Method	Total N applied (kg / ha)				
	0	25	37.5	50	100
Scott					
Side Band	37.9	45.8	42.4	44.8	44.9
Split, seed placed and dribble band	37.9	44.7	41.1	45.8	45.9
Swift Current					
Side Band	25.4	**35.2***	**37.8**	**42.1**	**49.5**
Split, seed placed and dribble band	25.4	30.0	29.7	36.9	44.6
Canora					
Side Band	41.2	56.0	58.5	60.1	59.4
Split, seed placed and dribble band	41.2	57.2	52.9	63.9	**69.6**

*** yields in bold denote situations where yield was significantly [P=0.05] increased by placement method at the site and same N rate.**

limited it may mean applying only P and K requirements at seeding. If moisture conditions become more favourable, then additional N as liquid UAN can be dribble banded after seeding. Recent research suggests that even with good moisture conditions, this may be an option especially where time of seeding is of the essence (Table 2). Under good N supply and excellent moisture conditions, there appears to be additional merit. However where soil N is low, there is a risk that the N may come too late to optimize yield. Where soil N is low, applying safe rates of N with the seed may be warranted. Nonetheless, it may be an option that allows for timely seeding in 2005 using your present equipment.

If you are still puzzled by what options you have, give our hotline a call at 1-800-213-4287 and talk with one of our Agrologists. Remember: **good crop establishment is key to a bountiful harvest.** ●

Busy Season Ahead for the Conservation Learning Centre

By Laurie Hayes, Msc PAg
Manager, Conservation Learning Centre

Cropping plans for 2005 are in the works. While nothing is finalized, we hope to showcase many new varieties of specialty canolas. We plan to seed Snowbird wheat, Copeland barley again this year – hopefully with better results!! Yields for both crops were actually quite good but quality was reduced to feed by the infamous August 20 frost. Selection of a wheat variety will be based primarily on days to maturity since seeding will delayed due to the spring harvesting of our 2004 flax crop.

Last year we initiated a weed survey on the CLC property. Based on initial results, our system will have to be fine-tuned. The intent is to identify the weeds present, log densities and track "movement" within fields. We are considering either the zigzag pattern used by Agriculture and Agri-Food Canada or a grid pattern (using our GPS) as studied in Guelph, Ontario. We will be consulting with Clark Brenzil (SAFRR) and our industry partners on the type of data that would be most valuable to them.

In collaboration with our industry partners, we will be demonstrating new seed treatments, herbicides, fungicides and insecticides. There will be the usual menagerie of uncommon crops: perennial ryegrass, Clearfield lentils, corn, turnips. We hope to plant some sour cherry trees. We will be demonstrating the use of a population monitor (measures the seed population in seeds per acre) on our seeder (potential field day). We will be expanding our solar power project to include the house on-site.

A number of field days are being planning for 2005. Watch for the dates:

Annual General Tour – Tuesday, July 19, 2005

Riparian Management Tours – TBA

Health assessment of pastures (native, tame, silvo, forest) and riparian areas – TBA

Depending on the establishment and number of canola and forage demonstrations, we may have separate field days on those topics.

Stop by our booth during the trade show season and pick up the Annual Summary for more updates on the CLC. Just a reminder to check out our website at **www.conservationlearningcentre.com**. Feel free to contact us at 306-953-2796 or by e-mail at *sask.soil.conservation.assoc@sasktel.net*.

The Conservation Learning Centre is grateful to its 49 partners, sponsors and supporters and the eight funding agencies that support its programs and projects. ●

ANNUAL LEGUMES AS AN OPTION ... CONTINUED FROM PAGE 9

year tends to be as good as or better in yield and grain protein as the durum on tilled or chem fallow. In addition, cutting annual legumes for forage removes any weeds before they can set seed and helps reduce weed resistance.

Desiccating annual legumes will usually produce increased cereal re-crop yields and protein, especially in the 40-10's. This practice also provides the same amount or more soil moisture as the fallow treatments, especially with the 40-10's. However, there is a higher cost with this practice ($28.75 / ac) than the fallow treatments unless there are more than four herbicide or tillage operations. It is also not as effective in reducing weed resistance as the foraged treatments. Although bred for greenfallow, AC Greenfix would not be my first or second choice as an annual legume for forage or for greenfallow for a nitrogen supply. Although it can fix more nitrogen at a faster rate under ideal conditions, it simply does not like cool temperatures. It grows very slowly under these conditions and is simply not nearly as competitive with weeds as are peas, especially in its early development.

Although desiccating annual legumes for nitrogen supply does supply more nitrogen than the foraged crops, the net returns are not any better than the foraged treatments. Unless you are an organic producer, there is generally a lot of resistance by most farmers to spray out a very good looking annual legume crop. Taking the annual legumes for forage looks like the best option since it provides a supply of forage that can be sold or used by the producer and still get the benefits of a fallow year. About 25% of the total nitrogen fixed by the crop will remain in the soil and good cereal re-crop yields and protein will be achieved the following year. Now having said that, if there is a drought in the spring, or at least lasting into seeding, then chem fallow is likely a better option.

Once again, these are only some of the potential options that may help producers improve their bottom line. If anyone has an idea of how to reduce input costs and increase net returns, or has a system that is working for them, please feel free to contact any of our staff. After all, direct seeding was thought to be a pretty zany idea 15 or 20 years ago. ●

PROTECTING OUR WATER: WATERSHED ADVISORY COMMITTEES ... CONTINUED FROM PAGE 11

4 Creeks Watershed Authority Committee on tour. Etienne Soulodre, Rangeland Agrologist with SWA, at a tame grass identification and management demonstration in a fescue field near Gainsborough.

recognize that many things need to be done concerning water management", said Jeff. "Water quality and quantity are affected not only by agricultural activities but urban, industrial and recreational ones as well." As the members of the Committees progress in their work, they are learning that watershed issues require a balance of social, economic and environmental values; that one can't be given up in favour of another.

While the Advisory Committees have been active for a few years now, Jeff says there is still much to do. More workshops and seminars are being planned as the Committees strive to demonstrate the connection between a healthy environment and a healthy, productive land. Educating the school students about water and environmental issues is also a need.

Soon the various Advisory Committees will be finalizing their watershed objectives and solutions and incorporating them in the overall Lower Souris Watershed Protection plan. This plan will identify both specific and general watershed action items – things that need to change and improve. Although a final plan will be in place, Jeff said that by no means is the work of the Advisory Committees over. "The Final Plans are living documents; that is they need to be continually reviewed and revised", he said. "The planning, implementing and monitoring processes are all ongoing."

The Watershed Advisory Committees of the Lower Souris Basin are examples of how, with a little help from the experts, bringing together local people to identify the issues and concerns can then enable them to work towards finding the solutions that best fit their local situation. A little awareness, a little education and a lot of cooperation will ensure that the quality and quantity of the water in the region is maintained, and perhaps even improved, for future generations. ●

4 Creeks Watershed Authority Advisory Committee on tour. Viewing the shallow buried pipleline system and troughs at the Ted Artz place, south of Pierson, MB.

BENEFITS OF HEALTHY RIPARIAN AREAS IN CULTIVATED LANDSCAPES ... CONTINUED FROM PAGE 10

Other benefits of biodiversity might positively impact the bottom line. Many insect pests that sometimes multiply to big enough numbers to cause economic damage have biological enemies. Predators of these crop pests may need the habitat riparian areas provide. Crop scientists are just beginning to focus research on biological control agents for pests such as weeds. Who knows if riparian areas might not provide some of the answers to this research or even have been habitat for mitigating outbreaks we didn't realize were pending?

The vegetation in healthy riparian areas provides food to enhance aquatic life. In locations where the riparian vegetation includes larger woody species, shade can reduce water temperature providing more potential for fish. Cooler stream temperatures increase dissolved oxygen holding capacity reducing the potential for algae. Less light on the water also limits photosynthetic activity further reducing the potential for algae. Debris from larger woody species provides structure such as pools, riffles, and runs in water bodies with longer term flowing water. These structures are also important components benefiting aquatic life.

Some might call these benefits to healthy riparian areas rather airy or ideological, though none the less important! Look to further articles in the series for more down to earth benefits of riparian areas for grain producers. ●

LAWRENCE FARMS - VARIABLE RATE FERTILIZER APPLICATION STUDY ... CONTINUED FROM PAGE 12

recorded approximately five inches of rain. As a result of the good looking crop and decent soil moisture, the Lawrences decided to dribble band an extra 15 lbs / acre of 28-0-0 across the entire field.

The rains, however, quit for July and August, and the once promising crop diminished. The field was harvested at the end of September. Yield and protein results are shown in Tables 2 and 3.

Due to the nature of the dry summer on the Lawrence farm, the yields of all treatments did suffer. There was no pattern exhibited by the individual treatments in either yield or protein measurements. A yield map was constructed with the software package, however no significant correlations could be made between stored soil moisture, topography and yield.

We believe the later seeding and rooting depth played a significant role in the reduced yields. The plentiful rains near the end of May and throughout June did not require the durum to root deeply. When the hot dry summer arrived, the yield of the shallow rooted durum wheat suffered.

We also believe this project has enough merit to continue on into 2005. The next crop to follow in the rotation will be canola. Watch for project updates in upcoming issues of this newsletter.

Seeding Trends 2005

"Direct Seeding Evolution"

Sponsored by the Seager Wheeler National Historic Farm
In co-operation with
The Saskatchewan Soil Conservation Association (SSCA)

Wednesday June 1, 2005

At the Seager Wheeler Farm Located 7 km's East of Rosthern on highway #312
Activities commence at 9:30 a.m.

THIS IS SASKATCHEWANS ONLY DIRECT SEEDING FIELD DAY!

Highlights will include:

- Direct Seeding Equipment Demonstrations
- Sprayer Demonstrations
- Industry Exhibits
- Long term benefits + producer challenges of direct seeding
- Direct seeding evolution
- Corn and forage production in direct seeding
- Forage fertilization – Greencover project
- Bio-diesel demonstration
- **Horticulture seminars**

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