The Newsletter of the Saskatchewan Soil Conservation Association

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Alive and Well Into the Next Millennium

Doug McKell

SSCA Executive Manager

The Green Plan is history and we're still in business! This was an issue back in 1994 when I took over the reins of the SSCA stagecoach. Many people felt the SSCA was underfunded for the last program and would not make it past March of '97. Others felt we had outlived our usefulness and would revert back to a "newsletter" organization or would dissolve and become a memory of the eighties. But we made it. And, we have signed some contracts that will take us through the next three years into the next millennium.

Unlike the last three years where we had one contract on which to focus, we now have several jobs to accomplish under a number of separate contracts. Our largest commitment is to the Agri-food Innovation Fund where we will conduct an information delivery system to farmers that is specific to sustainable agriculture. We have agreed to coordinate information between researchers, industry and farmers on any new and emerging technology pertaining to sustainable agriculture practices. This gives us a broad mandate to continue to work with farmers who are just getting into low disturbance seeding and also to work with those with whom we have interacted over past years and who will be demanding more specific and advanced information. One of our long standing partners, Monsanto Canada Inc., will provide us with funds to help us do this and also to help us reach more farmers so that we can convince them of the benefits of low disturbance seeding (LDS).

Our partnership with TransAlta Utilities will continue but will take on a slightly different role. In the past three year contract, TransAlta asked the SSCA to work towards increasing LDS acres in Saskatchewan. This we did and as such TransAlta now has enough acres to satisfy Environment Canada that they have done their part to develop a viable carbon offset program that addresses Canada's climate change goals. Our current contract with TransAlta has us working with over 120 cooperating farmers in Sask. who have changed to the LDS system in an effort to quantify the effects of LDS on soil carbon levels. This has tremendous implications for the power generating industry and the Canadian government. Canada has to find a way to offset the CO_2 levels we are emitting into the atmosphere. One way to do this is to bank carbon in the soil through sustainable agriculture farm practices. We know this happens through practices like LDS but we need to determine just exactly how much carbon is sequestered through this practice. Once we know how much carbon is being stored we can develop a program whereby the rights to soil carbon can be transferred from grain producers to power producers through a brokerage agency like the SSCA. There are going to be a lot of interested parties in the power industry with money who will look at what we are doing and the results of our programs. This may be the way the SSCA can sustain our existence in the years beyond 2000. It's leading edge stuff which may result in the SSCA being right in the middle of the global warming/climate change issues coming down the pipe. It may also help change the way urbanites look upon rural producers. Right now many urbanites view modern farming practices as harmful to the environment and farmers as

polluters. If all goes according to forecast, prairie producers can be seen as doing their part to contribute to a cleaner environment as well as addressing the global warming issue.

Other plans in the works will have the SSCA working with industry to develop and extend information on precision farming techniques and other new and emerging technologies that relate to soil conservation and sustainable farming practices.

Service to our SSCA members will also be a main component of future programs. Our membership has doubled over the past three years and will continue to grow as we reach and service new areas. Programs like our health benefits package will add to what we offer our membership.

We're alive and well and looking forward to conducting soil conservation programs through the remainder of this century. We hope you will be a part of these programs as well.

Bear Hills Part of Direct Seeding Study

by Ken Sapsford and Juanita Polegi

SSCA Soil Conservationists

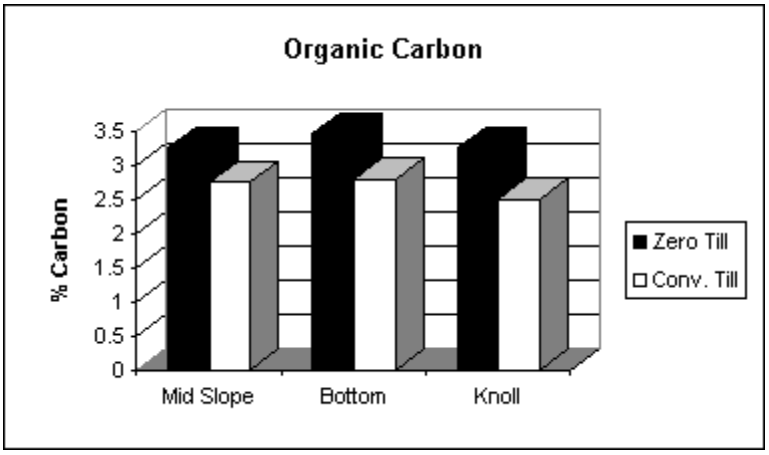
Hills are great in the winter when you want to go tobogganing but they pose a real challenge to farming. Following a few years of cultivation in a conventional tillage system, steep hills tend to develop eroded knolls. With the loss of topsoil and a decreased ability to allow water infiltration on the knolls, a decrease in yield is most often the result. As less and less crop residue is produced, the greater the potential for even more erosion to occur. This cycle can go on and on. But with the adoption of direct seeding, many farmers cropping hills are noticing big differences in both their yields and erosion potential.

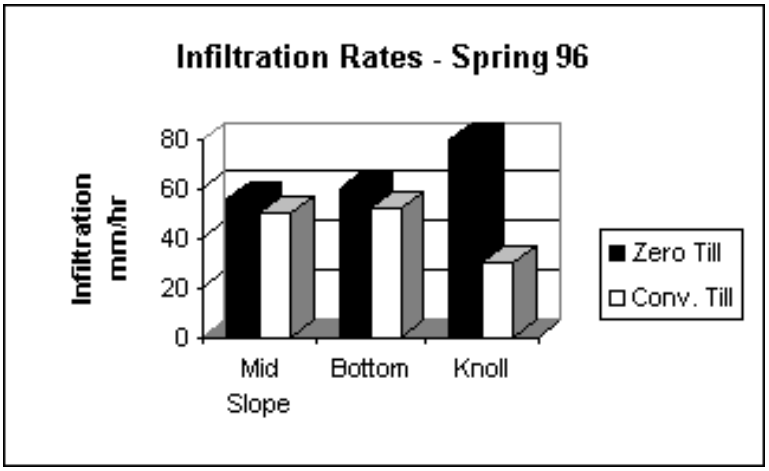
Ken Sapsford, Regional Soil Conservationist, who farms near Perdue, has been interested in some of the research currently being conducted in the area. "As a farmer who also contends with hills, I've seen for myself that the soils on the knolls change as the field is direct seeded and continuously cropped. It's good that now we will have some research that can put some numbers on those changes."

Allan Efetha, together with Darwin Anderson and Clint Hilliard of the Soil Science department at the University of Saskatchewan and Jane Elliott of the National Hydrology Research Institute, began a study on tillage and rotations in the Bear Hills (south of Biggar) in the fall of 1995. The objective of their study was to compare the effects of conventional tillage (CT) and zero tillage (ZT) systems on soil properties at a landscape scale and their effect on potential runoff. The study is also being carried out at the Conservation Learning Centre near Prince Albert and is part of a bigger project investigating the effect of tillage systems on the transport of agricultural chemicals in surface run-off. The entire project is funded by the Canada- Saskatchewan Agricultural Green Plan Agreement.

The research group undertook their study on hills in two different fields. The zero tilled field has been continuously cropped for the past 10 years while the conventional tilled field is under a crop-summerfallow rotation. Looking at the knolls, midslopes and valleys of the hills, the group measured a number of things including organic carbon, aggregate stability, soil moisture and infiltration rates.

The organic carbon content of the soils was measured to a depth of 0 - 10 cm. The zero tilled field contained a significantly greater amount of organic carbon at all slope positions, including the knoll, than the conventional tilled field. In terms of soil aggregate stability, the knoll in the zero tilled field had larger and more stable soil aggregates than did the conventional tilled field.





Soil infiltration rates were measured in the fall of 1995 and again in the spring of 1996. In both seasons, the knolls in the zero tilled field allowed greater water infiltration than did those in the conventional tilled field.

While continuously cropping and zero tilling brought a number of benefits to all the slope positions, these benefits were more pronounced on the knolls. Sapsford says, "On our farm and some of the neighbour's farms where direct seeding and continuous cropping have occurred for a number of years, there's been an overall yield increase in each field. We think that's because the knolls are now producing like the rest of the field."

As tight profit margins continue to plague prairie agriculture, enhancing the productivity of every acre becomes increasingly important. Bare, eroded knolls are no longer standard features of hilly farms. Well planned crop rotations in a direct seeded system can ensure the knolls regain and retain their productivity.

SSCA Member Benefit Analysis

We are seeing significant developments in the association benefits marketplace in recent months. More and more associations are realizing that providing value-added member services is very important in attracting and retaining a solid membership base. The SSCA's newly developed *Member Benefit Insurance Plan* is an excellent example of this type of initiative.

The *Member Benefit Plan* is a voluntary group insurance program exclusive to current SSCA members. The plan is designed and administered by DW Anderson Consulting Group. The primary insurance carrier is one of this country's largest insurance companies: Sun Life of Canada.

In a nutshell, the *Member Benefit Insurance Plan* provides the flexibility of an individual insurance program with the cost and underwriting advantages of a traditional group insurance package. After electing at least one of the two "core" benefits, the member has the ability to "cherry-pick" from the several remaining options to truly create their own package of insurance benefits to meet their own needs. In addition, a special out-of-province travel insurance option has been made available to the SSCA plan through Ingle Health which provides members with unlimited emergency travel coverage for any number of 8-day trips taken within the year. SSCA members also gain access to the association's exclusive "Snow Bird" travel insurance rates through Ingle Health.

As mentioned, there are several association benefit programs that have been rolled out lately. One such plan is the "Country-Care Plan" available through the Saskatchewan Wheat Pool. Although the *Member Benefit Insurance Plan* appears similar to this and other plans available, there are significant differences.

While other benefit plans are "pre-packaged" and have very little flexibility to customize it to the member's needs, the SSCA's plan has tremendous flexibility in that there are only two "core" benefits available and each member has the ability to pick their own options after the "core." Also, the SSCA plan provides the ability to choose "couple" coverage which at older ages will be more appropriate and less costly than having to elect a "family" coverage option.

Other plans have significantly lower limits on key benefits versus the SSCA plan. For example, the SSCA's healthcare provides members with unlimited annual and lifetime benefits (per insured) versus a $10,000 per year maximum and a $30,000 lifetime maximum (per insured) found with other plans. The SSCA travel health plan has unlimited annual and lifetime maximums also versus lower maximums found with other plans. There are no lifetime maximums for the prescription drug component of the SSCA health plan either whereas other plans include the prescription coverage in arriving at the $30,000 lifetime maximum. The SSCA healthcare plan covers all paramedical services where other plans available do not. The SSCA dental care plan does not have the restricted benefits in the first year as many other plans do. The SSCA dental plan begins at 100% coverage immediately. Also, the SSCA plan provides higher coverage limits on certain dental procedures than other plans available in the marketplace.

Additionally, the SSCA program has been designed without deductibles for the travel, health and dental care benefits. Other plans are designed with annual deductibles which of course raises the actual plan costs for the member.

The SSCA plan has guaranteed issue products available on both "core" benefits (up to age 50). Even the out-of-country travel portion of the SSCA plan has non medical approval (certain conditions may apply). Also, each SSCA plan member applying for healthcare is guaranteed a minimum level of prescription coverage under this benefit regardless of medical history. Furthermore, if an SSCA member currently has Blue Cross health/dental coverage, they can be automatically guaranteed full healthcare coverage under the SSCA program simply by providing the policy number of their current coverage. Similar benefit plans being promoted require medical underwriting and approval on all benefits.

Other benefit plans have limits of 30 days out-of-country health coverage (per trip) with no option to extend the coverage beyond the 30 days if it is needed. Most travelers would not fully utilize their per trip limit but are paying for it regardless. However, the SSCA plan provides basic 8-day coverage with the option to extend up to 6 months per trip at discounted rates. With the SSCA plan, members only pay for what they need, when they need it and can extend it as required.

Some questions often asked by SSCA members:

"I've compared the costs and it appears the SSCA plan is higher than my Blue Cross health and dental coverage for me and my family." The SSCA plan was designed to provide solid, comprehensive coverage for SSCA members at an affordable price. Although at some age ranges the cost is higher for family coverage, the SSCA plan currently provides significantly higher levels of health and dental coverage than the Blue Cross plan. In addition, there is no "6 month waiting period" associated with the SSCA plan's dental benefit - full coverage begins immediately and it is not "phased in" over the first three years. As with most purchases, you get what you pay for.

"I want a plan that has long term guarantees." As with any association or group insurance program, the rates that are charged to the plan may increase or decrease each year based on claims experience for the group. The insurer, Sun Life of Canada, has priced the plan very conservatively with the expectation that rates will remain stable.

"Do I need to have a medical exam to qualify for benefits?" The two "core" products are automatic issue for applicants under age 50. Additionally, applicants who already have individual Blue Cross health coverage and apply for health coverage under the SSCA plan are automatically issued coverage simply by providing their Blue Cross certificate number. Optional benefits require completion of a short questionnaire.

"I have heard that the Wheat Pool plan uses a consultant out of Ontario as their plan administrator. Where is the SSCA's plan administrator and consultant located?" The SSCA's consultant for the Member Benefit Plan is DW Anderson Consulting Group out of Moose Jaw, Saskatchewan. The consultant has several district representatives throughout Saskatchewan to

serve the needs of SSCA members. As well, there is a convenient toll free number (1-888-878-7722) SSCA members can utilize to ask representatives questions about the Member Benefit Plan or simply to have information sent to them.

Charter Member Passes Away

By Juanita Polegi,

SSCA Soil Conservationist

Long time member of the SSCA, Glennis Carlson of the Stenen area, passed away, June 5.

Glennis and her husband, Gerald, began farming in 1975. When the Crystal lake Soil Conservation Cooperative formed in 1985, Glennis and Gerald became members. Glennis was then elected the co-op's secretary. The co-op was very active and by 1989, it had planted over 80 miles of trees including the 15 miles planted by the Carlsons.

When the Save Our Soils program came into effect in 1990, Glennis became the chair of the District 18 ADD Board's SOS Committee.

In 1987, Glennis attended the first meeting of the SSCA. She joined the Association at that time, maintaining a continuous membership. In recognition of the Carlsons outstanding commitment to the soil conservation effort, a plaque was presented to them by the SSCA in May.

Glennis is survived by her husband, Gerald, two daughters and their husbands, a son and three grandchildren.

Conservation Learning Centre Update

By Pat Flaten,

CLC Manager

On a warm, sunny day in the summer, what could be better than attending one of many field days put on in the province? Once again, we have lots to choose from here at the Conservation Learning Centre, some of which have already past by the time of this issue of the Prairie Steward's distribution:

Beef Producer's Day June 25 12:30 p.m.

Canola Choices Day July 8 2:00 - 4:00 p.m. AgrEvo BBQ to follow

Crop Health Day July 24 1:30 - 5:00 p.m. Jam-packed afternoon

Preharvest Day August 14 1:30 - 4:00 p.m. Monsanto to follow

Self Guided Days anytime all day, evening bring a lunch

Canolas - We have eight canolas demonstrated at the CLC this summer, just about half of our annual cropland is canola, so it should be interesting for any of you who are curious about the newest varieties. In particular, six of these are herbicide tolerant, including Smart, Roundup Ready and Liberty Link Canolas. It is exciting to see some developments toward hybrids. We have three of AgrEvo's hybrid Liberty Link canolas. This year, perhaps you tried what we did, taking advantage of a preharvest Roundup treatment last fall on wheat, skipping the preseeding burnoff and going directly to an in-crop application of the appropriate herbicides. In our case, that last application was late, due to another brutal spraying season. However, the vigorous growth of some of these canolas prevented weeds from getting the upper hand (or leaf, in this case). It gets pretty exciting to see these developments shown successfully on a field-scale basis.

Crop Health - We had some challenges in the past with achieving the yields we think we should be getting on this land, especially with polish canola and peas. This year we have Agriculture and Agri-Food Canada and industry representatives involved in testing products for disease control on these two crops. SSCA's Do's and Don'ts of Direct Seeding Plots are back again, so watch for differences in crop growth related to fertilizer and seed placement, depth and amendments. Precision farming issues are highlighted in a couple of projects at the CLC, one of which is a unique project involving several collaborators -- Research Station personnel and University of Saskatchewan scientists in particular at this site. They will spend the next three years looking at how crops respond to different seeding and fertilizer rates across our parkland landscape.

Harvest - Early maturing barley was seeded this spring just for the purpose of holding a preharvest day before most get started on their own swathing or combining. Three features of the day will be: to show timing strategies of preharvest Roundup, to show residue management strategies, and to show some strategies of moving from perennial forage to annual crops within a crop rotation. It should be a fun and interesting day!

Hope to see you this summer!

Conservation Learning Centre Sets Out on Its Own

By Greg Kane,

CLC Chairman and SSCA Director

In the spring of 1993, the Conservation Learning Centre (CLC) was established 18 km south of Prince Albert through funding provided by Canada's Green Plan and land provided by Ducks Unlimited Canada. As of March 31, 1997, the Green Plan funding ended leaving the CLC responsible for finding future funding partners. For those not familiar with the CLC, it is a demonstration and research farm that focuses on farming practices which conserve soil, water and wildlife.

The Saskatchewan Soil Conservation Association, who have administered the CLC, felt that this was an opportunity for the CLC to become an independent body. Recently, the CLC became incorporated as the Saskatchewan Conservation Learning Centre Inc. Although the CLC will stand on its own, it will maintain a relationship with the SSCA. The SSCA board of directors felt the SSCA should become one of the CLC's major sponsors since they have similar ideals.

The CLC will be seeing changes in its structure by incorporating and also seeking charitable donation status. Pat Flaten, who has run the project from its infancy, will continue as farm manager while taking on more administrative duties.

The CLC will seek funding for the farm through government, corporate and individual donations. At this time memberships will be offered to those interested in seeing the CLC continue.

On behalf of the board and staff, I would like everyone for their support of the CLC and would invite you to visit the CLC this year.

Direct Seeding Grain and Forages on Light Soil

By Juanita Polegi,

SSCA Soil Conservationist

"Our land is basically too light to keep on doing what we were doing. Direct seeding was the only way to go", said Ivan Olynyk at his farm just north of Gorlitz. Phyllis, his wife agrees. "We even have blow outs in some of our pasture so cultivation leaves the soil pretty vulnerable", she said.

The Olynyks first began to direct seed in 1990 using a Morris Hoe Drill. made available to them by the District 19 ADD Board. In 1991, one of their neighbours did some custom seeding for them using a Great Plains Air Drill through the Save Our Soils program. Other seeding equipment the Olynyks used includes an Amazon No Till Drill, a Bourgault with shovels and a Haybuster 1206. In 1994, they purchased a Haybuster 1000 and have used it ever since.

At one time, the Olynyks were forage seed growers but have since scaled down their operation so they are forage seed dealers. To keep some diversity on the farm, they purchased a few brood cows in 1993. With the arrival of the cattle, some of the poorest land was seeded down to pasture and hayland. Ivan said, "All our forages have been direct seeded with the Haybuster 1000 and we've had excellent results." Pature mixes include meadow brome grass, intermediate wheat grass, crested wheat grass and bird's foot trefoil. The hayland has been seeded to a mixture of 50% alfalfa and 50% meadow brome grass.

As the herd expanded, more and more manure needed to be spread. The Olynyks have one half section block that has only 150 acres cultivated. It's those 150 acres that have been designated to receive the manure on a rotating basis. "Every year, we spread the manure over about 30 acres of summerfallow while the rest is cropped so only once in about every 5 years does a parcel in that half section ever see the cultivator", explained Ivan. He adds that the land isn't left bare. "Once the manure is spread, we disc it in, cultivate, harrow and seed oats for green feed."

Will the Olynyks ever go back to cultivating their entire land base? Both Ivan and Phyllis are quick to say no. "Our Bourgault cultivator was a very nice unit to work with so it was hard to sell it but when we pencilled out the costs of cultivating, it just had to go!" said Ivan. Phyllis reports that since they moved to direct seeding, quack grass has been virtually eliminated from the farm. Canada thistle and sow thistle are still present but the Olynyks intend to apply some preharvest Roundup in the fall of 1997 to help clean up those problems.

The light soils the Olynyks farm respond well to direct seeding. Their operation, based on a good understanding of the soil base, has improved the land's ability to produce both grain and forage.

The Olynyk's "Pretty View Stock Farm" is an example of how a well managed cattle operation can fit into a well planned direct seeding system.

Phyllis and Ivan and their two children, Nicholas and Roxanne, raise purebred Red Angus cattle.

Disk Leveler Improves Direct Seeding Efficiencies

By Garry Mayerle,

SSCA Soil Conservationist

Ernest Holinaty, grain producer from Porcupine Plain, likes the challenges of making direct seeding work. One of the tools he has found to improve seeding efficiency in his operation is disk levelers.

In our interview he tells about one flax crop of his that most farmers would classify as a wreck. The dandelions look really bad and you can't see the flax beneath the stubble. Preharvest was out last year because the crop was malt barley and the burn-off this spring didn't make the rain fast period. Ernest says most farmers with "a white shirt and a green tractor" would turn to summerfallow to fix this field. He hopes and schemes to reap a crop off this field and maybe even an average producing one at that!

Ernest started direct seeding some of his acreage in 1992 with a Concord seeding system. His direct seeding acres have been increasing each year until last when more than half of his crop was direct seeded and this year all of it was direct seeded. He started off with 12 in. row spacing but has now gone to 10 in. He was hoping the narrower spacing would leave a smoother finish but is not sure there is any significant difference. His openers are McKay deep penetrator shovels cut to 5.75 in. wide at the toe and tapered back to about 2.5 in. wide at the shank. He stresses that this angle reduces the amount of soil thrown to the side. The Froc boot he uses does a good job of distributing product evenly across the width of cut underneath the lift this opener provides.

Similar to many direct seeders in the northeast Ernest relies on the heavy harrow in his direct seeding operation. Weather permitting he will harrow most of his acres in the fall. Also depending on weather he bands some 46-0-0 in the fall with a narrow knife opener. In the spring he may harrow to dry out land if it is too wet. He also likes to harrow before seeding small seeded crops to break up residue lumps.

Ernest has had good success at doing some topdressing. On the cereal fields he doesn't band in the fall he is single shooting 70 lbs. of N, 25 lbs. of P20, and 8 lbs. of K20. He will go up to 50 lbs. of N with his flax but he doesn't like exceeding 20 lbs. of N with his canola. He is then topdressing another 40 - 70 lbs. of N with 21-0-0-24 fines. He says if he gets the right buy he can purchase this N cheaper than 46-0-0 and the sulfur is free.

Another one of the less well known techniques Ernest uses in his direct seeding system is disk levelers. He has been using them for 2 years now and has been extremely happy with them for several reasons. One of these is that they leave the field finish much smoother. Along with this he says that they level out residue that tends to bunch without the levelers. Another important

benefit is that he is able to travel up to 7 mph and still get these smoother fields with even shallow seed placement onto firm moist soil.

Ernest mentions that setup of the disk levelers is critical in deciding the angle the disks need to run at. He has his set at only 2 - 3º toed out from straight forward and this seems to do good job for 5 mph and faster. He goes on to say these disks are very flexible. They follow the contour of the ground up and down because they are hinged. They are also spring loaded to a side force. At 7 mph. they tend to run against this spring which means they run even straighter than the 2 - 3o angle he sets them for.

Even though they are "pricey" Ernest says, "They are worth the money because of the improved efficiencies in time, field appearance and field condition."

1997 Direct Seeding Field Days a Success

By Blair McClinton,

SSCA Assistant Manager

For the second year, the SSCA held two direct seeding field days, one in the north and one in the south. While the rain and generally wet conditions tested our patience, both field days were a success. Producers were able to see the latest equipment in action and make side by side comparisons. Several producers told us that they were using the field days to help them make their final decision between two or three different machines. Several manufacturers commented that they made sales at both field days.

Rosthern Field Day and Seeding Trends '97

900 producers attended the field day at Rosthern's Seager Wheeler Farm on June 7. While the Seager Wheeler Farm has been holding field days for the past few years, this was the first time one was held in conjunction with SSCA's Direct Seeding Field Day. The assistance we received from the Seager Wheeler Farm volunteers helped make the day run smoothly.

Thirteen direct seeding machines were on hand to demonstrate their ability to direct seed into standing stubble. The seeding demo was the most popular demonstration with people crowded around equipment jockeying for a better view.

The residue management demos were also well attended. Organizers unrolled bales of unthreshed wheat to simulate harvest conditions. Each combine made four passes to demonstrate uniformity of the spread. Spraying equipment was also demonstrated at this years field day. The spraying demonstration featured both high clearance and field sprayers.

There were also plots demonstrating direct seeding "Do's and Don'ts" and herbicide tolerant crops. An information session was held with presentations on crop and pest management. In addition to demonstrations on the latest in crop production techniques, the Seager Wheeler Farm also had horticulture demonstrations and horse plowing demonstrations.

Regina Field Day - June 17

When the sky opened up on June 16 and dropped 1/2 inch of rain on the field day site few people would have thought that the field day would go ahead the next day. While we had to push some of the vehicles into their parking spot, the site had dried enough by the afternoon to run the demonstrations. Even though the conditions were wet, local producers told us they would have been seeding in these conditions. 600 producers attended the Regina field day on June 17. Those who attended were able to see the equipment work under some of the toughest soil conditions in Saskatchewan (wet Regina Heavy Clay). As with the Rosthern day there were also residue management and sprayer demonstrations.

Plot tours during the day included one of SSCA's Do's and Don'ts of direct seeding plot sites. The demonstration site is also the location of one research trial. The Indian Head Agricultural Research Foundation are using this site as part of a larger direct seeded special crops trial.

East Central Research Foundation Begins First Season

By Juanita Polegi

SSCA Soil Conservationist

Finding a level field that is both well drained and easily accessible is not always easy for those wishing to conduct research. The East Central Research Foundation (ECRF) has found such a site just west of Canora. The deep black soil and a consistent topography make the 180 acres a suitable site for the research and demonstrations the Foundation will conduct over the next several years.

Founded in October, 1996, the ECRF is comprised of 2 representatives from each of the 4 ADD Boards in the area: Districts 12, 13, 18 & 19. The Foundation has accepted a couple of mandates. The first is to research and demonstrate special crops. The second is to provide a local site for agri-industry companies and agencies to demonstrate products and ideas. Organizing projects and lining up equipment and supplies has kept the Foundation's members and agronomist busy throughout the winter and spring.

Wendy Schatz, ECRF agronomist, explained that the ECRF's site is one of many "spokes" in the Ag Innovation Fund's Special Crops Strategic Area's "Hub & Spoke" project. She said, "The "hub" is the actual variety breeding and research that will be conducted by the University of Saskatchewan Crop Science Department ,the Crop Development Centre, Agriculture and Agri-Food Canada and the Plant Biotechnology Institute. The "spokes" are the research and demonstration sites." Schatz indicated the seven other sites include Redvers, Melfort, Scott, Saskatoon, Outlook, Swift Current and Indian Head.

Each of the spoke sites has funding for the next five years. Schatz said that in that time frame, the ECRF will enable researchers to study a number of factors affecting special crops. "We will assist the researchers in setting out variety trials for lentils, peas, dry beans and sunflowers. These trials will enable the researchers to determine which varieties are most suitable for this area. Studies will also be conducted on fungicides and inoculants for peas." Identifying herbicides suitable for some of the special crops is also a project to be undertaken at the ECRF. "We'll be using a number of herbicides and a variety of rates to determine which herbicides and at which rate they can be tolerated by crops such as sunflower, fenugreek, dill, coriander, caraway and beans (pinto, black and Great Northern)," said Schatz.

Dr. Guy Lafond will also be doing some research on flax nutrition. Schatz said, "Using the NorLin variety, Lafond will side band N, P, K & S and determine the flax's response to various levels of the major nutrients".

Demonstrations will also be featured at the ECRF site. Schatz said, "We're pleased that many of the herbicide and seed companies will be establishing demonstration plots at the site. And with the increasing interest in direct seeding, the Saskatchewan Soil Conservation Association will be demonstrating their "Do's and Don'ts of Direct Seeding." Sask. Ag & Food will also set up some demonstrations." Another demonstration that is sure to garner a great deal of interest is the organic farming demonstration. Schatz said, "In this trial, we will be looking for crop competitiveness against weeds. In one treatment, we'll seed the crop at increasing seeding rates. In the other treatment, we'll seed the crop at the regular seeding rate and then seed it again at a right angle to the first pass". Both wheat and barley will be seeded.

The ECRF has set its tour date for Tuesday, July 15. For more information on the tour or the ECRF, contact Wendy Schatz (306-563-5551) or stop by her office at the Canora Rural Service Centre.

Meet the Northeast Director

By Garry Mayerle,

SSCA Soil Conservationist

SSCA welcomes Don Kelsey of Choiceland to our Board of Directors. He fills the Northeast Directors position. Don is no stranger to farmer associations as he sat on the National Farmers Union Board as one of the three representatives from Saskatchewan for the past 9 years.

As Don comes on to the board we are sorry to see Ed Beauchesne leave. He was a strong proponent of direct seeding and is changing the farming landscape around Albertville. However, ties with Ed and Marg will be maintained as their son George from P.A. comes on the board as one of the directors at large along with Adrian Johnston from Melfort.

Don farms as part of a family farming operation with his father Cliff and brothers Glen and Ray. They are farming 2700 acres just south of Choiceland very close to the Fort a la Corne Forest Preserve. Since 1981-82 they have been continuous cropping the majority of their acres. The local ADD Board ran a three year 40 acre Conserva Pak plot on their farm and the Kelseys liked what they saw. They began direct seeding with their own equipment in 1988. Flexi-coil made a set of steel packers they mounted on their Friggstad air seeder. They also switched from shovels to Dutch knives to make direct seeding work for them.

Don says that one of the benefits that attracted them to continuous cropping and direct seeding was increased soil cover. They farm gray wooded land that can have sandy knolls peaty bottoms and white clay areas all within short distances of each other. The land is subject to both wind and water erosion. With the sufficient precipitation they normally get they felt direct seeding would work well to protect their soil.

This spring Don talks about the need to have a very flexible system in their area where excess moisture has made seeding difficult in the past few years. Normally they like to band NH_3 in the fall with narrow knives. They want to open up their soil a bit and dry it out so they can get on it in the spring. However, in the last two years they have switched to spoons so they can seed place more fertilizer. It has been very difficult to get banding done in the fall! They also use a heavy harrow to place granular herbicide and spread high residue fields in the fall. With the high moisture springs they have been getting some of their canola has been seeded successfully with a bit of tillage and these harrows!

The effort Don has made to develop a farming system that will protect his soil coupled with his practical farm policy experience makes Don a welcome asset to our board.

Precision Farming: The Third Lesson

The Third of three lessons

By Bob Linnell,

SSCA Soil Conservationist

Precision Farming offers us many opportunities to use new technologies to better manage crop production. I had previously talked about key technologies and costs associated with various pieces of equipment. I also suggested you should try to attend one or more of the many seminars and training sessions offered across the country to help you get more comfortable on how to proceed. Many simple methods exist to help or even take the place of some of the more expensive analyses that are needed to get the important data you will end up with. These included aerial photos, soil maps, field tractor notes, harvest data from past years, etc.

Some of the important advantages of precision farming include getting more information about your fields so you can make more educated decisions (identify the best areas and the worst areas), Maximizing your returns (reduce or redirect your inputs can result in both reduced input costs and increased yields), and even protecting your environment (a decrease in overall inputs needed to sustain high crop yields).

Precision Farming has applications in:

yield monitoring at harvest time to target your best areas

target disease sections of a field for future use,

identify weed areas for future spraying operations so you only have to go and spray those areas and not the entire field, thus saving you tons of money,

identify rocks or other features for considerations,

variable rate fertilizer or seed application to produce the maximum yields on those pieces of ground that are proven producers,

at spraying time the technology can help prevent overlaps or misses and save you a considerable amount of money.

To answer those pitfall questions I posed last time:

Can I justify the expense? A.- How do you know that if you spend $8-$12,000 in yield monitoring that the equipment will be worth anything in the next 2 years? I don't think any of it

is really economical now but it is becoming more so all the time. Your best bet is to look for equipment that you can adapt, adopt and improve. rather than get trapped into a long term expensive system that doesn't mesh well with other manufacturers stuff.

Will it pay on your farm? A.- Depends on the size of your operation. Larger farmers can equalize the expense across more acres than you. Larger fields also stand to have more variability than your smaller ones. you judge.

How fast do I jump in or How do I start? A.-You don't need to jump in with both feet. Start with one component such as the combine monitor and work into the others parts on a gradual basis. Just remember to calibrate the monitor properly and study the system you are buying to be sure it will adapt to spraying and variable rate application at a later date and be compatible with other equipment not necessarily from the same manufacturer.

Will the price of the technology drop? and Have I done my homework? A.-Typically the prices do drop as more units become available however high tech equipment has a rather limited market and prices will likely remain relatively firm for some time. You can buy a so called complete system for all pieces of your farm equipment from one company for the purposes of printing yield maps for about $10,000, or you could put together your own design system for less. The trade off is that you will have to spend a lot more time in research.

Is the equipment user friendly? Is the equipment compatible? How fast will it change? A.- Good questions all. The key here is to look at the ease of use in the field. You don't want to spend a lot of time making adjustments to the equipment in the field, especially at your very busiest time. You usually have enough to do just concentrating on doing a proper job of just operating the machine. This is where it is pretty critical to be able to extract the data and take it to your office in the house to store or at least archive the data for future use without the worry of thinking whether the data might get lost or not be able to be read by another machine and wind up being totally useless. Look at a package with a lot of flexibility so you can import and export information with other software programs. Remember that you own the data, so it is important to preserve the raw data on a diskette so you will be able to plug it into future software.

Keep on making field or tractor notes as you do your operations to check on the new technology. Don't try to do too many things at once in the initial stages until you are comfortable with the technology. If you vary the seeding rate or fertilizer rate across the field, make a pass every so often with a constant seeding rate. My concern with farmers adopting the new technology is that they may not know if it's any better than what they did before.

Profit From My Mistakes

By John Bennett,

SSCA West Central Director

I'm not sure how I got snookered into writing about what I've done wrong. Probably it's because I started direct seeding in 1987 long before it was fashionable. Information was scarce and I've had more time to make mistakes than most. The good news is that with a comprehensive strategy, direct seeding has allowed me to stop summerfallowing and maintain consistent yields due to increased moisture efficiency. This leads me to my first mistake.

I originally thought that a pass with a cultivator would be cheaper and more effective than a glyphosate burn off. the tillage wasted moisture and while I got the first flush of weeds I buried weed seeds and had more of an in-crop problem. Lesson 1: The more tillage the more you remove the moisture you have. This realization turned me into a zero till direct seeder.

The second, fourth and sixth mistakes involved residue management. This can be translated into (2) short stubble - no snow catch and too much straw on the ground which plugs the drill. (4) Too tall stubble catches snow in the field perimeter and perhaps keeps the ground too cool. (6) Poor chaff spreading which results in uneven surface moisture to seed oilseed into.

If there is too much tillage, chaff rows tie up nitrogen. This results in yellow strips in crop as well as increased weed growth. Now I try to straight combine everything leaving 12 inch tall stubble to match my drill spacing and chop and evenly spread straw and chaff. If you bury weed seeds they will likely grow. Less tillage means less weed growth. If you doubt this look at June summerfallow that you worked in May. Compare it to one that hasn't been worked. The weeds are larger where it wasn't worked but there are less of them. Try and relate this to direct seeding. Less tillage at seeding equals less weeds in crop. there is a qualifier here, don't let the desire for low disturbance lead you into compromising seed to soil contact.

Mistake #3 was not paying attention to crop rotations. My third year of barley resulted in root disease and a 10 bushel crop. Plan a rotation that works. I use cereal, pulse, cereal, oilseed. If you want risk, buy lottery tickets. At least with them you know what the risk costs you up front.

Mistake #5 was too much nitrogen fertilizer in a canola crop. This resulted in delayed emergence, poor crop competition and delayed maturity. This led to frost damage.

What was particularly annoying was I had already learned this lesson with cereals with seed placed urea and thought side banding would give me immunity. 125 lb of actual N (250 lb of product) was too much even with 3/4 inch seed-fertilizer separation. Had I placed nitrogen with seed I would have had very expensive fallow. To be concise, seed placed fertilizer is sure to give you a kick in the teeth sooner or later. You could try explaining to your banker that it probably happens one year in four and see if he understands.

To conclude I've made lots of mistakes. Zero till direct seeding virtually eliminates erosion. The moisture efficiency will compensate for the aggravation of sorting through the system and should make you more profitable.

The qualifier here is that zero till is a complex management strategy that rewards the thoughtful integration of a host of variables. Read all you can, attend the Saskatchewan Soil Conservation Association's Direct Seeding conference or Man-Dak Zero-Till Association conference. Don't try to BS or bluff your way through. No-till is not forgiving.

Remember the only bad mistake is a repeated one. I've promised myself that if I ever have a year without a mistake I will retire because I will never have another year like it.

Residue Management - The first step in direct seeding

Eric Oliver,

SSCA Soil Conservationist

Although July seems a bit early to be thinking about next year's crop, some decisions will need to be made now in order to prepare for next year. So, what kind of decisions are these? Well, residue management decisions are now being made. What you do this fall with respect to residue will greatly influence the success of your direct seeding system the following year. The start of your direct seeding program starts at the combine. This may be old hat for many of you who have been in a direct seeding farming system for many years. However, it is important to be reminded and especially to inform those just moving into the system. This is especially important for those deciding to switch into a direct seeding system next year. The SSCA Field Days at Seager Wheeler Farm at Rosthern and at the Regina site both demonstrated good residue spreading equipment. Farmers were able to see first-hand how different choppers performed and spread the residue.

So, what are the considerations when dealing with residue? The first thing to consider is stubble height. Although there has been a rule of thumb about not cutting your stubble taller than the row spacing of your implement, there is some leeway here. This rule definitely applies to hoe drills. The rule also applies when seeding into chem fallow, even with air drill or airseeders. The straw in chem fallow tends to break off at the soil surface and tall stubble can therefore become a problem. However, for air drills and air seeders, as long as the stubble is anchored, one can generally pass through taller stubble under most conditions (except wet conditions and wet clays). If you are using a disc type opener designed for direct seeding, you can cut stubble quite high and still go through it.

The next major component in residue management is how to deal with the material coming out the back of the combine. Both straw and chaff have to be adequately spread over as much of the width of cut as possible. This is usually not a major problem when straight cutting. However, double swathing can create some problems. But, there are some general guidelines that one can make here as well. If the straw can be spread to 80% of the width of cut and chaff spread to about 50% of the width of cut, this should be adequate. Straw choppers do an excellent job of dealing with long straw. Until quite recently, the factory choppers on combines were not nearly as good as the add-on types. However, there have been vast improvements in the factory chopper design and they are close the capabilities of add-on types like Redekop and Straw Storm. If choppers are not an option on your combine, it is essential to get the straw spread as wide across the width of cut as possible. Loose straw laying on the ground will cause more problems than anchored stubble will. in this case, the length of the straw coming out of the combine should be as short as possible to avoid plugging in the spring.

Different crops will produce different amounts and types of residue as well. Most pulse crops won't leave much if any stubble. However, several of the new pea varieties pod high enough to leave some stubble behind. Under dry harvest conditions, the stems of pulse and oilseeds like canola and mustard tend to be shattered so there is mostly chaff-like residue coming out the back. This must be spread adequately. In addition, some cereals like the semi-dwarf types will produce more chaff than durum or spring wheat.

If there is a real excess residue problem that hasn't been properly spread, heavy harrows can be used to help break some of it down and to spread it over a wider area. Just remember, that this operation will cause more weeds to germinate and a spring burnoff will be needed to control these weeds.

So remember, a little forethought and preparation will go a long ways towards managing the crop residue for next year's seeding. In addition, our Farmers Helping Farmers database is available to help put you in touch with other farmers that may have a piece of residue management equipment (or other direct seeding related equipment) that you are considering to purchase. Simply contact our head office, the 1-800 line or any of our regional offices.

The Road is Long

By Clint Steinley,

SSCA President

Its been busy and very interesting times for me as a director and now president of the SSCA. Not being one to just show up at board meetings, I've always tried to be very pro-active and positive about the soil conservation movement. This has taken me to many parts of Saskatchewan as well as Alberta, since I live on the provincial boundary. The most relevant observation I've made is the move towards the adoption of conservation farming methods is growing in momentum. I feel the "middle adopters", who are the majority of farmers, are now keenly interested in direct seeding and zero till, or at least greatly reduced tillage. Farmers in the "it won't work here" areas of the prairies are beginning to understand that it does work. These observations have become very apparent to me as I have traveled around Saskatchewan and Alberta both as a speaker and a participant at various soil conservation events.

Two or three years ago when I was asked to speak at an event, the question period following a presentation would be taken up largely by challenges and dismissal of the material I presented. Not so any more. Now the questions are sincere and the interest is keen. This leads to very productive discussions and exchanges of ideas. Even at the social events or just visiting around town, the discussion often ends up on direct seeding. It might be a few questions about seeding and fertilizing or weed control strategies or depending on the season, managing a pulse crop harvest, or it might just be a comment on a good crop of peas or winter wheat. So now the "village idiot" has, it seems, become a bit of a consultant.

This all leads me to role of the SSCA. Soil conservation and direct seeding are NOT passé. The majority of farmers are just getting comfortable with the notion and are now seeking out information. This has been proven by attendance at meetings and workshops throughout the prairies this past winter. SSCA, Mandak and ACTS have all enjoyed record crowds at their annual conferences and trade shows. Two day workshops in Swift Current and Medicine Hat were standing room only, and we had huge crowds at our SSCA field days this spring. People I spoke to at events this past winter are now calling and asking to come tour our farm.

The need for the work of our association is greater than ever. Producers are entitled to up-to-date, accurate, useful and unbiased information as they go about adopting conservation farming methods. The benefits of direct seeding and zero till increase the potential for profit but also increase the potential for costly mistakes. So, we owe it to our producers to be there providing the latest and best information to them. Although our staff is small, their expertise, experience and enthusiasm is vast. Together with other extension services we can serve producers well.

History has shown that when conservation programs are not maintained, much of the good work done is lost as producers tend to revert back to less sustainable practices. In order to prevent this from happening in Saskatchewan, we must continue to grow our SSCA membership, impress

upon our governments the need for continuity of programs and convince ag industry of their role in this effort. If we can be successful in these areas (and we are) the future of our association will be secure, our members and all producers will be well served, and the health of our soil will be a high priority as we make our farm management decisions. May you all have timely rains and a bountiful harvest. See you down the road.

Precision Farming - from one novice to another!

By Tim Nerbas,

SSCA Soil Conservationist

Precision farming has been around since fields were used to grow crops. As producers, we use our best parcels of land for annual crop production and save our less productive land (steep eroded slopes, rocky plateau's) for pasture and the like. Producers have applied manure to eroded knolls, have applied extra fertilizer to various parts of the field, and have spot sprayed. These are all methods to manage field variability, improve (hopefully) crop production and in the end increase farm profitability.

Today with the help of new technology, farmers have an opportunity to manage field variability as never before. However, the use of precision farming techniques should not be thought of as anything more than additional management tools which a progressive farm manager can use to implement farm decisions. These new technologies allow us to gather information (yield, weed patches) more accurately and direct equipment movements more precisely (fertilizer and chemical applications) within a given field. Despite these advances, the agronomic information associated with these technologies has lagged behind. The District 35 Precision Farming Project was initiated to study this very aspect, the agronomics of precision farming.

The District 35 Precision Farming Project was initiated in 1996 by the District 35 A.D.D. Board. The project is located in northwest Saskatchewan, 1 mile west of Waseca (on highway #16) and 1 1/4 mile north. Research on the 40 acre parcel is being conducted at farm scale using primarily full size implements (ie: Case IH 2188 combine). Only the 12 foot Conserva Pak seeder is plot-sized. This implement allows us to use individual fertilizer products in the seeding operation such as 11-51-0, 19-3-0-22, 0-0-60, and 82-0-0. Rates of either seed or a single nutrient can be quickly changed. We make two passes with the plot seeder to make a 24 foot wide plot. This year the plots are approximately 800 feet long. Treatments in 1997 include various rates on N, P, K, S, Cu, and a treatment of no fertilizer and variable seeding rates. The two crops under study this year are barley (Harrington) and CPS wheat (Karma).

In these trials, we are looking at landscape parameters to help explain yield and seed quality (protein, grade, weight) throughout the landscape. Some of these parameters include aerial photography, detailed topographic maps, soil characterization, fertility, salinity, and the nutrient supply power of the soil. Although we are making use of GPS (global positioning system) and yield monitors, this study is not just about space age technology. It is an attempt to add to the agronomic database of precision farming.

The infancy of the project was evident in 1996 as we learned by trial and error how to use the new technology. First, the yield monitors can be accurate to within several percent but only if

they are calibrated often and properly. This requires having a weigh wagon in the field or making several trips to the local elevator to have loads weighed. Yield sensors typically have a time delay of fifteen to twenty seconds between when the crop enters the combine until it measured by the yield sensor. This lag time can vary with operating conditions and operator error. Pushing the combine to operating capacity can increase the amount of grain cycled through returns, which adds to the time delay in reaching the yield sensor. If the combine plugs or there is an irregular swathing operation, yield spikes may appear. These must be edited. Finally weed patches and/or poor seedling emergence can cause yield differences which must be accounted for in the data analysis.

Precision farming tries to determine the underlying causes of yield reductions and peaks within each field. Our problem is trying to understand the variables and how they influence yield and crop quality. This will require more management of seeding, field scouting , the harvest operation, and finally our analysis of the year's data to make decisions for next year. It is an intense management package, but over time it may prove extremely beneficial to our final net return.

The District 35 Precision Farming Project will continue to update its research saga.

SSCA Membership Awarded to Top Term Paper

By Ken Sapsford,

SSCA Soil Conservationist

Don McLeod from Plenty Sask. was awarded a three year membership in the Saskatchewan Soil Conservation Association for having the top mark in the term paper in the Soil Conservation and Land Quality Class at the U of S.

McLeod's term paper entitled "Soil Conservation By Reduced Tillage Through Direct Seeding" addresses the issues that many farmers are facing today in making the transition to Direct Seeding. "Environmentalism is rising across Canada and is confronting us all with one simple truth: what we do or fail to do individually and as a society is going to have a profound influence on the environment and our quality of life. Agriculture world wide has a greater impact on the environment and surrounding landscape than any other industry. Tillage has been the single biggest factor causing soil degradation in Western Canada."

Don McLeod is working in a family farm unit that includes his father and two uncles. They currently operate a mixed farming operation where their cropping practice includes a 50-50 crop rotation where half of the land is in summer fallow each year. During the 1980's they started continuous cropping on an intensive tillage basis, but after 1988 they went back to a 50-50 rotation.

Many farmers share the concerns the McLeods have about moving into a zero tillage system. McLeod states, "Today my dad is contemplating getting back into continuous cropping, but in a zero tillage basis instead. There are however a few things holding him back. The first is the fact that we rent quite a bit of land. Many of the landlords are still stuck in the old ways. The second factor is getting all the members of the farming unit to agree. Every time direct seeding is brought up some of them the just say, "remember 1988". The third factor is the initial cost associated with changing our machinery over to zero tillage equipment." To farmers like the McLeods who have some reservations about direct seeding, the SSCA suggests they start with a few acres to get the bugs worked out of the system. This can also be used to show landlords and farming partners that direct seeding will work. Moving to a zero till system requires more management to make it work but the SSCA can help farmers find the answers to their questions while making the switch.

The Saskatchewan Soil Conservation Association would like to congratulate Don McLeod on the top term paper in the class and wish him the best of luck in future classes.

In closing I would like to quote his final paragraph in Don's paper. "A significant amount of research has been conducted in the area of direct seeding, but much more remains to be done. If

adopted on the scale anticipated, direct seeding will represent a transformation of prairie agriculture with long reaching benefits for the environment and the farmer. It has already begun to result in a wide range of changes to cropping practices, machinery usage, and the fundamental ways in which farming is carried out. Ultimately, it may be a major factor in the survival of farming on the prairies."

SSCA Offers Farm Unit Memberships

In an effort to recognize that today's farms are operated by more than one person, the SSCA recently added a "Farming Unit Membership" status. Farming Unit Members will function as Full Members with full voting privileges. This new membership allows for the names of other farming unit partners(i.e., spouse, children, brother, partner, etc.) as part of the Farming Unit Membership. Each Farming Unit will have one vote with the SSCA, and receive one copy of the Prairie Steward and other mailings. However, all other membership benefits like conference discounts and the Members Benefit Plan would be available to every person in the farming unit registered with the SSCA under the Farming Unit Membership.

As with a Full Membership, the Farming Unit Membership fee is $100 for 3 years. There is a $25 registration fee for each additional name added under the Farming Unit Membership. If you are currently a member of the SSCA, you can convert to a Farming Unit Membership by sending the additional names along with the registration fee to the SSCA. If you have any questions about the new Farming Unit Membership, please contact the SSCA at 306-695-4233.

"*Herb Garden*" Featured at CLC

By Barry Swanson,

SAF Extension Agrologist, Prince Albert

Mugwort or Monarda? Echinacea or Elecampane? Feverfew or Fennel?

The Conservation Learning Centre (CLC), located south of Prince Albert, has a new addition - a Herb Garden. Featuring both culinary and medicinal herbs, the demonstration garden is one of the latest projects at the CLC.

The Herb Garden is a project of the District 32 ADD Board in cooperation with Saskatchewan Agriculture and Food, Extension Service. Prince Albert Extension Agrologist Barry Swanson reports, Athe CLC has become an important demonstration farm in the P.A. area. Farmers expect to see updated cropping practices and the latest in new farm crops@. Hence the idea of a demonstration site for herbs at the CLC.

Herbs are >hot= topics at farm meetings. Farmers turned out in large numbers at seminars held across the northeast during the winter months. The trend was the same across the province.

In consultation with Dr. Branka Barl at the U. of S. Herb Research Centre, 24 herbs were selected. Some, such as Oregano and Sage, are well known cooking herbs. Others such as Burdock and Valerian, are less commonly known in Canada. All were selected for their market potential in other countries.

AThe demonstration site will sort out which of the perennials are hardy and which need a helping hand to get through the winter@, outlines Swanson.

Extension Agrologists report a large number of inquiries regarding Ginseng and Echinacea over the past two years. Some producers went ahead and ordered seed and plants without ever seeing the crops growing. The CLC Herb Garden will allow growers to observe the crops growing under parkland conditions before making their planting decisions.

The CLC is open to the public during the summer months. All plots are marked and self-guided tours are encouraged.

Contact Extension Agrologist Barry Swanson at 306-953-2770 or CLC Manager Pat Flaten at 306-953-2797 for further details.

The Newsletter of the Saskatchewan Soil Conservation Association

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1998 Direct Seeding Conference a Major Success

By Blair McClinton,

SSCA Assistant Manager

1400 farmers from across western Canada and northern U.S., met at the Regina Exhibition Park, February 11 and 12, to attend the Saskatchewan Soil Conservation Association's annual Direct Seeding Conference. This was our largest direct seeding conference ever. This is also the second time the conference has been soldout (the 1993 Conference in Moose Jaw also soldout).

"The purpose of the conference was to bring farmers together to get the latest information on direct seeding and how to implement these practices on our farms," says SSCA president Bernie Niedzwiedz. "Farmers had the opportunity to have their questions answered by researchers, industry experts and other farmers," says Niedzwiedz.

This year's conference featured keynote speaker was David Irvine, a family planning consultant. He talked about the six "willings" to build a healthy, sustainalbe environment in your home and to find balance in your life:

1. Willingness to take time - S-L-O-W D-O-W-N, open up, pay attention, be in touch,
2. Willingness to say thank-you.,
3. Willingness to be accountable,
4. Willingness to contribute,
5. Willingness to let go,
6. Willingness to put first things first.

The conference had five sessions which offered a mixture of farmers and researchers to provide both experience and first hand information. This year's sessions covered topics on precision farming, crop rotations, fertility, weed control and direct seeding equipment. Speakers talked about how to integrate all this information into a successful direct seeding system.

Once again, the informal evening "Bear Pit" sessions were well attended. There were five concurrent "bearpits": How to Start Direct Seeding, Crop Management in Direct Seeding, Direct Seeding Equipment, Precision Farming and Conserving the Family. These sessions provided farmers with the opportunity to have their questions answered by experts in less formal, smaller groups.

The trade show had 80 exhibitors showing the latest in crop production technology and information related to direct seeding. The trade show continues to be a major attraction of the conference.

Due to the large crowd at the conference this year, we don't have any extra copies of the conference proceedings for sale. However, we plan to to have the proceedings available at our web site *http://paridss.usask.ca/consgroups/ssca/sscahome.htm* soon. Plans are already under way for the 1999 annual meeting and conference in Saskatoon, February 17 and 18, 1999.

Awards Given for Outstanding Achievement in Soil Conservation

The Royal Bank of Canada and the Saskatchewan Soil Conservation Association recently announced the recipients of the Conservation Family of the Year Award and the Conservation Group of the Year Award.

The 1998 Conservation Family of the Year Award recognized the achievements of **Nestor** and **Vesper Kowalsky** of Richard, Saskatchewan. The producers of N.V. Farms Ltd. were chosen for their many conservation methods including a 12 year history of min-till followed by 5 years of zero till practices, and the conversion of abandoned farmyards and marginal land into wildlife habitats. The Kowalskys state they have no desire to return to conventional tillage, noting that zero till has not only improved the tilth of their soils, but also increased their overall grain production as a result of better water infiltration. They have also been active participants in the Ducks Unlimited "Conserve and Win" winter wheat program to reduce springtime soil disturbance.

The 1998 Conservation Group of the Year was awarded to the District 31 A.D.D. Board of Nipawin. This Board has implemented one of the most successful soil conservation programs in the province. When they began their direct seeding programs in 1989, many producers believed these methods would not work in this area. But District 31 established demonstration sites that showed the success and profitability of these methods, and communicated this success through meetings, tours, reports, and a homemade video. Because of their efforts, direct seeding and min-till systems are now being used on more than 20% of the grey wooded soils in this region. District 31 has also actively promoted a shelterbelt planting program by constructing tree planters and a special herbicide applicator.

Winners were presented with gifts from the Royal Bank of Canada. Their names have been added to the list of winners on a plaque awarded annually by the Saskatchewan Soil Conservation Association. The awards were presented at the Association's annual banquet in Regina on February 11th.

Conservation Learning Centre Update

By Pat Flaten,

CLC Manager

This is the time of the year when the Saskatchewan Conservation Learning Centre releases its results for the 1997 field season. The written report, Field Results 1997, covers most of the 40 projects in progress, including those involving annual crops, forages and trees. Due to the variable landscape of the CLC, many projects consider topography in the results. The following are a few highlights regarding landscape effects from our Field Results Report for 1997.

Wheat Protein and Topography

If you were to use GPS technology to help you produce a consistently high wheat protein content across a field, how would you do it? That is a question that we started to address this summer at the Saskatchewan Conservation Learning Centre.

For a first attempt, we performed a very simple test. A hard red spring wheat (AC Splendor) field was fertilized according to soil test recommendations generated by sampling the mid-slope positions of a pothole landscape. We experienced a very wet spring, whereas July and August precipitation was almost nil.

At harvest, samples of grain were taken from the lowest, middle (well-drained) and upper (but most level) slopes. What protein levels would you expect? Since we think of drier weather conditions usually resulting in higher proteins, would you think that the most well-drained slopes would grow the highest protein crop?

In fact, the lower slopes produced the highest protein wheat. In three of four side by side strips, the lowest slope produced the highest proteins, the well-drained middle slope produced the next highest protein, and the highest but most level slope produced the lowest protein levels. So, the lower slope positions, which would have more moisture throughout the growing season, have yielded the highest protein levels in 1997 at our site. This may be due to higher available levels of nitrogen. We'll follow up with more experiments in 1998 to try to better understand how wheat protein is affected by the landscape and fertilizer applications at the CLC.

Alternaria and Canola - Topography Influence

Another project, this one conducted by Dr. Randy Kutcher of the Melfort Research Farm (Agriculture and Agri-Food Canada), looked at what trends there are with crop disease and the topography. Why? There may be benefits to applying fungicides only on the areas of the field where crop diseases are likely to occur.

Kutcher=s results at the CLC last summer show there were significant differences in the incidence and severity of alternaria in polish canola within the landscape. The disease increased in severity from upper to lower slope positions. Application of a fungicide (Rovral Flo) reduced the disease severity on all slope positions. However, a yield increase on sprayed over unsprayed plots was detected only on the lower slope positions. So, this leads Kutcher to suggest that an application of fungicide only to slope positions where it increases yield or quality should increase net returns to producers and possibly reduce the environmental impact of fungicides.

Anhydrous Ammonia used in a One-pass, Direct Seeding System

A three year project to look at the safety of anhydrous ammonia in a one-pass direct seeding system is now complete at the CLC. Dr. Alex Matus of the University of Sask. Soil Science Department and Mr. Garry Hnatowich of Sask. Wheat Pool have been comparing the use of some different openers used for applying anhydrous ammonia while seeding wheat.

The results show that adequate separation can be achieved with both the Flexi-Coil side banding opener and a sweep with Froc boot opener. Some of the earlier results showed that some paired row openers were not as successful at separating the seed from the fertilizer. Also, packing was of great importance to keep the anhydrous from escaping, especially in the wetter soils often found at lower slope positions.

Mapping for Precision Farming Purposes

Who knows more about a piece of land, but the farmer who works on it? Nobody, usually. But, there are some farmers, who although they are confident in that fact, still wish to know more. Visual images and maps of fields often have a great impact on our understanding of the land.

A number of projects and activities at the Conservation Learning Centre have included some sort of mapping of different factors affecting yield. Grid soil nutrient sampling, grid monitoring with root simulator probes, soil surveys, topography surveys, landscape element judgements -- all of these have been used so far at the CLC. Farmers in the province are also now using yield maps from combines to generate a mass of information -- causing some challenges in interpreting them, but having the potential for easy comparisons from year to year and with other maps. Others are investing in combine yield monitors without the mapping capabilities, losing the ability to refer to a hard copy of results, but still providing some valuable impressions.

Some producers are not really wanting to invest the finances or the time to use some of these methods, but still want to know a little more about their land and results of their own experiments. One of the most useful and interesting mapping tools is any type of aerial photograph. I find that often what is invisible from the ground becomes very obvious from the air. It may be as simple as spending $100.00 to fly over the farm, maybe taking a few photographs while you're up there.

Soil survey maps can be useful for a general understanding of the land and its capabilities. Also, there are black and white photos which the province and some other agencies can show you. If you live along a highway, the province often takes aerial photographs of the land including a

highway and these are available for a low cost. They are repeatedly photographed, so if you can get these, they can provide a history of moisture cycles, productivity, changes in field boundaries and land use.

Another useful type of photograph is the infra-red image. It shows the most lush crops as deeper red, while the summer fallow appears green and the water appears black. What is great about these, is that you can get a quarter or full section image, and still be able to pick out three foot wide misses or overlaps in spraying or even a walking path. So, you can get a very good idea of what areas of a field are more or less productive. The next step is to attempt to explain the variation from your own in-depth knowledge of field history and treatments. Even improper field equipment settings can often be seen from the photos.

Infra-red photos are usually taken in mid-summer, so that the differences in lushness of a crop is accentuated. Prairie Agri Photo in Carman, Manitoba is often contracted to do this type of photography. Understandably, the cost per photo decreases with more photos required in an area, so it helps to get some neighbours together to get a better price.

These are just a few things you can do with mapping and photos. It all helps for discovering more about what practices pay and don't pay. It certainly sparks more curiosity about what is really happening in your fields.

CLC Annual Workshop Coming Up Soon!

Precision Farming Research - Producers Take the Initiative

By Doug McKell,

SSCA Executive Manager

The reaction you get from farmers when asked about their impression of the new precision farming technology ranges from, "boy is it exciting" to, "what the hell good is it?" And when the discussions and debates wind down to the short strokes, the questions that remain unanswered always relate to agronomic issues. There is pretty good technology out there today that will give you data from which you can create a real nice looking yield map of your field with acceptable accuracy. Today's precision farming technology will also give you the ability to import information from many other geo-referenced sources such as; remote sensing satellite imagery, soil sample maps, topographic maps, weed maps etc. What is missing in the precision farming puzzle is the agronomic pieces. Once a farmer has the yield monitor data collected and the map produced the question is: what do I do now? Currently no one can confidently advise this farmer as to what management strategies to put into place to address yield variances on fields where geo-referenced data has been collected.

This lack of agronomic support is precisely why a new joint venture at Indian Head was initiated. The joint venture involves the SSCA, the Indian Head Agriculture Research Foundation (IHARF) and Agriculture & Agri-food Canada at Indian Head. This joint venture will establish the Center of Excellence for Precision Farming Research on a one half section of land near the Indian Head experimental farm. The vision statement for this partnership reads: *"We are a unique partnership made up of farmers, scientists, industry and government whose goal is to evaluate precision farming concepts on a farm size scale in an unbiased, practical and environmentally responsible manner for the benefit of all producers."*

Creating the center of excellence is a tremendous task and one that would be impossible without the support of industry. Fortunately our industry contacts also feel the need for such an institution and have backed us accordingly. Our industry contributors currently include: Royal Bank, Flexi-coil, New Holland, AgrEvo, Simplot, Saskatchewan Wheat Pool, Westco, Monsanto, Zeneca, and Pattison Brothers - Lemberg. We will also receive support from PFRA for GIS services and Saskatchewan Agriculture & Food (SAF) for extension support.

The center will function to conduct research, specific to precision farming techniques, on a field scale basis. This means plots will be 50 - 60 acres in size and all operations will be performed with standard farm equipment. Seeding equipment will be set up for low disturbance seeding. Information produced at the center will be incorporated into the SSCA's and SAF's extension programs for delivery across the province. SSCA will present this and other precision farming information at our country meetings, field days, conference and through our newsletter. We will also investigate the options of providing precision farming information over the Internet.

So what does this mean for the average farmer? We hope, through this joint venture, to help farmers learn more about precision farming techniques and how or if this technology will be useful and economical for us. Right now there are a lot of questions about precision farming and its usefulness but very few answers. We hope to provide some of these answers through the work to be done at the Center of Excellence for Precision Farming Research at Indian Head.

Conservation Farming - We've come a long way

By Ken Sapsford,

SSCA Soil Conservationist

We started with a major extension program for conservation practices in the late 80's in Saskatchewan with the Save our Soils program. We started by promoting shelterbelts, chemfallow, strip cropping, snow trapping with field barriers and stubble strips, forage establishment on marginal lands and there was a little bit of interest in direct seeding.

I recently had the opportunity to visit parts of Nebraska and Colorado and speak to some of the more progressive farmers in the region. That is when I realized how far we have come in our direct seeding and conservation tillage practices.

In this area of Nebraska and Colorado, 90% of the acres that are in dryland cropping are in a winter wheat - fallow rotation. The winter wheat is sown in September and does not have enough growth to protect the soil from erosion through the winter and early spring. Some farmers are trying to direct drill back into it's own stubble but disease and downy brome cause problems . They will average between 30 and 40 bus/ac. on their winter wheat crop. They have been able to survive on this because the are still "farming out of the mail box". Farmers are still being receiving government payments for a number of programs. There is a little bit of proso millet grown in the area and there is very little dryland corn. They would like to try peas or chickpea in the rotation but they say they will have to use them for forage because there is no processing plants close by, therefore there is no market. Many of the farmers feel they are too dry to stubble crop but they get 14 to 16 inches of annual rainfall a year. They harvest the winter wheat in July and usually they get some fall rains. This year in October they also had 2 ft of wet snow. This snow had all melted by the time I went down there in February and because the soils don't freeze in the winter all the snow melt went into the ground. One farmer told me that he had 6 feet of wet soil in the stubble right now but he would be summerfallowing those fields because spring wheat just doesn't yield for them. He hadn't looked at other spring crops to find one that will work for a rotation.

There are a few farmers that are trying no-till but not many. There is interest in it though as they have heard rumours of what we are doing north of the 49th parallel. They also fear the government payments will be ending soon and they need to find an economical farming system.

This trip let me see where we were 10 to 15 years ago. Now look where we are: 22% of the acres in Saskatchewan are seeded with low disturbance direct seeding, another 25% seeded with high disturbance direct seeding. A crop selection in the province of wheat, barley, durum, oats, canary seed, peas, lentils, chickpeas, mustard, canola, flax, plus many smaller acres of specialty crops.

Necessity brings on innovation and diversity. Economics has been driving the system and I don't think it will stop now. We will continue to find and develop new and innovative technologies and crops that will work in our cropping system.

You have done a good job, give yourself a **pat on the back.**

Zero Till and Greenhouse Gas

By John Bennett,

SSCA 1st Vice President

Zero till began as a simple concept. Park your cultivator, add a dash of Roundup and continuous crop your way to profitability. However, simple concepts rarely remain simple for long. Past experience dictates that we have no choice but to deal with concepts we had no intention of exploring.

As an example, water management with zero till starts with tall stubble to catch snow. We soon discovered that water management is more complex. Evaporation rates, infiltration rates and micro-climate have more to do with water use efficiency than trapping snow. These were ideas we never considered when we started.

Burning fossil fuels creates carbon dioxide and other greenhouse gases. These greenhouse gases trap heat and the climate warms as these gases increase. It is a simple concept and one I was skeptical about.

One weather pattern model developed years ago suggested overall climate change wouldn't be all that dramatic but there would be an increase in individual severe weather events. This model came long before the "Flood of the Century" in Manitoba and the "Ice Storm of the Century" in the east. Somewhere there is a smug scientist who can say he was right. As a parallel in agriculture, think back ten years or more if you happened to be a no-tiller. Many of the then critics now direct seed. To be blunt, the debate over global warning is over. The world agreed at Kyoto in December 1997 that something must be done. Let's look at how it affects us.

The science is simple. Burning fossil fuel (we all do) creates among other things, carbon dioxide (CO_2) which is bad. Plants take CO_2 out of the atmosphere (which is good), put the oxygen back into the atmosphere (which is better) and store (sequesters) the carbon in the soil. If we don't till the soil, most of it stays buried (good again). Presto, good air to breath and healthier soils. Perhaps we won't have to give up our motor homes and sport utilities, at least not yet.

It is comforting to think that good soil stewardship can be good atmospheric stewardship as well. Let' consider the potential here. Perhaps there are benefits we have never considered.

If we use the Census figures that 8% of Manitoba, 20% of Saskatchewan and 8% of Alberta are under low disturbance seeding (LDS). Take this area and multiply it by the 0.15 to 0.30 tonnes of carbon per hectare, Ag Canada data suggests can be sequestered (stored) per year. You get between 600,000 and 1,200,000 tonnes of carbon per year. Since most fossil fuels are made up of about 60% carbon this would translate into 1 to 2 million tonnes of fuel.

Land zero tilled on the prairies now will convert the carbon dioxide released by burning this fuel into oxygen in the atmosphere and carbon, in the form of organic matter in the soil.

Astonishingly what plants, nature and zero till can accomplish. Start out with something as simple like trying to keep your soil from blowing away or washing away and you are suddenly able to clean up the atmosphere.

Now let's be a bit mercenary here. My math may be a bit shaky but if fuel weighs 8 lb per gallon that is between 275 and 550 million gallons per year of fuel. Metrified this translates to 1.24 to 2.48 billion litres per year and no one is forced to do anything they don't want to.

Farmers should certainly be looking at this. In a national context, instead of being part of the greenhouse problem, farmers are part of the solution. Think of rewards not penalties. It is amazing what farmers can do when they park their tillage equipment.

My suggestion is that you all talk to your neighbours and politicians to see that the concept of soil as a carbon bank does not fall off Canada's emission reduction plan. It would not hurt to suggest in the same breath that farmers' contributions to the Greenhouse gas problem be appropriately recognized

Densified Hay Opportunities in the East Central Region

By Juanita Polegi,

SSCA Soil Conservationist

Thick green stalks. Quack grass free. 12% moisture. These are the three requirements for premium grade timothy hay at the Sunridge Forage plant at Russell, Manitoba.

Direct seeded. A stand viability of 5 years or more. The ability to store great amounts of soil carbon. These are the characteristics of timothy grass that are of interest to the SSCA.

Another crop to add to the rotation, extend the rotation and the potential to make some money. These are the reasons producers are interested in timothy. Since the Sunridge plant began processing hay for shipment to Japan and other Pacific Rim countries last November, the interest in timothy hay in the East Central region has been increasing.

Sunridge is a branch of Transfeeder Inc., with its headquarters in Olds, Alberta. Transfeeder has been in the business of selling densified Canadian hay to Asian countries for 12 years because Japan and many other Pacific Rim countries don't have a large enough land base to produce forage for their growing livestock industries. So they look to other countries, in particular Australia, the United States and Canada for high quality forages, especially timothy hay. And who produces the most palatable timothy hay? Canadians! With the opening of the Sunridge Forage plant at Russell, the opportunity now exists for producers in the East Central Region to seed between 25,000 and 40,000 acres of timothy grass over the next few years.

While many producers in this region have experience with alfalfa or alfalfa in a mixture with grasses, little is known about timothy. At informational meetings held in February, producers had many questions about how to successfully establish and maintain a stand of timothy.

The key to successfully establishing any forage is to seed it into a firm, moist seedbed. Those conditions exist in a field with standing stubble. The seeding rate for timothy should not exceed 2.5 lbs/acre. Seeding at such a low rate shouldn't be a problem for newer model air delivery systems. The general rule of thumb is that if you can seed alfalfa at 5 - 6 lbs/ac, then you can seed timothy at 2.5. Proper trash management of the previous crop is essential! The straw should have been chopped and spread and the chaff spread evenly over the width of the swath.

Timothy is highly sensitive to residues of herbicide such as Avadex, Fortress, Pursuit and the trifluralins (Treflan, Rival, Advance and Bonanza). It should be seeded into fields that haven't been treated with these herbicides for at least 2 years.

Weed control is very important in timothy. Grasses, such as brome grass, foxtail barley and all the wheat grasses, including quackgrass, are not tolerated by the Japanese because these grasses can be hosts to the Hessian fly -- an insect that can wreak havoc on rice crops. One of the best ways to clean up a field infested with quack and brome is to apply Roundup at 1.0 l/ac preharvest. Fields that received a preharvest treatment in 1997 can be seeded to timothy in 1998. Seeding should be delayed until 1999 in untreated fields. Like every other direct seeded crop, a shot of Roundup at 0.5 l /ac should be applied prior to seeding. Once the stand is established, 2,4-D will keep a check on the broad leaf weeds. When older stands begin to get a little quack grass moving into them, it's suggested the new quack grass patches be cut and baled separately.

There is a debate among forage specialists about whether or not a cover crop is required when seeding forages. Very often a cover crop, especially one seeded at full rates, will compete with the forage thereby reducing the forage stand. On the other hand, many producers like to harvest some kind of crop in the year of establishment. Experienced timothy growers have used a variety of crops to provide cover for the little timothy seedlings. Because oats do not host the Hessian fly, they are very popular as a cover crop. To avoid too much competition from the oats, the oats should be seeded at less than 60% of their normal seeding rate. Wheat is another possibility although it is a little more risky in that the Japanese don't want to see any wheat straw in their timothy hay bales. Garry Halwas of Russell has underseeded wheat with little difficulty but every fall after harvest, he aggressively harrows the stubble hoping to encourage enough germination of any volunteer wheat that it won't be a problem in the spring. Art Pask of Esterhazy says that he likes to seed timothy into a canola crop that is just about to bolt. He says the canola bounces back from the timothy seeding operation and once it closes its canopy, it keeps the ground nice and moist for the little timothy seedlings. Seeding canola and timothy together could prove a problem, especially in very weedy fields, as the herbicide control options are very limited. Cereals that are underseeded to timothy can be cut for green fed in the year of establishment.

As do most grasses, Timothy requires some nitrogen in both the establishment year and during the life of the stand. Always do a soil test prior to applying any fertilizer. Generally, the grass doesn't require more than 50 - 60 lbs N/ac. Higher rates of fertilizer can cause "brown leaf". A bale with too much brown leaf will receive a lower grade.

Ideally, timothy hay should be cut at the pre-bloom stage. But Sunridge advises that the hay always be cut around the weather. That's why Sunridge recommends growing later maturing varieties such as Drummond and Bottnia II that mature in late July - early August, a period that is generally hot and dry. Sunridge recommends the swaths not be larger than 16 - 18 feet. Once cut, curing can be speeded up by putting the swath through a disc bine (such as the New Holland 411) that has had the cutting bar removed. Rakes and tedders don't work very well because they pick up too much trash from the ground.

For the densified hay market, the hay must not have more than 12% moisture. Sunridge finds the Delmhorst moisture meter to be the most accurate.

The round balers most cattlemen have on their farms won't see any service when it comes to putting up hay for the densified product market. The plant at Russell prefers mid sized square

bales that measure 31" x 34" x 8" and are tied with 4 plastic twines. Even the old little square bales are currently being accepted for processing.

Will timothy hay be the next Cinderella crop? Only time will tell but the future looks bright. Fair market prices and the ability to improve and extend rotations are all in timothy's favour. If the East Central region receives any moisture this spring, there's bound to be many fields seeded down to this tough little forage. It's good for Japanese cows. Hopefully, it will prove to be good for the prairie farmer.

For more information on timothy contract and pricing, contact Sunridge at Russell (204) 773-2013 or e-mail: sunridge@mb.sympatico.ca

Direct Seeding on Grey Wooded Soils

By Tim Nerbas,

SSCA Soil Conservationist

One of the first rebuttals farmers give when asked if they direct seed is "that may work for the soils in your area, but it won't work where I'm farming." This attitude prompted the SSCA to include a research site four miles northeast of Loon Lake, Saskatchewan.

The site is one of more than 20 "Do's and Don'ts of Direct Seeding" plots in Saskatchewan. Located at the Ag Canada research substation at Loon Lake, the site is situated in an area of little direct seeding activity.

Our goal was to demonstrate that direct seeding is a viable alternative for this area.

These grey wooded soils have little organic matter in the upper soil horizon. Typically in this area canola is not planted in the year following summerfallow. The risk of crusting on the soil surface results in reduced emergence. Producers in this region typically grow canola following wheat or barley to put residue in the surface soil. This rotation helps break up the crusting area creating accessible spaces for seedlings to break through the surface.

The Loon Lake plots included all of the following trials on both wheat and canola:

1) seed placed at the proper depth with 235 lbs of 34-17-0 fertilizer placed using a single side band opener

2) deep seeded with the same as (1)

3) deep seeded with 235 lbs of 34-17-0 fertilizer seed placed

4) the same as (3) but fertilizer coated with Agrotain

5) seed placed at the proper depth with 235 lbs of 34-17-0 fertilizer seed placed coated with Agrotain

We included a product called Agrotain in our comparisons. Agrotain is a urease inhibitor. When coated on the fertilizer, it slows the breakdown of urea to plant-available ammonium. This is desirable because during the conversion of urea to ammonium, ammonia gas is given off which can significantly damage germinating seedlings.

When everything was done correctly, with proper fertilizer separation and seed placement, we had our best plant counts.

Deep seeding wheat did not affect the results, but deep seeding canola significantly reduced plant numbers. Combined with seed placed fertilizer, deep seeding dramatically dropped the canola count.

The Agrotain coated fertilizer improved emergence numbers particularly when the seed placement depth was more ideal. Agrotain allowed seed placement of more fertilizer with a reduced risk of damage to the seedling.

Direct seeding's ability to maintain a level of residue in the soil surface is significant. It is this residue that will aid producers in their success with farming grey wooded soils.

The greatest benefit of these plots at Loon Lake is they demonstrate that direct seeding works and will work for those looking to change the way they seed.

Table 1

Loon Lake "Do's and Don'ts of Direct Seeding" demonstration plot

Trial	Seed Depth	Fertilizer	Canola	Wheat
1	proper depth	235 lbs of 34-17-0 placed using a single side band stealth opener	22	33
2	deep seeded	235 lbs of 34-17-0 placed using a single side band stealth opener	10	35
3	deep seeded	235 lbs of 34-17-0 seed placed	11	18
4	deep seeded	235 lbs of 34-17-0 seed placed using Agrotain	10	25
5	proper depth	235 lbs of 34-17-0 seed placed using Agrotain	18	32

(Plant number counts per 1 metre length of row, 12 inch row spacing)

Rotations you may have never thought of:

Dwarf Corn Earns Tall Praise

by John Russnogle

***(Reprinted with permission from SoyBean Digest-Feb 1998 Issue)**

When it comes to dryland corn production, Dave Collins likes to think small. He has been running tests for five years to see if dwarf corn is a profitable alternative in arid parts of the corn belt.

"We're in an area where most farmers use a three-year rotation of wheat-corn-summerfallow" says Collins, a Gothenburg, NE, crop consultant. "We were looking for a way to rotate back to wheat and continuous-crop our dryland areas. We needed a crop that didn't produce a lot of residue and could be harvested by Sept. 15 so we could no-till drill wheat by Oct.1."

Dwarf corn seemed to fit that bill. The 70 day corn can be planted early, only grows 4 and a half feet tall and showed good yield potential where it was grown in Montana and the Dakotas.

Short season crop replaces fallow in arid areas

The first few years of Collins' tests showed that the corn could yield within 15-20 bu. of dryland conventional corn in a three year rotation. Furthermore, wheat following the dwarf corn matched yields of wheat following summerfallow.

"We knew we were in the ball game," says Collins.

The dwarf corn was not without its problems, however. When the short statured crop was planted in 30 inch rows, it didn't shade out weeds like the conventional crop does.

"We're limited in what herbicides we can use, because we want to go right back to wheat," he says. "It gets tricky."

Collins and Callaway, NE, farmer Gary Ross solved a number of management issues when they decided to drill the corn in 1997. They used a standard drill equipped with a coulter caddy and planted the dwarf corn in 7.5 inch rows at 50,000 plants per acre.

"We wanted to use a system that didn't require a farmer to add equipment or tie up his machinery during the normal heavy-use periods," Collins reports. "The dwarf corn was developed in Canada, so it can take cold, wet soil conditions. That allows us to drill seven to 10 days before corn planting begins," he explains. "We used a flex-head to harvest it, starting in the middle of September, before the normal harvest begins."

"I really think it's going to take over." says Ross. "The dwarf corn makes its ears so early, it leaves plenty of moisture for a wheat crop. And, there seems to be a beneficial effect of planting wheat into corn stubble."

There's a marketing advantage to the short season corn as well, he adds.

In most years, Ross gets at least 25 cents/bu. more for local cash sales with old -crop prices during September, compared to new-crop prices a month later, when he starts to harvest his full-season corn. The best he ever did with his dwarf corn was in 1995, when he harvested 100 bu/ac. and hauled it to a local feedlot for more than $4/bu.

"The biggest challenge with the dwarf corn is to make absolutely sure you control weeds; otherwise you've got a mess," says Collins. "And, you need to make sure you get good seed-to-soil contact, so you get the stand you need to shade out the weeds."

Bob Linnell's Notes:

I recently visited Nebraska and found out the farmers were really excited about this dwarf corn concept. Since we already know how to achieve good seed-to-soil contact through our direct seeding machines, and have good straight cut combines, this gives us another crop in the warm season grass category to fill out our rotations. I have already ordered some seed and plan to include the dwarf corn in my 1998 rotation. I invite farmers to pencil out the economics, and maybe give it a try on some limited acres.

An article on short season dwarf corn in the summer 1997 issue of the Esso "Farm-Tek" magazine tweaked my interest when it explained research being done by Bob Hamilton of Agriculture and Agri-Food Canada. "He was pretty confident the crop could have a place in the prairies where about 2000 heat units existed." This would include an area of a lot of southern Manitoba, and parts of southern Saskatchewan below the trans-Canada highway and parts of southern Alberta. The local feed mills pay about C$3.75-3.90/bu. and a 90bu/ac crop beats the hell out of most wheats here.

On-Farm Precision Farming

By Garry Mayerle

SSCA Soil Conservationist

Precision farming in Saskatchewan agriculture is being driven by retailers. The large majority of farmers, even many of those often on the cutting edge, have taken a wait and see attitude to purchasing GPS and yield monitors. One group of farmers has decided to be proactive and see what precision farming can do for them. They belong to the Northeast Agricultural Research Foundation (NARF).

The brochure NARF puts out explains that their broader scope is to encourage, direct and manage the development and operation of agriculture research for producers in Northeast Saskatchewan. But at the present their research priority is to evaluate the use of precision farming tools for conducting on farm research. The farmers on the management board have been focusing on running GPS yield monitors to produce yield maps of their farms for the last two cropping seasons.

They have also begun to evaluate returns to the use of fungicides in both cereals and canola with GPS yield monitors. 3 treated and 3 untreated test strips were run in each field. Last June looked like prime weather patterns for a return to fungicides but July turned around to be hot and dry. Yield maps indicated the only response to fungicides was found on Harrington barley. Here an approximate 15 bu/ac yield response is reported.

One of the interesting findings was the confidence expressed in the yield monitor results. Yield monitor results were checked with weigh wagon yields. As long as the monitors were accurately calibrated yields reported by the monitors were within 1.5% of the weigh wagon yields on strips larger than 2 acres.

These results ought to excite any farmer seriously interested in evaluating returns to crop inputs. The logistics of putting out 6 strips in any one field is not too burdensome for many input evaluations even during busy seasons especially if they can be located with GPS. And the types of inputs that might be evaluated is numerous. One of the problems of course is other variables such as weather that reduce the repeatability of results.

The NARF Management Board recognizes this problem and sees the need to do as much ground truthing as possible during the growing season to authenticate yield monitor results. This means a lot of field walking which some day may be able to be done with photographic or other types of imagery. It also means that some record of weather on site, at very least rainfall, must be kept.

One of the biggest assets precision farmers could have is cooperation among themselves by compiling results. Research scientists increase the accuracy of their trials by putting out greater numbers of trials to give them more site years of data. If farmers could do the same by

comparing yield data among themselves coupled with good ground truthing and weather data, more accurate patterns of response could be establish much quicker.

NARF facilitates this exchange of results for its farmer and has been generally ready to share its findings with the farming public. There are still a lot of hurdles to overcome for precision farming to become adopted by Saskatchewan farmers but NARF along with all of the other research initiatives continue to discover the pieces and pull them together.

President's Message

By Bernie Neidzweidz,

SSCA President

Welcome to the latest issue of the Prairie Steward. This is my first report as SSCA president. After spending last year on the executive as first vice president I have moved up to the president's position. I am looking forward to working with the Board, field staff and Head office in the coming year. I have been on the SSCA board since February of 1994 and am convinced this is the best grassroots conservation association to belong to.

Welcome aboard to the following new board members: Tim Island (Southwest); John Clair (Northwest); Perry Leach (Director at Large); and Gary Kachanoski (Director at Large). I hope your terms on the board are rewarding.

The SSCA staff deserves a lot of credit for the time and effort they put into getting our best ever annual conference and trade show organized. We had to refuse registrations this year because we could not put any more people into the facilities at our disposal. I feel the attendance record we set this year speaks highly about the quality of the information we as an association are providing to the producers. We had excellent support from industry at the trade show end of our conference. There were over 80 exhibitors at the trade show.

We are partners in a new venture with Indian Head Agricultural Research Foundation (IHARF). This venture is based on a 307 acre farm a few miles out of Indian Head. Its main focus will be precision farming. SSCA's role in this project will be to get the information that is generated out to producers through our extension programs. This farm will produce some preliminary information about precision farming in two years time.

The SSCA membership is growing. We now exceed 1400 members. Membership has many advantages. First of all, it makes you part of a very dynamic association. Secondly, it entitles you to receive our newsletter (Prairie Steward) several times a year. Thirdly, it provides you with reduced fees when you attend SSCA functions. In fact if you take advantage of the three year membership ($100) and attend all of the SSCA events during those three years you will save $90. This means the membership cost you only $10(based on current membership benefits). Remember a strong organization carries more clout when it comes to dealing with soil conservation issues. Please encourage your friends and neighbors to join the SSCA and while you're at it remember to renew yours as well.

I wish everyone a safe and healthy spring season.

Seed Treatment and Inoculant Study - 1997 Results from the Southwest

By Eric Oliver,

SSCA Soil Conservationist

The interest in pulse crops in the southwest has been steadily increasing over the past few years. In addition to choices of varieties, there is now a larger choice of inoculants to use. A lot of excitement has been generated over granular inoculant. Granular inoculant differs from the other two seed coated formulations in that it is applied to the soil in the seed row, not unlike you would apply fertilizer in a single shoot system. There are certain advantages to using granular inoculant, such as ease of use and metering. The rhizobia in granular inoculant also has greater protection from desiccation relative to the peat powder or liquid type, allowing granular inoculant to survive for extended periods in the soil. In most cases, seed applied inoculant results in nodules that are clustered around the seed or crown of the plant. Since granular inoculant is in the soil, nodules tend to form on the lateral roots. This generally results in more nodulation on the lateral roots and nodulation that encompasses much more of the shallow root zone. Previous studies have indicated that in many cases, there was also a yield increase with the use of granular inoculant.

Under the Special Crop Sector of the Agri-Food Innovation Fund, seven Applied Research and Demonstration Farms across Saskatchewan initiated a study to look at the interactions between seed applied fungicide and inoculant formulations in Carneval peas under zero tillage. Inoculant treatments consisted of an uninoculated control, a liquid, and a granular formulation. The fungicide treatments included a control, Apron, and Apron plus Thiram. Emergence, nodulation, harvest dry matter, thousand kernel weight, percent protein and yield were examined. This experiment was conducted on land that had no history of pulses grown on it to best evaluate crop response without any residual effect from past applications of inoculant.

There is only one year's data so far in this study, so conclusions are very premature at this stage. There have been very variable results over the seven locations, which is not too surprising, this being the first year of the 5 year study. For the purpose of this article, I will be focusing on the Swift Current site managed by Wheatland Conservation Area. At Swift Current, there was an interaction in 1997 between fungicide treatment and inoculant formulation.

I was surprised at how well the untreated/uninoculated treatment yielded (Figure 1). Some of this response may be explained by the position of the slope these plots may have been located on, providing better moisture (the site has gently rolling topography). However, it is more likely a result of sufficient nitrogen available in the soil in combination with some starter nitrogen that was applied at time of seeding. There were excellent soil moisture reserves in the spring and timely precipitation occurred during the growing season. The yield for this control treatment will not likely remain as proportionately high in relation to the other treatments over time, especially

in drier years. The nodulation and plant vigour for the control was much lower than the granular treatment and somewhat lower than the untreated liquid inoculated treatment (Figures 1 and 2). However, the nodulation was higher than expected overall, indicating there was sufficient native rhizobia present in the soil at these plot locations to cause active nodulation.

With respect to yield, when no fungicide was applied, there was no difference between the granular inoculant treatment and the control (untreated/uninoculated). The untreated liquid inoculant treatment, although the highest yielding of the liquid treatments, was nearly 200 lbs/ac lower than the control (Figure 1). The granular treatments all showed an increase in yield and nodulation response compared to the treatments having liquid inoculant. When fungicides were added, the granular treatments again showed the best response in yield and nodulation. In addition, when the treatments were rated on the basis of vigour, the granular treatments all produced higher plant vigour ratings (Figure 2).

The Apron/Thiram/Granular treatment had a significant yield increase over the control and was 325 lbs/ac above the best treatments with liquid inoculant (Figure 1). However, this same fungicide treatment had a very negative impact on yield and nodulation scores when liquid inoculant was used. This effect was also observed at Indian Head, Canora and Redvers. Since there wasn't a Thiram treatment alone with any inoculant treatment, it is difficult to determine if the negative response to the liquid inoculant is a result of Thiram itself or a combined effect with Apron. The Apron/uninoculated treatment resulted in the lowest yields compared to the Apron/Thiram/uninoculated treatment or even the Apron/Thiram/liquid treatment. This effect was also observed at Melfort, and Indian Head.

There was a response to protein to inoculant formulation at Redvers and Scott (data not shown). At both locations, there was an increase in percentage protein with granular inoculant showing a higher increase in protein than the liquid formulation. At Swift Current, there was no significant difference between inoculant treatments. However, there was an interaction with the Apron/Thiram/liquid inoculant formulation resulting in a significant decrease in percent protein in the seed relative to the control or granular inoculant formulation. There was no significant difference in protein between the inoculant formulations without fungicide, the control, or with Apron.

In summary, this first year of results have provided variable results over the seven locations of this study. However, indications suggest there are positive responses of pea yields to granular inoculant without fungicide treatments or with either Apron or Apron plus Thiram. When Apron was applied without inoculant, there was often a reduction in yield. The combination of Thiram and Apron had a very negative effect on yield and protein when applied with liquid inoculant, however, the Apron/liquid inoculant treatment did not have a negative effect on yield. As more years of data are compiled, some of the variability may be sorted out. I understand that treatments with Thiram only on the two inoculants and uninoculated treatments will be included in 1998 to see whether Thiram itself is not compatible with liquid inoculant or if it is the combination of Thiram and Apron that may be the problem. Although granular inoculant is more expensive than liquid inoculant, initial evidence suggests that in many areas of the province, such as the drier areas, granular inoculant can provide advantages in yield and convenience.

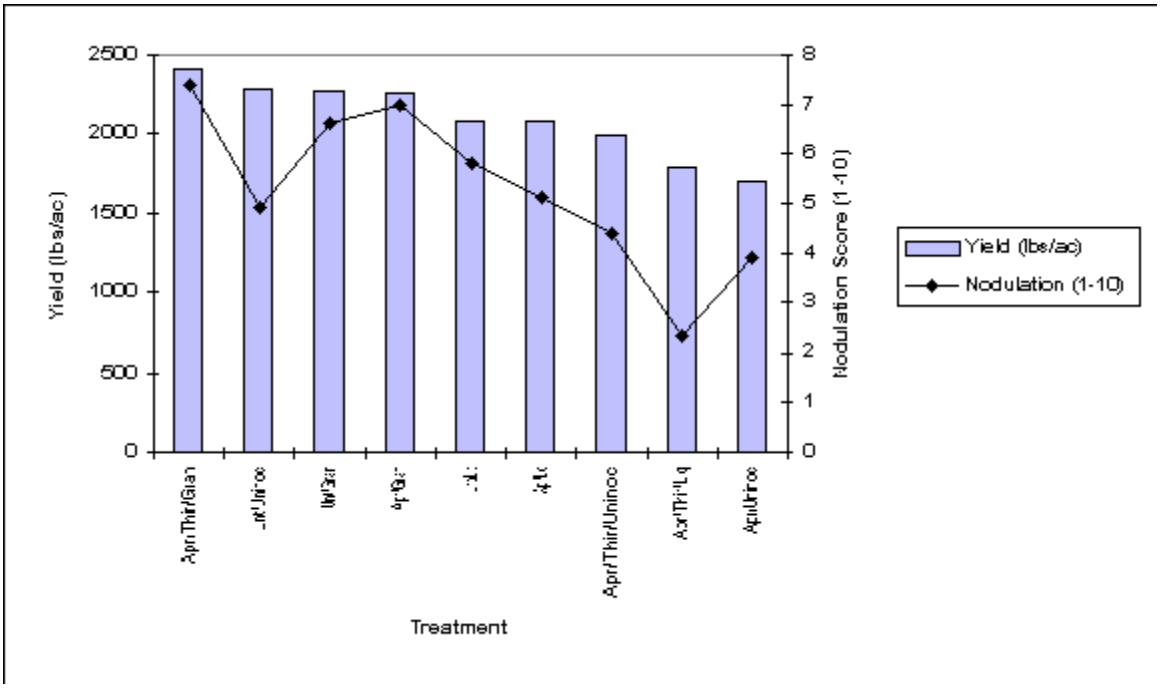


Figure 1: Carneval pea yields and nodulation scores, 1997 Swift Current.

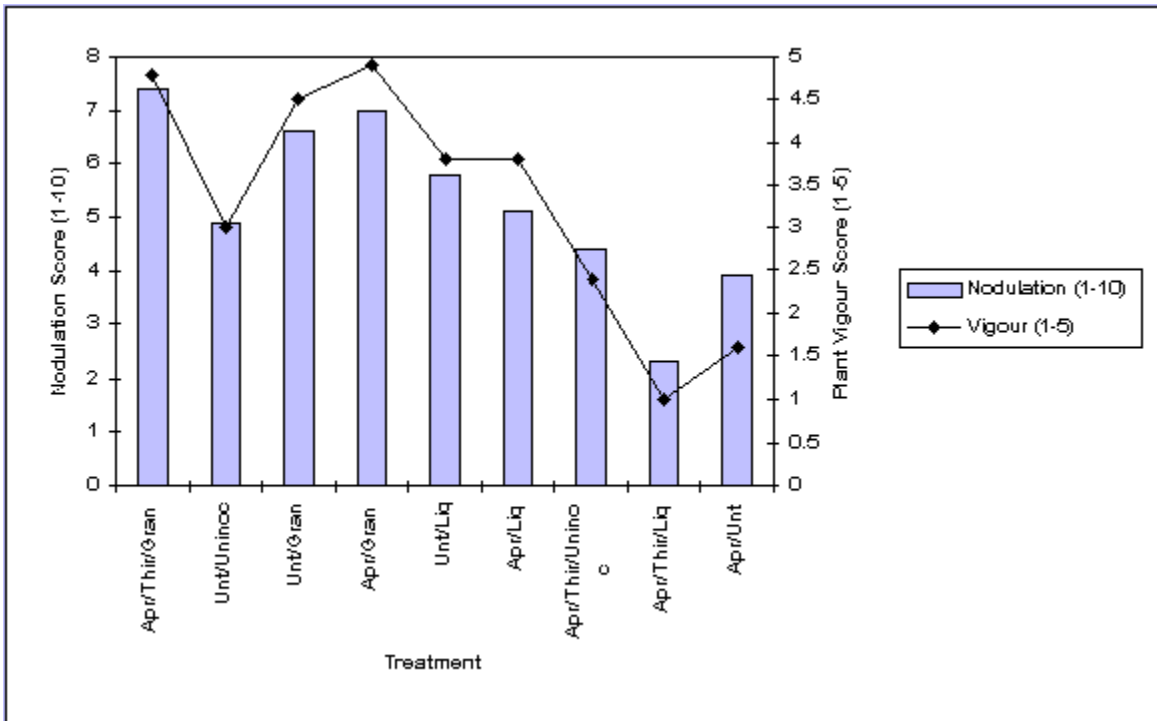


Figure 2: Nodulation and plant vigour scores, 1997 Swift Current.

Seed Placing Fertilizer!

By Garry Mayerle,

SSCA Soil Conservationist

One of the common themes of fertility presentations for direct seeding systems in producer meetings has been don't seed place too much fertilizer. Demonstration plots in the north east region depicting some of the mistakes made as producers shift into direct seeding invariably showed last season the detrimental effects of seed placing all required fertilizer even in high moisture springs.

When presenters talk about seed placing fertilizer they usually refer to the fact sheet Guidelines For Safe Rates of Seed Placed Fertilizer. They almost invariably say "off the record" that these are only guidelines and they probably error if anything on the safe side. When you get producers actually talking about their own experiences very few talk about seeing significant damage from seed placing too much fertilizer. If they do it is frequently on sandy or lighter land. The data from six of the direct seeding Do's & Don'ts plots in the NE region during last growing season certainly showed that seed placing higher rates of required fertilizer in tight bands reduced stand establishment even in a high rainfall spring like most areas experienced last year.

Plots of wheat and flax seeded next to the Naicam Canola Production Site last year received a good 2 inches of rainfall in the week of seeding. A good portion of this was received after seeding which should have effectively diluted the toxicity of the fertilizer away from the seed. Plant counts graphed in Figures 1 & 2 show seed placed (SP) trials with greatly reduced plant counts as compared to side banded (SB). Flax particularly shows stand thinning with 80 lbs actual N. It is interesting to note that the spread percentage with the side bander is probably about 11%. This is medium textured land. With good soil moisture the recommended guideline maximum is .

At the Tisdale site wheat and canola were seeded into quite warm moist growing conditions. The only difficulty with the site was that there was very little residue on the particular location where the plots were seeded. This is clay and heavy clay land and it can dry out quite quickly after seeding. For this reason the shallow seeded canola was a little too shallow and the deeper seeded trial had almost double the plant counts numbers. Figure 3 shows that canola with SP (seed placed) fertilizer had canola plant counts about ½ that of the SB (side band) seeded at the same depth.

Figures 5 & 6 from the Conservation Learning Center also depict similar reductions in plant counts with the fertilizer seed placed as compared to side band. Interestingly field peas which only received 40 lbs actual P and 10 lbs actual N still had a stand establishment reduction of almost 30%!

In closing, these observations clearly demonstrate that we cannot place all the fertilizer usually called for in the NE region with the seed!

Figure 1. Naicam Spring Wheat seeded May 23, wet seeding conditions, soil temp. 50°F, 80 lbs/ac, 235 lbs / ac 34-17-0

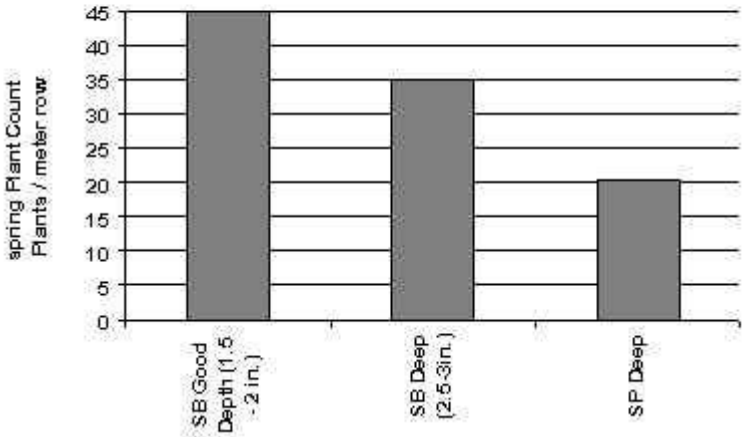


Figure 2. Naicam Flax seeded May 23, 50 lbs/ac, 235 lbs 34-17-0, wet seeding conditions, soil temp. 50°F

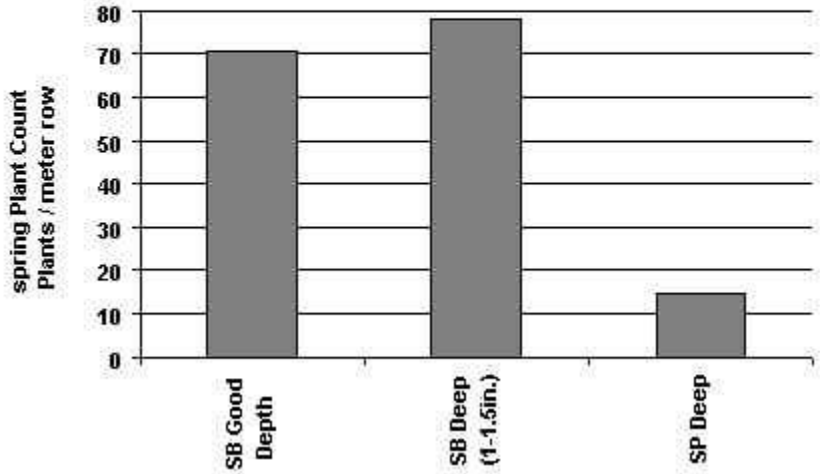


Figure 3. Tisdale Canola seeded May 23, soil temp. 53°F, wet seeding conditions, 71 lbs/ac, 235 lbs/ac 34-17-0

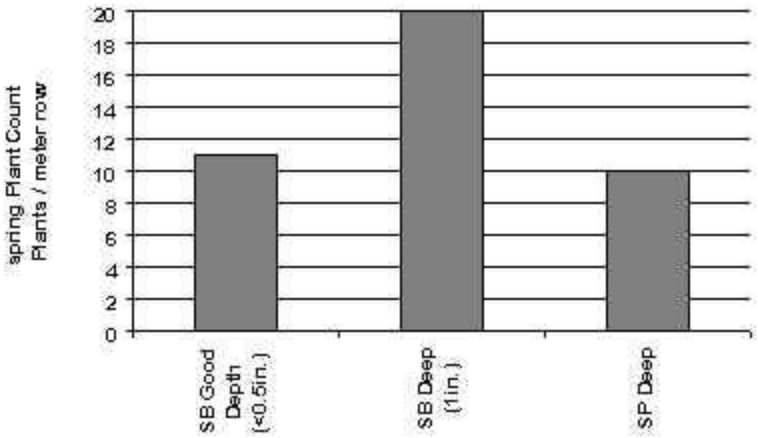


Figure 4. Tisdale Wheat seeded May 23, soil temp. 53°F, wet seeding conditions, 80 lbs/ac, 235 lbs/ac 34-17-0

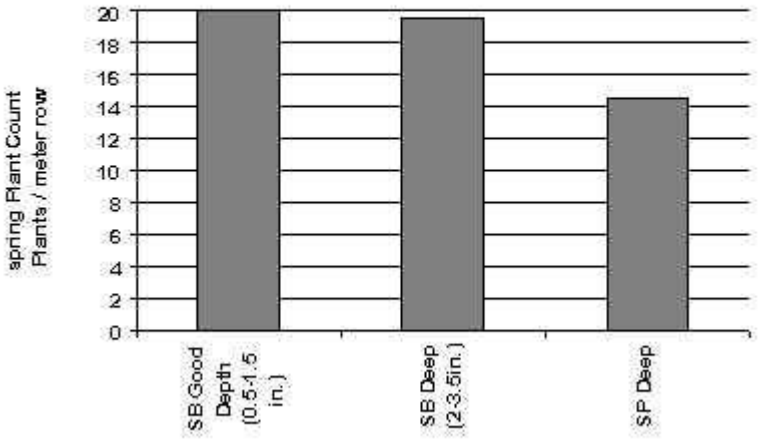


Figure 5. CLC Wheat Seeded May 20, soil temp. 46°F, wet seeding conditions, 95 lbs/ac, 235 lbs/ac 34-17-0

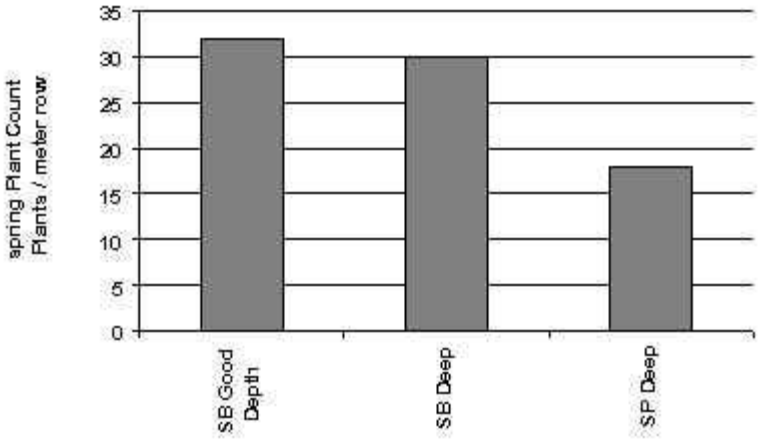
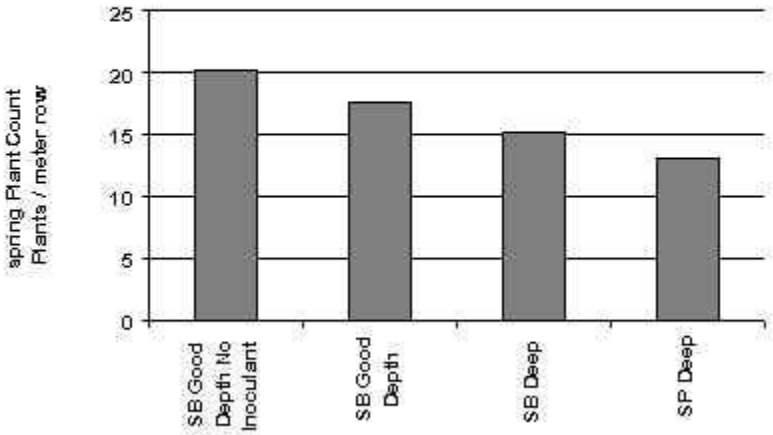


Figure 6. CLC Field Peas seeded May20, wet seeding conditions, Highlight peas at 180 lbs/ac, 80 lbs 12-51-0



The Precision Farming Corner

By Tim Nerbas,

SSCA Soil Conservationist

Data analysis, data analysis, data analysis. That's what precision farming is all about - hours of looking at data this way and that. If anyone tries to sell you the idea that precision farming will easily allow you to apply your inputs more efficiently, see if he or she will take some good swamp land in Florida on trade.

Many of the precision farming tools we will use in the future are already developed or are rapidly developing. However the agronomics still lag far behind the technology. It is unrealistic for producers to expect they can vary inputs to better meet the needs of next year's crop based on yield maps from one or two years.

With the current vacuum of agronomic knowledge, we may have a better chance of varying our inputs incorrectly than correctly. The homogeneous application of inputs at least meets the needs of some parts of the field. But as Dr. Fran Wally at the University of Saskatchewan states, "We now have the technology to theoretically put 100% of our inputs on the wrong parts of the landscape."

Over time however, our ability to fine tune inputs and place them appropriately will certainly improve. With numerous studies currently examining precision farming agronomics, including District 35's precision farming project, agriculture in the 21st century will undoubtedly look much different.

Members of our research team have spent this winter painstakingly examining our 1997 data. With the learning experiences of combine speed and overloading returns, the yield data appears appropriate. If we look at the data from the stand point of harvesting replicated treatments similar to using a weigh wagon, we see from Tables 1 and 2 in our CPS wheat (Karma) trials that our base rate of fertilizer (60-25-10-10) and seeding rate (90 lbs) proved to be one of the best treatments. When P or K was doubled (50 and 20 lbs/acre, respectively) or the seeding rate was increased to 160 lbs/acre, yield did not change. All other treatments caused reductions in overall yield. Of note are the treatments of zero fertilizer and a seeding rate of 45 lbs/acre. Both of these produced the lowest yields. It appears from this data that low seeding rates may be quite detrimental to producing a good CPS crop.

However, doing yield trials is not why we entered into precision farming. Yield monitors provide an excellent tool for this purpose. But we want to know which treatment performed best on different parts of the landscape (knolls, mid-slopes, depressions).

For example, did lower N inputs on the knoll produce the most economical crop or did lowering the seeding rate have an equal or greater effect? Presently these questions remain unanswered.

Our current problem is that we have been unable to locate an air photo containing our plots that is of sufficient quality to use in analyzing the data. A new photo will be flown in 1998. (Usually finding a good air photo for this purpose is not so difficult.) This will allow us to use the '97 information for, guess what, more data analysis, data analysis, data analysis,.....

Of course none of this research would be possible without the cooperation of some very dedicated organizations and businesses. At this time I would like to acknowledge and extend our appreciation to our supporting groups: the District 35 A.D.D. Board, PFRA, Sask. Ag and Food, the University of Saskatchewan and the SSCA; as well as our generous sponsors: Border Agro (Lloydminster), Conserva-Pak Seeding Systems, Cyanamid, Dow Agro Sciences, Enviro-test Agricultural Services, Kasun Agro (Maidstone), Lakeland Implements (Lloydminster), Monsanto, and Tiger Resources. Thank you for your interest and involvement in this project. We look forward to your continued support.

Table 1: Research Treatments in 1997

1. Fertilizer- 30-25-10-10

2. Fertilizer- 60-25-10-10

3. Fertilizer- 120-25-10-10

4. Fertilizer- 60-00-10-10

5. Fertilizer- 60-50-10-10

6. Fertilizer- 60-25-00-10

7. Fertilizer- 60-25-20-10

8. Fertilizer- 60-25-10-00

9. Fertilizer- 60-25-10-20

10. Fertilizer- 60-25-10-10 plus Cu

11. Seeding Rate 45 lbs./ac

12. Seeding Rate 160 lbs./ac

13. Zero Fertilizer

(Base rates used were: Fertilizer -- 60-25-10-10; Seeding Rate -- 90 lbs./ac)

Time To Tell Your Neighbors

By Bob Linnell,

SSCA Soil Conservationist

I often wonder what we as a group of direct seeders have learned over the past number of years about our method of seeding. I also wonder if the people have adjusted to a "new" method of seeding for the right reasons. Then I go to the annual Direct Seeding Conference and I witness Robert, an 80+ year old farmer asking questions of one of the speakers from the research community, and I suddenly know that someone out there has been listening and learning.

He asked questions about what is going on in and under the soil because he understands exactly just what is going on when it comes to his farm and his method of operation. This gives me faith to carry on and continue to do extension secure in the knowledge that we are doing some measure of good. But are we all doing our part?

Maybe it is time to swallow our pride and share some of our secrets of success in direct seeding with those in our neighborhood who still believe in the old traditional ways. You all know them. They are the soothsayers who say "you have to work your summerfallow at least 4 times to even stand a chance of getting a crop, and for each time you work it after that, you get another 5 bu/ac." I wish I could clearly and finally get them to realize that you actually loose 1/2 inch of moisture for each pass over the summerfallow, and that a little actual thinking might be in order.

I talk to people who often get caught in the "rotation trap' lured in by high commodity prices, and with no thought to what they seed on that land the following year. This is doubly hazardous of the selected commodity price suddenly goes in the toilet, or a drought year comes into play.

Robert (remember him?) has a plan and a rotation, albeit one that is flexible and allows for moisture probabilities and commodity price fluctuations. Robert also talks to his neighbors about what they are planning to seed in the area. Robert, you see is on top of the situation, and though he is a risk taker, he feels he can manage his risk and still sleep at night. Robert ,you see, also belongs to a local marketing group that analyzes farm production problems, and adjusts to demands and pressures of the market, instead of having a snooze after lunch each day.

Robert, I know also reads the newspaper, and was quite upset that the forest industry tried to take all the credit for carbon sequestering in the soil as the only group that were actually doing anything to help the poor federal government in their quest for solutions to global warming and the emissions dilemma that they now have to try and do something about as a result of the Kyoto conference and the global promises made to deal with the situation. He realizes that soils are very capable of taking carbon dioxide out of the air emitted by smoke stacks and by not overly disturbing the soil, allowing the plants growing over the prairie to do an equally good job of cleaning up the atmosphere and rebuilding the soil organic matter at the same time. He knows

the value of direct seeding as a valuable tool to rebuild the organic matter content of his soil that was so rudely lost over the last 90+ years.

So , what is the value of lost organic matter, anyway? I guess the answer will eventually be calculated as maybe $2/tonne or $5/tonne or whatever. It wasn't so many years ago that scientists considered acceptable losses of topsoil of 5 tonnes per acre as reasonable. That is about the thickness of a dime spread over the acre and was barely detectable. Unless you wanted to buy topsoil to landscape with and then you had to pay around $200 per dumptruck load (about 8-10 tonnes).

Robert, you see, has the right idea. He values things in proper perspective, and he is not afraid to tell people or even show them. Robert brought three younger farmers who do not now direct seed with him to the conference. He wants them to learn. He wants them to tell all their neighbors about the advantages of direct seeding. Way to go Robert! I salute you.

Timothy Hay Projects in East Central Saskatchewan

By Juanita Polegi,

SSCA Soil Conservationist

Timothy grass is not widely grown in the East Central Region. With the increasing interest in the crop among producers, groups such as the District #12 ADD Board, Ducks Unlimited, SSCA and PFRA will be working together on setting up projects to demonstrate and evaluate timothy for this region.

The District #12 ADD Board, with a producer membership, wants to ensure that producers know all that there is to know about timothy hay production. Potential returns and related costs to timothy production are of great interest to this Board.

Ducks Unlimited look very favourably on timothy. A direct seeded, well maintained stand of timothy has the potential to be viable for more than 5 years. Timothy hay isn't cut until late July, early August. Those two factors make for some ideal nesting habitat for ducks. While no formal program for producers has been announced by Ducks Unlimited at the time of writing, the Yorkton office is in the process of developing one that will assist producers in establishing and maintaining timothy grasslands.

In addition to the assistance program, Ducks Unlimited has offered a number of acres for the District # 12 ADD Board to use in setting up a timothy project demonstrating varieties, seeding dates, weed control options and fertility.

SSCA is also involved in the demonstration with a "Do's and Don'ts of Direct Seeding Timothy" project. We aim to show that timothy can be successfully established in a direct seeding system at proper seeding depth and fertilizer placement.

PFRA's interest is two fold. From a conservation point-of-view, PFRA supports practises such as the establishment of long term stands of forages that will protect marginal lands and keep them out of annual cropping. From the stand point of economic development, PFRA will assist with the evaluation of the agronomic and economic feasibility of a new crop in a region.

There is a lot to be learned about timothy hay production in this region. The cooperation shown among the different groups and agencies in obtaining this information is sure to be a benefit to everyone, especially the producers.

Wilson and Agnes Blair

By Juanita Polegi,

SSCA Soil Conservationist

Wilson Blair was first introduced to the concept of continuous cropping in the early `60's. At that time, Wilson spent the winters in Manitoba working for the University of Manitoba's soils department constructing soil and yield maps that were then submitted to Crop Insurance. Plots that had been continuously cropped for years on Red River clay maintained soil quality and yielded better than plots on a 50-50 rotation. That information and the fact that the Manitoba soil test lab was also promoting continuous cropping convinced Wilson to give it a try.

At the time, he and his wife, Agnes were living near Drake. The land they were farming was quite light and seemed suited to continuous cropping. It wasn't easy. To get control of the weeds, incorporated herbicides were used. Wilson said, "We had a hard time incorporating the Avadex and keeping the sand at home!"

A few years later, the Blairs moved to their current farm, north of Lanigan where the land is heavier. Wilson attempted to continuous crop again but found he needed some summerfallow in his rotation just for perennial weed control. When Roundup arrived on the market, he found it helped him better control those perennials with less tillage. But back then, the price prohibited widespread use over all the acres.

Having been very active in forming the Committee to get the Poundmaker Feedlot up and running, Wilson decided he needed some cattle on the farm. He and Agnes bought their first cows at Agribition and gradually built the herd into one of purebred Horned Herefords.

With the arrival of the cattle, Wilson figured he should be able to work a grass rotation into his continuous cropping system. Some land was seeded to grass for long term hay and pasture use but grass never quite entered into the rotation.

In the early 1980's, Wilson purchased his first air seeder. A few years later, he tried to direct seed with shovels but found he couldn't achieve a uniform depth. Then in 1988, he was able to have some wheat custom seeded with a John Deere 750 No Till drill. That was an extremely dry year. Wilson said, "The wheat we seeded ourselves after the field had been worked a time or two went 14 and 15 bushels to the acre. The direct seeded wheat went 30!" Agnes agreed. She said, "That drill showed us the moisture could be kept in the soil by not working it!"

In 1991, the Blairs purchased a Bourgault cultivator with a floating hitch and equipped it with Gen openers so that they could seed and apply anhydrous ammonia. The system worked well in the first year because the field conditions were quite dry. But problems occurred in the following springs when there was ample moisture. "The ammonia and the cast iron of the openers caused too much plugging in moisture", said Wilson. "I lived under the cultivator for the next 4 years!"

In the fall of `96, Wilson went to Bourgault and inquired about a mid shank bander, one that used knives for both seed and anhydrous placement. He then purchased a 5710 Air Drill and used the unit in the spring of `97. He found the machine to be simple and problem free, providing uniform seeding depth. The 3.5 inch packers worked well in his conditions. He also had no plugging problems and the draft was so light, the 4WD pulled only with the front wheels. "It was the best year of seeding we've had in 15 years!" commented Wilson. And Agnes added, "A happy seeder is a happy husband!"

Like many of the farmers in their area, the Blairs grow a variety of crops including canola, peas, wheat (CPS, HRS and durum), barley and flax. Wilson said he is looking forward to direct seeding some new stands of forages in `98 with his mid row shank bander.

The move to a direct seeding system has been pleasing to the Blairs. The savings in terms of labour and soil moisture have made the change worth while. But the Blairs recognize that the system requires more management than a conventional system. The variety of crops grown require a variety of herbicides. And as Wilson is quick to point out, you have to pay attention to what herbicides are applied to the crop, especially some of the new chemistries. "Some of these newer herbicides have me concerned about soil residues. For instance, on some of my own fields, I applied Pursuit to canola just 4 years ago and again to peas just 2 years ago. I wonder if I will have any trouble with those fields this spring."

Trouble or not, the Blairs will continue to direct seed. It's a system that works well for their operation.

The Newsletter of the Saskatchewan Soil Conservation Association

Issue 24 -- Summer, 1998

A Farmer's View of Carbon Sinks

By John Bennett,

SSCA 1st Vice-president

I would like to address some significant points in order to expand on the potential for soils as carbon sinks. For action to happen, we need to consider: 1. The crucial role of farmers. 2. The remarkable contribution soils can make in achieving targets. 3. Agricultural strategies that can be undertaken right now.

Farmers must be included to enable carbon sequestration in soils. It will be up to thousands of farmers like me to turn the abstract into reality. Carbon sequestration, potentially a successful part of our nation's Greenhouse Gas Reduction Plan is essentially an agricultural program. Farmers will be needed at all stages to make this proposition work.

In parallel with the development and refinement of the carbon sequestration initiative, farmers' constraints and concerns need to be taken into account because it will be farmers who are the implementers of the important work needed to achieve our carbon sequestration goals.

There must be a systematic approach with all of us in society who are concerned for greenhouse gas management to fully understand and share in the risks and rewards from this important work.

On the farm, we have a saying, "many hands make light work". It's the same for carbon sequestration. We need organizations like the Soil Conservation Council of Canada, the Saskatchewan Soil Conservation Association and the Alberta Conservation Tillage Society.

These organizations were formed by farmers to promote good soil stewardship. It is clear that good soil stewardship can have a significant and positive effect on the atmosphere. As producers, we take the perspective agricultural soils are the most effective and most immediate solution to reducing atmospheric carbon dioxide.

Conservative estimates show that most soils have the capacity to store between one and a half to three tonnes of carbon per hectare if conservation farm management practices such as continuous cropping and reduced tillage are implemented and carried out over a ten year period.

A Statistics Canada census tells us that eight per cent of farmland in Alberta, twenty per cent in Saskatchewan and seven per cent in Manitoba is being farmed without tillage right now. That's over four million hectares or a sink capable of storing from between six to 12 million tonnes of carbon ... roughly equal to storing the carbon dioxide released from burning between 10 to 20 million tonnes of coal or 15 to 30 billion litres of fuel.

These are conservative estimates, more important; they are in place today and come at very little cost to society. We are talking about 10 per cent of Canada's 150 million tonne greenhouse gas

target that can be accounted for right now. We have a 9 million acre functioning greenhouse gas mitigation system - a system that functions well and includes other benefits like reversing soil degradation, a stop to water erosion, an improvement of water quality and the provision for wildlife habitat.

Some studies suggest soils in Canada can potentially remove 400 million tonnes of carbon dioxide from the atmosphere - other sources cite different figures, none the less these are very, very significant numbers.

What can we do now to optimize the capabilities for agricultural soils to sequester carbon? I want to offer you four key points...

First, we can reduce acreage under summerfallow. This has already begun and will mainly affect Canadian prairies, as summerfallowing is not widely practiced elsewhere in Canada. For example, there was a 21 per cent reduction in summerfallow from 1983 to 1993 with further reductions in the past five years estimated at about another five per cent. A continuing trend would result in about four million hectares less summerfallow by the year 2005.

Secondly, we can reduce tillage in crop production. This practice has a double-barreled benefit - it increases carbon content in soils and reduces the use of fossil fuels used in crop production at the same time.

Third, we can increase forage production and achieve more diversification and also reduce the use of fossil fuels.

Fourth, we can initiate value-added enterprises. New and expanding uses for crop residues will result in other forms of carbon sequestration - for example, the manufacturing of fiberboard.

I'm grateful for the opportunity to share my views about the importance of the role of the farmer, the remarkable potential contribution soils can make in achieving greenhouse gas targets and agricultural strategies that can be undertaken right now. I want to leave you with these thoughts:

- Agricultural soils are the most effective, immediate solution to reducing atmospheric CO2 by sequestering carbon.

- Farmers are necessary and prepared to be involved in solutions like reducing summerfallow and tillage to enhance soil carbon storage. But they can't do this alone. It will take a systematic approach that involves all of society to realize the full potential of agricultural sinks.
- Effective leadership is crucial. With this goes sound, long-term planning and long-term funding for research and technology transfer activities with organizations like Soil Conservation Canada, SSCA and ACTS.
- Conservation farm practices require a high level of management skill and involve considerable risk. Farmer's shouldn't be expected to assume this risk by themselves while all of society benefits.

Burdensome regulation must be avoided. If you want to increase conservation practices, incentive and supports should be used, not regulation. As evidence of this point, just look at the remarkable agricultural carbon sequestration achievements to date - all without regulation.

Finally, as stewards of the land, farmers must be involved in creating a strategy to enhance carbon dioxide sequestration.

1998 Direct Seeding Field Days a Success

By Blair McClinton,

SSCA Assistant Manager

In 1998, the SSCA held two direct seeding field days, one in the north and one in the south. Both field days were a success with 600 producers attending each day. Producers were able to see the latest equipment in action and make side by side comparisons. Both sites will be signed for viewing over the summer.

Seeding Trends '98 at Rosthern

600 producers took the day off from spraying to attend the field day at Rosthern's Seager Wheeler Farm on June 6. This was the second time their field day was held in conjunction with SSCA's Direct Seeding Field Day. The assistance we received from the Seager Wheeler Farm volunteers helped make the day run smoothly.

Eleven direct seeding machines were on hand to demonstrate their ability to direct seed into standing stubble. The seeding demo was the most popular demonstration with people crowded around equipment jockeying for a better view.

Spraying equipment was also demonstrated at this years field day. The spraying demonstration featured both high clearance and field sprayers. Tom Wolfe from the Saskatoon Research Station demonstrated the latest technology for spray drift reduction. The new "air-induction" nozzles appear to be a major breakthrough.

There were also plots demonstrating direct seeding "Do's and Don'ts" and herbicide tolerant crops. An information session was held with presentations on crop and pest management. In addition to demonstrations on the latest in crop production techniques, the Seager Wheeler Farm also had horticulture demonstrations and horse plowing demonstrations.

Regina Field Day - June 16

For the first time in the past few years, the Regina Field day site was dry. While the clouds threatened to rain on our event, they stayed away until the following day. 600 producers attended the Regina field day on June 16. Eleven seeders were demonstrated at the site. As with the Rosthern day, there were also sprayer demonstrations.

President's Message

by Bernie Niedzwiedz

SSCA President

As I sit at my desk this morning I realize how hard it is to write an optimistic message. I am located in a fairly fortunate part of the province. My farm has had 1.75 inches of rain since the spring snow melt. There are many places in the province that have received very little, if any, rainfall this spring. The seasons of the year seem to be confused. Just before Christmas of '97 we were wearing summer clothing when we went outside. On June 1st of this year it snowed out here. The snow stayed on the ground for 18 hours and then things got worst, it froze for the next two consecutive nights. Temperatures dipped as low as -6 Celsius and stayed there for many hours during the nights. Farmers in the area have lost some oilseed crops. Most of them are reseeding these fields to oats or barley. There has been some talk in the country that the reason for the severe frost damage to many of the crops was due to the fact that they were direct seeded. Upon checking with some of the people that direct seeded and lost crops due to frost, I found that there was one thing many of them forgot to do - STRAW MANAGEMENT-If you have piles or large clumps of straw in your fields you are setting yourself up for problems. Anytime a crop has to struggle through a mat of straw, it is under stress and it doesn't take much for crop injury to occur.

May 3, 1998 was a day that showed me the benefits of direct seeding. We had a very strong southwest wind that day. The sky was full of dust and the neighbor's field was losing soil at a very rapid rate. I was seeding across the road into 18 inch mustard stubble with no dust blowing only some straw moving on the surface. Oh ! I forgot to mention that the neighbor had just finished cultivating and harrowing his field. It doesn't take many days like that one to assure me that direct seeding is one of the better ways of preserving the productive value of our soil and making sure that it is there for future generations. If you are just getting into direct seeding, been doing it for a long time, or just thinking about it, the SSCA puts on two direct seeding demonstration days annually. These are excellent times to see direct seeding in action. Try to take in one of them next year, there is always something new to learn.

I hope everyone had a safe spring. Sometimes in the hustle and bustle of this busy season we forget the important things in life, like spending some quality time with our families. Taking time to celebrate birthdays, anniversaries and high school graduation with them makes for a healthier family unit. As one person told me awhile back " I am a very successful farmer however I have lost my family by not being there when they needed me." So this summer, take some time to smell the roses and enjoy your family for after all "What is life all about?"

"So..... How are Your crops ?"

by Bob Linnell

SSCA Soil Conservationist

What a hell of a question to be asking of another farmer at this time of the year and particularly this year. It seems everybody is undergoing a fair bit of stress in this cropping year, mainly because of lack of moisture. Down here in the southeast we didn't fare very well last year, and this year is not much better in some areas, albeit , there are some rather patchy districts with crops that are not too bad. A good look around you though, will confirm that there is a lack of moisture over a pretty good chunk of the province. Grass is a good indicator, and most cattlemen are grazing on hay land, or poor crop in an attempt to "hold on" and see if they can get their livestock to the fall, and then opt for some straw maintenance ration.

Direct seeding areas, on the other hand, really stands out this year. You can tell from 100 clicks an hour who took the time to seed at the proper depth, and who went too fast or just right and those that "got most of it right", including the right speed to place the seed to the moisture with the fertilizer either side banded, or in my case, mid row between the paired row seed. I know we had a low chance for good emergence for a number of reasons: not much snow cover after a pretty dry fall, and a very dry summer of '97; some hail (not enough) and the cost of Pre Harvest Roundup. But what we didn't have was the 10 days of hot spring weather with 70 km winds that really took a toll on the cropping areas. If 1997 stands out at all, it will be for that reason alone. I may not have farmed for as many years as some of you readers, but I don't recall ever having seen the land dry out so fast as last year. This year, in our neck of the woods, it looks a lot better. Maybe we have a chance at this year being "that ever elusive Next Year". We are hoping.

I get laughed at some time by my professional counterparts in this association, by having a machine that features paired row seeding with rubber faced packers. Quite a number of them have said in the past, "it doesn't work." Sometimes I reply "it didn't work as well as I would have liked , but hoping that "Next Year" I would make it work and have pictures to prove it. Guess what..... this year I got it, and have the pictures to prove it. You see, I guess I believe what I preach, in that one system is not the best for every single situation, right across this fantastic province, or into neighboring provinces. The system you choose has to work on your farm, under your conditions, and with your rotation. I rather think every farmer has to do some degree of homework to discover the system or machine that is right for you, and then learn how to make that machine work even better. The bigger challenge is not in selecting the company that has the most bells and whistles, even though some of those things are appealing to us, but what actually works. Then the learning process starts all over again, because you then have to "become friends " with your new machine and find out what it can do and what it can't do.

So many farmers these days are taking the track that more is better and are desperately trying to increase their acreage in the hopes of being more sustainable. It hasn't always worked. Some farmers will continue to expand, some will continue to buy all the new toys, and some will go

out of business. I heard an American economist say recently that 70 % of USA farm land will change hands in the next 20 years. (big deal - where have you been sir? It happens all the time in Canada when we change generations). The bigger worry should be the fact that 25% of all farmers will be out of business in the next 5 years. Rail line abandonment, cost of inputs, uncertain commodity prices, corporate mergers are all going to give us much more to think about in the very near future. In fact, if you haven't been asked to fill out a credit application by your supplier this year, you may be pretty sure you might have to do one before next year. Some companies are asking for a new one each and every year, regardless of your past experience.

I think what I am getting at is that much has changed in the recent past in the farming industry. It has not come to full realization yet that we can and are becoming more efficient in our farming methods . Direct seeding so far has stood the test of time and has become the sought after method of choice by many farmers, both inside this country and out. How you afford it, has also become somewhat of a challenge for some producers. But we know it does work, it can work even better and this Association will certainly strive to do all it can to improve on that thought. Now, if we could just convince Allan Rock that our 22 is needed, and we promise not to introduce Hep C into farming, maybe he would have some influence in letting farmers share some of that bank profit picture. I digress. How are your crops anyway?

Conservation Learning Centre News

by Laurie Hayes,

CLC Manager

As some of you have probably heard, we have a rookie at the CLC - yup, that's me. In my switch from the animal industry to crops, I have had many basics to learn, new ideas to encompass - and machinery to figure out! So far, due in a large part to Pat's excellent organization, as well as the generous support and advice from many parties involved with the CLC, all operations have been successful. There were no problems getting the crop in, germination has been very good and most of the spraying is complete. Field-scale crops this year are AC Splendor CWRS wheat, AC Karma CPS wheat, CDC Fleet barley, SMART 45A71 canola, NorLin flax and Alfetta peas (edible). Despite a slight touch of frost on the canola and very little rainfall, all crops are looking good. Now that we have had two inches of rain, things should really start hopping!!

We will have a variety to show all of you this summer. The dates for field days have been finalized and planning is actively underway:

Sclerotinia Awareness Day (BASF) July 2 9:30am - 3:00pm

Crop Choices and Management July 7 1:30pm - 4:00pm

Crop Diseases and Insects July 28 1:30pm - 4:00pm

Preharvest/Harvest Day (Monsanto) August 5 1:30pm - 5:00pm

Herb Field Day August 6 1:30pm - 4:00pm

BASF is sponsoring the Sclerotinia Awareness Day on July 2, featuring Dr. Robin Morrall, among other speakers. Topics of discussion will include biology and causes of sclerotinia, when it is most prevalent, bloom staging, petal testing to determine the level of disease in the field, and information on Ronilan EG -- benefits and return on investment.

The Crop Choices and Management tour will focus on the array of crop varieties available as well as different management systems. SeCan has plots demonstrating different varieties of wheat (HRS, CPS and durum), barley (feed, hulless and malting) and Roundup Ready canolas and a field study of SMART 45A71 canola. Each canola is treated with different chemical products, highlighting the diversity available to producers.

SSCA has their very successful Do's and Don'ts plots once again at the CLC. This year they focus on wheat, peas and canola. They examine the effect of tractor speed, seeding depth, fertilizer placement and row spacing, just to mention a few areas. There are an array of herbicide demonstrations on wheat and canola.

Something new for us this year is demonstration plots of dry field beans. In addition, Monsanto has set up a small plot showcasing Roundup Ready corn, Roundup Ready soybeans and Bt potatoes (resistant to the Colorado potato beetle).

A new twist on the management side is the grazing of the dense nesting cover (DNC) area. The DNC is very well established but now needs to be manage. There are a variety of management tools, but grazing was selected as the option for the area within the CLC. Cattle and horses will be grazing the 50 acres of the DNC from the middle of June until the beginning of August and we will watch for the impact next spring. Unfortunately, this means that our Nature Trail will be closed. This is just another good example showing that agriculture and conservation can work in harmony for the mutual benefit of land and wildlife.

The university of Saskatchewan is in the second year of their trail studying the effectiveness of various sulphur fertilizer sources. The collaborative efforts between the University and Agriculture Canada looking at the effect of landscape on response to fertilizer continue this year at the CLC.

Feature speakers for the Crop Diseases and Insects field day are Dr. randy Kutcher with Agriculture Canada, Melfort and Scott Hartley, the new insect specialist with Sask Ag and Food. They will discuss disease and insect problems in a variety of crops. Disease management aspects to be covered include the effect of burning canola stubble on disease carry-over and the impact of precision farming on disease control and nitrogen fertilizer use efficiency in both wheat and canola. As well, CPS wheat was seeded based partially on its reported reduced susceptibility to wheat midge so we will be watching it closely. While this promises to be an interesting tour, hopefully, we won't have many examples to show!!

The Preharvest/Harvest Day sponsored by Monsanto will once again feature timing strategies for preharvest Roundup and residue management systems. The major combine manufacturers will be in attendance with their straight-cut headers. Again this year, early maturing barley was seeded fro this purpose.

an increasing interest in herb production has lead to the development of a multi-year AFIF funded herb project at the CLC. Different species of herbs with medicinal properties will be directed seeded or transplanted, irrigated or not, to study establishment and productivity. The project is coordinated through NorSask Botanicals, centered in Tisdale.

As well, throughout the summer, there will be a number of tours tailored for special interest groups.

Of course, all of the other "sites to see" at the CLC will be awaiting visitors throughout the summer -- the different tree lots and shelter/forest belts, the Herb Garden, the forage legume and grass gardens and the water quality study to mention a few. Everyone is welcome to come any time to tour the CLC. Maps are available to help you along your self-guided tour.

We look forward to seeing some of you at these tours or any other time if you just want to drop by. Have a good summer.

Building Canada's Carbon Bank

by Clint Steinley,

SSCA 2nd Vice President

Throughout this past winter the SSCA and other like-minded conservation groups embarked upon a campaign to have prairie soils recognized as a legitimate carbon bank. We wanted to convince our policy makers and political leaders that prairie soils, when farmed under a reduced or no-till system with an intense and diverse crop rotation have the potential to sequester huge quantities of carbon. It appears that our efforts have been successful. John Bennett, SSCA Director and myself attended a soil carbon conference in Calgary on May 21-22, 1998. It was very apparent that our Federal and Provincial Governments and other North American Policy makers and scientists are convinced of the value and potential of prairie soils role in assisting Canada and the United States in meeting their commitments under the Kyoto Protocol. Our objective was to convince them that farmers have an important role in making soil carbon sequestration work. Representing the Canadian Government, Michael Presly acknowledged the letters that had been sent to Ottawa as a result of our efforts. American Policy maker Craig Cox, although firmly on side, felt somewhat pessimistic about having soils readily accepted by the international community in upcoming negotiations in Bonn and Rio de Janeiro. He did however, feel that if we maintain our efforts eventually we would succeed. Both of these gentlemen stressed the need for us to reach our international counterparts with our message. They thought that this would go a long way towards assisting them with their efforts at the negotiating table. We must work with other conservation groups and the Soil Conservation Council of Canada to come up with a strategy to accomplish this.

At the Calgary Conference, the delegates were divided into four working groups to deal with specific issues. The task of the groups was to come up with ways and means of achieving specific goals. The group I attended discussed Carbon Credit Trading. We focused on the question "How can we insure that the existing and potential carbon bank will continue to grow so that a viable carbon trading system can exist?" It was interesting indeed to observe the response from our neighbors south of the border. The American policy makers initial response was that if you want farmers to implement a particular practice, simply pay them to do it and they will. This approach, although it may be successful if lucrative enough, didn't seem to me like it would be very sturdy over the long term especially if and when the "pay them to do it" program ended. "A carbon bank built on a foundation of sand" if you will. I put forward the idea that if you want a reliable and growing carbon bank, one that would sustain a carbon market over the long term, you must have farmers that are committed for all the **right** reasons to the farming practices necessary for carbon sequestration. The best way to achieve this is to have a program that would be information based and would assist farmers with the management complexities of no-till farming. To provide a forum for farmers to be exposed to the latest in production technology and opportunities for farmers to be an audience to and network with the research community and each other. Producers who adopt no-till farming expose themselves to higher levels of risk with this management system. Programs must be designed to help farmers manage risk and increase

their chances for success. A successful no-till farmer will be a dedicated no-till farmer. If this sounds a lot like what the SSCA does now, it was intended to. I needed only to point to the Ag Census numbers indicating the large uptake of no-till farming in Saskatchewan to make my case. I tried to stress that scarce program dollars would be best spent in this manner. The rate of adoption of no-till farming may be a little slower this way than with cash incentives, but in the long term it will result in a stable, reliable carbon bank built up by dedicated farmers.

By the end of the second day when our working group reported our results, two ideas which received high priority were direct technical assistance for farmers and enhanced education for farmers. The farmers crucial role in this whole soil carbon sequestration scenario was much better understood by the scientists and policy makers by the end of the workshop. We were successful.

What Happened to the Canola Seeded in the Fall of '97?

Last fall many producers around the province had the fall seeded canola bug. Ken Sapsford, SSCA's Regional Soil Conservationist in the West Central said there are a number of reasons for the high interest in fall seeded canola. "Reducing the spring work load is one of the reasons that makes seeding in the fall so appealing. Another is that the crop might be able to get ahead of the heat and insects that can sometimes wreak havoc on spring seeded crops. And based on early research, the fall seeded crops have fared pretty well in terms of both yield and grade."

The research Sapsford refers to is that which has been conducted by Dr. Ken Kirkland and Eric Johnson at the Scott Research Farm. They have been working on fall seeded canola since 1993 using a Roundup tolerant variety that allows a wide window for broad spectrum weed control.

Over the course of the study, fall seeded canola, especially that seeded into standing stubble, has shown a number of advantages when compared to mid May seeding.

Fall seeded canola emerges very early. However, with the early emergence, there is a risk of damage due to frost. Kirkland and Johnson found that early canola can survive up to 8 degrees Celsius of frost and has tolerated frost for up to 8 consecutive nights.

Earlier crop maturity is another advantage to the fall seeded canola. Kirkland and Johnson report that harvest of fall seeded canola can begin as many as 19 days sooner than canola seeded in the middle of May. With the earlier maturity, the fall seeded canola comes into flower earlier in the summer, thereby taking advantage of the normally cooler and moister conditions of mid June than those of mid to late July.

Based on three site years of data, the late fall seeded canola seeded into standing stubble yielded, on average, 44% higher than the canola seeded in mid May. The earlier flowering and seed set that occurs with the late fall seeded canola most likely plays a large role in the increased yield.

Heavier seed weight and higher oil percentages are often recorded in the late fall seeded canola as compared to those of the canola seeded in mid May.

And because the fall seeded canola crops are often shorter than the crops seeded in mid May, they are, therefore, less prone to lodging.

But what about the canola seeded in the late fall of 1997? "The first difficulty encountered with the 1997 seeding was the seeding date," Sapsford said. According to the work done previously by Kirkland and Johnson, the later the seeding date (meaning just before freeze up), the better. In previous years, the benchmark date was October 28. So many producers scrambled to seed their canola by that date. But the snow never arrived. "In fact", Sapsford said, "the first week of November, the soil temperature was still reaching +10*C".

Sapsford points out that initially, there was some concern over the warm temperature and the effect it would have on the dormancy of the canola seedlings. As it turned out, the temperature wasn't an issue. "Since the abnormally higher temperatures occurred for such a short period each day, the dormancy wasn't affected. And despite the lack of snow until late December and the warm winter temperatures, the canola appeared to survive quite well", he said.

And then a heavy frost occurred on April 30. Dr. Perry Miller from SPARC at Swift Current said that frost had a devastating effect on the fall seeded canola seedlings. "Based on a visual estimate, we lost 80% of our stand. Of the remaining 20%, 3/4 of those were severely injured although their growing points were alive. The other 1/4 were probably late stragglers." Miller said that although 20% of the seedlings survived, they have grown in to weak and spindly plants. "Our stand of fall seeded canola is pretty thin and patchy. In fact as of today (June 5), it isn't much ahead of our canola seeded on the 16th of April".

So, what went wrong? "Deacclimated" is the word Miller uses to describe what might have happened to the little seedlings. "In 1997, our fall seeded canola didn't emerge until April 29 & 30. This spring, the greatest wave of emergence occurred between April 9 and 12. After emergence we recorded 8 consecutive nights of frost from April 13-20, including two at - 7 *C, with no crop injury. Then 8 out of the next 10 days were unseasonably hot with maximum temperatures of 21 to 27 *C. During this period, the plants deacclimated and were not prepared for a sudden drop to -6*C."

Having said that, Miller points out the number of hurdles the fall seeded canola had overcome prior to the heavy frost. "The fall seeded canola had no snow cover, emerged very early under dry and abrasive conditions and was under attack by flea beetles almost as soon as it emerged. In addition, 2 frosts of minus 7 degrees C occurred on April 15 and April 19 but caused no injury at all!"

In contrast, the fall seeded canola at the Scott Research Station has fared pretty well. Eric Johnson, Soils & Crops Agrologist with Sask. Ag and Food says that the canola there is already flowering. "The late April frost wasn't as damaging to the canola at Scott as it was at Swift Current because the frost wasn't as severe and our seedlings weren't as advanced". Johnson says the canola didn't begin to emerge until the 18th of April at Scott. "Most of the emergence occurred between the 18th and 21st of April. In 1997, emergence didn't occur until the 29th and 30th".

In terms of maturity, the fall seeded canola began blooming at Scott on the 4th of June. In contrast, the canola seeded at the end of April is just beginning to bolt while that seeded May 19 is only in the 2 leaf stage.

Johnson says he's been hearing from producers that establishment has been very variable. "Some producers are reporting good establishment while others are reporting poor stands. It seems the common thread here is due to surface crusting. Even in stubble this spring, crusting has been a problem in some places".

Overall, Johnson is pleased with how the fall seeded canola emerged. "We were very concerned that the canola wouldn't overwinter as soil temperatures didn't drop to below freezing until the 8th of November. However, it is suffering from severe spring drought and it's yield potential may be severely reduced".

What conclusions can be drawn about fall seeded canola? The practise will always prove risky as the weather will continually change. Current research is focusing on reducing the risk of fall germination. Seeding the canola into standing stubble will ensure that snow is trapped (assuming any falls during the winter) for moisture in the spring. An early, hard frost can severely damage the seedlings, especially if there haven't been frequent minor frosts to harden off the little seedlings. And if the growing season should continue to be hot and dry as it is at the time of writing this article, how well the fall seeded canola will fare as compared to the canola seeded in mid May will be very interesting.

In summary, Sapsford says, "Canola producers should minimize their risks by seeding at different times of the year: late fall or early spring and mid May. Late fall seeded canola is only one management tool in canola production. Don't rely on a single tool and throw the rest of the tool box away."

Will producers have the fall seeded canola bug in 1998? We should know by October.

Precision Farming Seminars at the Western Canada Farm Progress Show

By Blair McClinton,

SSCA Assistant Manager

This year, the SSCA and the Farm Progress Show organized Precision Farming Seminars that ran in the mornings and afternoons during Farm Progress Show. Over 300 producers attended these seminars over the four days of the show.

Each session featured presentations on precision farming hardware from industry representatives, on the applications of the technology by various researchers and consultants and producer experiences from throughout Saskatchewan.

These seminars were made possible through the support of the Saskatchewan Wheat Pool and Westco Fertilizers.

Precision Farming Corner

By Tim Nerbas,

SSCA Soil Conservationist

As the long, dry days of June stretch out into the mid-season of the '98 crop year, it is apparent that precision agriculture is not at the forefront of producers' minds.

Blame it on El Nino or not living right, but when the skies dry up as they have thus far this year (Figures 1, 2 and 3), farmers donne a familiar attitude: "Precision farming? I just hope I can get a crop this year." From the beginning of May until mid-June, the Waseca area has only received 9% of its normal precipitation (Table 1).

Manipulating nutrients within a varying landscape seems irrelevant in the midst of near-drought conditions. But at the end of the day, our Precision Farming project will still have a valuable year of data. The yields we had hoped for may seem a distant memory, but I am certain there is wisdom to be found in the numbers we will crunch.

In 1998, we seeded the Precision Farming plots to Carneval peas using some new technology the Saskatchewan Wheat Pool is marketing as Bio-Coat Plus. The peas are coated with N-fixing rhizobia and Provide and protected by a thin polymer coating. This year we have replicated plots looking at P, K, and S, as well as inoculation trials comparing Bio-Coat Plus, the new clay-based granular innoculant (mbr), Tagteam, and no innoculant at all.

If you are in the Lloydminster-North Battleford area July 22nd, plan to take in the Yellowhead Crop Tour. It includes a stop at the northwest Precision Farming plots, as well as the Ag Canada substation at Lashburn.

Remember, this is dry land farming and droughts can and will occur, usually when we are least prepared for them. As a local producer told me, "Without a word of a lie I can tell you it's going to rain. What I can't tell you is when."

Figure 1: 1997 temperature and moisture data from Waseca, SK for the period Jan. 1 through June 30

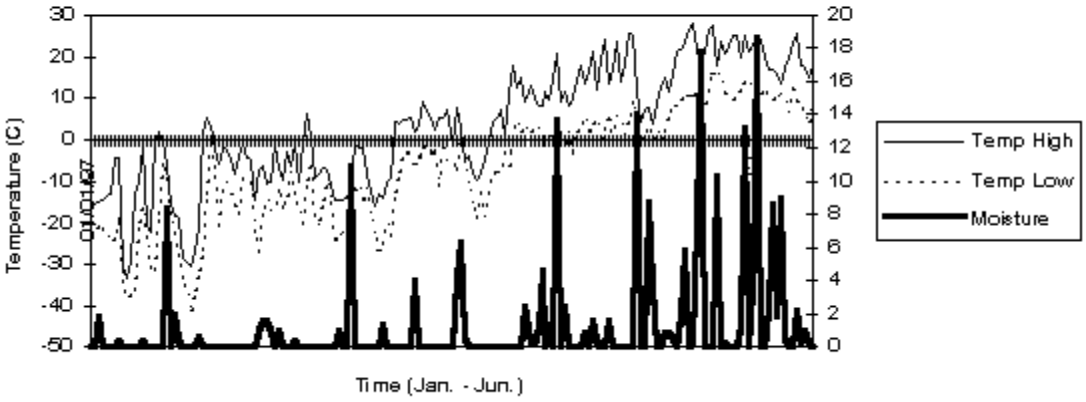


Figure 2: Temperature and Moisture Data from Waseca, SK for the period of July 1 through Dec. 31

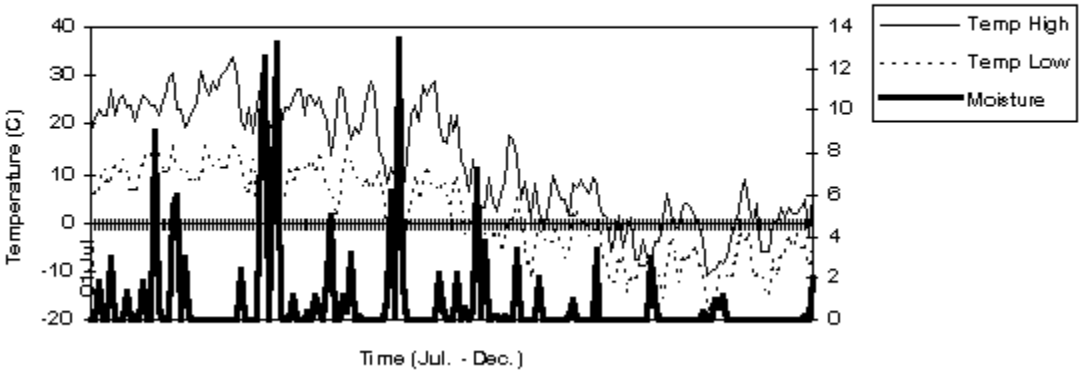


Figure 3: 1998 temperature and moisture data from Waseca, SK for the period Jan. 1 through Jun. 13

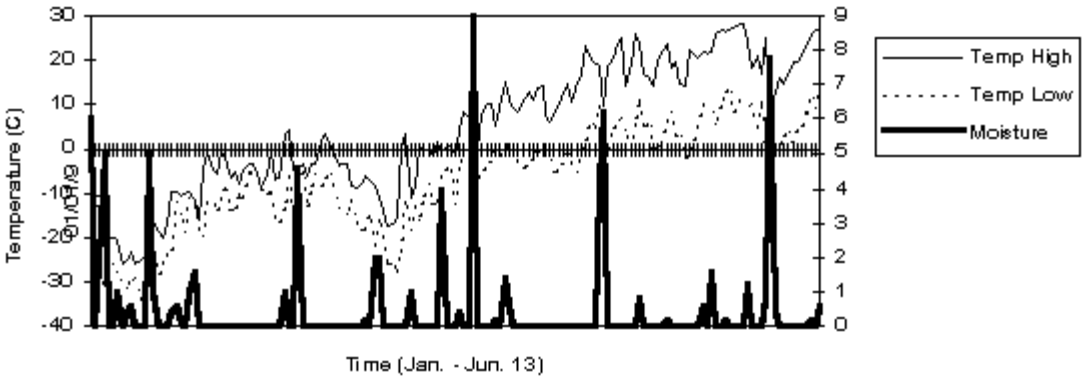


Table 1: Percentage of Normal precipitation for 1997 and 1998 at Waseca, SK					
Month	Normal Precipitation (1907-1990)	1997 Actual	1997 % of normal	1998 Actual	1998 % of normal
January	26.4	14.0	53	24.8	94
February	16.2	6.8	42	5.5	34
March	25.1	17.4	69	18.6	74
April	22.8	37.3	164	12.6	55
May	39.1	40.8	104	5.4	14
June	77.8	98.4	126	1.2*	3.6*
July	77.7	32.4	42	n/a	n/a
August	56.6	54.6	96	n/a	n/a
September	37.6	30.4	81	n/a	n/a
October	18.0	21.8	121	n/a	n/a
November	20.3	8.2	40	n/a	n/a
December	24.1	5.4	22	n/a	n/a
	* - percentage of normal precipitation for the first 13 days of June/98				

Risk Management - Conservation Strategy for the Future

by Doug McKell,

SSCA Executive Manager

One thing we as producers have learned, as the nineties wind down, is the importance of managing risk. In our forefather's times, risk was pretty much centered on production. Hail, rust, grasshoppers, drought, floods could all cause disastrous affects for farmers. But if you could grow a crop all you had to do was get it to the local elevator and things would generally work out. You may not have liked the prices but usually if you could produce an average crop the economics would allow even the poor business managers to make a decent living. The odd wreck would be more than covered by the above average years. Crop prices would most times cover the expenses and leave enough left over for next year's plans. I remember hearing "stubby pencil" economic formulas like; 4000 bushels of wheat would buy the newest large tractor or combine, ...keep a bin of flax around to sell when prices spike through the roof. Managing risk in those days doesn't seem so bad when you look back. A little crop insurance, hail insurance, keep that bin of flax around and leave the rest of the business to the professionals and you could get by. The Wheat Board gave us the price, the Ag Rep would tell us the variety to grow, how much Avadex and 2, 4-D to apply and the elevator agent would phone to let us know how much grain we could haul and when we could deliver. When we had a good crop we could replace some of the old machinery, buy a few bins and take the kids and mama to the big city for a holiday.

The risk to our resources was low. We got our crop nutrients when we summerfallowed, never worried too much about what got into the water and burned gas in the biggest V8's we could buy never giving a second thought to what happened in the atmosphere. Sun block was what the big fat kid did to your kid in the playground and the only greenhouse gasses we worried about were the ones uncle George produced after the barbecue. Somewhere along the way, however, things changed just a little bit.

In the mid eighties, as an Ag Rep, I started noticing the soil test results on fallow coming back with little or no available nitrogen. As a result many of us quit fallowing because we didn't see the point of leaving our fields sit for a year if we had to put fertilizer on anyway. At the time we were learning how to farm stubble land and found out we didn't need to fallow to store soil moisture. With less fallow we started extending our rotations and got into special crops which required more management and pricing plans. We soon found out about the risks of weeds and diseases that didn't seem to be a problem under the old ways. And the risks of drought, insects, hail and other calamities unknown to our predecessors ,due to changes in weather patterns, grew as fast as our loan accounts. If the only sure things used to be death and taxes, you can now add increased input and machinery prices as soon as crop prices improve. Four thousand bushels of wheat sure won't buy you a new large combine or tractor these days. And to top it all off, it seems now that our land, water, soil and wildlife resources are coming under increasing pressure

and scrutiny. Regulations for waste management and input use are in place in much of the country. Oh yeah, another sure thing nowadays is, whenever there is a danger to our resources we can expect some regulation to follow.

Modern farming systems and those in the 21st century will need to address these risks more than ever before. Partly this is true due to the increased awareness of all concerned of the risks associated with resource based food production. It is also true because of today's economics and the increasing strains we are putting on our resources. We need strategies that involves careful planning with all the ramifications of our actions considered.

The good news is that we, as producers, have the ability to do this planning. We have adopted new management practices and have better information resources available to us from which to make decisions. As we have become better managers and planners we have been able to address serious problems like soil erosion and degradation. We have improved our crop water use efficiency and cost effectiveness through low disturbance seeding systems. We have diversified our production that allows us to broaden our marketing opportunities. We have become more attuned to the global factors affecting our industry and are more active in affecting political change. And we are just starting to become very active in promoting our prairie soils as an effective carbon sink for greenhouse gasses that will help Canada meet our climate change responsibilities.

Many farmers will suggest there have always been risks associated with farming and that today's farmers have it better than in the old days. It does seem, however, the risks we face today as farmers do not allow for much error and have more far reaching implications. As a farmer organization the SSCA recognizes these risks and will incorporate strategies in our programs to address the risks associated with farming. Programs like ours will help farmers recognize the risks of their occupation and help them plan and operate around these risks to keep their farms and their surrounding environment viable through the remainder of the nineties and into the 2000's.

Opener/Rotation Study in the Dry Brown Soil

By Eric Oliver,

SSCA Soil Conservationist

A new direct seeding project has been initiated in the Dry Brown Soil Zone, located at Aneroid. It is looking at the effect of four single shoot openers on weed populations. This study is also a rotational study as it involves four crops in a zero-till rotation. The rationale behind this study is that in many areas within the dry brown soil, traditionally considered low disturbance openers, such as spoons, have not resulted in reductions of weed populations that have been observed in more moist areas of the province. The result has been that some farmers have been reverting back to a high disturbance system of direct seeding or even adding more tillage into the system. This study is therefore looking at what types of commonly used single shoot openers could be used to obtain the maximum benefit of weed reduction and just what can be expected from those openers being used. The study is also looking at how a zero-till situation, using this rotation, will work in this region.

This first year of the study is a collaborative effort with work being conducted by Wheatland Conservation Area and SSCA with funding from Saskatchewan Agriculture and Food, SSCA, Southwest Regional Agriculture Council, and District #4 ADD Board. Funding to continue this study for another four years is presently being applied for.

The four openers the study is comparing are the Barton disc, a knife, spoon and sweep. The crops used in the rotation are yellow field peas, durum, desi chickpeas and barley. This rotation is a relatively low input one that many farmers in this area would incorporate into their system. The study is field scale with a 30 foot drill with the Barton openers and a 24 foot Bourgault using knock-on knives; spoons and sweeps being used for the other treatments. The plots are 100 feet in length and are replicated four times for statistical accuracy. The cereal crops will be fertilized according to recommendations, but no fertilizer will be added to the pulse crops, only inoculant will be applied. Any phosphate requirements for the pulses can be added during the cereal year. The crops will be seeded directly into stubble and a summerfallow treatment will be added in subsequent years for comparison.

A unique aspect of this study is that a specific opener remains in place for the life of the study. In other words, a plot that was seeded with a Barton disc will seed whatever crop on that plot with that opener through the study. In this way, any differences in weed populations can be observed over the short and long term. In addition, there is a burnoff treatment with Roundup and a non-burnoff treatment for all plots. This will also provide an indication of how this commonly used weed control method fits into the various opener treatments and what effect it has had on weeds. In the non-burnoff treatments, it should show the direct effect of the opener used on weed populations.

Weed counts on each plot will be taken as well as plant establishment counts, date of maturity and yields. The economics of each system will also be determined. The first weed count will be taken just prior to the in-crop herbicide treatment. The second count will be taken about four weeks later.

There are already some interesting initial results showing up with respect to weeds, their numbers and their occurrence. There are also some differences in plant establishments based on the opener used. More information on this study will be provided later in the year.

For more information on this study or if you are interested in a field tour of the site, please contact my office at 306-778-8290.

New Manager at Conservation Learning Center

by Garry Mayerle,

SSCA Soil Conservationist

Laurie Hayes came to take the helm at the Conservation Learning Center early this spring. The wide variety of experiences she has had in the agricultural industry will stand her in good stead as she takes over management and promotion of the farm.

All those who have had contact with the farm are sorry to see Pat Flaten move on! Under her leadership the farm which consists of 3 quarter sections of land on a variable landscape was established in the spring of 1993. It is located just a few minutes south of Prince Albert. She built up the farm to where last year it included 40 projects with a variety of demonstrations and research related to sustainable farming practices. It continues to become more well known to the public. Last year for example, 500 producers and industry personnel toured various sites at the farm. Another 1000 students visited the center along with their teachers. The farm provides a setting where results are made visual with everyone welcome to participate in selfguided tours and a number of guided tours put on throughout the summer. Recently there has been a major emphasis on projects looking at production in terms of landscape units. Pat says that she is hopeful the CLC will continue to play a significant role in bringing together farmers, researchers, and industry, and addressing the environmental concerns of all in regards to wildlife and the quality of our land and water.

Hayes steps in to the management of the farm with a strong background in agriculture of course but also in public relations and promotional positions and with experience managing a wide variety of projects. For example just before she came to the CLC she worked for the Western Beef Development Center developing a partnership program between producers and researchers to enhance the dissemination of research results to producers and providing means for feedback from grassroots levels back to researchers. She worked for a number of other organizations including Ag Canada and the Canola Council of Canada in Winnipeg. She has been very active in the professional agrologist associations wherever she has resided. She has a M.Sc. in Agriculture with research focusing on the behaviour and management of turkeys. She grew up on a mixed farm at Val Marie which is 120 km. south of Swift Current. The farm backgrounded cattle and the land base included pasture, irrigated production and dryland feed production.

In her new position she plans to continue to promote the visibility of the CLC through development of local contacts with producers and potential sponsors. She says that she welcomes people to come and meet her and see the farm. She feels that she has a lot to learn and that she has learnt something from all who have dropped by so far so she expects that to continue!

Low Disturbance Application of Swine Manure

by Garry Mayerle,

SSCA Soil Conservationist

With the hog industry growing at rapid rates in Saskatchewan the need to be able to low disturbance apply swine manure is being demanded by direct seeders. Gordon Hultgreen with Prairie Agricultural Machinery Institute says there will be solutions in the near future. He is managing several widespread research projects that he is confident will bring results.

Norm Janzen with Pork Central, reports that there are 1.3 million hogs in the province presently. Production projects take about two years to come on stream. There are enough projects already underway to bring that hog number to 3 million by the year 2000. Many of these projects are 600 to 2400 sow operations. Each sow will produce an average of 22 to 24 market hogs every year.

One of the most odorous byproducts to deal with in this presently booming industry is manure production. A 600 sow farrow to finish operation produces 3.65 million gallons every year. This manure is not just a waste but has value as a form of plant fertilizer. Under present production methods the manure is about 5 to 6 % solids. It contains an average of 30 lbs of nitrogen, 10 lbs of phosphorus, 13 lbs of potassium, and 2 lbs of sulfur per 1000 gallons. Fifty to seventy per cent of this nitrogen is available to a crop in the year of application. Similar figures of availability for phosphorus are about 30%, and for potassium are 90%. To be sure of getting 50 lbs. per acre of plant available nitrogen in the year of application, 3300 gallons would need to be applied. This means a 600 sow barn could fertilize about 1100 acres of crop land annually.

Hultgreen, in cooperation with the University of Saskatchewan, has a multi-year project west of Humboldt evaluating crop response to injected hog and cattle manure. He has 15 treatments altogether applying varying rates of manure over the next three years compared to one of the standard methods of applying nitrogen fertilizer - banded urea. One of the treatments includes applying a high rate of manure once every three years. Evaluations will be done on long term responses and the effect on soil and water quality. He has also compared injection to: broadcasting and incorporating, a spike and straight boot applicator, and an applicator with 24 inch spaced sweeps. Hultgreen says they are getting fantastic responses to pig manure!

There are a few hurdles to overcome. Saskatchewan residents demand that the application of this manure be environmentally sustainable. This also means minimum smell! Hultgreen suggests that injection is the best method to consider. It has the lowest N losses (0 - 2%) and there is virtually no smell. One hurdle that he has tackled is finding the right equipment to inject high quantities of liquid. Being a strong proponent of direct seeding and finding demand from direct seeders to come up with options that fit their production system, he also wants low disturbance injection. At a direct seeding site southeast of Humboldt, Hultgreen has a research project

evaluating 5 openers for low disturbance injection. The openers he is testing are: a large Yetter disk, Dutch angled disc, Bourgault midrow bander, Green Trac disc opener, and Atom Jet C-shank knife.

Another project was set up in the Star City area funded by Agri-Food Innovation Fund and Agriculture Development Fund. It will evaluate the response of dehy alfalfa yield and quality to hog manure injection at varying rates over the next three years. Manure was injected with the Green Trac equipment. Trials were run on both an established and a first year field of alfalfa. The first year field was canola stubble with alfalfa underseeded the year before. An add on to this project was a direct seeded field in the area with pea stubble.

Research results do take time to be generated but with energetic people like Hultgreen working on these projects practical solutions will be coming. Take time to visit one of these sites or watch for advertisements on tours including these sites.

SSCA Promotes Soil Carbon Strategy

by John Bennett,

SSCA 1st Vice-president

In the months since the Kyoto Conference on climate change, the SSCA has been very active in ensuring farmers' contribution to reducing greenhouse gas emissions are recognized. We felt we should pursue this for several reasons. First, carbon sequestration in soils merely extends good soil stewardship. Secondly, we feel that Governments will be forced to take fairly drastic action to reduce fossil fuel consumption. Canada's targets for reduction will equal the total fuel used annually in Canada by all forms of transportation. If our efforts to turn prairie soils into a carbon sink are recognized, we won't suffer when we approach the "Pains" portion of emission reductions. Thirdly, carbon could well become a "value added" part of our farms. The Minister of Environment suggested on the news recently that carbon credit could have a value between $1.50 to $20.00 per tonne. This would mean millions to prairie farmers.

We have partners in ManDak Zero Till, Alberta Conservation Tillage Association, Manitoba Conservation Districts and Soil Conservation Council of Canada to field a common message. The letters the members wrote have been very helpful. We feel our position on soils has been well received federally and has strong support provincially.

SARM passed a resolution supporting this position at their annual convention and we are part of the provincial stakeholders committee on Greenhouse Gas Reduction.

One of the challenges we face as directors is the time commitment. It is difficult to stop farming operations to attend some of these meetings, for example, the Soil and Water Conservation Society (an international organization) gathered policy makers, scientists and environmentalists in Calgary, May 21-22. Obviously not many farmers are on the planning committee! Clint Steinley, SSCA Director and I met with Glen Hass, SCCC, Russ Evans and Jack Swainson from ACTS. Our intent was to ensure that when the delegates left, we would have impressed on them four things.

1. Farmers are essential if agricultural soils are managed to sequester carbon.

2. Farmers must be involved in creating policies for soil management.

3. Farming is a very high risk business and the public must share the risk if common good results.

4. Regulation must be avoided.

As members you can make a huge contribution if you would send a letter to Federal Politicians:

1. Hon. Christine Stewart, Minister, Environment Canada, Room 658, Confederation Building, Ottawa, ON, K1A 0A6.

2. David Oulton, Head of the Greenhouse Gas Secretariat, Natural Resources Canada, 580 Booth Street, Ottawa, ON, K1A 0E4.

3. Hon. Lyle Vanclief, Minister, Agriculture and Agri-Food Canada, House of Commons, Confederation Building, Ottawa, ON, K1A 0A6.

4. Hon. Ralph Goodale, Minister Natural Resources Canada, 580 Booth Street, Ottawa, ON, K1A 0E4

and to the Provincial Politicans:

1. Hon. Lorne Scott, Minister of Environment and Resource Management, Box 550, Indian Head, SK, S0G 2K0.

2. Hon. Eric Upshall, Minister of Agriculture and Food, Box 579, Watrous, SK, S0K 4T0.

3. Hon. Eldon Lautermilch, Minister of Energy and Mines, 823 Central Avenue, Prince Albert, SK, S6V 4V2

Or speak to your Federal MP or Provincial MLA. If you would like more information, please contact our office 306-695-4233 and we can supply more information.

Trees & Trends: Highlights of Tour

by Juanita Polegi,

SSCA Soil Conservationist

"The trees have made a world of difference." That was the message Jim and Russell Richards of Yorkton left with the Grades 11 & 12 Agriculture students from the Yorkton Regional High School. The students visited the Richards farm on a recent soil conservation tour organized by the SSCA. The Richards farm is located south and east of Yorkton. Their home quarter and the land surrounding it is very light. Prone to wind erosion, something needed to be done to keep the soil at home.

"About 13 years ago, we planted some trees on the home quarter and the quarter south of the house, just across the road. It took a lot of water and a lot of hoeing, but we got those little trees growing. And it didn't take long before we could see some changes", Jim told the students. The shelterbelts are mixtures of Green Ash, Carragana and Lilac. Today, over 3.5 miles of trees have been established on the two quarters.

"Once the trees got established, we noticed the soil didn't blow so much", said Jim. "And the trees trapped snow in the winter so there was more moisture in the spring for the crops". Jim and Russell listed a number of other benefits to the trees. "The wild life love our trees", said Russell. "We know there are lots of birds in the trees and we often see deer using the trees for cover as they move from field to field". Another benefit Russell pointed out was the value of the trees to other people. He told the students, "I believe that if we ever sell this land, the quarters with the shelterbelts will be worth more because the trees add value to them".

Russell also told the students he never gave much thought to the value of trees until he began looking after the shelterbelts. "You spend all that time hoeing, you want to make sure the trees live. And then you want the soil to stay in the field where it belongs. Then some of your farming practises change so you can be sure that happens".

The Richards told the students that they seeded some of the lightest land down to alfalfa. "You have to do what's best for the land", explained Jim. "Trying to grow annual crops in some areas just wasn't the right way to go". In addition to seeding the forages, the Richards have also extended their crop rotations, reducing the frequency of summerfallow.

While on the tour of the area around Yorkton, the students viewed a number of other sites that showed soil degradation and soil conservation practises. One stop was at some land owned by Ducks Unlimited. The land has never been broken so is an excellent example of what the area looked like prior to the arrival of the settlers. A discussion on the merits of seeding winter cereals also occurred. A field seeded to alfalfa to prevent the spread of salinity in the low areas, a riparian area and a crossroads where the four fields have all been managed in a different manner were other stops on the tour. The final stop on the tour was at a field that has been direct seeded

for many years. Earlier in the spring, the students had compared a number of soil samples, one of which came from this field. At the time, the students commented on how black the soil appeared and how much "stuff" (residue) was in it. On the day of the tour, much of the stubble was still standing and the students were impressed by the amount of cover on the field.

Resource people for the tour were Juanita Polegi, SSCA and David Struthers, Sask. Winter Cereal Growers' Assoc.

To Cover Crop or Not to Cover Crop?

by Juanita Polegi,

SSCA Soil Conservationist

Traditionally, seeding a forage crop has meant seeding a cover crop with it. Cover crops are used to protect the fragile forage seedlings from the blasts of the wind and reduce competition from weeds. And they provide a crop of sorts in the year the forage is establishing.

But the times they are a changin' and for producers interested in insuring maximum yield of their forage crop, cover crops are being omitted or seeded at a very reduced rate. While annual crop producers have long recognized the benefits of standing stubble to little seedlings, the principle is being applied to forage crops as well. With the standing stubble serving to protect the little seedlings from the forces of Nature, a cover crop isn't necessary. Standing stubble also ensures the forage seeds are being placed in a firm, moist seedbed, the number one requirement for successful forage establishment.

Implementing a weed control strategy before the forages are seeded is very important. Applying Roundup to the previous crop in the fall will control the perennial weeds and a healthy blast of Roundup in the spring takes care of the annual weeds prior to seeding.

But what about taking a crop in the year of establishment? It depends upon which side of the picture you look at says Brant Kirychuk, Head of Range Management with PFRA. "There is no question that a cover crop will drop the yield of the forage crop in subsequent years. From a true agronomic point of view, cover crops should be omitted." Cover crops tend to be more aggressive than the forage crops and, therefore, compete with the forages for moisture and nutrients. This is a particular concern in years of limited moisture.

Newfield Seeds in Nipawin has set up a non replicated plot where Meadow brome grass, Kentucky blue grass, Crested wheat grass, creeping red fescue, timothy, red clover and bird's foot trefoil were seeded. Seeded at right angles to the forages were oats, barley, peas, flax and both Argentine and Polish canolas. The control treatment had no cover crop seeded. Gord Pearse of Newfield Seeds said the results proved very interesting. "We evaluated establishment and ground cover rates", Pearse said. "Oats proved to be the worse cover crop although in the years we had the plot it was quite wet so there was a lot of lodging in the oats. Barley followed the oats in terms of limiting the establishment and ground cover of the forages. Polish canola was less competitive and flax worked well when it was sprayed out".

However, if you look at the economic point of view, Kirychuk says it's difficult to ignore the returns from a cover crop. "In the Black Soil Zone, many producers like to take off some green feed and either sell it or use it for their own livestock. They counter the reduction in yield of their forage crops by the value of the green feed".

Kirychuk recommends that producers in the Brown and Dark Brown Soil Zones and those who are growing forages for seed should not use a cover crop. Exceptions are those on heavy clay soils and those who wish to stabilize very light soils prior to the emergence of the forage seedlings. For those who are using forages for pasture and hayland in the Black Soil Zone, Kirychuk recommends that the seeding rate of the cover crop be dropped to 1/3 or 1/4 of the normal seeding rate and that the cover crop be cut early. "Decreasing the seeding rate of the cover crop and taking it as green feed will allow the producer to get some production in the year of establishment and enable the forage to recover from the competition before winter sets in".

With the growing interest in seeding forages in the East Central Region, we decided to design our summer plot tours around forage stand establishment. In one of the plots we've direct seeded alfalfa at 6 lbs per acre. Then we underseeded Pursuit Smart canola at 3 different rates . We'll be taking plant counts and doing visual assessments to determine the difference in the establishment of both the canola and the alfalfa.

In another plot, we direct seeded timothy into year old oat stubble. In this plot, we varied the seeding rate, seeding depth and fertilizer placement: side banded or seed placed.

A third plot has been seeded to a number of grass varieties. Seeded directly into standing barley stubble, the 7 grass varieties were cross seeded to various rates of oats. Various fertilizer treatments have also been applied to the plot.

The establishment of some of these plots is a co-operative effort between the Sask Soil Conservation Association and Sask Ag and Food. Sponsorship for the plots has been provided by a number of companies and businesses including Cyanamid; Monsanto; Preeceville Implements; UGG, Canora; Sask Wheat Pool; Sask Wheat Pool Farm Service Centre, Canora; Ducks Unlimited and Balawyder Seeds, Preeceville.

A Familiar Airdrill Re-engineered

By Tim Nerbas,

SSCA Soil Conservationist

A direct seeding prototype was put to the test northeast of North Battleford on the farm of Wayne Katerynych May 29 and 30. The new Bourgault equipment is a modified 5710 airdrill. The latter equipment was set up with mid-row coulters so seed and fertilizer could be put down in one operation. This seeder uses the same mid-row coulters found on a regular airdrill. But the usual shanks have been replaced with single disk openers on 9.8 inch spacing. The packing remains from the back-row packers.

"This is a user-friendly piece of equipment," says Katerynych, who seeded 300 acres of barley with the unit. "It's a well-engineered product with overall good performance."

The new disc provides another option for producers who are looking for an ultra-low disturbance seeding system. You may want to see how this unit operates in your own soil conditions, wet or dry. Watch for a demonstration coming to a field near you.

The Newsletter of the Saskatchewan Soil Conservation Association

Issue 25 -- Fall, 1998

Crop Diversification Studied in South Central

By Bob Linnell,

SSCA Soil Conservationist

In cooperation with the AgriFood Innovation Fund, a study was started this spring to deal with some of the problems and techniques that come with the introduction of broadleaf crops such as peas, lentils and mustard into annual rotations that contained a high presence of cereals. The south central area is an area in transition, as it attempts to deal with the decisions associated with the introduction of non-wheat type crops.

Sustainable crop diversification is not an easy thing to adopt, as many farmers find out that, yes, you can indeed grow a crop but what happens if you can't sell it? What is this doing to my land? What do I grow on that land next year ? What happened to my weed control? What amount of inputs do I need to make this new-to-me crop work in my area? What inputs do I need to include in my cereal crop following one of these new crops? Many questions come to mind and this study undertook to measure some of the things happening in the field in an attempt to provide some answers that farmers can use. Over the next two years, PFRA, Sask Ag and Food and the SSCA will be working together with local conservation groups to help farmers by providing timely information to promote the successful rotation of diversification crops to assist in maintaining good economic return for farmers.

Two sites were chosen by the local groups to demonstrate these rotations of wheat as a cereal and both oilseed and pulse crops as diversification crops. Field scale plots of durum were planted on stubble of peas, mustard, lentil and chickpea, using three different rates of seed and three different rates of fertilizer.

The Mossbank site at the Norm Shoemaker farm was seeded with a single disc airdrill that limited the amount of fertilizer that could be placed with the seed at the time of seeding. A second pass was made to ensure seedling safety by placing the remaining fertilizer either above or below the seed area. Norm had pea, chickpea and mustard stubble on three adjacent fields, which gave a good chance to profile what durum would do on each of these previous crops.

The Coronach site at the Don Kirby farm was seeded with a side band airdrill, which has no restrictions on how much seed and fertilizer could be put into the ground at the time of seeding on a single pass across the field. Don had pea and lentil stubble on the same field to give a good comparison for the area.

During the growing season, the fields were monitored using infrared photography to measure crop growth, and plant root simulator probes, which are placed in the soil to measure the amount of crop available nutrients extracted in each of the treatments. Both sites were soil tested prior to

the commencement of the research, and grain yield was measured at harvest, using a weigh-wagon. Field tours of the sites were held in late summer to view differences in the treatments. Crop samples were pulled from the combine hopper at harvest at set intervals in the fields to be measured for protein content. Crop residue levels are to be measured in each of the different field treatments. The plan is to map the crop yield, protein levels and residue quantities on grid maps of the sites. These maps will be shown at winter meetings to discuss and analyze the results of the research.

A simple economic diagnosis will be done using the grain yield and protein levels to determine gross revenue from which the input costs will be subtracted to arrive at net revenue.

These results will form part of a report outlining a study of the long-term sustainability of alternative crops within the south central region. Agronomic surveys among the farmers are planned for the area as well, to determine current practices, reasons for diversifying, and producer information needs. The level of crop diversification and trends will also be measured in the region.

Workshops are planned for the fall and winter seasons to provide an opportunity for producers to exchange information and obtain cropping tips and resource contacts. Seldom do producers get a chance to provide the relevant input into research trials. Producers feel it is necessary to provide useful results that they can take to the farm office or banker, or even the coffee shop. This research will attempt to deal with that concept and should prove exciting and more importantly, useful, to not only the farmers in the conservation group, but to all area farmers as well.

President's Message

By Bernie Niedzwiedz,

SSCA President

Hi There! Well harvest is over for another year. Now is the time to look at what worked and what did not work for us out in the field. There will be numerous information meetings happening over the winter months to help answer your questions. I find the winter meetings are an excellent way to get recharged for another production year.

It has been another busy summer for the SSCA staff and board. There have been many activities in all the regions of the province, ie. Field days, crop tours, soil carbon sink meetings just to name a few. They deserve a pat on the back for all the work that they do to keep the SSCA a leader in providing leading edge information to producers. Take the time to read this issue of the Prairie Steward and find out what they have been doing.

Our annual conference is set and ready to go for this coming February. Be sure to register early. Last year we had a full house and could not handle any late registrations. This year we have an excellent mix of producer and research presenters. By the way, this is an excellent time to renew or become a member of the SSCA. You will notice that there are great savings in registration fees if you are a member. Have an enjoyable winter and see you at our conference.

SSCA Takes Farmer's views to National Carbon Sinks Table

By John Bennett

SSCA 1st Vice President

As you are aware, the Saskatchewan Soil Conservation Association has a position on the National Sinks Table. From this position we wish to present to the Sinks Table three fundamental points essential to the success of programs that involved soil carbon sinks.

1. If Canada aims to realize the full potential of our agricultural soils then farmers must be recognized as the society that will accomplish the majority of the task.
2. Canada must use realistic and achievable goals in terms of amounts of carbon sequestered and, more importantly, the acreage potential must be credible.
3. If there are initiatives or policies designed to increase the potential of agricultural soils as mitigation for CO2 emissions, farmers must be involved in the conceptual phases of these policies for them to be successful.

Since there are so few farmers at the Sinks Table, our first challenge will be to create and foster a recognition that farmers are indispensable if Canada is to fully realize the potential of agricultural soils in the nations greenhouse gas reduction policy.

The SSCA's involvement and experience as a conservation group in promoting good stewardship over the past ten years, makes us aware that the adoption of the "best management" practices requires extensive education and technology transfer to achieve the results from the sophisticated management skills required. Saskatchewan has more land in soil conservation programs and a higher percentage of cropped acres in reduced tillage systems than any other province. This success would not have been possible, however, without the extensive awareness and technology transfer programs developed and conducted over ten years through a collaborative effort between SSCA, industry and government. The success of these efforts has spawned similar efforts in Alberta and Manitoba.

Many people (some of whom are in key agricultural positions) I have talked with believe these changes will happen by osmosis, without further effort. Any of us who have spoken to groups of farmers recognize that permanent change does not take place without considerable effort and a supportive structure.

Many estimations of an agricultural sink use the premise that all potential acres would be included under conservation "best management practices" and included in a potential carbon sink. This creates some very large numbers and results in an unrealistic premise.

When I ask my two kids, who are now in university, if they believe in Santa, they express no reservations as they think a belief in St. Nick results in an increase in gratification. Similarly, if we are to suggest summerfallow will magically disappear on the prairies, I doubt we would maintain credibility either nationally or internationally.

Perhaps our position should be that, barring any changes, the current acreage under conservation "best management practices" be our foundation when we talk acreage potential and suggest we would be very interested in discussing policies that would expand this acreage potential.

Hopefully we will have the opportunity to contribute to the awareness that: farmer's involvement in policy creation is imperative to the successful adoption of farm programs evolving from this policy.

Finally, in any discussions we have had with farmers regarding the promotion of conservation farming, as it pertains to carbon sequestration, the concept of risk reduction is high on the agenda. We know farmer's face rising input costs and a very thin profit margin. Combine this with uncertain commodity prices and dramatic weather events affecting production and paying the farm bills, becomes more of a concern than contributing to a national greenhouse gas solution.

To summarize if soil management is to change, farmers will have to accept the responsibility. From our experiences in conservation, we know these changes will not happen by themselves. If the national interest is to expand and develop the potential of soils to offset CO2 emissions, realistic goals must be established and farmer's efforts and the inherent risks involved in achieving these goals must be recognized by policy makers and the general public.

Please contact Doug McKell at 306-695-4234 or John Bennett at 306-948-2852 with any comments or suggestions as to how we can strengthen our position in developing a positive contribution to the Sinks Table.

Soil Conservation Farmer's Zero Till Experiences Differ From Those in University Study

By Doug McKell,

SSCA Executive Manager

For many of you, the desire for a more profitable farming operation was the primary reason for changing to a direct seeding system. Over the long term you expected to see your costs go down and your receipts go up. That is pretty much the message the SSCA has been spreading the last few years.

And then the September 9 edition of Ag World arrived at the farm kitchen tables. That's when the phones at the SSCA Regional offices began ringing. The reason for all the kafluffle was the headline on one of the columns that stated "Zero till costly in long run: study". Producers who have spent thousands of dollars upgrading equipment and many hours designing rotations were just a little concerned. Needless to say, so was the SSCA.

Since the arrival of the latest Ag World, SSCA staff has studied the research paper referred to in the U of S, Developments in Agriculture column. Its authors are Ahmad Gheidi and Suren Kulshreshtha of the Department Agriculture Economics, University of Saskatchewan. The study is actually entitled "Carbon sequestration in agriculture soils: An integrated analysis of economic & environmental trade-off".

In the study's abstract, it is recognized that soil organic matter is lost under an intensive tillage system and that this system creates greenhouse gas emissions. The authors indicate that conservation tillage systems have been suggested as one way of reducing those emissions. Based on two models the researchers linked together, they concluded that over the course of 150 years, conservation tillage will indeed store carbon but that it is costly to do so - more costly to the farmer than a system of intensive tillage. They suggest that society should help farmers by paying them to offset these losses but that given present circumstances, that isn't likely to happen. As a result, those that continue in a zero (no) till system will lose money. The next 21 pages of the report describe how the authors arrived at these conclusions.

The study looked at the area between Scott and Tramping Lake, an area comprised largely of Orthic Dark Brown Chernozemic soils. Two tillage systems - conventional and zero - and two rotations were incorporated into the models. The rotations consisted of canola-wheat-fallow and canola-wheat-wheat. Based on these systems and rotations, 4 scenarios - 25 % no-till, 35 % no-till, 45 % no-till and 55 % no-till, were applied to the models. And after much number crunching, the conclusions were drawn that farmers will lose money by practicing zero till.

As SSCA agrologists went through the study, they noticed a few flaws. First, in the Tramping Lake - Scott area, conventional till systems would most often have at least one fallow period in the rotation, there would be no continuous cropping. On the other hand, no-till systems would likely have continuous crop rotations including pulses. Fallow is not a typical practice for no-till farmers in this area.

The base year for the study is 1990. No-till systems practiced today bear little resemblance to farming systems practiced in 1990. Equipment and products have improved and so have the rotations and level of management.

It is also significant to note, the analysis of the 4 rotations did not compare no-till to conventional. Rather, the total area was analysed with different percentages of the area assigned to no-till.

The study author's notes in the final paragraph of their report should also be kept in mind. They cautioned: "These results are based on a single experiment and not under real farm situations. Management factors as well as site specific variability can vary and influence the economics of conservation tillage in the short - and long - run. Any indiscriminate generalization of these results should, therefore, be avoided."

Notwithstanding this caution, after reading the study the SSCA's conclusions were different than those of the authors'. We conclude that in order for more carbon to be stored in the soil, conventional systems must be converted to a no-till system using diversified rotations.

Despite what the writer implied in the Ag World article, the SSCA maintains the no-till system is a viable, economical land management system. Many Saskatchewan farmers would seem to agree after successfully making the switch from conventional intensive tillage based systems. If the no-till system was not profitable, as was suggested in the article, the trend would likely be an increase in tillage based systems. The opposite is true. Farmers are adopting this practical, environmentally friendly farming system as is evident by the six million acres converted to no-till from conventional farming systems since 1990. The SSCA supports this change and will continue to design programs to help farmers make those changes and to do so profitably.

Future for Soil Conservation Programs Unclear

By Doug McKell,

SSCA Executive Manager

It's been a long time since Senator Herb Sparrow traveled across the country promoting the book, "Soils At Risk". His message, at the time, was to inform the public of the dangers to the soil resource as a result of existing conventional farming practices and also of the need for soil conservation programs. He was a big hit at meetings and with the media due to his knack for an interesting style of delivery and upbeat presentations. He also garnered a lot of attention because the recent drought years in the eighties had spawned such terrible soil erosion that many were reminded of the devastating dirty thirties. The awareness of the dangers of soil degradation and the need for conservation programs was driven home.

The timing for the SSCA couldn't have been better. Our organization had just been established by farmers who also had concerns regarding existing production practices and the deleterious affects these practices had on the soil resource. The SSCA supported the stand that people like Senator Sparrow took on the issue of soil conservation. Governments heard the message and realized the need for programs aimed at helping farmers understand the dangers to the soil resource and what to do about these concerns. Over the next several years millions of dollars were pumped into programs such as: the Soil and Water Accord, the SOS program and the Green Plan. Through these programs our organization took the lead in educating farmers about the soil degradation process and the practices necessary to bring the land back into good shape. Much of our effort has focused on promoting reduced tillage farming systems and more specifically, low disturbance seeding. These efforts have been very effective. Saskatchewan can now boast the highest percentage of cropped acreage under, what we consider, effective soil conservation practices. We have also taken the lead in working with the power generating industry in raising awareness of the carbon sequestration issue and how the soil can function as a carbon sink for greenhouse gas emissions.

We have made some pretty positive steps in protecting our soil resource. But what about the future? Current programs that support the SSCA's farmer extension efforts will expire in eighteen months. Without these programs will it be possible to sustain the current momentum of soil conservation efforts? Some people in places of significant influence have taken the attitude that no further support is necessary. They suggest the momentum is sufficient now to carry the soil conservation message to farmers without further resources or extension efforts. I wonder. No doubt the level of direct seeding adoption has increased significantly since the early 90's when extension programs were initiated. And we are in a better situation than in our neighboring provinces. But to suggest this level of adoption will provide the impetus for further unsupported growth is, in our opinion, wishful thinking. Currently we have just over twenty five percent of Saskatchewan's cropped acreage under low disturbance seeding techniques. This situation exists

due to an extensive effort with respect to technology transfer. Future gains in the adoption of soil conservation practices will probably require more extension effort and resources, not less.

So what will the future hold for soil conservation programs? Our neighboring provinces seem to have taken the strategy that what has worked in Saskatchewan will work there. We can see a gearing up in extension efforts for both Manitoba and Alberta. In Saskatchewan I would have to say, it doesn't look good. There are no government programs scheduled for soil conservation at this time and industry budgets are extremely tight. It would be difficult to ask farmers to fund the efforts as they are in the toughest economic straits in decades. No one, at this time, will commit to a future program supporting soil conservation efforts like we have seen in the past several years. If anyone should fund the necessary efforts it should be those who have the most to lose. The food eating public. Unfortunately, this would be a minefield for a politician on a campaign trail. What I see happening in absence of government supported programs is a reduction in extension efforts. The information flow from researchers to farmers and back again will slow to a crawl. No field days, no annual conventions and no one on one support programs to which farmers, over the past ten years, have become accustomed. The rate of adoption for reduced tillage practices will slow and may even develop a negative trend and our valuable soil resource, on which we rely for our food, will still be largely at risk to erosion. Where are you now Mr. Sparrow?

Waldeck Area Farmers Adopt Direct Seeding

By Eric Oliver,

SSCA Soil Conservationist

Larry and Sandra Hill have farmed for the past 30 years. Although they have been part-time farmers with full time jobs, they have farmed full time for the past 17 years. They farm a little over 5000 acres near Waldeck in southwest Saskatchewan and have practiced various forms of conservation farming ever since they moved to their farm in 1968. The first thing they did was plant shelterbelts about 40 rods apart. On some of their lighter land, they narrowed that to 20 rods and on the land most prone to erosion, they even reduced the width between the tree rows to 10 rods. Since then, they have increased the shelterbelts that were 10 rods apart to 20 rods, due to direct seeding and other soil conservation techniques.

They first tried direct seeding in 1983, using a Noble DK5, combining it with chem fallow and straight combining. The DK5 didn't work that well, as it couldn't pass through the stubble effectively. Larry and Sandra also quit chem fallowing at that time due to the high cost of Roundup. However, they did continue with straight combining.

The Hills had contemplated modifying the DK5 so it would go through stubble, but in 1991 they bought a Flexi-Coil 5000 and were then able to successfully direct seed with it. They use a Stealth knife and single shoot. The Hills quickly learned that their straw chopper on the combine had to be set to maximum. "Managing our residue is very important and the key to being able to direct seed", explained Larry. The Hills started going to meetings locally and in Alberta, field days and demonstrations, as well as talked to farmers who were already direct seeding. They are always looking for new techniques or research that can be incorporated into their farming operation.

Since the reduction in price of Roundup, the Hills have re-introduced chem fallow into their system instead of tillage with excellent results. As Larry commented, "The direct seeded and chem fallow fields are now essentially unaffected by wind or water erosion, even on our most sandy fields." The Hills have experimented with cutting rates of herbicide on chem fallow with poor results. As Larry and Sandra commented, "It cost a dollar to save a nickel".

Although they have tried various crops in a rotation, the Hills are working towards a cereal/pulse rotation using peas and lentils in the rotation with durum. However, their rotation may change somewhat due to market prices. The Hills began incorporating pulses into the rotation due to the cereal leaf disease problems they were encountering on a chem fallow/durum rotation.

The Hills have been involved in a variety of soil conservation projects over the years. In addition to their own testing of techniques like variable stubble heights and knife deflectors, they have been involved with some testing with various chemical companies. They also have an impressive field forest belt test with PFRA that is located just behind their yard. This test has 15 different

varieties of deciduous and coniferous trees and is also testing different mulches on these tree rows for weed control. The Agri-Food Innovation Fund's Applied Research and Demonstration farm or "spoke" site for the southwest is located on the Hills land, as is a precision farming project. This demo farm has several projects involving special crops and spices. At the same location as the demo farm, there is also a stubble height project with the research Station at Swift Current and a Limagrin canola variety trial. The Hills are also involved as cooperators with the Carbon Monitoring Project with SSCA and the Research Station at Swift Current.

Larry and Sandra are an innovative couple who are continually seeking out better methods and management practices to make their farming system work better and be more profitable, yet remain sustainable. The projects they have been involved with not only increase their knowledge, but also help many other farmers. The success of their efforts is evident in the lack of soil erosion and more productive land without degrading the soil.

Investment in Seeding Equipment Pays Off

By Garry Mayerle,

SSCA Soil Conservationist

The Moroz brothers of Porcupine Plain made some major changes in their seeding operation this spring. They purchased a John Deere 1820 Flex Air Hoe Drill using a 1900 Commodity Cart to deliver grain and fertilizer to Dutch Industries new paired row opener. After the crop is all in the bin they report that they are very happy with the results.

Ray and his brother Michael farm 2000 acres of fairly flat land with a variety of textures right around Porcupine Plain. Although they tilled most of their acres in the fall of 97 they are moving to a direct seeding system next year. They plan to one pass seed a large majority of their acres in the spring of 99.

They combine with a 9600 John Deere with a chaff spreader and the standard straw chopper. They straight cut a large portion of their acres with a 30 ft. table about 8 to 10 in. high. This past summer they received good moisture and had heavy cereal crops. Ray comments that their hard red wheat ran in the high 40s and low 50s. To handle the residue that NE Saskatchewan grows with these kinds of cereal crops, the Moroz's have heavy harrowed all of their acres. This should put them in good shape for direct seeding next spring!

Last season Dutch Industries put out 6 sets of these paired row openers the Moroz brothers used. Ray and Michael ran NH_3 as their major source of nitrogen placing it behind the leading knife on this opener. Seed and dry fertilizer is placed in two rows behind and above the opening this knife makes. They state that they were very happy with the separation behind this opener. Rates of nitrogen were varied from 20 lbs/acre on peas to 90 lbs/acre on canola and they felt that there was no seedling damage. They also say they found a good 4 in. paired row pattern which is quite visible even in the stubble this fall. However, they do stress the need to keep seeding speed down to 4.5 mph. Ray says that it was a big adjustment to bring seeding speed down to 5 mph. when they started out in the spring because they were traditionally cultivating at 6.5 - 7 mph. By the end of the season they were down to 4.2 mph and were very pleased with the results!

One of the bugs they encountered with the openers was a weak wing structure that forms the trenches for the paired seed rows. Norman Vertefeuille with Dutch Industries says they have made some changes to this structure and after trying them out seeding some winter wheat acres he is sure they have the problem beat. The opener will be available this winter. It uses Dutch's 1640 knife with a carbide tip and a 4 in. wide paired row attachment that gives a 3.5 - 4 in. spread. Norman states that properly adjusting airflow is necessary to get maximum separation.

The air drill the Moroz's purchased was a 52 foot, 10 in. spaced machine with 550 lb. trips, 4 in. semi-pneumatic packer wheels and a tow between air tank. They pull a large 1750 gal. ammonia tank behind. John Meinhert with John Deere Seeding Group in Regina says they wanted a drill

that gave good accurate depth control and very good residue clearance. After the first season he said they are very happy with the drill. The Moroz's concur with Meinhert saying that after properly leveling the unit they were very happy with the way it followed the contour of the land. They have fairly flat land but do have a number of drainage ditches and the drill performed well seeding through these.

There are a few bugs that Ray mentions such as a retainer on the depth adjustment plates and seals at the bottom of the commodity tanks but they are confident that some updates will take care of these annoying problems. Another problem they ran into was co-ordinating ammonia delivery for maximum seeding efficiency. The problem was only encountered during the spring NH_3 application rush. To avoid the time spent waiting next year they hope to apply several fields of ammonia this fall to reduce dependency on dealer deliveries during this rush.

Moroz's pull their drill with a 375 hp. tractor. Ray says you might be able to get away with 25 horsepower less but there is definitely times when they needed all the power they had. They were especially happy with the DT710 radials they put on the tractor. He says they could find no compaction or emergence problems in the tire tracks. They were also pleasantly surprised with the savings in fuel costs last spring.

Ray and Michael state that there was a lot of anxiety in making such a big investment and a major change in seeding procedures but it turned out excellent.

Precision Farming Research Expanded in the Northeast

By Garry Mayerle,

SSCA Soil Conservationist

The Northeast Agricultural Research Foundation (NARF) has extended their commitment to evaluating the use of precision farming technology for on farm research. They have hired Glenda Leach as their research and development manager. With the addition of this position they expect to be able to get better quality results from more on-farm projects.

Glenda grew up on a family farm by Star City. She remains involved in the farm, which produces both grain and livestock. She has her Diploma in Agriculture from the U of S. She comes to NARF with 9 years of experience doing contract work for researchers at Agriculture & Agri-Food Canada's Melfort Research Station. The time that she has spent managing plots and working with data entry is good preparation for organizing the projects NARF wants to run. Ducks Unlimited Canada and NARF have been able to put together a full time position for Glenda. She will spend about half of her time doing extension for Ducks Unlimited and the other half working with NARF projects and extension. NARF was able to access funds for her salary through the Canada Saskatchewan Agri-Food Innovation Agreement.

Glenda started her position at the end of June. She was involved in organizing some of the on-farm projects, which were run after that. Six different farmers ran projects this last season. They included a number of comparison strips and 1 variable rate project. The farmers evaluate and record the results with their GPS yield monitors and yield maps. Comparisons involved such things as variety trials, varying fertility rates on a number of crops, fungicide trials on canola and cereals, a seeding rate trial on CPS wheat, and others. NARF also has the use of 150 acres of Agriculture & Agri-Food Canada land to develope the use of precision farming technology. This past season it was seeded to canola and included a herbicide tolerant variety trial and varying fertility rates. NARF was able to get GPS located yield data off the site this year. They also had 7 acres of fall seeded canola on the site.

In the next few years Glenda also foresees working with farmers to apply precision farming techniques at various levels depending on the financial commitment they are comfortable with. Data from soil types and soil sampling, topography, and remote imagery could be layered together to give enough information to begin doing some precision farming. She is confident that when grain prices provide a better return the benefits of applying precision farming will be more evident to all.

Be A Statistic

By Juanita Polegi,

SSCA Soil Conservationist

You've heard of the Baby Boomer Generation, the Pepsi Generation and the X Generation. Now you can add one more to the list: the DS Generation. That's the Direct Seeding Generation. Statistics show that well over 20% of Saskatchewan's farmers have implemented a low disturbance direct seeding system in their operation. Another 25% have adopted a high disturbance direct seeding system. These are the members of the Direct Seeding Generation (DSG).

You, too, would like to become a member of the DSG but you just haven't made the leap yet. There are many reasons for that, the most common of which is the lack of funds. As you admire the neighbour's shiny new rig, you just can't see yourself owning one of those for a very long time. You think you are destined to be a conventional seeder.

Good news! Think again! There are many ways to begin direct seeding simply by modifying your existing equipment. At the SSCA's upcoming conference, one of the concurrent sessions will feature a panel of 4 farmers who have been able to make the switch without a great outlay of cash. Tom McDougall has taken his Noble DK 5 hoe drill and fitted it with Gen's eagle beak points. Germaine Dauk has fitted his IH 7200 with Atom Jet openers. Clint & Aaron Steinley have an older model frame with Accu Plant double disc openers. Garry Dennis has a Prascoe air seeder and a Morris solid hitch cultivator on 12"row spacing equipped with Skayman points and K Hart mounted packers.

Air seeders can be converted to a direct seeding machine but the key to success is to use a single shoot boot and on - row packers. The packers should be the same width as the opener. The packers should also be compatible with your soil conditions. On heavy clay soils, flat rubber or pneumatic packers work best as they flex and allow the mud to drop off. Steel V packers tend to work better on loam and sandy loam soils. Equipping an airseeder with a double shoot boot may prove disappointing, especially in dry years, as you may not be able to achieve sufficient packing.

Single shooting will limit the amount of fertilizer that can be applied with the seed, particularly if the opener is narrow. Banding fertilizer remains an option in direct seeding. Deep banding with narrow knives travelling at less than 5mph will leave roughly 80% of the stubble standing and yet will not rip up too much ground.

There are many farmers around the province who have figured out a way to join the DSG without having to lay out significant sums of cash. If you have a piece of equipment that you want to modify, chances are someone else in the province has also modified the same model. To get in touch with others who have made modifications to their equipment, contact your Regional

Conservationist (Garry, Tim, Ken, Eric, Bob or Juanita) or call the SSCA Hotline (1-800-213-4287) and ask that a query be made in the Farmers Helping Farmers Data Base.

Tour de Fields

By Juanita Polegi

SSCA Soil Conservationist

"The skies they wuz blue,

The sun she was hot,

Where were all the farmers?

In air conditioned trucks they were not.

Pray tell, what was the lure

That had the farmers in the fields

Checking and figuring

Talking of yields?

Why a 1/2 ton tour

Where they saw insects, diseases and weeds

And discussed why a guy

Should direct seed."

Okay, I may not be Elizabeth Browning but the fact of the matter is SSCA staff organized or participated in over 70 tours and addressed about 3000 people during the summer tour season. The weather on most tour days was ideal for baling or going to the lake and yet all the tours were pretty well attended. Blazing skies be darned, the producers were there for information.

And information sharing is the main function of a summer tour. The sharing occurs in 2 ways. Firstly, it enables everyone to actually SEE what happens. Whether the focus is research or demonstration, it's much easier to grasp the result when you can observe the plots or the fields, make your comparisons and draw your conclusions.

The other function of the summer tour is to initiate informal discussion. Tours are very loosely structured so most of the resource people speaking at various sites along the tour encourage questions and comments, either at the site or as the tour jostles along the road to the next stop.

Tours are also a good time to meet with folks from a little further down the road and learn from them, too.

Conferences and equipment field days are important learning forums but the summer tours bring everything together. And don't think that you're "goofing off" by attending a tour. You're working just as if you were on the tractor (although it's probably cooler in the tractor!). Tour work involves gathering and then storing information to be retrieved later when you're making decisions about your crops, varieties, herbicides, or system. And if a donut or a beer come with the tour, so much the better!

When next summer rolls around, don't hesitate to give your Regional Conservationist a call and ask about tours coming near you! We plan our own tours and are generally kept well informed about tour dates for the various Research Foundations, Ag. Canada Stations and the Conservation Learning Centre.

Tours are informative and even a little bit of fun (never been on a tour yet when I haven't heard a good story or two!). Hope to see you on one next summer!

Green, green grass

By Juanita Polegi,

SSCA Soil Conservationist

The hot, dry conditions in spring followed by frosts in early June had producers from all around the province worried about the summer's hay crop. And while these adverse conditions did much to limit the yield potential of the grasses and legumes, the lack of adequate nutrients available to the plants also contributed to a reduced yield. A couple of hay fields west of Yorkton, however, show the importance of good soil fertility - even while doing a survey from the 1/2 ton going 90 km/h!

In the summer of 1997, Brent McKen direct seeded forages into a number of acres, some for hay and some for pasture. At the time of seeding, Brent also seeded oats and peas at half the regular rate and cut them for green feed. By mid June of 1998, the forages had generally established very well but the areas in the fields that had been fertilized were much better established than those that received no fertilizer.

One field of grass (a mixture of meadow brome, crested wheat and timothy) was particularly striking. When Brent seeded the field, he was able to seed from corner to corner and end to end. Then he built fences around the field. About the third week of April,1998, Brent broadcast a fertilizer blend that included 50 lb. Nitrogen (in the 34-0-0 form), 30 lb. Phosphate and 15 lb. Potassium. The cost of the fertilizer was roughly $37/acre. Brent couldn't apply the fertilizer up against the new fence or in to the seeded ditch. By mid June, even though at that time the field had received only four tenths of an inch of rain, the difference between the fertilized field and unfertilized area was startling.

The colour differences were most apparent. The fertilized area was a much darker green than the unfertilized grass. The fertilized grass was also taller. Thom Weir Agronomic Crop Enhancement Specialist with Westco was also at Brent's that day. Thom threw down the 0.25 square yard measure on both areas. The clippings from the unfertilized area barely put a bulge in the sample bag whereas it was all Thom could do to squeeze the clippings from the fertilized area into the same sized bag.

Thom then sent the samples away to the Enviro Test Lab in Saskatoon and had a feed analysis report prepared. The results prove just how important it is to fertilize forage stands. On a dry weight basis, the protein content of the unfertilized grass was 7.50% and the estimated TDN was 57.91%. Compare those two figures to the fertilized grass where the dry weight protein was 12.27% and the TDN was 68.17%. In terms of yield, the fertilized grass was remarkable. Brent said he cut the hay early and was able to take off about 2200 lbs. per acre. Rather than take a second cut, he turned his bison out on that field for grazing. Considering there hasn't been much notable rainfall since about the middle of July, Brent is very happy with the productivity of the stand.

The summer of 1998 has been the year where fertilizing forages has shown its value. Those forages with an adequate nutrient supply were healthy and vigorous and therefore, much better able to cope with the stresses of the adverse weather conditions than those forages under nutrient stress. Productivity and improved nutrient content of the hay were the final result.

For more information on pasture and hayland fertilization, contact Thom Weir at 786-5488. For information on direct seeding or soil conservation, contact the SSCA Hotline 1-800-213-4287.

Moisture Management - Key to Crop Establishment

By Ken Sapsford,

SSCA Soil Conservationist

In the spring of 1998 much of the province was very dry, west central and northwest parts of the province in particular. Many farmers moved to direct seeding to save valuable seedbed moisture for the crop they were planting. When the crop started to emerge they found patchy emergence and some seedlings did not emerge until after the first rain on June 19th.

Why didn't direct seeding help them this spring?

There were a number of factors that caused the poor emergence:

1. **Moisture loss to winter annuals**

Many of the areas that did not emerge this spring had high Flixweed, Stinkweed, or Narrow-leafed hawks beard populations. These weeds started to grow in early April with the warm weather. By early May they were 4 to 6 inches tall**,** starting to go into drought mode and not growing very actively. The Roundup applied to the field prior to seeding killed these weeds slowly because they were already stressed. This allowed the weeds to continue to extract moisture from the seed bed faster than the seeds that were planted could absorb the moisture thus creating poor and patchy emergence.

The solution to avoiding this from occurring another year is early control of winter annuals. Fall is the best time to control these weeds. 2,4-D at 5-oz active ingredient per acre (.28 L/ac of 500-gr./L formulation) will control most of these weeds. Narrow-leaved hawk's beard will only be suppressed at this rate of 2,4-D and requires 8 to 12 oz active 2,4-D for control in the fall. If you are applying 2,4-D in the fall you have to consider what crop you are planting next year.

There is no problem planting cereals next spring into a field that has had 2,4-D applied in the fall. Rick Holm, Professor with U of S Plant Sciences Dept, stated "Broadleaf crops can be injured by soil residues from fall or early spring applications of 2,4-D. Risk of injury is greater when 2,4-D is applied in the spring rather than in the fall."

Tables 1 through 4 are extracts from a final project report submitted to the Agriculture Development Fund entitled "Weed Control in Special Crops" by F.A. (Rick) Holm 1997.

The check yields used in calculating the "Yield % of Check" values are from plots treated with a low rate of Roundup. The clay soil is a Sutherland clay loam (23% sand, 41% silt, 36% clay, 4.5% OM) and the sandy loam soil is a Bradwell fine sandy loam (51% sand, 29% silt, 20% clay,

3.1% OM). From the tables it is obvious that in almost every case, spring burn-off with a low rate of Roundup resulted in higher yield than did fall or spring treatment with 2,4-D.

Table 1

Crop:Lentils			
	Rate of 2,4-D	Yield % of Check	
Time of Application	Active oz/ac	Sandy Loam	Clay
Fall	4	98%	93%
Fall	6	88%	100%
Fall	8	87%	98%
Spring	4	88%	98%
Spring	6	74%	96%

Lentils: Fall application of 2,4-D was much safer than spring application but still involved some risk. Growers on medium to heavy textured soil should experience relatively little risk of crop injury at rates of 4 - 6 oz ai/ac. These rates should be tested on an experimental basis on individual farms before field scale use, as the degree of risk is highly dependent on soil texture and organic matter content.

Table 2

Crop:Canola			
	Rate of 2,4-D	Yield % of Check	
Time of Application	Active oz/ac	Sandy Loam	Clay
Fall	4	85%	92%
Fall	6	90%	92%
Fall	8	78%	88%
Spring	4	-	-
Spring	6	60%	90%

Canola: On clay soil, the soil residual treatment caused significant initial injury. Based on visual observation, the plants recovered but final yields were nearly always reduced. Injury was much more severe on sandy soil.

Table 3

Crop:Peas

	Rate of 2,4-D	Yield % of Check	
Time of Application	Active oz/ac	Sandy Loam	Clay
Fall	4	90%	97%
Fall	6	93%	95%
Fall	8	101%	91%
Spring	4	108%	106%
Spring	6	83%	90%

Peas: fall application(s) of 2,4-D was relatively safe, resulting in only slight crop injury.

Table 4

Crop:Flax			
	Rate of 2,4-D	Yield % of Check	
Time of Application	Active oz/ac	Sandy Loam	Clay
Fall	4	86%	89%
Fall	6	93%	83%
Fall	8	100%	96%
Spring	4	-	-
Spring	6	75%	100%

Flax: Flax suffered relatively little injury from any of the treatments on clay soil and yield was generally not affected but, based on visual assessments of crop damage, injury levels were much higher on sandy soils.

Holm says, "Maximum safe rates of 2,4-D will vary considerably, depending upon soil texture and organic matter content. Coarse textured, low organic matter soils are highest risk and high clay and organic matter content reduce the risk of crop injury. Producers who are contemplating the use of 2,4-D for winter annual control prior to seeding these crops should conduct small strip trials on their own fields to confirm safe rates for their particular situation before treating large areas."

Roundup applied at 0.5 L/ac in the fall will also control these winter annual weeds with no residue that creates cropping restrictions. For the weeds to be controlled they must be visible and actively growing.

1. **Avoid surface evaporation**

2. If you have been in a low disturbance direct seeding system for a few years you should have created a layer of residue to reduce surface evaporation. However**,** if you are just starting into a low disturbance seeding system or last year grew a low residue crop like canola, peas, lentils, etc. you may not have enough cover to prevent evaporation. In this situation you would like to seed these fields early to utilize the moisture before it evaporates. If you have a large number of acres that are like this and they cannot all be seeded early then harrowing will seal up soil cracks and create a layer of soil that has a lower density than the soil below. Moisture will not travel between two different densities of soil so you are able to trap the moisture into the soil until you seed the field. **Be careful harrowing.** You don't want to create an erodable field in the process.
3. **Don't dry out the soil trying to put the fertilizer deep**

Many direct seeders are now using double shoot openers that put the fertilizer below and beside the seed row. As this spring progressed the soil continued to dry out so you had to put the seed deeper to get into the moisture. Some farmers put the double shoot openers so the seed was at 2 to 3 inches deep and the fertilizer tip was going 3.5 to 4.5 inches deep. This was fracturing the soil more than the packer wheels could repack and as a result the seedbed dried out before the entire crop was able to germinate.

Some farmers with the same openers switched the hoses around on the manifold and sent the seed down the fertilizer point and sent the fertilizer down the seed opening. This placed the seed into the moisture but did not dry out the seedbed. The fertilizer was above and beside the seed and so was not ideally placed but the fertilizer does no good if the crop does not germinate. Crop establishment has to be the priority**,** fertilizer placement is secondary.

The one thing we learned from this spring is we have to be able to think on our feet and adapt to changing conditions. The moisture loss from our soils was faster and greater than we expected. The farmers that were able to change their operation to match those conditions were able to get most of their crop established. After that it was up to Mother Nature. Some of us received the rain and some did not.

Summer Highlights from the CLC

By Laurie Hayes, M.Sc., P.Ag.

Manager, CLC

Well, this summer and fall have certainly passed quickly!! All in all, we had a reasonably good year at the CLC - good moisture when we needed it for the crops and nice weather for harvesting. We were quite dry but then got over 10 inches of rain between the middle of June and the middle of July. It created some problems with our field days but the crops sure prospered!

We had a busy summer with field days. As mentioned in the last newsletter, BASF hosted a Sclerotinia Awareness Day, with guest speakers, including Dr. Robin Morrell. The information was well received by ~65 attendees. We did a quick survey of our canola field at that time and in the following week and found few signs of sclerotinia. However, when harvesting this fall, we found more shredded stems than expected but there appeared to be little effect on yield.

The Royal Bank of Canada and the SSCA brought clients/producers from throughout the Parkland region to the CLC for tours. Most of the visitors were not familiar with the CLC and therefore, these tours presented a welcome opportunity to "spread the word" both about the CLC and the practices of direct seeding. Current and potential herb growers throughout Saskatchewan attended a field day at the CLC, highlighting some of the more popular herbs as well as some of the current production practices. As well, the local Horticulture Club and the Business Men's Club toured the facilities, again widening our audience.

Monsanto again sponsored a Preharvest Field Day at the CLC. Our barley was sprayed with Roundup Fast Forward and harvested 10 days later on the field day. There was a marked difference in the weed populations of the areas sprayed with Roundup Fast Forward, Roundup Transorb and the unsprayed control. It was a good demonstration. As well, the crowd was good (~200), the weather hot and a number of combines, sprayers and harrows were on hand for demonstration.

The CLC hosted a major all-day field day in July focusing on crop choices and management as well as diseases and insects of crops. Guest speakers included Dr. Randy Kutcher, a disease specialist with Agriculture and Agri-Food Canada, and Scott Hartley, the insect specialist with Saskatchewan Agriculture and Food. Unfortunately, the producers got to see first-hand the damage of wheat midge in both red spring and prairie spring wheat, septoria in barley, and the onset of aschocyta and powdery mildew in peas. Yield was affected in the red spring wheat and barley but the effect on the prairie spring wheat was less. In the canola, some sclerotinia was identified and we also saw a few lygus bugs, the bane of canola crops in Alberta. The CLC was also involved in the Bertha Army Worm survey. Fortunately, the number of moths found was well below what is considered a threat.

This year, the CLC welcomes the partnership with John Deere. John Deere supplied a 9610 John Deere combine with their GreenStar yield mapping system (their GPS technology), as well as an operator. Dean McPherson, their crop systems specialist, was on hand to run the combine as well as instruct any one interested in learning how to operate the machinery and its computer systems. The resultant yield and weed maps will be integral to our precision farming projects. An added bonus was the presence of PAMI personnel, testing the accuracy of the yield monitors in various makes of combines. The PAMI grain truck has load cells on each corner of the box and the weight of each load was compared with the readings in the combine. They gathered information on canola, wheat (red spring and prairie spring) and flax. It was exciting to be part of this type of research. Of course, we also very much appreciated the help in harvesting.!!!

When harvesting the flax, we left the majority of the straw in rows to be baled. However, we did use the straw chopper and spreader on the John Deere for one section. The flax straw came out in pieces that ranged between one and four inches long and quite fluffy. It will be interesting to see what it will be like in the spring and whether there will be any effects on seeding.

Our school program is growing strong again this fall. We continue to receive more requests than we can handle. Between in-class presentations and tours to the CLC, our coordinator is booked every day, morning and afternoon, between September 1 and October 15. Approximately 500 students (plus teachers and parent volunteers) will visit the CLC this fall, learning about the effects of changes in weather on the flora and fauna, the importance of soil and water conservation and factors affecting air quality. Integrated into these lessons is the relationship between agriculture and the environment and how producers while striving to remain sustainable, are making conscious efforts to improve the environment. We must continue to teach this next generation that we, as stewards of the land, are concerned, not only with providing food for the future, but also with the maintenance and conservation of the environment.

This fall, we are pleased that two First Nations schools are involved in the program. The First Nations peoples are the original wildlife conservationists and were well studied in the use of available plant life for medicinal purposes. It is great to see their interest in the CLC.

Jo Detillieux, our coordinator for the past four years, left the CLC this summer and is devoting more of her time to her herb ventures. She will also be developing and teaching some herb-related courses this winter. The CLC thanks Jo for her significant contributions to the school program and wish her the best in her new endeavours.

I would like to introduce our new School Program Coordinator, Garry Brad, B.Ed., B.A., PGD (Ed. Admin.). Garry has 31 years experience in the education system as a teacher and administrator. He has been instrumental in compiling content for science, geography, geology and social studies curriculums. As a member of Ducks Unlimited, wildlife federations and a landowner, Garry understands the challenges facing agriculture and the importance of conserving Saskatchewan's ecosystems and wildlife habitat. He has attached the school program with great zeal and we look forward to working with him to expand our already-successful school program.

Once again, the CLC thanks its partners and sponsors for their support throughout the year. The contributions through personnel and product are invaluable.

On a personal note, I would like to thank all the parties involved with the CLC for making my first crop and tour year a success. Many of you patiently answered my multitude of questions and volunteered assistance and information when needed. I sincerely appreciate all the help. Thank you.

Life After El Nino: The Summer of Two Droughts!

By Tim Nerbas,

SSCA Soil Conservationist

"You think this is dry, I tell you back in '98 it was a summer of not one but two severe moisture deficits ("droughts" in layman's terms) in west and northwestern Saskatchewan. Why, it was drier than a popcorn fart. Even the grasshoppers were going to McDonald's!"

In twenty or thirty years I am sure that there will be a number of us old farts (oh, I mean farmers) who will be reminiscing about the good old days (when only 25% of the farms were direct seeding for instance).

Well for those of you who never stray further than 30 miles from home and who never listen to the radio, watch TV, or read the newspaper, let me be the first to inform you that the northwest this year was a little dry, period. In the most northwesterly areas of our good province, many producers were looking for their first inch of summer rainfall (that's total rainfall) as late as June 26. It made for a dry spring to say the least. Pasture was at a premium (total herd disperses in some cases), crop emergence was patchy, and producers' nerves were frazzled.

But as always a rain improved not only spirits but transpired into some surprising yields (for some crops). Canola and peas showed amazing resilience while sitting relatively idle (so to speak) until it rained and then making the most of that moisture and turning it into yield. Most of these crops were not tall. In many fields canola that was cut leaving only 4 inches of stubble did not catch the bottom pods. But what were there were pods and more pods. Thirty to forty bushel pea crops, and twenty to twenty five bushel canola crops were not uncommon (thirty-five to forty-five bushel canola on summerfallow was noted by a number of producers). But not all producers were so lucky. Many particularly low yields were realized in the most westerly part of the region. The key to any success this year (well, most year's) was getting the crop out of the ground. Emergence meant everything.

As for the cereals, life was not good. If they did emerge, most were headed long before the rain fell. This resulted in second growth after the rain, and crop #2 had difficulty filling because of midge and the second drought of the summer. Bushel weights have been low and total volume harvested in many instances even lower. But present grain prices make it an easier pill to swallow - yea right!!

Many producers say it was one of the most challenging years in their farming careers. Dry at seeding, poor emergence, the re-seed decision, flea beetles, early June frost (as low as -8^{o} C was reported), dry at spraying, the spray or-not-to spray decision, grasshoppers, midge, lygus bugs, second growth, short crops, pasture problems, finding enough feed and straw, combine fires

while harvesting peas and for many the list goes on. As one farmer told me "we might as well laugh as cry".

If nothing else, 1998 has shown that by having a diverse rotation, some success can be realized even in years such as this. Other than that, this year proves that farming is definitely not for the faint of heart!