

The Newsletter of the Saskatchewan Soil Conservation Association

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1999 Direct Seeding Field Days a Success

By Blair McClinton,

SSCA Assistant Manager

In 1999, the SSCA held two direct seeding field days, one in the north and one in the south. While attendance was down at both field days due to the late spring, the field days were a success with 300 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 '99 at Rosthern

300 producers took the day off from spraying to attend the field day at Rosthern's Seager Wheeler Farm on June 5. This was the third 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. This year the machines seeded field peas treated with the new Bio-Coat seed treatment.

Spraying equipment was also demonstrated at this year's field day. The spraying demonstration featured both high clearance and field sprayers. Drift control methods including air-induction nozzles were featured on most of the 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 15

The conditions at the Regina site were very wet like most of the land in southeastern Saskatchewan this year. 300 producers attended the Regina field day on June 15. Nine seeders were demonstrated at the site seeding Roundup Ready Canola. As with the Rosthern day, there were also sprayer demonstrations.

Direct Seeding - The Cheap Way

By Bob Linnell

SSCA SoilConservationist

The science and method of direct seeding is now pretty well established in a lot of areas of Saskatchewan, but has only been embraced by about 30% of farmers on a low disturbance basis. Part of the cause for not direct seeding, as identified by farmers is the cost of new machines, sometimes placing the farm under capital stress, and endangering the ability to manage risk on the individual farm.

You don't have to buy new

There are plenty of good used machines out there, often lying in the "boneyard" out along the back fence, that can either be used as a direct seeding machine "as is" or with a few low cost modifications. The average farmer that owns one of these doesn't have to be told how to use the machine, but all he or she does need is an understanding of the systems approach to direct seeding. In other words, he needs to know that he has to cut his stubble to the proper height to enable him to directly seed into that stubble without plugging the machine, or having the machine act as a rake. He also realizes very quickly that he has to spread the chaff over as much of the width of cut as he can. With a pre-seeding burn off of Roundup to replace the pre-working of the land, he is then pretty much ready to adopt direct seeding as his method of choice to the management of his land.

Retro-fit parts available

There are a number of manufacturers that supply good quality replacement parts just for the purpose of making a better seeding job with a machine from a well recognized manufacturer. These include opener points, seed boots, shanks, packer units, seed distribution systems to fit on cultivators, or air seeders (high disturbance machines). If a person really thinks they have or have seen a good idea that they can make for themselves in their own shop over the slow season, then more power to them to try it. It often will save a lot of money, or at least will pay the enterprising farmer quite well for his shop time. Complete seeding units have been built by either an individual farmer or two people working together in a shop over the winter.

Example

Just to show what can be done, I point to an implement agency that has taken the idea of doing a retro-fit on an old Morris Seed-Rites. He has bought some of these units at farmer auction sales, hauled them back to his shop, and gone to work on them. He first removes the dead rod from the back and takes off the mounted harrows. He also installs the packer sections from the old Morris M-10 or M-11 drills to fit the spacing on the Seed-Rite and get this, he doesn't have to fashion new brackets, because they "happen" to fit, with no extra welding. He then goes to a company

like Atom-Jet Industries in Brandon MB and purchases new openers for the drill. Now, the farmer who is buying this unit doesn't have to pay very much to get into direct seeding, using this newly retro-fitted machine. It will do a perfectly good job, if he cuts his stubble to the right height and remembers to spread his chaff adequately.

If the farmer after a year or two, finds that he doesn't like stopping to fill a lot, he will then go back to that dealer and likely price out an air tank delivery system. The dealer, then takes the seed boxes off and fits the air tank to the perfectly good field unit. Meanwhile the dealer sets the seed boxes out behind his shop for storage. After another year or two, the farmer again returns to the dealer and says he would like to make the field unit bigger, to which the action taken by the dealer is to price out an air drill field unit. He then takes back the retro-fit Seed-Rite, replaces the stored seed boxes and sell it to the next "smaller" farmer, to begin the learning process for direct seeding.

The farmer gets used to the system approach for direct seeding, at an affordable budget. The dealer continues to develop a clientele for machinery at an affordable cost and introduces newer machinery to the farmers at a rate that they can afford.

Many individual farmers have adopted a lot of perfectly good machines in just a like manner, to allow them to direct seed on their own farm.

Pass The Word

The SSCA is interested in identifying all the farmers who have been successful in retro-fitting machines to allow direct seeding. If you as a reader, know of someone who has a retro-fit, please pass the name of that person along to Bob Linnell or anyone at the SSCA, so that we may contact them, and in that way, be able to help farmers who wish to begin direct seeding. Conversely, if you require the list of after market manufacturers that sell parts for the purpose of retro-fitting machines you can get help out of any SSCA staff member, or by calling the 1-800-213-4287. If you plan to attend our annual Direct Seeding conference coming up on Feb 9th and 10th, 2000 in Regina, you will find a display board there, inviting you to list people that have completed a retro-fit on their farm to allow them to direct seed at a lower budget.

Follow up on Short - season Dryland Corn.

By Bob Linnell

SSCA Soil Conservationist

Just to let you know, many small plots were placed throughout much of the province this past spring by SSCA staff, in order to test the feasibility of growing another warm season grass crop in our rotations. At time of writing, it is clear that this crop appears to be doing very well, even in the "wet southeast". The time to maturity for the SE may well be a problem this year, but I am sure the growing tests will be repeated next year.

Keep watching for a field day near you for more results.

What to do in a Wet Fall?

By Bob Linnell

SSCA Soil Conservationist

Now, coming from the great southeast, especially in a year like 1999, this could be an answer for a lot of people; or it could be what is known in the world as "a whizzer". Depends on where you sit, I suppose whether you are looking for great words of wisdom or an abundant supply of bullfeathers to spread around the coffee shop all winter.

A lot of ground did not get seeded this spring, and some people are going to claim to crop insurance "that field is summerfallow". Crop insurance are just as likely to look at the field around the 11th of July and mutter "HA". Truth is a lot of people just could not get on the land to do anything about summerfallow, not that they didn't try or hire someone to have a try. Just look at some of those well rutted up fields and try to tell the farmer or the commercial high-clearance sprayer operator that they didn't try and see what kind of reaction you get.

The crop plan went down the crapper early and didn't get any better as the spring and early summer progressed. Personally, I don't know quite know what to do with about a tonne and a half of fertilizer mix that couldn't be placed in the ground with "something". But, I don't have a half a hopper bottom bin full of the same kind of problem. I do know of farmers who have taken out a spin spreader, and proceeded to broadcast the fertilizer on cereals to improve yield (and protein, if their timing was correct).

This may well turn out to be one of those years when you need a bag full of short cuts and tricks to successful harvesting, and be quite prepared to use any one or all of them. This includes pre-harvest Roundup or Fast Forward at the right time to hasten the maturity of both the crop and the underlying growth of "other things".

Swathing into a late fall often is beset with its own list of problems and straight cutting may not be possible if the crop refuses to mature in time before the white stuff falls. Planning for the next season can also become difficult, if you are in a well recognized 4 year rotation of cereal-oilseed-cereal-pulse. Crop residue management becomes a bit of a quandry under less than desirable harvest conditions. "Heavy" harrows certainly may not help if the straw is wet at all. As farmers in southern Alberta found out by trying to get on the land too early this spring, you could certainly produce a quite a mess.

This part of the province is not a traditional user of drying facilities for grain, but the newly constructed high throughput elevators have finally had to admit their original shortcomings and install "On the prairie-drying capabilities".

It may be a good time to arrange for provisional use of those facilities, or get to know your neighbor who has one and make some arrangements before all your other neighbors and friends

get the idea first. Aeration facilities are also very valuable to have and can be jury-rigged on your own farm with a bit of determination and imagination.

Moving grain by turning over at least a load out of the bottom to back on the top of each bin is also a good practice. A lot of farmers do this as a regular practice each and every year, to keep their grain in condition. It doesn't cost much, but it can be quite effective as a management technique.

Blending wet grain with some in storage from previous years is also a hint, but be cautious and be sure to check for possible infestation each time you attempt to mix grains, to prevent even bigger potential losses from miss- handling.

Lastly, I suppose is a word of advice to "get prepared" early and try to get your crop to market as fast as possible if it is wet or in a vulnerable condition. Get the grass cut around the bins in case you have to work in the snow, and make sure to keep the banker informed of what you are doing. Bankers can be quite difficult at times to work with, but are not nearly so if they don't have you deliver surprises. They hate surprises.

Wouldn't a grain handling system with a leg to turn grain over be nice? I suppose it is not too late to dream. Good luck with the harvest.

Can You See the Difference?

By **Juanita Polegi,**

Regional Soil Conservationist

Can you see the difference in weed growth between the left side of the above photo and the right side? The photo was taken May 25, 1999 as the field was about to be seeded. Prior to seeding, the entire field received an application of Roundup. In the original colour photo, you can see that the Roundup did its job as the weeds are a sickly yellow colour. But why the difference in weed populations between the 2 sides of the photo?

In 1998, the field had been seeded to foundation barley so a 12 foot buffer strip had been cultivated around the field throughout the growing season. While no plant counts were done in May 1999, you can see that there was a virtual mat of weeds on the cultivated side, while there were few weeds in the standing stubble. The predominant weeds in the field this spring were stink weed and shepherd's purse. When I relayed my observations to Dr. Doug Derksen Weed-Crop Ecologist with Agriculture and Agri-Food Canada in Brandon, he was not surprised. He indicated that while some winter annual weeds prefer no tillage, others thrive on soil disturbance. "Stink weed and shepherd's purse are two winter annuals that prefer conventional tillage over no tillage", he said. With that in mind then, working stubble in the fall to control these two weeds will not be very effective. Applying 2,4-D in late fall continues to be a more effective method for reducing their numbers.

Tillage can also stimulate weed growth if the field has been direct seeded for a few years. Dr. Derksen said, "If a field has had little tillage for a few years and then is suddenly tilled, you can create a huge weed mess! Tillage removes weed seeds from the surface and plants them."

If you're planning to work your stubble this fall to "dry it out" for next spring, consider the weed problems that may be created. If you go ahead and work the field anyway, be prepared to control the winter annuals early. While moisture conservation wasn't a big concern for much of Saskatchewan this past spring, there have been many springs when we've wanted to save every drop of moisture. Leaving the winter annuals until just before seeding may be costly in terms of lost moisture and nutrients. It's estimated that for every 10 days a winter annual is allowed to grow in the spring, it can remove one inch of moisture from the soil. If the crop to be seeded is a cereal, then an application of 2,4-D early in the spring will look after the winter annuals. An application of glyphosate is recommended if the crop to be seeded is a broad leaf.

No weed control system is perfect. Herbicides don't control all the weeds all the time but then, neither does tillage. Before pulling out the cultivator this fall, look at the photo one more time. Can you see the difference in the amount of weeds between the cultivated and uncultivated areas? Which side do you prefer?

How to Get Some Farmers to Buy Into the System

by Doug McKell

SSCA Executive Manager

After spending some time talking with farmers at this year's field days, a couple of things are evident. The mood of farmers is generally, and understandably, pessimistic and, some guys just don't believe in soil conservation practices like direct seeding. I guess we shouldn't feel disillusioned. If promoting soil conservation was that easy we would be witnessing a much faster adoption rate and by now we would have moved onto other issues. (Some people in lofty places think this is the case already).

Upon further reflection of the above-mentioned observations there are a couple of suggestions that, I feel, should be considered. First, the federal government should print special "farmer" dollars that can be given in large quantities to farmers to be used in purchasing farm related goods such as; inputs, machinery, repaying loans etc. They will not be legal for purchasing things like motorhomes, boats, vacations in Fiji, or Lear jets. This program will not affect the Canadian treasury. All dollars will be entirely circulated. We all know that if a farmer has a dollar he will spend it. The suggested program will not throw the Canadian buck into peril as farmer dollars will only be used for inputs and keeping the farm going. You people in Canada's ivory tower lands can relax knowing that farmers will not threaten your lists of the rich and powerful. We won't keep any money; it will be used to pump the economy. Farmer dollars could only be used by non-farmers to purchase food from grocery stores or goods from farmers. Grocery stores could only use the farmer bucks to buy food or food products directly from farmers thereby eliminating the middlemen. This will ensure food processing gets developed at the farm level. Purchasing a farmer vacation would be allowed, however, so that urbanites can see first hand the luxury of most farmers' operations. Maybe farmer bucks could be used to fund a show called *lifestyles of the poor and infamous*. We'll ask Kevin Hursch if he will be the moderator.

The other option would be to allow as much nitrous oxide into the atmosphere as possible. Nitrous oxide is laughing gas right? If we get concentrations up high enough maybe we'll all feel so much better that the feds will lighten up and kick some cash this way and the Americans will forget about free trade when our goods are flowing more freely south than are expected. Nitrous oxide is a pretty dangerous greenhouse gas so the first option is probably the best.

I don't know if I could get elected on this platform but would these ideas be any worse than those dreamed up for farmers to this point? Well I won't spend a lot of time developing those ideas. What we are going to spend some time on is developing a program to address the issue of how to get more farmers interested in adopting sustainable farming practices. We have done a pretty good job of reaching the innovators. But by nature these guys are quite adept at latching onto a

concept and then figuring out how to make it work for themselves. The later adopters require a more hands on approach. They are quicker to revert back to conventional practices if there is any indication the new system is not immediately better. Several farmers with whom we have spoken this spring at field days indicated they tried direct seeding and quit because of problems like; dandelions, the field was too rough, residues were too hard to handle, the yield didn't seem to be as good, etc. These problems can be addressed with tech transfer programs but with limited resources available it will take a large effort and more time to get the results with this group that have been experienced to date.

With that in mind we have been working with representatives from Saskatchewan Ag & Food and PFRA to develop a strategy that will address soil conservation issues from 2000 onward. If all goes as planned we will be spending more time monitoring and evaluating successful conservation operations and developing a process by which other farmers can learn from these successes and be more interested in adopting sustainable practices on their farms. It could involve the SSCA moving into applied research and public outreach programs on climate change.

It will be a large challenge that will require the resources of SSCA, provincial and federal governments and industry. If successful, however, we should be able to reach higher levels of sustainability with a broader base of farmers. We should also be able to do it without the farmer bucks and the laughing gas!

Fall Seeding Canola in the Southwest

By Eric Oliver

SSCA Soil Conservationist

While farmers have been growing canola in the Brown Soil Zone for several years, it still remains a higher risk crop. The potential for hot, dry weather, particularly during flowering, tends to be high in this region. In addition, canola requires higher inputs, which creates more risks for producers. Early seeding of Argentine varieties or using Polish varieties is most commonly practiced. Although Polish canola matures much earlier, many farmers still want the higher yield potential that is available with Argentine types. Canola is often seeded onto summerfallow in this region, but there can be serious problems with crusting.

So, what techniques can farmers use to reduce risk and improve the yield potential? Fall seeding of canola appears to have tremendous potential for the southwest as well as other areas of Saskatchewan. The coating applied to the canola seed prevents it from taking on moisture and germinating until spring. This allows the canola to germinate earlier in the spring than spring seeded canolas. There is obviously a risk of frost, but the potential benefits in terms of yield potential and early harvest is very encouraging. However, if there is an early killing frost that takes out the crop, there is usually time to re-seed the canola or seed a different crop. When using this technique, one must use a herbicide tolerant variety of canola in order to control weeds like winter annuals.

In most cases, fall seeded canola is being seeded into stubble. This allows for snowtrapping and the crusting problems that are common with summerfallow, are significantly reduced when seeded in stubble. There are also advantages with stubble creating a microclimate for the canola, protecting it from wind shear, heat canker, and evaporation of soil moisture. There are several advantages to early emergence. Early emergence can take advantage of available stored soil moisture and develop before the weeds. The combination of early herbicide application and canopy development will usually result in excellent weed control. Plots at the Agriculture Canada Research Station (SPARC) at Swift Current showed the fall-seeded canola grew taller than the spring seeded canola.

The yield potential of fall seeded canola is also higher. Although this year has had probably the perfect weather for canola during flowering, on average fall seeded canola will have a longer period of flowering without stress. The longer canola flowers, the higher its yield potential.

As with spring seeded canola, adequate fertilizer must be applied. If the crop runs out of nutrients too early, the plant will have to maintain its plant growth and seed production will be compromised. Canola is a high user of sulfur and is very sensitive to sulfur deficiencies, so addressing this nutrient is very important.

All in all, fall seeded canola will offer producers another tool to improve their bottom line with higher yield, while at the same time, reduce risk and improve weed control.

Flax Straw Hassles

By Garry Mayerle

SSCA Soil Conservationist

Direct seeders find ways to cut the costs of dealing with flax residue. With the right production system and equipment some farm managers have been able to manage their flax straw the same as their cereal residue successfully!

Traditionally flax straw has been bunched and burned because the straw won't break down fast enough for any field operations the following spring. Occasionally conditions can be just right, and the residue can be burnt in the windrows left behind the combine. But normally the residue in these windrows has to be bunched first. Some direct seeders are bunching this residue with a baler because they find that any type of a straw pusher pushes up small mounds of dirt beneath each pile of straw. The most popular method of bunching the residue is with a harrow but this usually takes 2 to 3 passes to do an adequate job especially for those seeding with low residue clearance equipment.

Laurie Hayes with the Conservation Learning Center (CLC) tried chopping and spreading some of their flax straw last year. She was quite happy with the way seeding operations performed this spring into this residue. The flax had yielded 29 bu/ac, which indicates plenty of residue to deal with. (The CLC is a research and demonstration farm about 10 minutes south of PA.)

Last year John Deere supplied a 9610 combine equipped with their fine cut chopper to do the harvesting at the farm. John Deere has 2 speed options on their choppers and this chopper was running at the fast speed. They also have two different options for blades and this chopper had paddle type blades for extra spreading. The fine cut chopper has a heavier rotor and more blades than the standard chopper. After preharvesting with a liter/ac of Roundup the flax had been swathed with a 30-ft. swather.

SSCA has had demonstration plots at the CLC for 4 years now. This year we seeded these Do's & Don'ts of Direct Seeding plots with a 12 ft. Conservapak plot seeder set up on 12 in. row spacing. The barley plots were seeded into the chopped and spread flax straw and we experienced no problems. The Center just purchased a 9-in. spaced Flexi-coil 5000 air drill equipped with Stealth sideband openers. They also were very happy with the seeding job made with this machine into the flax residue.

Wayne and Rollice Gronvold direct seed northeast of Tisdale. They have been seeding into chopped and spread flax straw for several years and are very happy with the results. Rollice says, "I spend less seeding than others do gathering and burning their flax straw!"

The Gronvolds straight cut their flax with a New Holland TR equipped with a 30-ft. header and a Redekop chopper which also spreads the chaff. When the combine leaves the field it may not

look real pretty but it is ready for the seeding operation. To make this system work they say there are a few things that are important. One of these is to preharvest the flax. Another is to cut as high as they can to a maximum of 12-in. and still get all the grain and make the combine perform. This leaves less loose residue to put through their airdrill. Thirdly they combine on an angle so that they will be seeding across any residue rows. One of the places where they have run into the greatest problem is in the sprayer tracks and they are building a set of crop dividers to reduce this source of long straw.

They seed with a Concord air drill with shanks 12-in. apart set up in 3 rows. Their opener is a simple 6-in. cutoff shovel. They use all dry fertilizer placed in this 6-in. seed row. They feel confident handling the residue from a 30 bu/ac flax crop with the system and experience they have now. When questioned about how a 10-in. spaced machine might perform they suggest that a 5 row machine probably should handle the same amount of residue that their machine handles.

Being Concord owners has already helped them overcome the hurdle of a perfectly smooth field finish. Their seeded flax stubble does have some extra lumps of residue and dirt scattered across it but they have a system that can handle this kind of field finish. Besides the reduced costs of getting rid of the flax straw they also see a moisture conservation benefit for those dry springs.

Based on these experiences you may want to try chopping and spreading a few acres of your flax residue this year.

Direct Seeding & Heavy Harrowing

By Garry Mayerle

SSCA Soil Conservationist

Many direct seeders in the northeast are using aggressive harrowing in their production systems. Some would argue that this isn't direct seeding but just changing the primary tillage tool from a cultivator to heavy harrow. However, there are many good conservation minded farmers who still see the need for this type of light soil disturbance.

Justifying the use of a heavy harrow in a soil conserving direct seeding system depends largely on how much residue you produce and the length of your growing season. If the amount of residue mat on your field is going to delay the final day of your seeding operations then you can probably justify some form of aggressive harrowing.

Another circumstance where heavy harrowing has a good fit is when heavy residue is spread poorly enough to cause uneven soil moisture across a field. The wider the swath width at harvesting time the more difficult it is to get that residue spread evenly back out across the field. Some direct seeders will harrow in this circumstance to get an even distribution of moisture across the field. Although we get much greater harvest efficiency out of big combines when we double swath to 50-ft. it is almost impossible to get residue spread back out to 25-ft. on each side of the combine!

For those direct seeding with a seeding machine that has lower residue clearing abilities it is essential to get good even spread of heavy residues and break up the residue some. An aggressive harrowing with a heavy harrow will really reduce the chance of plugging on a seeding tool like the IH 7200. Some direct seeders with difficult to work soil will use the heavy harrow to create a dust mulch to seal in moisture on fields which have low surface residues and will be seeded later in the spring. They can also be used to create better soil flow and seed row closing.

Disturbance creates weed growth but there are some who want to promote weed growth which will be eradicated with winter frosts or the next herbicide application. They are arguing that with our higher moisture conditions in the northeast a percentage of the weeds and volunteers will grow anyway so let's promote that growth before the pre-seed burn-off.

The best fit for heavy harrowing to break up residue is to go as fast as you can on as hot a day as you can find as soon as possible after the combine has left the field. Harrowing in the fall is definitely preferred over waiting to spring. In the spring the straw is so rotten that most of it breaks off and you have more loose straw to contend with. Also, you have missed the opportunity for weed killing frosts.

A heavy harrow with lots of on the go adjustments has been used to redistribute residue from high straw producing areas to areas where it is more beneficial such as knolls. Those producers

who farm very variable land also comment that on the go adjustments are important. Peaty areas need to be treated differently than gray clay areas nearby.

For those who are concerned about field finish the heavy harrow can be used to level off fields once a year. I certainly do not recommend harrowing after seeding as you destroy and fill in the perfect little trench you have created at just the right depth over the seed. Cosmetics alone are probably not a good enough reason to harrow but if pull type swathers and sprayers are part of your operation even the leveling you give the field in the fall may help hold them together.

Heavy harrow owners often purchase a granular application kit and use it to surface apply granular herbicides. This is one of the extras of having a harrow in the system.

If you are direct seeding successfully now without aggressive harrowing you should not think about incorporating it into your production system. However, if you grow a lot of residue and can't see how a one soil disturbance per year system could work for you using heavy harrows might help smooth the transition into direct seeding and somewhere in the future you may or may not decide to leave them parked!

Precision Farm Update

by **Bonnie Stephenson**

Indian Head Agricultural Research Foundation

Second-year activities are up-and-running on the Precision Farm. A Landsat radar satellite passed over the farm on May 1. Dr. Al Moulin (Agriculture & Agri-Food Canada, Brandon) took soil samples and residue measurements to correspond with the satellite image. From this we can provide a moisture map and show the influence of residue on moisture readings.

The wet spring delayed seeding, though less than elsewhere in southeast Saskatchewan. We seeded 160 acres of Barrie Wheat, 80 acres of Carneval peas and 80 acres of InVigor 2153 canola. The draw running through our half section had some spring water erosion but we expect the benefits of continuous cropping will reduce this problem. Last year's excellent growing conditions and our reduced fertilizer application (to reduce bias in this year's results) contributed to low fertility levels. We fertilized to soil-test requirements, and seeded with a 27' Flexicoil 5000 equipped with Stealth double shoot side-band boots. These boots worked very well in this spring's wet conditions. We use liquid nitrogen/sulfur and dry phosphorus fertilizer.

1999 data collection will include aerial infrared photos, moisture and vegetative satellite images, grid soil sampling, EM38 mapping and yield maps. We have just received confirmation of funding from the Canadian Adaptation and Rural Development Saskatchewan (CARDS) to go ahead with a detailed weed and disease sampling. We are also in the process of hiring an agronomist to oversee research projects on the Precision Farm and to analyze the data we collect.

You are invited to visit the Precision Farm anytime. It is located two miles east of the Indian Head Research Farm. For further information, contact Judy McKell (695-4250), Joseph Boersch (695-2693) or Guy Lafond (695-5220).

SSCA Annual Conference Honours Soil Conservation Group

By Juanita Polegi,

SSCA Soil Conservationist

At the Saskatchewan Soil Conservation Association (SSCA) Annual Conference in Saskatoon held in February, the Last Mountain Soil Conservation Group was presented with the Conservation Award of Merit. Sponsored by the SSCA and the Royal Bank, the award is designed to recognize organizations that have promoted soil conservation to farmers and the general public.

Due to the severe water erosion and gully formation in the area, the Last Mountain Soil Conservation group was organized March 11, 1985. The members farm in the Duval, Govan and Strasbourg area.

On a volunteer basis, the group implemented a variety of soil conservation practises including extending crop rotations, grassing waterways, planting field shelterbelts and direct seeding. At one time the group had 75 members. The large membership enabled the group to lease and try many different pieces of equipment such as a wide blade cultivator, grass barrier seed strip planter and various direct seeding units.

The Last Mountain Soil Conservation group also took the message of soil conservation into the schools. The members volunteered to make presentations on the importance of soil to students in Kindergarten right through to Grade 6.

The group also organized a number of tours of projects for its members and interested neighbours. Many of the members were encouraged to attend conferences and meetings to learn more about soil conservation in general and direct seeding in particular.

While the group is not as active today as in the early years, the members usually get together once a year to discuss soil conservation issues

SSCA Annual Conference Honours Local Farm Family

By Juanita Polegi,

SSCA Soil Conservationist

At the Saskatchewan Soil Conservation Association (SSCA) Annual Conference in Saskatoon held in February, James W. (Jim) and Leona Richards were presented with the Farm Family Award for Soil Conservation. Sponsored by the SSCA and the Royal Bank, the award is designed to recognize those families whose efforts to practise and promote soil conservation have influenced other farmers and the general public.

In 1971, Jim and Leona purchased some land southeast of Yorkton. The soil textures on much of this land range from very fine sandy loam to loam. Since there are some spots that are quite sandy, those areas tend to blow when there is no vegetative cover.

Jim undertook a number of practises to encourage plant growth and improve the soil:

- a) In the spring, he would spread well-rotted manure on the hilltops.
- b) When cultivating the summerfallow, he lifted the cultivator in the sandier areas.
 - c. He often spread straw bales on some of the sandy areas.
 - d. He frequently planted clover and then worked it down as a green manure crop.
 - e. He planted field shelterbelts, which proved to be the most effective in preventing wind erosion. Some trees were planted in 1972 with the bulk of the belts being planted in 1985.

These practises have improved the condition of the fields. The sandier soil has become more productive and areas in the fields that couldn't grow a crop when he first took over the land are now doing so. Soil erosion by wind has been virtually eliminated. The trees in the field shelterbelts are pleasant to view and the deer and birds are making use of them.

Jim enjoys visiting with students. He explains to them the conditions he was faced with when he first took over the land and describes to them the changes he has implemented. The most obvious changes of course are the field shelterbelts. The trees are quite tall now and for many of the local students, these are the first field shelterbelts they have seen.

While many of the soil conservation practises Jim employed to ensure his topsoil stayed at home are not considered new and innovative, they weren't common for that time nor for that area.

What Can the SSCA do for You?

by **Juanita Polegi**

As an SSCA member, the *Prairie Steward* arrives in your mailbox three times a year, you receive a discount on your Annual Conference registration fees and you are admitted to the Field Days without charge. SSCA members also have the opportunity to participate in a group health plan. At the last couple of Staff meetings, we have asked ourselves "Is this enough? Is there something else we can offer our members?"

So, we decided to ask you, the members. We'd like you to take a few moments to think about what would enhance your SSCA membership and then let us know. You can call me (786-1526) or fax me (786-1511) or email me jpolegi@agr.gov.sk.ca or you can send a note via Canada Post (38 5th Ave. N., Yorkton, Sask. S3N 0Y8). Your ideas will help us to come up with some "member only" services. Our next Board/staff meeting is in early November. We'd sure like to have your thoughts by then so we can do some planning as we move into the winter extension season. With only 9 staff members and 12 Board members, the idea pool isn't as large as that of the 1500+ members. We need your input. So while you're on the combine or hauling grain this fall, give the SSCA some thought and send us your ideas!

Crop Rotations Should be Planned

By Ken Sapsford,

SSCA Soil Conservationist

With grain prices in the basement and crop inputs staying high, many farmers are looking for that one piece of magic to make the whole system work. There is no piece of magic. The system works when all the pieces are put into place and managed. In direct seeding we often talk about the 5 pillars: Residue Management, Fertility, Weed Control, Rotations, and Crop Establishment.

Crop Rotation is defined as a **planned sequence of crops**. The key is the "planned sequence". I have seen rotations that are market oriented or very haphazard. This type of rotation usually ends up costing you more money in the long run with either higher inputs or the loss of some of the rotation benefits that can be achieved. The rotation of crops has an impact on residues, weed control and fertility.

Many direct seeders are using a 4-year crop rotation with a Cereal - Pulse - Cereal - Oilseed. This rotation can be used in all soil zones, although the specific crops that are plugged into the rotation will vary according to the region. The advantages to this rotation include:

1. Volunteer weed control is made simple, as it is easy to remove a broad leaf out of a cereal crop and a grassy weed out of a broad leaf crop.
2. Crop diseases are kept in check as all crops have a 4-year span before they are planted back on the same piece of land, provided there are two different cereal crops used. Sclerotinia is the one disease that can carry across between pulses and oilseed crops so it has to be watched in wet years.
3. Crop residues are easy to manage, as there is always a low residue crop, pulse or oilseed following a high residue crop, cereal. This helps avoid large residue build up that may cause plugging problems with seeding equipment, it also provides enough residue to protect the soil against erosion in the years of low residue crops such as the pulses and oilseeds.
4. Soil fertility is enhanced with the inclusion of a pulse in the rotation. This can either reduce some of the required fertilizer input or increase yield and/or protein in the following cereal crop.

Over the next few issues of the Prairie Steward, I will be addressing all of these issues of rotations and how they impact one another. In this issue I will look at the weed control aspect of this rotation.

All weeds have a time of year or a specific climatic condition in which they germinate and grow best. If we always seed the field closest to home first and the field furthest away last, we are selecting for specific weeds on these fields with our seeding habits. One of the best examples of this is Pygmy flower and Yellow Whitlow grass. These weeds germinate as soon as the snow

leaves, flower 2 to 3 weeks later and have produced seed before the end of May. If you always seed this field last, you have allowed these weeds to go through their entire life cycle without any disturbance. Using a crop rotation to determine the time of seeding will vary the seeding date on each field as you rotate the crop on that field. Low residue stubble such as pulse or oilseed stubble should be seeded first as it will warm up sooner and also dry out quicker due to the lower amount of residue covering the soil. Higher residue fields such as cereal stubble will hold the moisture longer and will also take longer to warm up in the spring so they can be seeded later and still have adequate moisture for crop germination.

When controlling weeds in crop there should be a basic plan. Herbicide rotation should be considered. It is usually cheaper to control broad leaf weeds in a cereal crop and grassy weeds in a broad leaf crop. So this is where the emphasis should be placed. One example is a little bit of Buckwheat in a cereal crop. It may not seem economical to spray it out this year but the seed set from those weeds will make it necessary to control the buckwheat in the broad leaf crop the next year. The cost of controlling the buckwheat in a wheat crop is much cheaper than in a pea crop or a chickpea crop where there is no registered control.

Residual herbicides should be used to your advantage but require rotation planning and a good set of field records. Don't sacrifice your rotation because you used a herbicide with recropping restrictions that doesn't fit into your rotation, regardless of how good the weed control it will give you.

Perennial weed control is best achieved with preharvest applications of glyphosate. Once again, planning your rotation will give you the opportunity to control these tough perennials in the crop so harvest and weed staging work together. Many farmers do not like to use preharvest in canola because they feel the damage from the sprayer is more than acceptable. Pulses should be a good candidate for preharvest as the Roundup will also help dry down the crop for harvest. The problem in pulse crops is that when you have high thistle populations, the pulses are not competitive and where the thistles are, you have no crop at all. Many farmers like to control the perennial weeds before they plant their pulse crops. That leaves cereal crops for the preharvest application. But if you are trying for malt barley the maltsters don't want glyphosate residues on the barley. Therefore, preharvest should be used on the other cereal crops and flax. An additional benefit to spraying Roundup on flax is that it stops the flax from continuing to grow and thereby saves moisture for the next year's crop.

Chart #1 shows this basic rotation with seeding dates and time of some weed control. If Preharvest Roundup is applied to the cereal crop in year 4 for perennial weed control, you can then assess the control in the oilseed crop in year 1 of the chart. If there is still a large number of perennial weeds in the field you have the option of using a post harvest Roundup application after crops such as canola or mustard are harvested. These crops are usually cut early in the fall and quite high, leaving many of the thistles leaves on the plants. With fall rains and adequate regrowth showing on the weeds, Postharvest is an option that has worked well. It is more effective to hit perennial weeds with Roundup two falls in a row (for instance, preharvest in Year 1 and post harvest in Year 2) than to wait for 2 or 3 years.

Control of winter annual weeds like Stinkweed, Flixweed and Narrow Leaved Hawksbeard also need to be part of your rotation plan. Fall 2,4-D is an excellent method of controlling these weeds. In this rotation there is a fall 2,4-D application following the oilseed and pulse crops. This is because these crops have dark residues and low residues and in the spring these fields are infested the worst with winter annuals because they will get an early start next spring. A fall application of 2,4-D is not recommended prior to seeding oilseed or pulse crops the following spring.

Chart # 1 shows the timing of all the practices I have been mentioning. However when I start plugging specific crops into this rotation I will change some of the timings:

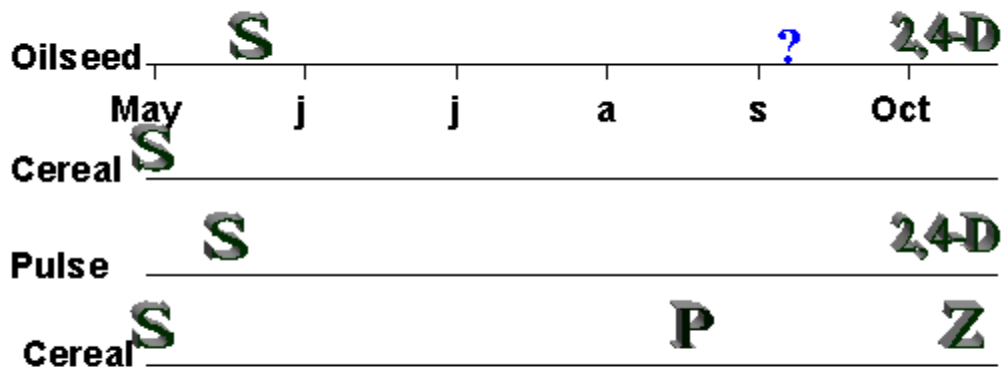
If peas are my pulse, I will seed them first. Even though the peas are on cereal stubble, they require a lot of moisture to germinate and can tolerate cool soils. When peas are seeded early, there is usually 2 weeks before they emerge. This is an opportunity to do a post seeding-pre emergent burn off. Quite often in a Low Disturbance system, if the broad leaf weeds are controlled at this time there is very little new germination and there may not be a need to use any incrop broad leaf weed control; provided all the tough-to-kill broad leaf weeds that were in the cereal crop the previous year were controlled. This may not always work but when you build it into your rotation system you reap the benefits when it does work.

If I were using a Roundup Ready Canola as my oilseed crop I would also seed it early and not use the Zero Incorporated Granular herbicide. The reason for planting this type of canola early is that I don't need to wait for the first flush of weeds to emerge before I apply my Roundup burnoff. I can spray Roundup at any time the weeds are there and not hurt the crop. By seeding early I can also make use of the moisture and avoid the July heat.

As you can see, even though I have set out a basic rotation, once specific crops are identified, some of the practices change. There is no perfect rotation or recipe that will work for all conditions. However, a well planned and managed rotation will give you some agronomic benefits that should also help the bottom line on the balance sheet.

Chart#1

**Chart 1. Weed control management
With Rotations & Timing**



? - Post Harvest Roundup
2,4-D - Fall 2,4-D
S - Seeding date
P - Pre-Harvest
Z - Zero incorp. Granules

Conservation Learning Centre News

By Laurie Hayes,

CLC Manager

This spring has been a hectic one at the Conservation Learning Centre (CLC). Striving toward our precision farming objectives, we purchased a 27' Flexicoil air drill and a 60' Flexicoil sprayer this spring. The drill was fitted with Raven technology to vary seed and granular and liquid fertilizer rates. Although the equipment was ready, we did not apply the variable rate options this spring as other components were not in place. With trying to figure out new machinery and dodging the rain, seeding took over a month. Then came the chuck-and-jive with the rain clouds and wind to get the spraying done -- welcome to the world of farming!! Despite all, the crops are up and looking quite good and we are starting to get a handle on the weeds.

Demonstration Projects We are once again involved in a large number of projects. We have seeded 70 acres CDC Fleet feed barley, 65 acres Alfetta yellow peas, 35 acres Croma yellow peas, 38 acres Espace green peas, 25 acres AC Elsa wheat, 30 acres NorLin flax and 30 acres 46A73 SMART canola. Some demonstration projects include direct seeding peas into sod, timing of herbicide application after emergence of canola and peas, new pea and wheat varieties, new seed treatments in barley and wheat, new herbicide tolerant canola varieties, pea inoculant and fungicide demonstrations and new herbicides. We have also (with the help of the Saskatchewan Forage Council) re-established our grass and legume forage gardens by direct seeding into wheat stubble. SSCA has Do's and Don'ts plots in barley, peas and barley. This is only a partial list of the 40+ projects that we have underway at the CLC this year.

Research Projects The University of Saskatchewan and Agriculture and Agri-Food Canada continue to have research plots at the CLC. Drs. Dan Pennock and Adrian Johnston continue their precision farming trial, investigating variable seed and fertilizer rates and the influence of landscape. Dr. Randy Kutcher and his crew have three plots (two canola and one wheat) on which they are studying the effect of nitrogen fertilizer and slope on the incidence of disease. This group has also established a pea fungicide trial. Dr. Jeff Schoenau begins the third of his three-year study into various sources of sulphur fertilizer. In a new trial, Dr. Diane Knight is examining different alfalfa inoculants. In addition, we have two companies with private (proprietary) research plots.

Tours and Field Days We have been busy with tours already this summer. We were pleased to host the SSCA Board of Directors on June 21. On June 28, we had a tour for the CLC Board as well as an appreciation tour and barbeque for our sponsors. This event was well received by the sponsors who were assured that we do sincerely appreciate their support - 20 of our sponsors attended!

One of our biggest events this summer was being included on the Agriculture Tour of the Federal, Provincial and Territorial Agriculture Ministers Conference on July 5. We had 30 visitors to the CLC from across Canada. We were very fortunate to have six Agriculture Ministers visit our facilities: The Honourable Eric Hammill (Prince Edward Island), The Honourable Ed Lorraine (Nova Scotia), The Honourable Stuart Jamieson (New Brunswick), The

Honourable Ernie Hardeman (Ontario), The Honourable Harry Enns (Manitoba) and The Honourable Corky Evans (British Columbia). In addition, ministerial staff from these provinces, as well as Saskatchewan's two Assistant Deputy Ministers, Susie Miller and Hal Cushon, attended the tour. The participants were briefed on the past, present and future of the CLC. John Bennett, SSCA Director, presented a brief synopsis of the carbon sequestration issue. This was followed by a short tour of the CLC. Although the visit was short, much interest was generated and many provinces have indicated that they will be contacting us for further details about our programs.

School Program

The school program began 1999 with a bang -- 750 students visited the Centre this spring alone. This is compared to 1000 students for the entire 1998 season! With an increased radius of schools being contacted about our program, we are looking forward to an equal increase in the fall session. A special thanks to Westco for supplying us with some rain ponchos for the school program -- this saved us from cancelling six class visits to the CLC. Their contribution is greatly appreciated.

The CLC was approached by the Saskatchewan Canola Development Commission (SCDC) to integrate some canola material into our current school program. As informing youth about agriculture is a common goal, an agreement was quickly reached and we now have a section in our school room designated as the "Canola Corner." SCDC has provided poster boards outlining the history, uses and future of canola. In addition they are supplying their "What's all that yellow stuff?" activity books. We welcome SCDC's participation in our school program.

We welcome you to visit the CLC this summer. With the wide variety of projects that we have on the go, we have something of interest for almost everyone. Once again, we thank all our sponsors for their continued support of the CLC. See you this summer.

How does your Rotation stack up?

By Tim Nerbas,

SSCA Soil Conservationist

Does your rotation include diversity and intensity? Does it maximize your soil's profitability? What is your native vegetation telling you? Recently Dr. Dwayne Beck of the Dakota Lakes Research Farm performed no-till brain transplants on a few of us Canucks.

During the first week of July, I had the privilege of participating in a no-till tour of South Dakota, sponsored by Monsanto, Alberta Reduced Tillage Initiative, Flexicoil, and Southern Alberta Conservation Association. The tour included stops at the Indian Head Research Farm, the Dakota Lakes Research Farm, and several progressive no-till farms.

Many of the ideas impressed upon us in South Dakota, were similar to what researchers like Martin Entz, Doug Derksen, Brian McConkey, George Clayton, Guy Lafond and others have been stressing north of the border. Perhaps the most notable difference is that Canadian experts offer these ideas as polite suggestions. South of the border these directives are given as strong guidance.

Nonetheless the same concepts hold true - encourage fast uniform canopy formation through accurate seeding depth into properly managed residue to ensure good seed to fertilizer separation.

At the Dakota Lakes Research Farm Beck is continually changing and improving on a drill which can seed and fertilize in one pass. The challenge for Beck is to develop a seeder that can seed corn (traditionally a 30-inch+ row crop) as well as wheat and other traditionally narrow spaced crops. His present seeding unit is 12.5 feet wide (wings can be added later to increase the width) and is used to seed the 800 acres of cropland on the farm. All crops are seeded on 15-inch row spacing (which is a significantly narrower than even the more radical 22-inch row spacing on some of the newer row-crop seeders). The 15-inch row spacing in corn allows for much quicker canopy closure.

Canopy closure is the first important concept in Dr. Beck's philosophy. Allow the crop to establish fast and provide less than optimum conditions for the weeds, thereby providing as much crop competition as possible. The less disturbance the better (hence the disc drill). The use of disc drills makes it possible to harvest with a stripper header, which itself increases the capacity of the combine. This allows a smaller combine to cover many more acres.

The next important aspect of a finely tuned system is rotations. This may mean using more than one rotation. The process should provide the proper diversity, intensity, and profitability for each individual field based on native vegetation and soil type. Since 1991 three dryland rotations have been practiced at the Dakota Lake Research Farm. They are: (1) winter wheat (cool season grass)

- corn (warm season grass) - cool season broadleaf (flax, canola, lentils, field peas), (2) winter wheat - corn - warm season broadleaf (soybean, sunflower, safflower, chickpeas, dry beans) - spring wheat, (3) winter wheat - warm season broadleaf - corn - cool season broadleaf.

By having diverse crop types, seeding and harvesting dates are automatically altered which aides in weed control. Each crop type favors and discourages a different spectrum of weeds. Perennial and forage crops can be excellent tools to control certain weeds. Having a diverse rotation allows diversity in the herbicide program to be used. It also spreads out risk and workload. One can handle more acres with the same fixed costs. Diversity can also create the proper conditions for the subsequent crop. For example, a dark colored residue produces a warmer seedbed in the spring.

The next important component of Dwayne's philosophy is altering the intensity of the rotation. Proper intensity reduces risk. How many times have you heard someone say I have to use tillage to dry out the land in the spring? Dwayne's reply: "Rotations with insufficient intensity will be too wet in the spring." The other side of the coin is that rotations with excessive intensity will be too dry. That means poor plant growth in average years. Proper intensity depends on weather, soil type, and land location.

If weather tends to be variable, utilize two or more rotations. Have the ability to put flex crops into the rotation based on the weather (forage the crop if it's a dry year, grain if it's a wet year). Soils that have high water holding capacity require more intensity and more high-water use crops. Coarse textured soils require slightly less intensity: more short-season crops and less inter-crop time. The important thing to remember is that when a producer begins direct seeding the intensity should be greater than that of conventional tillage. More water is stored and greater water-use efficiencies will be attained under a direct seeding system. Therefore the intensity must be increased to avoid undesirable effects from that extra moisture.

Another concept Beck is working on is stacked rotations, allowing a four-year gap between broadleaf crops. This allows the disease intensity to be greatly reduced before coming back with two of the same crops grown back to back. For instance, spring wheat - winter wheat - corn - corn - field pea - field pea.

Is it a good rotation? Only time will tell but it does pose the question: how does your rotation stack up?

For anyone wishing to look up additional information about the Dakota Lake Research Farm they can be located at www.DakotaLakes.com.