

Photo by Keith Meszaros

1st Prize \$3000 2nd Prize \$2000

The 10 finalists will demonstrate their machines at the SSCA Direct Seeding Field Day, June 21, 1994. Located 19 miles north of Regina on Highway #6.

Entry Criteria

- 1] Applicant must be a farmer not engaged in commercial farm machinery sales or manufacturing.
- 2] The applicant must have designed the modification of the seeding machine and must include modifications in at least one of the following areas: openers, on-row packers, seed delivery, shanks, frame modification, herbicide delivery.
- 3] Entry will be limited to 10 seeding units.
- 4] The SSCA reserves the right to accept entries based on the nature and design of modifications made.
- 5] Applicants must be prepared to provide their own transportation to and from demo site and insurance.
- 6] The SSCA will supply seed and granular fertilizer only and accepts no liability pertaining to the event
- 7] Tractors will be supplied courtesy of Young's Equipment Inc, Regina and Case IH.

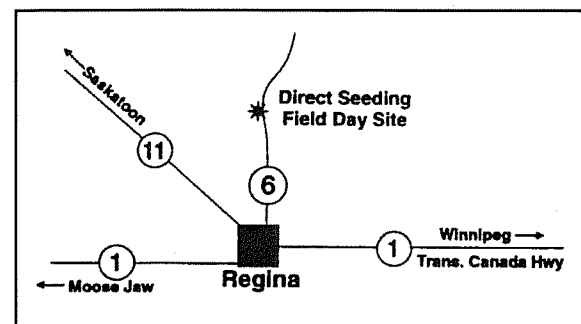
Judging Criteria

An independent judging panel organized by the SSCA will evaluate the machines. The judges decisions will be final.

Judging of the competition will be based on the following:

- 1] Quality of the engineering and design.
- 2] Degree of complexity of modifications.
- 3] Originality of design.

- 4] Adherence to the following principles of direct seeding.
 - a) Seed-soil contact
 - b) Proper packing of seed
 - c) Fertilizer placement
 - d) Soil disturbance
 - e) Residue clearance
 - f) Field finish after seeding
- 5] Cost efficiency of the modifications.



Location of the Competition/Demonstration Site

To Enter the Competition:

Send photographs of the seeding unit with a list of modifications made by May 31, 1994 to:
Saskatchewan Soil Conservation Association

Attn. Garth Patterson
3735 Thatcher Drive,
Saskatoon, Saskatchewan S7K 2H6
Phone: 933-5287



SASKATCHEWAN SOIL CONSERVATION ASSOCIATION
3085 Albert Street, Regina, Saskatchewan S4S 0B1 Phone:(306) 787-0558 Fax:(306) 787-0551

Monsanto



WITH SUPPORT FROM: PRAIRIE FARM REHABILITATION ADMINISTRATION (PFRA) & SASKATCHEWAN AGRICULTURE AND FOOD (SDAF)

Prairie Steward . . . Conserving the Land Resource

The Newsletter of the Saskatchewan Soil Conservation Association Inc.

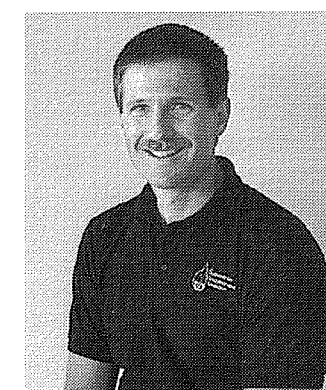
Spring Issue No. 11, 1994



**SASKATCHEWAN
SOIL CONSERVATION
ASSOCIATION**

CONTINUED..... FROM SUMMER 1993 The Status Quo Is Not An Option: Change Is On The Way!

By John J. Kiss, SSCA Executive Manager



John J. Kiss
SSCA Executive Manager

In last summer's Prairie Steward I talked about the fact that as an organization, the SSCA is like the farmers we serve. Farmers who look into the future are constantly evolving and changing their ways of thinking and their operations.

Over the next 6 to 8 months the SSCA will undergo the most significant change since our field programs began in January 1990. All of the details of the changes will become more evident as public announcements are made with our new partners. Some of the changes will be difficult, fraught with uncertainty and to some people questionable. We have looked into the future and realized we must develop new relationships and new structures to continue to be successful.

As part of the SSCA's team effort over the last several years, you have witnessed or been part of the great accomplishments we have made; particularly in the area of Direct Seeding. We have been the catalyst for more change than many organizations and individuals achieve in a lifetime. The SSCA has much to be proud of and to look forward to!

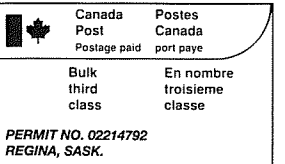
As part of the reorganization now underway, there are some important and specific changes which you as an SSCA member should be aware of:

1. After many happy, challenging and rewarding years, your Administrator, Carolyn Fife and I will be leaving the SSCA this fall for new challenges. When I signed on in late 1989 with Brett Meinert (1989 SSCA President) and Glen Hass (1987-89 Executive Manager), I made a commitment to build an SSCA and SSCA field extension program that would make a difference for soil conservation and farmers in Saskatchewan. I also made a commitment to see that the SSCA and its field extension programs would continue into the future under new funding arrangements.

With the help of a committed group of farmers on the Board of Directors, this has been accomplished. I am very proud of the difference the SSCA has made to Saskatchewan. I will always remember the many SSCA Board, staff and Association members that I have had the privilege to work with. From my perspective, their commitment to the SSCA's goal of "encouraging soil conservation by promoting agricultural production systems which reduce soil degradation and maintain economic viability" is unequalled.

Carolyn Fife and I will remain with the SSCA for several months to finish planning and implementing the SSCA's reorganization plans. After new management and staff are in place and trained, we will remain for a short time in an advisory capacity to ensure a smooth transfer of managerial and administrative authority. After our job is complete we will watch your efforts from other locations and hopefully see you from time-to-time at future SSCA events.

Continued "Change..." Page Two



In This Issue

Change Is On The Way	p. 1 - 2
SSCA Field Day June 21	p. 3
Lloydminster Workshop Recap	p. 4 - 9
Openers: 1993 and 1994	p. 10
CLC Update	p. 12



1100 farmers from western Canada, the Dakotas and Montana attended the SSCA Direct Seeding Workshop in Lloydminster. Lorne McClinton Photo

1100 Attend Direct Seeding Workshop

By Lorne McClinton
SSCA Communications Specialist

Farmers from across western Canada, Montana and the Dakotas crammed onto the Lloydminster Exhibition Grounds Feb. 14 and 15 to attend the Saskatchewan Soil Conservation Association's (SSCA) annual Direct Seeding Workshop. Direct Seeding, the process of planting crops into standing stubble, has attracted widespread attention as farmers search for ways to increase profitability in tough economic times. Workshop attendance has nearly doubled in just two years; from 600 at the first workshop in Prince Albert in 1992 to 1100 at this year's workshop in Lloydminster. Attitudes towards Direct

Seeding have definitely changed. "I've gone from being an idiot to an innovator in just seven years," says John Bennett, a farmer from the Biggar area and winner of the SSCA's Farm Family Award. "People no longer get out of their trucks and point when they see me in the field... I can remember a time when conversation would stop dead when I walked into the local John Deere dealership for parts."

Farmers heard presentations on such topics as practical farm experience with direct seeding, why direct seeding works, why sustainable agriculture is important and farmer experience with equipment modification. Also experts passed on the

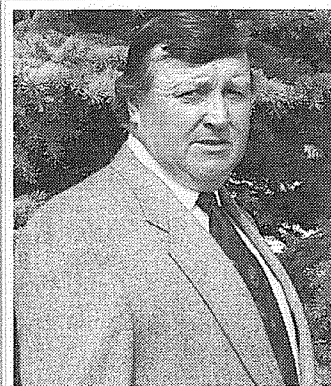
Continued "Attend..." Page Two

Fast Facts On Soil Conservation

1. 1 mm of topsoil weighs 5 tonnes/acre.
2. On average, shelterbelts can increase crop yields by 3.5%.
3. Cereal crops set their yield potential in the 4-5 leaf stage. Plant stress at this stage from low fertility or soil moisture will lower yields.
4. In 1992, Saskatchewan farmers spent \$445.1 million on farm fuel and lubricants, \$258.9 million on fertilizers, and \$239.0 million on pesticides.
5. One foot of moist soil contains about one inch of available water on sandy soils, 1.5 inches on loamy soils and two inches on clay soils.
6. An American study found that 16% of global CO₂ emissions would be offset if the global annual release of soil organic carbon could be prevented by conservation tillage practices.
7. Over 1100 farmers attended the SSCA's 1994 Direct Seeding Workshop in Lloydminster.
8. The total soil lost on the prairies due to wind and water erosion is estimated at 277 million tonnes/year.



ASSOCIATION INFORMATION



President's Message

Dean Smith
SSCA President

A very successful SSCA annual meeting and workshop is over for another year, but I believe the impact of this event has just started. The 1100 enthusiastic and dedicated farmers came together to discuss how direct seeding can work and be profitable. The exchange of ideas bolsters support for each and every farmer who has made the change in farming practices. As John Bennett, the winner of the "Farmer Conservation Award" said, "I have gone from idiot to innovator in seven short years." This is a true and accurate assessment of the philosophical attitude of the farming community.

It was a cold and snowy winter, and a lot of time was spent indoors. However, farmers should not waste this time. Do your seeding plans now. I hope you consider more direct seeding acres and make plans to extend your cropping rotations. For those who are continuous cropping, keep up the good work and expand your knowledge on disease control. Encourage your neighbors to implement your practices. For the beginners, give it a try. You have little to lose, but a lot to gain. Besides, you have the support and information from those who are already in the program. Remember, start by doing only what you feel you can manage. Increase in small increments. Steady growth is the answer for change.

SSCA will be hosting a Soil Conservation Field Day 19 miles (highway #6) north of Regina on June 21. It was a huge success last year with just under 4000 farmers showing up at the Moose Jaw airport for the day. We hope with the experience gained and the good support of those who participated, we will have an even better day this year. Plan to attend and show your support for the implement dealers and industries who help to make this day possible.

The SSCA's Conservation Learning Centre (CLC) at Prince Albert is one year old and right on target. We have a very capable and experienced manager, Patricia Flaten. We are anticipating a very successful and informative venture with this learning facility. I wish to extend a big thank you to the managing committee of the CLC, and encourage you to keep up the good work. Without your valuable time and expertise, the center would not succeed. Also, thanks to Ducks Unlimited and all the industries who have had a hand in making it all work.

SSCA Presidents can come and go, but our future as an organization is far more important. In the near future the SSCA will undergo some major changes. At the time of writing this article we are finalizing plans for our future and will be able to tell you more specifics in upcoming public announcements and the summer edition of the Prairie Steward. Most of the changes will affect our head office in Regina where we will be losing all of our staff and the office will be moving to the Indian Head Experimental Farm. You can get more specifics on the changes in John Kiss's article on page one.

We all regret the staff losses and the uncertainty which the change will bring. We are hopeful that the change, in the long run, will put the SSCA in a stronger position to provide farmers with the information they will need. On behalf of the SSCA, I would like to thank Carolyn, Crystal, Lorne, Chris and especially John for the hard work and guidance they have given the SSCA and all of the farmers in Saskatchewan. Without a doubt you will be missed by all the SSCA Board and the membership.

I look forward to serving as president for this upcoming year of change and reorganization. John and Carolyn have agreed to develop and implement the SSCA's reorganization over the next 6 months. I and the other SSCA Board Members will do everything we can to make this a successful transition.

Good Luck with seeding and see you at our Field Day on June 21.

Change... Continued from Page One

2. The SSCA's head office will be moving to the Indian Head Experimental Farm the first week of July 1994. The move is a strategic move for the future of the SSCA. While I realize it will cause hardships in the short-term, it clearly will be beneficial to both the SSCA and the Experimental Farm.

The strength and priority for the Association over the next few years will be to assist and enhance Saskatchewan farmers adopting Direct Seeding techniques. Drs. Lafond and Derksen are committed SSCA members and outstanding Zero-Till, No-Till, Direct Seeding researchers at the Experimental Farm. They and others in the Indian Head area will contribute much to the SSCA's future extension efforts.

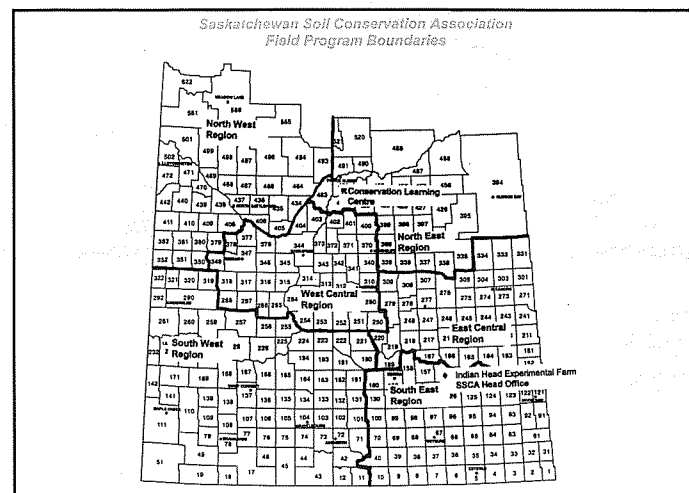
3. All present SSCA Regional staff will remain where they are and will be able to continue serving you and other farmers under the modified regional boundaries below. Two new Regional staff will be hired for the South West and North East Regions. Garry Meier will work with the SSCA only on an event basis. Pat Flaten and the Conservation Learning Centre (CLC) will be unaffected by the reorganization and will continue doing their good work. Chris Zabeck will be leaving the SSCA in April to continue his studies. Thank you Chris for your contribution.

4. Without pre-empting upcoming public announcements, I would also like you to know that future field programs would not have been possible without the leadership of the SSCA's two new private sector partners. They truly are first rate corporations committed to helping the SSCA and farmers in Saskatchewan. For many months I watched many other groups sit silent, appear uninterested or only self interested, while the two private sector partners enthusiastically took up the SSCA cause. They did this because they clearly recognized that the SSCA's programs and efforts were making a difference and benefiting Saskatchewan farmers.

From my perspective, I see them as committed individuals and true corporate leaders willing to risk significant cash expenditures. They have recognized the value of the SSCA and believe that "what is good for farmers and agriculture in Saskatchewan will ultimately be good for both their interests and others in society". I trust that you will recognize their commitment and what their support has and will do for Direct Seeding, the SSCA and future soil conservation efforts in Saskatchewan.

I realize that these are major organizational changes and that they may be surprising to some of you. It will be a challenge to see these changes are put into place smoothly and efficiently. I am confident that by the 1995 SSCA Annual Meeting, the SSCA will be more efficient and better organized.

If you have any questions, please feel free to contact myself or any of the SSCA Board Members. The Status Quo is not an option and I am confident that the reorganization, head office move and our new partners will make the SSCA stronger and better prepared for the bright and exciting future of soil conservation and farming in Saskatchewan.



1100 Attend Direct Seeding Workshop

Continued From Page One

latest research on: planning crop rotations for disease control, changes in weed communities under direct seeding, zero incorporation of herbicides and crop emergence under direct seeding.

"It's definitely turned into the largest direct seeding conference held on the Canadian Prairies this year. Farmers recognized that it would provide them with their best opportunity to get up to date information from other farmers and researchers," says Blair

McClinton, SSCA Soil Conservationist from North Battleford.

The workshop also featured a Trade Show with 85 exhibitors which featured the latest information, technology and conservation equipment for direct seeding. All of the latest equipment technology was on display under the roof of a one-acre building. So farmers were able to examine and discuss the equipment in comfort, despite the cold, snowy weather.

SSCA BOARD OF DIRECTORS:

Dean Smith (Success), President	Bernie Niedzwiedz (Wynyard), E.C. Director
Marvin Fenrich (Wilkie), President-Elect	Ed Beauchesne (Albertville), N.E. Director
Gerry Willerth (Indian Head), Past President	Lee Moats (Regina), Director-At-Large
Lorne Crosson (Limerick), S.W. Director	Brett Filson (Regina), Director-At-Large
Ken Sapsford (Perdue), W.C. Director	
Dwayne Mitchell (North Battleford), N.W. Director	
Paul Carles (Radville), S.E. Director	

REGIONAL SOIL CONSERVATIONISTS:

Blair McClinton, North Battleford	446-7650
Garry Meier, Ridgedale	277-2110
Garth Patterson, Saskatoon	933-5287
Juanita Polegi, Yorkton	786-1526
Bob Linnell, Weyburn	848-2381

HEAD OFFICE:

100 - 3085 Albert Street Regina, SK S4S 0B1 (306) 787-0558
John J. Kiss, Executive Manager
Carolyn Fife, Office Manager
Chris Zabeck, Soil Conservationist
Lorne McClinton, Communications Manager
Crystal Dash, Receptionist/Secretary

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

Liability ...Continued

which affected only one's own land. Nor could one be held accountable for damage solely caused by predecessors in title. One could only be held liable for damage caused by your own activities.

As we have seen above, there has in the last decade or so been an increase in government regulation of activities potentially damaging to the environment. Legislative changes have also added a number of grounds of potential liability for livestock operations, in addition to the common law grounds:

1. Under the EMPA, the Minister of the Environment is given authority to make clean up orders where he is satisfied that a pollutant has been discharged or is present anywhere in circumstances that are harmful or potentially harmful to the environment. There

is now, therefore, the potential for liability for the costs of cleaning up pollution on your own land or for cleaning up the land of others, if it is polluted as a result of your activities. There are a number of things to note:

- farm operations are not exempt;
- you may be liable to clean up despite the fact you are not guilty of any negligence or fault;
- you may be liable to clean up pollution which occurred many years ago;
- there is a possibility that you might be subject to clean up orders for pollution which was caused by persons who operated the farming operation even before you owned it;
- recent amendments to the EMPA allow any Saskatchewan resident

who believes an offence under the EMPA has been committed, to apply to the Minister for an investigation. As a result, a neighbour who believes that a neighbouring farm (or livestock operation) is causing pollution may be able to apply for an investigation, the end result of which may be a clean up order or a charge for an offence under the EMPA.

2. As noted in the discussion above, the Minister of Agriculture is given the power under *The Pollution (by Livestock) Control Act* to issue clean up orders.

3. The EMPA gives any person who has suffered loss or damage as a result of the discharge of a pollutant, a civil right of action. This is similar to the common law action in nuisance although it is a defence to show that you took all reasonable steps to

prevent the discharge of the pollutant. In that respect, it is somewhat narrower than the common law action in nuisance. On the other hand, though its inter-

pretation is not clear, it is possible that Section 13 imposes civil liability for damage caused by a predecessor in title.

SSCA Makes Lasting Contribution

SSCA Staff and Board

My motherly duties are over for the day and I finally found time to read the latest Prairie Steward. I was impressed. Despite the disappointments and uncertainties you are facing at the moment, everyone should feel elated and needs to be congratulated for accomplishments over the past three plus years. When I think back to the frustrations and false starts in the early months of the contract, the SSCA of today bears little resemblance.

As an impartial observer sitting on my vantage point of this Pacific island, I can state that the SSCA has made a valuable and lasting contribution to Saskatchewan (and in a very short time span).

Some may question my sanity but I am envious of those who are still in the fight! (although I am not envious of those still living in Saskatchewan). A part of me is a little lost in my new role and needs to find a niche similar to the one I enjoyed with the SSCA.

I wish everyone success as you continue to seek new directions and new audiences.

Nancy Fraser,
Former Rangeland, Specialist, SSCA
Vancouver Island

The SSCA Is Pleased To Welcome The Following New Members

Barber, Syd Beckie, Hugh Budz, Walter Calvert, Chris Camitz, Blaine Clarke, Marg Dodman, Carman Erns, Dennis Fuchs, Ross Gerle, Jarrad	Regina, SK Melfort, SK Solsgirth, MB Rosetown, SK Saskatoon, SK Eatonia, SK Saskatoon, SK Carrot River, SK Glen Bain, SK Ceylon, SK	Gibbens, Kenneth Hammond, Jim Hart, Lee Hennig, Rolf Hill, Jack Holizki, Zachary Kearnan, Glen Kloster, Stephen Linklater, Nelson Lundquist, Larry	Balcarres, SK Biggar, SK Calgary, AB Glaslyn, SK Lloydminster, AB Briercrest, SK Delisle, SK Macklin, SK Swift Current, SK Maidstone, SK	Mohr, Gerry Moulin, Alan Nation, Dave Shaak, Ron Strautman, Ed Tieszen, Leonard Totten, John Unger, John W. Visscher, Harvey	Zehner, SK Melfort, SK Regina, SK Delmas, SK Speers, SK Hepburn, SK Coronach, SK Rush Lake, SK Gibbons, AB
---	--	---	---	--	--

SSCA MEMBERSHIP

By Carolyn Fife
SSCA Office Manager

Membership in the SSCA has grown to a total of 734 members. Broken down by regions, membership is as follows: West Central (177); East Central (78); North East (77); North West (96); South East (139); South West (108); out of province members (59). Out of province members are from Alberta, Manitoba and the United States. The regular membership rate (3 years for \$100.00) is now in effect.

Name	Full Membership	
	1 year	\$50.00
	3 years	\$100.00
Address	Associate Membership	
	1 year	\$50.00
	3 years	\$100.00
Postal Code	Supporting Membership	
	1 year	\$500.00
	3 years	\$1000.00

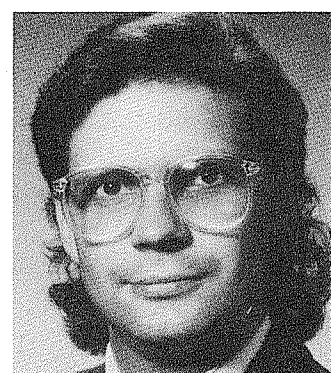
QTR SEC TWP RGE W. of
(land location of home quarter for regional designation purposes)

Membership Enhancement Program:

If you are presently a member of the SSCA and wish to help the Association by recruiting new members, both you and the Association can benefit from your efforts. For every six (6) memberships sold in one year by you as a member, you will receive an additional 3 years membership as a bonus. To qualify, print your name on the applications you sell and forward the applications plus membership fees to the SSCA. Applications may be sent individually or as a group. All memberships received by the SSCA between 01 April and 31 March of each year will be counted towards this Membership Enhancement Program.

Liability For Environmental Damage

By Leonard D. Andrychuk
Partner with the law firm
MacPherson, Leslie
& Tyerman



Leonard D. Andrychuk
Partner with the law firm
MacPherson, Leslie &
Tyerman

Until roughly the 1980's, polluting activity was regulated by common law (judge made law). Polluting activity was regulated by the fact that if you polluted and caused damage to the water supply, soil or crops of your neighbour, he could sue you. Three common law actions were and are still available to address environmental concerns.

The first is the action of negligence. In other words, if a person fails to exercise reasonable care in handling or spraying a chemical or in the management of animal waste, and damages his neighbour's land, water supply or crops, or injures his neighbour's health or the health of his family, he is liable to pay damages.

Under another common law type of action, called the rule in *Rylands v. Fletcher*, there is no need to prove a failure to exercise reasonable care. In order to succeed, all the injured person must do is prove that the wrongdoer was engaged in an activity on

his land as a result of which some substance escaped and caused damage. Fault is not necessary. The wrongdoer might have taken all the care in the world, but if the thing escapes from his land and causes damage, he is liable. Substances held to fall within the rule include fire, things likely to cause fire, water, sewage, herbicides, insecticides, oil and gasoline. If a livestock operator allows animal waste to escape his property and get into the ground water or surface water and contaminate someone else's water supply or cause them physical injury, the operator is liable in damages.

The third type of common law action is the action for nuisance. Again, it is not necessary to prove fault. The injured party has only to establish that there has been physical injury to, or a substantial and unreasonable interference with, his use or enjoyment of land or of an interest in land. Such nuisance can take a variety of forms, ranging from physical injury to land to interference with the health,

comfort or convenience of the owner or occupier of land. In the context of a livestock operation, the most common nuisances would be noxious smells as well as animal wastes. In the case of other farming operations, overspraying or escape of chemicals would be the most commonly occurring nuisances. In the case of actual physical damage to property, such as pollution caused by animal

waste or chemicals, the courts have been quick to conclude that the interference constitutes a substantial and unreasonable interference with the enjoyment of property.

The common feature of all common law causes of action is that damage had to be caused on another's land or to another person. One could not at common law be forced to clean up environmental damage
Continued "Liability..." Page 15

Soil Conservation Means Good Land Stewardship

By Michael Shaw
Deputy Minister of
Environment and
Resource Management

Soil degradation carries a heavy price. Good land stewardship means caring for the land's resources and recognizing their real value. As a \$4 billion industry in this province,

agriculture produces 50 per cent of all jobs directly or indirectly. So it is in our best interest to make agriculture a healthy industry and to encourage sustainable resource management. We also need to look at paying the true costs of agricultural products that are developed from sustainable practices.

In the past 10 years, cultivated acreage increased more than 1.7 million hectares, usually from breaking up less agriculturally productive land such as native pasture, wetlands and woodlands. The more we drain wetlands and break marginal land the more water that gets to the surface carrying salts making our soil saline.

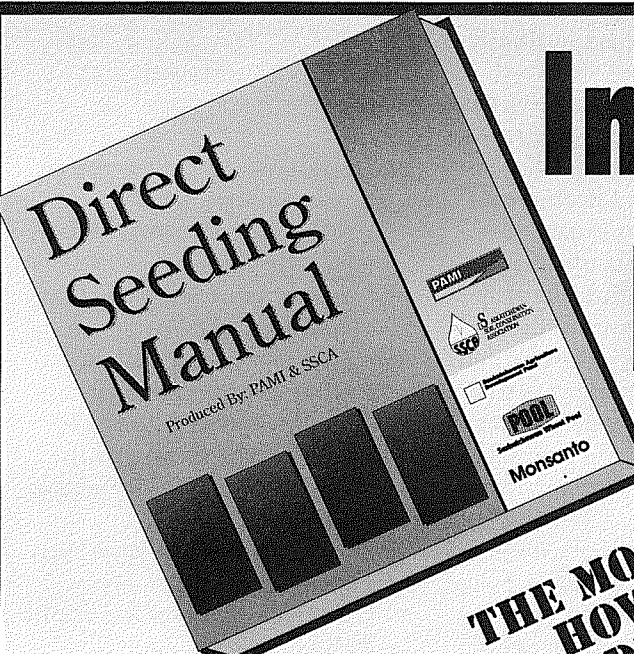
Like it or not, society now demands more from agriculture than just putting food on the table. But agriculture is also a partnership between producers and consumers. We all want to protect our water, wetlands and wildlife, but what are their value and who pays the cost down on the farm? It is uncertainty over this responsibility that is at the core of the issue. Farmers want to meet society's expectations but they still must remain economically viable. This point is summed up in an article entitled, "A Green Revolution: Retooling Agriculture Policy for Greater Sustainability" that I recently read in the *Journal of Soil and Water Conservation*:

"Many of the values that mean so much to our city neighbors do not improve profitability. No, the

benefits accrue to the rest of society and to future generations. On our farm we have deer, ducks, and some breathtaking views. Our farm also protects a municipal watershed. But my banker won't let me add these values to my balance sheet. Yet they exist! I believe in protecting those values, but not all landowners can afford to do it alone. We must continue to find new ways to share in the cost of stewardship of our natural resources."

When we promote cultivating marginal lands, it is time we look at what we count valuable in this society. Producers will respond quickly to positive incentives to conservation if it gives them a better bottom line, but don't punish them for keeping marginal land in grass or special crops instead of producing wheat. Each of us must ask: How much do I value open spaces, wildlife and good water quality, and what am I willing to pay for these things I value?

Soil degradation is a symptom of what we are doing wrong. We need to integrate resource policies in a comprehensive and sustainable way. What is good for wildlife and ducks is quite often what is good for the land. If we do not change, we will repeat the cycles of the past. Our challenge is a holistic and fair approach to stewardship of our land. A system that creates new and healthy opportunities without imposing all the costs on either the landowners or the public. As stewards of the land we all share in this obligation.



Increase Profits

THE MOST UP-TO-DATE HOW-TO MANUAL ON DIRECT SEEDING.

1994 UPDATE
Farmer Modifications
Real Economics

Contains 160 full color pages in a 3 ring binder designed to provide you with all the information you need to Increase Your Profits using either minimum or zero till systems.

Get detailed information on:

- Crop Rotation
- Seeding Equipment
- Residue Management
- Economics
- Weed Control
- Seeding Principles
- Soil Fertility
- Farmer Modifications

Direct Seeding Manual
Call Paulette at...
1-800-567-7264
8AM To 5PM Mon. Thru Fri. (Sask)
\$29⁰⁰ GST Included
Visa or Mastercard

Monsanto
Monsanto
Monsanto

Don't Miss SSCA's 94 Field Day June 21

By Lorne McClinton
SSCA Communications
Specialist

The Saskatchewan Soil Conservation Association (SSCA), in co-operation with the Western Canada Farm Progress Show, is hosting their second annual Soil Conservation Field Day, June 21, 1994. The Field Day, scheduled one day before the 1994 Farm Progress Show will be located approximately 19 miles north of Regina along the No. 6 highway. Last year's Field Day at the Moose Jaw Airport attracted a huge crowd of just under 4000. Farmers came by car, truck, bus and airplane to see the latest in soil conservation and direct seeding equipment. Attendance also included representatives from fourteen countries in Regina for the Western Canada Farm Progress Show.

The 1994 Field Day will feature direct seeding demonstrations, residue management demonstrations and spraying demonstrations. Participants can also inspect on-site plots of peas, canola and wheat seeded in early May using the direct seeding equip-

ment demonstrated at the Field Day. Concord, Haybuster, Great Plains, Seed Hawk, Bourgault, John Deere, Morris, Flexicoil, Harmon and Conservapak New Noble will demonstrate their direct seeding equipment. Rem Pneumatic, Redekop and Dutch Industries will demonstrate straw and chaff spreading systems and ACAMC, Brandt, Harmon and Dutch will demonstrate spraying systems.

Seeding demonstrations will run continuously from 9:00 AM to 3:00 PM and spraying demonstrations will run continuously from 10:00 AM to 3:00 PM. This will also allow each unit to be demonstrated twice during the course of the day. Residue management demonstrations will take place three times during the day; 10:00 AM - 11:15 AM, 11:45 AM - 1:00 PM, and 1:30 PM - 2:45 PM.

A new event for this year's field day is the Farmer Modified Direct Seeding Competition. Ten farmers will demonstrate equipment they've modified for direct seeding. The farmers, competing for \$5000 in prize money



SSCA's 1993 Field Day near Moose Jaw attracted nearly 4000 farmers to see the very latest in direct seeding technology. Chris Zabek Photo

will have their equipment judged on quality of the engineering and design, degree of complexity of modifications,

originality of design, adherence to the principles of direct seeding (seed-soil contact, proper packing of seed, fertilizer placement, soil distur-

balance, residue clearance, and field finish after seeding) and the cost efficiency of the modifications. Farmers wishing to enter their equipment should turn to page 16 for more details.

The field day will provide farmers with the opportunity to have a

hands on review of the performance and operation of soil conservation farming equipment working in the field. This year, the event is being planned to carry itself financially. There will be a \$5.00/person entrance fee charged to offset some of the costs associated with the day.

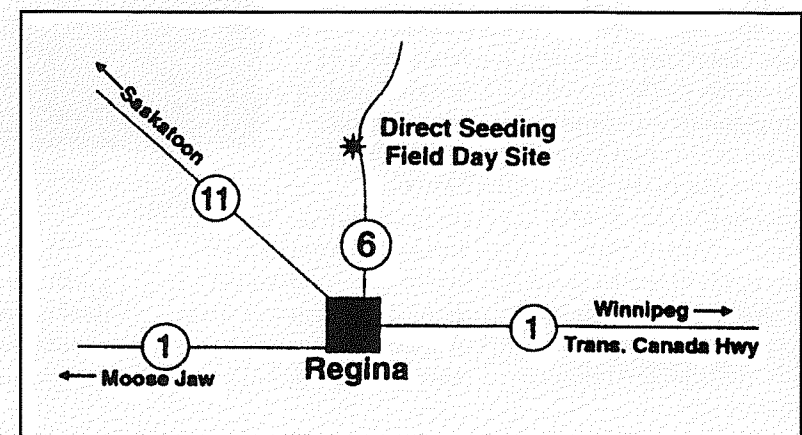
HOW LONG CAN YOU AFFORD NOT TO PRACTICE SOIL CONSERVATION

Don't Miss the 1994 SSCA Soil Conservation Field Day
A 115 Acre Site Featuring Field Demonstrations of the latest in
Direct Seeding - Fertilization - Crop/Weed Spraying -
Harvest/Residue Spreading

JUNE 21, 1994
ADMISSION \$5.00

Concord, Haybuster, Great Plains, Seedhawk, Bourgault, John Deere, Morris, Flexicoil, Harmon, Conservapak, New Noble, Rem Pneumatic, Redekop, Dutch, ACAMC, Brandt

PLUS
45 Acres of Direct Seeded Canola, Peas And Wheat Seeded In Early May Using Equipment Demonstrated At The Field Day.



Located 18 Miles North of Regina On Highway #6

DON'T MISS THE FARMER MODIFIED EQUIPMENT COMPETITION

FERTILIZER SUPPLIED BY COMINCO, SEED PROVIDED BY UGG - PROVEN SEED, ROUNDUP SUPPLIED BY MONSANTO, TRACTORS FOR THE FARMER MODIFIED COMPETITION SUPPLIED BY YOUNG'S EQUIPMENT LTD. REGINA AND CASE INTERNATIONAL



SASKATCHEWAN SOIL CONSERVATION ASSOCIATION

3085 Albert Street, Regina, Saskatchewan S4S 0B1 Phone:(306) 787-0558 Fax:(306) 787-0551

Monsanto



With Support From Prairie Farm Rehabilitation Association (PFRA) and Saskatchewan Agriculture and Food (SDAF)

Crop Rotation Presentations At The 1994 Lloydminster Direct Seeding Workshop

By Blair McClinton, P.Ag.
SSCA Soil Conservationist

When tillage is reduced or eliminated, crop rotation becomes one of the most important management tools available to direct seeders. That was the

residue stubble earlier in the spring to take advantage of the warmer seedbed.

He also believes that zero till rotations need to be more intense to take advantage of the extra moisture conserved.

Common conventional rotations grown under zero till typically perform better in dry years and poorer in wet years. These rotations do not take advantage of the extra moisture available in zero till. Rotations can be made more intense by reducing or eliminating summerfallow, using forages in

established. Rotation can have a significant impact on disease and is important for all management systems. The environment within the crop, the field, and the area can dramatically alter the development of the disease and the success of the control measures. The current evidence with wheat does not indicate any consistent tillage by rotation interactions which indicates that a good crop rotation is beneficial under a variety of management systems. If the rotation plan aims to reduce leaf spot diseases then it will be effective at reducing disease under both conventional and zero till. However, there is evidence that zero till increases leaf spot severity. Therefore, rotation would be more beneficial under zero till.

Producers who attended the bear pit session on crop rotation expressed a great deal of interest in the risk

The only major disease common to all of these crops is sclerotinia. Sclerotinia affects most of the annual broadleaf crops and annual broadleaf weeds grown in Saskatchewan. The general recommendation is to space susceptible crops at least four years apart which is not very practical if both pulse and oilseed crops are to be grown in rotation. Pulse crops, especially lentil and semi-leafless pea varieties, are not as easily infected by sclerotinia as canola or sunola. Canola and sunola should not be used in shortened rotations together because of the high risk of infection. Karen Bailey presented the following table at the 1994 Direct Seeding Workshop.

because the weeds that go to seed in the non-competitive crop can be managed by the competitive ability and herbicide options in the subsequent crop. Rotating annual crops with either winter annuals, like fall rye or winter wheat, or

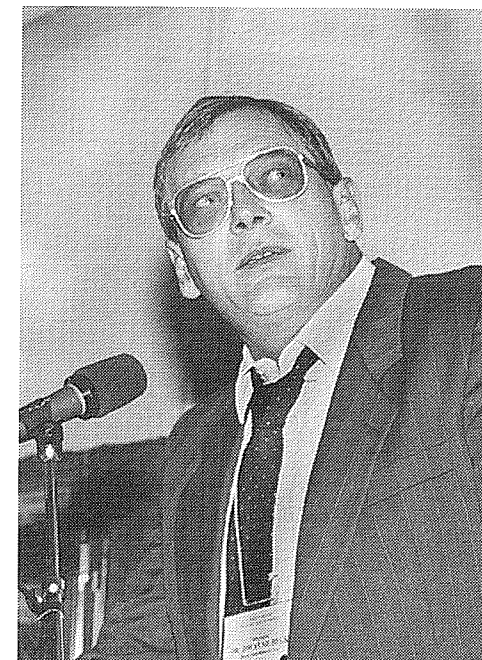


Doug Derksen
Ag Canada

perennial forage crops is particularly useful for reducing weed densities and inhibiting weed community changes. In addition, direct seeders should pay particular attention to rotating herbicide groups, since the risk of developing resistance may be greater in direct seeding due to the extensive use of post-emergent herbicides.

If you seed one field first every year, Derksen also suggests that seeding dates for fields be varied from year to year to prevent selecting weeds that germinate early. Seeding dates can be easily altered by seeding a different field first every year which changes the seeding order.

Crop rotations are an important part of direct seeding management. They can be used to manage a wide number of problems associated with direct seeding. Planning a good crop rotation that will work with your farming is challenging will require a great deal of thought and planning. But as Dwayne Beck concluded, "nothing is more important in making the change to zero till than careful observation, adequate planning and a positive attitude".



Duane Beck
Dakota Lakes Research Farm

message from several speakers at the 1994 Direct Seeding Workshop in Lloydminster. The following is an overview of some of the presentations on crop rotation at the 1994 workshop.

Dwayne Beck, manager of the Dakota Lakes Research Farm, has found that rotation along with other cultural practices like competition and sanitation can solve most of the management problems associated with zero tillage. Everyone is somewhat aware of the benefits of crop rotation in limiting disease, weed, and insect pressure but many lack experience utilizing this concept. Proper crop rotation can prevent most pest problems from getting out of hand and significantly reduces the reliance on chemical control measures.

Beck believes that rotation is an effective method to manage crop residues which can affect soil temperatures at seeding. He does this by using both low residue crops like canola, pea or lentil, and high residue crops like cereals in the rotation. Crops can be seeded into low

rotation, double cropping and using long season crops like sunflowers in rotation.

In western Canada, it is expected that changes in tillage practices will have the most effect on residue and soil-borne diseases. According to Karen Bailey, a plant pathologist with Ag. Canada, planning for disease prevention is the key to control because there is often no recourse in solving the problem once the disease becomes



Karen Bailey
Ag Canada

of shortening rotations. In particular, there is a great deal of interest in spacing canola, and pea or lentil one or two years apart.

Levels of risk associated with shortening the recommended crop rotation interval for some plant diseases.

Disease	Crops Affected	Recommended Rotation Interval	Risk of Shortening Rotation Interval
Common root rot	cereals	2-3 years	low
Take-all	cereals	1 year	low
Leaf spots	cereals	2-3 years	low - moderate
Sclerotinia	all except cereals, grasses, forages	> 5 years	moderate - high
Ascochyta	lentil, pea	3-5 years	high
Blackleg	canola	4 years	high

Herbicide Resistance In Crop Rotations

By M.D. Devine
Department of Crop Science
and Plant Ecology
University of Saskatchewan

INTRODUCTION

Herbicide resistance refers to the development of weed biotypes that are not killed by recommended herbicide rates (i.e., rates that normally would be expected to control that species). The level of resistance varies, but is often very high; 10 to 50 times more herbicide may be required to kill the resistant plants than typical, susceptible ones.

Although the phenomenon of herbicide resistance in weeds has been around for over 20 years, it is only quite recently that it has affected producers in western Canada. The first confirmed occurrence of herbicide resistance in the prairies was green foxtail (wild millet), which developed resistance to trifluralin-type herbicides in the late 1980's. Since then, resistance has developed in six different weed species, and now encompasses many of the major groups of herbicides used in the prairies.

HOW DOES HERBICIDE RESISTANCE ARISE?

Herbicide resistance arises when a particular herbicide, or different herbicides in the same group, are used repeatedly. Any individual weeds that can survive the herbicide treatment will slowly increase in population, whereas the susceptible ones will remain at relatively low numbers. It may take as little as 3 or 4 years of continuous treatment, or as many as 20 years, for resistance to develop to the point where most members of a species in a field are resistant. In most cases where resistance has developed, it is possible to go back through the herbicide use history in those fields and show that the field has been treated repeatedly with the same or similar herbicides. (See Table 1)

THE HERBICIDE GROUPS

Once resistance develops to a particular herbicide, weed

control options become limited because of cross-resistance to related herbicides. To simplify this concept, all of the products currently in use in western Canada have been assigned to a Herbicide Group (see Table 2). The herbicides within any one group all have the same mode of action; i.e., they kill plants in the same way. There are several important implications of this: usually, if a weed is resistant to a particular herbicide, it is also resistant to all other herbicides in the same group. For example, wild oat resistant to Hoe-Grass is likely to be resistant to all other Group 1 herbicides. (See Table 2)

a weed can be completely resistant to a herbicide that it has never seen before. For example, a wild oat plant resistant to Group 1 herbicides following repeated use of Hoe-Grass and Poast will probably also be resistant to Achieve and other, newer Group 1 herbicides.

IMPLICATIONS FOR CROP ROTATIONS

One of the striking revelations about the development of herbicide resistance is that those producers on whose fields it has occurred often were practicing very good crop rotation. For example, the field histories shown in Table 1 contain some quite diverse crop rotations, with a good mixture of cereal and oilseed and special crops. However, the failure to rotate herbicide groups led to the build-up of resistant weeds.

Although it is very difficult to provide firm guidelines on how often various products or types of products can be used, some general recommendations can be made. Producers should do everything possible to avoid back-to-back use of the same herbicide group. In Manitoba, extension personnel have been advising producers to rotate herbicides so that each group is used only one year in three. While this is sound advice, it may be very difficult for some producers to follow, especially in the short term. However, producers must become aware of the possible consequences of not rotating herbicides in an appropriate manner.

Table 2. herbicide groups based on their mode of action.

Group 1	Hoe-Grass, Hoe-Grass II, Laser, Excel, Fusilade II, Triumph Plus, Assure, Puma, Poast, Achieve, Select
Group 2	Ally, Assert, Amber, Glean, Muster, Refine, Triumph Plus
Group 3	Edge, Fortress, Treflan, Rival, Triflurex
Group 4	2,4-D, MCPA, Banvel, Bucril M, Dyvel, Estaprop, Kil-Mor, Target, Todon 202C, Lontrel
Group 5	Bladex L, Blagal, Sencor, Lexone
Group 6	Bucril M, Hoe-Grass II, Laser, Pardner
Group 7	Afolan, Lorox
Group 8	Avenge, Avadex BW, Fortress
Group 9	Others - Carbyne, Mataven, Eptam, TCA, Stampede, Roundup

As producers extend crop rotations to include new crops, and new combinations or sequences of crops, they should - if they are doing a good job - be paying attention to many other factors that will indirectly affect weed control. These are the old stand-bys of good crop productions - timely seeding, good fertility management (rates, placement, etc.), use of clean seed, care in cleaning equipment, and many other factors. It is important, especially in the current economic climate, to pay attention to all of these aspects in order to minimize reliance on herbicides for weed control.

If good crop management can be used to restrict weed growth and keep weed populations relatively low, and herbicide use is restricted to those situations where it is absolutely necessary, the useful life of many of our current herbicides will be maintained or extended. The worst case scenario is that weeds will develop resistance to multiple herbicide groups, severely limiting the herbicide options available. This has already happened with green developing resistance to Group 1 and Group 3 herbicides in Manitoba, leaving these producers with few options for controlling these weeds.

This may be an appropriate time for some producers - especially those with livestock operations - to consider including short-term forages in the rotation. Research many years ago showed that wild oat populations could be decreased substantially by going to three years of alfalfa. In general, annual weeds can be controlled very effectively in perennial forage crops; as one farmer pointed out to me recently, not many wild oats are resistant to a cutting bar 4 inches off the ground.

How Can You Tell if You Have Herbicide Resistant Weeds?

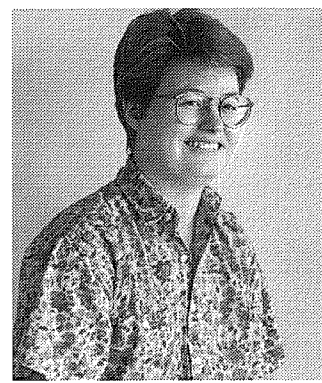
- Patchiness - strip vs. round patches?
- Are other weeds on the label controlled?
- Could it be related to weather factors?
- Could there be a water quality problem?
- Has the same herbicide (or one from the same group) been used repeatedly in the past?
- Have you noticed problems in recent years?
- Can Herbicide Resistance Be Prevented?
- YES!
- Do not apply continuous selection pressure
- Rotate herbicides (use different groups)
- If you are on to a good thing, DON'T stick to it!!

In conclusion, it is essential that the concept of herbicide rotation be included in the planning of crop rotation. Producers should be encouraged to use as many different approaches to weed control as possible, and to use herbicides from different groups as much as possible. By doing so, the long-term effectiveness of existing herbicides will be maintained, and the development of herbicide-resistant weed biotypes will be delayed, if not avoided.

Table 1. Herbicide histories of two fields in Manitoba in which resistance to Group 1 herbicides (Hoe-Grass, Poast, etc.) has developed in wild oat.

Year	Field 1		Field 2	
	Crop	Herbicide	Crop	Herbicide
1981	—	—	Barley	Hoe-Grass
1982	Wheat	Hoe-Grass	Wheat	—
1983	Barley	Hoe-Grass	Wheat	Hoe-Grass
1984	Wheat	Hoe-Grass	Flax	Poast
1985	Barley	Hoe-Grass	Wheat	Hoe-Grass
1986	Wheat	Hoe-Grass	Canola	Poast
1987	Flax	Poast	Wheat	—
1988	Barley	Hoe-Grass	Flax	Poast
1989	Flax	Poast	Wheat	Hoe-Grass
1990	Wheat	Triumph Plus	Wheat	Triumph Plus

Conservation LEARNING CENTRE



Pat Flaten
Manager CLC

By Pat Flaten,
Conservation Learning
Centre Manager

As has been reported in the Prairie Steward before, the SSCA is a partner in the Conservation Learning

Centre (CLC), the demonstration farm south of Prince Albert. We have three quarter sections of land to work with, demonstrating and researching soil, water and wildlife conservation practices. Ducks Unlimited and Canada's Green Plan are our other major partners, in association with the local A.D.D. Board.

This has been the CLC's first year of operation, so the Steering Committee has been very busy finding an appropriate land base and then implementing a strategy for cropping and demonstrations for the 1993 growing season. Direct seeding was a major focus this year, operating the

entire farm with direct seeding techniques.

Some of our 1993 highlights include:
* 224 acres of direct-seeded canola, yielding 20 bpa.

* 95 acres of direct-seeded CPS wheat, yielding 45 bpa.

* 45 acres of dense nesting cover established
* alternative crops garden

* field-scale demonstration of seed-placed urea with canola (see graph)
* field-scale demonstration of 5 polish canola varieties (see graph).

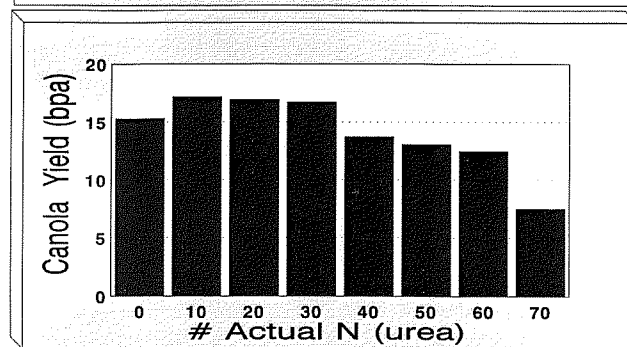
Also, research on greenhouse gases was begun at the site by the Soils Department of the University of Saskatchewan, comparing emissions under different land uses and management. The Melfort Research Station demonstrated canola tolerance to several herbicide residues as well as setting up a trial to test potential forages to be planted for dense

nesting cover.

Anyone who wishes to receive the Annual Report of Results for these projects is welcome to get in touch with myself at the CLC office,

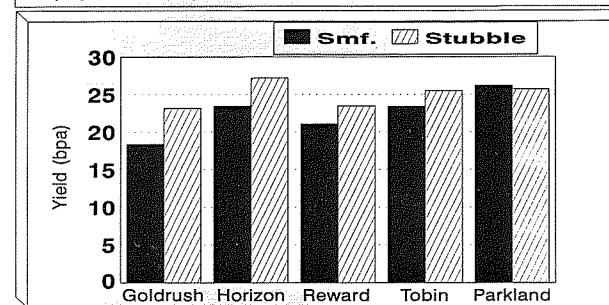
phone. 953-2796,
fax. 953-2440 or write to:
Conservation Learning
Centre
Box 3003
Prince Albert, Sk.
S6V 6G1

Seed Placed Urea Trial, 1993 Canola, 1 year, no replication



Conservation Learning Centre

Polish Canola Variety Trial, 1993 (1 year, no replication, summerfallow and stubble)



CONSERVATION LEARNING CENTRE

Conservation Farmers Helping Farmers

Does conservation farming look difficult? Why not talk to a farmer who has tackled the same situation that you are facing? The **Conservation Farmers Helping Farmers Directory** houses the names of SSCA members who are willing to accept phone calls about their conservation farming practices and equipment.

Interested in the kind of equipment direct seeders are using in your soil zone? Concerned about quackgrass in your minimum tillage operation? Considering shelterbelts as part of your conservation plan? Get the facts from experienced farmers.

How does it work? Simply call the SSCA Regina office at 787-0558 and ask to use the **Conservation Farmers Helping Farmers** service. You will be able to specify the conservation techniques, equipment and practices you have questions about. The SSCA will then search the directory and provide the names and phone numbers of any members who have experience with the conservation methods or equipment in question.

Some examples of conservation information and experience included in the directory are:

- direct seeding
- conservation equipment
- conservation tillage
- barrier strips
- rotational grazing
- alternate crops
- weed control
- residue management
- chemfallow, shelterbelts
- forage establishment
- soil salinity management
- wildlife habitat enhancement
- and other conservation farming experiences.

This is an ideal opportunity for farmers to take advantage of a large and diverse source of practical knowledge... other farmers!

1993 Update

1994 CLC Plans

By Pat Flaten,
Conservation Learning
Centre Manager

In 1994, the Conservation Learning Centre Steering Committee is planning to continue and expand on its 1993 activities. Its focus will be on direct seeding, forages and shelterbelts. We will continue to produce crops through a direct-seeding system, including aspects of all "five pillars" of the system; residue management, seeding principles, crop nutrition, weed control, and crop rotations.

The main crop rotation that we have chosen alternates broadleaf and cereal crops (wheat-peas-barley-flax/canola). We will also look at the effects of short term alfalfa on crops and soils. We will also look at some alternative crops on a small plot basis.

Fertilizer placement is one of the most challenging aspects of direct seeding, so the farm will demonstrate some of the alternatives. A small field of canola will demonstrate the effects of seed placed N with canola and another small experiment will look at variable rates of N across the landscape.

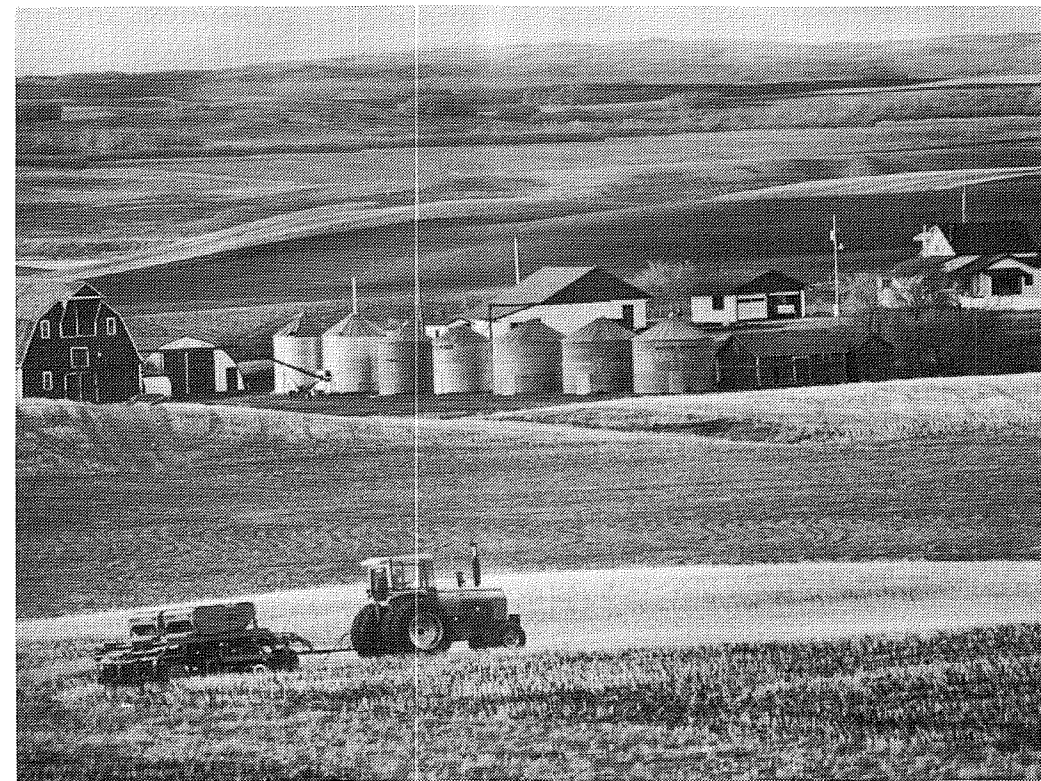
The CLC has most of the same weed problems as other new direct seeders have, such as Canada Thistle, quackgrass, sow thistle and wild oats. The fields will be monitored for

changes in populations over several years. Last fall, the CLC initiated an experiment to look at wild oat control with Avadex as a non-incorporated herbicide.

The use of perennial forages is very important to the conservation of soil and wildlife. Demonstrations and research have been designed to answer questions, from how to direct-seed forages to maintenance and rejuvenation of them. The CLC will have a species garden as well.

Despite the relatively sheltered Parkland landscape, wind erosion is still evident in the area and at the CLC. Since shelterbelts will control wind speeds, existing shelterbelts will be enhanced and new ones will be planted, including several different designs. As with forages and annual crops, the CLC will have a shelterbelt species garden to demonstrate the many trees and shrubs which are available for planting.

The CLC is a place for many organizations and industry to cooperate with producers to focus on conservation practices. There will be several opportunities to visit the farm this summer. You are welcome to participate in self-guided tours and guided tours. Thanks to all of you who have been involved in the planning and support of the 1994 program.



John Bennett direct seeds his crop with a modified Haybuster Drill. Keith Meszaros Photo

Biggar Sweeps SSCA Awards

By Lorne McClinton,
SSCA Communications
Specialist

Biggar, Saskatchewan is home to both 1994 Saskatchewan Soil Conservation Association (SSCA) Conservation awards. John and Shirley Bennett have won the Conservation Producer Award while the Group

would stop dead when I walked into the local John Deere dealership for parts."

The Bennetts farm 1000 acres in the hills south of Biggar in the moist Dark Brown Soil Zone. They switched to Direct Seeding, the process of seeding a new crop into standing stubble, in 1987 as a method to cut down soil erosion and to reduce farm costs. They

would stop dead when I

would stop dead when I walked into the local John Deere dealership for parts." The Bennetts farm 1000 acres in the hills south of Biggar in the moist Dark Brown Soil Zone. They switched to Direct Seeding, the process of seeding a new crop into standing stubble, in 1987 as a method to cut down soil erosion and to reduce farm costs. They



John Bennett is presented with the SSCA Conservation Farmer Award by Craig Evans of Monsanto and Colleen Munro of the Western Producer.

Conservation Award has been won by the District #23 Agricultural Development and Diversification (ADD) Board. Both awards were presented Feb. 14 at the SSCA's Direct Seeding Workshop in Lloydminster. "I've gone from being an idiot to an innovator in just seven years," says John Bennett. "People no longer get out of their trucks and point when they see me in the field... I can remember a time when conversation

have had dramatic success. In 1993 heavy rains caused major problems with water erosion in conventionally tilled fields in the area. Washouts and sloughs were common. The Bennetts had none.

In dryer years results also have been positive. By not working down the crop residue in the fall, the Bennetts have been able to trap snowfall and conserve what limited moisture there was. Also the straw provides shelter for the soil,

preventing wind erosion. The Bennetts believe that direct seeding and continuous cropping is the way to maximize the economic returns from their farm while increasing their soil's productivity and reducing soil erosion. They've experimented with and refined different crop rotations to control weeds and crop disease.

"A weed species can't have a free ride for two years or you'll have trouble controlling it," John Bennett says. He feels that weed populations are influenced by crop rotations and fertilizer placement. Equipment modification has been necessary to ensure that their Haybuster drill accurately places seed and fertilizer.

Bennett has found that conservation farming requires a lot of research and reading and has been quick to adapt innovative techniques and practices to their farm. Persistence has also been necessary to achieve their conservation goals, especially after encountering minor setbacks.

The District #23 ADD Board, winner of the SSCA Group Conservation Award, began promoting soil conservation in 1987. It was one of 10 districts in Saskatchewan that applied for funding under the Save Our Soils (SOS) pilot project. Over the past seven years the Board has been able to bring soil conservation to the attention of many area farmers. They have not only demonstrated proven conservation methods but also demonstrated new practices to give farmers a

SSCA a Positive Influence

Dear Sirs,

We would like to thank you for the honor of being chosen the SSCA Conservation Farm Family of 1993

Zero till farming has renewed my excitement in farming as I have seen such positive results in both the improvement of my soil quality and our financial picture.

The SSCA is a positive influence on the leading edge of change in farming methods in Saskatchewan. Your initiative in this area is translating into larger numbers of

farmers practicing conservation each year.

My thanks to your employees Garth Patterson and Ken Sapsford. They have been very helpful in supplying both information and encouragement. The experimental plots set up in conjunction with them have benefited our farm and have sparked great interest in Zero Till farming.

The hand-crafted clock which we received along with the award was greatly appreciated and will be a visual reminder of this honor.

Yours truly,
John and Shirley Bennett



Art Bonstrom receives the SSCA Group Conservation Award on behalf of the District #23 ADD Board from Craig Evans of Monsanto and Colleen Munro of the Western Producer.

High Soil Disturbance Direct Seeding

By J. T. Harapiak
Westco Fertilizer

Editor's Note: the following is a segment of John Harapiak's presentation at the Lloydminster workshop.

Over the past five years on the Canadian prairies there has been a significant move towards reducing tillage and adopting direct seeding practices. This development has been driven by the desire on the part of dryland farmers to reduce crop production costs plus a recognition of the need to improve both

interest in adopting low disturbance direct seeding systems as a possible approach to reducing herbicide costs.

Managing Fertilizer is a Major Challenge

In fact, after gaining some experience with a high disturbance system, many farmers indicate a desire to switch to seeding systems that are less disruptive to the soil surface. However, the

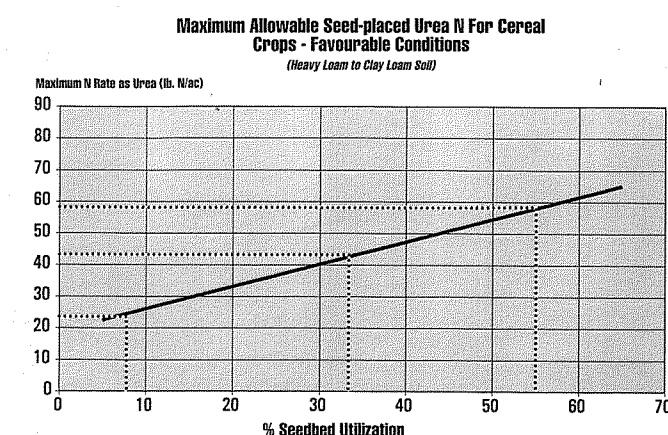
(i.e., usually fertilizer is placed in a mid-row band between pairs of seed rows) or in a single opener that attempts to apply seed and fertilizer separately (i.e., precision placement). While some of the precision openers appear to be successful, many of these double-shoot openers are still in the developmental stage. Some of the first attempts at double-shooting resulted in openers that disturbed much more soil than expected, failed to adequately separate the seed and fertilizer, loosened the seedbed unnecessarily and had a high draft requirement.

In a low disturbance seeding system, it appears that most of the required N fertilizer should be placed about 1" to the side and 1-2" below the seed row providing that this can be accomplished without compromising seedbed quality. There are several potential agronomic benefits for attempting to accomplish this type of fertilizer placement. Firstly, it ensures the fertilizer is rapidly and equally available to all of the plants resulting in more rapid and vigorous crop growth. Secondly, this type of precision placement could improve fertilizer use efficiency compared to randomly located bands applied prior to seeding. Thirdly, if the amount of soil disturbed by a double-shooting opener can be limited, fewer weeds will become established. Fourthly, fertilizing the crop rather than the weeds will make the crop more competitive. Finally, herbicide requirements may be reduced as a direct result of reduced soil disturbance and a more competitive crop due to more strategic fertilizer placement.

soil and moisture conservation. The systems used to accomplish direct seeding are extremely varied. They range from High Disturbance Direct Seeding on methods that disturb the entire soil surface to Low Disturbance Direct Seeding systems that attempt to disrupt as little soil as possible in order to reduce the possibility of encouraging the germination of the weed seeds present on the surface of the soil.

Precision Placement

One method of avoiding the risk of incurring serious germination damage is to separate the seed from the fertilizer with a barrier of soil. There is a great deal of farmer interest in using paired-row side banding



There is a linear relationship between the degree of seedbed utilization (%) and a safe rate of seedrow urea based N for cereal crops. As illustrated in the above graph, if seed and fertilizer are scattered over 8%, 33% and 55% of the total available seedbed, the "safe" rate of N is 24, 42 and 58 lbs. of N/acre respectively for fields with excellent seedbed moisture on soils with a heavy loam to clay loam texture. The maximum allowable rate of seed row N varies with soil texture. The highest amount of seed row N can be applied to clay soils and the least to light or sandy soils.

Figure 2

High Disturbance Seeding Currently More Practical

However, for the time being, we expect that single shoot, high disturbance seeding systems that place the seed and fertilizer in a common band are having the greatest impact in making direct seeding possible. These systems are currently more trouble free, providing that the "safe" rate of seed row fertilizer is not exceeded.

There is, however, a significant risk associated with applying excessive amounts of N directly in the seed row. As illustrated in Figure 1, increasing the amount of urea-N applied in the seed row results in a corresponding loss of plant stand. While some loss of plant stand can be tolerated, excessive losses can contribute to a very significant delay in crop maturity. This delay in maturity appears to be associated with weaker plants that are slower to become established and a greater dependence on tillers to produce grain. Based on a relatively large data pool, Westco agronomists have

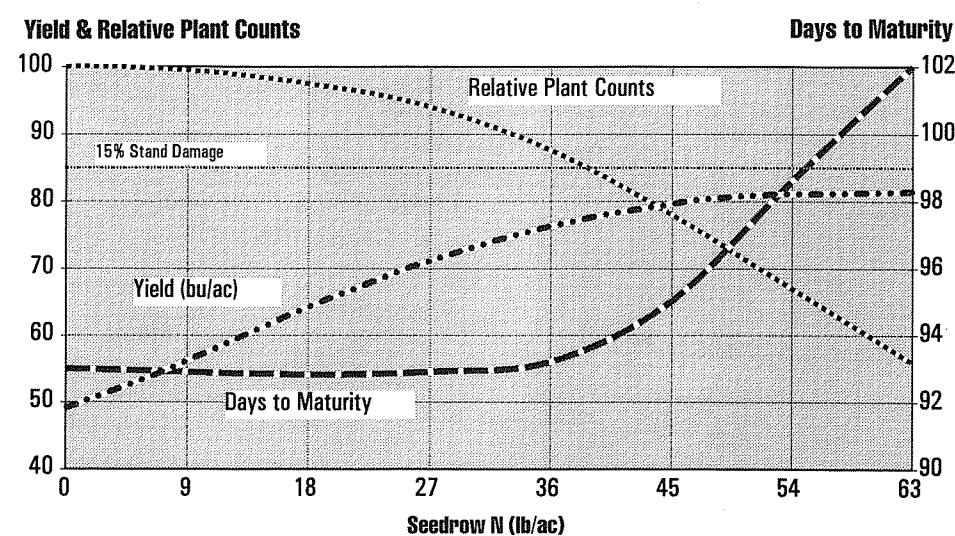
established that a plant stand loss exceeding 15% results in unacceptable delays in crop maturity.

New Seed row Guidelines

New guidelines have been published by Westco to help establish a safe practical upper limit for seed row N under ideal seedbed conditions. The information contained in Figure 2 illustrates the relationship between percent seedbed utilization and the upper limit for one soil textural group (i.e., heavy loam to clay loam soils). Slightly higher rates of seed row N can be tolerated on clay and heavy clay soils. Progressively less N can be applied in the seed row on soil with a loam and sandy loam texture.

Spreading the seed and fertilizer over as much of the total seedbed as possible automatically results in a high degree of soil disturbance but this approach provides a higher margin of safety against the risk of germination damage. As a greater variety of improved openers are developed, we expect more farmers to switch to using low soil disturbance seeding systems that feature precision fertilizer placement.

Seedrow Urea vs Crop Characteristics



There is a distinct relationship between the rate of seed row applied N, relative plant stand and days to maturity. Since there is a considerable risk associated with delaying crop maturity on the Canadian Prairies, the "safe" rate of seed row N should result in less than 15% stand loss. The rate of seed row N that results in 15% loss of stand will vary quite widely depending on the moisture, clay and organic matter content of the soil as well as the percentage of total available seedbed that is utilized for spreading the seed and fertilizer.

Figure 1

Soil Conservation Course Available From U of S Certificates In Agriculture Program

By Corey Loessin, P.Ag.
CAP Coordinator
University of Saskatchewan

This is the fourth successful year for the off-campus Certificates in Agriculture Program. It is clear that off-campus delivery of sound agricultural credit courses is needed in Saskatchewan.

This program, offered jointly by the College of Agriculture and the Extension Division of the University of Saskatchewan, is specifically designed for adults actively engaged in farming or agriculture careers. The Certificates in Agriculture Program makes courses equivalent to those taught on-campus available throughout Saskatchewan.

One course of particular interest to members of the SSCA might be SL SC 24 - Soil Conservation and Land Quality. While many of you have considerable conservation experience and knowledge, this course can offer another perspective on many of the principles you are familiar with. Specific topics include soil organic matter salinity, soil acidity, soil structure and soil erosion. Members of the SSCA may wish to take this course only, and this is certainly possible within the CAP structure. Furthermore, the course manual for SL SC 24 is an excellent resource and reference.

While the Basic Soil Science course is a prerequisite to Soil Conservation, anyone with a degree or diploma in Agriculture would meet this requirement. This may be the only course you wish to take within the Certificates program, or you may wish to try others as well. The SL SC 24 course is one of the elective courses within the Crop Production Certificate. Other courses include Soil Fertility, Weed Control, Cereal Crops, Oilseed and Pulse Crops, and Forage Crops. Each student receives a self-study reference manual and workbook which is supplemented by mail-in assignments and phone contact with the instructor. Students receive further assistance at periodic live satellite TV sessions scheduled during each term and delivered to each of ten receiving sites in the province. Some courses

contain a weekend of on-campus laboratory instruction as well.

The Farm Business Management Certificate is now available, with four courses being delivered. Three more courses will be available for delivery next fall, including Introductory Marketing. Course development is underway and more courses will be available in the next year

or two.

Few can argue with the popularity of CAP courses in Saskatchewan and in our neighbouring provinces. The 1993-94 academic year saw a total of 201 students enroll to study about 330 individual courses. This represents a 27% increase over 1991-92. Student evaluations indicate a high degree of satisfaction with the course

materials and instruction.

CAP courses have become popular with both the primary farm sector as well as the agri-business sector dependent on the farm industry. Many grain industry employees and government services people have identified CAP as an opportunity to upgrade their education and provide better service to their farm clients. CAP

participants are men and women averaging about 35 years old.

For more information, or for a registration package, contact the Certificates Program, College of Agriculture, Agriculture Building, University of Saskatchewan, Saskatoon, SK, S7N 0W0 - phone 966-4062.

Indian Head Experimental Farm Zero Tillage Field Day

Your Choice of July 26, 1994 or July 27, 1994

Spend a day with other farmers observing and discussing current research and farmer experience with this rapidly expanding technology

Zero Tillage Highlights Research

- 8 year comparison of Zero, Minimum and Conventional tillage yields, economics, and moisture.
- weed management
- special crop production
- row spacing
- diseases

On Farm Demonstrations

- 16 year field in Zero Tillage
- Conservapak fields
- crop rotations
- cereal oilseed and pulse crops
- soil quality and hydrology
- herbicide application technology

Tour Information

Registrants will be divided into two groups in order to provide everyone with a closeup look at the research and demonstrations.

9 - 12A.M.

Group A - On Farm Demonstration
Group B - Research

1:30 - 5P.M.

Group A - Research
Group B - On Farm Demonstration

Organizers:

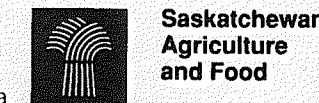
- Agriculture Canada
- Ducks Unlimited Canada
- Monsanto Canada
- Indian Head ADD Committee
- Indian Head Agriculture Research Foundation
- Valcon Equipment
- Saskatchewan Agriculture and Food
- Dupont Canada

Registration

- \$25.00 / person (\$20.00 U.S.)
- Includes Lunch and BBQ Supper
- Please forward fee with registration (non-refundable)
- Register early to get your preferred day
- Deadline is July 19, 1994
- Limited to 200 people / per day

Local Contact

Rural Service Centre
Box 99 Indian Head, Saskatchewan
Phone 695 - 2263, Fax 695 - 2481



Openers 1993 And 1994

By Garry Meier
SSCA Soil Conservationist

Spring 1993 saw the emergence of numerous new seed/fertilizer opener designs as manufacturers large and small moved to meet farmers' rising interest in direct seeding equipment. It did not seem to matter who the manufacturer or what the design was, they were all sold out or in short supply. In their haste to lay money on the table to acquire some of this new opener technology, many producers overlooked the potential problems that were inherent in the design of most of these new openers.

The primary function of an opener is to place all the seed at the optimum depth on firm moist soil with some soil covering the seed to provide an ideal environment for plant growth. A lot of the openers sold in 1993 did not do this and a lot of farmers lost a lot of money because of this.

This article is far too short to fully describe all of the openers and their performance. I will comment only on disc openers, side-band double shoot and paired-row double shoot hoe type openers.

Disc openers come in single, double, offset double and triple disc configurations. Disc openers generally cause low soil disturbance which reduces weed growth in the field and require lots of down pressure to cut residue and place seed into the soil below. Two problems appeared with most disc openers in 1993. First, hairpinning occurs when the disc fails to cut cleanly through crop residue. Seed is placed on top of the residue and not in contact with the soil and can lead to a situation where the seed dries out before it has a chance to get established. This results in a non-competitive crop and all the problems that often accompany such a crop.

The second problem was a result of the disk opener's low soil disturbance capability. Low soil disturbance is a desired feature in an opener in areas that are more concerned about weed growth than cool soil surfaces in the seed trench. However, low disturbance disc openers in the northern areas of the province in 1993 resulted in delayed crop emergence when compared to hoes especially in crop residues such as seed which tend to reflect the sun's energy away from the soil surface.

Double shoot side-band and paired-row hoe type openers were designed to place seed and fertilizer in separate bands in close proximity to each other during a single pass through the field. The separation of seed and fertilizer prevents seedling damage at high rates of fertilizer to all seed types. Most of the double shoot openers currently on the market are designed to place the seed about 1.5 inches above the seed and about 1 inch to the side.

Unfortunately, what looked good on the drafting table and in the soil bin quite often fell apart under field conditions. Problems ranged from premature wear out to failure to perform. Some openers plugged with mud and straw while others shattered the seedbed in dryer soil conditions. This left the seed stranded in a loose dry seedbed without providing enough separation between seed and fertilizer, damaging the seed. It also placed the seed at varying depths within the seed row. Farmers learned an expensive lesson: **You never ever trade off seedbed quality to achieve fertilizer placement with a double shoot opener.**

All of the openers sold in 1993 were meant to work, but the question that quite often went unanswered was where??? A lot of farmers found out in 1993 where they did not work. Most of the opener manufacturers have taken their 1993 opener line and reworked and redesigned them for the 1994 sales season. Have they gotten all the bugs out of them? Will they now work on the range of soils on your farm?

For 1994 I would recommend that farmers exercise caution when it comes to selecting a new seeding opener. Try a few to see how they perform on your soils or cheaper yet, get your neighbour to try a few and have him tell you if they work.

We have yet to see the opener that will work well over a wide range of soils and conditions and I would suggest that the perfect opener for you may still be some time away. Be patient and wait this thing out. You will be money ahead!!



Rangeland near Cypress Hills. Photo By Lorne McClinton

What Condition Is Your Rangeland In?

By Chris Zabek
SSCA Soil Conservation Specialist

Canada's Prairie grasslands have long been an important renewable resource. The loss of much of our native grasslands to the plough with the widespread introduction of agriculture has made the remaining prairie areas all the more precious. These areas provide forage, wildlife habitat, recreation opportunities, protection of soil and water resources and storehouses of biodiversity.

All range, however, is not equal. The condition of the range is a measure of how healthy it is and will vary depending on the state of the vegetation and the soil. Grazing, in particular, can have a marked effect on this condition. It logically follows that the type of grazing management can have a positive or negative impact on the range.

Overgrazing occurs when a plant is bitten before it has had enough time to recover from a previous grazing event. Plants need rest during the growing season in order to recover and build up energy reserves. Overgrazing is a function of time. When left uncontrolled for a long enough period of time, one animal can overgraze an area just as easily as can several.

Plants can generally be divided into 3 categories according to their grazing response:

Decreasers - these plants decrease in relative amounts with continued heavy grazing.

Increases - these plants increase in relative amounts with continued heavy grazing. They will often start to decrease after a certain degree of overuse has been reached.

Invaders - these plants are not part of the natural range composition. They invade the stand when prolonged overgrazing or disturbance weakens the native species.

The relative contributions of these plant types helps provide a measure of the range condition. Managers generally use the following range condition classes:

Excellent - original vegetation contributes more than 75% of the total yield.

Good - original vegetation contributes 50% to 75% of the total yield.

Fair - original vegetation contributes 25% to 50% of the total yield.

Poor - original vegetation contributes less than 25% of the total yield.

Plants must receive adequate rest during the growing season in order to build up their energy reserves. Otherwise, the plant will weaken and may die.

Grazing must take place at the proper time of the year. Generally, native range plants are damaged more easily by early spring grazing. Every day of delayed grazing use in the spring means an extra two or three days of grazing in the fall.

The animals must be distributed as evenly as possible over the entire grazing unit. This can be accomplished through a

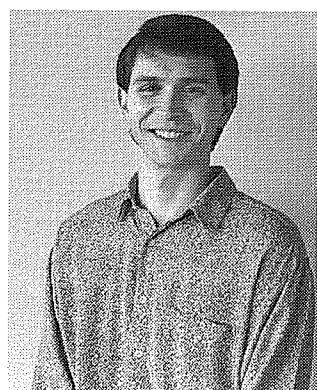
combination of different methods. Some of these methods are touched on below.

Proper fencing is essential. Cross fencing can be used to ensure different range sites are properly utilized. This is especially important in areas where the topography and/or plant cover varies greatly.

Location of water can also have a big impact on distribution. To a large extent, topography of the area dictates the spacing of water sources. Naturally enough, rough terrain necessitates water sources that are closer together than they are in smooth terrain.

Salt and mineral supplements are a simple way to improve animal distribution. Simply locate them in areas that are underutilized but take care not to place too much salt in any one location.

Rangelands are diverse, marvelously intricate systems. When we appreciate them as such, we'll stop treating them as wastelands.



Chris Zabek
SSCA Soil Conservationist

Crop Emergence Under Direct Seeding

By Guy P. Lafond
Indian Head
Experimental Farm

Editor's Note: The following is the text of Guy Lafond's presentation at the Lloydminster Workshop missing from the Proceedings.

Direct seeding involves seeding through residues at the soil surface and standing stubble, which in turn leads to other important ramifications. The climatic conditions at the soil surface will be altered somewhat by the presence of surface residues and standing stubble and the extent of this alteration will depend on the types of residues present. In the case of cereal crops, more residues will be present at the surface than for crops like flax or lentil.

The more residues at the soil surface, the slower the drying process will be resulting in more surface soil moisture. In these situations, the higher soil moisture conditions combined with the insulating effects of the residues will result in lower surface soil temperatures. Again the extent of the insulating effect will be a function of the amount of residues present and how well the residues were spread at the surface. Six major factors have been identified which can influence crop emergence.

Soil Temperature

Soil temperature has been by far the largest influence on determining the rate of crop establishment. The percent number of seeds

germinating and emerging is usually not affected in the 5 to 20°C temperature range providing that the quality of the seed used is sound, however, as temperature increases, time to emergence decreases with the largest effects observed in the 5 to 20°C range.

Soil temperature is in most part determined by the prevailing weather and the residue management employed. As mentioned earlier, even distribution of the residues at the soil surface will greatly improve surface soil temperatures. The best way to minimize delayed crop emergence due to soil temperature is to ensure shallow seeding.

The other important factor to consider is that in Western Canada, mostly hoe-type seeding implements are being used. The end result being very little residues are present on the seed row and consequently the full impact of sunlight can be obtained. If this is combined with shallow planting (less than 1"), the temperature of the soil at that depth should closely approximate the prevailing air temperatures, or a conventional tillage situation.

A tillage system by crop rotation study was initiated in Indian Head in 1986 on a thin black heavy clay soil. The results clearly showed that tillage systems did not have an effect on crop emergence.

Soil Moisture

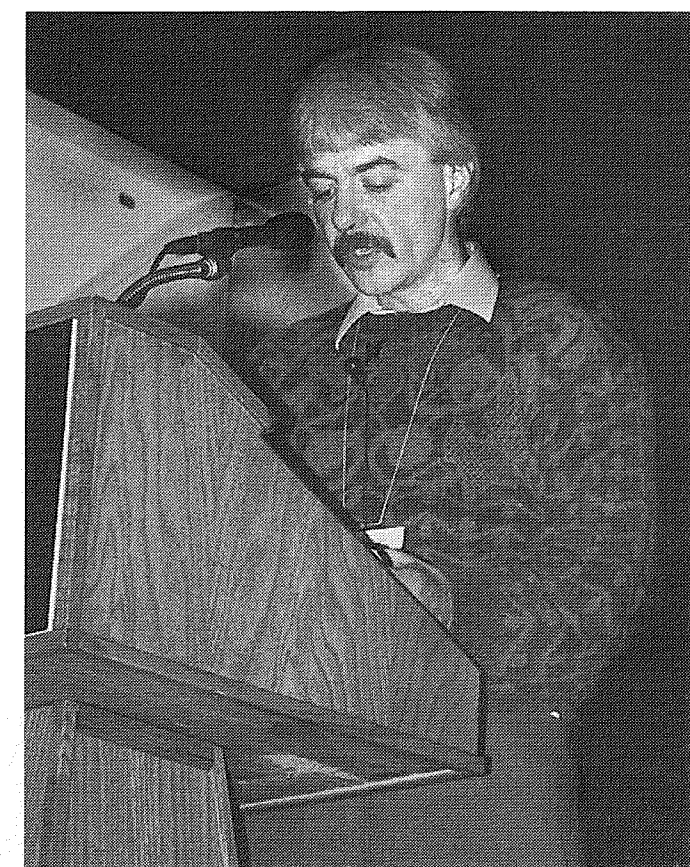
In controlled experiments, changes in soil moisture, (between permanent wilting point and

field capacity) have had little effect on speed of emergence for winter and spring wheat, regardless of temperature. The producer has some control on the moisture content of the soil at seeding because by going to direct seeding, you are facilitating soil water conservation which almost always results in close to optimum surface soil moisture conditions for quick crop emergence. Manipulating the height of the stubble for example can affect the amount of moisture present in the seed zone.

Seeding Depth

Seeding depth is defined as the height of soil above the seed when the crop emerges. The amount of soil present on the seed usually increases from seeding to emergence. As seeding depth increases, time to emergence increases. Of importance also is the relationship between soil temperature and seeding depth because as soil temperature decreases, the effects of seeding depth on time to emergence are greater. Deep planting can also lead to a higher incidence of common root rot.

Seeding depth can also influence the ability of the crop to withstand certain herbicide residues such as trifluralin which can cause the coleoptile to swell and remain short. Under these conditions, more plant thinning can occur if deep planting is encountered. In the end the producer has full control on the depth of seeding which is determined by management and



Guy Lafond
Ag Canada

to a certain extent by the seeding implement employed, which in turn can alleviate problems with cool soil temperatures.

Packing

As a rule packing is a requirement to maximize yield and if a problem occurs it is usually because there wasn't enough packing. Proper packing is very important because it facilitates the movement of water to the seed through capillary action by allowing contact points to develop between the seed and the soil. By placing the seed on undisturbed, firm and moist soil, the seed will be in direct contact to exposed capillaries from the soil. Over packing could be encountered in situations of wet heavy clay soils.

Fertilizer Placement

High concentrations of inorganic fertilizer near the seed, can result in a number of problems; firstly the concentration of the solution is such that the seed cannot take up enough water to germinate due to an osmotic effect; secondly the salt effect is toxic to the germinating seed and kills the developing embryo; thirdly the concentration of the solution is such that the tips on some of the newly formed seminal roots are damaged thereby affecting their growth and subsequent uptake of water and

nutrients.

A word of advice to producers wanting to buy new direct seeding equipment, determine the crops to be sown and how you want to manage your fertilizer before you start looking for a seeder.

Seed Quality

Another factor often overlooked is the quality of the seed planted. The producer has complete control over the quality of the seed he uses. He can choose the seed lots he wants based on routine available tests. (editor's note: a seedling vigour test is recommended to ensure adequate emergence)

Conclusion

Lower surface soil temperatures can be experienced under direct seeding at certain times, but this situation can be circumvented. Under direct seeding conditions, surface soil moisture conditions are usually good to excellent and the presence of a firm seed-bed allows for very shallow planting and because of this, the effects of lower surface soil temperatures on speed of emergence can be greatly reduced or even overcome.

As a rule packing is a requirement to maximize yield and if a problem occurs it is usually because there wasn't enough packing. Proper packing is very important because it facilitates Crop Emergence Under Direct Seeding.



Direct Seeded flax at Ag Canada's Indian Head Experimental Farm.

Direct Seeding Conference - Farmer Comments

By Lorne McClinton
SSCA Communications
Specialist

were willing to share their successes and failures.

- I have found all things good except the distance from the Moose Jaw area.
- I have attended a lot of workshops in the past 4 years. This is one of the best ones in the province of Alta.

- 8 calving cows out and I am needed close to home if it is at this time of year.
- Trade show was small.
- 1 1/2 days are not quite enough time to take in all the interesting lineup of speakers and spend time in the trade show area.
- More variation, more conclusive results on

field scales, too much of same thing, good for beginners need for an advance type of program.

- I thought your speakers were very knowledgeable and interesting.
- I would like the bear pits to be spread out. You cannot attend enough topics.
- Excellent. Probably one of the best trade shows I

have attended. The seminars were good and informative.

- Best organized banquet I was ever at.
- More direct experience by farmers who have started zero till and their pros and cons, rather than sit and look at graphs and numbers all day.
- I'm more interested in direct seeding now.



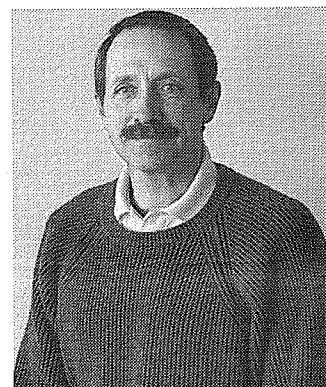
85 Exhibitors packed the Trade Show at SSA's Lloydminster workshop with the latest in direct seeding technology. Photo By Lorne McClinton

Learn To Direct Seed At Schools

By Bob Linnell, SSA
Soil Conservationist

You would think that you would be past school once you achieved adult status, but in the wacky world of farming, a lot of things change and we have to change with them; thus the reason to "go back to school" to learn about the newest techniques and methods of farm management involved in Direct Seeding.

For the beneficial reasons of such things as large savings of fuel, time, labour, and equipment along with moisture



Bob Linnell
SSCA Soil Conservationist

conservation and enhancement of wildlife habitat, farmers are taking a serious look at how they

go about achieving a better bottom line on their farming operations. The response to these day long schools has been very encouraging over the past two and a half years that the SSA has been instructing them. This is supported by other large related events such as the SSA direct seeding workshops at annual meeting time and the summer interest in the Direct Seeding Field Days where farmers can see the practical application of these techniques and machines at work.

Farmers seem to enjoy sharing their experiences in a relatively unexplored field and learn the basics of direct seeding through seeding systems, fertility management, rotations as a method of reducing disease, residues, and prevention of herbicide resistance and perhaps the most important factor of direct seed; the seeding methods and how they achieve good seed to soil contact under somewhat intensive cropping conditions.

Most machinery and supply businesses around the province also take an active part in the schools and learn at the same time as their customer. These schools have brought the farming community together faster than any other thing in the farm scene in the past two or three years, and continue to be a great refresher in the general art of practical and precision farming. They are also a lot of fun and should not be missed in your winter meeting schedule.

A Crop for the Future?

Fields of Cannabis may soon be sprouting across Saskatchewan. Federal Health Minister Diane Marleau announced in March that Canada is moving to decriminalize the growing of cannabis, or hemp, for commercial purposes. With the legalization of commercial hemp production, Canada joins a growing list of European Countries, including France and Spain.

In a letter to the Quebec anti-prohibitionist league Ms. Marleau said "once parliament has approved the law, my department will have the authority to put in place licences for the growing of cannabis, depending on the level of "THC". THC is the Hallucinogenic agent in cannabis.

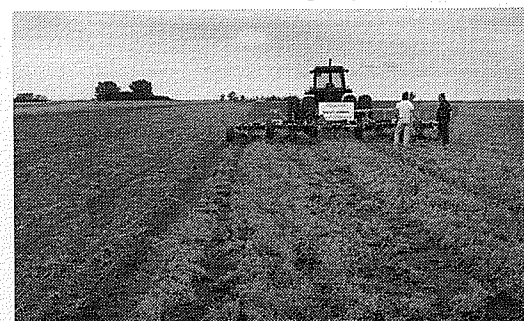
Hemp is used in the manufacture of rope and paper. Its described as a remarkable plant that produces a strong and high quality tissue and produces a lot of biomass. The cannabis family, which includes the marijuana producing varieties, has been banned under the narcotic control act for most of the past century.

"Cannabis has a lot of potential from a soil conservation point of view, says John Kiss, SSA Executive Manager, Growing hemp for paper production will save thousands of poplar trees and has potential as a cash crop grown on marginal land. Hemp also could be used for annual shelterbelts."

Slide Contest Winners

Every year it seems to become harder to pick the winners in the SSA Slide Contest. Thank you to everyone who took the time to enter the contest.

Soil Conservation Category



1st Eric Johnson, North Battleford

2nd Ron Thompson, Indian Head

3rd Phyllis Olynyk, Canora

Soil Degradation Category

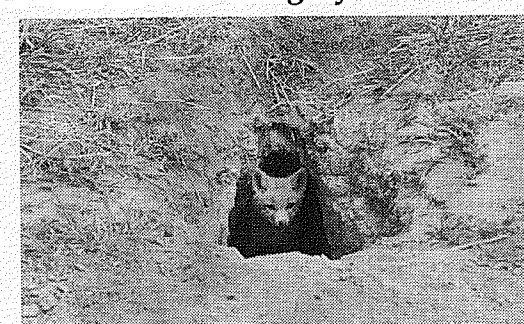


1st Phyllis Olynyk, Canora

2nd Harold Amundson, North Battleford

3rd Eric Johnson, North Battleford

Wildlife Habitat Category



1st Eric Johnson, North Battleford

2nd Ron Thompson, Indian Head

3rd Eric Johnson, Indian Head

Conference Prize Winners

SSCA WINNERS

Fly-In Fishing Trip from SSA & Foster Lake Lodge
winner - John Warrington, Mervin, Sask.

Houseboat Holiday Package from SSA & Lakeside Marina Service
winner - David Schmidt, St. Walburg

Binoculars
winner - Mike Leppa, Macrorie, Sask.

\$100 cash company draw
winner - Rolande Larouche, Chauvin, Sask

Thanks to Foster Lake Lodge and Lakeside Marina Service for their contributions.

OTHER PRIZES

Westco
1 tonne Fertilizer - Barry Bradley
Jacket - Jim Etter
Travel Alarm - Bill Meyer

Ducks Unlimited
Decoy - Don Sapsford, Perdue

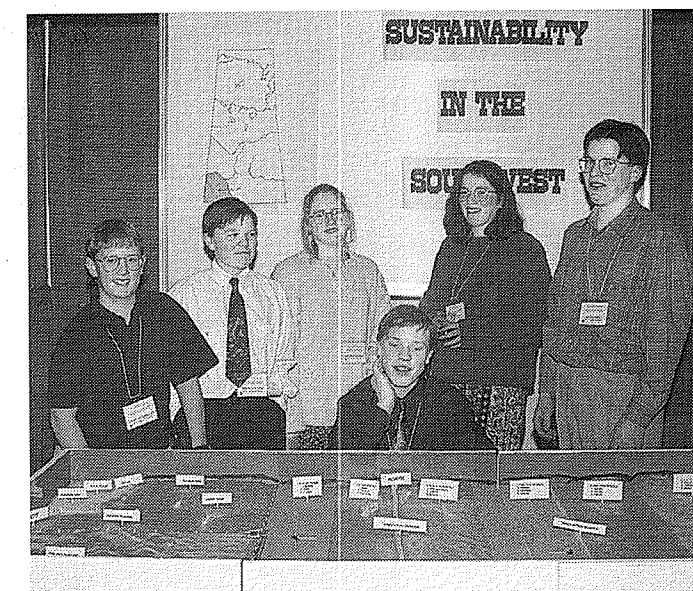
Dupont
1 container Refine Extra, Ally, Assure or Muster - Duane Almond, Lloydminster

CIBA Geigy
40 acres Amber
Herbicide - Maurice Nunweiler,

Monsanto Shuttle of Roundup or Rustler
- Trent Ilott, Eston



McClurg High, Wilkie, Sask., fifth place winners in the Student Environmental Challenge.



Gull Lake High School, Gull Lake, Sask., second place winners in the Student Environmental Challenge.



Ridgedale High School, Ridgedale, Sask., fourth place winners in the Student Environmental Challenge.

Students Design Sustainable Farms

By Juanita Polegi
SSCA Soil
Conservationist

A skit involving "Little Rich Soils" and his "dad", "Robbin' Soils", a homemade video and discussions on the merits of diversity were just some of the ways the participants in the Student Environmental Challenge made their cases for sustainable farming.

Students from five high schools, including Gull Lake; Lloydminster Comprehensive; Ridgedale; Bedford Road Collegiate, Saskatoon; and McClurg High, Wilkie worked at designing sustainable farms for their own areas of the province. In addition to their oral presentations, each school designed a table-top sized sustainable farm. These displays created a great deal of interest among the producers at the meeting and enabled the judges to visit and question the students more thoroughly on their ideas about sustainable farming.

Following the presentations and visits to the display, the panel of three judges had to place the five schools. This proved to be a very difficult task for the judges as they found all the students were well prepared and well informed.

After much discussion, the judges agreed to the following placings:

First prize was awarded to Bedford Road. The school received \$300 from Agland Implements in Lloydminster and a framed print from Wildlife Habitat Canada.

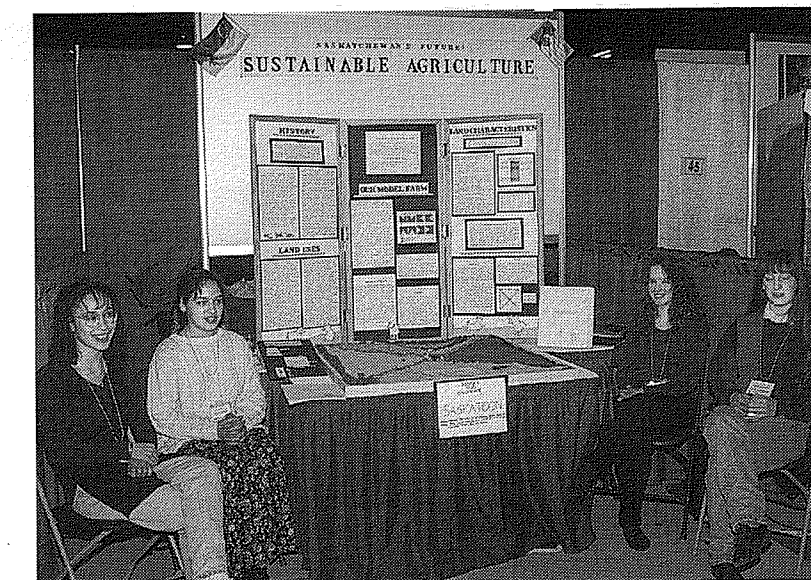
Second place went to Gull Lake. For their efforts, the Gull Lake School received \$200 from Nelson Lumber Co. Ltd. and a framed print from Ducks Unlimited.

The local hometown favourite, the Lloydminster Comprehensive High School was awarded third place receiving \$150 from the SSA and a framed print from Wildlife Habitat Canada.

Ridgedale was selected for fourth place and the school received \$100 from the SSA and a print from the Fish & Wildlife Development Fund.

McClurg High from Wilkie received \$50 from Husky Oil, posters from the Sask. Wetlands Conservation Corporation and a book from Nature Saskatchewan.

The SSA would like to thank the students and teachers for participating in the Student Environmental Challenge; the judges for working so hard; and the sponsors for their interest in this worthwhile event.



Bedford Road Collegiate, Saskatoon, Sask., first place winners in the Student Environmental Challenge.



Lloydminster Comprehensive High School, Lloydminster, Sask., third place winners in the Student Environmental Challenge.

SASKATCHEWAN

1995 Direct Seeding Workshop: A Systems Approach

SASKATCHEWAN SOIL CONSERVATION ASSOCIATION

February 14 and 15, 1995
Lloydminster Exhibition Grounds
Lloydminster, Saskatchewan

TOPICS

- | | |
|---|--------------------------|
| Direct Seeding Management Systems | Weed Control |
| Direct Seeding Crop Establishment | Future Of Direct Seeding |
| Reports On Field Scale Applied Research | Soil Improvement |

AVOID DISAPPOINTMENT REGISTER EARLY

NAME: _____

ADDRESS: _____

POSTAL CODE _____ PHONE _____

Workshop Pre-Registration before February 1, 1995:
Single & Proceedings \$60 Husband & Wife \$90 Total Amount Enclosed _____
Please make cheques payable to Saskatchewan Soil Conservation Association



Mail to: Direct Seeding Workshop
Saskatchewan Soil Conservation Association
Box 1360 Indian Head, Sask.
SOG 2KO Phone: (306) 695 - 4233

SASKATCHEWAN SOIL CONSERVATION ASSOCIATION

Monsanto

With Support From
Prairie Farm Rehabilitation Association (PFRA)
Saskatchewan Agriculture and Food (SDAF)

TransAlta
Utilities Corporation

Prairie Steward...

Conserving the Land Resource

The Newsletter of the Saskatchewan Soil Conservation Association Inc.

Summer Issue No. 12, 1994



SASKATCHEWAN
SOIL CONSERVATION
ASSOCIATION

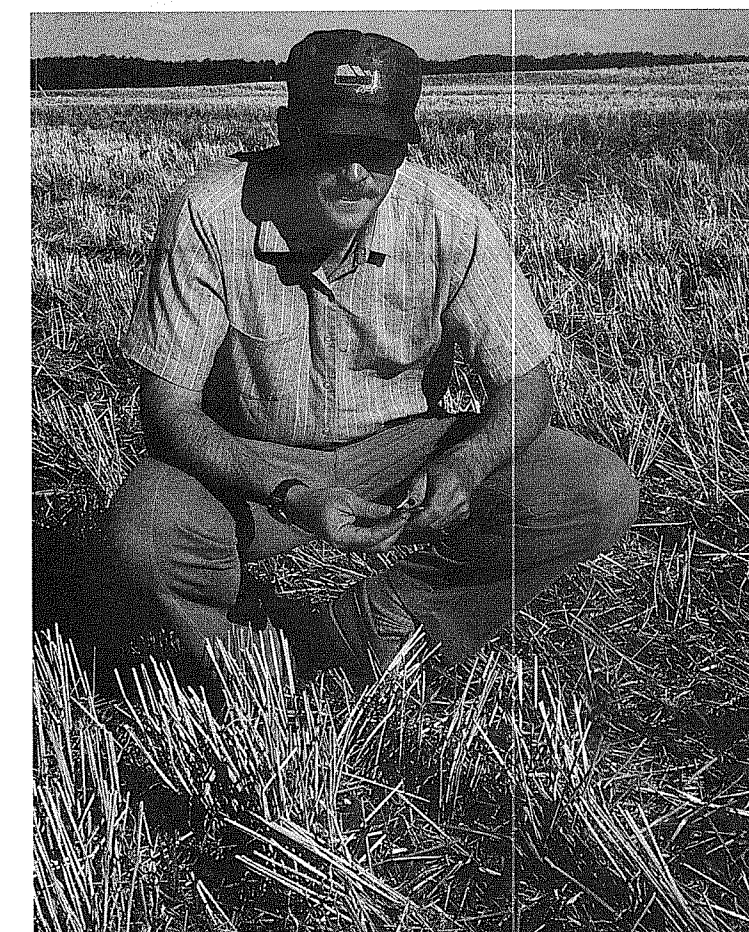
SSCA LEAVES PORT ON NEW VOYAGE

By Doug McKell, SSCA Executive Manager

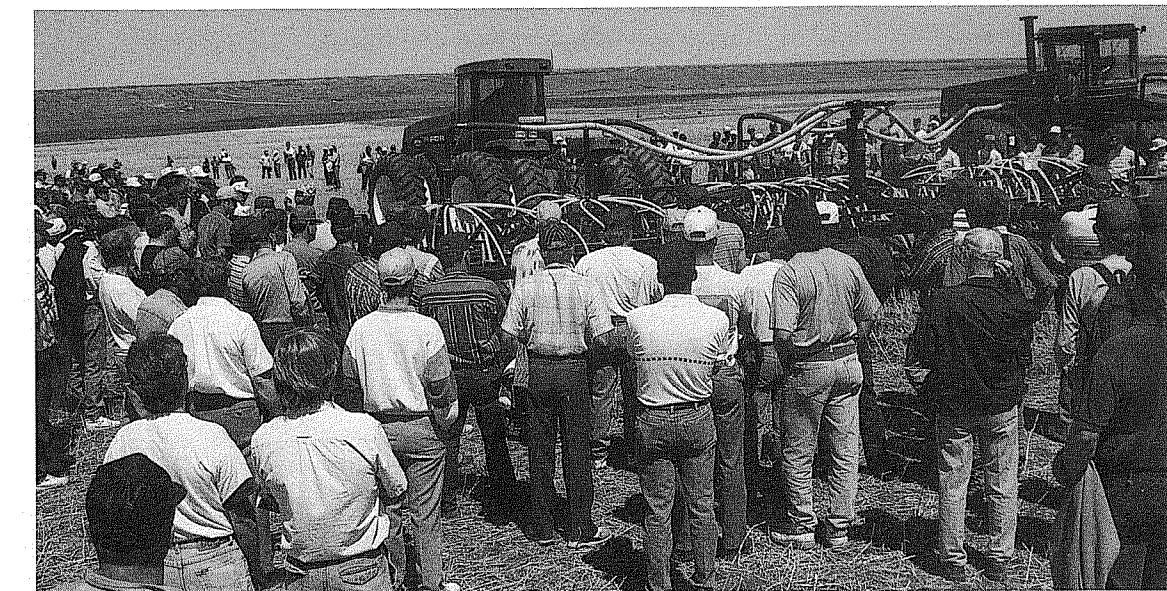
I now know what it must feel like for a captain to take over command of a new vessel and sail out into relatively uncharted waters. Fortunately the good ship SSCA has been left to me by her former captain in great shape. Her hull is strong in the form of our board of directors; Her navigation equipment accurate in the form of our board executive; and her holds full having been well stocked by our members and our financial backers. The crew is experienced, respected by their peers and willing to accept new challenges.

We have new backing from Monsanto Canada Inc., TransAlta Utilities and our Green Plan partners; new quarters at the experimental farm, Indian Head; a few new crew members

Continued "SSCA Leaves Port ..." Page Two



Doug McKell, SSCA Executive Manager



Over 1000 farmers attended the SSCA Direct Seeding Field Day

Field Day A Success In Spite Of The Rain

By Blair McClinton
SSCA Assistant Manager

Rain! That was what the SSCA field day organizers and participants found on the morning of June 21. By the time, the rain stopped nearly 0.25 inches had fallen. While the rain slowed us down, it did not stop the field day. The demonstrations were able to start at noon. In spite of the rain delay, over 1000 farmers attended the field day. They all came to see the latest in soil conservation and direct seeding equipment.

This year there were two separate direct seeding demonstration areas on site. In the main seeding area, the 12 seeders which seeded plots of canola, peas and wheat in early May, were on

hand to demonstrate their ability to direct seed into standing stubble. In the second seeding area there were demonstrations of the entries in the farmer modified contest and commercial modified seeding equipment. The two seeding areas, with a total of 21 different seeders, were the most popular demonstrations as people crowded around equipment jockeying for a better view.

A unique feature of the SSCA field day were the May seeded plots of canola, peas and wheat. Twelve commercially available seeders seeded these plots to provide a comparison of crop establishment for the field day. These plots gave producers the opportunity to not only see the seeders working on that day but also see the

results from each seeder a month after a crop was seeded. Dr. Guy Lafond from the Indian Head Experimental Farm, gave a guided tour of the May seeded plots to around 150 interested farmers. Many other farmers viewed these plots at their own leisure. Anyone interested in looking at these plots, the field site is 19 miles north of Regina along highway #6.

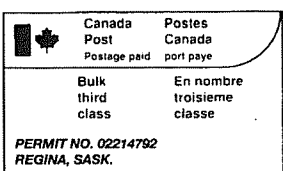
The residue management demos were also well attended. Farmers were very interested in how the residue management equipment would work in field conditions. Organizers unrolled bales of unthreshed wheat to simulate harvest conditions. Each combine made several "Continued Field Day A Success..." Page Seven

Fast Facts On Soil Conservation

Source: Statistics Canada and various agricultural factsheets

- Saskatchewan has 40% of total Canadian cropland. It also has 72% of the national summerfallow acreage..
- Bare soil can begin to blow with as little wind as 30 kph.
- As of 1987, an estimated 5 million acres were affected by salinity on the prairies (MB, SK, AB)
- The effects of salinity are estimated to be increasing at a rate of up to 10% per year.

- Plastic mulches can provide effective weed control for up to five years in newly established shelterbelts.
- At least five tonnes of topsoil per acre are lost when you can see soil blowing.
- It took prairie soils some 10000 years to form and build a reserve of organic matter, yet in less than 100 years of farming nearly half of the original organic matter content has been lost
- According to a PFRA study, it is more important to weed the area closest to the shelterbelt trees than to cultivate alongside the tree rows.



In This Issue

- SSCA Leaves On New Voyage.....p. 1 - 2
- SSCA Field Day June 21.....p. 1, 6, 7
- Indian Head Field Day.....p. 3
- Designing Crop Rotations.....p. 4
- CLC News.....p. 10

ASSOCIATION INFORMATION



Dean Smith
SSCA President

President's Message

By the time this issue of the Prairie Steward hits your mailbox we will have put in a couple of months at our new home at the Indian Head experimental farm. This move marks a new milestone in our history. We have in the past operated entirely on funding from our membership and the Agriculture Development Fund (ADF). This partnership has allowed us to develop as an organization to the point where we are now recognized as a strong voice in the prairie agriculture scene as well as in soil conservation circles. We are in fact one of only a few true grassroots farmer organizations left on the prairies with no ties to political parties, bureaucracy or industry. Our association is respected not only on the prairies but also in other parts of North America and abroad. This is a good indication of past leadership on behalf of our directors and hard work on behalf of our qualified staff.

Our accomplishments have been many. When it comes to soil conservation information the SSCA is the place to get it. Our direct seeding field days have for the past couple of years been tremendously successful. This years event on June 21 attracted over one thousand people on a day where at 7:00 am you couldn't have gotten near the plots for mud. Not to be deterred we plowed ahead and adjusted to the conditions and provided all those who

attended with a show that was described by some as "the best direct seeding day they had ever seen".

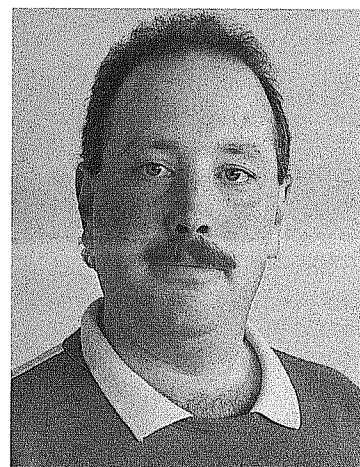
Plans are well underway for the 95 conference titled "Direct Seeding - A Systems Approach". This years conference will once again be held at the Lloydminster Exhibition grounds on February 14th and 15th 1995. We decided to go back to Lloydminster as this is one of the few places in Sask. where we can accommodate the numbers of participants and also host the trade show. If you are thinking about going to this years conference make sure you plan ahead for accommodations and register early. Last year we were sold out and people had to scramble for last minute accommodations. If you want more information on how to get involved with this years conference please call our office at Indian Head and our staff can help you get set up.

Other events including introductory and advanced courses in direct seeding will be offered later this year and ongoing into 95. Keep up with all our events through your membership and reading the Prairie Steward.

Although we take off now on a slightly different road with our new corporate partners and a new focus on direct seeding; our ultimate goal is to provide the best soil conservation information to our members. At the core of the SSCA is a large body of committed soil conservation minded farmer members. It will be to these people that we will continue to provide the best service that we can offer. We will be working hard in the new year to build on our membership offering improved services and meeting the needs of farmers who are soil conservation minded.

You as an SSCA member have a role to play in our organization as well. Your voice is a true grassroots farmer message that is heard by governments and industry alike. Through your membership you can show these people that soil degradation and conservation issues are important to all of us. So When you renew your SSCA membership you can feel confident that someone is listening to you. Talk to your neighbors as well about soil

SSCA Undergoes A Major Staffing Change



By Blair McClinton
SSCA Assistant Manager

The theme of this newsletter is change. Over the past few months we have relocated our central office to the Indian Head Experimental Farm, we started a new direct seeding extension project and there have been some major staff changes. John Kiss, Carolyn Fife, Crystal Dash and Lorne McClinton are no longer with SSCA. We wish them all the best with their future endeavors.

SSCA's central office has three new faces to pick up where John, Carolyn, Crystal and Lorne left off. Doug

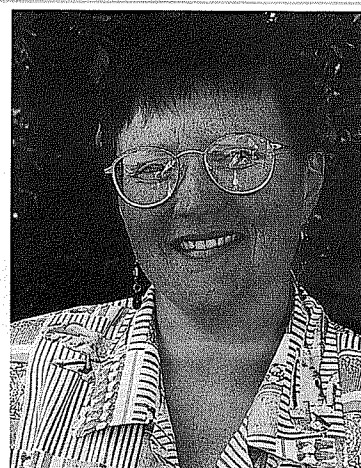
McKell is the SSCA's new executive manger. Doug brings a diverse background with experience with agri-business, and both the federal and provincial agriculture departments. Claire Neill is SSCA's new part-time office manager. Claire is from Indian Head she provides office services to a couple of local

businesses. I moved to Indian Head in July to become SSCA's assistant manager. While I will miss the northwest region, I am looking forward to new challenges in Indian Head.

There is one new person in the regions. Eric Oliver is the new soil conservationist for the southwest region based out of Swift Current. Eric

may be familiar to many people in the southwest from his work with the Wheatlands Conservation group. The northwest and northeast regions are vacant at present, but we are planning to fill these positions as soon as possible.

You will have the opportunity to meet Doug, Claire and Eric in the months ahead.



Claire Neill
SSCA Office Manager

SSCA Leaves Port On New Voyage - Continued From Page One

whom you will meet later in this issue; and a new mission in promoting direct seeding to Saskatchewan farmers.

Our mission for the next three years will be to go forth and spread the good news about direct seeding. The SSCA has always promoted direct seeding as a sustainable soil conservation practice. However where before we had other goals on which to focus we now look solely out to the direct seeding horizon.

It was to a large degree our new direct seeding mandate which led us to relocate to the beautiful grounds of the Indian Head experimental farm. This farm is arguably home to the best direct seeding research in Canada. Drs. Lafond and Derksen have for the past several years been cranking out volumes of data lending credibility to the practice of direct seeding. We have a good fit. The Indian Head experiments will create useful data providing our extension staff with the tools to build strong bonds with farmers across Saskatchewan eager for information on how to make direct seeding work on their farms.

The move to Indian Head on July 4th was completed in quick fashion. We closed the office on June 29th to box up our files

and equipment. On June 30th we were up and almost running at Indian Head. The move was so quick that it may have caught a few of you off guard. Hopefully by now you will have figured out where we are and how to contact us.

Upon arrival at Indian Head we were welcomed with open arms by the experimental farm staff. They are as happy to have us sharing this picturesque spot as we are to be here. Already we have opened the lines of communication and have been sharing ideas on direct seeding research, extension plans and thoughts to future programs. I'm sure we will not regret the move to this place.

Finally I must acknowledge the hard work and dedication to the SSCA by the former captain and crew who are departing for other shores. Without the diligence of John Kiss and the devotion of Carolyn Fife, Crystal Dash and all other former staff this ship may have foundered on the nearest reef. I can assure you that the good ship SSCA has been in good hands and it will be quite a challenge but also an honor and my privilege to sail her on our next voyage.

1994-95 SSCA BOARD OF DIRECTORS

Dean Smith (Success) President
Marvin Fenrich (Wilkie) President-Elect
Gerry Willether (Indian Head) Past President
Lorne Crosson (Limerick) S.W. Director
Ken Sapsford (Perdue) W.C. Director
Dwayne Mitchell (Battleford) N.W. Director
Paul Carles (Radville) S.E. Director

Bernie Niedzwiedz (Wynyard) E.C. Director
Ed Beauchesne (Albertville) N.E. Director
Lee Moats (Regina) Director-At-Large
Brett Filson (Regina) Director-At-Large

Disclaimer

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

SOIL CONSERVATIONISTS (located in Rural Service Centers)

Garth Patterson, Saskatoon (306) 933-5287
Juanita Polegi, Yorkton (306) 786-1526
Bob Linnell, Weyburn (306) 848-2381
Eric Oliver, Swift Current (306) 778-8284

HEAD OFFICE

Box 1360
Indian Head, SK
S0G 2K0
(306) 695-4233
Doug McKell, Executive Manager
Blair McClinton, Assistant Manager
Claire Neill, Office Manager

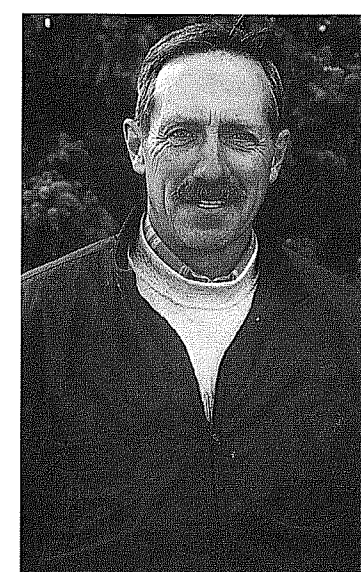
The Prairie Steward is published three times a year by the Saskatchewan Soil Conservation Association with support from:

Monsanto

Prairie Farm Rehabilitation Association (PFRA)
Saskatchewan Agriculture and Food (SDAF)

**TransAlta
Utilities Corporation**

Residue Management - The First and Still Most Important



By Bob Linnell
SSCA Soil Conservationist

Direct seeding requires good knowledge of management techniques involving residue, weed control, rotations, fertility, and good seed placement for proper seed to soil contact. But, if you don't get your head around the systems approach to management, you are putting yourself at a great disadvantage. Early innovators in the direct seeding business learned that residue management was and probably still is the most important factor in the success formula.

This summer, the crops look great as they are growing rapidly in near perfect conditions in many parts of the province, while other parts are suffering under excess moisture or dry periods.

The fall bodes well for a large harvest of diverse crop commodities, but the real problem for many will be how to deal with the residue. Lots of unwise people burn what they don't know how to use while others bale for their livestock resources. The decision then comes down to one of bale, burn or spread. Spread is the best answer but how is still the question for many farmers who have not seen the many chaff and straw spreaders available on the market today.

Yes, I said chaff, because that is the one aspect of spreading many do not believe is a problem. It is important to set the combine properly to start with before you even think about spreading. You have gone to all the trouble to grow the crop to the best of your ability or luck, now you owe it to yourself to harvest and handle it to the same degree. Chaff, as I have mentioned, can pose problems for spring seeding and once placed on the ground, it cannot be moved. Straw, under the right conditions (length, dryness and type), may be capable of being moved around by harrows, heavy harrows or forage harvesters.

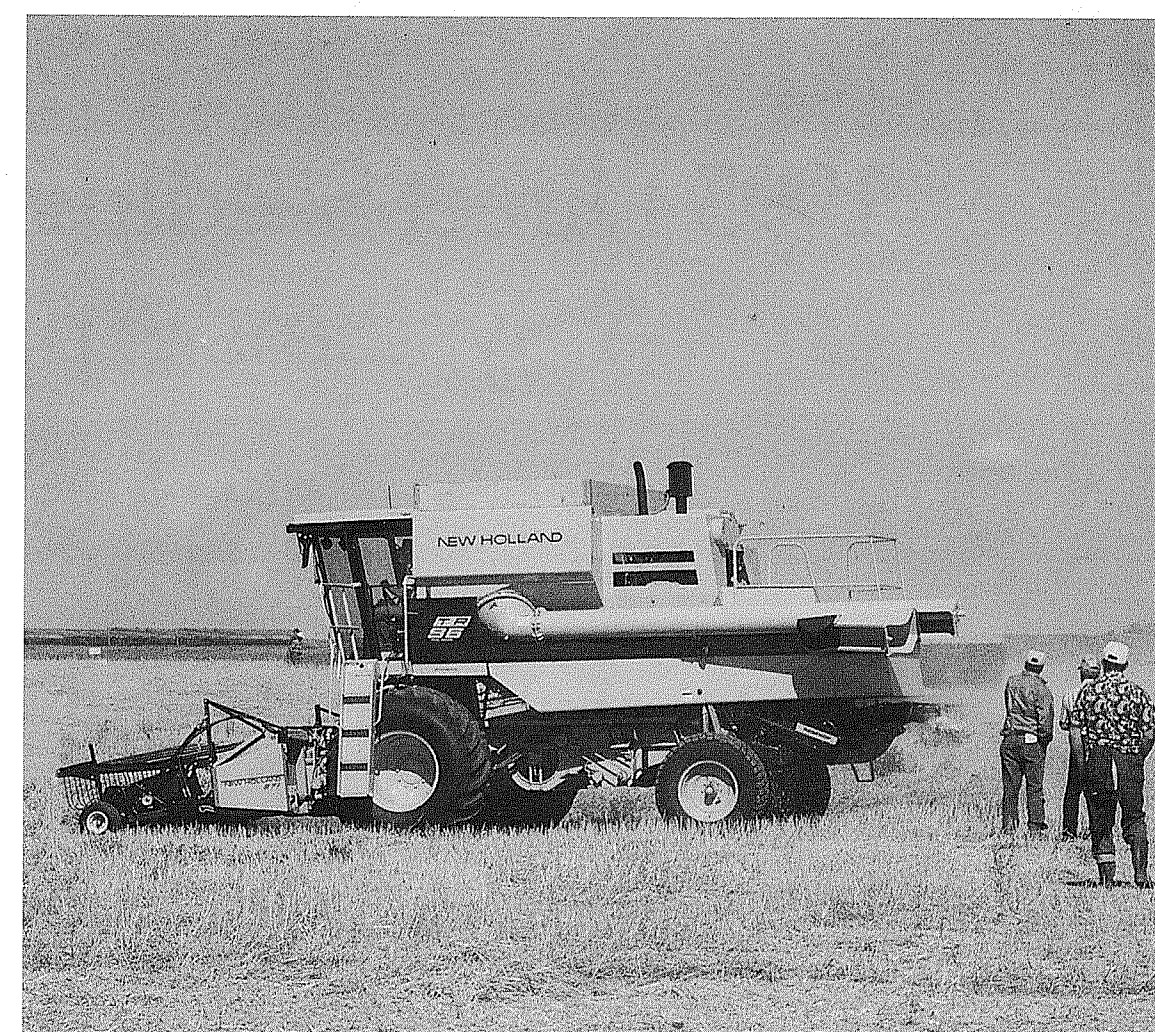
However, most times it is best to slow down the com-

bine, cut lower and spread properly right from the back of the combine for best results.

Delayed harvest because of green strips is only one problem caused by poor chaff spreading; others include increased weed populations, disease problems, and many unwanted and often expensive volunteers from the previous year.

Maybe it's Time to look into the purchase of a chaff spreader to improve your residue handling to minimize or eliminate the problems caused by the improper or incomplete spread of chaff from that big crop coming this fall and just maybe you might have an easier time of direct seeding next spring, while your neighbours curse, burn, or fight with their seeder for clearance.

At a cost ranging from \$500 to \$4000, there is a wide range of types and availability. Look into it and you just could be on the road to success in direct seeding.



Farmers watch the residue management demonstrations at the SSCA Direct Seeding Field Day on June 21st 19 miles north of Regina. -Lorne McClinton Photo

SSCA MEMBERSHIP

Full Membership - (Farmers)	1 year	\$50.00	_____
	3 years	\$100.00	_____
Associate Membership - (Non Farmers)	1 year	\$50.00	_____
	3 years	\$100.00	_____
Supporting Membership - (Institutions)	1 year	\$500.00	_____
	3 years	\$1000.00	_____

Name _____

Address _____

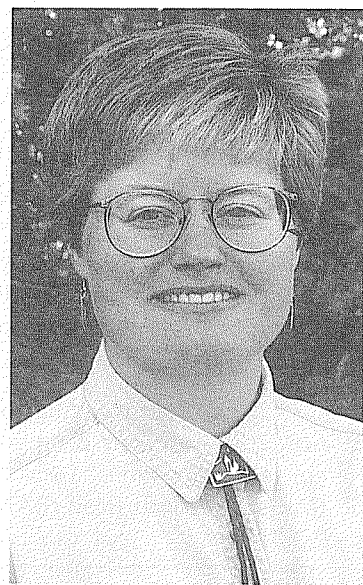
Postal Code _____ Telephone _____

SEC _____ TWP _____ RGE _____ W. of _____

(land location of home quarter for regional designation purposes)

Membership Enhancement Program:

If you are presently a member of the SSCA and wish to help the Association by recruiting new members, both you and the Association can benefit from your efforts. For every six (6) memberships sold in one year by you as a member, you will receive an additional 3 years membership as a bonus. To qualify, print your name on the applications you sell and forward the applications plus membership fees to the SSCA. Applications may be sent individually or as a group. All memberships received by the SSCA between 01 April and 31 March of each year will be counted towards this Membership Enhancement Program.



Pat Flaten
Manager CLC

Conservation Learning Centre News

1994 Shelterbelt Projects July, 1994

By Pat Flaten
Conservation Learning
Centre Manager

In the parkland region of Saskatchewan, one would hardly think it was necessary or even desirable to plant shelterbelts. The nearby forest fringe and roadside aspen bluffs convince us there are plenty of trees to shelter the yards and fields of our area. Not like the southern prairies where the wind freely blows.

However, some of us think differently. It is hard to deny the fact that the wind was unusually strong this spring, and even in the parkland area there has been a significant amount of topsoil in the air at times. Of course, this may have been an unusual spring, but some of the cultivated fields in this region are unusually bare of other forms of protection during many spring seasons. If there are no shelterbelts to protect our wind erosion prone fields, is there stubble there to stabilize the soil? If so, great. If not, let's think about trees again.

It seems that one either loves or hates shelterbelts. Some people diligently plant miles of them in order to protect their fields. Others plant them for wildlife benefits or aesthetic reasons. Still others have planted multi-row belts for the potential future cash value they may bring. Others limit their tree planting to yard shelterbelts so they can enjoy the quiet amidst the summer (and winter) breezes.

At the Conservation Learning Centre, we have decided that shelterbelts should be part of the demonstrations and research on conservation practices.

The Prairie Farm Rehabilitation Administration (PFRA) staff have started a large demonstration at the Centre. This spring, they planted two new field shelterbelts: one with green ash and the other with white spruce. They have also enhanced an existing shelterbelt for wildlife benefits, added to the existing yard shelterbelt and established a species garden for the public to view.

With the cooperation of the Canadian Forest Service, the PFRA is also getting a good start on the establishment of a three acre woodlot as a demonstration. Talk about long term planning! The woodlot includes Scots Pine, Jack Pine, White Spruce, Siberian Larch, Poplar, and fruit-bearing shrubs.

Most of the trees and shrubs have done very well this summer and should really start to show up in the next couple of years. All of these projects are available for the public to view at the Conservation Learning Centre near Prince Albert.



Top Students Win SSCA Memberships

By Garth Patterson
SSCA Soil Conservationist

Congratulations to Terri Gagnon of Shaunavon and Trevor Waite of Cabri for winning three year memberships in the SSCA! Terri and Trevor wrote the top

papers in their Soil Conservation Class taught by Prof. Mike Grevers in the School of Agriculture at the U. of S. This is the third year that the SSCA has awarded memberships to the top students in Prof. Grever's class.

Terri's paper discussed soil organic matter and methods of maintaining it. "Organic matter binds tiny soil particles together in larger aggregates that are more erosion resistant than single grain particles. A soil with good

aggregate structure allows better seedling emergence and root growth. Organic matter is also the main source and storehouse for nitrogen and serves as food for organisms in the soil."

"The breaking of prairie sod resulted in a flush of oxygen entering the soil and the decomposition of organic matter was fanned into a virtual flame. Keys to maintaining organic matter:

1. return large amounts of plant residue
2. cultivate and harrow as little as possible
3. balance the residues with extra nitrogen
4. prevent erosion"

"It has become a goal of my husband and myself to pass on land which is in better shape than what has been handed to us, so that our children can continue and prosper on the farm."

Trevor described his experiences with wind erosion and reviewed methods of reducing it. "Wind erosion has

occurred for all of time, it is occurring now and will continue in the future. Every time man does something with the soil a very delicate system is disrupted. History has shown that civilizations have risen and fallen based on their ability to produce food, but strangely our land is often mistreated due short term economics and an unwillingness to change old habits."

"Of all the methods that help control erosion, minimum tillage holds the most promise. With this minimum disturbance residue is left standing to slow down the wind and secure the soil."

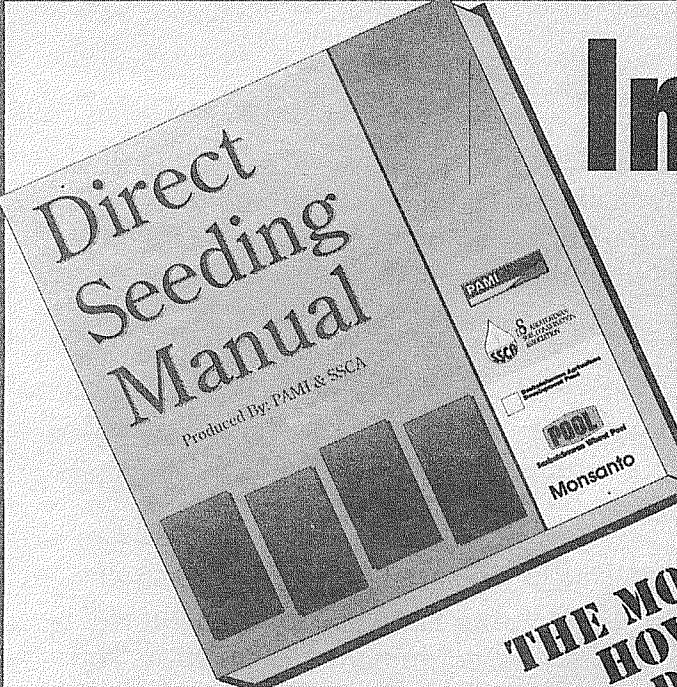
"Two possible government approaches, legislation and payouts, are not the solution, in my opinion. The only way erosion can be addressed effectively is by education. People have to fully understand the problem and its long term effects before they can ever address it effectively."

Welcome to the SSCA, Terri and Trevor!

REQUEST FOR SUBMISSIONS

Do you have ideas or comments on the conservation of our land resource? We would like to print them in future issues of the Prairie Steward. Pertinent photographs would be appreciated. Please forward to:

The Editor
Prairie Steward
c/o SSCA
Box 1360
Indian Head SK S0G 2K0



Increase Profits

THE MOST UP-TO-DATE HOW-TO MANUAL ON DIRECT SEEDING.

1994 UPDATE
Farmer Modifications
Real Economics

Contains 160 full color pages in a 3 ring binder designed to provide you with all the information you need to Increase Your Profits using either minimum or zero till systems.

Get detailed information on:

- Crop Rotation
- Seeding Equipment
- Residue Management
- Economics
- Weed Control
- Seeding Principles
- Soil Fertility
- Farmer Modifications

Direct Seeding Manual
Call Paulette at...
1-800-567-7264
8AM To 5PM Mon. Thru Fri. (Sask)
\$29.99 GST Included
Visa or Mastercard

Monsanto
Monsanto
Monsanto

Employees of the Month

Former executive manager, John Kiss and new assistant manager, Blair McClinton watch helplessly as a straw bale burns on the field day site. Due to their diligent efforts, they were able to prevent the fire from spreading across the field.

Garth Patterson Photo



Indian Head Zero Till Field Day

By Blair McClinton
SSCA Assistant Manager

Over 300 farmers attended the Indian Head zero tillage field days over July 26 and 27. The field days featured research, on-farm demonstrations and presentations from researchers from Ag. Canada and the University of Saskatchewan, prominent zero till farmers in the Indian Head area, and the Indian Head Agricultural Research Foundation (IHARF). Organizers divided the field day into two sections, research and on-farm demonstrations.

The research focus of the Indian Head Experimental Farm is zero tillage systems. Guy Lafond focused on crop water use, soil temperature and crop development in different tillage systems. Dr. Lafond has found that zero

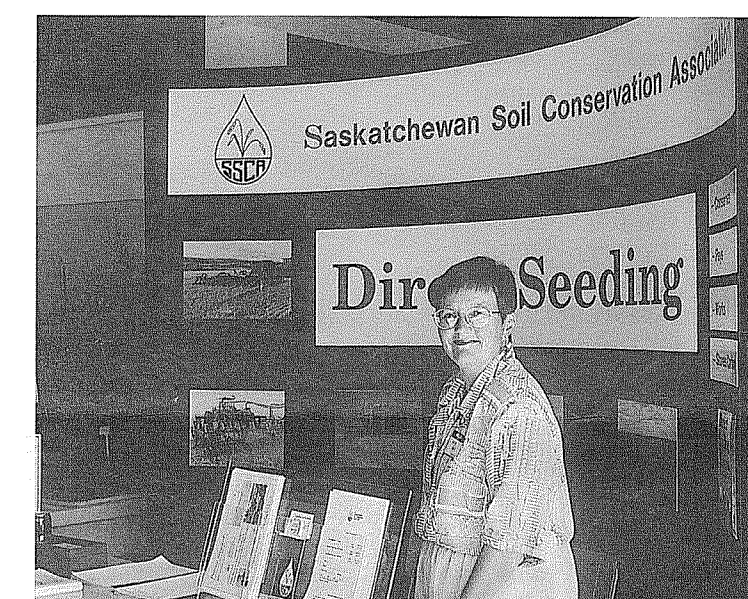
till increases crop yields because of higher soil moisture levels. The main differences in soil moisture were found in the top 24 inches of the soil where the majority of plant roots are found.

Doug Derksen focused on the impact of different management practices on weed populations. Dr. Derksen pointed out the importance of diverse crop rotations and varying seeding dates as weed control methods. He has also found that certain weeds like wild oats and prickly lettuce are associated with zero tillage while green foxtail and stinkweed are associated with conventional tillage.

Jim Hunter is evaluating different control methods for volunteer "Roundup-Ready"

canola in zero till systems. The volunteers of this crop could cause some complications with the pre-seeding weed control. He has found that he needed to tank-mix 10 oz. of 2,4-D amine with Roundup to achieve adequate control of this volunteer crop at the two leaf stage. Dr. Hunter is also working on Persian darnel control in cereals. Karen Bailey and Bruce Gossen gave presentations on disease management in conservation tillage systems.

The other half of the field day toured on-farm demonstrations in the Indian Head area. Jeff Schoenau from the U. of S. has been doing research on the changes in soil quality on land on and around Jim Halford's farm. He concluded that soil



New SSCA Office Manager, Claire Neill, staffs the SSCA booth at the Indian Head Zero Till Field Day.

quality does improve over time with zero till. Even the visual differences between the soils from adjacent 16 year and eight year zero till

fields were dramatic. Dr. Schoenau also gave a presentation on using ion-exchange resin strips to assess available nutrient levels.

Charles Maule from the U. of S. demonstrated a rainfall simulator that he uses to measure water infiltration and runoff. His research has found that

there is higher water infiltration and less runoff on zero till fields than on conventionally tilled fields.

At one stop, Rick Holm presented information on the effect of water quality on herbicide performance. The tour also stopped at the Indian head Agricultural Research Foundation's (IHARF) "Deep Lake" site where there were crop rotation demonstrations and trials comparing side-banded urea to side-banded anhydrous ammonia.

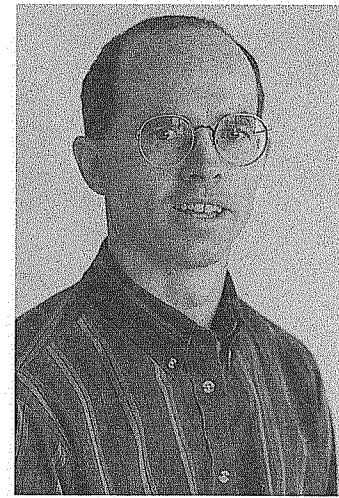
The feedback on the field day that the organizers received was very positive. Everyone seemed to be able to take something home. According to Judy McKell, extension agrologist in Indian Head, "the farmers who attended were very interested in the information presented at the field day." She concluded that "these days provided a good opportunity for farmers to discuss their on-farm experiences and to see first hand current zero till research."



Dr. Guy Lafond conducts a tour at the Indian Head Zero Till Field Day. Over 300 farmers visited the Indian Head Experimental farm for the field days over July 26 and 27.

Designing Your Crop Rotations For Direct

By Garth Patterson and Garry Meier



Garth Patterson
SSCA Soil Conservationist

INTRODUCTION

Crop rotation means growing a planned sequence of crops over a number of years. The rotation may be as simple as continuous cereals, or very complex, including cereal, broadleaf and legume crops. There is no perfect crop rotation, but a rotation that was effective in a conventional system may not perform as well under low disturbance direct seeding (LDDS). This is because LDDS leaves most crop residue on the soil surface. This can improve surface moisture, reduce soil temperatures and increase the risk of soil and stubble borne diseases. An effective crop rotation is the best way to take advantage of improved moisture while overcoming some of the problems associated with increased surface residues in LDDS.

The objective of a crop rotation should be to provide stable economic returns while ensuring the long term sustainability of the soil. In this article we will review the principles for designing sustainable crop rotations and discuss some of the strengths and weaknesses of various crop rotations.

PRINCIPLES OF CROP ROTATIONS

1. Diversity - The most important principle in a crop rotation is diversity. This includes varying the types of crops grown, the dates of seeding and the weed control program. Growing a crop on its own residue should be avoided wherever possible. Diverse crop rotations should include annuals and perennials, and both broadleaf and cereal crops to improve yield and income stability.

Crop rotations reduce disease risk and provide an opportunity to benefit

from the "rotation effect". Research has shown that a crop grown on the stubble from a different crop performs better than a crop grown on its own stubble. Agriculture Canada at the Scott Experimental Farm found that under minimum tillage wheat yields on canola stubble averaged 35 bu/ac while wheat on wheat stubble averaged 27 bu/ac. Although it is tempting to push rotations and increase the acreage of profitable crops to farm the markets, you might be more successful farming the soil.

Alternating a broadleaf crop one year and a cereal the next provides an opportunity to control grassy weeds (and volunteers) in the broadleaf crop, and broadleaf weeds (and volunteers) in the cereal crop. For example, good stinkweed control in a wheat crop may negate the need to control stinkweed in next year's canola crop. Flax diseases affect only flax, making it a useful replacement for either a cereal or a broadleaf in a rotation.

Legumes have the unique ability to incorporate nitrogen from the air into their plant tissue, with the help of the Rhizobia bacteria. This not only reduces dependence on fertilizers the year the legume is grown, but also provides nitrogen to next year's crop. Peas and lentils provide about 5 lb/ac nitrogen for every 1000 lbs of seed harvested. Well managed alfalfa provides about 25 lbs/ac of nitrogen.

2. Crop Residue and Moisture Management - Standing stubble traps snow, which usually translates into better soil moisture conditions at seeding. Excessive straw (usually from cereals) may cause seeding problems and slow soil warming. **The first step in managing straw and chaff is to put it back where you got it from.** Selecting varieties that produce less residue may also help. It may not be possible to LDDS fields without first removing some straw (fall rye and flax). Residue management problems with fall rye may soon be reduced by new semi-dwarf varieties.

Fields with less residue (flax, canola, lentil) will warm up quick and dry out first in the spring. Seed these fields first with a crop that will benefit from early seeding. Seeding into low residue fields where the surface is dry and may cause soil lumping and result in poor seed placement. Mechanical surface disturbance may be required to prevent excessive moisture loss if early seeding is not possible. Rotary harrows appear to accomplish this



Direct Seeded Peas as part of a crop rotation fix nitrogen and increase diversity.

without flattening much stubble. Fields with high residue can be seeded later, with less risk of losing soil moisture.

3. Crop Water Use - Including both short and long season crops in your LDDS rotation will improve your moisture management and weed control options. Crops extract water from the soil to their effective rooting depth. The greater the rooting depth the more soil water the crop can extract. Perennial forages extract the most water, followed by winter annuals, spring cereals and broadleaves. Any crop that is using soil moisture into September may affect next year's crop, and should be considered a long season crop. Desiccation of crops like lentils and flax can prevent them from robbing valuable moisture from next year's crop.

Alternate long and short season crops to best utilize soil moisture. For example, a Polish variety of canola seeded early, followed by fall rye or winter wheat the same year will take advantage of any available soil moisture and also compete very well with weeds. Deep rooted crops such as alfalfa and clover can access water and nutrients that have moved below the more shallow roots of most annual crops.

4. Weed Control - There are many non-chemical methods of weed control which can compliment or replace herbicides. Sanitizing field borders by mowing, tillage or chemical burnoff will help prevent weeds from moving into a field. Brome grass and scentless chamomile are examples of weeds controlled by mowing. The on-row packing utilized by LDDS creates a microclimate for the emerging crop resulting in a competitive advantage over weeds in the undisturbed soil between the seed rows. This



Crops like canola leave little residue. These fields warm up quickly in the spring and should be seeded early.

undisturbed soil between the seed rows will also have less weeds emerging from it. Fall seeded crops (winter wheat and fall rye) and perennial crops are very good competitors and offer less opportunity for annual weeds. For a complete discussion on cultural weed control refer to The 1994 Guide to Weed Control by Saskatchewan Department of Agriculture and Food.

Using the same herbicide or group of herbicides year after year encourages an increase in weeds that are resistant to that herbicide group. A sound crop rotation includes rotating herbicide groups. Post emergent products are best targeted to early seeded crops where a pre-emergent burnoff may be less effective. A pre-emergent burnoff may be the only weed control required for late seeded crops under a LDDS system. More information on this subject can also be found in the Guide to Weed Control.

CROP ROTATIONS NOT RECOMMENDED FOR DIRECT SEEDING

1. Fallow - Wheat - Wheat
2. Continuous Wheat
3. Cereal - Lentil/Pea
4. Cereal - Lentil - Pea
5. Canola - Cereal - Conservation Fallow
6. Barley - Barley - Lentil/Pea - Wheat

Strengths: - reduced risk of crop failure in dry areas (rotation 1)

- low to moderate level of management expertise required - potential for greater net returns (rotations 3, 4, 5 & 6)

- legumes may reduce dependence on nitrogen fertilizer (rotations 3, 4 & 6)

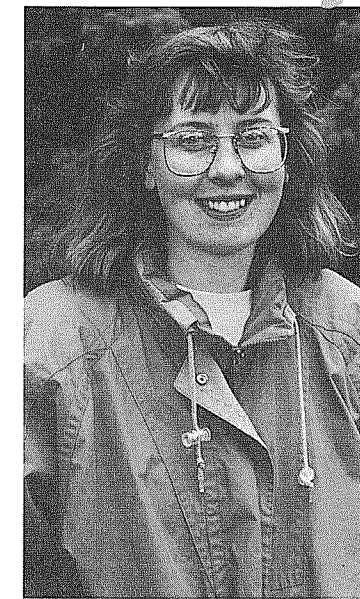
- may improve soil organic matter (rotations 3, 4 & 6)

Weaknesses: - not enough crop diversity, no fall seeded crops, and few annual or perennial broadleaf crops

- moderate to high risk of soil and stubble borne cereal diseases (rotations 3, 4 & 5)

- moderate to high risk of soil and stubble borne cereal diseases (rotations 1, 2, 3 & 6)

Dandy Dandelions



By Juanita Polegi
SSCA Soil Conservationist

"If you're in the Parkland and you have dandelions, don't throw away your cultivator shovels", says long time direct seeding practitioner Garry Meier of Ridgedale when discussing dandelion control. He adds, "Success in controlling them comes only on your lucky days".

Under cultivation, dandelion is easily controlled. It just doesn't like to be disturbed. In undisturbed situations, however, dandelions thrive.

The herbicides used and their rates are shown below. See **Figure One**.

The cost per acre for these treatments ranged from as low as \$2.35 (2,4-D Ester 600) to as high as \$15.60 (Harvest).

Herbicides were first applied October 20, 1993 to an alfalfa field coming out of production and a direct seeded field. Roy reports reasonable control of dandelion was achieved by the Roundup at 1.0 l/ac. but all other treatments provided poor control. The herbicides were re-applied May 19 to an alfalfa field heavily infested with dandelion north of Tisdale along Highway #35. SSCA Staff visited the site May 31. Those dandelions treated with Roundup (at 0.5 l/ac.) or Roundup mixtures and Refine Extra suffered the most with the main shoot of the dandelion browned off and withered. Although new, green and healthy side shoots were beginning to appear, Roy reports that their flowering was delayed relative to the dandelions receiving some of the other treatments. He cautions that, at best, only 50% control was achieved by any application.

other herbicides and herbicide mixtures should be evaluated following a postharvest (mid September) application.

When I asked Garry Meier what his experiences were with dandelions, he replied "They are a major challenge." For instance, this spring he applied 0.5 l/acre Roundup either pre-seeding or post-seeding and

achieved excellent dandelion control. But he reports that's not always the case. He says he does get good in crop (cereals and flax) control by mixing Lontrel and 4-6 oz. of MCPA ester.

Controlling dandelion is a challenge in many direct seeding systems in the Parkland. The dandelions' ability to thrive under low soil disturbance and their

inconsistent response to herbicide makes control difficult. Roy Button suggests that "Until cost effective chemical control can be achieved, tillage may be the only alternative for ridding fields of dandelions".

For more information on dandelion control, contact your soil conservationist or Roy Button (873-2693).

Chemical	Rate/acre
Banvel	120 mL
2,4-D Ester (600)	0.40 L
Banvel & 2,4-D Ester	120 mL & 0.4 L
Lontrel & MPCA	0.15 L & 0.45 L
Estoprop	0.7 L
2,4-D Amine	0.45 L
Roundup*	1.0 L
Refine Extra & 2,4-D Ester	8 g & 0.4 L
Mecaprop	2.2 L
Rustler	1.0 L
Harvest	1.0 L
Roundup + 2,4-D Amine	0.5 L + 0.45 L

* Roundup 0.5 L/ac. in Spring

Figure One

Conservation Farmers Helping Farmers

Does conservation farming look difficult? Why not talk to a farmer who has tackled the same situation that you are facing? The **Conservation Farmers Helping Farmers Directory** houses the names of SSCA members who are willing to accept phone calls about their conservation farming practices and equipment.

Interested in the kind of equipment direct seeders are using in your soil zone? Concerned about quackgrass in your minimum tillage operation? Considering shelterbelts as part of your conservation plan? Get the facts from experienced farmers.

How does it work? Simply call the SSCA Indian Head office at 695-4233 and ask to use the **Conservation Farmers Helping Farmers** service. You will be able to specify the conservation techniques, equipment and practices you have questions about. The SSCA will then search the directory and provide the names and phone numbers of any members who have experience with the conservation methods or equipment in question.

Some examples of conservation information and experience included in the directory are:

- direct seeding
- conservation equipment
- conservation tillage
- barrier strips
- rotational grazing
- alternate crops
- weed control
- residue management
- chemfallow, shelterbelts
- forage establishment
- soil salinity management
- wildlife habitat enhancement
- and other conservation farming experiences.

This is an ideal opportunity for farmers to take advantage of a large and diverse source of practical knowledge...other farmers!

Scentsless Chamomile

By Juanita Polegi
SSCA Soil Conservationist

In the reference text "Budd's Flora of the Canadian Prairie Provinces", scentsless chamomile is described as "an introduced plant found occasionally; in waste places and roadsides; across the Prairie Provinces and becoming more common in Parklands". For those of us living in the Parklands, what an understatement! And no longer is scentsless chamomile confining itself to roadsides and waste places. Under direct seeding systems, scentsless chamomile is expected to thrive.

There are a few reasons for this plant's success. The first is its ability to produce seed. In a 1988 Sask. Agriculture press release, Dr. Garry Bowes indicated one square meter of scentsless chamomile can produce 1.2 million seeds! That's a lot of seeds!

Scentsless chamomile has an unique life cycle. It can occur as summer annuals, winter annuals, biennials or perennials. In any group of scentsless chamomile plants, various life cycles can occur.

Finally, scentsless chamomile plants have been blessed with dense, fibrous root

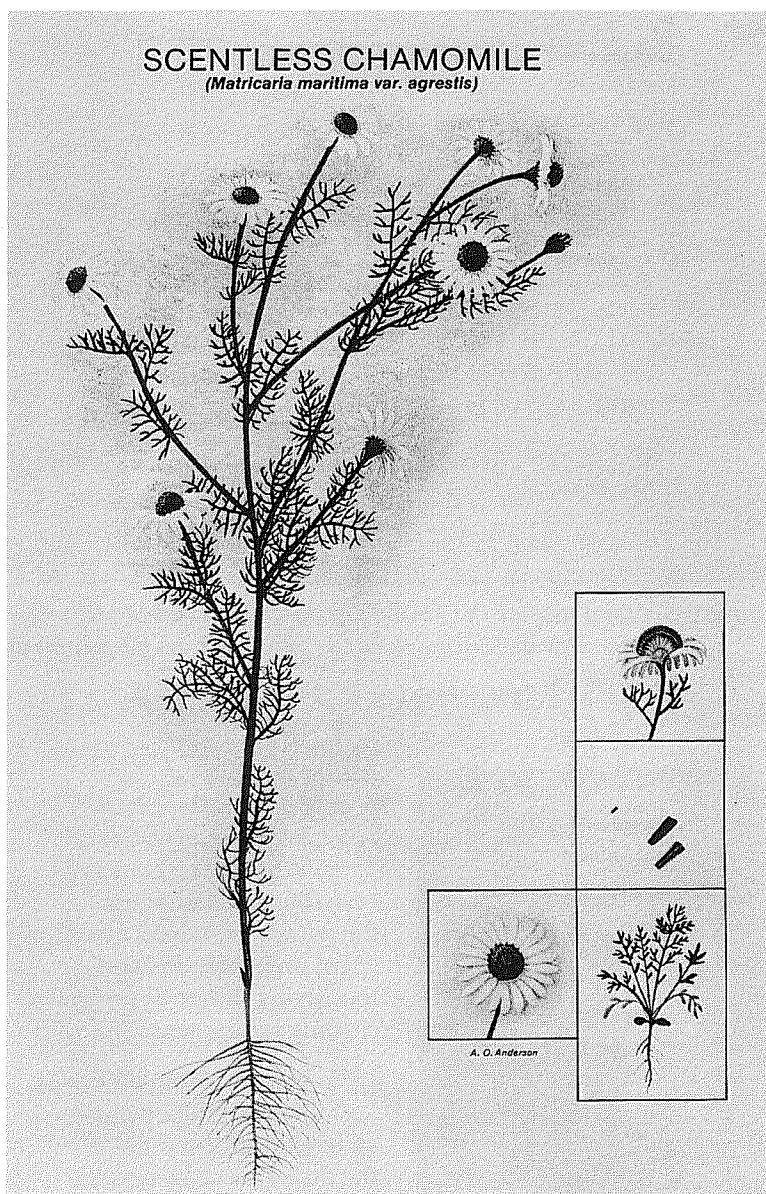
systems which hold large amounts of soil. Control through cultivation can be difficult to achieve because the roots can lie dormant, protected by the soil. When moisture is present, the roots will re-establish.

Chemical control is not easy, either. Sask. Agric. & Food's "Weed Control in Field and Forage Crops 1994" guide lists only seven herbicides that show any action on scentsless chamomile. Of these seven herbicides, one suppresses the weed, four spell death to only the spring seedlings and two will provide control. While chemical control can be tricky, it is possible to achieve. I recently spoke to John Burns of Wynyard who has been practising conservation tillage and direct seeding for a number of years. Prior to seeding cereals, John hits the scentsless chamomile with 1.0 l/acre of Rustler and 0.16 l/acre Roundup. He finds that if the plants are less than 6" in diameter, this mixture controls them very well. He uses Refine Extra in the cereals whenever "the sprayer got too short" or to finish off any plants that somehow have overcome the Rustler and Roundup mixture. John reports that

Lontrel does a good job on scentsless chamomile infesting a canola crop. He says that scentsless chamomile is not competitive once the crop gets above it. John also reports that 1 L/acre Roundup is very effective on scentsless chamomile when applied before seeding canola, and before or after seeding peas.

Mechanical methods can also be employed to control scentsless chamomile. In field situations, as soon as a scentsless chamomile plant rears its daisy-like head, get it! Rogue it, mow it or beat it with a hoe! Let the kids pick bouquets of it. The point is, destroy it before it sets seed. In pastures and grasslands, infested areas may be mowed. Due to the various life cycles of these plants, mowing may be required 2 or 3 times in a single season.

Biological control may soon be another option available in Saskatchewan. Through funding from the Green Plan, the Scentsless Chamomile Seedhead Weevil will be released at 3 sites each in both the Wynyard and Melville districts. The weevil comes from Nova Scotia but researchers are unsure if it can survive our harsh win-



ters. If the weevil can cope with the cold, it will serve as a partner in the control of scentsless chamomile.

Producers must make every effort to keep scentsless

chamomile out of their fields. Once established, it can seriously affect yield and cost time, energy and money to remove. Scentsless chamomile is not just another pretty flower.

Prairie Steward Now Available Electronically

By Murray Bentham
Project Manager,
PARI DSS Agriculture &
Agri-Food Canada,
Research Branch,
Saskatoon, Sask.

On July 12, at AIC '94 in Regina, the Parkland Agriculture Research Initiative (PARI) of Agriculture and Agri-Food Canada, announced the availability of an electronic information service, called Gopher, residing on Internet.

Internet is a worldwide computer which is available to everyone who has a microcomputer and a modem. Gopher is software, developed at the University of Minnesota, and is used extensively throughout the world for providing a fast simple method for distributing information.

The PARI is a federally sponsored component of Agriculture and Agri-Food Canada's Green Plan and is managed by the Research Branch. The initiative focuses on developing and encouraging the adoption of sound soil conservation practices, that have the potential to decrease tillage operations and identify alternatives to summerfallow, in the parkland region of the prairies.

The three main components of the initiative are:

1. Research and refinement of sustainable management systems
2. Soil resource monitoring and evaluation
3. Landscape farming research and technology transfer.

One of the activities within the first component is the development of a computer-

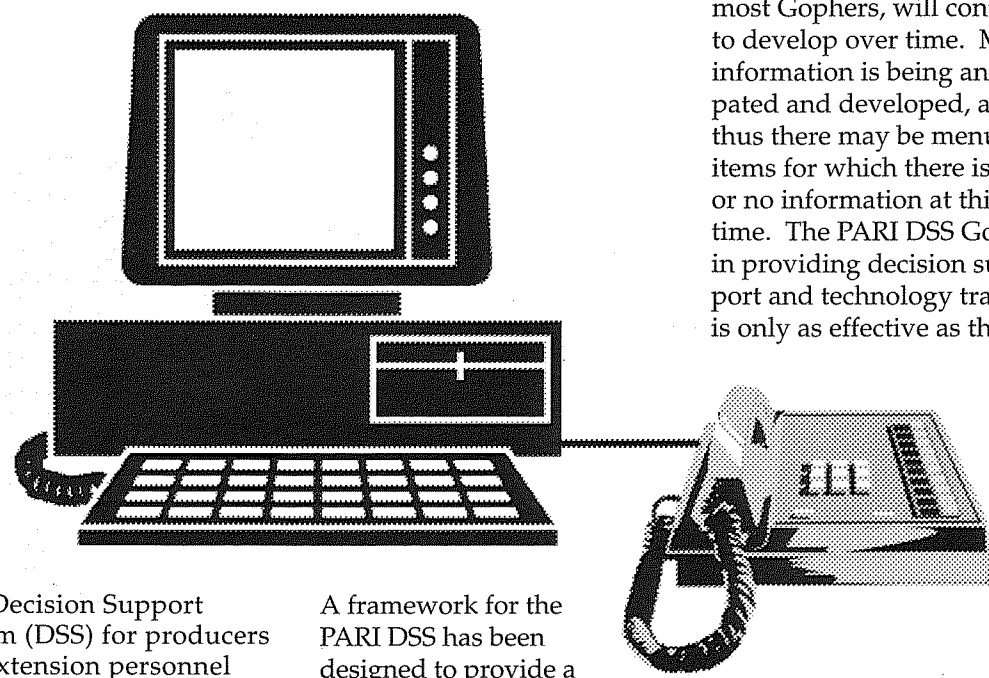
example of a decision support system may be a software package to aid producers in selecting herbicides, varieties or rotations. The PARI DSS is being collaboratively developed with research partners, including producers, provincial governments, universities and private industry. Producers are being used to supply ideas on the design, content and operations of the PARI DSS.

information on various aspects of conservation farming systems including the Prairie Steward newsletters. Users can retrieve documents through a menu system or by using text searching capabilities. In addition to information contained in the PARI DSS Gopher, users can also access hundreds of other Gopher systems on Internet.

The PARI DSS Gopher is available now, but as with most Gophers, will continue to develop over time. More information is being anticipated and developed, and thus there may be menu items for which there is little or no information at this time. The PARI DSS Gopher, in providing decision support and technology transfer, is only as effective as the

A framework for the PARI DSS has been designed to provide a "single window" to conservation information by integrating four different levels of expertise and decision support. Level-1 consists of basic decision support and includes the PARI DSS Gopher which contains

information contributed. If you have information which is relevant to conservation farming systems, the PARI DSS would be most pleased to incorporate it into their Gopher.



Seeding Systems

- may have buildup of grassy weeds (rotations 1, 2 & 6)

- uneconomical to completely replace soil nitrogen required to produce cereal crops resulting in reduced soil quality and increased risk of soil erosion (rotations 1 & 2)

- may have buildup of straw and chaff in successive cereal crops (rotations 1, 2 & 6)

- high risk of leaf disease with barley two years in a row (rotation 6)

- increased risk of foxtail barley in chemfallow (rotation 5)

- reduced opportunity for herbicide group rotations (rotations 1 & 2)

CROP ROTATIONS RECOMMENDED FOR DIRECT SEEDING

7. Cereal - Canola/Mustard/Sunola - Lentil/Pea - Cereal

8. Canola/Mustard/Sunola - Cereal - Lentil/Pea - Cereal
Note: Flax is best grown following the lentil/pea crop.

Strengths: - broadleaf crops in 50% of rotation

- legume in 25% of rotation

- low risk of soil and stubble borne diseases in canola/mustard/sunola (rotation 7)

- low risk of soil and stubble borne cereal diseases (rotation 8)

- alternating cereals every second year reduces residue management problems (rotation 8)

- potential for greater net returns

- opportunity for residual weed control from carryover of trifluralin/ethylfluralin product in first year broadleaf to second year crop (zero incorporation of these products is not registered at present)

- may improve soil organic matter

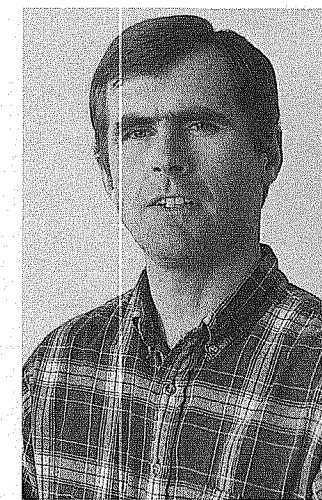
Weaknesses: - moderate to high risk of sclerotinia in lentil/pea (rotation 7) and canola/mustard/sunola (rotation 8)

- no perennial crop in rotations

- moderate to high level of management expertise required

- may have buildup of straw and chaff in successive cereal crops (rotation 7)

9. Cereal - Cereal - Canola/Sunola - Pea/Lentil - Flax - Cereal - Canola/Sunola - Pea/Lentil - Flax - Cereal - Canola (underseeded to Alfalfa) - 3 yrs Alfalfa seed or hay



Garry Meier

Strengths: - very diverse crop rotation

- low risk of soil and stubble borne diseases in all broadleaf crops, except moderate risk of sclerotinia in peas and lentils

- opportunity for trifluralin/ethylfluralin product to provide residual weed control from canola/sunola to lentil/peas to flax (zero incorporation of these products is not registered at present)

- opportunity for good herbicide group rotations

- potential for greater net returns

- may improve soil organic matter

Weaknesses: - high level of management expertise required

- moderate risk of soil and stubble borne diseases in cereal on cereal (low risk if oats is one of the cereals)

- moderate risk of soil and stubble borne diseases in pea/lentil

- may have buildup of straw and chaff with successive cereal crops.

SUMMARY

Crop rotation is probably the most complex and controversial of the five agronomic pillars for successful direct seeding (residue management, crop establishment, fertility, weed control and crop rotation). We have not discussed all possible crop rotations but have covered enough to provide you with ideas for designing yours. It is important to remain flexible with your crop rotation to enable adaptation to new situations such as diseases, pests, markets and new crops. Keep the principles of diversity, crop residue and moisture management, crop water use, and weed control in mind, and you will succeed. Most of you will likely feel that your rotations need improving, however don't panic and try to change everything in one year. Remember to walk before you run!

Winter Annual Weed Control

By Blair McClinton
SSCA Assistant Manager

One of the most common problems I have seen with direct seeded fields over the past couple of years is poor winter annual weed control. One common misconception is that these weeds can be adequately controlled with a pre-seeding Roundup treatment. While Roundup will control most of these weeds, by the time the Roundup treatment is used these weeds will have

completed their life cycle and set seed. This also means that these weeds will have used up a significant amount of soil moisture.

In addition, advanced stages of some weeds like narrow-leaved hawk's-beard can tolerate fairly high rates of Roundup. These weeds can be controlled with fall or spring treatments of 2,4-D or MCPA.

Fall treatments are recommended over spring treatments to avoid problems with herbicide residues on subsequent broadleaf crops. Also, because these weeds are further developed in the spring, higher rates are usually needed. Fall treatments can be done anytime after mid-October. The required rate will depend on the weeds present. The following table summarizes the recommended rates in the Saskatchewan Weed Control Guide.

Weed	Herbicide	Rate (Litres/acre)
Stinkweed, Flixweed, Shepherd's Purse	2,4-D or MCPA Amine 500	0.34 - 0.45
Bluebur, Common Peppergrass	2,4-D or MCPA Amine 500	0.51 - 0.69
Narrow-Leaved Hawk's-Beard	2,4-D Amine 500	0.57

Note: Ester formulations and other concentrations may also be used. Consult the Saskatchewan Guide to Weed Control for conversion factors. Source: Direct Seeding Manual

SSCA's 5th Annual Photo Contest



Open To All Amateur Photographers

Photos must have been taken in the last three years

All photos will be returned

Photos cannot have been entered in previous SSCA photo contests

Photos must be received by January 13, 1995

Now is the time to take those pictures

What does your conservation farm look like? Is it a winner?

Slides or prints welcome (originals only)

Each photo must be clearly labelled

Must be present at the annual meeting to win

Three categories:

SOIL CONSERVATION

SOIL DEGRADATION

WILDLIFE AND HABITAT

Send photos to:

Bob Linnell

Saskatchewan Soil Conservation Association

110 Souris Avenue

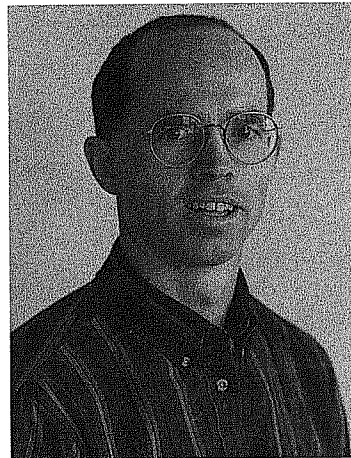
Box 2003

Weyburn SK S4H 2Z9



SASKACHEWAN SOIL CONSERVATION ASSOCIATION

Farmer Modified Competition A Big Success



By Garth Patterson
SSCA Soil Conservationist

They came from as far away as Kindersley and Durban, Man. to compete in SSCA's First Annual Farmer Modified Direct Seeding Contest at the Direct Seeding Field Day near Southey on June 21st. The entrants had put an amazing amount of time and energy into modifying their equipment for low disturbance direct seeding, and answered many questions from other farmers during the day.

The judges, Norm Flaten, Gordon Hultgreen and Roger Olson had a difficult decision, but in the end awarded first place and \$3000 to Jerry and David Zinkiew of Durban, Manitoba. Their unit was a JD 610 cultivator with shank mounted Valley packers and home made openers for side banding liquid fertilizer.

Second place and \$2000 was awarded to Donald Toews of

Sedley. Donald had modified a MF 128 DT cultivator by adding caster wheels and a floating hitch, and changing the frame from a three row twelve inch spacing to a five row eight inch spacing. His unit single shoots using Dutch Eagle Buster knives and Dutch tool bar mounted packers.

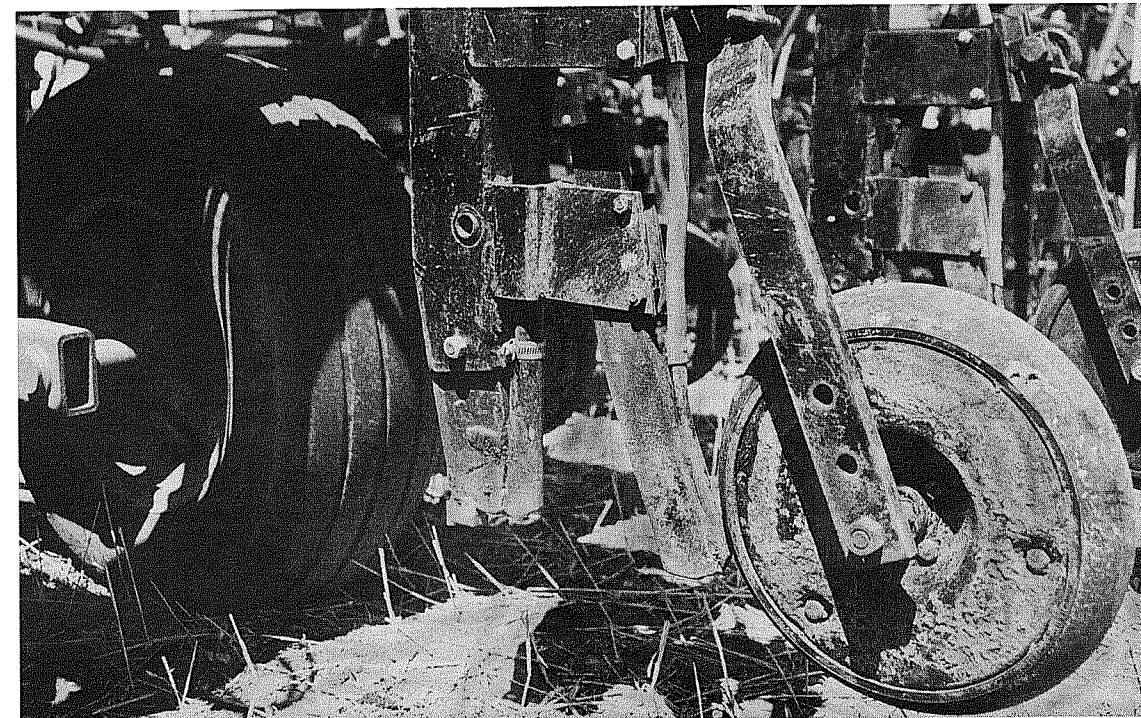
Robert and Sharon Kachmarski of Kindersley had modified a Morris L240 cultivator with caster wheels and a floating hitch, and from a three row to a four row unit. Rear transport wheels and gang packers salvaged from an IH 7200 drill were also part of the modifications. Their unit single shoots using narrow knives or eight inch shovels.

Merv Schmidt of Lipton has converted his JD 665 air seeder from single shoot to double shoot using Dutch Vern knives for side banding anhydrous ammonia. His Dutch packers are rear mounted and the frame has been converted to a floating hitch. Sterling and Ken Hall of Earl Grey had modified a Flexicoil 5000 with Swede double shoot openers.

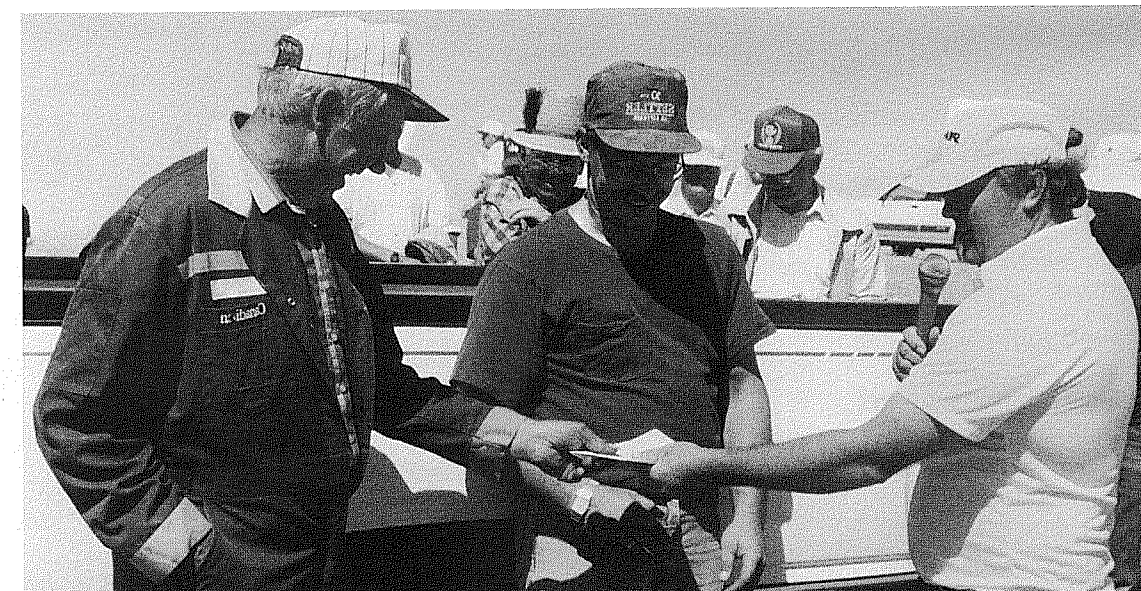
Thank you to all of the competitors for making the competition a success, and to Young's Equipment in Regina for supplying tractors for some of the units. We hope to see even more modifications for next year's contest!



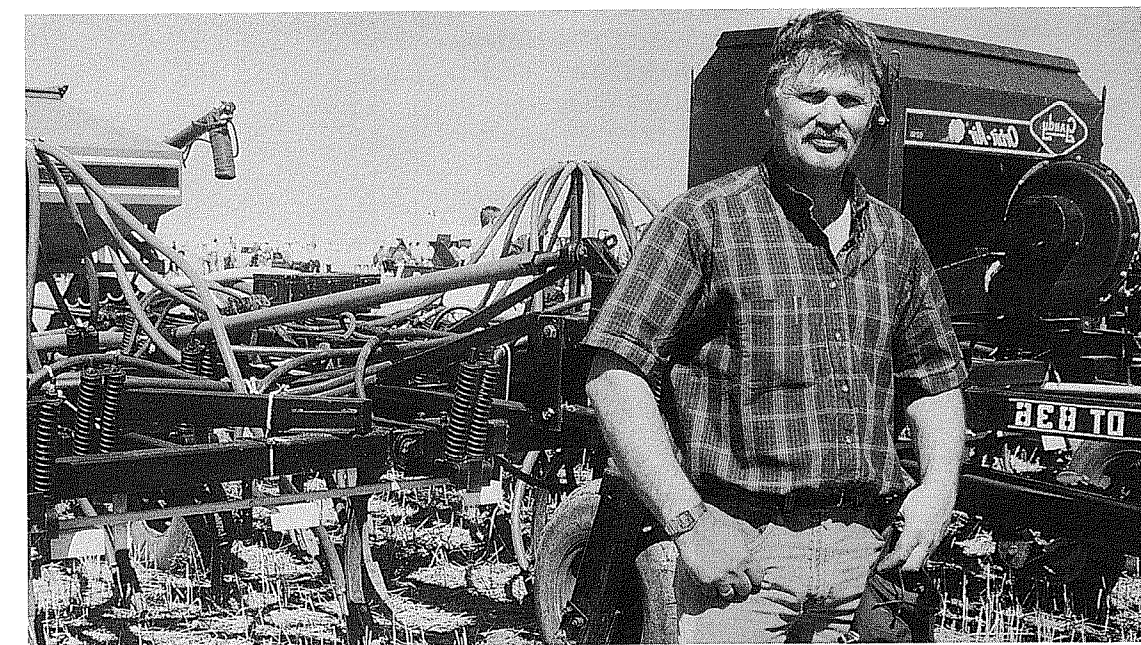
Jerry and David Zinkiew of Durban, Manitoba won first place in SSCA's First Annual Farmer Modified Direct Seeding Contest with their modified JD 610 cultivator.



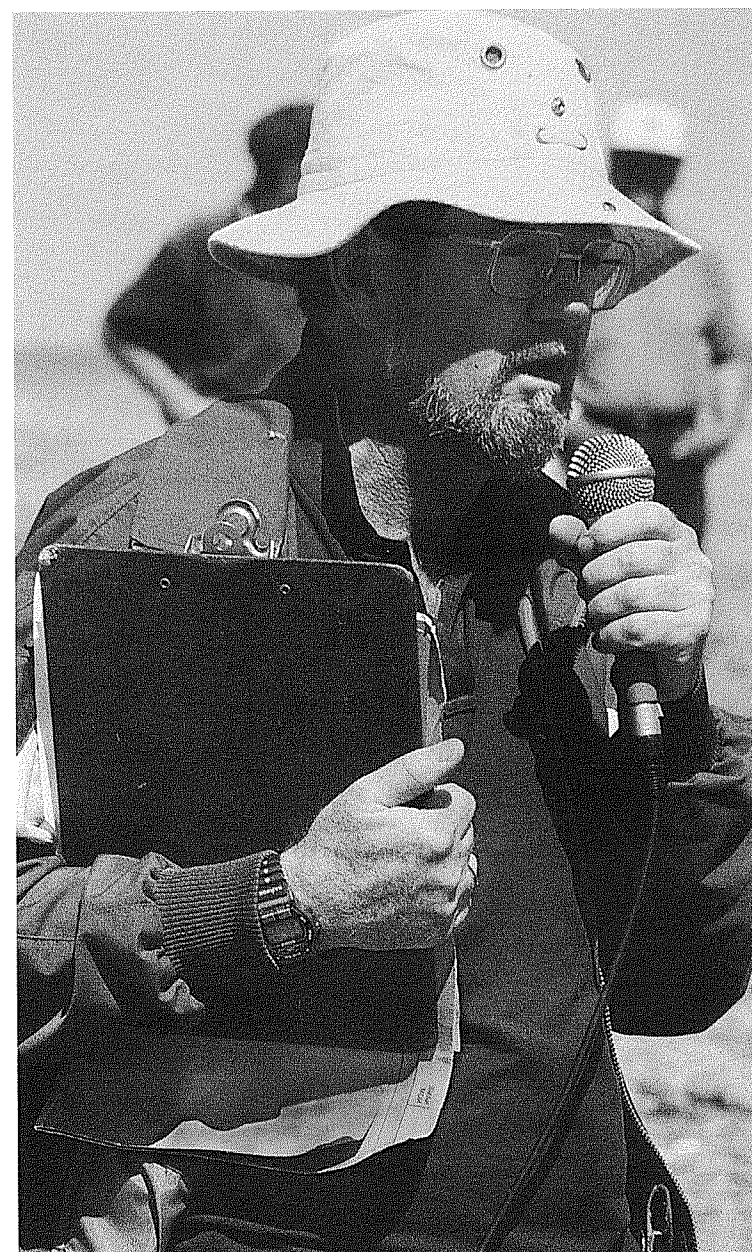
Zinkiew's first place entry featured shank mounted Valley Packers and home made openers for side banding liquid fertilizer on a John Deere 610 cultivator.



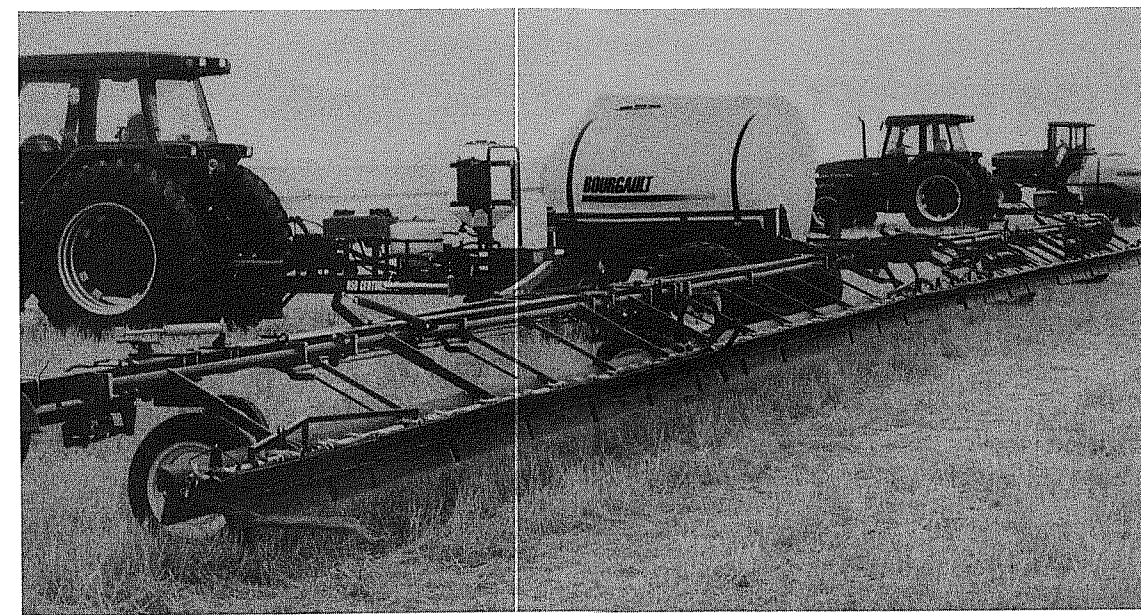
SSCA President Dean Smith presents Jerry and David Zinkiew with a \$3000 dollar cheque for their first place entry in SSCA's first annual Farmer Modified Direct Seeding Contest.



Donald Toews of Sedley, Sask. took the \$2000 dollar second prize with his modified MF 128 DT cultivator. He single shoots using Dutch Eagle Buster knives and Dutch packers.



PAMI's Gordon Hultgreen along with Norm Flaten and Roger Olson had the tough job of picking the winner.



Sparse attendance at the Field Day Sprayer Demonstrations allowed farmers to have more one on one discussions with spraying equipment manufacturers.

Field Day Sprayer Demonstrations



By Juanita Polegi
SSCA Soil Conservationist

The use of herbicides to control weeds and other undesirable plants is a fact of life in a direct seeding system. The sprayer, however, is too often neglected. No

matter how well or how poorly it does the job of applying the herbicide, the sprayer's performance is often overlooked while thousands of dollars are spent on herbicides and modifying old or buying new seeding equipment.

To hammer home the idea that the spraying operation is an important component of the direct seeding system, SSCA featured sprayers at their June Field Day. The seven manufacturers participating in the demonstration included Bourgault, Brandt, Flexicoil, Harmon, Air Ride, Computorspray and Rogers Innovative. During the Demonstration, each manu-

facturer was given a few minutes to discuss the merits of its sprayer. Then all but one of the sprayers began operating using Regina's drinking water (which is considered by some to be less of a health hazard than a herbicide) to demonstrate spray patterns, drift reduction, and ease of operation.

As in real life, the sprayers did not attract as much attention as the seeding equipment. However, those producers who did attend the demonstration were able to see first hand the advances in sprayer technology and discuss the finer points of each sprayer in more detail with the company reps.

Field Day A Success In Spite of Rain...Continued From Page One

passes to demonstrate uniformity of the spread. Many farmers realize that residue management is the first change they need to consider in their seeding system. Spraying equipment was also

demonstrated at this year's field day. Other successful direct seeding days were also held at Leroy and Rosthern. Congratulations! The direct seeding day at Melfort was unfortunately rained out.

Organizers of the event were pleased with how the event turned out considering the rain delay. The organizers would like to thank all of the field day suppliers and participants who have helped to make this field day a success.

Thanks To Our Field Day Sponsors

The Saskatchewan Soil Conservation Association would like to thank our sponsors (Monsanto Canada Inc., TransAlta Utilities, Agriculture Canada and Saskatchewan Agriculture and Food) for assisting us in conducting a very successful direct seeding field day on June 21/94. We also thank all the equipment manufacturers and farmer modified entrants for their participation. The following organizations and individuals graciously donated items or services which were also utilized at the field day site. Thank you to all for helping make the day a success and we look forward to working with you next year.

McLeans Agra Center, Balcarres - John Deere Gator

Flamans, Southey - Bale processor

Ag Mar Industries - Uniblade

Youngs Equipment, Regina - Case IH tractors

Country BBQ, Sands Hotel - Food for field day staff

Dave Struthers, Custom Crop Care, Yorkton - Herbicide application at last minute

Ag Canada Staff, Dr. G. Lafond - Plot tours and site inspection

PFRA and SDAF staff - Assist at seeding and during day

Michael Nethercut, Metropol Security - Help secure tent during wind storm

Gord Hultgreen, Norm Flaten & Roger Olson - Judges for Farmer Modified event

UGG Proven Seeds - Seed for plots

Cominco Fertilizers c/o Bell Agro, Indian Head - Fertilizer for plots



Morris Air Drill seeds plots in early May for the SSCA Direct Seeding Field Day on June 21.



SSCA staffer Garth Patterson checks seed placement when the equipment manufactures seeded their May plots.



The seeding equipment was the star attraction at the SSCA Direct Seeding Field Day on June 21.



Farmers check to see how accurate seed placement was during a seeding demonstration at the Field Day.

1995 Direct Seeding Workshop: "A Systems Approach"

1995 Saskatchewan Soil Conservation Association Annual Workshop, Meeting & Trade Show

February 14 & 15, 1995

Lloydminster Exhibition Grounds - Lloydminster, Saskatchewan

The Saskatchewan Soil Conservation Association would like to thank the following sponsors for their assistance in making this event possible and for their commitment to Soil Conservation in Saskatchewan

*Bourgault, Conserva Pak, Flexi-coil, Harmon,
Saskatchewan Wheat Pool & Westco Fertilizer*

Conference Proceedings Available

Tuesday, February 14		Wednesday, February 15	
ALL TIMES QUOTED FOLLOW ALBERTA TIME (Mountain Standard Time)	Dick Jones Pavilion	11:35 a.m. "How Crop Rotations Affect Weed Control" Doug Derksen, Agriculture Canada, Indian Head, SK	9) Ivanhoe Motel Phone: 403-875-5561 D-\$44
8:00 a.m. to 10:00 a.m. Workshop Registration and Coffee in the Trade Show Area (Saskatchewan Building). Coffee Sponsored by: DUTCH INDUSTRIES	5:30 p.m. Workshop Banquet - Alberta Building Chairman: Alex Mitchell, District #35 ADD Board	11:55 a.m. Questions to Speakers	10) Lodge Motel Phone: 403-875-1919 D-\$43
Workshop Chair: Dwayne Mitchell, SSCA NW Director, Battleford, Sask.	6:30 p.m. Soil Conservation Awards 6:45 p.m. SSCA Photo Contest Awards	12:00 p.m. Lunch Sponsored by: CONCORD INC.	11) Prince Charles Motor Inn Phone: 403-875-9018 D-\$25
Alberta Building	7:30 p.m. Evening Bear Pit Sessions	Alberta Building	12) Trailside Inn Phone: 306-825-2557 D-\$32
10:00 a.m. Opening of the 1995 SSCA Workshop	#1 "Crop Management" (Dick Jones Pavilion) Chair: Bob Linnell *crop rotations, weed control, disease control, fertility management	Session #6 "Improving Your Soil With Direct Seeding" Session Chair: Gerry Willerth, SSCA Past-President, Indian Head, SK	13) Voyager Motel Phone: 306-825-2248 D-\$30
10:15 a.m. Keynote Speaker: "Conservation Tillage: A Global Perspective" John Hebblethwaite, Director, Conservation Tillage Systems, Monsanto, St. Louis, Missouri	#2 "How to Start Direct Seeding" (Lounge & Rest Area) Chair: Juanita Polegi *practical tips on how to start direct seeding	1:30 p.m. "Effect of Direct Seeding on Soil Properties" Ken Greer, U. of S., Saskatoon, SK	*note "Soil Conservation Meeting" when making a booking. All bookings must be made by the registrants and should be made before Feb. 1, 1995. **plus applicable taxes.
Session #1 "How to Win with Direct Seeding"	#3 "Direct Seeding Equipment" (Alberta Building) Chair: Garry Meier *successful approaches and	1:50 p.m. "Direct Seeding in Heavy Textured Soils" Jim Kambeitz, Farmer, Sedley, SK	For additional accommodations contact the Lloydminster Tourist Bureau at 306-825-6180 or Fax: 306-825-7170
10:45 a.m. "Agronomic Pillars of Direct Seeding" Adrian Johnston, Agriculture Canada, Melfort, SK	Chair: Garry Meier *successful approaches and	2:10 p.m. "Direct Seeding in Light Textured Soils" Harold Wakefield, Farmer, Maidstone, SK	For more information on the workshop or the trade show contact:
11:05 a.m. "How We Direct Seed On Our Farm" Ed & Marguerite Beauchesne, Farmers, Albertville SK	Wednesday, February 15	2:30 p.m. "How Direct Seeding Has Changed the Soils on My Farm" Jim Halford, Farmer, Indian Head, SK	Doug McKell 306-695-4234 Garth Patterson 306-933-5287 Blair McClinton 306-695-4235 Juanita Polegi 306-786-1526 (Trade Show Coordination) Howie Bjorge 306-825-6470 Dwayne Mitchell 306-937-3239 Ken Sapsford 306-446-7650
11:25 a.m. "How We Direct Seed On Our Farm" Clint & Lily Steinyler, Farmers, Empress AB	Alberta Building	2:50 p.m. Questions for Speakers	Workshop Registration Fees
11:45 a.m. Questions for Speakers	Session #4 "Field Scale Direct Seeding Research" Session Chair: Lorne Crosson, SSCA SW Director, Limerick, SK	3:00 p.m. "Towards Sustainability: Implications of Conservation Tillage" Richard Johnson, Alberta Environmental Centre, Vegreville, AB	Pre-Registration Before February 1, 1995
12:00 p.m. Lunch in Trade Show Area Sponsored by: SHERRITT INC.	8:00 a.m. "Conservation Learning Centre" Patricia Flaten, Prince Albert, SK	3:30 p.m. Draws for Conference Prizes:	Single \$60 includes: All meals & conference proceedings.
Alberta Building	8:20 a.m. "Indian Head Experimental Farm" Guy Lafond, Agriculture Canada, Indian Head, SK	You Must Be There To Win !!!! Draw Chair: Dean Smith & Marv Fenrich	Husband & Wife* \$90 includes: All meals & 1 copy of conference proceedings *must register together
Session #2 "Establishing A Crop Using Direct Seeding" Session Chair: Paul Carles, SSCA SE Director, Radville, SK	8:40 a.m. "Manitoba Zero Till Research Centre" Daryl Domitruk, Brandon, MB	DRAW PRIZES*:	After February 1, 1995
1:30 p.m. "Successful Crop Establishment Using Direct Seeding" Stewart Brandt, Agriculture Canada, Scott, SK	9:00 a.m. "Smokey Applied Research and Demonstration Association" Jeanne Bisson, Falher, AB	• Fly-in Fishing Trip to Fosters Lake Lodge*	Single \$85 includes: All meals & conference proceedings.
1:50 p.m. "Crop Establishment on Our Farm" Aaron Friesen, Farmer, Rosthern, SK	9:20 a.m. Questions for Speakers	• Shuttle of Roundup*	Husband & Wife* \$100 includes: All meals & 1 copy of conference proceedings *must register together
2:10 p.m. "Role of Potash & Phosphate in Crop Establishment" Terry Roberts, Potash & Phosphate Institute, Saskatoon, SK	9:30 a.m. Refreshments in Trade Show Area Sponsored by: New Noble Distributors Inc.	• Binoculars (to watch your neighbour cultivate)*	Single Day Registration
2:30 p.m. "Direct Seeding With Anhydrous Ammonia" Herb Bartel, Farmer, Lanigan, SK	Alberta Building	• Special Draw For SSCA Members Only!	Day 1 February 14, 1995 *includes lunch only \$30
2:50 p.m. "Effect of Crop Residues on Crop Establishment" Howie Bjorge, SDAF, Lloydminster, Roland Brassard, #35 ADD Board, Lloydminster, SK	Session #5 "Weed Control in Direct Seeding Systems" Session Chair: Bernie Niedzwiedz, SSCA EC Director, Wynyard, SK	* All winners must accept the draw prizes within the limits set by the SSCA. All prizes are non-transferable and have no cash value.	Day 2 February 15, 1995 \$30 *includes lunch only
3:10 p.m. Questions for Speakers	10:15 a.m. "A Systems Approach to Weed Control" Eric Johnson, SDAF, North Battleford, SK	Meeting Accommodations in Lloydminster*	Extra banquet tickets \$15
3:30 p.m. Coffee in Trade Show Area Sponsored by: SANDOZ AGRO CANADA	10:35 a.m. "Weed Control Systems on our Farm" John Bennett, Farmer, Biggar, SK	Hotel / Motel Name Cost**	Extra copies of Conference Proceedings \$15
Cash Bar Open	10:55 a.m. "How To Use Roundup as a Preseeding Burnoff" Rob Neyedley, Monsanto Canada, Saskatoon, SK	1) Imperial 400 Phone: 306-825-4400 D-\$47	
	11:15 a.m. "Weed Control Systems On Our Farm" Dale Anderson, Farmer, Richard, SK	2) West Harvest Inn Phone: 403-875-6113 D-\$54.95	
		3) Tropical Inn Phone: 403-875-7000 D-\$50	
		4) Wayside Inn Phone: 403-875-4404 D-\$40	
		5) Alberta Hotel Phone: 403-875-6101 D-\$35	
		6) Capri Motor Inn Phone: 306-825-5591 D-\$30	
		7) Cedar Inn Motel Phone: 306-825-6155 D-\$35	
		8) Good Knight Inn Phone: 306-825-0124	

Prairie Steward...

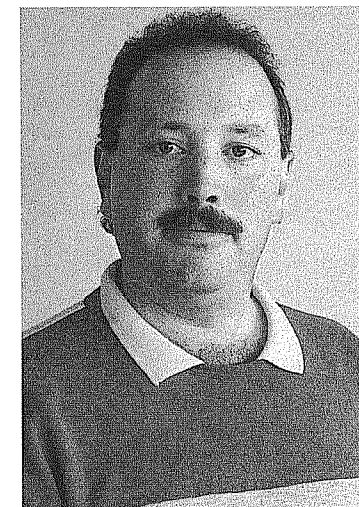
Conserving the Land Resource
The Newsletter of the Saskatchewan Soil Conservation Association Inc.

Fall/Winter Issue No. 13, 1994



SASKATCHEWAN SOIL CONSERVATION ASSOCIATION

Direct Seeding Courses Updated for 1995



By Blair McClinton
SSCA Assistant Manager

Over the past two to three years, the SSCA has been conducting one day direct seeding courses. These courses placed equal emphasis on each of the five "pillars" of direct seeding: residue management, crop rotations, fertility management, crop establishment and crop rotation. These courses have been very popular with over 4000 producers attending over the past two years. Due to the amount of information presented at these meetings, we recommended that farmers buy a copy of the "Direct Seeding Manual". This winter, we have changed the course format to a series of half day meetings at the same location.

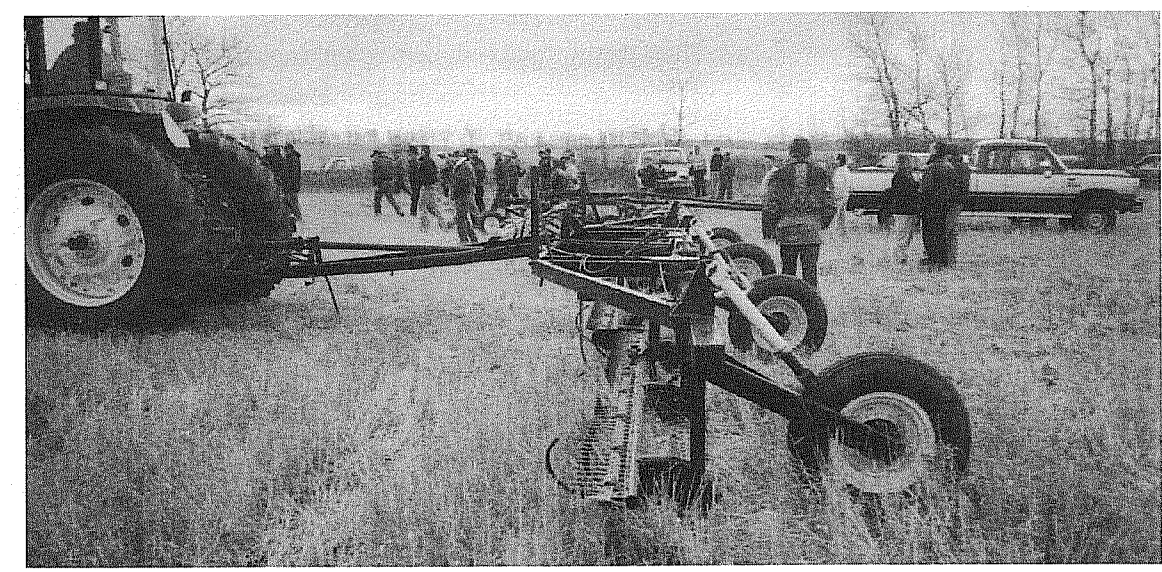
- The series is divided into three half day courses:
1. Introduction to Direct Seeding
 2. Soil Fertility and Equipment Requirements for Direct Seeding
 3. Designing Direct Seeding Systems - Weed Control and Crop Rotations

The objective of the introductory course is to cover the basic information needed to be successful at direct seeding. This course includes a general overview of the pillars of direct seeding and presentations from experienced direct seeding farmers.

The second and third "advanced" courses cover more specific topics. These meetings will cover some of the latest information on direct seeding. In addition, the SSCA will also be using resource people from Agriculture Canada, Sask. Ag. and Food, the University of Saskatchewan, and industry in these more advanced courses.

Producers can attend any individual course or all three in the series. Ideally, the same group of producers would all three courses. SSCA's soil conservationists are planning to follow up with these groups with one on one field calls and summer "half-ton" tours.

For more information on these courses, contact the SSCA soil Conservationist (names and phone numbers listed on page two of the Prairie Steward) in your area.



Ken Blosser's Double Knife Stubble Cutter at the Kelvington Stubble Management Demo

Stubble Management Field Demonstration

By Juanita Polegi
SSCA Soil Conservationist

Whenever farmers who straight cut and/or direct seed their crops ask the question "What do I do with all that tall stubble?" Ken Blosser of Kelvington, Saskatchewan, and Al Muchka of Acme, Alberta, have just the answer. Both producers have designed their own stubble cutters. At a field demonstration North of Kelvington on October 18th, producers had the opportunity to watch both stubble cutters in action on 20 inch high wheat stubble.

The first unit to demonstrate was Muchka's 30 foot single knife stubble cutter. The stubble cutter, made with two

15 foot knife sections and the wobble box in the middle, can operate at speeds of up to 10 mph. One of its unique features is that it can be either pushed or pulled. At the field demonstration Al demonstrated how the stubble cutter can be pulled by a half ton equipped with a hydraulic pump.

This past summer, Muchka's stubble cutter was used to mow weeds on establishing hay fields. The cutter was also used to mow brome hay. In this instance, the cutter was pushed by the tractor. The hay was left for a few days and then raked with a V-rake. Al reports that the hay mowed by the stubble cutter dried down faster than the hay cut by a swather. No comparison was made to

hay cut by a mower conditioner.

The second unit to demonstrate was Blosser's 46 foot double knife stubble cutter. This cutter is designed to cut standing stubble as tall as 24 inches into 3 equal pieces. For shorter stubble, the whole frame of the machine can be tipped forward as the two knife rows remain stationary. Ken says he tried to make the double knife cutter as simple and as rugged as he could. Like the single knife cutter, Blosser's unit has very low horsepower requirements. Ken reports the double knife cutter works best at about 6.5 mph.

Continued "Stubble Management Demo..." Page 9

Fast Facts On Soil Conservation

- In 1990, 433 million tonnes of carbon dioxide were released into the atmosphere due to the burning of fossil fuels.
- Saskatchewan now has an "Ag. in the Classroom" program! The executive director is Gloria McPhadden in Saskatoon (933-5224).
- Each year prairie soils lose between 16 to 20 million tonnes of carbon to the atmosphere.
- Direct Seeding not only improves soil and water conservation, it also provides improved wildlife habitat.
- In 1994, there were over 4.5 million acres of low disturbance direct seeded crops in Saskatchewan.
- Of the eight million trees distributed in 1994 by the PFRA Shelterbelt Centre in Indian Head, five million went to farms in Saskatchewan.
- Over 150 Direct Seeding Workshops will be held in Saskatchewan this winter!
- The SSCA staff pounded the SSCA board 35 - 7 the fall football classic!

Source: Statistics Canada and various agricultural factsheets

◆ AVOID DISAPPOINTMENT ◆ REGISTER NOW! ◆ LIMITED SEATING! ◆

Registration Form included on page 3 of this Prairie Steward

ASSOCIATION INFORMATION



President's Message

This is my last message to you as SSCA's president.

The main message I have at this time to SSCA members and to potential members is that now is the time to renew or get that much needed membership. Remember - this is your organization! It is up to each and every individual to see that it continues. As directors, we try to develop and access funding for projects that provide the most benefits for producers. But it is up to the membership to sustain the organization. SSCA needs a strong membership to be able to continue to develop and access funding for soil conservation programs.

I would like to thank our very able and dedicated staff for their support this past year. It has been a difficult year with contracts and job security up in the air. Their dedication, and commitment to soil conservation and the SSCA have made

the transition to the new program easier. Special thanks to John Kiss for all his past efforts. His efforts have ensured the continuation of a coordinated direct seeding extension program for farmers in Saskatchewan. I want to wish John all the best with his future endeavors. And I welcome all of our new staff to the Association. Garry Mayerle, Eric Oliver and Ken Sapsford all have a great deal of expertise, and experience with direct seeding and soil conservation which will nicely complement our existing staff members.

Harvest is over and the year was a big success with good grades and average yields. Even the price looks better. What an opportunity to try some new crops, extend the crop rotation and get into direct seeding. Now is the time to start planning for next year. Our staff will be conducting a series of direct seeding courses throughout the province this winter. These courses are an excellent way to learn how successfully direct seed. If you are an experienced direct seeder, consider going these schools to share your experiences with others. Contact your local SSCA Soil Conservation for information on courses in your area.

Speaking of planning, mark your calendar for February 14 and 15, 1995 for the SSCA annual workshop and meeting in Lloydminster. Register early and plan to attend. Once again, we have put together an excellent program which should appeal to both experienced direct seeders and farmers who are new to the system. The agenda and registration information are included elsewhere in this newsletter.

Have a good Christmas and all the best in the new year. I look forward to seeing you at Lloyd.

Executive Manager's Report

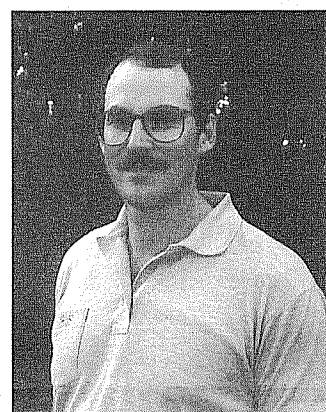
Judging by the thickness of the ice on the horses water trough and the renewed fall offensive by the mice on our garage, I would say fall is definitely here. For the SSCA this means the end to another successful summer tour season and a new winter extension season about to begin.

From all reports it looks like we were quite successful in our soil conservation activities for this growing season. We can now say there are over 4.5 million acres of direct seeding in Saskatchewan and many thousands of acres under perennial forage or tree cover. What does this mean to you as a producer and an SSCA member? As a producer who is involved in direct seeding, you have contributed to the addition of soil carbon (see the article by Dr. Con Campbell on his results from direct seeding research performed at Swift Current). Soil carbon is an essential component in the nutrient cycle. This was very apparent this year as some fields did not seem to need the humungous amounts of N required on others. We are still learning about how nutrients are stored and released under low disturbance seeding systems but one thing is for sure, tillage has a negative affect on soil carbon. This will eventually deplete your nutrient bank account. Anybody can grow straw but it takes a real pro to put the grain in the head.

As an SSCA member you have helped our staff spread the word about the techniques that protect our prairie soil and the environment. Your membership does make a difference in more ways than just helping fund our programs. As a visible group of producers with a noble cause such as soil conservation, we gain the attention of politicians, industry and the public at large.

Our upcoming winter Direct Seeding Courses are another example of our efforts to inform the farming community of the most up to date soil conservation techniques. SSCA staff (who now include a few new faces: Eric Oliver - SW, Ken Sapsford - NW and Garry Mayerle - NE) have recently completed training in the latest direct seeding technology and agronomy. They will be looking to share this information with you and your neighbors at courses in your area this winter starting as early as mid November. We are also looking for another successful "Direct Seeding" conference in February. Early registrations indicate another large crowd so please book your seat early to avoid disappointment if we have a sellout.

Lets hope you have a great holiday season and gain lots of useful information at the winter meetings and courses.



Doug McKell, SSCA Executive Manager

SSCA STAFF NOTES

NEW STAFF

The SSCA would like to welcome two new staff members, Ken Sapsford (NW region) and Garry Mayerle (NE region). Ken may familiar to some of you from his work as SSCA's West Central Director for the past four years. Ken was also the SOS Technician for the Biggar ADD Board. Ken will be working out of the North Battleford Rural Service Centre. Garry Mayerle may be familiar to some of you from his work as the SOS technician for the Tisdale ADD Board. Garry will be working out of the Tisdale Rural Service Centre.

FORMER STAFF

Over the past few months, we have received many questions on the whereabouts of our former staff. This is the latest on what they are up to.

- John Kiss, former Executive Manager, is in Regina where he is now looking after special projects for Monsanto.
- Carolyn Fife, former Office Manager, has moved to Phoenix, Arizona where her husband is working as a computer consultant. (Editors Note: I now have a place to stay for a golf trip this winter)
- Crystal Dash, former secretary, is now the Administrative Assistant with UGG in Regina.
- Garry Meier, former NE soil conservationist, is farming full time with the family farm.
- Chris Zabek, former shelterbelt Information Officer, has returned to the University of Saskatchewan where he has started a "M.Sc." program in range management.
- Lorne McClinton is back at the University of Regina's School of Journalism teaching photography and computer design,

OTHER NEWS

Carol Ann Patterson (Garth's wife) is in the process of completing her Ph.D. in Food Science and is managing the new Food Talk program for Sask. Ag. and Food.

1994-95 SSCA BOARD OF DIRECTORS

Dean Smith (Success) President
Marvin Fenrich (Wilkie) President-Elect
Gerry Willerth (Indian Head) Past President
Lorne Crosson (Limerick) S.W. Director
Clint Steinley (Empress, AB) W.C. Director
Dwayne Mitchell (Battleford) N.W. Director
Paul Carles (Radville) S.E. Director

Bernie Niedzwiedz (Wynyard) E.C. Director
Ed Beauchesne (Albertville) N.E. Director
Lee Moats (Regina) Director-At-Large
Greg Kane (Nokomis) Director-At-Large

CONSERVATION LEARNING CENTRE

Patricia Flaten, CLC Manager (306)953-2796

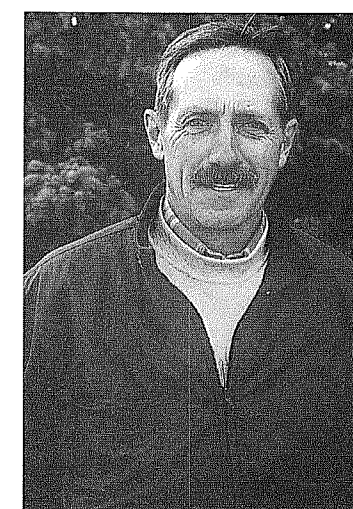
SOIL CONSERVATIONISTS

Garth Patterson, Saskatoon (306) 933-5287
Juanita Polegi, Yorkton (306) 786-1526
Bob Linnell, Weyburn (306) 848-2381
Eric Oliver, Swift Current (306) 778-8284
Ken Sapsford, North Battleford (306)446-7650
Garry Mayerle, Tisdale (306)878-8806

HEAD OFFICE

Box 1360, Indian Head, SK S0G 2K0
(306) 695-4233 Fax: (306) 695-4236
Doug McKell, Executive Manager
Blair McClinton, Assistant Manager
Claire Neill, Office Manager

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



By Bob Linnell
SSCA Soil Conservationist

Management of direct seeding systems comes down to the tried and true rules of **STOP, LOOK and THINK** period. Now, you're thinking to yourself; just what does this so and so know about farming and direct seeding in my part of the universe, and what the hell does he mean by those words. "I" stop, look, and think all the time, especially when I cross the railways, even that old abandoned one that runs across the grid road near me. After all "my dad" darn near got hit at that crossing and I've been careful ever since.

We tend to think a lot about what is currently on our minds. But when it concerns something we don't know everything about, we tend to let our thinking wander and get swayed by people who don't always know what they are talking about. And that summarizes some thinking about the management of direct seeding systems.

THE RULES - STOP

1. Stop working the heck out of your land because you think you have to. You don't have just base your farming practices only on what your Dad did.

2. Stop rushing through harvest without setting the combine properly to prevent grain loss, causing problems for yourself next year, especially at seeding time.

3. Stop and think about how easy it is to reduce crop establishment problems in the chaff rows by simply installing a chaff spreader on your combine.

4. Stop speeding through your fall work and remember how easy it is to control on your winter annuals by spraying in the fall.

5. Stop and think what crop would fit the best on each of your fields next year. Treat those fields accordingly to manage residue, reduce disease potential, make weed control easier and maybe spread out your seeding time to ease time pressures.

Direct Seeding Management: The Toughest Part Of All

6. Stop and think about crop-fallow rotations practised by your neighbour, and how a wheat-fallow system in a 15 inch rainfall area produces one crop from 30 inches of precipitation.

7. Stop acting "just like your neighbour" and start being innovative about managing your farm and direct seed because you want to.

8. Stop what you are doing. Look at what your crops, land, soil test results are telling you and begin to manage your land the way you want to. Then think about what you need to change on your farm next year to enable you to farm better and more profitably for the sustainable future.

LOOK

1. Look at your land. Is there too much erosion. Would you

like to gain more control over the erosion process.
2. Look at the efficiencies of direct seeding and try to implement some of these ideas in your farm managing practices.
3. Look at the time, manpower energy and fuel savings you can achieve with a direct seeding system.

4. Look at the results of direct seeding on you neighbours farm, in the community, and at farm schools and seminars on the subject.

5. Look at the economics of direct seeding and then decide for yourself if you want to make a change.

6. Look at the successful weed control that your direct seeding neighbours are able to achieve.

7. Look at the resources available to help you understand the concept, get

started and be successful at it.
8. Look at the crop rotations you can achieve under a direct seeding system.

THINK

1. Think about how fast your direct seeding neighbour seemed to get finished seeding ahead of you, and he didn't make near as many passes over the field, and "wow" does he seem to have a whale of a crop compared to you. How does he do it?

2. Think about growing only one crop on 30 inches of rain in a 15 inch rainfall area (crop-fallow).

3. Think about how a crop-fallow system gives a farmer enough to not quite survive.

4. Think about how direct seeding seems to be able to handle crop residues under a system and how water conser-

vation is always necessary and how they can both be easily managed under a direct seeding system.

5. Think about the hassles of proper fertilizer application and how easy it seems to be under a well designed direct seeding system.

6. Think about how little machinery seems to be present on a direct seeding farm and what the cost savings must be.

7. Think about how the established direct seeding farmer seems to have more time for fishing and family matters.

8. Think about getting a bunch of your smart neighbours together and attend the SSCA direct seeding workshop and annual meeting in Lloydminster in mid-February.

SSCA MEMBERSHIP

Full Membership - (Farmers)	1 year	\$50.00	_____
	3 years	\$100.00	_____
Associate Membership - (Non Farmers)	1 year	\$50.00	_____
	3 years	\$100.00	_____
Supporting Membership - (Institutions)	1 year	\$500.00	_____
	3 years	\$1000.00	_____

Name _____

Address _____

Postal Code _____ Telephone _____

SEC _____ TWP _____ RGE _____ W. of _____

(land location of home quarter for regional designation purposes)

Membership Enhancement Program:

If you are presently a member of the SSCA and wish to help the Association by recruiting new members, both you and the Association can benefit from your efforts. For every six (6) memberships sold in one year by you as a member, you will receive an additional 3 years membership as a bonus. To qualify, print your name on the applications you sell and forward the applications plus membership fees to the SSCA. Applications may be sent individually or as a group. All memberships received by the SSCA between 01 April and 31 March of each year will be counted towards this Membership Enhancement Program.

The Prairie Steward is published three times a year by the Saskatchewan Soil Conservation Association with support from:

Monsanto

Canada - Saskatchewan
Agriculture Green Plan

TransAlta
Utilities Corporation



Patricia Flaten
CLC Manager

Conservation Learning Centre News Productive Summer at the CLC

By Patricia Flaten, CLC Manager

This summer has been an exciting one for us at the Conservation Learning Centre. One reason for the excitement is the interest we have seen not just by producers, but also by about 35 other organizations, agencies and businesses. Our major partners with the SSCA, are Canada's Green Plan and Ducks Unlimited Canada. The project would not be possible without each one of the partners and supporters.



Farmers check out the CLC Field Day

Our projects tend to fall into the categories of forages, shelterbelts and of course, direct seeding. Although many of the official results have not been tabulated yet, I can describe some general results of new projects in this article. We will have more details to share in upcoming editions of the Prairie Steward. Incidentally, I expect the annual report of results to be in print by January. Please call or write if you wish to be on the CLC mailing list.

In the area of forages, our wetter than usual summer provided the perfect growing conditions for forages. Our grass variety plot, seeded by the Sask. Forage Council is fully established, including 35 different varieties and species. Heather Loepky, Melfort Research Station, also successfully established both alfalfa and meadow bromegrass. She is comparing conventional to direct seeding methods, as well as looking at alfalfa within the crop rotation. Phil Curry, Ducks Unlimited, arranged for some non-dormant alfalfa to be planted - it has established very well, but now we have to wait till next spring to see if it survives our winters. Although not a demonstration or research project, we have established some pathways which will make it much easier for organized and informal tours in future years. The public will be invited to use these pathways for 'U-Drive' tours next summer.

In the last Prairie Steward, I described our tree program, which PFRA and the Canadian Forest Service have adopted. This was not a particularly good spring for planting with a shelterbelt planter as it was so wet. But once the trees were planted, many by hand, they did very well. Our shelterbelt species garden, woodlot, forest belt, and field shelterbelts will only need minor additions next year. Now the challenge will be maintaining of all these trees. Sound familiar?

Direct seeding is a primary focus of the SSCA these days, and it is also a major part of our program at the CLC. We have projects that cover each of the five pillars of the direct seeding system. Adrian Johnston and Hugh Beckie, Melfort Research Station and Garry Hnatowich, Sask. Wheat Pool, will have data dealing with fertilizer management techniques available soon. Edge and Avadex were used as non-incorporated products, in peas and barley, respectively. Although neither provided 100% control of target species, there seems to be some positive results which may be adopted by direct seeders. We also have several researchers monitoring a variety of things, such as greenhouse gases, crop residue breakdown, weeds, and starting next year, surface water quality.

We have three quarters of land to work with, so a major part of CLC activity is not just working with researchers' plots, but 'farming'! We have decided to work within a crop rotation of pea - barley - flax/canola - wheat. Just like 'real farming', we had some disappointments. Sometime in mid-July a neighbour and I were discussing the subject of hail - apparently there hasn't been any in the immediate area since the '50's or '60's. Well, you guessed it, we received a healthy dose of vertically transported ice wads on July 28th. If it wasn't for the hail, the crops were hit by disease, insects or

lodging winds and rain. None of the crops yielded exceptionally well, but many learning experiences were had and that's why we call it the Conservation Learning Centre....

TO ALL OUR PARTNERS AND SUPPORTERS:

- | | | |
|---------------------|-------------------------|----------------------------|
| Cominco Fertilizers | Simplot Fertilizers | Sask. Wheat Pool |
| Canada's Green Plan | P.A. ADD Board | SSCA |
| PFRA | Ducks Unlimited Canada | Melfort Research Station |
| Flexicoil | Cdn. Forest Service | Sask. Ag. and Food |
| Gustafson | Canada-Sask. Green Plan | Saskatoon Research Station |
| Monsanto | DowElanco | Zeneca Agro |
| Esso Petroleum | BASF | Newfield Seeds |
| ProvenSeeds | Finora Seeds | Sask. Forage Council |
| Farm Credit Corp. | DuPont | Esso Farm-Tek |
| Pattison Brothers | University of Sask. | Crop Protection Institute |
| Moker & Thomson | Flaman's | Rhone Poulenc |

Thank-you from the CLC!



Managing Soils To Store Carbon More Effectively

By C.A. Campbell, B.G. McConkey, R.P. Zentner and F. Selles
Agriculture and Agri-Food Canada

Society is generally aware of our need to maintain or build-up the organic matter (carbon and nitrogen) in soils so as to maintain their productivity. More recently, another important factor has entered the picture, that is, the close apparent association between carbon, nitrogen, and "Greenhouse gases" and their relationship with global warming. There are important questions being asked regarding how we can best manage our soils so as to capture and store more of the greenhouse gases, such as carbon dioxide, in soil organic matter.

Results of two 12 year experiments conducted at the Swift Current Research Centre, one on our research plots and a second on an adjacent farmer's field, have provided valuable information pertaining to this subject. We found that, if land previously cropped in the customary fallow-wheat (half and half) rotation, where mechanical tillage was used to control weeds, was converted to continuous wheat with no-tillage (herbicides used to control weeds and direct seeded), the soil organic matter increased gradually at rates of about 0.4-0.5 tonnes/hectare/year. If, after years of no-tillage continuous wheat, we then reverted to mechanical tillage, organic matter would slowly decline, even though continuous cropping was still being practiced.

Our study suggests that, given a choice of using different tillage methods versus reducing summerfallow to sequester more carbon, the latter is by far the most effective approach. Of course, we know that increasing the cropping frequency is not easily done in the semi-arid southwestern Saskatchewan. However, implementing snow management, crop rotations and proper fertilization techniques will

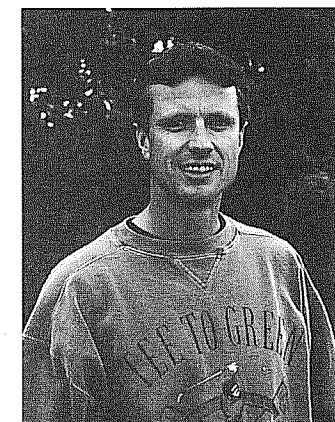
help in this regard. Reducing mechanical tillage or increasing no-tillage will also help, but not nearly as much as reducing fallow. For example, in one of the experiments we estimated that during the 12 year study period, continuous wheat gained about 2 tonnes/hectare more carbon than fallow-wheat, no-tilled continuous wheat gained 1.5 tonnes/hectare more carbon than mechanically tilled continuous wheat, while no-tilled fallow-wheat gained only 0.5 tonnes/hectare more carbon than mechanically tilled fallow-wheat. This evidence suggests that agriculture, with a change in method of soil management and cropping systems, can become an important sink for greenhouse gases, thus helping to mitigate or slow down the global warming phenomena.

REQUEST FOR SUBMISSIONS

Do you have ideas or comments on the conservation of our land resource? We would like to print them in future issues of the Prairie Steward. Pertinent photographs would be appreciated. Please forward to:

The Editor
Prairie Steward
c/o SSCA
Box 1360
Indian Head SK S0G 2K0

Northwest Director Profile



Dwayne Mitchell
SSCA NW Director

DWAYNE MITCHELL

- Married to Karen
- Two children
- Farms near Battleford
- Dark brown and black soil zone
- cereals, oilseeds, peas, mustard and forages

Q: How long have you been a member of the SSCA?

A: I have been a SSCA member for three years.

Q: Why did you get involved with the SSCA?

A: Being a member of the SSCA is just a logical thing to do for anyone who is concerned about preserving and improving their farmland. Being a part of SSCA puts a person in contact with others who have similar objectives, namely, conserving our soil. It's a nice feeling to be a member of an organization which sends a clear message to the public, that farmers have a genuine concern for the land,

and are not simply using the soil recklessly.

Q: How long have you been practicing conservation?

A: Soil Conservation is something I grew up with. Some the soil in our area is extremely fragile but with conservation practices can be preserved and be quite productive.

Q: What are some of your practices?

A: I have made a constant move towards less and less tillage. Although at this time I am still using a high disturbance system, direct seeding is still a big part of my seeding program. Crop desiccation has been very

helpful in reducing the need for tillage. Fall spraying for winter annuals is quite an asset in reducing the need for preseeded tillage. Planting highly erodible land to forage crops is also part of my conservation approach.

Q: Why isn't everyone in the province practicing conservation?

A: That's a good question. A lot of times I think it's just a case of resisting change. Old habits are hard to break.

Q: How can we, as an Association, convince the non-conservationists that conservation is important?

A: I think that being visible in whatever means will eventually touch everyone connected to agriculture. By promoting such things as direct seeding, marshland management, perennial forages and gully restoration will certainly affect everyone in one way or another.

Q: Do you see governments taking a more aggressive stand on soil conservation?

A: I am sure the government will become more involved in how we as farmers treat our soils. As much as I dislike government involvement in agriculture, I have seen instances where somebody should be able to stop atrocious abuse of the land. I'm also sure the public will demand it.

Q: Should our governments force farmers to practice conservation? (ex. If you don't practice, you don't tie into any farm programs.)

A: Perhaps, I say this with mixed feelings, when land is being blatantly misused, disallowing participation in farm programs could go a long way to conserving soil. But taken to an extreme, such involvement could leave us at the beckon call of the powers that be.

Q: Are we going to end up like the Americans with compliance programs?

A: Compliance programs are a very real possibility. I feel that the tax paying public, which farmers are part of, will demand responsible use of tax dollars.

Q: What are the benefits of joining the SSCA?

A: Membership in the SSCA not only keeps its members up to date on soil conservation practices, but helps to spread the message. So it is a much nicer feeling to be part of the solution rather than part of the problem. Not everything has a monetary gain to it, sometimes just being able to say that you belong to a highly respected organization is enough.

Q: What convinced you to run as a director of the SSCA?

A: Firstly, I wanted to know more about the SSCA and what made it tick. Secondly, I felt that my first hand experience with soil conservation may allow me to assist the board in the direction that it took.

Q: What impact do you hope to make as an SSCA director?

A: As a SSCA director, I hope to help expand conservation awareness in both urban and rural populations. I also think that with the help of the rest of the board, we can preserve and expand the membership of the SSCA as well as its image.

New Developments in Direct Seeding Equipment

By Blair McClinton
SSCA Soil Conservationist

There have been many developments in conservation tillage technology in recent years. Just keeping up to date on these developments is a major challenge. Earlier this fall, the SSCA staff met with industry representatives and researchers to find out what was new in direct seeding. This also gives us an opportunity to give some input to the manufacturers. The following is a brief overview what was covered at our meetings.

OPENERS

There has been a great deal of work done with openers in the last few years, especially in

effort to develop the allusive perfect double shoot opener. While no one has perfected an opener yet, the 1994 double shoot openers were a major improvement over the previous efforts. This is especially true from a durability stand point. The performance of these openers for seed and fertilizer separation, and seedbed quality varies regionally. In other words, some openers seem to work better in some areas than others.

Most of the manufacturers agreed that correctly setting the fan speed on the air seeder is critical to opener performance. Too much air causes seed bounce which affects the seed in two ways. Seed bounce causes variable seed depth and can

blow the seed into the fertilizer row. This can be a bigger problem with small seeded crops like canola which have high nutrient requirements.

AIR SEEDERS

There have been a few changes in air seeders this fall. The manufacturers air trying to make their air systems more compatible with double shooting by making both larger capacity air tanks and also by making smaller systems for mid-sized farmers.

Bourgault is coming out with a 350 bushel air system with an integral third tank. They are also offering a duel fan option to allow for double shooting. This duel fan system provides a

simple but effective air flow control for both seed and fertilizer. Bourgault are also starting to marketing their Coulter Disc drill this winter.

Flexi-coil will be manufacturing the Barton No-till Disc opener system for this season. This system uses a single disc opener running on approximately a 20 degree angle. Configuring the disc this way reduces the amount of weight the disc openers need for penetration. The manufacturer claim's there is a reduction in hairpinning as well as eliminating the need for additional ballast on the air seeder.

Conserva Pak is now offering a pneumatic tire packer as an option this year. This option

should help to reduce mud build-up in clay soils. Seed Hawk is now offering a smaller version of its seeder with gravity metering. These seeders come in widths ranging from 18 to 22 feet and are designed for smaller farms.

We also met with several researchers from around the province. While they didn't have any new data available at the time we met with them, we had a good discussion on the state of direct seeding in Saskatchewan and what some of the new issues were going to be.

Some of the latest in direct seeding research will be presented at the 1995 Direct Seeding Conference in Lloydminster.

1995 Direct Seeding Workshop: A Systems Approach February 14 & 15, 1995 - Lloydminster, Saskatchewan

NAME: _____ ADDRESS: _____
POSTAL CODE _____ PHONE _____

Single & Proceedings \$60 Workshop Pre-Registration before February 1, 1995: Husband & Wife \$90 Total Amount Enclosed _____

Please make cheques payable to Saskatchewan Soil Conservation Association

Mail to: Direct Seeding Workshop
Saskatchewan Soil Conservation Association
Box 1360, Indian Head, Sask.
S0G 2K0 Phone: (306) 695-4233

Complete
Conference Details
on Page 12

AVOID DISAPPOINTMENT REGISTER EARLY

Special Draw Prize For SSCA Members



SASKATCHEWAN SOIL CONSERVATION ASSOCIATION

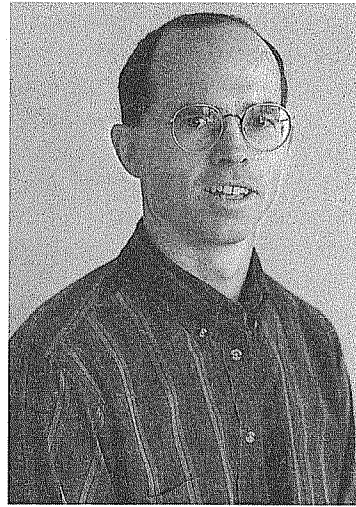
Monsanto

With Support From
Canada - Saskatchewan
Agriculture Green Plan



Designing Crop Rotations For Direct Seeding Systems:

By Garth Patterson and Garry Meier



Garth Patterson
SSCA Soil Conservationist

INTRODUCTION

In our previous article (newsletter #12) we discussed the concept of crop rotations as a system utilizing various management tools. These tools included crop diversity, crop residue and moisture management, crop water use, and weed control. In this issue we will focus on the idea of managing crop residues in a direct seeding system.

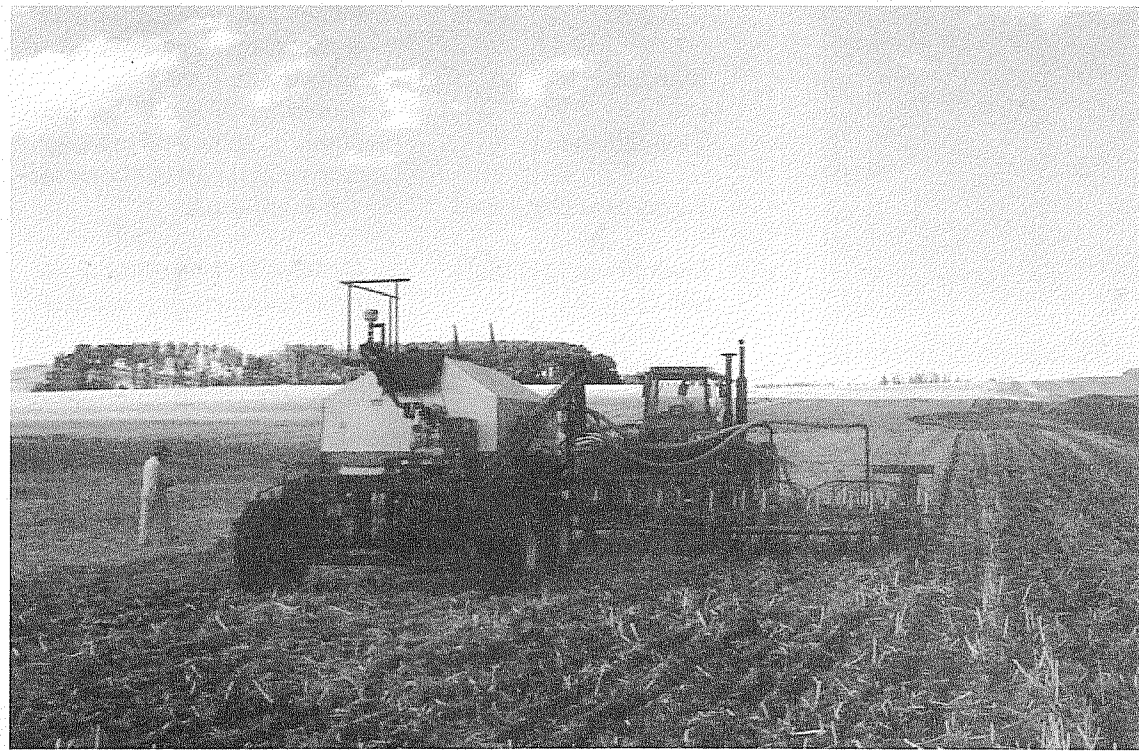
THE BASICS

The number one rule is to cut the stubble and chop the straw no longer than your shank spacing. This means that a seeder with a shank spacing of 8" will usually seed through stubble that is 8" high. Narrow openers will pass through taller stubble, but stick to this rule if you're using wider openers. Taller stubble in the fall usually means a better snow catch. If this is important to you, it may be worth your while to cut the stubble high, and then manage it in the spring. Seeding with a disc opener or running coulters in front of your knives will improve your machines' ability to pass through standing stubble.

The number two rule is to put the residue back where you got it from. This means that the chaff should be spread over at least 50% of the width of cut, and the straw should be chopped and spread over 100% of the width of cut. Poor spreading of straw and chaff will result in uneven surface moisture and soil temperatures at seeding. This could cause uneven emergence, especially with small seeded crops. Preharvest use of Roundup helps even out crop maturity, resulting in straw that is easier to chop and spread (perennial weed control is an added benefit!). If your combine's straw handling system requires upgrading, Redekop, Dutch and REM are three Saskatchewan companies that manufacture straw and chaff management systems. The residue

coming out of rotary combines may not require additional chopping, but will still require spreading.

Harrows and crop shredders are effective in managing straw, however this operation will likely cost you more than managing the straw with the combine, especially if you consider labour and depreciation of new equipment. If you're going to harrow, the most effective time is as soon as the combine leaves the field. Remember that harrows do not move chaff, this must be done with the combine! Some farmers prefer to improve combine efficiency by putting as little straw through as possible, and then manage the straw at a later date; the choice is yours!



Low Residue Fields like Canola Stubble Warm up and Dry out Relatively Early.

POSSIBLE ROTATIONS

Let's now examine how crop residue might be managed in two of our recommended rotations from the previous article:

Rotation #7			
Year 1 cereal	Year 2 broadleaf (canola, mustard or sunola)	Year 3 broadleaf (lentil or pea)	Year 4 cereal

Rotation #8			
Year 1 broadleaf (canola, mustard or sunola)	Year 2 cereal	Year 3 broadleaf (lentil or pea)	Year 4 cereal

Here's an example of how rotation #7 may be used to manage residue in your direct seeding operation:

Year 1 wheat	Year 2 canola	Year 3 peas	Year 4 barley (2 row)
-----------------	------------------	----------------	-----------------------------

The wheat in year one will be one of the last you seed because it will be on barley stubble. The field will have a higher surface moisture content, and will be slower to warm. In table one, Henry and Bulman at the U. of M. found differences in straw and chaff produced by different wheat varieties. Shorter varieties generally produced less straw, however awned varieties produced a greater proportion of chaff. Avoid a variety that produces excessive chaff. Try a variety that produces only a moderate amount of straw, and has good disease resistance (CDC Teal is an example from table one). Be sure to do a good job of residue management in the fall because you will be seeding canola next spring!

Winter wheat may be a good choice in the second year of a cereal on cereal rotation

because it is always easier to seed into heavy residue in the fall under warm dry conditions. It will also be more competitive with the volunteer barley from last year. Make sure the barley

crop goes in moderately early so you can get it off and put the winter wheat (or fall rye) in. This should be possible because there would have been a lower residue producing pea crop the year before.

Blackleg caused serious losses for canola growers in 1994. Polish varieties have poor resistance to blackleg, so make sure they're seeded early to reduce the chance of blackleg. You may want to select an Argentine variety with good blackleg resistance. Plan on seeding this field midway through the growing season, likely the around the second or third

week of May, depending on the year. Canola can be tricky to establish by direct seeding because accurate, shallow seed placement to moisture is required. This means that you must have done a good job spreading straw and chaff in last year's wheat crop. Variable surface moisture caused by an uneven spread of straw and chaff may result in an uneven stand of canola.

Year 1 canola	Year 2 wheat	Year 3 peas	Year 4 barley
------------------	-----------------	----------------	------------------

The pea crop in year 3 will be one of the first you seed. The canola stubble will dry out and warm up relatively early. Delayed seeding of this field could result in disaster if it's a dry spring because the low residue levels will allow the soil surface to dry. Direct seeding into a dry soil surface will likely result in lumping and poor soil flow around openers. Peas love direct seeding and should do well in the canola stubble!

Instead of seeding the barley last, you should target early to mid May because the pea stubble will warm up quicker than cereal stubble. This will improve your chances of getting a malt grade! You should be able to cut back on

your nitrogen fertilizer because of the legume benefit of the peas. You may want to try a two row variety. It will volunteer less the next year, reducing the risk of contaminating your wheat crop.

Here's a possible application of rotation #8.

Rotation #8 is superior from a residue management point of view because the cereals are not back to back. There is a greater risk of leaf diseases when a cereal is grown on cereal stubble. There may be more logistical problems with dates of seeding because the wheat and barley will likely be able to be seeded earlier on the pea and canola stubble. It may be difficult to seed the peas as early as desired because of the wheat crop the previous year. Some will argue that the risk of sclerotinia is greater in rotation #8 because there is never two years between susceptible broadleaf crops, however this has never been tested.

Table 1: Straw and Chaff Produced by Selected Wheat Varieties

Variety	Description	Height (in)	Straw (lb/ac)	Chaff (lb/ac)	Total Res. (lb/ac)
AC Minto	tall, awnless	44.0	4779	971	5750
Katepwa	tall, awnless	42.4	3661	907	4568
Glenlea	tall, awnless	43.6	3450	728	4178
Grandin	s-dwarf, awned	35.8	3101	931	4025
CDC Teal	tall, awnless	37.9	3102	745	3847
BW-148	tall, awnless	38.1	3076	630	3699
Roblin	tall, awnless	38.1	2834	716	3550
AC Taber	s-dwarf, awned	32.0	2097	745	2841

Adapted From: Henry and Bulman, University of Manitoba, 1994.
Note: All straw and chaff levels based on a yield of 35 bu./ac.

What Kind of Beard Is a Goat's Beard?



By Juanita Polegi
SSCA Soil Conservationist

Tragopogon dubius Scop. isn't exactly a name that rolls off your tongue but becoming familiar with the plant may be very important to direct seeders in the near future.

The first time I saw Goat's Beard (the plant's common name) I was near Birsay about ten years ago. The goat's beard plants were growing in sandy, almost dune-like soil, so I thought they were pretty much contained to the drier, lighter soil associations. I realized I was wrong when the first goat's beard reared its distinctive head near Jedburgh (north and west of Yorkton) a couple of years ago. Unlike most weed species that invade from the east, goat's beard appears to be moving from the west. That helps to explain why it is just beginning to show up on the eastern side of the province.

Both the flower and the fruiting head of goat's beard

Stubble Management Field Demonstration

... Continued From Page 1

Ken says there are a number of benefits to using stubble cutters. The first is that by leaving tall stubble over the winter, more snow can be trapped for early spring moisture. The second is that cutting the stubble in the spring enables the seeding implement to seed directly into the stubble. The third benefit is that with the stubble cut so high, roughly 40% less material is going through the combine. This greatly improves the combine's efficiency and reduces operator stress!

Also demonstrating at the field demonstration was the Buffalo Seeding System designed by Sherwin Peterson of Rose Valley. The steel individual shank mounted packers are adaptable to 8, 9, or 12 inch shanks. An innovative feature of the packing system is its strut and spring assembly for controlling packer pressure.

are distinctive. The flowers, appearing in July and August, are comprised of only yellow coloured ray florets. Giving the flower head a spiked appearance are 10 to 14 green, pointed involucre bracts which are longer than the outer ray florets. Like dandelions and thistles, goat's beard produces "cotton balls" of seeds although the goat's beard ball is relatively large. It's the large number of seeds, the fleshy taproot, the biennial growth habit, and the goat's beard's preference for undisturbed habitats that should alert direct seeders. While cultivation usually controls this weed easily, direct seeding may, in fact, encourage its establishment.

What to do if goat's beard is present? Because the plant is so distinctive, especially at flowering, it is easy to identify. If there are only a few plants bordering the field or in the field, pick them and get them out of there! If too many plants are already established and roguing can't be done, then herbicide control may be an option. But when we turn to Saskatchewan Ag & Food's publication "Weed Control in Field & Forage Crops 1994" we see that herbicide choices are limited.

Goat's beard seedlings tend to be susceptible to 2,4-D amine LV500 at a rate of 0.34 - 0.45 l/ac or 2,4-D ester LV700 at a rate of 0.24 - 0.32 l/ac. The seedlings tend to be more resistant to MCPA.

Another feature is that the packer and seed tube are a component unit.

The field demonstration also was an opportunity for the local John Deere dealership to demonstrate one of its new 8000 series tractors.

Sponsoring the event were the SSCA, Saskatchewan Agriculture and Food, and Humboldt Farm Equipment Ltd. (Kelvington). Thanks are extended to Monsanto for providing a case of Roundup for a "field gate" prize.

For more information on the single knife stubble cutter, contact AJ Muchka (403)546-2423; the double knife stubble cutter, contact Ken Blosser (306)327-4832; and the Buffalo Seeding System, contact Sherwin Peterson (306)322-4660.

Goat's beard is a weed that has been found at the Indian Head Experimental Farm. Doug Derksen, one of the Farm's weed control researchers, controls goat's beard seedlings by applying 2,4-D in the fall and applying 0.5 l/ac of Roundup the next spring. He says that this method of control appears to be more effective than just spring applying 0.5 l/ac of Round Up. It seems when the seedlings receive only Roundup in the spring, a lot more "escapes" occur.

While not yet a common weed around the province, goat's beard should be respected. Take measures to keep it under control.



A large yellow flower is a key feature of Goat's beard

Conservation Farmers Helping Farmers

Does conservation farming look difficult? Why not talk to a farmer who has tackled the same situation that you are facing? The **Conservation Farmers Helping Farmers Directory** houses the names of SSCA members who are willing to accept phone calls about their conservation farming practices and equipment.

Interested in the kind of equipment direct seeders are using in your soil zone? Concerned about quackgrass in your minimum tillage operation? Considering shelterbelts as part of your conservation plan? Get the facts from experienced farmers.

How does it work? Simply call the SSCA Indian Head office at 695-4233 and ask to use the **Conservation Farmers Helping Farmers** service. You will be able to specify the conservation techniques, equipment and practices you have questions about. The SSCA will then search the directory and provide the names and phone numbers of any members who have experience with the conservation methods or equipment in question.

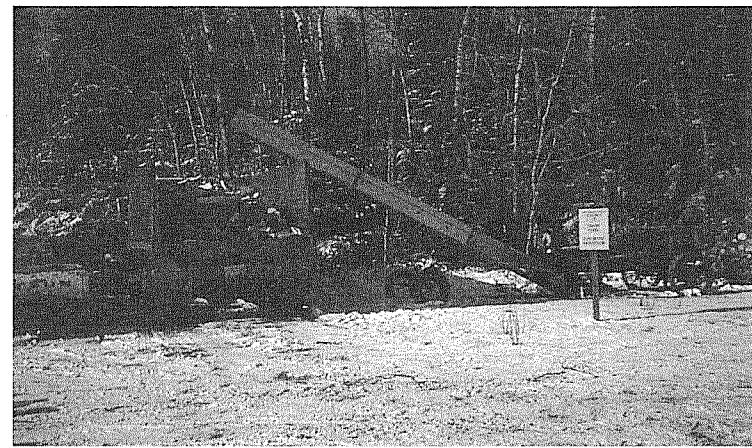
Some examples of conservation information and experience included in the directory are:

- direct seeding
- conservation equipment
- conservation tillage
- barrier strips
- rotational grazing
- alternate crops
- weed control
- residue management
- chemfallow, shelterbelts
- forage establishment
- soil salinity management
- wildlife habitat enhancement

This is an ideal opportunity for farmers to take advantage of a large and diverse source of practical knowledge...other farmers!

Farm Woodlot Management

By Robert Fincati
Extension Agroforester
The Farm Woodlot
Association of Saskatchewan



Woodlots can provide off-farm income

Do you have a few acres of trees on your farm and wonder what potential they have and what you could do with them? Woodlots can provide many things for different people. Often a woodlot can provide a valuable source of supplemental farm income: producing lumber, pulpwood, firewood, mushrooms, berries, or Christmas trees. Additionally, woodlots can be managed for wildlife habitat, recreation, or simply as a place to relax and unwind. Most importantly, woodlots can exist for more than just one purpose.

Woodlot management is work carried out to derive personal benefits from the woodlot, while protecting the quality of its natural resources (soil, wood, water and wildlife) for future generations. A woodlot contains a wide variety of interdependent plants and animals, and management decisions will affect the character of this environment for decades to come. Therefore it is important to wisely choose management options while considering the whole ecosystem.

Where do you begin? To be successful, you must be familiar with your woodlot

and know a little about woodlot management. Start by walking through it and learning to identify some of the trees and plants. There are many free publications available and knowledgeable people to help you learn about woodlot management. You can also visit other woodlots and talk to people who practice woodlot management.

The Farm Woodlot Association of Saskatchewan (FWAS) is a non-profit corporation established by private woodlot owners dedicated to promoting farm woodlots across Saskatchewan. As the FWAS Extension Agroforester, I am available to visit your farm woodlot, assess its potential and help you develop a woodlot management plan according to your objectives. This plan will suggest specific management practices to integrate your

objectives with your woodlot's potential. These might include planting trees, fencing, installing wildlife nest boxes, harvesting timber, clearing access trails, maintaining firebreaks, thinning a dense stand of trees or protecting a unique natural resource. In order to have a woodlot management plan completed, you must have a minimum of 40 acres of woodlot and have an interest in actively managing it.

The Farm Woodlot Association Extension Program offers you the opportunity to derive more satisfaction from your woodlot. Under wise management, you will see your forest grow to its potential. You may also be eligible for financial assistance through incentive funding. For more information, contact Robert Fincati, Box 760, Meadow Lake, SK S0M 1J0 or phone (306)236-3319.

New Northeast Soil Conservationist

By Garry Mayerle

As the new SSCA soil conservationist for the Northeast region, I would like to take this time to introduce myself.



Garry Mayerle
SSCA Soil Conservationist

I grew up on a farm just a few miles northeast of Tisdale. I graduated from Providence Bible College with a BA in 1980. I then went to the U. of S. where I completed my degree in agriculture in 1984.

Three months after I was married, my wife, Florence and I spent a year and a half doing missionary work in Central America (Belise, Guatemala & Honduras). Since our return to the family farm, we have been involved during the winters with a project we started there.

In addition to working on the farm I have had several part-time positions in the agriculture industry. My work as the District 26 Soil Technician in the Save Our Soils program was good preparation for my new position with SSCA.

I believe that within the roots of the family farm is

the desire to conserve the soil for future generations. In the past we have been somewhat misguided as to the best way to achieve this goal. The present emphasis on direct seeding is giving many a better understanding of how they can conserve the great natural resource we have been given.

In the next few months I look forward to meeting many of you in the northeast as I put on direct seeding courses. My office is located in the Rural Service Centre in Tisdale. I am proud to be part of the effort toward soil conservation in our province!

NEW CLASSIFIED ADVERTISEMENT SECTION FOR THE PRAIRIE STEWARD

Starting in the next issue of the Prairie Steward (March 1995), the SSCA will be adding a classified ads section for conservation equipment and services. This service is offered to SSCA members, free of charge. Advertising categories will include:

- Seeding Equipment,
- Chaff and Straw Spreaders,
- Custom Direct Seeding,
- Custom Tree Planting and Maintenance
- Miscellaneous Conservation Equipment and Services.

Ads may be placed by either mailing or faxing the information to:
Prairie Steward, c/o SSCA
Box 1360
Indian Head SK S0G 2K0 Fax: 306-695-4236.

Ads should be kept to 25 words or less. The submission deadline for the March 1995 issue is February 15, 1995. For more information on this service, contact the SSCA at 306-695-4233.

SSCA's Soil Conservation Awards

Do you know a conservation farmer or conservation group whose efforts to promote and practice soil conservation have influenced other farmers and the general public? If you do, consider nominating them for one of SSCA's Soil Conservation Awards. Nomination forms are available from any SSCA staff member.

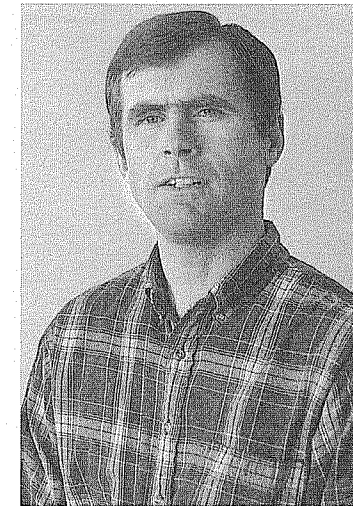
Two awards:

CONSERVATION PRODUCER AWARD
CONSERVATION GROUP AWARD

Send nominations before January 13, 1995 to:
Bob Linnell
Saskatchewan Soil Conservation Association
110 Souris Avenue
Box 2003
Weyburn SK S4H 2Z9

These awards are jointly sponsored by the SSCA and the Western Producer.

Part Two



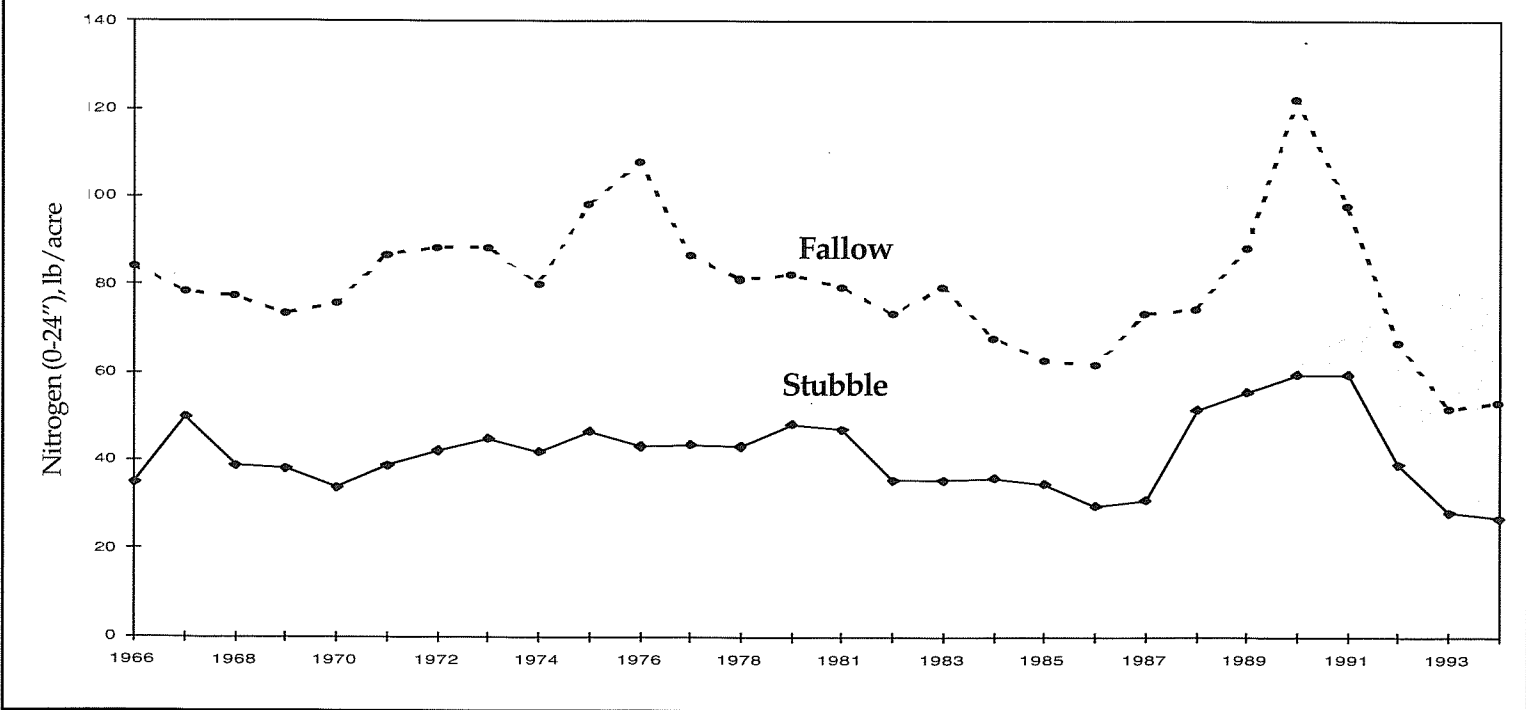
Garry Meier

SUMMARY

These rotations may not suit you, but keep the principles in mind and you'll be able to develop something that works for you. The basic tools of residue management were best described by Ron Bell (a Manitoba farmer) at last year's ManDak Zero Till Workshop:

- 1) "Rotate high and low residue crops."
 - 2) "Grow shorter strawed varieties."
 - 3) "Grow cereal crops that break down easier (barley, durum)."
 - 4) "Seed early and harvest early."
 - 5) "Avoid harvesting heavy strawed crops when damp."
 - 6) "Don't cut too high (or use a shredder if you do)."
 - 7) "Use lifters in a lodged crop." (and a pickup reel too!)
 - 8) "Spread straw and chaff well."
 - 9) "Avoid unnecessary tillage, especially with sweeps."
 - 10) "Use seeding equipment with good residue clearance."
 - 11) "Avoid seeding high residue fields on wet days."
 - 12) "Do as many of the above as possible!"
- We would probably add a few others to Ron's list:
- 13) The use of crop desiccants or preharvest products will make the residue easier to manage.
 - 14) Avoid preseeding tillage with sweeps in heavy residue crops (you have one free pass, make sure it is your seeding operation!)
 - 15) Be flexible!
- In our next article we will discuss weed control strategies for successful crop rotations in direct seeding systems.

Historical Soil Nitrogen Levels in Saskatchewan



Nitrogen in Saskatchewan Soils Still at Low Levels

By Rigas Karamanos
Plains Innovative Laboratory Services

Soil "available" nitrogen levels in the province this fall remain amongst the lowest in the last 28 years, according to historical records kept by Plains Innovative Laboratory Services (formerly the Sask. Soil Testing Lab) in Saskatoon. There has been a slight overall decrease in the mean (average) nitrogen levels of stubble fields (27.0 lb/acre compared to 28.3 lb/acre last fall). The only exception is the Meadow Lake area where nitrogen levels remain relatively high.

We started the 1994 growing season with record low nitrogen levels but neither fertilizer inputs nor weather conditions were conducive to recharging the nitrogen in the province's soils. Many producers realized during the summer that crops were not fertilized adequately with nitrogen. As a result the laboratory carried out more plant tissue analyses in 1994 than ever before.

Plant tissue analysis is not as widely used as soil testing is. Therefore, the compiled database is not large enough to carry out statistics on a provincial basis. However, it is indicative of the problems producers encountered during the 1994 growing season.

Over 50 percent of the some 500 plant samples submitted this summer represented nitrogen deficient crops. Many of these samples were from legume crops, such as peas and lentils, which are known to "fix" nitrogen from the air. However, legumes "fix" only 50 to 80 percent of their nitrogen requirement from the air. Cool spring conditions prevented soil mineralization, which is responsible for nitrogen release from the organic nitrogen pool in order to supply the balance. This natural source of nitrogen was in a limited supply for all crops and combined in many cases, with inadequate fertilization resulted in either lower

than expected yields or lower protein levels in cereals.

Realization of the low nitrogen status of soils has sparked interest for soil testing this fall. The laboratory has already processed 45 percent more samples compared to the whole 1993 fall testing season. This means that some 8.5 tonnes of

soil have gone through the laboratory since October 1.

Another noticeable change has occurred in the "available phosphorus levels. Historically, available phosphorus levels have remained constant. However, this year we have observed a mean decrease of 7 lb/acre in the soil phosphorus

levels compared to the previous five year average. The chemistry of phosphorus in the soil is quite complex and very much environmentally dependent. However, this year's levels may signal that greater attention should be paid to phosphorus fertilization after three consecutive years of above average crops in the province.

SSCA's 5th Annual Photo Contest



Open To All Amateur Photographers

Photos must have been taken in the last three years
All photos will be returned
Photos cannot have been entered in previous SSCA photo contests
Photos must be received by January 13, 1995
What does your conservation farm look like? Is it a winner?
Slides or prints welcome (originals only)
Each photo must be clearly labelled
Must be present at the annual meeting to win

Three Categories:

SOIL CONSERVATION SOIL DEGRADATION WILDLIFE AND HABITAT

Send Photos To:
Bob Linnell
Saskatchewan Soil Conservation Association
110 Souris Avenue
Box 2003
Weyburn SK S4H 2Z9



SASKATCHEWAN SOIL CONSERVATION ASSOCIATION

Direct Seeding Manual
1994 UPDATE
Farmer Modifications
Real Economics

Increase Profits

THE MOST UP-TO-DATE HOW-TO MANUAL ON DIRECT SEEDING.

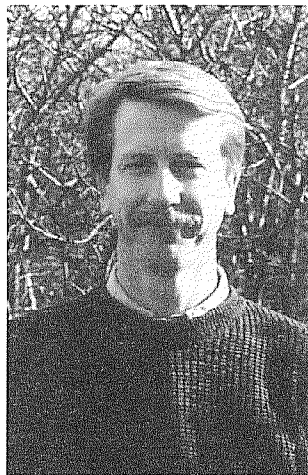
Contains 160 full color pages in a 3 ring binder designed to provide you with all the information you need to Increase Your Profits using either minimum or zero till systems.

Get detailed information on:

- Crop Rotation
- Weed Control
- Seeding Equipment
- Seeding Principles
- Residue Management
- Soil Fertility
- Economics
- Farmer Modifications

Direct Seeding Manual
Call Paulette at...
1-800-567-7264
8AM To 5PM Mon. Thru Fri. (Sask)
\$29.00 GST Included
Visa or Mastercard

****SSCA Members****
\$10 Rebate For SSCA Members who purchase a Direct Seeding Manual before March 31, 1995.



Eric Oliver
SSCA Soil Conservationist

Using Computers to Keep Field Records

By Eric Oliver
SSCA Soil Conservationist

Kelly Klaas has written articles in Grainews describing how one can record the field information on a word processor and include a graphically represented picture of the field along with this information. Including a picture of the field is an excellent idea as it makes identification much easier and more clear for yourself and others, especially hired hands or people who do custom work for you.

Although the method described by Mr. Klaas is good and will be very effective, recording this information on a spreadsheet instead of a word processor allows the farmer more flexibility in

Year	Crop	Herbicides Used	Herbicide Group	Fertilizer Applied	Fertilizer Rate lbs./ac.	Yield bu./ac.	Field 3 40 ac.
1992	Canola	Edge Muster	3 2	11-55-0	50	27	
1993	Wheat	Triumph Plus	2	27-27-0	125	38	
1994	Sunola	Treflan	3	27-27-0	140	16	

Table 1: Field 3 Record Sheet

Year	Crop	Herbicides Used	Herbicide Group	Fertilizer Applied	Fertilizer Rate lbs./ac.	Yield bu./ac.	Field 4 31 ac.
1992	Wheat	2,4-D Avadex	4 8	34-0-0	40	35	
1993	Barley	Hoe-Grass II	1 & 6	27-27-0	125	45	
1994	Wheat	Amber	2	27-27-0	140	30	

Table 2: Field 4 Record Sheet

the field with the field information on screen. In other words, you can draw a picture of the individual fields and the quarter section within the spreadsheet program and include pictures within the spreadsheet (Figure 1). The method of drawing the pictures will vary, depending on the spreadsheet program, however, it is generally not a difficult process. Creating a graphical picture can be more difficult with some spreadsheets that are DOS based. However, even if a picture of the field cannot be included within the spreadsheet, one can still draw a picture of the field on paper, then identify the field and similarly identify the information on the spreadsheet as a particular field. The point is you can

set up your own field record system with any spreadsheet program with relatively little effort.

As mentioned earlier, you can make the field record system as easy or as complex as you feel comfortable with. However, it is generally best to start slow. You can always make it more complex later. The main point of this article is to stress the importance of keeping field records. A lot of dollars can be at stake if a serious mistake is made. It really doesn't matter what system you use as long as you are comfortable with the system and it is easy to record the information. In many cases, the kids are the ones in the family who are most experienced with computers and could help set up the field record system. This could be

a great opportunity to get them directly involved in the farming operation at the management level. I would be interested in hearing from any of you who have developed your own system of recording farm and field records. Exchanging information and ideas can often spur new ideas, find answers to annoying problems, or develop a better system of doing things based on a combination of ideas. Due to the differences between spreadsheets, I have not described a step-by-step process to make a graphical picture of the fields and place it in the spreadsheet. However, if you have any questions as to the process, or would like more information on the field record system described in this article, please feel free to contact me.

The number of farmers owning a computer has risen dramatically over the past five years. However, computers are still on average, under utilized by farmers. There are a variety of reasons for this, but the fact is that computers will become more important to the farming operation as a management tool as time goes on. One of

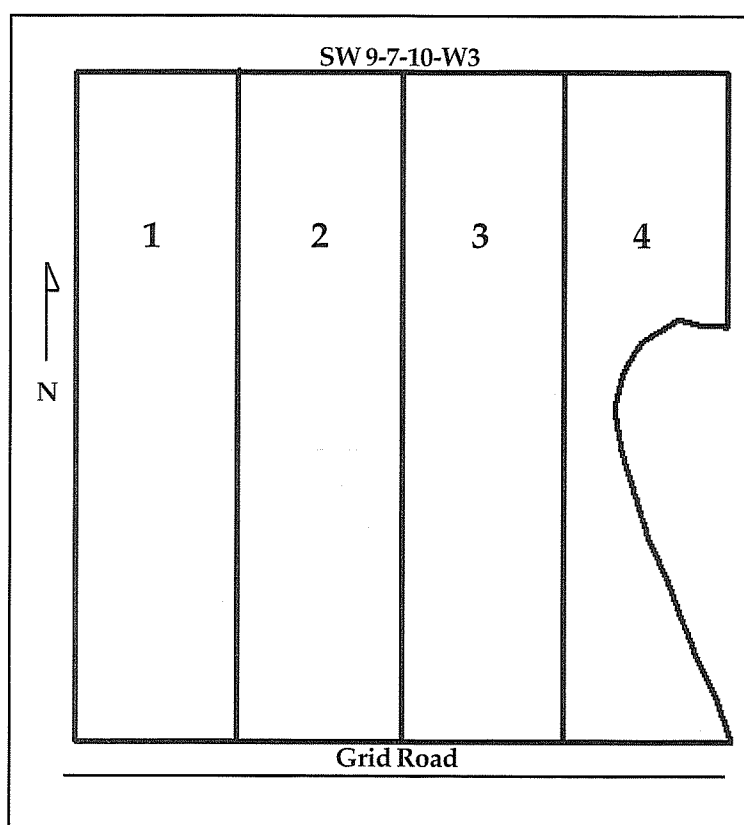


Figure 1: Field record showing field boundaries of quarter section and individual fields.

the key management tools in any farming system involves keeping farm records. There are software packages that compare crops and inputs to help make management decisions, however, few software packages have a field record system.

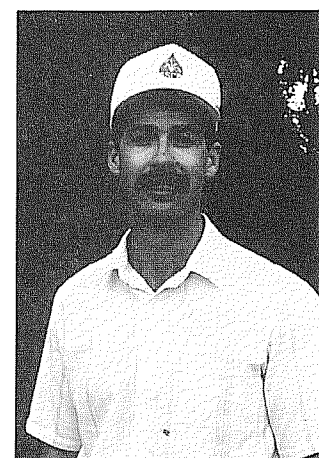
Accurate field record information is essential when making management decisions on crop inputs and rotations. Due to the potential for herbicide resistance developing in weeds, rotating herbicides from each herbicide group becomes very important. Although this information can be recorded manually on paper, keeping records on computer allows the farmer more flexibility in utilizing the information when making management decisions. In addition, the information can be moved around and changed much more easily as compared to when it is recorded manually on paper.

how the information can be used. Calculations can be automatically incorporated into the records and the information used in other spreadsheet applications. In the example provided, I included only the basic information needed to make crop and herbicide rotations. The amount of field information you want to record is limited only by the amount of time you wish to spend obtaining and entering the information on the computer and the level of detail desired. In most cases, you will likely start off recording only the minimum information necessary to make your decisions. However, as time goes on and you become more familiar and confident with the system, more information can be included.

Spreadsheets such as Quattro Pro, Excel, and Lotus 1-2-3 that are Windows based, can include a graphical picture of

Upcoming Events

Field Research Studies: Design and Analysis Workshop University of Saskatchewan	Saskatoon, SK	Dec. 7-9, 1994	Contact: Grant Wood, (306)966-5588
Crop Production Week Saskatoon Inn	Saskatoon, SK	Jan. 10-14, 1995	Contact: Joan Heath, (306)668-2380
Annual meetings, research updates and social events by: Saskatchewan Pulse Crop Development Board Saskatchewan Canola Development Commission Saskatchewan Ag Grads Association Saskatchewan Winter Cereal Growers	Saskatchewan Seed Growers Association Saskatchewan Canola Growers Association Flax Growers Western Canada		
Western Canada Crop Production Show Wheatland Centre	Saskatoon	Jan. 10-13, 1995	(306)931-7149 Saskatoon Prairieland Exhibition
1995 Manitoba - North Dakota Zero Tillage Workshop Workshop Theme: "Farming For Maximum Efficiency" Keystone Centre/Victoria Inn	Brandon, MB	Jan. 23-25, 1995	Contact: Bob Bradley, (204)726-7584
1995 Direct Seeding Workshop: A Systems Approach Lloydminster Exhibition Grounds	Lloydminster, SK	Feb. 14-15, 1995	Contact: SSCA, (306)695-4233
Opportunities & Challenges in Sustainable Agriculture 1995 Alberta Conservation Tillage Society Annual Meeting Westerner Park	Red Deer, AB	Feb. 23-25, 1995	Contact: Russ Evans, (403)936-5306
Soils and Crops '95 Workshop: An Agrologist Update University of Saskatchewan	Saskatoon, SK	Feb. 23-24, 1995	Contact: Grant Wood, (306)966-5588
1995 SSCA Direct Seeding Field Day	Indian Head, SK	June 20, 1995	Contact: SSCA, (306)695-4233



By Ken Sapsford
SSCA Soil Conservationist

Seed placed Nitrogen Fertilizer

resulting in poor weed control even though there was a yield response.

- 80 lbs. of seed placed nitrogen gave a poor stand, lower yield and delayed maturity.

- These were compared to side banded fertilizer up to 80 lbs. that showed no damaging effect on the germination or maturity.

Even though there are several double shoot boots on the market these days there are still many farmers who are single shooting. So the question is always coming up "How much fertilizer can I put with the seed?"

There is a good publication **FARM FACTS Guidelines for Safe Rates of Fertilizer Applied with the Seed** produced by Saskatchewan Agriculture and Food. Safe rates of nitrogen with cereals are listed in Table 1.

Many farmers feel that these rates may be conservative, so they are experimenting on their own. The District #23 ADD Board has been demonstrating the effect of seed placed nitrogen with cereals for the past three years. The demo was done on a clay loam soil with a knife opener (1 inch spread) with 7.5" row spacing. According to the table above the safe rate of seed placed nitrogen would be around 25 lbs. All three years the seedbed moisture was excellent.

The first two years of this demo showed similar results:

- 20 lbs. of seed placed nitrogen did not damage the crop, but was not enough nitrogen to meet the crop requirements.

- 40 lbs. of seed placed nitrogen gave a good yield response but caused a delay in maturity of two to four days, in 1993 this caused a lower grade due to frost.

- 60 lbs. of seed placed nitrogen produced an unacceptable crop due to delayed maturity. This was also a thin crop

In 1994 the third year of this demo the site received a substantial amount of rainfall five days after seeding the plots. In this case there was no delay in germination, no thinning of the crop, no delay in maturity and no yield decrease due to seed placed nitrogen up to 80 lbs. When compared to sidebanded fertilizer there was no difference.

What this demo shows us is that the safe rates of nitrogen published in the **FARM FACTS** did not cause any seedling damage but slightly higher rates may produce a satisfactory crop if you are willing to risk a few days later maturity. The other thing shown here is that we should not use one year of experimenting with higher rates of seed placed nitrogen to base our practices on. If we only took 1994 test results we would conclude that there was no damage from high rates of seed placed nitrogen which would lead to disaster on some years.

The amount of nitrogen fertilizer you can safely seed place depends on many factors:

- Soil moisture
- Soil organic matter
- Soil texture
- Seed row spread
- Row spacing
- Nitrogen source (46-0-0 or 34-0-0)
- Seed type (cereal, oilseed or pulse)

All of these factors must be considered before you determine how much fertilizer you will seed place on your fields.

Soil Texture	Disc or Knife Opener (1-inch spread)			Spoon or Hoe Opener (2-inch spread)			Sweep Opener (4to 5-inch spread)		
	Row Spacing			Row Spacing			Row Spacing		
	6"	9"	12"	6"	9"	12"	6"	9"	12"
Light (sandy loam)	20	15	10	30	20	15	35	30	20
Medium (loam-clay loam)	30	20	15	40	30	20	55	40	30
Heavy (clay-heavy clay)	35	30	20	50	35	25	65	50	35

Table 1: Safe Seed Placed Urea (46-0-0) N Applications with Cereals (all rates are in lbs. of actual N per acre) Source: Saskatchewan Agriculture and Food



1993 80 lbs. N Seed Placed on the Left

1993 80 lbs. N sidebanded on the Right



1994 80 lbs. N Seed Placed on the Left

1994 80 lbs. N Sidebanded on the Right

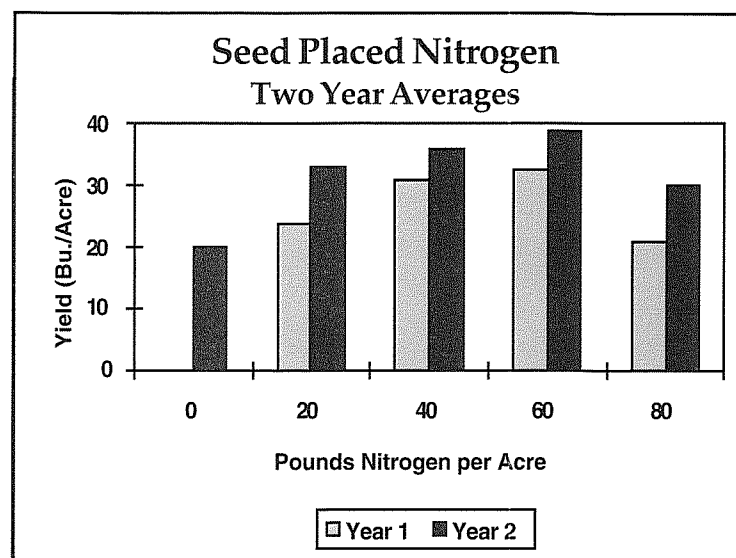


Figure 1



1993 Delay in Maturity: 80 lbs. N on Seed Placed on the Left, 80 lbs. N Sidebanded on the Right

Have you modified your equipment to direct seed?



Winners, Jayman and David Zinkiew, Durban, MB

Enter your machine in the SSCA's Farmer-Modified Direct Seeding Equipment Competition.

The 10 Finalists will demonstrate their machines at the SSCA Direct Seeding Field Day, June 20, 1995. Located 4 miles north of Indian Head on Highway #56.

Entry Criteria

1. Applicant must be a farmer not engaged in commercial farm machinery sales or manufacturing.
2. The applicant must have designed the modification of the seeding machine and must include modifications in at least one of the following areas: openers, on-row packers, seed delivery, shanks, frame modification, herbicide delivery.
3. The modification must not copy any patented designs.
4. Entry will be limited to 10 seeding units.
5. The SSCA reserves the right to accept entries based on the nature and design of the modifications made.
6. Applicants must be prepared to provide their own transportation to and from the demo site, and insurance. **A transportation assistance program is available.**
7. The SSCA will supply seed and granular fertilizer only and accepts no liability pertaining to the event.
8. Tractors will be supplied.

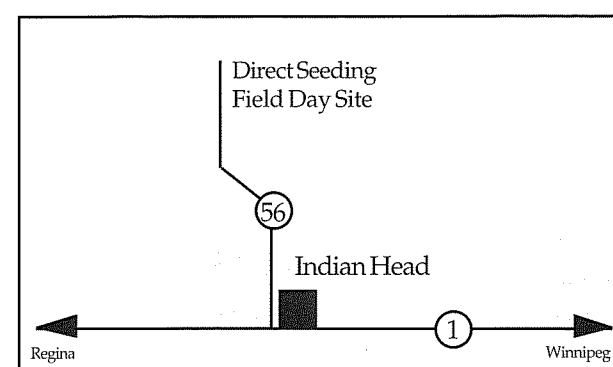
Judging Criteria

An independent judging panel organized by the SSCA will evaluate the machines. The judges decision will be final.

Judging the competition will be based on the following:

1. Quality of the engineering and design.
2. Degree of complexity of modifications.
3. Originality of design.

4. Adherence to the following principles of direct seeding.
 - a) Seed-soil contact
 - b) Proper packing of seed
 - c) Fertilizer placement
 - d) Soil disturbance
 - e) Residue clearance
 - f) Field finish after seeding
5. Cost efficiency of the modifications.



Location of the Competition/Demonstration Site

To Enter the Competition

Send photographs of the seeding unit with a list of modifications made by May 31, 1995 to:

Saskatchewan Soil Conservation Association
Attn. Eric Oliver
1 - 1081 Central Avenue N.
Swift Current, SK, S9H 4Z1
Ph: (306)778-8290



SASKATCHEWAN SOIL CONSERVATION ASSOCIATION

With Support From



Prairie Steward...

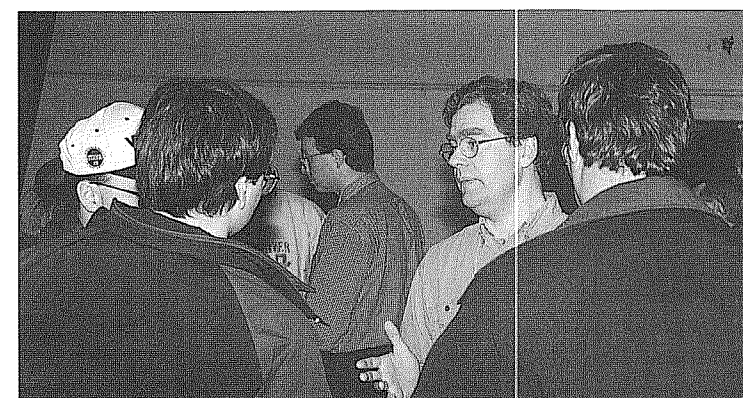
Conserving the Land Resource

The Newsletter of the Saskatchewan Soil Conservation Association Inc.

Spring Issue No. 14, 1995



SASKATCHEWAN SOIL CONSERVATION ASSOCIATION



Dr. Doug Derksen fields farmers questions after his presentation on weed control.

800 Attend Direct Seeding Workshop

By Blair McClinton, SSCA Assistant Manager

Farmers from across western Canada, met at the Lloydminster Exhibition Grounds February 14 and 15 to attend the Saskatchewan Soil Conservation Association's annual Direct Seeding Workshop. With Over 800 in attendance, farmer interest in direct seeding continues to be strong. "The whole idea of the conference was to give farmers the most up to date information available on how to implement direct seeding practices on our farms" says SSCA President Marv Fenrich.

There was plenty of information available according to Fenrich. "The Direct Seeding Workshop provides one of the best opportunities for farmers to get the latest information on direct seeding. Farmers have the opportunity to have their questions answered by research-

ers, industry experts and other farmers", says Fenrich.

Of special note were the six sessions which offered a mixture of farmers and researchers to provide both experience and information first hand. The informal "Bear Pit" sessions were well attended. These sessions provided farmers with the opportunity to have their questions answered by experts in less formal, smaller groups.

Topics covered at the conference included crop establishment, weed control, soil improvement, on-farm research and how to integrate all the information available into a successful direct seeding system. The trade show had 79 exhibitors showing the latest in crop production technology and information related to direct seeding. The trade show was all under one roof so farmers were able to examine and discuss the products in comfort.

Indian Head Direct Seeding Research Program Moved

By Doug McKell, Executive Manager

Federal budget cuts have affected the way direct seeding research will be performed on the prairies. SSCA learned on March 8th that Drs. Lafond and Derksen will have their research programs transferred from the Experimental Farm at Indian Head to the Ag Canada station in Brandon, Manitoba. Other Research Stations across Canada have also been affected through Ag Canada's plan to consolidate research programs at fewer centers across the country. The Brandon Research Station will become a Land Management Research Center for the black soil zone. Their programs will, however, include the interests and concerns of Eastern and Southeastern Saskatchewan farmers. The SSCA will strongly suggest to the Brandon Research Station that we be involved as advisors in the development of programs to ensure Saskatchewan concerns are included in their research.

The transfer of staff and programs to Brandon will take place over the next two years. This will leave the seed increase program and other activities related to plant breeding as the focus for Indian Head. Dr.



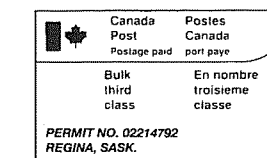
The nature of the Indian Head Experimental Farm will change when Drs. Guy Lafond and Doug Derksen move to Brandon

Derksen indicated they will conduct off station research at the Indian Head site but at this time it is unclear as to what extent this work will take. What is also unclear is the reaction from the farm community especially those who have become accustomed to acquiring their agronomic information through research farm tours and discussions with research agronomists. Both Dr. Derksen and Dr. Lafond insist direct seeding information will be available to all who need it and it will probably be better than ever.

On July 1, 1994 the SSCA moved our head office to the Indian Head experimental farm to be closer to the agronomic information being generated on what we feel is the most important component of soil conservation at this time: direct seeding. The move of

Indian Head's research programs to Brandon puts a new light on how we will acquire and disseminate this information.

It may still be possible for agronomic research related to soil conservation to be performed with Saskatchewan concerns kept in mind. We as producers, however, will need to become more pro-active in what we want to see in agricultural research ensuring that provincial boundaries do not affect the flow of relevant information to the end user. We must also look at how this research is funded. We are being asked more and more for check off dollars as well as tax dollars and donations to fund research, plant breeding, crop development and more. Maybe its time we let it be known how and for what we want these dollars spent.



In This Issue

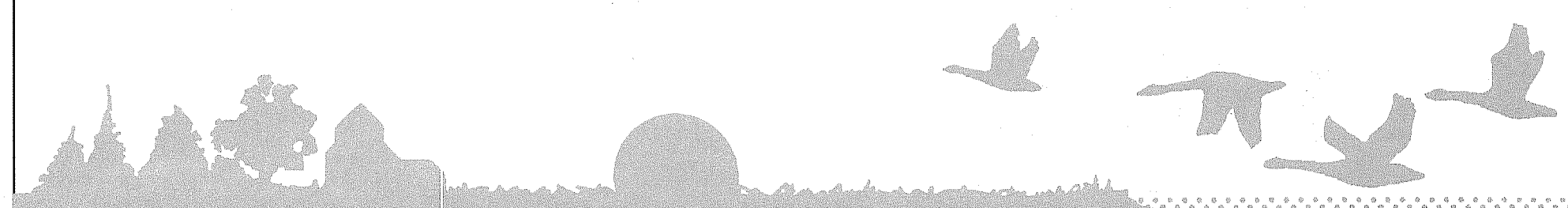
Direct Seeding Research Program Moved.....	p. 1
1995 Direct Seeding Workshop.....	p. 1, 3 - 7, 9, 11
Direct Seeding Forages.....	p. 4
Direct Seeding Effects on Pea Nodulation.....	p. 11
CLC News.....	p. 10

Fast Facts On Soil Conservation

Source: Statistics Canada and various agricultural factsheets

- Seed placed Ammonium nitrate (34-0-0) is as damaging to canola as Urea (46-0-0). However, it is a safer source of seed placed nitrogen for cereals.
- Soil temperature is largely determined by soil moisture. It takes longer to raise the temperature of moist soil than dry soil.
- Sandy soils hold proportionately more air and less water than clay soils. In the spring, sandier soils warm faster than clays.
- Many shelterbelt species have some value for commercial woodlots.

- The performance of Roundup herbicide can be improved by using clean, soft water.
- Herbicide resistant weeds can become a problem if herbicides from the same herbicide group are used on the same piece of land year after year.
- Some of the largest economic benefits of No-till are found with No-till rice production in Southeast Asia.
- Over 800 farmers attended the SSCA Direct Seeding workshop in Lloydminster; 1200 farmers attended the Manitoba-North Dakota Zero Till Workshop in Brandon and 600 attended the Alberta Conservation Tillage Workshop in Red Deer.



ASSOCIATION INFORMATION



President's Message

I would like to take this opportunity to extend greetings to all SSCA members, fellow board members and the staff of the SSCA. This marks the beginning of my term as President of the SSCA. I would like to thank Dean Smith for all the time and commitment given last year as President of the SSCA. He travelled many miles and spent countless hours working to ensure that our current contract was acceptable to both the SSCA and our partners. I cannot forget to mention our 1994 Past-President, Gerry Willerth. If one could add all the hours he spent nurturing and guiding this organization, I am sure that he would have a hard time

convincing others that being a director of the SSCA is not a large time commitment. I extend a big thank-you to Gerry and fond farewell. We will miss you around the board table for sure! I would also like to thank Paul Carles for the time and effort he spent as the Director of the Southeast region over the past three years.

On behalf of the board, I would like to thank Garth Patterson for his commitment to the SSCA over the past five years and I am looking forward to working with

him in his new position with the Pulse Crop Development Board.

The SSCA staff have been busy this winter holding direct seeding meetings. Attendance has been good, which indicates that direct seeding is still on the minds of many farmers. This was also apparent at the SSCA annual meeting and conference in Lloydminster. Once again, the attendance was excellent and most were satisfied with the workshop we presented. There was great deal of excellent information presented at the conference. Summaries of several workshop sessions are elsewhere in this newsletter. Those of you who could not attend this year's conference can get a copy of the workshop proceedings from any SSCA staff member. We are already planning next year's workshop being held in Regina on February 14 & 15, 1996.

I would also like to touch base with the SSCA members who are mainly involved with the livestock industry. I know that at times you must feel forgotten with all the attention that direct seeding has received over the last couple of years. I want to assure you that the SSCA will endeavour to remain an organization that has a well balanced concept of soil and water conservation. Grassland and pasture management is an integral component of a sustainable agricultural system.

The SSCA has always been concerned with agriculture education in our school system. We are pleased to announce that the "Project SOILS" education program we developed in 1993 will continue with assistance from the Green Plan.

I also feel very strongly that the governments must work towards designing a Canadian agricultural strategy that will have soil conservation as a cornerstone. I hope to have an opportunity to voice these concerns during my time as SSCA President.

Executive Manager's Report

We well pulled off another one. The 1995 Direct Seeding Workshop was again a tremendous success with over 800 in attendance. I have attended this workshop in the past but this was the first time I had been involved in it's organization and I can assure you it is no easy task. All of the credit is due to our staff and board and a few volunteers who were dedicated to making sure this event went off without a hitch. Many thanks to the Saskatchewan Ag and Food staff from the North West who helped organize, promote and conduct the workshop especially Howie Bjorge and Diana Thompson from Lloydminster and Eric Johnson from North Battleford, thanks again. A big thanks also is due to the people from the Lloydminster Exhibition Association who had things well organized for us and were more than willing to cater to our needs. Mike, I never would have guessed that you could feed 800 people in less than 15 minutes!

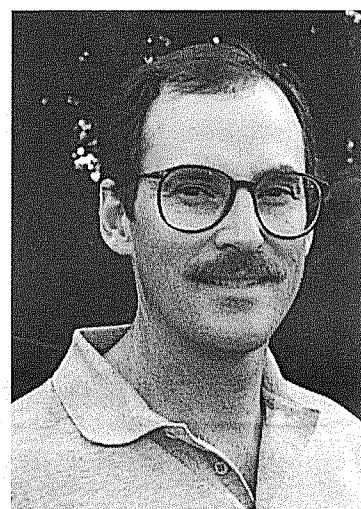
This year's conference on Direct Seeding and the response to our winter advanced direct seeding courses shows there is still tremendous interest in this area. By the end of March we will have discussed the ins and outs of direct seeding with over twenty five hundred farmers across Sask. This is a great achievement but we won't stop there as this is just a fraction of the farmers out there who we can reach. More events will be planned for the future to spread the good word about direct seeding and soil conservation. Stay tuned! As a member you will be kept informed.

Speaking of membership, we have added some 150 new members since the spring of 94. If you remember back an issue or two I said membership was going to be an area on which we were going to focus. The proof to this statement is in this issue. Starting in this Prairie Steward we will be offering classified ads for soil conservation equipment and services at no charge to all SSCA members. Non - members may also advertise but will be billed at \$.50 per word. So if you have a soil conservation machine to sell or are looking for one, drop us a note with the details and we will put it in the next issue. Also if you are offering custom services for direct seeding or other soil conservation services or are looking for these types of services we can include these requests as well. NB. SSCA management reserves the right to decide what qualifies as soil conservation equipment and services.

Other things to be offered to members in the near future will be: free passes to the June Field Day, reduced rates on the conference and future workshops or any other event which the SSCA will sponsor. Of course you will also be informed of all SSCA activities, courses, tours etc. and will have access to our "Farmer Helping Farmer" data base.

As you can see we are as busy as ever in promoting soil conservation. You can help too by getting your friends and neighbours to join the SSCA. Don't forget the incentive offered to you to bring in new members. For every six new members you send us in one year you will receive an additional three year membership free of charge.

See you at the June Field Day.



Doug McKell,
SSCA Executive Manager

Staff Notes

Over the next few weeks SSCA will go through some more staff changes.

ONTO BIGGER AND BETTER THINGS

Garth Patterson, West Central Soil Conservationist, will be leaving the SSCA on March 30 to become the Executive Director of the Saskatchewan Pulse Crop Development Board. Garth, one of SSCA's original employees, has been very involved with SSCA's conference, field day and other events over the past five years. We want to wish Garth the best with his new position.

Ken Sapsford will replace Garth as the Soil Conservationist for the Central region. This is a natural move for Ken since his family farm at Perdue is closer to Saskatoon. Ken's current position in North Battleford will be filled in early April.

THE BABY BOOM CONTINUES

Juanita and Allan Polegi are expecting their third child in mid-May. Juanita will be off on maternity leave for the summer. She plans to return to work as the Soil Conservationist in Yorkton in the fall. The Polegis are doing their part to maintain the viability of the Jedburg school system

Eric and Wanda Oliver are expecting their second child in May. Eric didn't realize when he joined SSCA as the SW Soil Conservationist that this organization was in the midst of a baby boom. The current count for SSCA staff is 11, not including the two on the way.

Does Direct Seeding Affect Pea Nodulation?

By Blair McClinton,
SSCA Assistant Manager

Field pea is a crop that has consistently shown yield increases under low disturbance direct seeding systems. Dr. Guy Lafond, Indian Head Experimental Farm, found that zero till field yielded 9% higher than conventional seeded peas from 1988 - 93. Dr. George Clayton, Beaverlodge Research Station, found that zero till pea outyielded conventional seeded pea by 21% when averaged over three years. Most of these yield increases in these studies could be accounted for by higher plant emergence, 1000 seed weight and water use.

Could direct seeding affect pea nodulation, contributing to higher yields? Ag. Canada conducted experiments at four locations in northeast Saskatchewan and the Peace River region in Alberta to answer this question. Dr. Wendel Rice presented the results at the Soils and Crops '95 workshop in Saskatoon in February.

Preliminary data comparing nodulation under ZT (zero till) and CT (conventional till) indicated that effective pink nodule numbers were greater, were established earlier and were sustained longer under ZT at Ft. Vermilion in 1993. However, there were no significant differences in nodule weight or grain yield. In 1994, nodules under ZT

were greater in number and weight at Ft. Vermilion but there were no significant differences at Beaverlodge. Since Ft. Vermilion was dry in 1993 and 94 while the conditions at Beaverlodge were normal, Dr. Rice felt that differences between tillage systems may not be apparent under higher moisture conditions. He feels that improved nodulation is related to cooler soil temperatures. They have found that soil temperature differences between tillage systems are more apparent under dry conditions. This is because it takes more energy to warm soil with high levels of soil moisture.

In 1994, the Saskatchewan study showed that effective pink nodules were greater under ZT than CT. However, there were no significant yield differences. The potential advantages from enhanced nodulation early in the growing season were not expressed in the final yield.

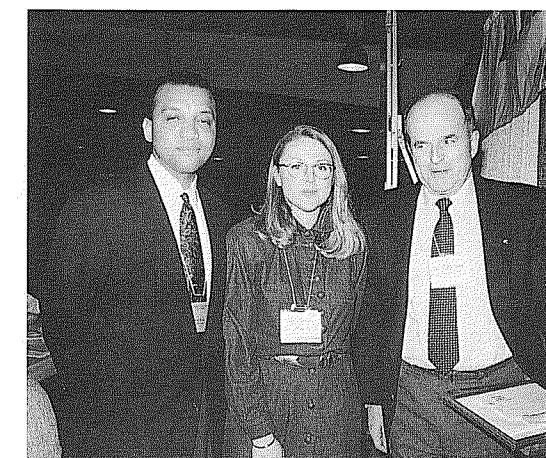
They concluded that "in the Black and Gray soil zones, soil temperature under reduced tillage systems did not appear to be a limiting factor in the nodulation of field pea. Where there was significant reduction in soil temperature under direct seeding, nodulation was enhanced. However, the enhanced nodulation did not always translate into increased grain yield. In no case was the nodulation reduced with direct seeding."

Southwest Region Farmers Win Soil Conservation Awards

By Blair McClinton,
SSCA Assistant Manager

The 1995 SSCA Conservation Awards were presented to farmers from southwestern

He has been using an extended crop rotation for several years. This has meant growing a variety of different crops on his farm. He has spent many hours in his shop modifying and improving the various seeders he has owned. Cecil was one of the first farmers in his area to try direct seeding.



Cecil Reisner is presented with the SSCA Producer Award by Ken Jones of Monsanto and Colleen Munro of the Western Producer.

Saskatchewan. Cecil Reisner of Limerick, Sask. won the producer conservation award while the Coronach Conservation Coop won the group conservation award. Both awards were presented February 14 at the SSCA's Direct Seeding Workshop in Lloydminster. These awards recognize individual producers and groups who have displayed conservation leadership and who have motivated others to adopt conservation activities.

Cecil Reisner's involvement in conservation and with the local community is outstanding. He has been involved in soil conservation for many years.

His action's have prompted other farmers to give soil conservation a try. He has been active with local soil conservation programs and has given presentations

at local meetings.

The Coronach Conservation Coop is a prime example of what can be achieved by a group of farmers with a common purpose. The Coop's most successful program has been their direct seeding demonstration program. They have leased several

direct seeding machines over the past few years for direct seeding comparisons on their members farm's. These demonstrations not only demonstrated the different machines, they also showed their members how direct seeding could work on their farms. The numerous demonstrations and tours the Coop has held in their area has helped increase the adoption of soil conservation practices in their area.

The Coop has also helped coordinate local tours and trips to major conferences like the SSCA Direct Seeding Workshop and the Manitoba-North Dakota Zero Tillage conference. They have also helped organize extension meetings in their area. They have enrolled in an electronic newspaper to inform farmers the area about direct seeding developments.



John Totten receives the SSCA Group Award on behalf of the Coronach Conservation Coop from Ken Jones of Monsanto and Colleen Munro of the Western Producer.

Classified Section

Seeding Equipment

1993 Great Plains Zero Till 15' Coulter Drill - 1800 acres complete with Greendrop Liquid fertilizer system. Asking \$23,500.00. (306)682-3464, (306)369-2681.

28' (4x7) of Noble DK drills, F.A. spear point openers, tarps, Asking \$5200.00. 36 Swede openers for the above, \$20.00 ea. Ph: (306)738-4716 after 6:00 p.m.

3x12' Amazone 375NT drill. Shredded and field ready. Will sell as 36' unit, \$10,000.00 or split up, 3500.00/12' section. (306)948-2736.

Haybuster 1000, 2-10' units on 14" paired row. Two drill hitch. Drills located at Lloydminster. (403)847-2356.

32' Ezee on cultivator, 8" spacing, floating hitch, w/w-o Flexi-coil 1330 airseeder, K-Hart packers, Morris double-shoot paired row boots, Valmar, Kee-depth control. (403)632-7303.

21' of Edwards 912 hoe drill with 9" spacing with 812 Boxes, always shedded. (306)948-2801.

Residue Management

76' Victory Oscillating harrow - with Valmar attachment. (306)246-4427.

Chaff Blower for JD 7721 combine. (306)929-4601.

Miscellaneous

18400 lb. trip C-shanks for Morris Maxim Airdrill. Complete, less openers. Used very little. (306)892-2417.

32 Valley Packers, shank mount from heavy chisel plow. (306)246-4945.

Complete "Rugby Hydraulics" depth control system for tri-plex cultivator, including all electrical and hydraulic components. In perfect working condition. (306)937-3239.

The Classified Section is a service provided to SSCA members free of charge. The non-members advertising rate is \$0.50 per word. For More information on this service contact SSCA at (306)695-4233.

SSCA MEMBERSHIP

Full Membership - (Farmers)	1 year	\$50.00	_____
	3 years	\$100.00	_____
Associate Membership - (Non Farmers)	1 year	\$50.00	_____
	3 years	\$100.00	_____
Supporting Membership - (Institutions)	1 year	\$500.00	_____
	3 years	\$1000.00	_____

Name _____

Address _____

Postal Code _____ Telephone _____

SEC _____ TWP _____ RGE _____ W. of _____

(land location of home quarter for regional designation purposes)

RM# _____

Membership Enhancement Program:

If you are presently a member of the SSCA and wish to help the Association by recruiting new members, both you and the Association can benefit from your efforts. For every six (6) memberships sold in one year by you as a member, you will receive an additional 3 years membership as a bonus. To qualify, print your name on the applications you sell and forward the applications plus membership fees to the SSCA. Applications may be sent individually or as a group. All memberships received by the SSCA between 01 April and 31 March of each year will be counted towards this Membership Enhancement Program.

1994-95 SSCA BOARD OF DIRECTORS

Marvin Fenrich (Wilkie) President
Lorne Crosson (Limerick) President-Elect
Dean Smith (Success) Past President
Dick Richards (Assiniboia) S.W. Director
Clint Steinley (Empress, AB) W.C. Director
Dwayne Mitchell (Battleford) N.W. Director
Gary Nolan (Rouleau) S.E. Director

Bernie Niedzwiedz (Wynyard) E.C. Director
Ed Beauchesne (Albertville) N.E. Director
Lee Moats (Regina) Director-At-Large
Greg Kane (Nokomis) Director-At-Large

CONSERVATION LEARNING CENTRE

Patricia Flaten, CLC Manager (306)953-2770

SOIL CONSERVATIONISTS

Garth Patterson, Saskatoon (306) 933-5287
Juanita Polegi, Yorkton (306) 786-1526
Bob Linnell, Weyburn (306) 848-2381
Eric Oliver, Swift Current (306) 778-8290
Ken Sapsford, North Battleford (306) 446-7650
Garry Mayerle, Tisdale (306) 878-8808

HEAD OFFICE

Box 1360, Indian Head, SK S0G 2K0
(306) 695-4233 Fax: (306)695-4236
Doug McKell, Executive Manager
Blair McClinton, Assistant Manager
Claire Neill, Office Manager

Disclaimer

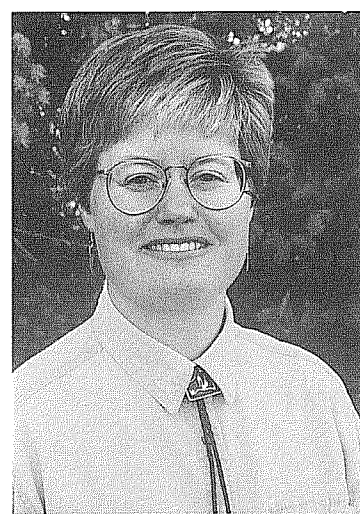
The opinions of the authors do not necessarily reflect the position of the Saskatchewan Soil Conservation Association.

The Prairie Steward is published three times a year by the Saskatchewan Soil Conservation Association with support from:

Monsanto

Canada - Saskatchewan
Agriculture Green Plan

TransAlta
Utilities Corporation



Conservation Learning Centre News Surface Application of Herbicides

By Patricia Flaten,
CLC Manager

How much incorporation is needed for products like Avadex and Edge to work? Traditionally, these products have been associated with intensive tillage. In fact, neither are registered for use as non-incorporated products in low disturbance direct seeding systems. However, researchers and farmers alike are trying to see just how far they can get away from incorporation and still achieve adequate control of target weeds.

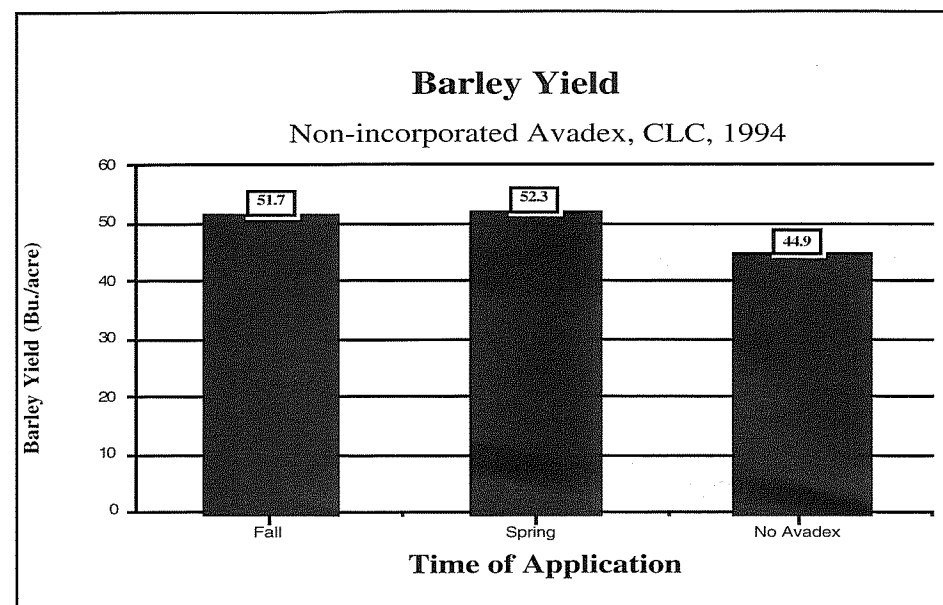
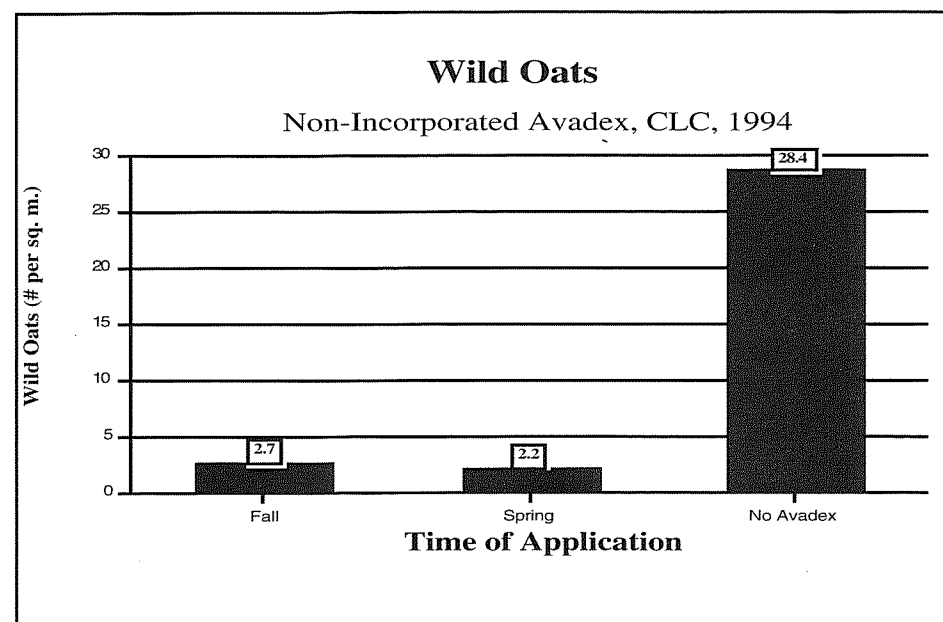
Why try them with less tillage? Less fuel, labour, moisture loss, and soil erosion may be some of the advantages. For direct seeders, if they like the products but don't like the tillage, they may already be experimenting with them as non-incorporated products.

Does the number of years that the land has been direct-seeded have an effect on how well the product works when non-incorporated? This question hasn't yet been answered, but there are theories which indicate that they will work better on land which has been direct seeded for a number of years. The difference is that the weed seeds in a low disturbance direct-seeding system will eventually be concentrated in the surface layer and therefore will be easier to control.

We are curious about the potential for use of Avadex and Edge as non-incorporated products at the Conservation Learning Centre, south of Prince Albert. Last summer, two projects were set up with the assistance of Monsanto and DowElanco. This was just the second year of direct seeding with a knife opener.

The Avadex trial included a comparison of late Fall and early Spring application. Barley was seeded into the canola stubble in mid-May. Spring application should be a safer bet than fall application due to guaranteed moisture over winter. This spring was particularly moist, which may be why no obvious differences in wild oat control were measured between these two treatments. There was 90% control with both methods. Is that enough control for your needs? This was just a one year, replicated large-scale trial in a particularly moist year. So, what would happen in other conditions? Both industry and government researchers have been gathering hard data, so we'll have to look for possible changes in product registrations.

With Edge, instead of comparing timing of application, a trial compared weed control in peas, with and without a rotary harrow operation. The Edge was applied just one week before seeding, a little closer to seeding than would have been preferred. In this year's conditions, both treatments worked similarly well on the two most obvious weeds, volunteer wheat and wild oats. Although no data was recorded for this demonstration, the visual results were positive enough for us to now try Edge on a larger scale. Thirty-five acres were fall-applied in anticipation of direct seeding peas this spring. We have chosen to avoid the rotary harrow operation completely.



Future Fertilizer Application Options

By Patricia Flaten,
CLC Manager

The most common way of applying nitrogen fertilizer in the Parkland area is deep banding anhydrous ammonia. The biggest reason for this is related to cost-efficiency. If that cost-efficiency was increased even more, what would that be worth to the average producer?

If you farm on rolling topography, what is the yield potential on different areas of the field? Does it make sense to apply the same amount of fertilizer on the whole field? Are some nutrients needed more on the lower areas or on the knolls?

Fertilizing according to the topography is not a new concept - it can be as simple as applying manure to the knolls, or as sophisticated as using satellites to guide your steering and rates of fertilizer application. Whatever the level of technology, there may be a time when variable fertilization is regularly used to increase fertilizer cost-efficiency.

Until now, the only reasonably priced method used for varying rates is in broadcasting granular fertilizers. Soon, reasonably priced technology may be available for use with other application methods.

Dr. Hugh Beckie of the Melfort Research Station has begun to look at the science of deciding where to put what amount of nitrogen fertilizer in a variable landscape. For instance, should we be using organic matter as an indication of variability in nitrogen fertilizer requirements? Soil organic matter is expressed as different shades of brown or black in most of our soils, so if technology was used to interpret soil color, the fertilizer rates could be adjusted accordingly.

What about using the landscape itself to adjust the fertilizer rates? For the knolls, apply 'X' amount of fertilizer; for the low areas, apply 'Y' amount of fertilizer, and for the level areas apply yet another rate of fertilizer.

In recognizing different crop yield potentials across the landscape, perhaps our production goals need to vary accordingly. Then, based on the new yield goals, we may be able to increase the efficiency of the fertilizer that we apply, therefore also increasing the cost-efficiency of our fertilizer dollar. Watch for developments in this type of technology in the next few years.

REQUEST FOR SUBMISSIONS

Do you have ideas or comments on the conservation of our land resource? We would like to print them in future issues of the Prairie Steward. Pertinent photographs would be appreciated. Please forward to:

The Editor
Prairie Steward
c/o SSCA
Box 1360
Indian Head SK S0G 2K0
Fax: (306)695-4236

Don't Miss SSCA's 95 FIELD DAY, June 20

By Blair McClinton,
SSCA Assistant Manager

The Saskatchewan Soil Conservation Association (SSCA), in cooperation with the Western Canada Farm Progress Show, is hosting their third annual Soil Conservation Field Day, June 20, 1995. The Field Day, scheduled one day before the 1995 Farm Progress Show, will be located approximately 4 miles north of Indian Head along the No. 56 highway. Last year's Field Day north of Regina attracted a crowd of 1500. Farmers came by car, truck and bus to see the latest in soil conservation and direct seeding equipment.

The 1995 Field Day will feature demonstrations on direct seeding, residue management and spraying, plus tours of the May seeded plots, variety plots and opener research plots. Participants can also inspect on-site plots of canola and wheat seeded in early May using the direct seeding equipment demonstrated at

the Field Day. The equipment demonstrations will include most of the major direct seeding equipment, sprayer, residue management and opener manufacturers. The PFRA Shelterbelt Centre will also demonstrate shelterbelt mulch techniques.

The field day will run from 9:30 a.m. to 4 p.m.. Each demonstration will run only once during the day. The spraying equipment demo will run from 9:30 to 10:30 a.m.. The residue management demo will run from 10:30 to 11:30 a.m. Tours of the May seeded plots, variety plots and opener research plots will run from 11:30 a.m. to 12:30 p.m.. The seeding equipment demo will run from 1:30 to 3:00 p.m.. And the Farmer Modified equipment competition will run from 3:00 to 4:00 p.m..

Once again, the SSCA will have the Farmer Modified Direct Seeding Competition. Ten farmers will demonstrate equipment they've modified for direct



Over 1500 farmers checked out the machinery at the 1994 Field Day.

seeding. The farmers will have their equipment judged on quality of the engineering and design, degree of complexity of modifications, originality of design, adherence to the principles of direct seeding (seed soil contact, proper

packing of seed, fertilizer placement, soil disturbance, residue clearance, and field finish after seeding) and the cost efficiency of the modifications.

The field day will provide farmers with the opportunity to have a hands

on review of the performance and operation of soil conservation farming equipment working in the field. There will be a \$5.00/person entrance fee charged to offset some of the costs associated with the day. There will be free admission for SSCA members.

World Perspective Kicks off Conference

By Garry Mayerle,
SSCA Soil Conservationist

The annual SSCA conference started off with an around the globe tour of the trends and benefits of direct seeding. John Hebblethwaite, Director of Conservation Tillage Systems with Monsanto from St. Louis, Missouri gave us an exciting snap-shot of the worldwide direction of conservation tillage. He predicted the global population would double to 11 billion in the next 40 years. Because this population increase will be largely in the lower income class of people, we must find ways to increase production of affordable food. Direct seeding has great potential to allow us to achieve this goal of sustainable, economically efficient food production.



John Hebblethwaite,
Monsanto, St. Louis

The success of direct seeding systems throughout the world has been driven by farmer resolve and innovation. The pressure to be environmentally responsible started the process. Economic pressures will continue to accelerate the trend. Farmers all over the world are finding reductions in the costs of fuel, labour and equipment as they develop direct seeding systems. Hebblethwaite suggests that the biggest cost saver is the ability to spread machinery capital over more acres for more years. Farmers supported by government, industry and research have developed unique crop rotations and better equipment to achieve the goal of sustainable affordable food production.

1995 SSCA Soil Conservation Field Day

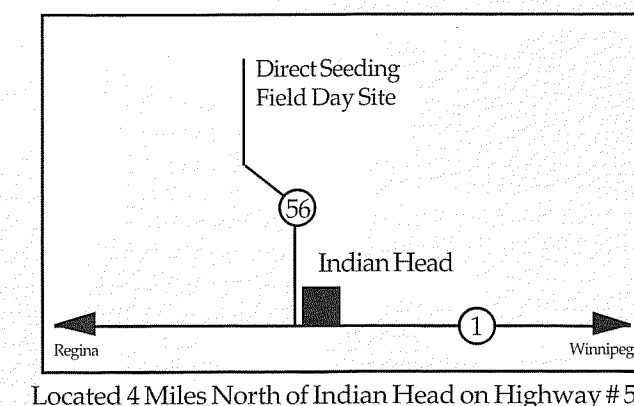
A 100 Acre Site Featuring Field Demonstrations of the latest in:

- Direct Seeding Equipment and Openers
- Fertilization
- Crop/Weed Spraying
- Residue Management
- Shelterbelt Mulching Techniques

Plus Plot Tours:

- 30 Acres of Direct Seeded Canola and Wheat Seeded in Early May Using the Equipment Demonstrated at the Field Day.
- Direct Seeding Opener Research Plots
- Variety Plots

DON'T MISS THE
FARMER
MODIFIED
EQUIPMENT
COMPETITION



June 20, 1995

ADMISSION \$5.00 (SSCA Members Free)



SASKATCHEWAN
SOIL CONSERVATION
ASSOCIATION



Direct Seeding Forage Crops



By Juanita Polegi
SSCA Soil Conservationist

The topography around Punnichy is one of hills and potholes. Such a landscape lends itself well to mixed farming. With so many cattle producers in the area, it only seems natural that a Beef Club would be formed. Ken Forden of Punnichy says about 15 farmers came together just over a year ago to form the Punnichy Beef Producers Club. He says there were a number of reasons for forming the Club. Firstly, with many younger producers in the area, a club seemed a good way of getting them involved and creating some interest for them. Secondly, with the loss of the Crow Benefit looming before prairie farmers, an established club will be a good place for livestock producers to exchange ideas about value-added grain marketing which will perhaps bring some benefits to the community. The third reason for the club's formation was to

become involved in a pasture project in conjunction with Ducks Unlimited.

While the Beef Club wished to set up a project that would demonstrate rotational grazing practices and the use of annual forages, Ducks Unlimited wished to be involved in a project that would delay grazing in some areas and thereby provide nesting cover for upland birds.

With the help of Extension Agrologist Lewis Reeve, Rangeland Agrologist Brant Kirychuk, and Trevor Plews from Ducks Unlimited, all of whom attended the early meetings, a Producers Club was started and the basic idea for a grazing project set up. After an initial application to the Green Plan for funding was rejected because of timing, it was decided to start the project and re-apply in 1995. With this in mind a quarter of land was rented from a club member and with funding from Ducks Unlimited and support from Sask Wheat Pool and Monsanto the "Kutwood Forages Demonstration" was started.

In the spring of '94, after a burnoff with 1 Lac of Round-Up, the quarter was divided into 3 parcels. The largest parcel is 80 acres and it was seeded to 8 lbs. of meadow brome grass, 1 lb. of alfalfa and 8 lbs. of oats. The second parcel is 40 acres and it has been seeded to 6 lbs. of crested wheatgrass, 1 lb. of alfalfa and 8



For Ken Forden direct seeding forages gives the best establishment.

lbs. of oats. The third parcel is roughly 30 acres and it was seeded with 50 lbs. of oats. All parcels were direct seeded with a Conserva Pak and had about 20 - 25 lbs. phosphate fertilizer applied with the seed. Aside from some bridging that occurred, the seeding went well and the forages established very well.

Forden reports that the oats in all three parcels were cut for green feed and that the grasses and alfalfa made an excellent recovery following cutting. Ken says, "Direct seeding of forages is the way to seed them as they're seeded into moisture and they establish so well".

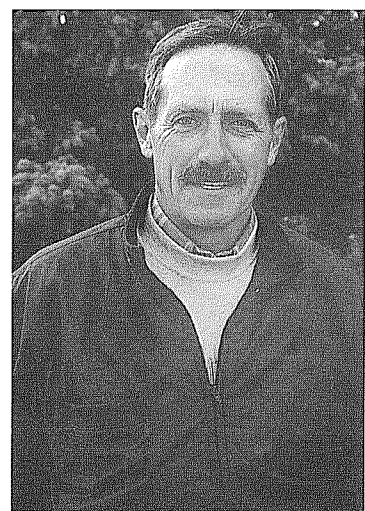
In the fall, a dugout was dug. This spring, the members will fence off the dugout and pipe the water to a pump. Ken says a nose pump will likely be used.

This spring the members will seed fall rye or winter wheat into the 30 acre parcel. Brant Kirychuk will design the paddock system for the remaining area. The members plan to put in 40 cow/calf pairs this spring but say they are flexible about stocking rate depending upon conditions. Kirychuk also has a forage species plot established at the site.

Ken indicates that although demonstrating soil conservation is not the primary reason for the project, it is certainly a benefit. By seeding sloping land to forages, less topsoil will be lost from the knolls into the potholes. With well managed rotational grazing, there should be less overgrazing and thereby less risk of erosion of bare soils.

The Punnichy Beef Club sponsored a summer tour in '94 and plan to hold one again in '95. For more information on the Punnichy Beef Club or its project, contact club members Ken Forden 835-2645 or George Benko 835-2028.

A Summary of Field Scale Direct Seeding Research.....



By Bob Linnell,
SSCA Soil Conservationist

Pat Flaten from the Conservation Learning Centre was the lead off speaker in this series of presentations and covered the following:
* Location of the centre was to be typical parkland topography and farming variations.
* Operations are affected within landscape restrictions, time of seeding, weed control and everyday farming variables.
* This challenged researchers used to working small plots with predictable and uniform production potential.

* Projects are grouped according to agronomic pillars of direct seeding and include variable vs uniform fertilization, fertilizer placement options.

* Many granular non incorporated products are being evaluated for weed control.
* The CLC is also working on direct seeded forages, soil temperature and residue breakdown, and the monitoring of greenhouse gasses and surface water quality.

* CLC determines what the Direct seeding research needs are by questioning non-direct seeders and producers converting to direct seeding.
* They are trying to convert producers to take a systems approach to weed control.

Dr Guy LaFond of the Indian Head Experimental Farm also presented some new approaches and opportunities in on-farm research comparing the scientific approach and on-farm testing.

* He stated that scientific approach is often not suited for areas of research that change quickly. He also gave a summary of suggestions on communication of farm information. Producers should

spend a greater amount of time implementing the practices than searching for information.

* Successful integration of on-farm testing with agricultural research requires an appreciation of where research should end and where on-farm testing should begin. Researchers testing new ideas then should conduct on-farm evaluations to test the merits of the research over a wide range of conditions.

* A greater efficiency could be gained by empowering producers with the necessary knowledge to conduct on-farm tests which would then allow for more locations, more information and hopefully quicker adoption of new technology.

Daryl Domitruk of the Manitoba Zero Tillage Research Association agrees that producers are demanding information on direct seeding to help them use the technology in a way that improves their return on investment.
* The MZTRA was formed to guide the evolution of zero till crop production through practical, farm oriented research.

* Field scale research is conducted using commercial farm machinery and includes work on fertilizer type and placement, seeding tools, tillage methods and crop cultivars.

* Field scale research will best serve the farmer if it is used to develop innovative management strategies.
* Direct seeding has removed tillage as one weapon against pests.

* A very good place to begin field scale research is in diversifying crop rotations to include more crop types.
* We should be trying to include some warm season grasses such as corn and more cool season broadleaf crops such as edible beans to complement our cool season cereals and cool season canola and peas.

* Short term perennial forage legumes reduce weed populations, provide N and improve soil moisture. The rising cost of synthetic N and the removal of transport subsidies suggests that diversification toward a larger animal-forage component may be warranted.
* Field scale studies assist producers by putting direct

seeding decisions in their proper context of a management strategy.

Jeanne Bisson of The Smokey Applied Research and Demonstration Association at Falher, AB, outlined the setup of their farm organization.

* SARDA's main goal is to speed the transfer of ideas from research institutions and industry to local producers.

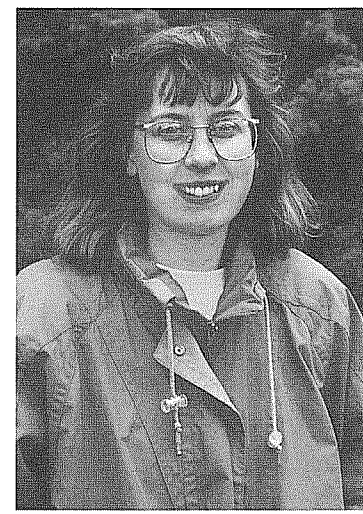
* Major soil problem is surface crusting with low organic matter, high levels of clay and environmental effects.

* Experience shows direct seeded crops were slightly delayed in emergence and this continued through to harvest.

* Perennial weeds such as dandelion, volunteer legumes and foxtail barley have increased under zero till. The winter annual narrowleaf hawksbeard also increased.
* Many producers are becoming aware of how reduced tillage will benefit their soils.

* The Peace region has 19 such conservation groups, doing similar work.
* The Rycroft site has shown results with very positive results favouring zero till.

You Don't Have To Be Big To Be a Direct Seeder



By Juanita Polegi,
SSCA Soil Conservationist

"If you want something to work, it will work." This is the philosophy Garvin Wiley of Saltcoats has adopted since entering into a direct seeding system a couple of years ago.

In 1993, Garvin purchased a Morris 8018 Seed Rite and decided that he would try to modify it for direct seeding. He replaced the shovels with winter wheat boots with Gen points and mounted packers from a Melroe 204 Press Drill. Garvin also mounted a liquid fertilizer kit so the fertilizer could be applied behind the seed. A coulter injection system was used to fertilize and

cut the residue where canola and flax crops were to be seeded.

Prior to seeding, Garvin applied 2,4-D for winter annual control in fields where he would seed oilseed crops. On those fields designated for flax and canola, he applied a mixture of Round-Up, Rustler, and ammonia sulfate, waiting five days after using the Rustler before seeding the oilseeds.

He fall applied nitrogen fertilizer on oilseed fields and put down P, 05 and S with the seed. He applied 50 lbs. of actual N with the cereal seed.

Once seeding began, Garvin soon realized that maximum working speed of the unit is 4.5 mph. He finds that the Seed Rite works very well in dry residue but has a tendency for plugging on damp days.

In 1993, Garvin used 18' of drill to seed over 400 acres. In 1994, he increased his acreage to 1000 acres, using the same drill. Garvin says he would like to add another 18 foot section to the unit but transport from field to field would be a problem.

producers must work towards a reduction in total herbicide equipment.

Mr. Ken Greer of Soil Science at Univ. of Sask. works in the area of soil science and soil quality and said we must manage surface residue to achieve the key results.

Mr. Rob Neyedley of Monsanto works in field research and said we must learn our weed species and the key was to handle the weeds properly.

Ms. Pat Flaten of the Conservation Learning Center works in the area of conservation research, said the key factor was putting all the information together and applying a systems approach to direct seeding.

Mr Daryl Domitruk of the ManDak Research Farm said the key was to place management ahead of seeding technology and to be sure and maximize the good things about direct seeding.

Mr Howie Bjorge of Sask. Ag and Food was involved with extension services and suggested a producer had to look at all the information available and the key factor was to relate that information to their own farm inventory the information and place reality in the picture to achieve success.

While Garvin has a few "kinks" to work out of his unit, generally he is quite pleased with its performance. He especially likes the fact that he has been able to achieve a direct seeding system by spending less than \$3,000 on both the unit and the modifications.

Tom McDougall of Lebret is another fellow who, although he doesn't crop a large acreage, has employed a direct seeding system. Tom says that while most farmers value their seeding implements in terms of cost/foot, he values his in terms of cost/ton (of scrap iron).

Tom uses 3 - 7 foot sections of a 1979 Noble DK5 Hoe Drill with weld-on Eagle Beak tips from Gen. Prior to his move to direct seeding, Tom applied 2,4-D in either spring or fall for control of winter annuals. He now relies on Round-Up for pre-seeding burn off.

Tom firmly believes that residue management is the key to direct seeding success. By extending the fins on his chopper and relocating his straw spreader behind the sieves, he is able to spread the straw and chaff well over the width of his swath. Referring



Tom McDougall's Noble drills using liquid fertilizer.

to his cattle as his assistant residue managers, he turns his cattle out after combining and finds they do a good job of spreading out any piles or clumps of straw that accumulated during harvest.

1990 was the first year Tom dabbled with direct seeding when he seeded some wheat. At that time, he spoke injected liquid fertilizer post seeding.

In 1991, he direct seeded a few more acres and banded anhydrous ammonia.

He took a big step in 92, and direct seeded peas. He moved back to liquid fertilizer running the tube behind the shank and allowing the tube to drag

behind the seed row. He feels he's achieving adequate separation with this method as he hasn't observed seed burn.

Because the drills have such large deep V packers, Tom was concerned that the field may prove too rough. He's found however, that by the time harvest arrives, the ridges have settled enough that he hasn't yet rolled his peas.

This spring, Tom will direct seed the entire acreage.

Tom and Garvin are just two of many producers who have had success direct seeding on small acreages at a very modest cost.

Conservation Farmers Helping Farmers

Does conservation farming look difficult? Why not talk to a farmer who has tackled the same situation that you are facing? The **Conservation Farmers Helping Farmers Directory** houses the names of SSCA members who are willing to accept phone calls about their conservation farming practices and equipment.

Interested in the kind of equipment direct seeders are using in your soil zone? Concerned about quackgrass in your minimum tillage operation? Considering shelterbelts as part of your conservation plan? Get the facts from experienced farmers.

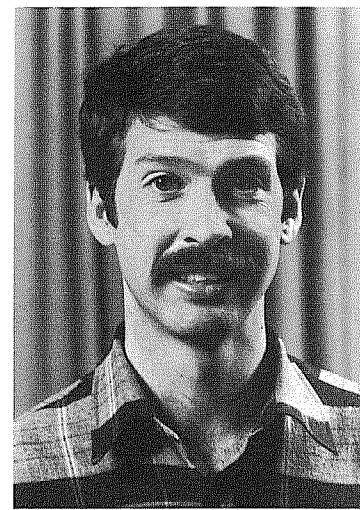
How does it work? Simply call the SSCA Indian Head office at 695-4233 and ask to use the **Conservation Farmers Helping Farmers** service. You will be able to specify the conservation techniques, equipment and practices you have questions about. The SSCA will then search the directory and provide the names and phone numbers of any members who have experience with the conservation methods or equipment in question.

Some examples of conservation information and experience included in the directory are:

- direct seeding
- conservation equipment
- conservation tillage
- barrier strips
- rotational grazing
- alternate crops
- weed control
- residue management
- chemfallow, shelterbelts
- forage establishment
- soil salinity management
- wildlife habitat enhancement
- and other conservation farming experiences.

This is an ideal opportunity for farmers to take advantage of a large and diverse source of practical knowledge...other farmers!

Canada Thistle Control in Direct Seeding



By Ken Sapsford,
SSCA Soil Conservationist

Canada Thistle has become a weed that has spread to many fields over the past few years. It is a perennial weed that spreads by root rhizomes that can sprout from 6 - 12 inches deep and by seeds blowing in the wind. Once Canada thistle has become established in your field it can be very difficult to eliminate. Canada thistle numbers will be higher following a wet year, and the roots survive better in a winter with good snow cover to insulate the soil from severe temperatures.

Canada thistle control by cultivation depends on starving the root system. In

order to do this intensive tillage must be carried out for the entire season. This will reduce the number of shoots but will not eliminate it completely. You may also be creating a very erodeable field in the process.

Canada thistle establishes late in the spring so a pre-seeding treatment with Roundup will not control the weed. In spring the plant is still feeding off the root, has very little leaf area to absorb the herbicide and there will be some shoots that are not above the soil surface at this time. In order to get Canada thistle under control you need to use a long term management approach.

There are numerous in-crop control options available for cereal crops and Lontrel is available for use in canola fields. The Melfort research station and Sask. Ag and Food conducted a combination demonstration/research project with the Melfort ADD Board to evaluate the different in-crop control options. They used the following herbicides:

Each Herbicide was rated on a scale of 0 to 9. 0 = no

Herbicide	Rate
2,4-D Ester 600	0.41/ac.
Lontrel + MCPA	0.3 + 0.451/ac.
Buctril M	0.41/ac.
Banvel + MCPA	0.1 + 0.341/ac.
Refine Extra +MCPA	8gr/ac. + 0.341/ac.
Estaprop	0.711/ac.

control and 9 = complete control. If a herbicide is to give satisfactory control it must reach a rating of 7 or higher.

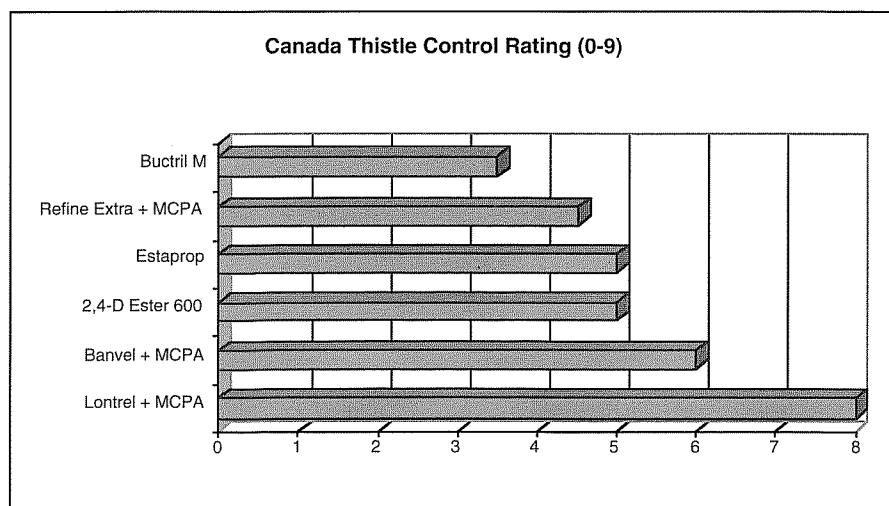
Lontrel + MCPA was the only herbicide combination that rated above 7, it is also the most expensive herbicide tested. 2,4-D Ester 600, Banvel + MCPA, Refine Extra +MCPA and Estaprop all gave some top growth control that allowed the crop to grow without heavy competition but the Canada thistle continued with regrowth.

Preharvest Roundup at 1 litre per acre is registered for Canada thistle control. This time of application appears to get better control than a postharvest application because there is more leaf area on the Canada thistle to absorb the Roundup. A trial by L. Darwent from Beaverlodge, Alberta showed that one year of preharvest Roundup controlled many of the Canada thistle shoots. But it requires many

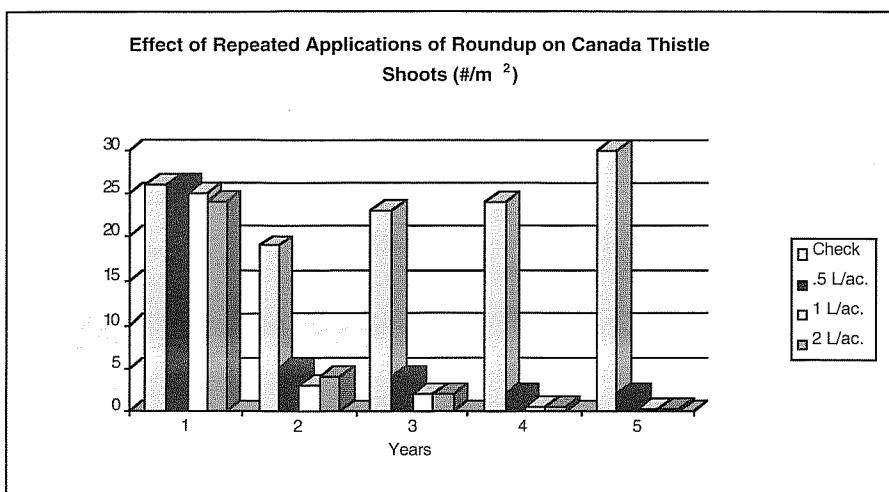
years of applying Roundup to get complete control.

If you have some fields that have become infested with Canada thistle the most economical way to control the problem is to seed a competitive crop (barley, wheat). Use an in-crop herbicide to control the top

growth of the Canada thistle and follow up with a preharvest treatment of Roundup. One year of this management will not eliminate the Canada thistle so you will have to continue to monitor the field and treat accordingly.

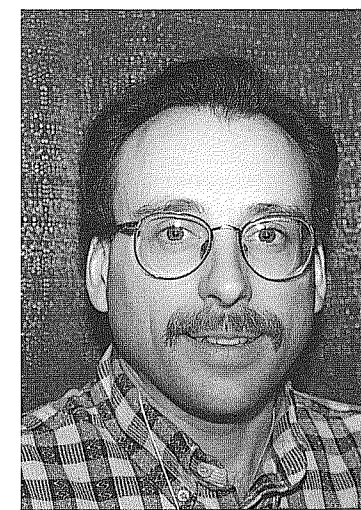


* Laurence Townley-Smith, Ag. Canada, Melfort; Keith Head, Head & Associates; Roy Button, Sask. Ag. & Food, Tisdale



* L. Darwent, Ag. Canada, Beaverlodge Alberta

Reduced Tillage Benefits for the Northeast



By Garry Mayerle,
SSCA Soil Conservationist

Farmers change from conventional production systems to direct seeding systems for two important reasons.

1) They want to conserve their soil. Many have seen erosion occurring first hand. They feel compelled to do all in their power to prevent it from doing any more damage on their farms.

2) They want to increase their net return per acre.

I met two farmers who made some interesting comments at my direct seeding courses this winter.

Art Russell from White Fox said one of the reasons he got into direct seeding was because he didn't want to spend all that money beating down

straw just so he could get through it with his press drill. He direct seeds with a Conserva Pak with 9 in. spacing. He crops 1900 acres. Another very positive comment was that he has found very good emergence of canola under direct seeding as compared to conventional seeding. Russell farms in soil which has a lot of white clay. He only summerfalls enough to keep up standards for pedigree seed production. His land is stony so he uses a land roller on quite a few acres every spring.

Osborne Craig, a smaller farmer from Carrot River, says he couldn't afford to farm if he wasn't direct seeding. He has 500 acres of "cultivated" acres. His soil type is a Tisdale clay loam. He says you have to make a sizeable net return per acre to make a living on 500 acres. He found that he has cut fuel costs in half by direct seeding. His costs for equipment repairs and replacement are also reduced. He has been doing an interesting side by side comparison between a direct seeded field and a conventionally seeded field since 1988. He found the direct seeded field has outyielded the conventional field by a bushel or two almost every year. Last year he didn't need in crop herbicide on the direct seeded field as compared to the conventional field. If this happened in even some years, it represents a significant return

per acre. Another benefit to direct seeding is time freed up from tillage. Craig says he can get his crop planted by working 10 hours a day. When he was conventionally farming he had to work 18 hours a day.

It is difficult to put an accurate dollar figure on savings from tillage reduction. Every farm has a somewhat different production system. Table 1 shows the possible savings from reducing tillage in the northeast.

I used the basic custom work rate not including any margin for profit.

Notes - Values are based on Sask. Ag. & Food - Farm Machinery Custom and Rental Rate Guide 1995.

- Conventional seeding system includes three more tillage

operations than the direct seeding system. This is an average. Earlier seeded fields might get away with one tillage operation but some will probably need a fourth fall or spring tillage or harrowing.

- Farmers are continuous cropping more acres all the time. This seems to have resulted in the need for pre-harvest use of Round-up on at least some of their acreage. I think that pre-harvest Round-up use will continue to increase by both direct seeders and conventional farmers. The only extra herbicide cost direct seeders are going to have is the pre-seeding application. This may be a little optimistic but with a good systems approach to weed control, the event of transgenic canolas and maybe other grains, and the possibility

of reducing in-crop herbicide I think it is logical.

- In the northeast there are a number of direct seeders who knife in anhydrous as a separate operation. If you seed in a true single pass system there would be even further savings of \$2-\$3/acre.

The bottom line for this scenario is a savings of \$5.71/acre. Maybe that doesn't sound like a lot but for a 2000 acre farm that is over \$11,000 per year. The increase in net returns by reducing tillage through direct seeding is significant. If individuals can manage their production system so that they will maintain or even increase yields the efficiencies of direct seeding will pay.

Table 1: Tillage Cost Scenarios - \$/acre

DIRECT SEEDING		CONVENTIONAL SEEDING	
Fall			
Harrow	1.26	Harrow	1.26
		Spike	3.35
Band fert. (NH ₃)	3.35	Band fert. (NH ₃)	3.35
Spring			
Pre-seed Rd-up applic.	1.96	Field cult.w/harrow	3.42
0.5 L Rd-up	4.50	Field cult.w/harrow	3.42
		Harrowpack	2.37
Seed Airhoe	8.83	Seed Discpress	8.44
TOTAL	19.90		25.61
DIFFERENCE		\$5.71	

Weed Control in a Direct Seeding System

By Ken Sapsford,
SSCA Soil Conservationist

"Weed management is more than just the application of the proper herbicide at the recommended rate and recommended growth stage," said Eric Johnson, soils and crops agronomist from North Battleford.

At the 1995 direct seeding workshop and trade show held in Lloydminster Feb. 14 + 15 there was a session on weed control in direct seeding systems. In addition to Eric Johnson, this session had two farmers, John Bennett from Biggar and Dale Anderson from Richard. It also had two researchers, Rob Neyedley with Monsanto and Doug Derksen with Agriculture Canada from Indian Head.

This was not a session on how to use herbicides, except for Rob Neyedley who was asked to speak on Roundup use. All the other presenters spoke on using other methods for weed control. Johnson said "Integrated weed management involves the application of many strategies in a mutually

supportive manner. Some weed management strategies zero-till farmers should utilize are:

- 1) Managing crop residue
- 2) Crop species/cultivar selection
- 3) Crop Rotation
- 4) Planting densities
- 5) Fertilizer placement
- 6) Reduced soil disturbance & seed-row packing
- 7) Shallow seeding for quick, uniform crop emergence
- 8) Seeding date
- 9) and Timing of herbicide application "

Doug Derksen expanded how crop rotations effect weed control in direct seeding. By using a good crop rotation we are able to create different selection pressures on weeds. Alternating between cereals and broadleaf crops enable us to use a variety of herbicides and we can easily control our volunteer. By rotating the date of seeding and the date of spring burnoff weed control we are changing the selection pressures on the weeds." For early seeded crops, the in-crop treatment is most important while for late seeded crops the burnoff treatment is most important"

said Derksen. If we are able to use winter wheat or fall rye in our rotation the need for herbicides are reduced since control of such weeds as wild oats and green foxtail will be reduced.

"Optimizing crop competition against weeds, varying crop life cycles and seeding dates and herbicide options in a multi-year crop rotation can be used to manage weeds and optimize net returns" said Derksen in conclusion. The researchers remarks were echoed as the farmers told how they controlled weeds on their farms. Bennett said "Weed control with reduced tillage requires a change in attitude. - Crop competition is probably the cheapest and most effective weed control available."

Weed control in a direct seeding system can be achieved but it may require a little more management, but the results are worth it. As Anderson said "If zero till farmers can come out at least even with other systems, the big winner will be the soil. What price can you put on soil maintenance and rebuilding for future generations.

Photo Contest Winners

Every year it seems to become harder to pick the winners in the SSCA Photo Contest. Thank-you to everyone who took the time to enter the contest.

Soil Conservation Category



1st Aaron Steinley, Empress, AB

2nd Dr. Guy Lafond, Indian Head, SK

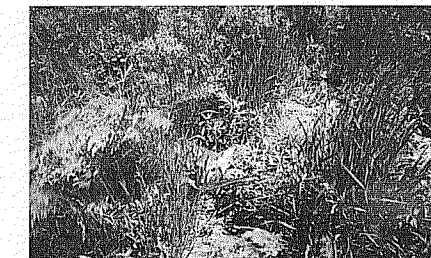
Soil Degradation Category



1st Ron Thompson, Indian Head, SK

2nd Aaron Steinley, Empress, AB

Wildlife Habitat Category



1st Aaron Steinley, Empress, AB

2nd Aaron Steinley, Empress, AB

Indian Head Zero Tillage Field Day

Expanding the Basics...
Seeding, Fertility and Weed Control

Your Choice of July 25 or July 26, 1995
Indian Head Experimental Farm

Zero Tillage Research Highlights

8 year comparison of Zero, Minimum and Conventional tillage: yields, economics and moisture
weed management reduced input systems
crop rotations plant diseases

Demonstration Highlights

Equipment and Opener Performance
Nitrogen Fertility: Ammonia and Dry
Spring and Winter Wheat

Registration

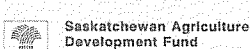
\$25.00/person (\$20.00 U.S.) Deadline is July 21, 1995
Includes Lunch and Supper Limited to 200 people/day
Please forward fee with Register Early to get your preferred day
registration (non-refundable)

For More Information

Rural Service Centre
Box 399, Indian Head, SK S0G 2K0
Ph: (306)695-4250, FAX: (306)695-4246

Direct Seeding Manual

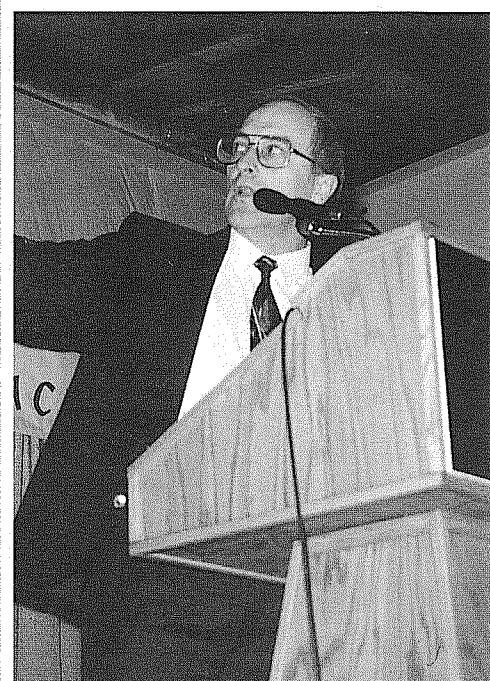
Produced By: PAMI & SSCA



Successful Crop Establishment Using Direct Seeding Techniques

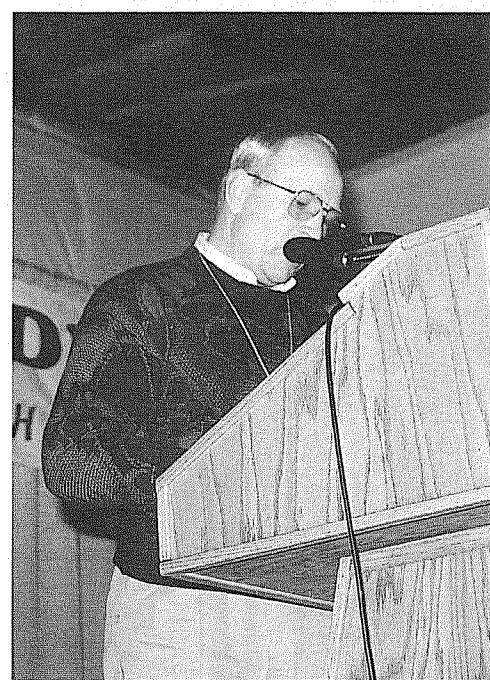
By Eric Oliver,
SSCA Soil Conservationist

Crop establishment is the single most important step in producing a crop. This was a common theme the speakers on this topic all described during the 7th Annual Meeting and Trade Show of



Stewart Brandt,
Ag. Canada, Scott

the Saskatchewan Soil Conservation Association. This conference at Lloydminster, February 14-15, covered a wide variety of topics related to direct seeding. I will provide a brief overview of the "Establishing a Crop Using Direct Seeding" sessions. Speakers on this topic included farmers, Ag. Canada Researchers, Sask. Ag. and Food Agrologists, an ADD Board Representative, and a representative of the Potash and Phosphate Institute.



Aaron Frieson,
Rosthern

Stewart Brandt is a research scientist from the Ag. Canada Research Centre at Scott. His presentation noted that relatively little research has been conducted on crop establishment with direct

seeding. However, Mr. Brandt stressed that it is important to understand how changing the seedbed conditions under direct seeding will affect crop establishment. It should also be noted that the factors described in Mr. Brandt's presentation are based mainly on conventional tillage research.

Mr. Brandt emphasized that no matter what seeding system you use, good crop establishment begins with using high quality seed. In direct seeding, soil temperatures are often a degree or two lower than where pre-seeding tillage has occurred. However, as a result of better moisture conditions, cooler soil temperatures associated with direct seeding can be overcome with shallow seeding.

Row spacing will also affect crop establishment.

According to the research at Scott, row spacings of 6 to 9 inches appear to be the best compromise. However, research elsewhere indicates that seeding paired or split rows with wider spacings may be similar to narrower row spacing results. Mr. Brandt also emphasized the importance of good seed to soil contact and preventing loss of seedbed moisture. Packing is therefore very important, however, there is a risk of excessive compaction under wet clay conditions.

Terry Roberts, Western Canada Director of the Potash and Phosphate Institute of Canada discussed the role of phosphorus and potassium in crop establishment. Dr. Roberts described how phosphorus and potassium play key roles in plants. Phosphorus helps in root and seedling development, improves winter hardiness, increases water use efficiency, improves disease resistance in some crops, hastens crop maturity, and is vital to seed formation. Phosphorus is also very

important in the plant's internal processes, such as photosynthesis, respiration, and cell division. Potassium increases kernel weight, strengthens stems, improves

disease resistance, and helps the plant to withstand stress.

Both phosphorus and potassium are relatively immobile in the soil. Mr. Roberts noted that in loamy soil, if the phosphorus is more than a quarter inch from a root, it is too far to be taken up by the root. Therefore, it is important to maintain adequate phosphorus and potassium fertility levels in the soil, particularly in the early stages of plant growth.

Studies have shown that a shortage of phosphorus often results in reduced tillering in small grains. Mr. Roberts discussed the importance of phosphorus and potassium as starter fertilizers. He noted that phosphorus is of most concern in the Prairies because about 3/4 of the soils show moderate levels or less in available phosphorus and therefore, require supplemental fertilization. However, only 1/4 of the Prairies require supplemental potassium. According to Mr. Roberts, starter fertilizers get the crop off to a good start, but optimum yields are only possible when all required nutrients are available to the crop. Studies have shown that even when available phosphorus is built up, wheat still responds to small amounts of seed placed phosphorus. Mr. Roberts emphasized that placing phosphorus close to the seed is extremely important because early spring is the period when crops make maximum use of it. In addition, because root development and nutrient movement are restricted by low temperatures, the chances of starter fertilizers producing beneficial effects are higher under no-till and reduced tillage systems.

The question often arises... "How much fertilizer can safely be applied with the seed?" Studies show that more fertilizer can be placed with the seed if more of the seedbed is utilized. However, Mr. Roberts noted that farmers should use caution in applying fertilizer with seed. There are guidelines for applying fertilizer with the seed, and as Dr. Roberts noted, "A poor establishment is not worth the risk."

Eric Johnson (Sask. Ag. and Food) made a presentation on behalf of Howie Borge (Sask. Ag. and Food), Karen Benjaminson (PFRA), and Roland Brassard (District 35 ADD Board) on the topic, "Effect of Crop Residues on Crop Establishment." Mr. Johnson commented that one area of concern in direct seeding is whether crop emergence and crop maturity proceeds as quickly as under conventional systems.

While a small difference in maturity would not normally be cause for concern, the early fall frosts in 1992 and 1993 has heightened this concern. Although a study at Indian Head has shown that crop emergence and development under zero-till was equal to minimum and conventionally tilled plots, many farmers in the northern regions of Saskatchewan were still sceptical. These farmers were concerned that the growing conditions at Indian Head do not parallel their conditions.

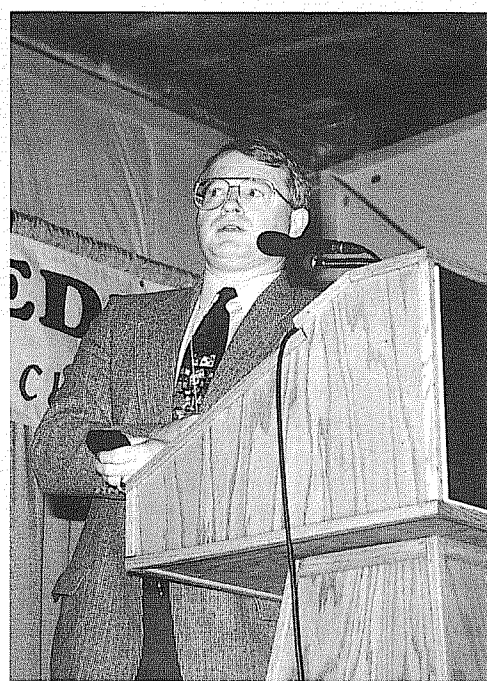
In 1994, the District 35 ADD Board received funding from the Canada-Saskatchewan Green Plan to set up field assessment sites to address the crop maturity issue. The objective of the project was to compare the rate of crop development under three seeding treatments:

- 1) Direct seeding into standing stubble.
- 2) Seeding into pre-tilled stubble.
- 3) Direct seeding where the previous crop residue was mowed and removed.

According to Mr. Johnson, the results indicated that the direct seeded crop was slightly behind in crop stage development by June 17. However, Mr. Johnson stressed that crop development variability within the field was greater than variability between treatments at some sites. Observations made during the late heading stage showed little visual differences in maturity between the cultivated strip and direct seeding into standing stubble. General observations indicated that if the residue is not spread adequately at harvest time, there is going to be variable maturity in the field at harvest time the next year. However, Mr. Johnson emphasized that it's too early to draw conclusions from the first year of the project.

Aaron Frieson, a farmer from Rosthern, spoke on crop establishment on his farm. He purchased his first air seeder in 1979 using 16" sweeps and dribbling liquid fertilizer in the seed row. In 1986, he changed

to a back swept knife to band liquid fertilizer between two rows of seed. However, he had trouble seeding canola, flax and lentils into cereal stubble. Mr. Frieson also experienced an ongoing weed problem with the high disturbance system. In 1992 he purchased a John Deere 750 drill and was able to seed through 18" or taller



Terry Roberts,
Potash and Phosphate Institute,
Saskatoon

stubble. However, there were some problems associated with fine residue on the soil surface. After talking with a few farmers, he chose to use a John Deere paired row V tool opener. This also allowed Mr. Frieson to use anhydrous ammonia as a cheaper source of nitrogen. The V tool opener had good trash clearance on 15" spacing, but the fields were rougher than before.

Mr. Frieson is a firm believer that good crop establishment



Eric Johnson,
Sask. Ag. & Food, North Battleford

begins with good residue management. Weed control in the fall and spring are also very important factors for good crop establishment. Roundup was sprayed on 95% of Mr. Frieson's land

either as a pre-harvest treatment or immediately after harvest for Canada thistle control. 2,4-D is sprayed in mid-October for winter annual weed control. This spring, Mr. Frieson does not intend to conduct any burnoff spraying on cereals that are to be seeded before the 10th of May. The remaining acres will have Roundup sprayed either before seeding or after seeding, but before crop emergence.

Mr. Frieson believes that for good crop establishment, it is very important that the residue is uniformly spread and weeds are controlled early. He commented that these factors may be more important than the type of seeder used.

Herb Bartel, a farmer from Lanigan, was the other farmer speaker on crop establishment. His talk focused on applying anhydrous ammonia in direct seeding. Mr. Bartel likes using anhydrous because of its price advantage, lower volumes required, and having it delivered to the field when needed. He was confident that he could apply anhydrous ammonia at the time of seeding as long as there was separation. After determining his needs for a seeder and applying anhydrous, he settled on a Harmon 4480 Air Drill. In 1994, he seeded all his crop zero-till, banding the anhydrous below the seed and placing the phosphorus with the seed. Mr. Bartel also increased his seeding rate by 20% to compensate for possible seed burn from the anhydrous.

Mr. Bartel uses a four-year rotation, selecting a combination of wheat, barley, oats, peas, canola, mustard, or flax. He randomly soil tests, testing at least one field of each crop in each year of the rotation. The soil tests are used only as a general guide as he usually doesn't have enough moisture to fully utilize the high fertilizer rates.

Like Mr. Frieson, Mr. Bartel follows the "pillars" of direct seeding, starting with residue management at harvest time. He has encountered no problems with seed burn or germination problems as a result of using anhydrous during the seeding operation. In the future, Mr. Bartel will likely decrease the vertical separation of anhydrous and seed at the moderate rates of nitrogen. This should also lessen the soil disturbance. Like Mr. Frieson, Mr. Bartel believes his land has benefited significantly from direct seeding and will continue the practice, even if yields don't improve over conventional seeding systems.

How to Win with Direct Seeding

By Garry Mayerle,
SSCA Soil Conservationist

The first session of the 1995 Direct Seeding Workshop looked at how to be successful with direct seeding. Dr. Adrian Johnston, Farming Systems Agronomist with the Melfort Research Station talked about the integration of five key Saskatchewan designed pillars of direct seeding. He stated that "success in direct seeding is dependent upon increasing plant available water and developing a flexible crop rotation strategy to maximize returns. Each farmer must develop an individual strategy after considering his own environmental and soil conditions."

The first agronomic pillar is *crop residue management*. Dr. Johnston looked at some



Adrian Johnston,
Ag. Canada, Melfort

additional techniques to control heavy crop residues in addition to uniform spreading. The basic principle is alternate low and high residue crops. Residue often carries crop disease spores, so alternate crops to make sure these spores are decayed or rendered nonviable before replanting that specific crop. Consider a wider row spacing to help you handle more and longer residue.

Another pillar is *crop establishment*. Seed placement is more crucial than soil disturbance in direct seeding. Keep seeds shallow but in positive contact with moist firm soil. Alternate high and low residue crops, and uniformly spread residue to keep moisture uniform throughout the field. This will help improve establishment of small seeded crops. Fertilizer placed in the seed row or in precision bands close to the seed will enhance early seedling development. However, be sure that you don't overdo the rates and get fertilizer burn. Dr. Johnston also says soil temperature problems can be overcome by seeding shallow with shallow surface moisture and by clearing the residue away for a two to

three inch wide strip around the crop row.

The third pillar is *weed control*. A surprise for many direct seeders with a low disturbance one pass system has been a reduction in problem annual weeds. A general rotation principle to achieve better weed control is to be sure to get grassy weeds in broadleaf crops and broadleaf weeds in cereal crops. Less disturbance seems to be resulting in less weeds. Varying seeding dates from early to late in one's rotation can increase cultural pressure on weed populations.

Soil Fertility is the fourth pillar. It is helpful to understand the nutrient requirements of individual crops when planning your rotation. Dr. Johnston says soil testing is the only way to make application decisions which will optimize fertilizer investment. He also suggests utilizing the potential release of nitrogen from pulse stubble to get protein increases in wheat. For similar reasons avoid planting malt barley on pulse stubble as an increase in protein will reduce chances of getting malt.

The fifth pillar is key in integrating the rest of the pillars into a production system. Dr. Johnston says "crop rotation is crucial to developing a successful direct seeding system." Sunola, edible oil flax, and mustard are and will become important crops to increase diversification in a rotation. Chickpeas and lupines will be crops those in the brown soil zones will want to consider. If you can't conserve enough moisture to eliminate summerfallow in your rotation at least try to go to a three year rotation keeping heavy cereal residue cover on the summerfallow to eliminate erosion. Winter cereals and perennial forages also have a good fit in direct seeding. They root deeper and draw up nutrients and water from deeper depths and at different times of the season. They also tend to shift labor requirements away from critical time periods.

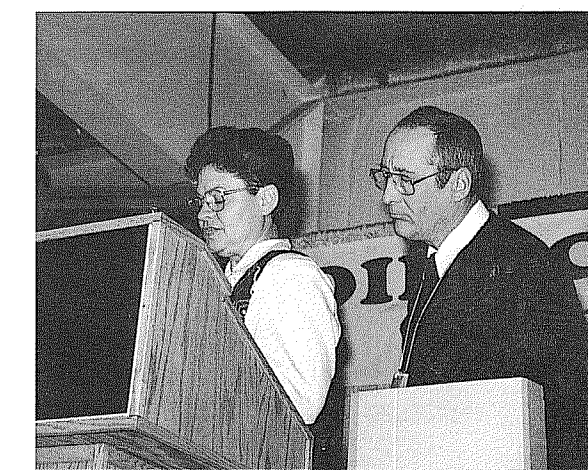
The morning was wrapped up by two Saskatchewan farmers sharing their experiences with direct seeding.

Ed and Marguerite Beauschesne of Albertville began to move toward conservation farming when they saw soil drifting back in the seventies. They farm on a black clay loam soil.

They seed 2000 acres with a Flexi-coil airdrill on 7 inch spacing. They dribble liquid fertilizer alongside a Super Eagle Buster opener. They tried two different types of openers before they came up with this system of applying fertilizer. They collect chaff in piles and then either burn them or ammoniate them to use in their cattle backgrounding enterprise. Spreading and harrowing straw in the fall gives even moisture conservation. It also gives even germination of weed seeds to make the spring burnoff more effective. They have tried some surface application of Edge and trifluralins. The crop rotation they follow is: wheat or oats - canola - barley - peas or flax.

The benefits they have found are higher yields, higher bushel weights, less dockage and sometimes a reduced need for wild oat herbicides. They have also found a 30% reduction in labour, 30% reduction in fuel costs and tractor hours cut to 1/3 of the hours under conventional tillage.

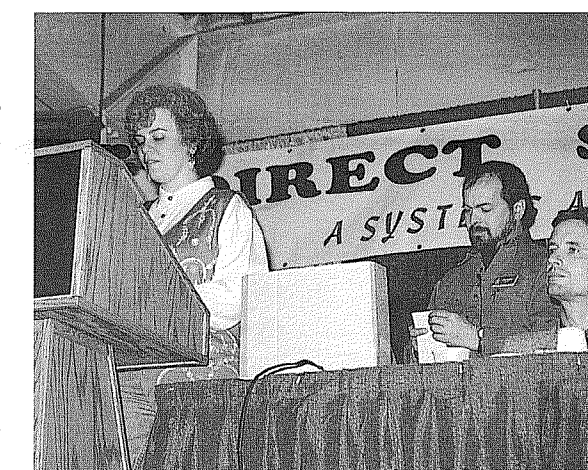
Clint and Lily Steinley farm brown clay loam soil with gently rolling topography west of Leader. They follow a two or three year rotation depending on soil moisture. Usually



Marguerite and Ed Beauschesne,
Albertville

it consists of a legume or a broadleaf crop followed by a cereal and then chemfallow. They also use zero incorporation of trifluralin or ethalfuralin granules. Using the Acra-Plant double disk opener, they built their own drill. Fertilizer rates are limited because all fertilizer is placed with the seed. They use a pre-emergent burnoff just prior to crop emergence. A Kirby handles the straw and chaff residue.

One benefit the whole family found to direct seeding was a positive change in attitude to



Lily and Clint Steinley,
Empress, AB

farming. Lily says farming is now fun again. There is something to work toward. Although input costs have stayed about the same on their farm, the most significant savings were realized in the area of equipment inventory.

Seeding Trends '95

Seager Wheeler Farm
Rosthern, SK

Saturday, June 3, 1995

For More Information Contact:

Rural Service Centre
3735 Thatcher Avenue
Saskatoon, SK
Ph: (306)933-5090

The Newsletter of the Saskatchewan Soil Conservation Association

Issue 15 -- Summer, 1995

[Wet Conditions challenge Seeding Equipment at Field Day](#)

[Top School of Ag. Paper Wins SSCA Membership](#)

[Flexibility Key to Crop Rotations](#)

[No-till Canola production: Profitable or Not?](#)

[The Right Opener Makes Direct Seeding Even More Appealing](#)

[Openers: The Ultimate Secret in Direct Seeding](#)

[Designing Your Own Direct Seeding Equipment](#)

[Looking For a True Zero Till System for Marginal Lands](#)

[The Health of Our Soil: Are We Too Complacent?](#)

[Soil Degradation a Slow Process](#)

[Wildlife and Agriculture - Can they Coexist?](#)

[Environmental Effects of Direct Seeding](#)

[Seager Wheeler Farm](#)

[New Commodity Association Forms](#)

[Direct seeding into Wet Soils](#)

[CLC Summer Tour Opportunities](#)

Wet Conditions Challenge Seeding Equipment at Field Day

By Blair McClinton

SSCA Assistant Manager

Wet, sticky, heavy clay soil and heavy residue is what the companies demonstrating at SSCA's Soil Conservation Field Day found at the site located four miles north of Indian Head on highway 56. These wet conditions, typical of seeding conditions in eastern Saskatchewan this spring, provided a definite challenge for the equipment being demonstrated on June 20. The 800 farmers who attended seemed to really appreciate seeing the equipment operate under the tough seeding conditions faced by farmers every year. We had comments from both farmers and agricultural researchers that these were the most realistic conditions we have had for our field day.

Once again, there were two separate direct seeding demonstration areas on site. In the main seeding area, the thirteen seeders were on hand to demonstrate their ability to direct seed into standing stubble. In the second seeding area there was a demonstration of the lone entry in the farmer modified contest. The two seeding areas, with a total of 14 different seeders, were the most popular demonstrations as people crowded around equipment jockeying for a better view.

A unique feature of the SSCA field day were the May seeded plots of canola and wheat. Eleven commercially available seeders seeded these plots to provide a comparison of crop establishment for the field day. These plots gave producers the opportunity to not only see the seeders working on that day but also see the results from each seeder a month after a crop was seeded. Dr. Adrian Johnston, Melfort Research Station and Blair McClinton, SSCA, gave a guided tour of the May seeded plots to around 150 interested farmers. Many other farmers viewed these plots at their own leisure. Plot information is available at the main sign for anyone interested in looking at these plots. There will be another tour of these plots during the Indian Head Zero Tillage Field Day on July 25 or 26.

The demonstration site is also the location of two other research trials. It is one of five locations in Saskatchewan of an Ag. Canada/PAMI Direct Seeding Opener Trial. Gord Hultgreen, PAMI and Guy Lafond, Ag. Canada, were on hand to explain the experiment and answer any questions. The Indian Head Agricultural Research Foundation are using this site for a high disturbance vs. low disturbance direct seeding trial. Doug Derksen, Ag. Canada and Judy McKell, SDAF, were on hand to explain the plots.

The residue management demos were also well attended. Farmers were very interested in how the residue management equipment would work in field conditions. Organizers unrolled bales of unthreshed wheat to simulate harvest conditions. Each combine made several passes to

demonstrate uniformity of the spread. Many farmers realize that residue management is the first change they need to consider in their seeding system.

Spraying equipment was also demonstrated at this years field day. The spraying demonstration featured both high clearance and field sprayers. In addition to the sprayers, Rogers Engineering demonstrated their liquid fertilizer "Pulse Bander". This machine injects liquid fertilizer using high pressure (5000 psi) nozzles instead of using a traditional soil openers.

Overall, the organizers were pleased with how the field day turned out. The organizers would like to thank all of the field day suppliers and participants who have helped to make this field day a success.

Top School of Ag. Paper Wins SSCA Membership

By Ken Sapsford

SSCA Soil Conservationist

Congratulations to Jody Rysavy of Glenside for having the top term paper in the School of Agriculture's SL SC 24 - Soil Conservation and Land Quality class. For his efforts Jody receives a three year membership in the Saskatchewan Soil Conservation Association. The class is taught by Mike Grevers of the Soil Science Department at the U of S. The majority of the papers were written on wind erosion, next water erosion. However the top paper by Jody Rysavy was written on soil salinity.

Jody's paper describes what causes soil salinity, possible cures and what he is doing on his own farm to stop it's spread. " Soil salinity has been and will always be a concern for producers of any field scale crop. If preventative measures are not taken, soil salinity can result in many acres of lost or marginal production. Some areas of the province have already fallen to this "silent white blanket", but with careful management practices, these "patches" can be prevented.

As a management practice Jody states "Barley is probably the most common crop planted in problem areas because it can grow in moderate to severely saline soil. The best way to manage moderate salinity problems is to establish a heavy cover crop, and do as little as possible to disturb the soil surface." With this in mind direct seeding has a positive fit manage saline soils. " Some areas have too much salt to grow any commercially viable crops. In these cases, a ground cover forage or grass is used. Some of these include Altai Wild Ryegrass, Slender Wheat Grass, Salt Meadow Grass and Tall Wheat Grass.

Jody continues to explain his own farm management for salinity. " the largest area of salinity (on his farm) is an artesian discharge, the water recharge may be several miles away. Just finding the general recharge area would be hard enough, let alone trying to convince the owner farming it to plant high water usage crops. The solution to this problem unfortunately now lies with myself, trying to manage the problem that is already there rather than preventing the cause.

If crops that are less tolerant to establishment in saline soils can be planted now, they will not have too much problem germinating at the present time. Later when the salinity has increased they would be harder to establish. By planning ahead I hope to prevent a big mess in the future." Jody hopes to seed the area to forages in the future to prevent the spread of the saline area.

Jody concludes with " There unfortunately no quick cure for salinity, good management skills are needed to work with patches already formed. If the water table can be kept as far away from the surface as possible, the probability of salinity is reduced greatly."

Flexibility Key to Rotations

By Juanita Polegi

SSCA Soil Conservationist

During the course of our winter series of meetings, the benefits of direct seeding and crop rotations were 2 topics that always generated good discussion. Esterhazy area farmer, Art Pask, a panellist at one of the direct seeding meetings spoke on the benefits of direct seeding to his own operation and the crop rotation he employs.

Art's first experience with direct seeding occurred in the fall of 1982 when he seeded winter wheat. He describes his seeding implement as a "Wilrich airseeder with 3/4" worn out little spikes". After seeding, he spread the fertilizer.

Art grew winter wheat until 1986 when he had severe losses due to rust. However, his direct seeding of winter wheat into a variety of stubble with good success proved to him that direct seeding was a viable option.

Meanwhile, although Art wasn't direct seeding his spring crops, he had greatly reduced his tillage operations. He says his last year of "recreational tillage" occurred in 1979. By 1981, he began to band NH_3 in the fall and then seed the following spring.

In 1989, Art purchased a 42' Victory Seed-o-vator air seeder. At the time, it was equipped with 16" sweeps. Over the years, he has reduced the sweep width to 8" on 14" centres, using steel on-row gang packers. Art says this system "leaves a fair bit of black soil around the seed but that helps with emergence - especially in springs such as the ones we've had since 1992. The exposed soil probably encourages extra weed growth but it does help the crop to get a good start".

As for weeds, Art doesn't feel he has any more problems than any of his conventionally seeding neighbours. The wild millet is no longer a problem. Although he still has some wild oats and quack grass, these are very manageable. As for scentless chamomile, he hasn't seen an increase in its presence since his move to direct seeding. Art says if he can catch the scentless chamomile with Roundup before it bolts, it, too, is manageable. A preharvest application of Roundup seems to be doing a good job of controlling the Canada Thistle.

When asked about the benefits of direct seeding, Art is enthusiastic. He says he noticed the soil becoming more mellow after 2 years of direct seeding. After 5 or 6 years, the soil improved even more. Art likes the "tonnes of slime" that come with direct seeding after about 3 years. The slime he refers to is the earthworms. The earthworms feed on the trash assisting in its breakdown to organic matter. As the earthworms work, they release N. Art feels this extra N made available to the crop in July or August enables the crop to give a little extra in yield. Art maintains "It's this 'bank account' of stratified residue and earthworm activity that makes the whole system pay".

Included in Art's crop rotation are canola, semi-dwarf wheat, flax, oats and about 15% of the acreage is seeded to forages. The forage crops consist of alfalfa, crested wheat grass and timothy grass. Art has a couple of reasons for growing timothy instead of Bromegrass. He really dislikes the brome because of its creeping nature. The timothy, in contrast, "stays put". He feeds the timothy hay to his cattle and is able to sell some of it into the horse feed market.

Art really likes oats in the rotation. He finds the mellow soil following an oat crop is ideal for seeding canola. The oats also do well on the eroded knolls and they add much fibre to the soil. Like so many other direct seeders, flax serves as Art's "clean up" crop.

Art feels the fault of his crop rotation is that it is not diversified enough. However, because he has so many stones and rocks to contend with, he can't justify growing peas and lentils and then paying for stone damage to his equipment.

When planning a crop rotation, Art advises "Watch the futures market, be aware of potential pests and plan accordingly. Flexibility is the key to rotational success".

No-Till Canola Production: Profitable or Not?

By Marv Fenrich

SSCA President

There is an on-going question in my mind that has not been answered to date. Over the long term, is zero till canola production on stubble as profitable as on conventional summerfallow? If one were to ask a canola producer in the moist dark brown region of Saskatchewan you would get a mixed reaction that would end up favoring summerfallow production as the clear winner. I would like to challenge this bias and try to present the pros and cons of the two systems.

Conventional Summerfallow

On June 3, a small area received a heavy rain shower just after the canola had emerged. On June 6, a strong NE wind developed and the pulverized soil began to blow. By June 7 the canola will have to be reseeded because of severe wind shear and to stop the soil erosion. To complicate matters, the land will be exposed to wind erosion for an additional two to three weeks. Fortunately this is an isolated incident covering a small but not an uncommon sight over the years. A dry loose seedbed on summerfallow in 1995 will go down as a much bigger problem for sure. Many producers have gone to the spread and till approach and there are many complaints of poor emergence as of June 10 with some areas receiving no rain yet this spring. Poor wild oat control on trifluralin treated soil has also plagued our area for the last three years. There appears to be no clear answer to this one other than cold soil conditions in the spring. This is somewhat ironic since black summerfallow is supposed to warm up early to activate trifluralin. High stinkweed populations are always a threat as this weed prefers a firm moist seedbed similar to canola.

The most disturbing trend that I have witnessed is the call for high rates of nitrogen from soil samples. This spring, I viewed one test result called for 70 lb. of N for normal growing precipitation. I will admit that this is the worst one that I have seen in some time but 30 to 50 lb. is common. Depletion of soil organic matter and leaching of soil nutrients during the fallow period appear to be taking their toll and will continue to do so in the future.

To conclude the summerfallow picture, I must mention that the risk from spring water erosion is an on-going degradation factor that will not go away. Canola does like a low residue, warm, moist seedbed and will do very well with the extra subsoil moisture that summerfallow provides on a dry year. Most producers seem willing to risk summerfallow cropping in order to achieve that "magazine cover" canola crop that we in the dark brown soil zone don't often enjoy.

Zero Till Stubble

Straw management, in my opinion, is the most crucial management tool that needs to be performed for good canola emergence. Harvest is the time to perform an even spread of straw and chaff or you will pay dearly next spring. Weed control in zero till may not be as big a problem as previously thought since the concept of surface applied trifluralin and ethalfluralin. This is working very well in my own case in 1995. Perennial weed control can be achieved from a preharvest application of roundup. Winter annuals are controlled in the late fall. It appears that the stinkweed population in the zero till fields are much smaller and generally not a problem.

Fertilizer must be applied by fall banding or side banding during spring seeding with specialized equipment. If you are not totally confident of seed to fertilizer separation at seeding, stick to fall banding with a narrow knife. Seedbed moisture is usually very good but cool soils can pose problems in germination especially with the polish varieties. You may also be more susceptible to spring frosts as the straw covered furrow will freeze first. Overall, if the straw has been managed well you can expect a moist firm seedbed to get the crop off to a good start. However, in a dry year, moisture stress will limit yield. From a soil conservation perspective, over the long term you will not experience the soil degradation problems related to fallow cropping systems.

I have not made a lot of progress outlining the economic comparisons of the two systems but I do hope to continue this discussion in the next issue of the Prairie Steward. I will stick my neck out on the line and share with you my results with the 1995 canola crop. At this point in time our canola crops are off to a great start and we trust that there will be adequate moisture to sustain the crop. Good luck with your '95 crops and I hope they will be bountiful.

The Right Opener Makes Direct Seeding Even More Appealing

By Garry Mayerle

SSCA Soil Conservationist

In the last few years direct seeders have expended a lot of energy trying to find the right double shoot opener. Lyle Larsen knows something about the frustration of this kind of search, try, redesign, and search again! In the spring of 94 he put a set of Swede openers on his 5000 air drill and after seeding 8000 acres he is still saying only good things about them.

Lyle and his wife Kim farm at Aylsham, 32 kilometers south and east of Nipawin. One of the features that Lyle really likes about the Swede opener is that it puts the seed into a firm moist seed bed. The other paired row openers that he has tried placed the fertilizer first and then tried to rebuild a seed bed. Invariably they dried out to the bottom of the fertilizer channel. Lyle says that when he makes the Swede opener place seed a half an inch into moisture it will still be a half an inch in moisture several days later. This has given him excellent germination.

Another point he emphasized is the low wear rate of these openers. After seeding 8000 acres he says, "these openers aren't wearing to speak of." Lyle will probably change the openers that run in the wheel tracks but the rest of them look like they will seed next year's 4000 acres too! He fully expected to change them after the first year of seeding.

After Lyle first tried the Swede openers he took a wire brush to them to shine them up and they have worked fine for him since. Lyle seeds at four mph and gets good separation of seed and fertilizer. He is especially please with crop response to nitrogen placement. When he was conventionally farming he deep banded anhydrous ammonia in the spring. He noticed crop yellowing as the plant roots went from the seed placed fertilizer to the bands. This deficiency is not noticeable with the Swede opener. He has had no major plugging problem and the bottom of the opener stays clean. In certain conditions dirt will stick to the side of the fertilizer wing but Lyle says it doesn't affect the way the opener seeds.

1992 was the last year that Lyle seeded with a press drill. He says "I got so tired of watching land blowing and trying to find moisture to put seed into that I said there has got to be a better way!" A neighbour with a Flexi-coil airdrill seeded a couple of fields for him that year and they turned out so well he was convinced about the airdrill.

Lyle says he used to seed 2800 acres with 3 four wheel drive tractors. They burned over 250 gal of diesel a day and he was still only covering 140 acres a day with a 30 ft. drill. Now he seeds 4000 acres with two tractors -a 195 hp MFWD tractor pulling a 39 ft. airdrill, and a sprayer tractor. He averages 185 acres seeded a day. Lyle says proudly, "With 3700 acres in the ground I still haven't used up my second 1000 gallon tank of fuel!"

Less stress at seeding time is another major advantage of direct seeding . Lyle says, " with the drill and the sprayer, which operates only part of the time, there is less machinery to service and keep organized in the field."

To add to these benefits Lyle is convinced direct seeding is good for his land. He farms a mixture of soils. Some of it is sandy to peaty land. Lyle says this is the only way to farm peat land. He also has some loam and some with more clay content. He says even after only three years of direct seeding his ground takes less draft to seed into. The hardest pulling field he seeded this year was a piece of conventionally tilled summerfallow he just took on. In comparison the stubble 'worked nice'.

Direct seeding hasn't been all a bed of roses for Lyle. Besides the frustrations of finding the right opener, dandelions have also been a difficult weed problem. Lyle feels he may have the solution with post harvest Roundup. It appears to have sure worked good on the fields he sprayed last fall. He is also considering purchasing a four wheel drive high clearance sprayer. He is hoping to put a lot of Roundup on in the fall and avoid the need for spring burn off. There may be some problems but Lyle wouldn't consider going back to conventional farming.

Openers : The ultimate Secret In Direct Seeding

By Bob Linnell

SSCA Soil Conservationist

This spring has been one of "get to know your Machine" in much of the direct seeding world. To date, there has not been a spring quite like it when it comes to the actual performance of openers on air seeders and air drills. Most operators will persist in using what they bought or were sold, good or bad under these tough seeding conditions. Mother nature did have fun with us this spring. Some parts of the province were too dry while others had a tad too much moisture at the start and it continued to get worse. This was complicated with late, cool conditions and many farmers tried to go with what they thought they knew best.

The high humidity conditions also played havoc with fertilizer applications once they did start to roll. A lot of good farmers attempted to limit their potential losses on such crops like Canola, by making sure they had a least some sulphur in the mix. This proved to be difficult, when combined with a fairly heavy product like phosphorous, pushing the densities of some of these mixes to around 65 pounds to the cubic foot. Some fans did not have the capability to push that large amount of dense product to the openers, while successfully delivering seed and fertilizer to the openers. The openers were under pressure to adequately separate seed and fertilizer for seedling safety and still operate under less than perfect field conditions. This must have driven research and development engineers wacky with the number of calls coming to the factories that make the "wonder" openers.

The "old time" farmers used to say the most valuable factor in producing a crop was the dirt on your hands at the right time. Boy, Did they ever get that right this spring. It should be a heck of a crop this fall for some farmers. I ran across a farmer that spent enough time digging the dirt out of his plugged openers that he "named" each shank. He didn't tell me what the names were, but I guess some of them were not fit to print anyway. Another fellow persisted to the point of putting 2 tractors on his "proven separation" system in order to get the last of his crop in the ground, and he wasn't even in the heavy rainfall or flooded area.

Most of what I have been saying comes back to what the SSCA has been telling farmers that come to the field days and direct seeding schools throughout the year. "There Is No One Best Opener for all soil types and farming conditions". That is not to say that a great deal of work hasn't been done by manufacturers and engineers to design the best that they can. This always means a certain amount of money needs to be expended on R & D in all situations, big or small company notwithstanding. What works under 9 years of "normal" conditions doesn't always work under the 10th when it suddenly turns "abnormal".

What is needed here is reliable testing done by a PAMI group or several field years of practical experience tests to determine the limits of the opener under most conditions. This is not always possible when a new opener comes to market from a small manufacturer or even a bigger "rushed" manufacturer. The question begs to be asked, from the point of view of the potential purchaser, "How do I as a Farmer, Know what Opener Is best for My Farm Or Area."

The answer lies in what you expect it to do, and how you estimate or observe it will perform on soils and conditions similar to what you expect to subject the thing to. The best way to look at openers without making a purchase is a field day, followed by observing a neighbour, or by getting a manufacturer to demonstrate the unit on your own farm. A rental unit often is the way dealers will encourage you to become familiar with their machine in the hope you will actually choose theirs' and not the competition. These are all good methods to test these openers without actually buying a set for your chosen air seeder or air drill.

Next comes the money bit and you don't want to commit \$70 - \$80 a shank to buy something you don't want or won't work for you without being able to recapture at least some of your money. This is the quandary some people find themselves in this year. I predict you will see some openers for sale in the want ads after a troublesome year in farming, but the fight will go on to provide "The Perfect Opener". There will always be a new "wonder" opener just coming on to the market. This will be the case until some smart fertilizer manufacturer or supplier figures out how to coat or treat the product to delay release just long enough to avoid seedling damage and provide a product the farming public can afford.

Call me if you think you have figured a "better way", I'm always interested.

Designing Your Own Direct Seeding Equipment

By Eric Oliver

SSCA Soil Conservationist

Why do some farmers insist on modifying existing equipment or build equipment based on their own design when there's perfectly good equipment already on the market? Well, the reasons can be as varied as the farmers who undertake such projects. Very often, economics are the driving force behind some projects. Many farmers are either unwilling to make such a large investment in a commercially made machine or simply do not have the cash flow to justify the purchase. Some farmers are still unsure of the direct seeding technology and do not want to make a large capital investment until they gain more experience in the system. In other cases, there simply is no machine or opener currently available on the market that works to the farmer's satisfaction on his land. These same reasons are also the motivation that fuels farmers ingenuity and has often resulted in a commercially marketed component or machine.

Tom and Owen Cairns, a father and son team from Coronach, are two farmers who have designed and built their own 50 foot air drill to suit their farming conditions. Their unique design allows for flexibility, yet ensures good penetration, even under adverse soil conditions. In addition to these reasons, economics also played a big role. As Tom Cairns noted, "At the time we built our seeder, most new 50 foot air drills cost around \$100,000. Ours cost between \$25,000 and \$30,000." The Cairns built the drill during the winter of 1993 and have used it for three seasons now, seeding about 3800 acres annually.

The air drill consists of six, eight feet four inches wide sections. Unlike other air drills, the sections are not connected directly to each other. Instead, they are each attached to the main frame running horizontally above the sections. The sections are connected so that they can move up and down as well as laterally, each section moving independently of each other. Another innovative design feature is that due to the way the sections are connected to the main frame, the sections are pushed, not pulled through the soil. This provides downwards pressure to ensure adequate penetration.

The Cairns have also used some commercially available components on their air drill. They are very happy with the packing system based on the Concord pneumatic tire system. The secondary manifold system is from Morris and they have added sensors on each run. A monitor in the tractor cab monitors all 60 runs and can show which run is having a problem. They originally designed their own shank with Bourgault 450 pound trips. Due to some opener problems, they changed to a Bourgault C shank and trip system. The row spacing is 10 inches and the shanks are 40 inches apart, providing very good residue clearance. The distance from front to back is less than 11 feet which helps to maintain uniform depth control over uneven ground. The opener they used this year was a four inch Key Ag chrome sweep so they could apply fertilizer with the seed.

Since Tom and Owen farm on some hilly land, skewing is always a problem. To reduce this they added a coulter at each end of the drill and probably more importantly, modified the front castors. They have incorporated an assembly on each castor which operates like a trip mechanism to keep the wheels running straight. When a certain pressure is reached, the castor can rotate. This dramatically reduces skewing on most side hills, yet allows the machine to make sharp turns.

The air tank is a modified Frigstad with 75/65 bushel capacity. The Cairns have changed the mounting hitch and carriage of the tank to the seeder so it is stronger and prevents skewing when the outfit is backing up. The metering wheel for the air tank was moved to just in front of the tank. An oil pump was mounted on the wheel which drives the metering system. The wheel is tied into the main hydraulic system so that as the seeder is lifted, the metering wheel automatically lifts off the ground first. The wheel touches down first when the seeder is lowered into the ground.

Tom and Owen are firm believers in the direct seeding system now that they have several years of experience. They have also noticed a dramatic reduction of weed problems on their direct seeded fields. As Tom noted, "Anyone who direct seeds with lower disturbance can expect 50 to 75 per cent reduction of weed problems in their direct seeded fields in the first few years."

Modifying existing equipment can be a viable option to change from a conventional method of farming to direct seeding. Modifications do not necessarily have to be as elaborate as the Cairns. There are also modifications one can undertake on existing equipment that can allow it to direct seed. Some of these will be profiled in upcoming issues of the Prairie Steward.

Looking For a True Zero Till System for Marginal Lands?

by David Shortt

SSCA Soil Conservationist

Perennial forages is a true zero till system that many farmers have practiced over the years but not realized it. Forages enhance organic matter accumulation, reduce wind and water erosion, enhance wildlife and contribute to soil building processes. After initial seeding land converted to forage production tillage operations are no longer needed allowing roots to develop creating organic matter in the soil.

However in the past after initial seeding forage stands would become unproductive in a few short years. In order to regain productivity fields would be rebroken then reseeded back to forage only to repeat the cycle again in a few short years. During the year of breaking intensive tillage was used to kill out the forage. Unfortunately this left the field open to wind and water erosion and also broke down the organic matter created during the previous years. Forage fields are zero till but they are also a continuous cropping system. All farmers are aware that adequate fertility levels must be maintained in a continuous cropping system. So too do forage stands require proper fertilization to maintain their productivity. When a grass forage stand becomes unproductive it is generally due to a lack of fertility not to the age of the stand. Studies in Alberta have shown that smooth brome grass hay fields remain productive for over thirty years with adequate fertilization.

With the recent registration of glyphosate to kill out the hay stand, followed by seeding with a low disturbance seeding implement, tillage can be eliminated from forage stands when they need to be rejuvenated. This greatly reduces any chance for serious wind and water erosion to occur on predominately marginal lands.

In the late nineteen seventies there was approximately 25 million acres in native grassland in Saskatchewan, by the early nineteen nineties only 16 million acres remained. The nine million acres that were cultivated could be defined as marginal for the reasons of salinity, topography, stones, sand, or sloughs.

With changing grain prices and higher production costs these nine million acres could be converted to true zero till acres in Saskatchewan if seeded to forages.

The Health of Our Soil: Are We Too Complacent?

By Doug McKell, SSCA Executive Manager

Funny thing about our value system. I wonder how much warring and unrest there would be in the world if we put the same value on the soil as we do on such things as oil, automobiles and the places where we spend our leisure activities. Maybe it's a good thing the soil isn't valued as such. If it were, we would certainly be literally under the gun to defend our world class soil.

But do we take our soil resource too much for granted? Given the droughts of the late eighties, the degraded state of most prairie soils and the growth of soil conservation programs you would think the health of the soil would be a top priority for policy makers and producers. Recent events prove otherwise. Last years excessive spring moisture situation in the North and East areas of Saskatchewan coupled with an open fall prompted many farmers to work down their stubble. Many were trying to open up the soil for the purpose of making it dry out sooner in the spring. Some felt they couldn't seed through the residues left after a heavy crop. Others simply had extra time on their hands and it sure was fun to spend a nice fall day on the tractor out in the field. Unfortunately these activities contribute to soil degradation.

Take a look at recent election campaigns for more proof. In Ontario and Saskatchewan the election issues focused around economics. The deficit, government spending, jobs and other fiscal matters far outweighed all other issues combined. Not much was said about programs to address environmental concerns including the health of our soil.

We struggle every day to bring the messages of soil conservation to producers. Most people are happy to listen and many have changed their farming methods to work towards sustainability. Farming to conserve the soil will mean adopting new techniques born out through new and innovative agronomic research. It also requires in most cases a change in attitude in how we view our soils. However it was suggested to me more than once this spring the only thing that would bring change to some would be another drought similar to 1988/89. What a thing to hope for!

We are not alone in our situation. I recently talked with a fellow from Taiwan who inquired about our Saskatchewan made direct seeding machinery. From what he told me they are suffering very similar soil degradation and erosion problems as have we. They are very concerned and are very interested in learning techniques to address this problem. Given their economic situation and work ethic it will not take long for them to get on top of their situation.

I also met some concerned producers from Nebraska at a Great Plains symposium this spring. They were looking at ways to influence policy makers and design programs that ensure the great plains remain healthy into the next century and beyond.

We are making headway. Farming practices have been altered significantly in the past ten years. In ten more we will see even more remarkable changes. What we must not allow, however, is to become too complacent towards soil conservation. Government, producers and industry alike need to be reminded of the importance of sustainable land management practices. Financial stability and diversification are no doubt important goals for prairie agriculture. Without a healthy soil resource, however, these goals become virtually impossible to achieve. Research programs aimed at soil conservation need to be maintained and strengthened. We cannot expect industry to pick up the tab for "common good" research such as the type that can support soil conservation. We the producers of food and the people who make policy have to do it. Lets make the health of our soil a high a priority in all our program plans.

Soil Degradation a Slow Process

by David Shortt

SSCA Soil Conservationist

Soil degradation started over 100 years ago with the breaking of the sod yet its long term effects were not noticed until the 1980s when drought caused large amounts of wind erosion. At that time the general farming public became aware of the true effects of soil degradation. Looking back over the history of Saskatchewan the drought of the eighties was compared to the drought of the thirties but it appeared that the lessons of the thirties had long been forgotten.

Serious erosion is readily apparent in dry years. However degradation is continually occurring under our conventionally tilled fields. Every time a field is tilled more organic matter is broken down. The problem is that the changes from year to year are minor. If you consider that a producer farms his land for an average of thirty years there is not much apparent change to the land from when he starts farming to when he stops. However the cumulative effects of over the past 100 years has been devastating to the soil. Yet because we do not farm the land for that long or live long enough to remember that far in the past we are not fully aware of what conventional farming practices are doing to the soil.

It has been well documented that over half of the original organic matter has been lost and there are an increasing number of soil tests to requiring nitrogen fertilization on summerfallow. This indicates what organic matter is left can no longer cycle out the required nutrients for an average crop. The solution lies in changing our conventional practices and adopting practices like low disturbance seeding and other conservation practices to enhance and build our soils over the long term.

Wildlife and Agriculture - Can they Coexist?

By Patricia Flaten

CLC Manager

Can wildlife and agriculture coexist? Ask a wildlife biologist and the answer would be 'no'. Ask a grain farmer, and the answer would still be 'no'.

Are these statements an over simplification of reality? I think it is, and many biologists and farmers would agree. From the point of view of the farmer, many like to see wildlife on their land. They will go out of their way to provide habitat for a wide range of species. They see wildlife as a sign of healthy land.

I know a farmer, nearing retirement, who is building nesting sites in the middle of flat, uninterrupted cropland to increase the habitat in the area. Now, this is quite a departure from another neighbour who may be hiring the same equipment to fill a pothole or clear a road allowance to increase cropland acres and make field operations easier.

So, why do we see these extremes in practices? We can rationalize these activities based on economics and efficiencies, science and technologies, even government policies and world trade. Yet, we know what the bottom line is, don't we - that is attitude.

Attitudes are shaped by many factors. Culture, family training, peer pressure, religious beliefs, personality, academic training, and world experience affects our attitudes about everything around us.

Change has been said to be the only thing we can count on. I believe that in the next few years we will experience changes in attitudes by both the biologist and the farmer. In fact, it has to happen. Now, the two groups are further separated than is useful. In the future, land use issues will force the two professions closer together.

What will need to happen? Both groups will need to learn the objectives of the other, understand them and cooperate in finding common ground from which to find mutually acceptable solutions.

The Steering Committee of the Conservation Learning Centre created both wildlife and soil conservation as an objective for the Centre two years ago. It is an ongoing process, but because these are written objectives, the concept is becoming more recognizable in the operation of the demonstration farm.

We have learned that 'habitat' can mean many things. Some wildlife may benefit from one practice while others don't and vice versa. By doing several different things, we believe that the diversity will enhance habitat for that many more forms of wildlife. Standing stubble, brush

piles, berry bushes, trees, grass, potholes, and even parked field equipment seem to have provided habitat so far.

These discoveries are just the beginning of understanding dual-purpose land uses and management practices.

Environmental Effects of Direct Seeding

By Patricia Flaten

CLC Manager

There are many reasons why producers have adopted the practice of direct seeding in Saskatchewan. Some say it saves money. Some say it saves time for fishing. Some say it saves soil from wind and water erosion. While others say it saves wildlife.

All of us have a different perspective of what is environmentally friendly. One of the more common questions I get about the Conservation Learning Centre from non-producers is, "So, do you grow your crops organically then?" From that statement, you can readily recognize the opinion that the only way to farm in an environmentally-friendly way is through organic farming.

An interesting presentation was made at a recent Manitoba-North Dakota Zero-till Conference in Brandon. Mr. Dennis Avery, Director of Global Food Issues, Hudson Institute, Indiana, told the crowd of enthusiastic producers that in order to save world wildlife habitat, we will in fact have to increase production on present farmland.

His argument goes as follows. It is pretty well accepted that organically grown crops tend to be lower yielding. If the world population continues to rise, which we have to assume is true, then we need more food. If we need more food, either our production needs to increase through increased yields or through increased acreage. Certainly, if increased acreage is allowed, we will begin to crop the corners of the earth which we have deemed "marginal". This is exactly the land which has often been left for wildlife habitat or wildlife in co-existence with livestock.

This argument in favour of modern crop production systems, those using herbicides and fertilizers, is quite unique. But we still have to ask the question, "What are the effects of agriculture on the land, the wildlife, the air, and the water?" Researchers have considered many of these questions for a long time. At the Conservation Learning Centre, we can only look at these issues on a fairly limited scale, but we have several agencies involved in monitoring 'our own backyard'.

The longest running project is one in which greenhouse gases have been measured by students and scientists from the University of Saskatchewan. By 1996, we will have a better idea of how much nitrous oxide evolves from direct-seeded land vs. conventionally farmed land, fertilized vs. non-fertilized cropland, cropland vs. grassland, and how the landscape affects the process.

Water quality is of concern to all of us, including wildlife. The National Hydrology Research Institute is coordinating the monitoring of several potholes at or near the Conservation Learning Centre. They are measuring any contamination of surface water from all of the inputs used for crop production.

Wildlife, weed populations, and soil quality are other components which will continue to be monitored. We hope that these projects will provide a glimpse of truth as to the potential environmental advantages and disadvantages of the practices we have adopted.

Seager Wheeler Farm

By Ken Sapsford

SSCA Soil Conservationist

Seager Wheeler once said: *"The soil is ours to make or mar and we should aim to leave it, when the time comes for us to pass on - in as good or better condition than when it came under our hands."*

I believe Seager did this, because as I look at the soil on the Wheeler farm I find 10 to 12 inches of rich topsoil, mellow and easy to seed into.

Seager Wheeler (1868-1961) was probably the most famous farmer in the history of the Canadian Prairies. He was best known as an international prizewinner in wheat competitions and author of numerous publications on progressive farming techniques. Yet he was also known as a part time inventor of farm implements and a developer of new grain and horticultural varieties.

The Seager Wheeler Historic Farm Society was established to promote agriculture and horticulture. The former superintendent's house from the Rosthern Experimental Farm has been moved onto the Wheeler farm to become the interpretive center, gift shop, coffee shop and dining room. The old barn has been restored with a new loft floor, shingles and a paint job in its original gray color. Future renovations includes Seager Wheeler's seed cleaning plant, including some of his own seed cleaning equipment. The area around the Wheeler house is ready for the extensive annual and perennial English flower garden.

The aim of the society is to have a farm site that will give us the opportunity to see what agriculture was like in the first half of the century. This will be complemented with what is happening now, and show future trends on the farm.

On June 3, 1995 the Seager Wheeler Historic Farm Society held the second annual Seeding Trends '95. The day was very successful with numerous activities and demonstrations, including: horse plowing and seeding, gardening seminar, PFRA shelterbelt planting and a direct seeding demo with eight, farmer owned and operated, pieces of direct seeding equipment. There were also slide presentations on Bertha army worms and wheat midge as well as Seager Wheeler's life story.

There is still much work to be done on the farm site. The society plan to have it open to the public in 1996. The Seager Wheeler farm brings together the history of Saskatchewan agriculture, rural life, soil conservation and management, progress and the future of agriculture. If you would like further information on the Seager Wheeler Historic Farm Society call Larry Janzen, chairman, at (306) 232-5588.

New Commodity Association Forms

By Lee Moats, Secretary-Treasurer

Saskatchewan Winter Cereal Growers

Friday the 13th of January was a good day for winter cereals in Saskatchewan. On that day 68 people gathered in the Saskatoon Inn as part of Crop Production Week to talk about the future for these potentially

important cereal grains. And the results were tremendous. Thirty-four people joined a new organization called the Saskatchewan Winter Cereal Growers and showed the doubtful that Saskatchewan farmers want winter cereals as part of their rotations.

The event was the first annual meeting of the new commodity association which had been formed by a small steering committee of interested winter cereal growers. The meeting was designed as a launch vehicle for the new group and as a method of gauging the support for the new organization. Judging by the turnout and membership sign-up its an easy conclusion that there is strong interest in winter cereals and having producers play an active role in realizing the potential of these crops.

The first annual meeting heard from Dr. Gary Storey and Dr. Brian Fowler on the future of fall rye and winter wheat. Dr. Storey's message showed that fall rye has tremendous potential and provided recommendations for revitalizing the industry. Dr. Fowler also was very positive for winter wheat and outlined what he thought needed to be done to make winter wheat a viable crop choice. These presentations set the stage for discussion on the role that the Saskatchewan Winter Cereal Growers could play in developing winter cereals and the list of suggestions was a long one.

The predominant message that came from the meeting was that winter cereals needed a voice and that voice needed to come from winter cereal growers. Research, extension, new market development and general advocacy were among the main points brought forward. The many suggestions formed the basis for setting the objectives of the Saskatchewan Winter Cereal Growers which follow:

The purpose of the Saskatchewan Winter Cereal Growers is to promote the development of winter cereals (fall rye, winter wheat and winter triticale) as viable crop choices for Saskatchewan farmers. This purpose will be reached by:

1. Promoting winter cereals through education and by creating awareness of economic and conservation benefits.
2. Acting as a winter cereal advocate by working with public and private agencies and individuals.

3. Encouraging, promoting and conducting research designed to improve production practices and develop new varieties.
4. Developing new market opportunities for winter cereals.
5. Promoting sound agronomic production practices.
6. Communication with the SWCG membership and affiliating and cooperating with other agencies having similar objectives.

Direct Seeding Into Wet Soils

by Garry Mayerle

SSCA Soil Conservationist

Were direct seeders with standing stubble and heavy residue worried on May 1 because of the late wet spring we were having? Two direct seeders featured in this article were confident they could manage this kind of this wet spring as well or better than conventional farmers. Garry Meier and Kelvin Grisdale both farming in northeastern Saskatchewan felt they had the flexibility in their systems to handle these conditions.

Kelvin farms black, medium to heavy clay soils with his father and uncle close to Weekes. They seed into standing stubble using a Flexi-coil 5000 air-drill. However, they do band anhydrous in the fall so Kelvin feels that the small amount of soil disturbance this operation creates will help to dry out the soil enough on a wet spring so they can seed. He says if it is dry enough for my neighbors to cultivate then I expect to be seeding. He did have a couple of fields that he didn't band anhydrous into the previous fall and he felt they might be a test for their system. However, he says he still had the flexibility to cultivate those fields to dry them out if he had to.

A number of direct seeders in the northeast feel it is important to do aggressive harrowing in the fall to reduce residue loads and even create a bit of soil disturbance. Many others are getting the benefits of direct seeding even though they are using a "two pass" system. The first pass is a low disturbance fertilizer banding operation frequently placing anhydrous ammonia. If conditions are favorable this pass is done in the fall. Roundup is usually applied just before a single low disturbance seeding pass is made in the spring. This system normally leaves a significant portion of the stubble still standing after seeding. Even though it means the expense of an extra trip over the field these producers feel extra soil disturbance is needed to warm and dry their fields out.

Garry and Glen Meier direct seed on gray wooded clay soils at Ridgedale. Garry is well known in direct seeding circles around Saskatchewan. He says direct seeders probably have more options to accommodate wet seeding conditions than conventional farmers. He and his brother Glen have developed a single pass seeding system they use to seed into soils so wet they have difficulty traveling on them with their two wheel drive spray coupe. In 1994 they gave their system a good test. Their seeding was interrupted by late May rains. They observed that they were able to seed as soon as, or quite often sooner, than their neighbours who tilled their land that spring.

Here is what they have done to made their system work: Gary says, "Seed as shallow as possible to moisture. Just scuff it in." He points out that seeding shallow reduces draft which reduces rutting and compaction from tractor slippage.

Second, reduce footprint pressure from implements and tractor tires. Gary says the biggest problem they had seeding in wet conditions last year was the tire tracks that the dealer's 1000 gal

anhydrous tank left. (The tank trails behind the air seeder.) By moving axles and increasing tire size they have gotten the footprint pressure on the ammonia tank equivalent to the tractor. They pull their forty-eight foot air seeder with a four wheel drive with triples without extra ballast giving a ground pressure of 9 psi. on the tractor.

Third, be very cautious about over packing the soil in the seed trench particularly on heavier soils. Garry says in very wet soils you need just enough pressure to form a trench over the seed. The importance of this trench is to reduce the depth of soil over the seed. If you over pack, especially in clay soils, you will get a smearing action over top the seed row that will bake, causing the seed row to dry out. This can exclude oxygen from the seed row which is essential for germination of all crops and nitrogen fixation by pulse crops. Meiers use a quick change mounted packer system. They adjust packing pressure by changing spring pressures.

Garry thinks that if your implement has fixed packing pressure you might try using openers that leave a narrower trench than the width of your packer wheel. Your packing wheel rides up on the shoulders of the trench and reduces actual packing pressure over top the seed.

Direct seeders do have options to help them deal with high soil moisture conditions. A word of caution if you want to dry out high residue stubble by cultivating it with full cut sweeps. You will probably need to make several passes with harrows to level out the piles of straw. You might be better off to do your best at seeding it in one pass.

CLC Summer Tour Opportunities

By Patricia Flaten

CLC Manager

There has been a lot of activity at the CLC once again this spring. With 40 different agencies involved in various ways, it's easy to have 6 or as many as 10 agencies present at the site in a single day at seeding time!

It is now crop tour season for anyone involved in agriculture - the CLC has a number of opportunities for touring this summer. Small groups can book tours through our office

(ph. 1-306-953-2797). We also have a self-guided tour booklet available for those who would prefer to see the projects at their own pace. The third way of seeing the projects first-hand is by attending one of the public tours, which are now set for:

Thursday, July 13th @ 2:00 - 5:00 PM

Tuesday, July 18th @ 2:00 - 5:00 PM

Thursday, July 27th @ 2:00 - 5:00 PM

Tuesday, August 1st @ 10:00 AM (Special Crops, Crop Disease and Insect Focus)

What are some of the research or demonstration projects to see at the CLC this year?

ANNUAL CROPS:

* Crop Nutrition - Nitrogen placement, Variable rate fertilization, Copper, Anhydrous Ammonia applied at seeding time

* Weed Control - surface-applied Avadex (new formulations), surface-applied Edge, cleavers and dandelion control with pre-seeding burnoff mixes, field-scale application of several other herbicides and inoculants

* Annual Crop Alternatives - alternative crops garden, 3 new herbicide resistant canola varieties.

* Field-scale crops - this year include Highlight Peas, Teal Wheat, B1215 Barley, Norlin Flax, and Biggar Wheat.

PERENNIAL FORAGES:

* Species Gardens - grasses and legumes are now on display

- * Establishment Methods for both Meadow Bromegrass and Alfalfa
- * Grass Seed Production - 5 different species were seeded this spring for seed production
- * Dense Nesting Cover - 45 acres of a forage mix have been established for 2 years
- * Non-dormant alfalfa - one variety is being tested for use as a short-term alfalfa

TREES:

- * Shelterbelts - several designs of one year old field, wildlife and forestbelts
- * Woodlot - 3 acres were set aside last year for a newly planted woodlot
- * Weed control measures - several methods are being tested and demonstrated
- * Species Garden - 24 different tree and shrub species have recently been planted

With this variety of projects on site, we hope that you will want to come and visit the Conservation Learning Centre this summer - either as part of a group, as part of our public tours or as an individual!