Prairie Steward

Farming For Your Future Environment

The Newsletter of the Saskatchewan Soil Conservation Association Inc. SpringIssue No. 56, 2009

2009 Annual Conference a Success

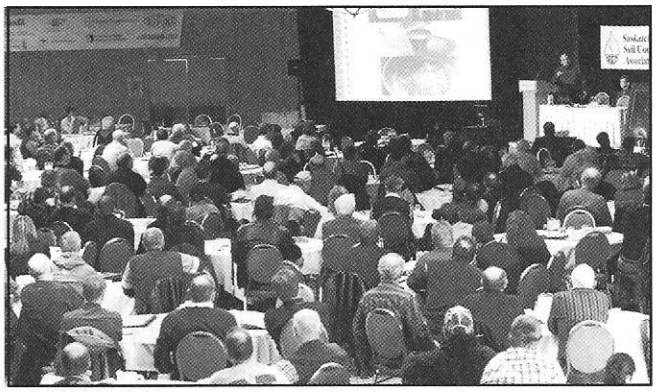
300 producers met at the Saskatoon Inn, February 11 and 12, to attend the Saskatchewan Soil Conservation Association's Annual Conference. The continued success of this year's conference reflects that farmers recognize the value of attending our conference in helping them gain an edge with their crop production system.

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

In This Issue

This year's conference featured keynote speakers Sylvain Charlebois and Dwayne Beck. Dr. Charlebois's presentation focused on four areas affecting agriculture and food issues in Canada that are that are creating changes for policymakers. These are:

1. The rural-urban divide.
2. The competitive environment and demand complexity.
3. The reduction of channel options offered to consumers.
4. Globalization.



300 attended the 21st SSCA Annual Conference at the Saskatoon Inn on February 11 and 12, 2009.

The conference had six sessions, which offered a mixture of farmers and researchers to provide both experience and first-hand information. This remaining session covered topics on optimizing production, optimizing the value of fertilizer, nutrient management, pest management, environmental issues and biofuels.

Dr. Dwayne Beck closed out the conference with a presentation titled, "Let Mother Do It". Dr. Beck talked about using natural processes to address pest and fertility issues in direct seeding systems. This included numerous examples of how this approach can be used in the real world.

This year, the conference featured two after dinner presentations rather than bear-pit sessions. SSCA's Edgar Hammermeister and Laura Reiter gave a presentation on the current status of soil carbon trading. Dr. Guy Lafond gave a presentation on his experiences with conservation agriculture projects in China, Russia and the Ukraine.

We increased the size of the trade show to allow more exhibitors. This year, 22 exhibitors participated in the show displaying a wide variety of crop production technology.

Extra copies of the conference proceedings are available for $15 through the SSCA office in Indian Head. Plans are already under way for the 2010 annual conference in Regina, February 9 & 10.

President's Report

By Laura Reiter
SSCA President

Well, a year has past and my term as president of the Saskatchewan Soil Conservation Association is finished. It has been an interesting year.

I attended a number of meetings on behalf of the association, this past year as well as in previous years. The SSCA is well regarded in the industry. We are looked to for information on sustainable agriculture. We have been approached to speak at conferences both here in Saskatchewan as well as internationally. We are also considered a good source of information regarding soil carbon and the issues around "carbon trading". This is something we should be proud of.

In July we launched our newest service for our members. The "Prairie Soils and Crops" Journal's first issue was released at the Western Canada Farm Progress Show. It is a wonderful way for our members to access current research information. It is also in a format that is much more user friendly than some of the more scientific journals that are available. The first issue was available to everyone. The second issue, Weed Management on the Prairies, is only be available to members or those that have paid for a subscription. It is also only available on the internet. You can access it by going to www.prairiesoilsandcrops.ca and signing in. Please contact our office in Indian Head for your login information.

We have just finished with our annual conference. It was held in Saskatoon this year. We had an area for trade show booths this year. It was good to get a chance to listen to the speakers. There were a variety of topics covered and I always go home with something new to consider for the coming year.

We have seen changes in the SSCA over the last few years. As a board we are looking at how to best position the organization for the future. You will be asked for your input into our future. There is a member survey in the works. We would ask that you take the time to give us your ideas. We are your organization and we need your help.

New Directors

The SSCA welcomes two new members to its Board of Directors.

JIM GREENBANK

Jim Greenbank is the new Southeast Regional Director. He replaces Edgar Hammermeister who has completed his second 3-year term on the Board. Jim, along with his family, operates a mixed grain and cow/calf farm near Wawota.

TOM WOLF

Dr. Tom Wolf is a new "industry" Director-at-Large. He replaces Dr. Guy Lafond who has completed his second 3-year term mon the Board. Tom is a research scientist based out of the Agriculture and Agri-Food Canada Saskatoon Research Centre. His research focus is on application technology development to minimize the environmental impacts of pesticide use.

NORTHEAST DIRECTOR

The Northeast Regional Director position is still vacant. We would like to fill this vacancy as quickly as possible. If you farm in northeast Saskatchewan and are interested in joining the SSCA Board, please contact us at 1-800-213-4287.

www.ssca.ca

Direct Seeding Hotline
1-800-213-4287
e-mail: info@ssca.ca

HEAD OFFICE

Return Mail to:
Box 1360, Indian Head, SK S0G 2K0
(306) 695-4233 Fax: (306) 695-4236
Yorkton Office: (306) 786-1526

Blair McClinton, Executive Manager
Marilyn Martens, Office Manager

SSCA's mission is "to promote conservation agriculture systems that improve the land and environment for future generations."

SSCA's Vision is "to be the recognised driver and facilitator of change that leads to conservation agriculture being practiced on prairie agricultural land.

SCCC appoints new executive director

The Soil Conservation Council of Canada (SCCC) has appointed a new executive director. Glen Shaw of Moose Jaw, Sask. took the position at the beginning of January 2009 with SCCC, which has served as the face and voice of soil conservation in Canada since 1987.

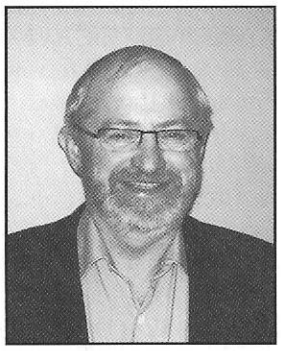
"We are pleased to welcome Glen as the new executive director of SCCC," says Newfoundland and Labrador producer Eugene Legge, president of SCCC. "Glen served on our board of directors and brings several decades as a soil conservationist and developer of programs dedicated to protecting Canada's soil resources."

Shaw replaces outgoing executive director Doug McKell, who stepped down from the position last year after seven years of service to SCCC. "Doug has worked tirelessly during his time as executive director to help drive understanding and awareness about the causes of soil degradation in Canada, a problem which is costing Canadians $2 billion per year. His work is greatly appreciated," says Legge.

Shaw began his career with Saskatchewan Agriculture and Food, moving to Manitoba to work as a land use specialist and later working as a soil conservationist with Manitoba Agriculture. In 1984 he joined the Prairie Farm Rehabilitation Administration (PFRA) as a senior soil conservationist in Saskatoon. Prior to his retirement in 2007, he also managed PFRA's Northern Saskatchewan region and Soil Resource Division.

Since the mid-1980s, Shaw has played a key role in developing a number of soil conservation and agri-environmental programs including Save Our Soils, Permanent Cover Program, Green Plan, and the Greenhouse Gas Mitigation Program. "These programs contributed to significant adoption of practices such as direct seeding, conversion of marginal annual cropland to perennial cover and improved grazing management," says Legge.

In addition to his role as an SCCC board member, Shaw has also worked closely with groups such as Saskatchewan Soil Conservation Association, the Saskatchewan Stock Growers and the Saskatchewan Forage Council, helping them to secure federal funding to deliver demonstration and extension programs to producers. One of his later achievements was to lead a national working group that selected beneficial management practices that were later funded across Canada through the National Farm Stewardship Program.



"Farmers have done an amazing job over the past 30 years developing innovative soil management and conservation practices to protect and improve the soil resource," says Shaw. "However, we cannot become complacent in thinking soil degradation is under control. The SCCC will continue to be a strong voice promoting soil conservation practices and working with provincial soil conservation organizations to address growing challenges related to soil degradation, climate change and water quality."

Executive Managers Report: Member Benefits

By Blair McClinton, PAg
SSCA Executive Manager

SSCA offers a number of benefits to its members. Below is a list of SSCA member benefits. While most benefits are automatically provided to our members, others like the e-mail updates and Prairie Soils and Crops eJournal are only provide to members who provide us with their e-mail addresses. If you have not already done so, please provide us with your e-mail address. The best way to do this is to send us an e-mail to **info@ssca.ca.**

1) SSCA is your voice in the world of Carbon Trading. SSCA continues to work with all levels of government in Canada and with international groups on carbon trading and climate change issues. The SSCA's goal is to make sure that benefits to the farmers are maximized while the risks are minimized.

2) The SSCA is a founding member of the Conservation Agriculture Systems Alliance (CASA). In CASA, SSCA meets with other soil conservation organizations from Canada, the USA and Mexico to share information on soil conservation and no-till.

3) SSCA is also represented, through the Soil Conservation Council of Canada (SCCC), at the Confederation of American Associations for the Sustainable Production of Agriculture (CAAPAS). CAAPAS is a network of South American no-till producer organizations.

4) SSCA is a member the Agriculture Council of Sask. (ACS).

5) SSCA works closely with research scientists with both the University of Saskatchewan, and Agriculture and Agri-Food Canada to ensure that the research needs to further develop direct seeding production systems are being met.

6) SSCA works with both levels of government to promote the development of soil and water conservation initiatives in agri-environmental programming.

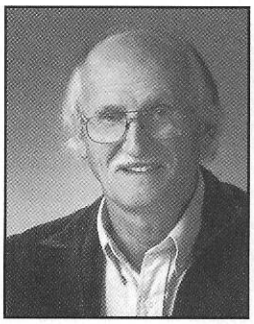
... Continued Page 4

Brian Fowler presented Award of Merit

The Saskatchewan Soil Conservation Association (SSCA) presented its 2009 Award of Merit to Dr. Brian Fowler at the SSCA Annual Conference in Saskatoon on February 11. Un fortunately Brian was unable to attend. The following is Dr. Fowler's acceptance letter that was read at the awards banquet.

Let me start by thanking the SSCA for this honour. I was extremely disappointed to find that I had a conflict and could not be present at this year's SSCA annual meeting. The need to manage the winterkill risks with winter wheat was the reason I was drawn into research on "conservation production systems" starting in the 1970's and it is ironic that the reason for my absence is that I will be making a presentation on "Selection for Cold Adaptation in Wheat and Its Relatives" at a plant abiotic stress conference in Vienna. This doesn't sound like a major crowd attraction, but that's science. From the start of our efforts to extend the winter wheat production area into Saskatchewan, it was evident that the solution to the over-wintering problem was not going to be easily attained and the genetic answers that would create the super-hardy cultivars necessary for survival without snow cover have not been found to this date. We do have better understanding of the mechanisms involved in low-temperature adaptation of crops and we do have more sophisticated tools for cultivar selection, but the means to produce super-hardy cultivars is a research priority that still eludes us. In contrast, success has been found through the development of no-till production methods, or "stubbling-in" as we called it in the early days, which provided the means to reduce winterkill risks to acceptable levels through snow trapping.

The soil, water, energy and wildlife conservation advantages of no-till winter wheat have been the arguments that have driven research over the years. However, the management packages, equipment, cultivars, and experience necessary to capitalize on these opportunities have taken time to position and they are still being refined today. While the struggle to make winter wheat a profitable option for growers has tried the patience of many, I consider myself very fortunate to have been part of the development effort in western Canada. Every scientist should have my good fortune to be able to work with students, technical staff, farmers, research fellows, and scientists that were part of this adventure. Direct seeding is a default requirement for winter wheat production and many of early no-till farmers cut their teeth on "stubbled-in" winter wheat in the 1970's and 80's. The number of farmers and innovators who developed their own versions of "zero-till" drills and opener designs during that period was truly amazing. These many options had to be sorted through to arrive where we are today. Seeding date, seed and fertilizer placement, weed control, variety development questions, etc., also had to be addressed for winter wheat. The answers to these questions then had to be shared through technology transfer and communication activities before the later adopters necessary to make the acreage grow could be convinced that benefits outweighed the risks.



Brian Fowler

Working on winter wheat with early adaptors and environmentalists has been the most exciting part of my career. Many of the farmers were bucking the conventional wisdom of their neighbours, but they could be found throughout Saskatchewan. We had farmer and extension specialist co-operators from Shaunavon to Meadow Lake and Porcupine Plain to Carnduff. They provided the land and enthusiasm for our replicated research trials that doubled as extension sites because of the need for reliable, repeatable information and the cost of conducting separate multiple location demonstration trials. This not only allowed us to bring information to the farmer, but it also demonstrated how research dollars were being spent.

Once again, thank you for this recognition. Soil conservation is a prerequisite to the maintenance of a healthy, productive environment. This requirement has secured the future of your organization and creates the opportunity for its continued success.

- Brian Fowler

Executive Manager's Report - Continued from Page 3

7) SSCA members receive a registration discount at the Annual Conference – the 2010 conference will be held in Regina at EVRAZ Place on February 9 & 10.

8) All SSCA members receive the *Prairie Steward*, SSCA's newsletter, published 3-times per year. While the newsletter brings updates on the Association's activities, efforts are made to also include agronomic information relevant to conservation agriculture systems.

9) The SSCA Update is emailed regularly to those members who have provided us with their e-mail address.

10) SSCA's online eJournal, Prairie Soils & Crops: Scientific Perspectives on Innovative Management, is available on-line at www.prairiesoilsandcrops.ca. The most recent issue on Weed Management was released in March. The eJournal is available through a $15/year subscription. **SSCA members who provide us with their e-mail address will receive a free subscription as a membership benefit.**

New Herbicides for Western Canada

By E. N. Johnson, Agriculture and Agri-Food Canada, Scott, SK

AUTHORITY (SULFENTRAZONE) CONDITIONAL REGISTRATION IN CHICKPEA

In the spring of 2008, sulfentrazone (Trade name: Authority) was granted conditional registration for the control of kochia, lambs-quarters, redroot pigweed, and wild buckwheat in chickpea. The registration is limited to the province of Saskatchewan only. Rates are dependent on soil pH with rates of 118 and 89 ml/acre registered for soils with a pH < 7.0, and a pH > 7.0, respectively. The label states that Authority can be applied prior to planting and up to 3 days after planting. Moisture is required to activate the herbicide and incorporation is not required; however, under dry soil conditions a shallow incorporation may improve performance. Sulfentrazone controls emerging weeds and has limited burndown activity on established weeds. Since sulfentrazone is a residual product, there are re-cropping restrictions and the current label is quite restrictive. The conditional registration for sulfentrazone is for 2 years. In that time frame, the company must supply the Pest Management Regulatory Agency with additional information to address deficiencies in their registration submission.

SIMPLICITY HERBICIDE

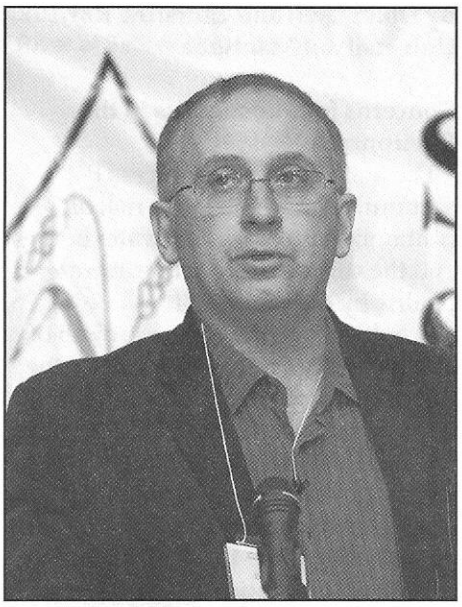
Simplicity herbicide was registered in both Canada and the United States in 2008, as a result of a joint review process between the Pest Management Regulatory Agency and the United States Environmental Protection Agency. Simplicity Herbicide contains pyroxsulam, a new Group 2 active ingredient for the control of grass and certain broadleaf weeds in spring wheat and durum wheat in Western Canada. The label states that the product controls wild oats, cleavers, chickweed, smartweed, hemp-nettle, and non-Clearfield volunteer canola. It suppresses green foxtail and wild buckwheat.

Velocity M3 Herbicide

This is a new product from Bayer CropScience which combines 3 different modes of action. Thiencarbazone-methyl, a new Group 2 herbicide, has both grass and broadleaf weed activity and is combined with Infinity broadleaf herbicide in the M3 packaging. Infinity herbicide consists of 2 active ingredients: pyrasulfotole (Group 27) and bromoxynil (Group 6). According to the product label, Velocity M3 controls wild oats, green foxtail, barnyard grass, annual sow thistle, chickweed, cleavers, flixweed, hemp-nettle, kochia (Group 2 susceptible and resistant), lamb's-quarters, lady's thumb, redroot pigweed, russian thistle, shepherd's purse, stinkweed, all types of volunteer canola, wild buckwheat, and wild mustard. Weeds suppressed include: Canada thistle, dandelion, perennial sow-thistle, persian darnel, and yellow foxtail.

KIXOR TECHNOLOGY

A new Group 14 herbicide (ppo inhibitor) is being developed by BASF. The proposed active ingredient name is saflufenacil. The technology is known as Kixor; however, saflufenacil will be sold under a different trade name in Canada. Saflufenacil is a pre-seed or pre-emergence broadleaf herbicide that can be tank-mixed with glyphosate to manage a wide spectrum of dicot weeds, including those resistant to glyphosate and other ALS-resistant biotypes. Therefore, saflufenacil will provide



Eric Johnson, PAg
AAFC, Scott, SK

better control of weeds such as wild buckwheat, kochia than glyphosate itself. The mix will also control all types of volunteer canola. The activity of saflufenacil is similar to carfentrazone (Clean Start); however, it appears to work more consistently over a wider range of plant stages.

Saflufenacil will be labelled as a pre-plant or pre-emergence treatment in a number of cereal and some pulse crops. Field pea and chickpea have exhibited excellent tolerance to saflufenacil while dry bean is sensitive. Lentil has less tolerance than field pea and chickpea but has exhibited acceptable tolerance at the proposed label rates. Saflufenacil has some residual properties; however, the level of residual activity is rate dependant. There is limited residual activity at the rates proposed for the Canadian label. Saflufenacil may have potential as a desiccant as well. It will be registered as a sunflower desiccant and research is underway to determine its effectiveness as a bean desiccant.

Agricultural P Losses in Prairie Watersheds:

By Don Flaten and Christine Rawluk, University of Manitoba

Concerns for Phosphorus in the Environment

The main concern for excess P accumulation in soil is the risk of contamination of surface water bodies and the subsequent decline in water quality by the process of eutrophication (increasing growth of algae, surface scums, followed by the depleted oxygen concentrations, foul odours, sedimentation, fishkills and release of algal toxins). The P responsible for eutrophication originates from a variety of sources, not only from livestock and crop production activities, but also from natural ecosystems and direct discharge of human and industrial waste.

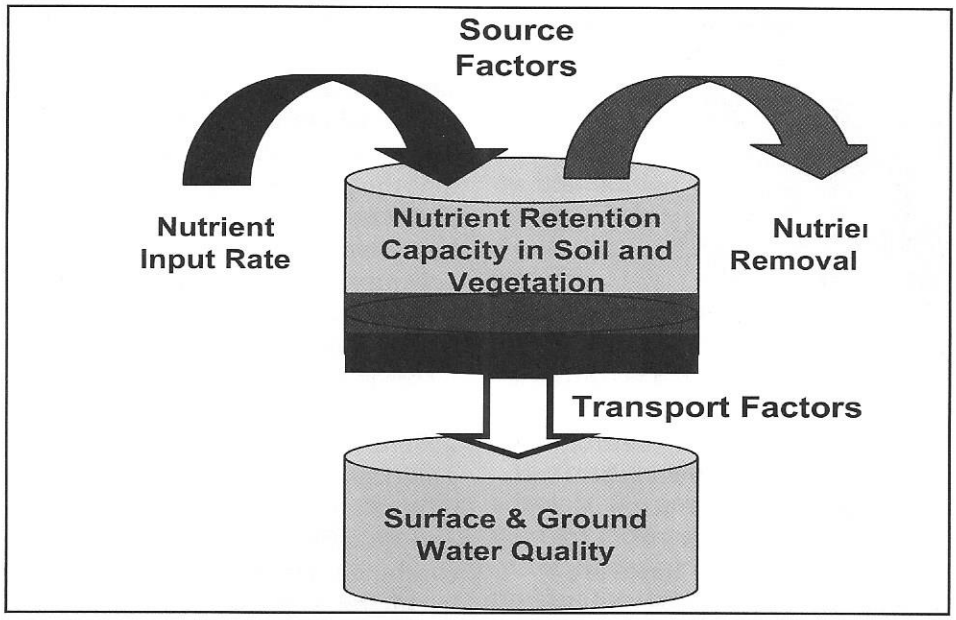


Figure 1. The risk of nutrient loss from land to water depends on the balance of nutrient inputs and removal, along with the capacity of soil and vegetation to retain nutrients and the intensity of transport factors (adapted from Flaten 2003).

Factors Affecting the Risk of Phosphorus Transfer from Agricultural Land: An Overview

The factors affecting the risk of P transfer from agricultural land are similar to the typical source-receptor-pathway model that applies to most types of environmental contamination. In the case of nutrients applied onto agricultural land, the source factor can be subdivided into several subfactors including form of nutrient and rate, method of application; rate of nutrient removal by crops and livestock; and the soil's capacity to retain nutrients. Pathway factors relate to the transport of nutrients in particulate and dissolved forms. And, of course, the receptor factor relates to surface or groundwater, where a defined level of water quality is desired. All of these factors interact in the general model described in Figure 1.

1) Source Factors – affect the quantity of P in the soil available for environmental losses. Source factors address the:

· net loading rate of P – the balance between N and P inputs and removals

· availability of P for plant uptake or loss to surface water as affected by:

- form and amounts of P in fertilizers and manure
- the rate at which fertilizer and manure is applied
- placement of fertilizer and manure
- timing of fertilizer and manure application

· capacity of the soil and vegetation to retain added P.

The potential for loss increases as P accumulates in soil and overwhelms the soil's ability to retain those nutrients. However, some risk for nutrient loss still exists at all concentrations of N and P because the system is not closed — it is "leaky".

2) Transport Factors – determine the loss pathway and ease of P movement along that pathway. Transport factors for P contamination of surface and groundwater include:

· climate and weather factors - quantity of snow and duration of snowmelt period; frequency, duration, intensity and quantity of rainfall events

· landscape - slope, hydrology, surface condition, depth to water table, proximity to water bodies

· soil – texture, structure, stratification, water retention and infiltration capacity

· land and water management – soil and crop management, equipment and operations, drainage, vegetated areas

Transport factors connect the source to the receptor and determine if the potential for P loss at the source translates to actual nutrient loss to surface or ground water. Therefore, source and transport factors must coincide at the same location and at the same time in order for N and P to move from land to water.

The relative importance of the various source and transport factors is governed by regional land and climatic factors. Therefore, an understanding of how those factors interact in the region is necessary for developing beneficial management practices that will control nutrient loss in the region. Conversely, without this understanding, the practices purported to be beneficial and encouraged by education, incentives

Snow and Rain are not the Same

and regulations are likely to be ineffective, inefficient and/or counter-productive.

Factors Affecting the Risk of P Loss at the Source

Soil is not the only possible source of P released during runoff events. When plants are actively growing, they retain their tissue P quite well. However, repeated freezing and thawing of plant material breaks up plant cells and releases P from plant tissues which can be subsequently transported with snowmelt runoff to surface waters. Surface residues or perennial cover may therefore also contribute significant amounts of dissolved P to snowmelt runoff, particularly with reduced tillage or perennial cropping. Under simulated rainfall, Bechmann et al. (2005) measured approximately ten times more total P loss in runoff from catch-cropped soils after freeze/thaw cycles than from bare manured or bare unmanured soils. Similarly, laboratory studies in Manitoba showed that the amount of soluble P released from frozen and thawed canola and oat residues collected from zero-till fields and conventional till fields was much higher than from the top 1 cm of soil collected from the same fields. Riparian vegetation also released a significant amount of soluble P (Flaten et al. 2005).

Unique Challenges Associated with P Loss during Snowmelt in the Prairies

In most of North America and Europe, where the climate is relatively warm and humid, rainfall is the main source of runoff. However, in the Prairies, 80-90% of runoff typically occurs during spring snowmelt (Nicholaichuk 1967; Glozier et al. 2006. As a result, the vast majority of runoff and P loss in this region also occurs during snowmelt, rather than rainfall runoff events (Figure 2) (Glozier et al. 2006; Sheppard et al. 2006; Green and Turner 2002).

Most snowmelt P in the Prairies is in the dissolved form - Erosion of soil by water is an important pathway for steeply sloped land in humid climates (e.g., much of the U.S. and Europe). However, in the Prairies, the nature of our cold, dry climate combined with our relatively level landscapes makes dissolved P the predominant form of P lost from agricultural fields during snowmelt (Glozier et al. 2006; Little et al. 2007). In addition, snowmelt runoff extends over a longer time period than rainfall runoff and the long duration of the soil-water contact encourages solubilization reactions at this interface. Soluble P is also released during freezing and thawing of dead plant tissues (Bechmann et al. 2005; Flaten et al. 2005). As a result of these factors, 79% of the runoff flow and 83% of P loss in the South Tobacco Creek watershed of south-central Manitoba occurred during snowmelt (Glozier et al. 2006) with the vast majority of the P lost in dissolved forms, especially at the edges of fields. Alberta researchers have also observed that snowmelt runoff is the dominant source of dissolved P.

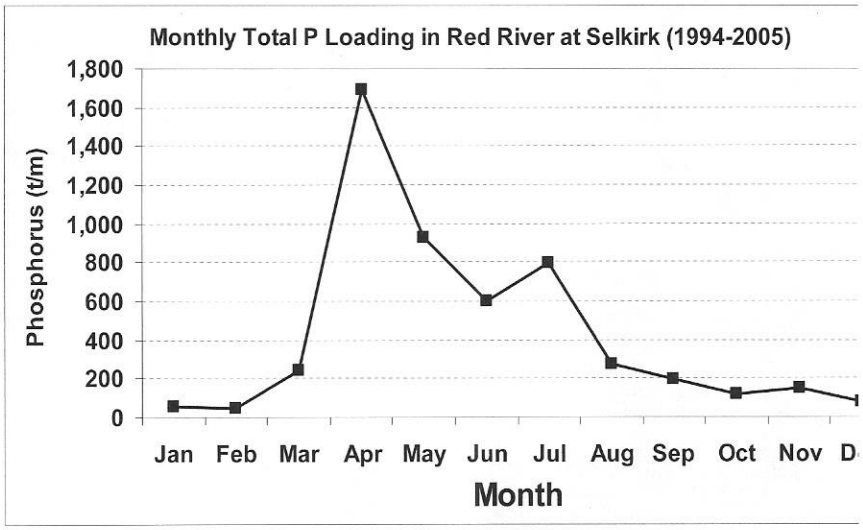


Figure 2. Monthly total phosphorus loading in the Red River at Selkirk (1994-2005) (Lake Winnipeg Stewardship Board 2006)

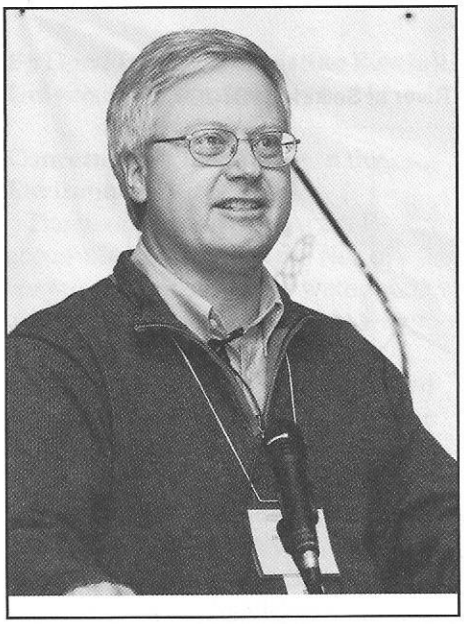
P loss during snowmelt is more complex than during rainfall - The water flow pattern for snowmelt runoff is much slower and more complex than for rainfall runoff. During snowmelt, conditions at the soil surface determine the degree of P loss since most of the soil is frozen and water infiltration is restricted to the soil surface or a thin thawed layer. Therefore, in addition to the complex hydrological character of snowmelt runoff, losses of P will vary with:

· Sources of available P at the soil surface:
- P released from plant residues and perennial crops
- P originally present in snow
- P released from soil (background, from manure, or from fertilizer P)
· Depth of thawed layer of soil
· Duration and degree of contact between snowmelt and soil surface/thawed layer

These pools of P can enter into melt water along the drainage pathway for transport to surface water. It is largely land management factors that determine the soil surface conditions and the amount of soil and vegetative P available for interaction with snowmelt. Once the dissolved P begins to move with snowmelt water, it is very difficult to intercept due to most of the soil being frozen and a lack of plant growth and uptake. Therefore, reducing the quantity of soil

... Continued Page 8

Agricultural P Losses in Prairie Watersheds: Snow and Rain are not the Same Continued



Dr. Don Flaten
University of Manitoba

P located at or near the soil surface via input and crop management is the most effective means for reducing the risk of dissolved P entering surface waters with snowmelt runoff.

Developing and Implementing BMPs to Reduce the Risk of P Contamination of Water

The development of a sound scientific base for reducing the potential for P contamination of surface waters by agricultural sources requires detailed information about many factors. Such factors include the landscape attributes involved in the risk of overland or subsurface transport of P, the amount of P available from all sources and their modes of application on agricultural land. However, most of the information on P behaviour and transfer has been developed for areas in which soils are dominantly acidic and where transport is dominated by overland processes after rainfall (erosion and surface runoff). This information may not be pertinent to the Prairies because it is dominated by neutral to high pH soils, relatively flat agricultural land base, and runoff processes that are mostly associated with snowmelt.

To date, our knowledge of the P transport processes and the effectiveness of transport-oriented BMPs for reducing P loss in the Prairies is very limited. Our relatively dry, cold climate and nearly level or "pothole" topography results in relatively low rates of erosion; therefore, erosion control will probably do little to reduce P loss. As a result, limited research to date indicates that vegetated buffer strips and zero tillage may not be very effective for reducing P losses under our conditions (Sheppard et al. 2006; Glozier et al. 2006).

Conversely, research in the Prairies indicates that some source-oriented factors, such as soil test P concentrations appear to be relatively strongly associated with P loss from Prairie watersheds, at least at high concentrations of soil test P (Little et al. 2007). Therefore, we should focus most of our immediate efforts towards nutrient management practices that will reduce P source/loading problems, developing and promoting practical ways to balance P application with removal to avoid accumulation of excessive soil test P.

The challenge of developing BMPs that will address the issue of P transfer to water bodies is, however, complex. Phosphorus behaviour in soil, in water and at the interface between these two media is very complicated and so is the jurisdictional responsibility for managing these resources. As a result of this complexity, P management is a challenge that requires a multi-disciplinary and multi-agency approach. For example, knowledge of hydrological and soil science is needed to understand the problem; knowledge of these sciences plus animal science, agricultural engineering and agricultural policy is required to develop practical solutions. Similarly, in order to develop and implement a sensible, fair and effective P management strategy, Federal, Provincial, and municipal agencies, along with university scientists and agricultural producer groups must work cooperatively.

References

Bechmann, M. E., Kleinman, P. J. A., Sharpley, A. N. and Saporito. L. S. 2005. Freeze-thaw effects on phosphorus loss in runoff from manured and catch-cropped soils. J. Environ. Qual. 34: 2301-2309.

Flaten, D. 2003. The risk of phosphorus transfer to water from manure application onto agricultural land. Proc. 46th Annual Manitoba Society of Soil Science Meeting, Winnipeg, MB.

Flaten, D. N., Senkiw, K., Lobb, D., Hill, D. and Cavers, C. 2005. Dissolved nutrient losses from vegetative residues and soil near South Tobacco Creek, Manitoba. Poster 2005. Manitoba Agronomists Conference.

Glozier, N. E., Elliott, J. A., Holliday, B., Yarotski, J. and Harker, B. 2006. Water quality characteristics and trends in a small agricultural watershed: South Tobacco Creek, Manitoba, 1992-2001. Environment Canada. 86 pp.

Green, D.J. and Turner, W. N. 1999. South Tobacco Creek manured watershed runoff study: Interim Report. Manitoba Environment and Deerwood Soil and Water Management Association. Manitoba Environment Report No. 99-03. Manitoba Environment, Winnipeg, MB.

Lake Winnipeg Stewardship Board. 2006. Reducing Nutrient loading to Lake Winnipeg and its watershed: Our collective responsibility and commitment to action. Report to the Minister of Water Stewardship. December 2006.

Little, J. L., Nolan, S. C., Casson, J. P. and Olson, B. M. 2007. Relationships between soil and runoff phosphorus in small Alberta watersheds. J. Environ. Qual. 36: 1289-1300.

Nicholaichuk, W. 1967. Comparative watershed studies in southern Saskatchewan. Trans. ASAE. 10: 502-504.

Sheppard, S. C., Sheppard, M. I., Long, J., Sanipelli, B. and Tait, J. 2006. Runoff phosphorus retention in vegetated field margins on flat landscapes. Can. J. Soil Sci. 86: 871-884.

EFP and Farm Stewardship Programs

By Blair McClinton, PAg
SSCA Executive Manager

In early April, the provincial and federal ministers of agriculture announced new funding for the Environmental Farm Plan (EFP) and Farm Stewardship programs under the Growing Forward initiative. While the new programs are similar to the previous programs, there are some significant differences.

EFP

The EFP program continues to be delivered by the Provincial Council of ADD Boards (PCAB). This voluntary self-assessment process will continue to be delivered similar to the previous program with few changes.

FSP

There are several significant changes to the Farm Stewardship Program (FSP). The FSP provides grants to offset the costs of adopting a particular BMP (ie. GPS guidance system, riparian buffer strips etc.). Just like the previous program, to eligible to apply for FSP funding, a producer must have completed an EFP. Unlike the pervious program, the FSP is now administered by PCAB, which should streamline the entire administrative process and improve turn-around times. One improvement is the program now allows producers to adopt and pay for a BMP prior to program approval. While this does not guarantee that an application will be approved, it does show that some issues with the previous program are being addressed.

Likely the biggest changes to the FSP is that the numbers of BMPs have been reduced and there have been changes to funding levels for a few remaining BMPs. While the total funding available through the FSP has not been announced yet, early indications are that it will be significantly less than the previous program. This will likely mean that the program will be oversubscribed with more applications than available funding. I would recommend that anyone interested in applying for a grant should do so as soon as possible. **For more information: www.saskpcab.com.**

A list of the BMPs and available grants are shown in Table 1. Of particular interest to SSCA members:

- The grants for on-farm dry fertilizer storage facilities are no longer available. Grants for improved liquid fertilizer, pesticide and fuel storage are still available. However, the maximum grant available has been reduced to $10000.

- The maximum grant available for low disturbance seeding equipment (ie. Openers) has been reduced to $5000.

- The maximum grant available for chaff collectors and spreaders has been reduced to $10000.

- Precision farming applications (GPS guidance etc.) remain the same as before with $15000 funding cap.

Table 1. Farm Stewardship Program Grant Information

BMP	Cost-Share	Caps
Relocation of Livestock Confinement Facilities	60%	$50,000
Fencing to Protect the Environment	50%	$30,000
Fencing to Prevent Damage by Big Game Wildlife	30%	$10,000
Utilizing Portable Windbreaks and Shelters	50%	$15,000
Remote Water Systems	50%	$15,000
Farmyard Run-off Control	50%	$10,000
Manure Storage Improvements	30%	$30,000
Manure Storage Increases	30%	$30,000
Manure Application Equipment and Technologies	30%	$10,000
Manure Nutrient Planning	50%	$4,000
Modifying and Revegetating Waterways	75%	$20,000
Planting Vegetation to Protect Riparian (stream bank and shoreline) Areas	50%	$20,000
Improved Stream and Creek Crossings	50%	$20,000
Protecting Marginal High Risk Soils	50%	$5,000
Shelterbelt Establishment	50%	$5,000
Decommissioning Abandoned Wells	75%	$6,000
Protecting Existing Wells	50%	$6,000
Agricultural Product's Safe Storage and Handling	30%	$10,000
Agricultural Waste's Safe Storage and Handling	30%	$10,000
Pesticide Application Systems (Drift Reduction Technology)	30%	$5,000
Information Collection and Monitoring	30%	$5,000
Integrated Pest Management for Insect, Vertebrates and Non-vertebrate Pests	30%	$5,000
Integrated Pest Management for Invasive Plants	50%	$5,000
Native Plant Re-establishment	30%	$5,000
Integrated Pest Management Planning	50%	$2,000
Irrigation Equipment Modification	30%	$10,000
Irrigation Management Planning	50%	$2,000
Low Disturbance Placement of Seed and Fertilizer	30%	$5,000
Chaff Collectors and Chaff Spreaders	30%	$10,000
Precision Farming Applications - GPS	30%	$15,000

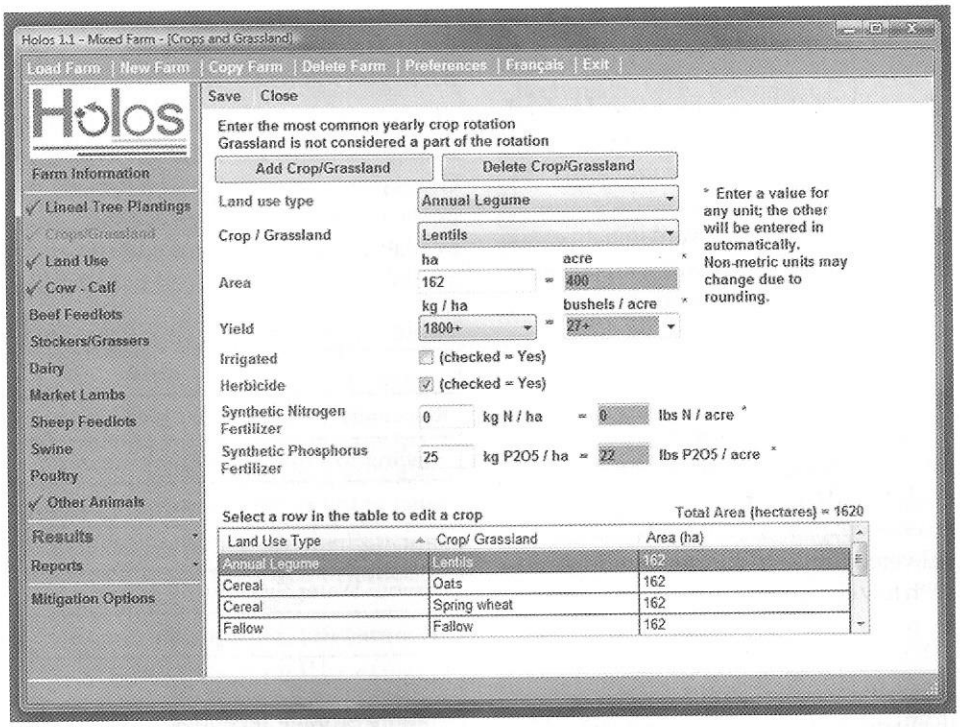
New GHG calculator for producers

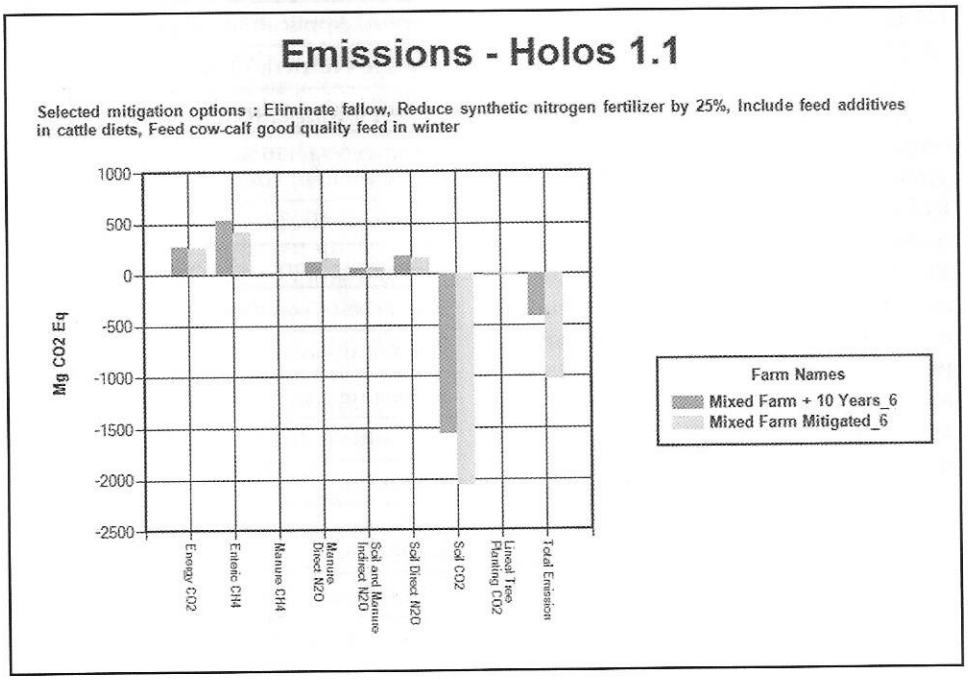
As the Saskatchewwasn Taking Charge Team coordinator, the Saskatchewan Soil Conservation Association is working with the Soil Conservation Council of Canada (SCCC) to evaluate a new computer-based tool designed to help agricultural producers identify opportunities to calculate and reduce greenhouse gas (GHG) emissions on their operations.

Holos, a greenhouse gas calculator designed by Agriculture and Agri-Food Canada (AAFC), analyzes a range of on-farm conservation management scenarios and determines potential reductions in GHG emissions. It is being evaluated by SCCC's Taking Charge Teams across Canada, who will test the program by plugging in real data provided by farmers. We will then report our findings to AAFC, who will modify the program into a final version for field use.

"Holos covers various conservation practices such as zero tillage, rotations with perennial forages, shelterbelts and riparian buffers," says SCCC executive director Glen Shaw. "At a time when the agricultural industry is under pressure to reduce its carbon-based emissions, this tool offers producers the opportunity to identify and set specific reduction goals," he says.

Former SSCA regional agrologists, Eric Oliver and Garry Mayerle, are working as field coordinators for the Saskatchewan portion of the program, says Blair McClinton, SSCA executive manager. The first phase of evaluating Holos was completed in January, with Eric Oliver, Garry Mayerle and Doyle Wiebe attending a one-day workshop in Ottawa. "AAFC demonstrated the latest version of Holos in the workshop and field people were allowed to do some hands-on training," says McClinton. "Our goal is to test the Holos program in small group settings with at least 160 Saskatchewan producers over the coming year."





"We made a good start this past winter. Eric and Garry held 18 meetings and tested Holos with 75 producers," says McClinton. "We plan to hold more test sessions next fall and winter. Anyone interested in helping us test the Holos software can contact SSCA at 1-800-213-4287."

The project is being funded by the Advancing Canadian Agriculture and Agri-Food Saskatchewan Program. "However, because we are conducting this testing program across Canada, it is open to funding partnerships with agencies throughout the country interested in evaluating the product in the field and extending it to producers," says Shaw.

Greenhouse gases: clues to better ways of farming?

By H.H. Janzen
Agriculture and Agri-Food Canada, Lethbridge, AB

Our planet is facing unprecedented changes, of which predicted climate change is only one. How do we – those of us involved in prairie farming – best respond to these coming changes? I offer here some timid thoughts, mostly to prompt further conversation about this essential question.

A first response is to understand better the extent to which our farms are immersed in the global flows of elements, notably those of carbon. Farmers, in essence, are managers of carbon: they set out plants to capture carbon from the air and store within their tissues the sun's energy. These tissues – grains, fruits, leaves – are then eaten as fuel by us and our animals, releasing carbon back into air again as CO_2. In the past, farmlands released more CO_2 than they absorbed, notably in the decades after initial cultivation. But with better practices, some lands can again, for a time, be induced to absorb more CO_2 than they release, thereby removing atmospheric CO_2 and storing it in soil organic matter. At the same time, however, farms also release CH_4 and N_2O, both greenhouse gases. So farms are interwoven in the global flows that may affect future climates, and there have been increasing calls to reduce emissions.

A second response, then, is to look for ways of reducing emissions from farms. To do this effectively, however, we need to look at the whole system, not at individual pieces. For example, a new feed might not only influence CH_4 emission from cows that eat the ration, but also affect N_2O emitted from the fields used to grow the feed. Sometimes, a new practice could have more than one benefit; for example, a new cropping system might help store carbon in soil (removing atmospheric CO_2) and also reduce the amount of CO_2 emitted from burning of fuel. Whatever the practice, the best opportunities can be found by looking at all gases from the whole farm, rather than at single sources within the farm.

Thirdly, we need to recognize farms as ecosystems that provide many services: they give us food and fuel, they give livelihood to people and habitat to wildlife, they help filter our air and purify our water, they appeal to our sense of beauty and give us space to wander. Reducing greenhouse gases is only one of many aims in seeking better ways of farming – and likely not the most urgent one. Any practice, therefore, that merely reduces greenhouse gas emissions will be of little use, for it likely won't be adopted widely. Thus, practices and ways of farming should be judged not only on the amounts of their emissions, but on the value of the services they render. From this perspective, then, we measure greenhouse gases not only for reducing their emissions, but as markers for better ways of farming; they can point us to inefficiencies in the use of energy, or carbon, or nitrogen, and may help direct us to practices that can have many other benefits.

The issue of greenhouse gases affords a chance, perhaps unprecedented, to enunciate and communicate clearly the interdependence of rural landscapes and all citizens, wherever they reside.

Despite all our best efforts, our landscapes are likely to face rapid changes in coming decades. Aside from any climate change, there are likely to be increasing demands for food, greater costs for energy, less plenteous clean water, and greater pressure to preserve biological diversity. A fourth response, therefore, is to prepare for coming changes. And a fundamental way of doing that is to develop and adopt practices that keep our farms – these ecosystems on which we so much depend – resilient and robust enough to ensure they persist and flourish under coming pressures. That may mean understanding these ecosystems and their inhabitants not merely from a narrow scientific perspective, but from a broader ecological and social perspective.

Lastly, the issue of greenhouse gases affords a chance, perhaps unprecedented, to enunciate and communicate clearly the interdependence of rural landscapes and all citizens, wherever they reside. Our farmlands serve many functions, reducing greenhouse gases just one among them. What happens on these lands profoundly influences those who may think themselves far removed. In turn, what happens in places far from our fields affects the resilience and behaviour of farming ecosystems. We may need to look for new ways of describing this interdependence, new ways of telling these stories, to re-awaken a keener, more abiding interest in the health of our lands. And we do that, not just for our own sake, but for the generations still to come who, in the face of coming changes, may depend even more than we do today on the sometimes-hidden services of our lands.

The preceding are merely a few fragmentary suggestions for a collective response to the changes swirling about us. Likely there are better, more creative ones. But whatever they may be, if born of broad conversations among farmers, scientists, educators, and all who depend on the land, they may help us see the coming changes not as ominous worries, but as opportunities to build vibrant communities based on resilient ecosystems.

Farm Family Recognized

On Wednesday, February 11th, Trent & Carolyn Walls of Alameda, SK, were recognized with the Saskatchewan Soil Conservation Association's (SSCA's) Farm Family Award. Sponsored by Ducks Unlimited Canada, this award recognizes a **farm family** that has made an outstanding contribution toward promoting production systems that reduce soil degradation, enhance water quality and maintain economic viability.

Trent and Carolyn along with their 2 daughters farm with Trent's parents, Doug & Arlene Walls. **Their main goal is to create a sustainable environment for the land, the people and make a profit doing so.** Trent & Carolyn have converted their cropland to forage and have been increasing the size of their cattle herd. The Walls are developing rotational grazing plans up to one year in advance. This helps them use the grass more efficiently, increases the health of the forage, distributes the manure more evenly and improves soil health. They believe in leaving enough residue behind after grazing to trap snow and to improve soil health.

The Walls are innovative producers. They are one of the first producers in the area to try extending their grazing season with chaff or bunch piles. They have developed relationships with their neighbouring grain producers to use their chaff and for seeding crops for swath grazing. As well, they have installed a water pipeline and off-site watering systems to facilitate the rotational grazing. To make winter grazing easier Trent has come up with a tool to put pilot holes in the ground to make his temporary fence go in easier.

Edgar Hammermeister, SSCA SE Director (right), and Vicki East, Ducks Unlimted Canada (left), present the 2009 Conservation Farm Family of the Year Award to Trent and Carolyn Walls.

By changing the management of their native pasture they have seen several native species come back into the stand. As well the native pasture is much more productive than it was previous to the changes.

The Walls are familiar faces in among forage producers: Trent is a grazing mentor and also shares his experience with forage conversion and planned rotational grazing as a member of the Upper Souris Watershed AEGP committee. Trent has given several presentations at local grazing events and has held a pasture tour at their place.

Congratulations to Trent & Carolyn and their family. •

www.ssca.ca

Special Thanks to SSCA Project Partner Sponsor:

Arysta LifeScience

Publication Agreement No. 40065736
If not delivered, please return to:
SSCA, Box 1360, Indian Head, SK, S0G 2K0