



# THE IRRIGATOR

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## ICDC Board Report



ICDC Chair  
Carl Siemens

## Irrigation conference in Outlook

*7th Annual Irrigation  
Conference  
December 2 - 3  
Civic Centre  
Outlook, Sask.*

I want to extend an invitation to everyone interested in irrigation to come out to our annual conference sponsored jointly by the Irrigation Crop Diversification Corporation (ICDC) and the Saskatchewan Irrigation Projects Association (SIPA).

This annual conference is the only venue in Saskatchewan where those involved in our growing industry can get together in one room.

Producers, agronomists, government officials, suppliers and others, all come together to celebrate our accomplishments and discuss solutions to the many challenges we face.

As usual we will be providing you with a summary of this past year's projects and bring forward for approval our plan for the coming season.

While many issues will remain the same as in the past, several major changes have also taken place.

Both of our government partners have undergone significant changes relative to how they will be delivering their services to irrigators.

The federal government has reorganized

Agriculture and Agri-Food Canada as a result of the new Agriculture Policy Framework. This has the potential to dramatically affect the programs that agencies such as PFRA have carried out in the past.

The provincial government has also made major changes.

In keeping with ICDC's recommendation and the government's rural revitalization strategy, many of the responsibilities for irrigation have been transferred to Saskatchewan Agriculture, Food and Rural Revitalization.

We believe this to be a very positive first step and look forward to developing a close relationship with the department.

At the conference, you will hear first hand from officials of government how these changes will affect you -- and you will have an opportunity to provide feed-back directly to them.

One of the most popular activities at our conference is the "Bear Pit Sessions."

We hope this year will be no exception!

This year's topic is *Infrastructure-Saskatchewan's Hot Potato*.

We hope you will join us in Outlook for some serious discussion, to renew old acquaintances, to make new contacts and to help strengthen our industry.

# ICDC ryegrass demonstration

This past summer, ICDC worked with five producers in demonstrating ryegrass production and evaluating it as an annual forage crop.

Annual ryegrass is gaining popularity as a highly productive and flexible forage crop.

It is especially desirable for winter grazing as its quality does not deteriorate over the season.

Annual ryegrass likes cool moist climates. It is grown across the United States as a cover crop and for winter pasture and produces some of the highest quality pasture that can be found in the southeastern US. It can be harvested as silage or hay in two cuts (mid-July and mid-Aug.) and then fall grazed.

Last summer, ICDC worked with five producers in demonstrating ryegrass production and evaluating it as an annual forage crop.

Humid, rainy and/or snowy conditions from late July to late October have made for poor haying weather. Some ryegrass producers, who cut their hay in early to mid-July, were able to get it dried and baled. Second cut was generally taken off as silage, either pit or wrapped bales. There is a lot of poor-quality ryegrass that sat out in the field for four weeks or more. That's a tough pill to swallow on a year when good hay is valuable.

## Second cut

Second cut came along nicely whether the first cut was off the field or not. Silage and grazing were the harvest method of choice this year, especially for second cut. One producer even bought his own bale wrapping set-up.

Producers' opinions on ryegrass as a forage



Dan Willms cutting irrigated ryegrass on his ICDC Demo, Hillcrest Irrigation District.

crop generally depend on how they chose to harvest it and whether they were able to get their first cut off the field in good condition. Those who didn't cursed its regrowth rate.

The fields were ready for second cut in early to late September, depending on when first cut was taken off. All in all, three of five co-operators should be quite content with how things turned out. All three took off first cut (or grazed) in a timely manner and had a good second cut. The other two will probably do things rather differently next year.

We've learned a few things about managing and feeding ryegrass since the last article on ryegrass in the July 2002 Irrigator. Our findings are described in the following paragraphs.

## Grazing

Some of ICDC's co-operators have been rotationally grazing a portion of their ryegrass with good success. A pie formation works well with pivots. Taking the animals off the ryegrass fields periodically or at night has reduced excessive trampling of the fields and allowed for continued irrigation.

Also, cattle grazing ryegrass with very high water content will have trouble getting enough food value out of it. So, graze a dry paddock and wipe the rest of

*(Continued on page 3)*



Bale wrapping at the Willms' farm

## Field days well attended



Left:  
A Corn Field Day held this fall at Dick Friesen's farm near Warman. The corn is for silage for dairy cattle.

Right:  
The Pocket Gopher Control Field Day held at Blaine Lake. In the last three years, more than 600 producers have attended ICDC pocket gopher control field days.




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## ICDC ryegrass demonstration

*(Continued from page 2)*

the field with the pivot. Generally, annual ryegrass is performing well as an intensively-managed irrigated pasture forage.

### Nitrates

One thing to watch out for is nitrate poisoning.

When ryegrass is given very high N fertility, it can accumulate nitrate in its tissue. Feed tests of some co-operators' cuts came back with high nitrate.

Ruminants can adjust to high nitrate levels, so if your cattle have been on it for a few days, you shouldn't worry too much. You'll see any problems the first couple of days you're feeding it. Talk to your local livestock agronomist for more details on nitrate and nitrate poisoning.

### Feed Balance

Ryegrass generally has higher protein content than beef cattle require. When feeding ryegrass hay or silage, mix in some straw bales for higher energy content and yield.

Next year, a mixture of ryegrass and oats (low density) may be a mixture to consider. Wild oat also accomplishes the same thing but tends to be very patchy. Early-weaned calves make good use of the high protein in ryegrass.

Most cow-calf producers who grew ryegrass this year have found it a useful addition to their rotation.

For more production details, see the July 2002 Irrigator or the 2002 ICDC Demonstration Report.

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*Cutting dates, P fertilization and update . . .*

# Timothy research and demonstration

Wouldn't it be nice to reach the optimum in first- and second-cut yield and quality by picking just the right stage and date for first cut?

Second cut yields have been disappointing in the past, often because first cut was taken off over-ripe.

First cut quality is also disappointing when taken off too late.

ICDC agrologists are working with Agriculture and Agri-Food Canada researcher Bruce Coulman to determine the best stage for cutting timothy.

A cutting date trial was started in the Outlook area on two established timothy co-operator fields. Three different first cutting dates were compared for yield and quality of first and second cut. These corresponded with pre-anthesis, post anthesis, and seed set stages.

Agrologists Lana Shaw and Deb Oram encountered two main problems with doing this type of work in commercial timothy field, instead of at a research farm.

First, the co-operators' hay from the rest of the field had to dry, so there was no irrigation for the cutting date plots at this time. In a great year for making hay, this down time would only be a couple of days.

Unfortunately, 2002 was generally not a good year for putting up hay. Plugged fertilizer runs and poor fertilizer spread before and after first cut really complicated the results of this trial, as well.

The take-home message from this exercise is to plan on cutting once the anthers are out. Then adjust that date back or forward based on the weather forecast.

You should certainly plan on cutting before senescence starts to maintain quality. The key is to be ready to go when the opportunity comes and to get the hay off as fast as possible. Irrigation down time while hay is drying hurts second cut yield; the longer the down time, the lower the second cut yield (and, incidentally, the lower the first cut quality). So work such as raking, conditioning, and fluffing becomes critical.

Most of the 2002 co-operators got their first cut off in good time around anthesis. Yields were somewhat below average at 2 to 2.5 ton/ac, with most of it making #1 grade.

It was difficult to get second cut off the field with the drippy fall we had. Three of five co-operators had their second cut baled as of Oct 28. The other two will have a poor chance of getting their second cut off this year now that it has snowed.

Second cut was generally poor, with yields at 0.5 to 1.5 ton/acre. Quality will be variable, depending on how long second cut was out in the field. Some of it is pretty bad. On the bright side, soil moisture should be decent for next spring with the rain and snow we've had this fall.

Two timothy producers applied different rates of phosphate fertilizer (50, 100, 200 lb/acre) to established stands of timothy at the start of the season.

ICDC agrologists and Agriculture and Agri-Food Canada personnel looked at the yield and quality of first and second cut. The extra phosphate did not seem to advance maturity or improve yield of first or second cut (50 lb v. 100 and 200 lb/acre) as we had hoped it would.

This may have been for many of the same reasons that the cutting date trial was unsuccessful: irrigation, fertilizer variability, and a poor season.

However, for now, there is no reason to assume that putting on more than 50 lb P in the spring will be worthwhile.

If you have any questions, call Lana or Deb. We can also put you in contact with the timothy producers.

For more information, contact:

Lana Shaw, A.Ag.	Deb Oram, P.Ag.
ICDC Agrologist	Bloomfield Consulting
<a href="mailto:lshaw@agr.gov.sk.ca">lshaw@agr.gov.sk.ca</a>	<a href="mailto:oram@sympatico.ca">oram@sympatico.ca</a>
Ph: (306) 867-5407	Ph: (306) 796-4651



**Left:**  
**ICDC's timothy  
 cutting date plots  
 on Boot Farms,  
 Glenside.**

**Right:**  
**Fertilizer application on  
 ICDC's  
 timothy trial at Jerry  
 Eliason's farm,  
 Glenside.**



## Changes to SIPA's voting rights

By James Harvey, SIPA President

The Saskatchewan Irrigation Projects Association (SIPA) invites all irrigators to attend the Annual Irrigation Conference.

You want to vote on SIPA business?  
 Now you can.

SIPA requested and got amendments to *The Irrigation Act, 1996* and has subsequently presented bylaw changes to allow all irrigators to be represented.

At present all Irrigation Districts are eligible to send delegates (one per 5,000 irrigated acres or part thereof) and vote.

With ratification of the bylaw changes this year, non-district irrigators will be eligible to vote, too.

SIPA membership is voluntary. Its 2002 levy is 20

cents per acre: minimum \$50 and maximum \$2,000.

SIPA members must have paid their levy to be eligible to vote.

Non-district irrigators will vote as delegates for their Irrigation Development Area on the basis of one delegate per 5,000 acres or part thereof.

All district and non-district irrigators and related industries are welcome to attend the Annual Irrigation Conference.

For more information or to register for the Annual Irrigation Conference, contact Sandra Bathgate, SIPA Secretary, at (306) 796-4420.

# Grass needs phosphorus

By Les Henry, P.Ag.

Reprinted courtesy of *Grainews*, Volume 28, Number 10, May 2002

In this column I've often taken a run at fertilizer on forages and usually left you with the message:

- 1) N,
- 2) N,
- and
- 3) N.

Most times we've looked at grass and pointed out that nitrogen (N) and grass go hand in hand and that almost all old grass stands are short of N, need some N and could be reclaimed with a good dose of N.

Phosphorus (P) can improve yields after we've pushed the yield up with a high rate of N.

But, in old flood-irrigated plots in southwest Saskatchewan, P has become the limiting factor.

A few weeks ago Les Bohrson sent me some data he and Don Arendt have gathered on the Arendt Farms at Eastend.

Les is senior Agrologist with the Irrigation Development Branch of Saskatchewan Agriculture, Food and Rural Revitalization at Swift Current and is the type of guy who makes a difference wherever he goes.

Les hails from Hanley and was ag rep at Outlook when this scribe was speaking at town halls. Any town hall we went to with Les in charge was a well run affair and well worth our time. He always made sure we sent farmers home with something to think about.

Back to forage crops, particularly alfalfa. In southwest Saskatchewan there are many small irrigation projects where several farmers have a few small plots that get irrigation water so they have a stable supply of feed for livestock. Many of these plots have received N fertilizer, but little or no P over the years. Fifty years of constant drain on P in the soil has exhausted the supply.

On the Arendt farm at Eastend a tired dandelion-infested irrigated alfalfa field was broken up in 1994. It was border dike irrigation, so Don used the individual border strips as plots for an experiment with P fertilizer. He banded 75 lb./ac. of P2O5 before three years of annual cereal forage.

In 1998, an extra 150 lb./ac. P2O5 was banded before he seeded alfalfa. By the end of 2001 the total alfalfa yield had more than doubled from 5.1 T/ac. with no phosphorus fertilizer to 11.3 T/ac. with the banded phosphorus - 75 lb./ac. P2O5 in 1995 and 150 lb./ac. in 1998.

Les Bohrson took the alfalfa yields and converted them on paper to milk and beef. The three-year result was an extra 15,000 lb. of milk or 900 lb. of beef per acre. Dairy and beef people can figure out what that means in \$\$\$\$\$.

**If we establish an alfalfa stand and then try to throw some P fertilizer on top, it's sort of like trying to push a rope.**

The big bang came from the fact that the phosphorus fertilizer was in the soil ready to go to work as soon as the young and tender alfalfa seedlings needed it. If we establish an alfalfa stand and then try to throw some P fertilizer on top, it's sort of like trying to push a rope. The P fertilizer doesn't move easily into the soil where it's needed.

The bottom line is:

If you're establishing an alfalfa stand on soil that's low in P, think hard about banding about 150 lb./ac. of P2O5 (300 lb./ac. of 12-51-0) before seeding the alfalfa.

\* \* \*

Les Henry is a former professor and extension specialist at the University of Saskatchewan. He's now retired, farms, travels and consults. For more information on this project call Les Bohrson, ICDC Swift Current, (306) 778-5043. This project was evaluated as part of the Canada-Saskatchewan Partnership Agreement on Water-Based Economic Development (PAWBED) Final Evaluation done in 2000. The PAWBED Irrigation R&D projects returned over \$4 for every dollar spent. The "agronomic practices" portion of the PAWBED Irrigation R&D, which included this forage fertilization project, returned over \$11 for every PAWBED dollar spent. Good job, Les!

# Grazing Vegetative Cereals

By Les Bohrson, P.Ag.,  
ICDC, Swift Current

Cereals “for emergency pasturing” represented the biggest shift in irrigation crop decision making this year in central and southern Saskatchewan.

Yes, the south also faced the disastrous 2002 drought right up until mid-June.

I have never received this level of requests for production and grazing information on so many crop types and mixtures, some with legumes.

Livestock producers were paying top dollar for new seed and wishing for record production.

Four of the most requested selections in addition to corn were spring-seeded fall rye and winter triticale, foxtail millet and several ryegrasses that would be grown as annuals.

All were to be grazed for a portion of the summer, fall and/or early winter, but combination with baling or silaging was optional.

I have spring seeded winter triticale as a border and as pathways through crop demonstration plots for several years. At summer field days, many livestock producers will comment that the borders and pathways could graze more cows than their pasture. I reply, “Yes, you’re right and I have mowed that winter triticale twice already.”

So, for 2002, Pika Winter Triticale and Dakota Fall Rye were placed side by side with Golden German Foxtail millet and SW Botrus annual ryegrass on the forage centres at the research station near Swift



ICDC Forage Plots at the Semiarid Prairie Agricultural Research Centre, Swift Current.

Current and at the Larry, Lyle and Dick Friesen’s irrigation farm north of Saskatoon.

Summer field days at both demonstrations were well attended and silage/grazing opportunities were discussed at length. A detailed report will be available at the SIPA/ICDC Conference.

Korvin Olfert, Amanda Wilson and I systematically sampled the total vegetation from these grazing selections for yield and quality four times from mid-July thru late-August. We hand-weeded the millet and ryegrass to give them an equal start to the fall rye and triticale. A split application of 140 pounds per acre of nitrogen and full irrigation produced a respectable 2002 crop. Eleven barley, oat, spring triticale and wheat varieties were also being harvested for yellow and greenfeed, and silage at SPARC. These cereal grains produced well over a ton more feed than the four varieties solely grown for vegetation/grazing. The four grazing types were also much wetter when cut (about 87 per cent moisture) and slower to dry down.

The resulting comparison of yield and quality is adjusted to a hay equivalent of 15 per cent moisture content. The results are averaged including all four single cuttings in July and August 2002. The single cut yields and qualities were best for the winter cereals. Foxtail millet has some upside yield beyond the July and August sampling period, and multiple cutting of annual ryegrass is recommended. Both foxtail millet and annual ryegrass are useful feeds, but fell well short of the fall rye and winter triticale in total digestibility nutrients (TDN), and crude protein.

## SPARC Forage Centre 2002 Average Vegetative Yield and Quality

	Yield		Crude
	Tons/Acre	TDN%	Protein%
<b>Winter triticale</b>	<b>2.9</b>	<b>56</b>	<b>21</b>
<b>Fall rye</b>	<b>2.6</b>	<b>58</b>	<b>22</b>
<b>Foxtail millet</b>	<b>2.9</b>	<b>49</b>	<b>11</b>
<b>Annual ryegrass</b>	<b>2.4</b>	<b>51</b>	<b>16</b>

# Welcome to the 7th Annual

## Outlook, Sask.,

The Saskatchewan Irrigation

The Irrigation Crop Divers

The Seventh Annual

Civic Cent  
December

To register, phone Sandra Bathgate,  
SIPA Secretary, at  
(306) 796-4420.

Registration is \$35

### Agenda -- Monday, December 2

- 2:30 p.m. Registration and Trade Display opens
- 3:30 p.m. SIPA Annual Business Meeting
- 6 p.m. Banquet
- 7 p.m. Sponsor Presentations
- 7:30 p.m. Bearpit Session:  
Infrastructure n Saskatchewan's Hot Potato!  
Moderator: *Kevin Hursh, Hursh Consulting and Communications Inc.*  
Panel:  
! *Al Scholz, Executive Director, Sask Agrivision Corp. Inc.*  
! *Brad Wildeman, Chair, ACRE Value-Added Sub-Committee*  
! *Gordon Kent, Irrigator, Riverhurst*  
! *Kelvin Bagshaw, Irrigator, Luck Lake ID*
- 9:30 p.m. Cash Bar



To book rooms close t

The Irrigation Cen  
The Bird's Ne



# Annual Irrigation Conference

Dec. 2-3, 2002

Saskatchewan Irrigation Projects Association (SIPA)

and  
Irrigation Development Corporation (ICDC)

invite you to attend  
the Annual Irrigation Conference

in Outlook

December 2 - 3, 2002



## Agenda --Tuesday, December 3

- 7:30 a.m. Breakfast at the Civic Centre
- 8:30 a.m. ICDC Annual Business Meeting
- 10 a.m. The Agricultural Policy Framework (APF) and Irrigation Policy for Saskatchewan  
! *Bob Wettlaufer, Acting Director General,  
Prairie Farm Rehabilitation Administration (PFRA)*
- 10:30 a.m. The Action Committee on the Rural Economy (ACRE) and Provincial Irrigation Policy  
! *Maryellen Carlson, Assistant Deputy Minister,  
Saskatchewan Agriculture, Food and Rural Revitalization (SAFRR)*
- 11a.m. Coordinating Primary Highways and Irrigation Districts  
! *Saskatchewan Highways*
- 11:30 a.m. Coordinating SaskPower and Irrigation Districts  
! *SaskPower*
- 12:30 p.m. Lunch
- 1:30 p.m. Conference Wrap-Up  
! *Kevin Hursh*
- 2:15 p.m. Safe Travels Home

to the Civic Centre in Outlook,  
call:

Centre Motel, (306) 867-8633

Best Inn, (306) 867-8661



# A note on nitrates

**At the high levels of fertility with irrigated crops, nitrogen is easier for the roots to accumulate and can affect nitrate levels in the plant.**

By Korvin Olfert, P.Ag.  
ICDC Agrologist, Swift Current

Many labs are reporting high levels of nitrates in feed samples as producers have been baling up hauled or frozen irrigated crops.

Nitrogen is normally absorbed by roots, translocated up the plant and turned into protein. When a frost (or any stress) damages the top portion of the plant, it no longer turns the nitrogen into protein and the nitrogen accumulates in the form of nitrates.

If the next day or two are warm and sunny, the nitrates will return to normal levels as they are converted into protein. A low level of nitrates should be in every sample especially at the plant nodes. At the high levels of fertility with irrigated crops, nitrogen is easier for the roots to accumulate and can affect nitrate levels in the plant. Some plants are more susceptible than others: oats are worst.

## **Another source of nitrates for livestock is water.**

Another source of nitrates for livestock is water. Manure contains high levels of nitrogen, which is very soluble and a shallow well right next to the corrals probably contains high levels of nitrates. Wood well casings also contribute nitrates. So, if you are testing your feed for nitrates, test the water as well.

Animals become accustomed to nitrates so watch them closely the first few days after moving home from pasture.

When a ruminant ingests nitrates in the feed and water, the rumen chemically converts nitrate to nitrite. Nitrite is utilized by the rumen bacteria to make bacterial protein, which in turn is a major source of protein for the cow. In normal situations the bacteria are able to keep the nitrites at a low level, and the cow absorbs virtually no nitrite. However, when a high level of nitrates are converted to nitrites, some of the nitrite is absorbed across the rumen wall and into the blood stream.

Nitrite binds to hemoglobin and converts it to methemoglobin, which cannot carry oxygen. If 80 per cent of the hemoglobin is converted, the animal will die. High levels of nitrates can also cause abortions.

The symptoms of nitrate poisoning are essentially those associated with lack of oxygen in the blood. Rapid, heavy breathing along with dark or bluish unpigmented areas are the first signs. Muscle tremors, weakness, diarrhea and frequent urination follow with possible abortions due to lack of oxygen to the fetus.

Poisoning can be treated by a veterinarian by an injection of aqueous methylene blue. Some animals are more susceptible than others. Pregnant dairy cattle are the most susceptible, followed by other cattle, sheep and horses being the most resistant.

## **If high levels of nitrate are present in the feed, it can be diluted with grain.**

Nitrates are a part of normal metabolism and uniformly present. As such, even high levels can be managed. If high levels of nitrate are present in the feed, it can be diluted with grain. Cattle can also be accustomed to high levels of nitrates. Limiting exposure to high nitrate pasture for 30-60 minutes each day for three to seven days should be sufficient time for them to become accustomed.

Testing is recommended for both the feed and water to determine total exposure and level of risk.

# Protect your irrigation from fusarium

By Lana Shaw, A.Ag., and Deb Oram, P.Ag., Outlook

Irrigated acres in south and central Saskatchewan are at risk for developing fusarium.

Once the disease is established in a field it is difficult to impossible to eradicate. It will also spread in the localized area to other irrigated fields.

Fusarium was present in ICDC manure management demonstrations in 2001 in a localized area of west-central Saskatchewan.

Moisture during flowering is critical to ensuring high yields of cereals. This moisture is supplied under irrigation, but fusarium also uses precipitation from sprinkler irrigation to splash from the ground onto cereal heads during flowering.

Warm nights during July speed the development of *F. graminearum*. Other types of fusarium are favored by cool temperatures during July.

Durum is very susceptible to fusarium head blight. Winter wheat, triticale, and CWES are less susceptible than durum, but still have poor resistance. Some varieties of hard wheat (red and white) have fair resistance, which is as good as it gets in the wheats. See the SAFRR publication *Varieties of Grain Crops 2002* for details on varietal resistance. There is variation in resistance among barley varieties, but they are generally more resistant than hard wheats. Oats are the most resistant cereal.

ICDC monitored fusarium development in four irrigated durum fields within a three-mile radius in 2002. Irrigation and rainfall totaling one to two inches accompanied by hot, humid weather during anthesis (flowering) created ideal conditions for the development of fusarium in the four durum fields.

Symptoms were hard to miss in the standing crop by harvest. During the dough stages, the infected spikelets are prematurely bleached. There may be an orange mold peeking out from the glumes. This is not to be confused with other diseases that cause the whole head to be bleached and infertile.

ICDC initiated a demonstration of Folicur, a new locally-systemic fungicide for fusarium. Donated product was applied to fields using a high-clearance sprayer with twin-jet nozzles. These nozzles were specially chosen to maximize coverage of the heads with the fungicide.

A split application was compared with a single

**It would be valuable to collect samples of cereals from irrigation districts to test for fusarium and develop an ICDC fusarium survey.**

application at anthesis and with no application.

The three treatments (0X, 0.75X, 1.5X split) were sprayed in large strips across the field. Yields (weigh wagon) and seed samples were taken from each of the three strips. The combined and averaged yields of all four fields are shown in the graph.

Production techniques were typical of irrigated durum production. Seed was tested before seeding for the presence for fusarium. Two fields had been in durum in two of the previous three years. Part of another field had been in corn two years ago.

The good news is that the use of Folicur consistently increased yields by 4.5 bu/ac for the split application over no application. The reduced rate (3/4 of recommended rate) did not provide a consistent advantage over no application. This may be purely an effect on leaf diseases rather than fusarium reduction.

The bad news is that there is already a problem with fusarium on irrigated acres in Saskatchewan.

*(Continued on page 14)*



**Fusarium in durum: top, severely infected kernels; bottom, relatively healthy durum kernels.**

# Bean Seed Production in Saskatchewan: Challenges and Opportunities

**High value product and excellent returns (\$1,000/acre is possible) make pedigreed bean seed production an attractive option for current and potential bean growers.**

By Lana Shaw, ICDC Agrologist, Outlook  
and  
Deb Oram, ICDC Agrologist, Central Butte

Calling all irrigators: this is an excellent opportunity to get some high value out of your irrigated acres.

There will be strong demand across the prairie provinces in 2003 for seed of locally-adapted cultivars, such as CDC Pintium.

There were approximately 10,000 acres of dry beans seeded in Saskatchewan in 2002, of which approximately 6,000 acres were irrigated. Continuing expansion in dry bean acres is expected for Saskatchewan and parts of Manitoba. Saskatchewan has a potential to rapidly expand dryland bean acreage so long as the bean prices remain relatively high and new growers are given agronomic support.

Production risk can be reduced by using good-quality seed with high vigor and low seed-borne pathogen levels. Over the past several years, some dryland producers have had wrecks when they use bad seed and/or unsuitable varieties. With the bean industry in expansion and suitable seed in short supply, many will again be tempted to use seed of questionable or unknown quality. Haphazard use of common seed poses a threat to the industry by opening the door to seed-borne diseases such as anthracnose and bacterial blights. Use of physically-damaged seed also has the potential to hinder the growing industry.

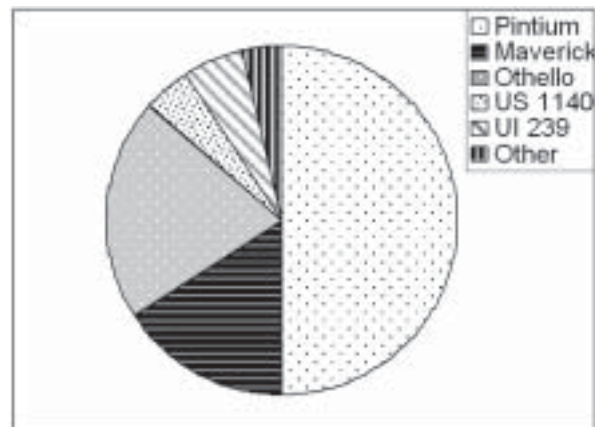
What makes pedigreed seed better than common seed? The answer is clearly seed production protocol and standards, including unwritten consensus by seed growers. The reputation of Canadian pedigreed bean seed must be cultivated to assure the success of the Canadian bean industry.

## The Opportunities

Domestic production of bean seed represents a tremendous opportunity. High value product and excellent returns (\$1,000/acre is possible) make pedigreed bean seed production an attractive option for current and potential bean growers. Costs per acre are in the \$400 range.

Certified CDC Pintium seed was largely unavailable until last season. In 2002, Saskatchewan has seen a leap in acreage of this variety to approximately half of the seeded acreage of 10,000 acres (see chart below). Pedigreed CDC Pintium seed is also in demand in Manitoba and Alberta. The same situation will be repeated for other new varieties produced by Canadian breeding programs. However, growth in acreage of new Canadian (and suitable American) varieties is dependent upon the seed system generating a steady supply of good-quality seed.

Who wants in?



## The Challenges

### Rapidly and reliably multiplying seed of new Canadian varieties

Rapid and reliable seed multiplication is needed to effect a switch to new and better bean varieties.

Dryland seed production entails more production risk than irrigated production. Yields of Canadian varieties are consistently high when tested under irrigation at the Canada-Saskatchewan Irrigation Diversification Centre (CSIDC) and across Alberta.

The irrigated land base in Saskatchewan can serve as a dependable foundation to the bean seed system.

### Measuring and reducing physical seed damage

Successful establishment is the first and most important component of a good bean crop.

Beans with hairline cracks may pass a germination test and yet have appalling seedling vigor. Cracks in the seed coat are an entry point for soil-borne diseases and bacterial blights. These cracks can be created during combining, transfer, cleaning, and seeding.

The combination of gentle handling and harvest at moderate seed moisture will prevent damage to valuable pedigreed seed.

### Prevent and control the multiplication of seed-borne disease in the seed system.

The seed-borne diseases of interest in Canada are anthracnose and the bacterial diseases of beans, including common blight, halo blight, bacterial brown spot, and bacterial wilt.

Anthracnose has not yet been reported in Saskatchewan and Alberta, but has become a serious issue in Minnesota, North Dakota and Manitoba in the past few years.

Proper crop rotation, use of clean seed and seed treatment can prevent its spread into new areas and reduce its impact in infected areas. Bacterial blight seems to be everywhere in beans.

If seed-borne pathogens in elite and breeder's seed were reduced or eliminated, control of seed-borne diseases throughout the seed system would be much easier.

### Other management tactics will also reduce the threat of bacterial blight.

These management tactics include the following.

1. Agronomic bacterial blight management including preventative application of bactericides (copper products, new products?) and seed treatments with copper sulfate in pedigreed seed fields will reduce the multiplication of blight in the seed system.

However, even under the most favorable agronomic conditions, a seed crop is likely to become contaminated with bacterial blight if contaminated or infected seed was planted.

The outcome of an ICDC demonstration in seed-producers' fields, featuring bactericide application, field inspection, and seed testing, will be available in the 2002 ICDC Demonstration Report.

2. Seed health testing is critical to ensuring a healthy future for the bean industry. However, there is no accepted seed health test for bacterial blights.

Bacteria are more difficult to test than fungal pathogens like anthracnose. The standard 'dome' test does not differentiate between nasty and mild strains of the bacteria, or even opportunist bacteria that normally wouldn't harm living tissue.

DNA markers have been developed which do distinguish between nasty and mild strains of the bacteria.

There is also a selective plate test available. Sensitivity, specificity, reliability and repeatability of a seed assay and the tolerance level of the crop require investigation prior to acceptance of a seed health test.

These three seed tests are being compared in the lab and in the field. Results will be available in the winter.

3. Proper crop rotation and isolation for pedigreed seed fields will also protect the health and reputation of Canadian bean seed.

A four-year rotation will be promoted among seed

**Since Saskatchewan can offer large-scale isolation, it is a suitable setting for pedigreed bean seed production on the prairies.**

*(Continued on page 15)*

## ICDC and SIPA Web site launched

The Internet Web site established by a joint committee of ICDC and SIPA is now up and running at [www.irrigationsaskatchewan.com](http://www.irrigationsaskatchewan.com).

This Web site is your farmer-friendly gateway to irrigation information and contacts on the Prairies and around the world.

The Web site is a "work in progress." It will take another couple of years to accumulate all the necessary links.

The SIPA/ICDC committee's objectives for the Web site are that it should be easy to use; relevant to Saskatchewan irrigators; and organized by subject (example: beans, durum, and alfalfa).

The committee will try to include all irrigation sources in the Prairies, North Dakota and Montana.

It is expected that the Web site

will contribute to the timely dissemination of irrigation research to producers.

For the Web site to be effective, SIPA and ICDC ask you to "test drive" the site and let us know your

thoughts about it. Contact Lana Shaw, at [lshaw@agr.gov.sk.ca](mailto:lshaw@agr.gov.sk.ca) or phone (306) 867-5407, Outlook



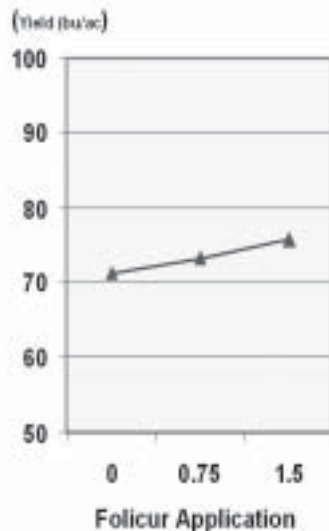
Homepage of the ICDC/SIPA Web site

## Protect your irrigation from fusarium

*(Continued from page 11)*

Where the disease was already present in the soil, there was a substantial problem with quality of durum. The quality results of the fusarium demonstration will be presented in the 2002 ICDC Demonstration Report.

Irrigated acres are not included in the provincial



fusarium survey. We may develop other pockets of fusarium in irrigation districts. It would be valuable to collect samples of cereals from irrigation districts to test for fusarium and develop an ICDC fusarium survey, and include our results in the provincial survey.

Elevator estimates of fusarium-damaged kernels (FDK) are not good enough to determine whether you have a problem with fusarium.

There are other nasty head diseases that look like fusarium and the elevator can't distinguish between them.

Fusarium tests are available from any seed lab for about \$35.

For more information, contact ICDC agrologists.

# Reservoir tillage may boost crop yield and quality

Reprinted courtesy of *IRRIGATING Alberta*, Volume 6, No. 2, Fall 2002

Potato farmers have already found that using a dammer-diker can boost crop yield and give them a more uniform crop.

Now, specialists are testing the concept in other crops.

Warren Helgason, Alberta Agriculture irrigation specialist in Taber, is testing alternatives to the dammer-diker in a variety of crops.

"The dammer-diker scoops a depression into the soil to act as a reservoir for irrigation water," he says. "The reservoirs reduce surface run-off and the erosion that causes. Potato growers have found it gives them a much more uniform, better quality crop because it improves infiltration quite a bit and it really keeps water from running off into low spots.

"More even infiltration means a higher irrigation efficiency, perhaps a grower is able to irrigate less often and they don't get a combination of dry and saturated conditions across a single field.

"There are probably benefits to putting reservoirs in other crops like beans, beets and corn. We're monitoring some fields this year to see how much difference reservoirs make."

Helgason is also testing alternatives to the dammer-dyker.

The propeller-diker is less aggressive than the best known reservoir machine. It's mounted on a toolbar

and ground-driven and it works at an angle rather than square to the ground like the dammer-diker so it just flicks a little soil out to form a depression.

The furrow-diker forms reservoirs in continuous channels by building up the sides of a furrow rather than digging a depression.

Helgason doesn't know which reservoir tillage system will fit particular situations yet. He hopes to have some more information by the end of the season.



Warren Helgason and a dammer-dyker.

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## Bean Production: Challenges and Opportunities

*(Continued from page 13)*

growers in 2003. Isolation required by the CSGA for certified seed is three meters. Geographic isolation from major commercial bean production areas is also desirable.

Since Saskatchewan can offer this large-scale isolation, it is a suitable setting for pedigreed bean seed production on the prairies.

### Conclusions

Canada needs seed production standards that will improve and preserve the reputation of Canadian bean seed, and facilitate growth and progress in the Canadian bean industry

These standards must be both accepted by pedigreed bean seed growers and acceptable to the majority of commercial bean growers and contractors.

The shape these standards take and how they are administered is a subject for continuing discussion and a unique opportunity for leadership in the pulse industry. This is a great opportunity.

If you have any questions or concerns, call Lana Shaw 867-5407 and Deb Oram 796-4651.

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