Irrigation Crop Diversification Corporation

ANNUAL REPORT 2006/07

Irrigation Crop Diversification Corporation

Objects and Purposes of ICDC – *The Irrigation Act, 1996*

The objects and purposes of ICDC are the following:

- to research and demonstrate to producers and irrigation districts profitable agronomic practices for irrigated crops;

- to develop or assist in developing varieties of crops suitable for irrigated conditions;

- to provide land, facilities and technical support to researchers to conduct research into irrigation technology, cropping systems and soil and water conservation measures under irrigation and to provide information respecting that research to district consumers, irrigation districts and the public;

- to co-operate with Minister in promoting and developing sustainable irrigation in Saskatchewan.

Irrigation Crop Diversification Corporation

Board of Directors

The following served as Directors of ICDC in 2006/07:

Name	Position	Irrigation District	Development Area Represented	Election Year (#terms)
Rick Swenson	Chairman	Baildon ID	SEDA	’09 (2)
Randy Bergstrom	Vice Chair	Luck Lake ID	LDDA	’07 (2)
Rob Oldhaver	Alt. Vice Chair	Miry Creek ID	SWDA	’08 (2)
Kevin Plummer	Director	Moon Lake ID	NDA	’09 (2)
Paul Heglund	Director	Vidora ID	SWDA	’07 (1)
Francis Kinzie	Director	Pike Lake	Non-District	’09 (2)
Neil Stranden	Director	SSRID	LDDA	’08 (1)
Kelvin Bagshaw	Director	Luck Lake ID	SIPA rep.	app.
Larry Lee	Director	Macrorie ID	SIPA rep.	app.
John Babcock	Director		SAF rep.	app.
John Linsley	Director		SAF rep.	app.

The Four Development Areas are: Northern (NDA), South Western (SWDA), South Eastern (SEDA) and Lake Diefenbaker (LDDA) as defined in ICDC’s bylaws.

ICDC Directors are elected by District Delegates to the Annual Meeting. Each Irrigation District is entitled to send one ICDC Delegate per 5,000 irrigated acres or part thereof. Two Directors are elected from LDDA, two from SWDA, and one each from NDA and SEDA. Non-District irrigators elect one representative. The Saskatchewan Irrigation Projects Association (SIPA) and Saskatchewan Agriculture and Food (SAF) appoint two directors each to the ICDC board. The ICDC board must, by law, have irrigators in the majority.

Staff 2006/07

By agreement, agrologist and administrative services are provided to ICDC by SAF.

John Linsley PAg	Manager (April 2006 – Jan 2007)	Outlook
Gerry Gross PAg	ICDC Senior Agrologist	Outlook
Korvin Olfert PAg	ICDC Agrologist	Swift Current
Lana Shaw PAg	ICDC Agrologist	Outlook
Brady Sproat AAg	ICDC Agronomy Assistant	Swift Current
Marlene Knopp	ICDC Administration	Outlook
Janice Bennett	ICDC Administration	Outlook

ICDC, Box 609, OUTLOOK SK S0L 2N0 (306) 867-5527

Irrigation Crop Diversification Corporation

Letter of Transmittal

Outlook, Saskatchewan
June 26th 2007
To His Honour
The Honourable Dr. Gordon L. Barnhart
Lieutenant-Governor of the Province of Saskatchewan

Your Honour:

I have the honour to submit herewith the Annual Report of ICDC (Irrigation Crop Diversification Corporation) for the year 2006/07, including the financial statement audited by Lois A. Johnson CMA, all in accordance with *The Irrigation Act, 1996*.

Respectfully submitted by

Rick Swenson
Chairman
ICDC

Irrigation Crop Diversification Corporation

ICDC R&D Program Update
March 2007

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ICDC R&D Program Update
March 2007

1. Strengthen the linkages in profitability and risk between production capacity, processing and market opportunities.

The Prairie Irrigated Crop Diversification Group

By John Linsley, PAg Irrigation Development Branch, SAF

Irrigation has many common interests in the three Prairie Provinces. Research and demonstration (R&D) resources are limited and collaboration between provinces will help to avoid duplication of studies and "reinventing the wheel".

ICDC has been instrumental in keeping the Prairie Irrigated Crop Diversification Group active. A new Memorandum of Understanding (MOU) was signed in 2005. Parties to this MOU are;

- The Canada-Manitoba Irrigation Diversification Centre.
- The Canada-Saskatchewan Irrigation Diversification Centre (including ICDC as industry co-chair).
- The Canada-Alberta Crop Development Initiative and the Crop Diversification Centre South.

The purpose of the MOU is to assist the irrigation industry across the prairies to address economic and environmental issues through;

- The sharing of information on research and development initiatives
- The identification and development of joint projects
- The exploration of joint funding opportunities
- The enhancement of joint visibility through a shared communications plan
- The provision of a mechanism for addressing operational issues that impact on cooperation and
- The coordination of prairie-wide conferences, seminars and workshops.

ICDC, CSIDC and SAF contribute to this sharing of information through their respective websites. You will find access to irrigation information from all three prairie provinces on ICDC's website www.irrigationsaskatchewan.com and one of the priority items for

this group is to make sure that all irrigation-relevant information is made accessible. This is an on-going technology transfer effort.

In 2006 PICDG met twice: March 22nd in Saskatoon, July 12th at Outlook.

PICDG hosted a workshop (70 attendees from three Prairie Provinces), Sustainable Irrigation for the Prairies, in Saskatoon March 22nd and 23rd. Five topics were discussed:

- Provincial irrigation environmental challenges
- Irrigation water quality for food production
- Production sustainability - stewardship and conservation
- Environmentally sustainable livestock development
- Irrigation productivity

Five key issues were debated by participants:

- In the future, what key factors will impact irrigation water quality and quantity?
- From an urban perspective, what will be the most important water related issues for the prairies?
- What should be the short and long-term goals for irrigation with respect to soil and water management on the prairies?
- How do we capitalize on the uniqueness of the prairie climate and our water resources to create agribusiness opportunities in this highly competitive global market?

Four preliminary recommendations came out of the workshop participant discussions:

- Focus on studying water management (water quality and quantity) on a large watershed (i.e. SSRIB) and investigate the impact of treating water, developing BMPs to protect water, improving water use efficiency and educating the public
- Prepare a communication plan to clearly convey to the urban public the value of irrigation and how it can be combined with other uses, i.e. recreational, wildlife preservation
- Conduct more soil and water quality monitoring to study the impact of irrigation and investigate water use efficiency and productivity
- Establish partnerships (federal, provincial, local, industry and producer) to develop guiding policies, regulations and certifications for agricultural products grown in the prairies and create viable agribusiness opportunities.

ICDC is already involved in inter-provincial projects on

- Corn
- Timothy
- Potatoes
- Forage varieties
- On-line weather-based irrigation scheduling (www.imcin.net)
- Sustainable Irrigation for the Prairies.

Some PICDG priorities for the near future include

- Continuing the existing inter-provincial projects

- More closely linking irrigators and their field support staff to market analysts and trade representatives to more efficiently explore market opportunities and ensuring that the relevant information is readily available to prospective processors.

Strawberry Crowns - New Market Opportunity for some Irrigators?

By John Linsley, PAg Irrigation Development Branch, SAF and Jazeem Wahab, PAg, CSIDC

The concept of Northern Vigor™ that made Saskatchewan a leading seed potato producer in North America has proven to be true with strawberry crowns (nursery plants). Strawberry crowns produced in Saskatchewan outperformed Californian stock in commercial fields in California. ICDC, AgriARM, CSIDC, the University of Saskatchewan and two consultants, who have grown and marketed the product, have joined hands in a project aimed at commercializing the production of strawberry crowns under irrigation in Saskatchewan. This project takes advantage of the concept of Northern Vigor™ and favorable soil, water, and climatic conditions in Saskatchewan.

Background:

Research at the University of Saskatchewan showed Northern Vigor™ advantages for strawberry nursery plants, i.e. 'crowns', similar to seed potato:

- Dr. Karen Tanino, James Lokken and Dr. Gary Storey (University of Saskatchewan) carried out strawberry Northern Vigor™ research projects beginning in the 1990's. They demonstrated the agronomic and economic potential of strawberry nursery plants (California varieties) multiplied for a year in Saskatchewan and then used in fruit production in southern California, in competition with the commercial crowns grown in northern California.
- Lokken and Storey also partnered in a private commercial venture that produced 10 acres of Camarosa strawberry crowns in the Pike Lake area in 2000 and sold them into the California market.
- Tanino coordinated strawberry crown production at three dry land AgriARM locations in Saskatchewan. This research demonstrated the superior Northern Vigor™ characteristics of strawberry plants. These Saskatchewan crowns out-yielded local crowns when used for fruit production in southern California.

The Market Opportunity:

This project will place high quality Saskatchewan plants in the hands of some of the best commercial strawberry fruit producers in Florida and California. They will field-test them and provide comparative data in relation to locally produced crowns. The growers have already indicated their willingness to purchase crowns from Saskatchewan and pay a premium if they are convinced of their superior quality with Northern Vigor™. Other growers in these areas will follow these industry leaders.

The Project:

ICDC wants to find out if strawberry crown production is a profitable, new market opportunity for irrigators and, if so, to facilitate its commercialization.

This ICDC project involves extensive collaboration in which:

- ICDC has taken on the role of commercialization consultant, developing a prospective grower group, and is the overall coordinator of project. Two prospective grower meetings have been held. Tours will be organized for this group to view the crop in the field.
- CSIDC (Canada-Saskatchewan Irrigation Diversification Centre), Dr. Jazeem Wahab and Greg Larson are providing management and execution of crown production for export and the collection of field data.
- Lokken and Storey are the consultants providing advice on production and market development in Florida and California. They will also coordinate post-harvest handling, packing and shipping of plants to the target markets.
- Dr. Karen Tanino and Dr. Jill Thomson (University of Saskatchewan) provide advice on agronomics and pest management issues. They also communicate with researchers in target destinations.
- CFIA and SAF provide regulatory advice, field and processing facility inspection, laboratory services and certification. The Provincial Laboratory Supervisor Grant Holzgang is certified to test soil & plant material for nematodes, a phyto-sanitary issue critical to the export of Strawberry Crowns.

In 2006, two Florida varieties (Festival and Treasure) and one California variety (Camarosa) were planted at CSIDC on two thirds of an acre. Plants were established using CSIDC's Water-Wheel Planter. A mustard-based soil fumigant MOSS was used on half the area, leaving the other half un-fumigated. Soil and plant material were tested at the Provincial Lab for nematodes at planting and again at harvest. No nematodes were found. The plants were hilled, hand weeded and daughter plants were hand set. A second plot of the three varieties was fall planted for harvest in 2007. Again, soil and plant material were tested for nematodes. The plants were all straw-covered in October in preparation for winter.

Water quality testing was done by accredited laboratories in the USA. These tests confirmed the absence of nematodes and pathogens (Phytophthora, Fusarium, Rhizoctonia) in the irrigation water. California growers use groundwater for irrigation and need assurance that the surface water used in Saskatchewan is pathogen and nematode free.

Results:

Hail severely damaged the plots at CSIDC on August 23rd. Therefore, no plants were shipped to commercial growers in Florida in 2006. However, 225 Camarosa plants were sent to Oxnard CA and 300 (100 Festival, 100 Treasure and 100 Camarosa - 50 trimmed and 50 untrimmed of each) to Wimauma FL, to be evaluated under research conditions.

The cost/return analysis done by Lokken and Storey showed that a multiplication rate of approximately 12 to15 marketable daughter plants per mother plant would be required for profitability. The 2006 plantings indicated a potential multiplication rate of 25 to 30 providing more than sufficient evidence to justify pursuing this commercialization opportunity aggressively.

In 2007, comparisons will be made between the 2006 spring planted hail-damaged plants and the crops established in 2006 fall and 2007 spring.

ICDC Industry Co-chair at CSIDC

By John Linsley, PAg Irrigation Development Branch, SAF

ICDC has brought the irrigators voice to the Executive Management Committee of CSIDC, a Federal, Provincial, Industry partnership since 1998. CSIDC operates a world class irrigation R&D facility at Outlook and ICDC is part of it.

The partnership is at a critical point in its history as the 1998 Canada Saskatchewan Industry Agreement on Irrigation Development and Crop Diversification is nearing the end of its ten year term. A new agreement has been drafted and is in the process of review by the partners.

Kevin Plummer (Moon Lake ID) was the ICDC industry co-chair in 2006.

The Executive Management Committee met three times in 2006 and approved the 2006 Annual Workplan. A hailstorm on August 23rd severely damaged crops and limited the amount of useful data, a major disappointment. This is the first time in over 30 years that hail has wreaked this kind of havoc on the site.

ICDC is a major contributor to the R&D work at CSIDC notably in

- the development of the Crop Varieties for Irrigation publication
- corn production and variety testing in partnership with the Alberta Corn Committee
- timothy varieties in collaboration with Dr Bruce Coulman
- strawberry crown commercialization in collaboration with the U of S and marketing consultants
- Field day organization.

CSIDC offers ICDC a facility and proven staff expertise to carry out irrigation R&D work. A CSIDC publications committee is working on the development of farmer-friendly fact sheets for posting on the websites with relevant recommendations from the research work.

ICDC is administering nine Research Support Agreements for work at CSIDC in 2006.

Most significant to this year's achievements was the adoption of ProGrid® Evaluation Solutions as a method of prioritizing work at CSIDC. Implementation of this system is underway in the winter of 06/07. ICDC is committed to using this system to prioritize its R&D program (within the ICDC Strategic Plan) as part of the CSIDC partnership.

Investment Attraction

By John Linsley, PAg, Irrigation Development Branch, SAF

The opportunity for irrigation expansion exists in Saskatchewan with underutilized infrastructure (i.e. the Gardiner Dam), untapped water and adjacent irrigable land, and an aging generation of farmers looking to retire in the next ten years. Furthermore, ICDC understands that irrigation water on the North American continent is depleting and pumping costs are becoming more expensive, in the case of groundwater; water is being bid away from agriculture by urban and environmental interests in the case of both ground and surface water. The opportunity to attract investment and immigration to new irrigated areas with reliable and relatively inexpensive land and water is increasing.

SAF has been involved in immigration attraction to the hog and dairy industry and to farming in Saskatchewan through the Saskatchewan Immigrant Nominee Program. ICDC has been able to add irrigation to the province's immigration attraction portfolio. Real Estate Companies and consultants are active in immigration attraction to Saskatchewan. The Last Cattle Frontier initiative in the Yorkton area has targeted immigration from Alberta. See www.lastcattlefrontier.com.

ICDC is working with SAF, the Saskatchewan Immigrant Nominee Program and with MidSask REDA around Lake Diefenbaker to align its resources for investment attraction and immigration. SIPA's and ICDC's website www.irrigationsaskatchewan.com is being upgraded and redesigned to provide the information required by prospective investors and immigrants. The website now includes irrigated land listings among other upgrades. Discussions are held regularly with prospective immigrants and with immigrant agencies.

The Mid Sask REDA is working on the development of a Lake Diefenbaker regional plan, its WaterWolf project (http://www.waterwolf.org/) including a GIS database of resources and opportunities around tourism, irrigation, subdivisions and others. SAF's Irrigation Development Branch participates in this initiative.

Since 2000 approximately 5% of the irrigated land around Lake Diefenbaker has been purchased by people moving from Alberta. This trend will continue and grow if irrigation "infill" and expansion plans currently being studied under The Canada Saskatchewan Water Supply Expansion Program (CSWSEP) are implemented. Five CSWSEP studies are underway

- Westside Irrigation Project (report released in 2006 for over 300,000 acres)
- Qu'Appelle South Irrigation Project
- SSRID
- Luck Lake ID
- Riverhurst ID.

ICDC and SIPA irrigators participated in Federal consultations, February 8th in Outlook. The Brace Centre for Water Resources Management from McGill University organized and facilitated the workshop for PFRA. Phase I in 2005 of the project identified constraints to sustainable irrigation; Phase II consisted of eight workshops across Canada to validate these constraints and identify potential roles for governments, producers and other industry partners to address these constraints. Top constraints discussed were:

- inadequate infrastructure to create a critical mass of irrigators (water, roads, three phase power, transportation, community infrastructure, etc)
- low current farm-level economic returns from many irrigated production alternatives
- shortage of available investment capital at reasonable interest rates
- others including: limited market development and value-added opportunities; apparent inconsistency in the commitment of federal and provincial governments to a long-term integrated irrigation water strategy for Saskatchewan; shortages of labor skilled in irrigated agriculture; barriers to entry and expansion for producers.

Workshop results showed considerable variation across Canada. The report will assist PFRA to develop an irrigation-based economic development partnership strategy for Canada.

ICDC continues to develop an investment attraction and immigration strategy around irrigation in the Lake Diefenbaker area.

Irrigation Economics and Agronomics Saskatchewan 2006

In order to strengthen the linkages in profitability and risk between production capacity, processing and marketing opportunities, one has to know the costs of production and probable returns to labor and management. So, each year ICDC updates its irrigated crop budget guidelines. They are used by irrigation farmers for crop planning and by economists for irrigation economic studies.

The publication is a critical piece of information in monitoring the health of the irrigation sector in Saskatchewan. The net returns to labor and management have shown a decline in the past three years due to increased operating costs and decreased crop prices.

Six cereal crops, five oilseeds, six pulses, eleven forages and two potato budgets are included in the publication. The budgets are posted on the website www.irrigationsaskatchewan.com in “Find Out About” under “Production & Processing” and the respective crop or under “ICDC” and “ICDC Publications”.

2. Enhance the production of profitable, sustainable irrigation based crop and livestock products.

Irrigation Scheduling with your computer (IMCIN)

By Garth Weiterman, PAg, Irrigation Development Branch, SAF, and Terry Hogg, PAg, CSIDC

ICDC continued working with Alberta Agriculture's Irrigation Division staff to field check a decision support system based on climate data. This system, known as Irrigation Management Climate Information Network, (IMCIN) utilizes the nearest meteorological station data to assist with irrigation scheduling. The meteorological (met) data is used in the Alberta Irrigation Management Model, AIMM, and with input by the producer helps determine appropriate times for irrigating. The model requires input on seeding date and beginning soil moisture content. It then tracks moisture use based on the met data. The moisture use curve can be corrected to measured values if desired throughout the season. AIMM will also predict moisture use for an upcoming period based on historic record for the selected met site. This allows a producer to forecast an irrigation requirement.

Irrigated crops were monitored for moisture use utilizing tensiometers, rainfall and irrigation rain gauges, gravimetric soil moisture, and in field moisture determination by the feel method. Irrigation timing and amounts were controlled by the co-operator and the water use tracked with the model.

As mentioned a number of crops were monitored. These included one regional variety site where cereals, canola, flax and peas were being grown.

Initial data entry into the program does take some time, probably in the neighbourhood of at least half an hour per site. However, once this is completed, updates can be entered very quickly and you begin to see the power of this new tool. Seeding date and initial moisture content for the soil type are required. Gravimetric soil moisture would be recommended, however, this would be impractical for most producers. The more accurate your determination of the initial soil moisture content, the more reliable the moisture use curve will be. The program allows periodic correction of the moisture content, which was done three times during the season.

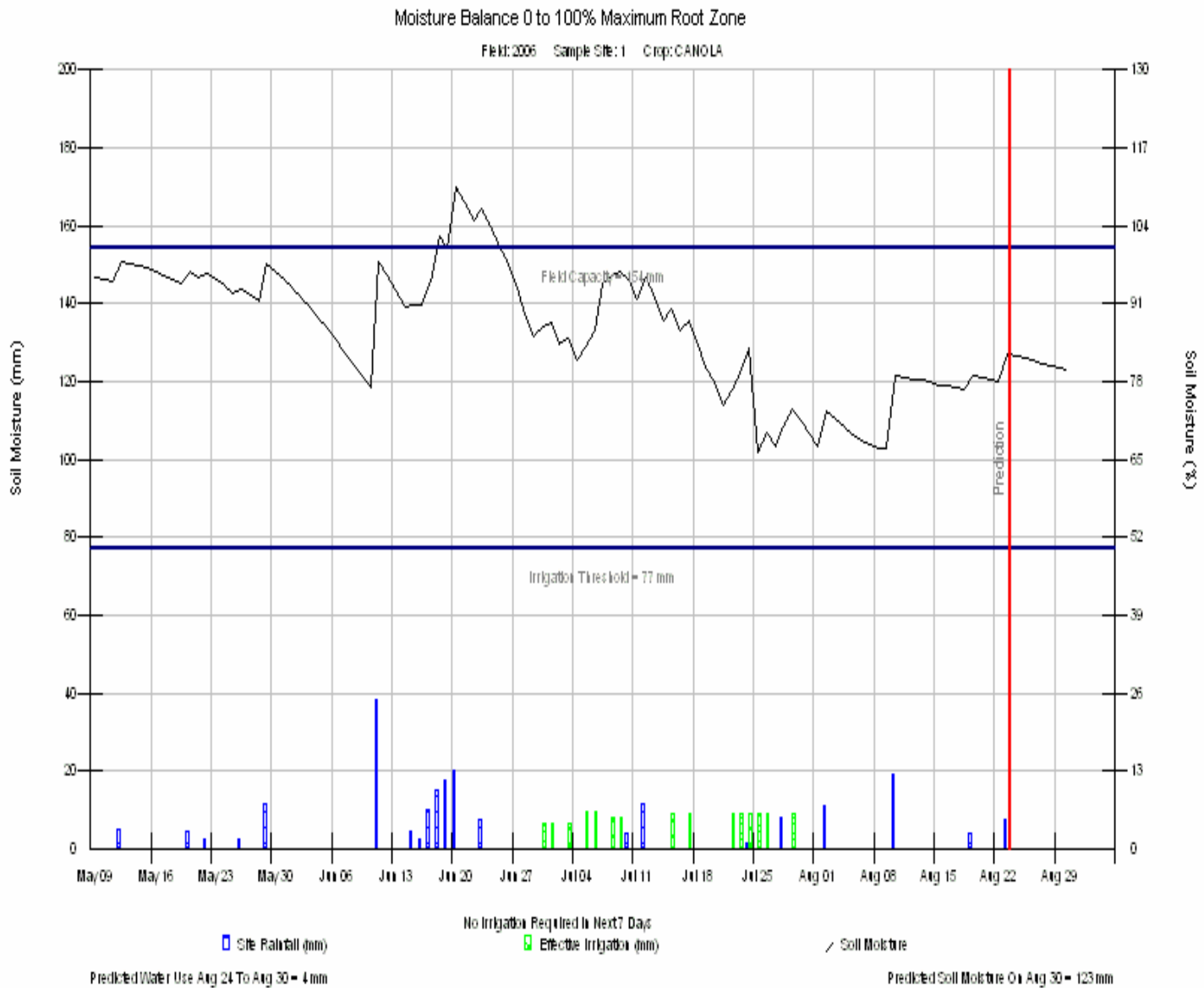
One of the required data entry fields is information about your irrigation system. All input fields are in metric units so this may cause some consternation. Some trial and error, using drop down calculators, made this section workable, even for those of us from the old school. Some other optional inputs are details about your pump and drive unit. This may be a good place to keep those details for future reference. Field operations and inputs such as fertilizer and herbicide applications can also be recorded.

Moisture use within the root zone is modeled based on commonly agreed rooting zone depths. One of the most useful graphical presentations of the data is to look at the entire root zone, which is expressed in both volume and percentage basis. Irrigation and rainfall to keep the use curve above the allowable depletion line for the crop should allow for

maximum yield. All weather or irrigation information can also be depicted in tabular form. This is useful when looking at the details of moisture use.

The moisture use depicted below is from a co-operators canola field. As can be seen, rainfall amounts were substantial in June. Irrigation amounted to 155 mm and kept the crop within the mid-range of soil moisture storage, with irrigation ceasing July 30. Rainfall in early to mid August and again in September (not shown) provided the crop with plenty of moisture to mature. The program predicted crop use reasonably well when compared to the gravimetric data.

Evapotranspiration total for this crop was calculated to be 321 mm to August 23. The site received 227 mm of rainfall and irrigation amounted to the additional 155 mm mentioned above. Yields were very good, which should be expected as the moisture level in the field did not go below 65%.


Moisture Balance 0 to 100% Maximum Root Zone
Field: 2006 Sample Site: 1 Crop: CANOLA
Soil Moisture (mm)
Soil Moisture (%)
Field Capacity = 154 mm
Irrigation Threshold = 77 mm
Prediction
200
180
160
140
120
100
80
60
40
20
0
130
117
104
91
78
65
52
39
26
13
0
May 09
May 16
May 23
May 30
Jun 06
Jun 13
Jun 20
Jun 27
Jul 04
Jul 11
Jul 18
Jul 25
Aug 01
Aug 08
Aug 15
Aug 22
Aug 29
No Irrigation Required In Next 7 Days
Site Rainfall (mm)
Effective Irrigation (mm)
Soil Moisture
Predicted Water Use Aug 24 To Aug 30 = 4 mm
Predicted Soil Moisture On Aug 30 = 123 mm

The 2006 growing season was again challenging. There were four days when consumptive use hit 7 mm (0.275") per day. Overall the AIMM program provided reasonable agreement with what we observed for consumptive use in the field. There were differences with some sites slightly over or under estimating use. These differences could be due to the soil texture profiles chosen to run in the program (something for which we need to gain a better understanding). We continue to collaborate with our counterparts in Alberta and are actively working to see more Saskatchewan stations added for 2007. This would allow producers in other parts of the province to use the program and assist them with their irrigation decisions. Take the time to check out the IMCIN web site located at www.agric.gov.ab/app49/imcin/index.jsp to learn more about this powerful tool.

ICDC's Irrigated Corn Survey 2006

By Korvin Olfert, PAg, Irrigation Development Branch, SAF

This year was certainly a good year for corn, above average, but not the best ICDC has recorded. We had significant Corn Heat Units (CHUs) accumulated in 2006 but in most cases 2003 was hotter. None of the 21 weather stations insured by Saskatchewan Crop Insurance fell below the threshold of 2100 CHUs in this, its third year of the corn heat unit pilot project. The liability paid out was restricted to yield losses from unusual weather events (hail), or wildlife damage.

ICDC's 2006 corn demonstration included forty two sampling sites with twenty three varieties ranging from early 2000 CHU to full season 2650 CHU varieties. The real difference is the certainty of maturing 90 bushels per acre of grain with the early one, while having the potential of producing 150 bushels per acre from the late ones. The good news is that most 2006 corn focused on 2200 CHU varieties for silage production. The objective in Saskatchewan is to reach the silking stage by August 1st. This year we achieved that on all of the fields we sampled. In addition to that we had an extended frost free period until Sept 19th. Any sites that squeaked by that first frost were ended the first week in October. Normally, everyone ensiles their corn the same week, which is sometime after that first hard frost. This year however, we had sufficient development that the plant had dried down sufficiently to silage before the frost. The Cypress Hutterite Colony started silaging their corn Sept 3rd. In fact, several of the producers ensiled their corn at a lower than optimum moisture content (down to mid 50%s), simply because it dried sooner, and quicker, than everyone was expecting.

During the first week of August, Table 1 and Table 2 shows the corn leaf tissue analysis and field observations that describe 42 different corn site observations. All this information is available, but is summarized here to describe each of the ten grower's experiences. Silk stage was achieved in all of the corn fields by this time. Blister kernels were observed at the Cypress and Downie Lake Hutterite Colonies near Maple Creek on August 2nd. At this time the corn field height ranged from seven and a half feet for the shortest variety to over ten feet. Some of the fields were below the target of 30-

32,000 plants per acre. The desirable concentration of 2.75% nitrogen in the leaf tissue after silk was demonstrated in 68% of the samples. The micro nutrient tissue concentration in the corn leaf was higher where soil organic matter is higher and especially where manure is regularly incorporated. A single annual large manure application is not a sufficient source of nitrogen for corn, as it is not all immediately available. Additional nitrogen fertilizer will still need to be applied. Consistent perennial manure applications will reduce the need for commercial fertilizer. Potash, copper, zinc and boron continue to raise nutrient management questions.

Table 1. Corn Leaf Tissue Levels August 2-4, 2006

	Macro Nutrients						Micro Nutrients				
	N	P	K	S	Ca	Mg	Cu	Fe	Mn	Zn	B
Cypress HC	2.72	0.38	1.86	0.21	0.57	0.18	10.7	125.3	75.2	42.8	21.7
Downie Lake HC	2.71	0.32	2.02	0.30	0.56	0.34	14.0	151.3	56.0	24.4	12.2
Estuary HC	2.85	0.27	2.23	0.20	0.54	0.18	14.7	100.5	35.2	34.2	10.2
Kim Watts	2.45	0.26	2.05	0.19	0.54	0.30	13.5	105.3	46.5	30.4	9.1
Rick Swenson	3.26	0.38	2.33	0.23	0.56	0.29	10.0	140.6	56.0	18.0	7.1
G & T Follick	2.96	0.31	1.89	0.24	0.82	0.51	16.5	91.8	93.5	25.1	8.8
C & R Nadeau	2.89	0.30	2.63	0.22	0.50	0.34	13.7	112.3	61.2	24.2	7.1
Ian Phillips*	2.36	0.25	2.26	0.17	0.63	0.50	10.3	104.2	57.4	24.4	7.1
P,R & J Ens	3.12	0.34	1.93	0.23	0.71	0.53	7.6	196.4	84.6	21.1	5.9
Sufficient	2.75	0.24	1.75	0.20	0.20	0.20	8.0	20.0	25.0	25.0	6.0
Marginal	2.25	0.14	1.25	0.10	0.10	0.10	2.0	20.0	15.0	12.5	2.5

* Fertilized with only manure.

Table 2. Corn Field Observations August 2-4, 2006

	CHU Rating	Stage	Height (Inches)	Population (#/acre)	Soil Texture
Cypress HC	2450	Blister	102	27,250	Fine Sandy Loam
Downie Lake HC	2350	Blister	103	30,500	Fine Sandy Loam
Estuary HC	2450	Pollen Dropped	113	31,500	V. Fine Sandy Loam
Kim Watts*	2450	Pollen Dropped	106	36,000	Light Loam
Rick Swenson*	2150	Pollen Dropping	102	31,143	Loamy Sand
Ryan Gibson	2150	Pollen Dropping	92	32,000	Loamy Sand
G & T Follick	2200	Silk	111	27,750	Sandy Loam
C & R Nadeau	2200	Silk	111	28,250	Clay Loam
Ian Phillips	2200	Silk	97	30,000	Sandy Loam
P,R & J Ens*	2150	Starting to Silk	98	36,583	Sandy Loam

* represents an average of several fields

The corn silage results are shown in Table 3. Most of the corn grown in the province is intended for silage and competes well with cereal silage. Great corn cob development propels corn silage well past the optimum cereal silage in total digestible nutrients. On a dry matter basis, our corn silage objective is to deliver over 70% TDN. Corn silage in

2006 averaged 67% TDN similar to 2005 which compares to about 62% for barley. However yields were higher than barley. Yields ranged from 11 to 22 tons per acre with an average yield of 18 tons per acre at 65% moisture. The lower yielding ones were the ones that received hail. There was a severe hail storm that went through Outlook on August 23rd and damaged not only the Alberta Corn Committee plot at CSIDC but also several of our cooperator fields as well. It stripped all of the leaves off and left impressions on the cob. This allowed a number of diseases in the cobs and opening up a cob a couple weeks later was an interesting experience. However, in spite of all the visual damage, the corn yielded surprisingly well (11-13 t/a). Only 15% of the dry matter is in the leaves on a mature plant and that is what was removed and left on the ground. Any additional yield loss was from the loss of potential, simply not packing that last little bit of starch into the kernel. However, the lesson we learned was not the yield losses, but rather the yield that was kept. All of the surrounding crops were pounded flat (zero yield) and the corn still yielded 11-13 t/a. Of course, no hail is preferable, but corn stands up comparatively well to hail.

Table 3. Corn Silage Quality Summary 2006

		Moisture	CP	Mineral (%)					NDF	ADF	TDN
	CHU	(%)	(%)	Na	P	K	Ca	Mg	(%)	(%)	(%)
Cypress HC	2450	70.7	8.2	0.02	0.33	1.49	0.26	0.15	45.5	27.9	69.3
Downie Lake HC	2350	61.2	8.0	0.02	0.24	1.44	0.28	0.25	51.8	30.3	68.1
Estuary HC	2450	67.7	8.5	<0.01	0.18	1.30	0.28	0.18	45.7	27.5	69.5
Kim Watts	2450	50.8	7.2	0.02	0.19	1.17	0.25	0.23	59.0	35.3	65.8
Rick Swenson	2150	64.1	9.0	0.01	0.36	1.58	0.22	0.23	54.8	33.6	66.6
G & T Follick*	2200	51.2	7.5	<0.01	0.25	1.12	0.15	0.22	58.9	36.1	65.4
C & R Nadeau*	2200	63.4	8.4	<0.01	0.21	1.59	0.39	0.31	56.2	35.9	65.5
Ian Phillips	2200	59.2	7.5	<0.01	0.19	0.90	0.19	0.26	61.0	38.4	64.4
P,R & J Ens	2150	63.6	8.1	n/a	n/a	n/a	n/a	n/a	48.3	23.0	69.3
Typical Corn Silage	**2006**	**61.3**	**8.0**	**0.02**	**0.24**	**1.32**	**0.3**	**0.2**	**53.46**	**31.99**	**67.4**
	2005	66.5	8.1	0.01	0.23	1.12	0.2	0.2	53.40	29.85	66.8
	2004	66.5	9.0	0.01	0.25	1.37	0.2	0.2	57.00	32.95	63.4
	2003	67.0	8.6	0.01	0.23	1.24	0.2	0.2	44.40	26.00	70.8
	2002	64.3	8.0	0.02	0.21	1.01	0.1	0.2	52.40	28.90	68.0
	2001	64.0	7.9	0.03	0.24	1.42	0.2	0.3	48.20	26.30	71.0
	2000	65.0	8.3	0.02	0.22	1.16	0.2	0.2	47.00	27.00	70.0

* Received significant hail.

Corn grain (Table 4) samples, collected, shelled and analyzed in the first week of September, indicated that 54 pounds per bushel was typical at that date. There was sufficient time until the first hard frost to bring this up even higher. The average grain yield estimate of 104 bushels per acre increased from 80 b/a in 2003 but was much improved over 38 b/a in 2004. The peak estimates were lower than in 2003 however

more of the cooperators had good bushel weights and higher kernel numbers with very few poor samples. This is one of those years to combine corn.

Table 4. Corn Grain Summary 2006

		Bu Wt (lbs/bu)	Kernels (#/cob)	10 Cob Grain (g)	Est Yield (bu/a)	Stalk Hgt (inches)
Cypress HC	2450	60.1	506	1169	114	102
Downie Lake HC	2350	59.6	492	1228	128	99
Estuary HC	2450	53.5	533	952	119	114
Kim Watts	2450	54.9	518	927	125	103
Rick Swenson	2150	52.9	469	780	98	109
Ryan Gibson	2150	59.5	447	1153	149	95
G & T Follick	2200	50.5	457	655	87	99
C & R Nadeau	2200	43.3	493	592	83	107
Ian Phillips	2200	57.9	394	653	64	105
P,R & J Ens	2150	43.9	397	409	71	106
Average		53.6	471	852	104	104

ICDC had the privilege of once again working with Monsanto, Keg Agro and a couple producers to compare varieties. Table 5 shows the variety comparisons trials we sampled. Care should be taken not to compare between the locations since they received different amounts of heat, but rather compare within the locations. The CHUs received were those from the closest weather station (which may not be all that close) on Sept 8th and may not reflect any local microclimates. These numbers were based on ten cobs that were taken the first week in September. The cob circumference is an average of the ten. There is always an even number of kernels in the circumference of any one cob. The cob length was estimated in those cobs with bird damage. Some of the fields around Outlook had significant bird damage. Some people have suggested that the cores of the cobs of some varieties were larger than others. So this year ICDC started measuring the core diameters once the kernels had been taken off. Again these are averages of ten cobs. Not all kernels dent, some of the varieties are flint varieties. Any time there is a milk line observed, but no dent, there probably will not be any dent. The best variety comparison is the randomized replicated Alberta Corn Committee plots and these should be used for varietal recommendations.

For the fourth year the Alberta Corn Committee (ACC) tested both grain and silage corn varieties at CSIDC in Outlook (2363 CHU). These tests are also located at Bow Island (2543 CHU), Vauxhall (2359 CHU), Brooks (2353 CHU), Lethbridge (2326 CHU) and Lacombe (1850). Canadian Corn Companies paid $140.00 for each entry. Sponsors include: Thompson LTD (Hyland Seed), Maize Technologies Inc (MTI), Maizex Seeds Inc. (Maizex), Monsanto (Dekalb), Pride Seeds, Quebec Federated Coop (Elite), PIONEER HI-BRED, and Syngenta (NK Brand Seeds). Silage entries were harvested for whole plant yield and moisture content. Grain varieties were harvested for grain yield, moisture content and test weight. In both cases, great cob development is required to deliver top results. The corn heat unit rating of the 37 silage and 11 grain corn entries was from 2000 to 2700 CHU. This range brackets the coolest to warmest summers

experienced at Outlook in the last forty years. Brian Beres, heads the Agronomy Unit, Lethbridge Research Centre, and is the Corn Hybrid Trial Coordinator for the Alberta Corn Committee and Terry Hogg supervised the corn trials at CSIDC in Outlook.

CSIDC topped all the ACC corn test sites in 2003, but had the lowest yields of all the test sites in 2006 because of damage received from a severe hail storm on August 23, 2006. The silage plots averaged 15 tons per acre (65% moisture) and the grain plots averaged 120 bu/a. The ACC website at www.albertacorn.com displays the detailed corn variety comparisons. ICDC supports the independent irrigated variety testing at CSIDC and in Alberta. The 2005 Manitoba Corn Hybrid Performance Trials and variety are located at: http://www.gov.mb.ca/agriculture/crops/specialcrops/bii03s06.html. While there check out Pam de Rocquigny's excellent "The Corn Cob" newsletter.

The list of herbicide resistant corn varieties adapted to Saskatchewan increased again in 2006. The Roundup Ready Corn is also now marketed by several Canadian corn companies. If you are considering a herbicide tolerant corn hybrid, compare the entire seed and herbicide program costs of a conventional program to a herbicide tolerant program. Good weed control really pays in a corn field. Also look at your crop rotation and the future crops that may be added on your best land as some of the conventional herbicides have carryover effects. Hybrid corn selection requires comparison of yield potential, plus attention to maturity, agronomic traits, reliability and cost. Sweet Corn and Corn Maze development may be opportunity crop for any irrigated corn grower. Contact ICDC for more information on Corn, the energy crop.

Table 5. Corn Variety Comparisons

Location	Variety	CHU Rating	CHU Rc'd	Cob Circum (Kernels)	Cob Length (Kernels)	Kernels (#)	Est Grain Yield (bu/a)	Bu Wt (lbs/bu)	Core Dia (mm)	Stage	Stalk Height (Inches)
Kim Watts	Maizex 850 RR	2650	2311	16	39	590	114	53.3	26	10% Milk Line	105
	Maizex LF755RR	2350	2311	16	29	441	122	57.1	27	50% Milk Line	101
	PH 39H83 RR	2450	2311	16	34	523	140	54.3	25	33% Milk Line	102
Estuary HC	DKC 33-10	2450	2311	14	37	511	115	52.1	26	Dented, 25% Milk Line	111
	PH 39H86	2450	2311	16	36	554	123	54.9	26	Dented, 25% Milk Line	116
R. Swenson	DKC 26-78	2150	2239	16	29	442	106	51.9	29	Dented, 10% Milk Line	103
Monsanto	NC 2701NRR1	2375	2239	16	32	528	104	52.8	25	Dented, 25% Milk Line	99
FACT Plot	DKC 27-12	2250	2239	14	34	451	92	56.9	24	No Dent, 10% Milk Line	110
	DKC 27-15	2300	2239	14	33	469	99	55.1	25	No Dent, 10% Milk Line	111
	DKC 30-02	2375	2239	14	35	473	84	49.3	25	Dented, 10% Milk Line	107
	HL 27-44	2300	2239	12	35	439	111	54.3	24	Dented, 10% Milk Line	113
	PH 39T67	2200	2239	16	31	477	91	50.0	30	No Dent, Firm Dough	118
Keg Agro	PH 39P78	2050	2360	14	20	293	83	53.4	23	Dented, 20% Milk Line	105
Demo	PH 39T71	2250	2360	14	19	264	63	52.0	27	Starting to Dent	120
Plot	PH 39B93	2150	2360	16	20	309	86	47.2	27	Starting to Dent	118
	PH 39J26	2500	2360	14	25	334	111	52.6	27	No Dent, 10% Milk Line	115
	PH 39T67	2200	2360	14	29	409	70	48.6	27	Starting to Dent	125
	PH 39T66	2250	2360	14	24	357	82	50.3	26	Starting to Dent	119
	PH 39F59	2200	2360	16	18	270	75	50.3	25	Dented, 20% Milk Line	126
	PH 39M27	2150	2360	14	17	249	84	56.8	26	Dented 25% Milk Line	120
	X4V217T	?	2360	14	17	230	127	52.2	22	Starting to Dent	107
	PH 39F45	2000	2360	14	19	245	111	57.8	27	No Dent, 25% Milk Line	110
	X4T962	?	2360	16	20	301	104	47.1	24	Starting to Dent	119
	PH 39H83 RR	2450	2360	16	25	394	118	45.4	24	Starting to Dent	123
	PH 39M26	2100	2360	16	27	446	84	55.2	27	Starting to Dent	118
P,R & J Ens	DKC 26-78	2150	2230	16	26	404	87	46.3	28	Starting to Dent	104
Monsanto	DKC 30-02	2375	2230	14	32	417	66	37.6	26	Firm Dough	108
FACT Plot	PH 39T67	2200	2230	14	28	380	72	39.6	28	Starting to Dent	113
	DKC 27-12	2250	2230	14	29	372	59	50.1	25	Firm Dough	103
	NC 2701NRR1	2200	2230	16	25	382	70	39.2	24	Starting to Dent	98
	HL 27-44	2300	2230	14	32	428	74	50.5	24	Starting to Dent	108

Osler Dairy Forage Center

By Korvin Olfert, PAg, Irrigation Development Branch, SAF

In the spring of 2003, a randomized replicated trail was established at Osler with 14 different varieties of alfalfa and 14 different species and varieties of grasses. The purpose of this trial was to highlight the potential production of forages under irrigation with an intensively managed system and to compare how the varieties responded to this intensive management. Much of the forage information currently available is collected from plots with less intensive management (1 or 2 cuts) while what the dairy producers typically utilize is 3 cuts. This plot was to form a linkage between the dairy industry and the missing forage information. The soil at this site is a Sandy Loam with irrigation straight off the North Saskatchewan River. This site was cut three times during 2004 (June 22, Aug 5, and Oct 6), three times during 2005 (June 24, Aug 10, Oct 6), and three times during 2006 (June 14, July 20, and Sept 8). No data was collected from the third cuts in 2005 and 2006. Yields for the alfalfa were assumed to be 1.3 t/a for all varieties for these cuts. Fertility started in the spring with 100 lbs actual N on the grasses, and 50 lbs actual P over the whole plot. The alfalfas also received 23 lbs actual N from the P application. After first cut and second cut, the grasses were fertilized again with 100 lbs actual N. The yield results from 2006 for the alfalfas are shown in Table 1, and the grasses in Table 2. The quality analysis is shown on Table 3 for the alfalfas and Table 4 for the grasses.

Table 1. Alfalfa yields (t/a) for 2006.

Alfalfa	Cut 1	Cut 2	Total 2006	3 Yr Total*	% of Beaver
AC Nordica	2.1	2.3	4.4	16.1	112%
PS8925MF	2.0	2.6	4.6	15.0	104%
54V54	2.1	2.1	4.2	14.9	103%
AC Longview	1.8	2.5	4.3	14.8	103%
Ameristand	2.0	2.4	4.4	14.8	103%
Hornet	1.7	2.5	4.2	14.7	102%
Gala	2.0	2.2	4.2	14.6	101%
PS2065MF	1.7	2.3	4.0	14.6	101%
53Q60	2.1	2.4	4.5	14.5	101%
Geneva	1.7	2.3	4.0	14.4	100%
Beaver	2.1	2.5	4.6	14.4	100%
Stockwell	2.0	2.2	4.2	14.4	100%
AC Grazeland	2.0	2.1	4.1	14.3	99%
LSD	n/a	n/a	n/a	n/a	
CV	n/a	n/a	n/a	n/a	

* Values are rounded to one decimal place. Third cut was assumed to be 1.3 t/a for all varieties. There was also a significant block interaction in the statistics.

Table 2. Grass yields (t/a) for 2005.

Grass	Cut 1	Cut 2	Total 2006	3 Yr Total	% of Bravo	
Common Tall Wheat Grass	4.3	2.1	6.4	19.8	116%	A
Paddock Meadow Brome Grass	4.7	2.4	7.1	18.8	111%	AB
AC Parkland Crested Wheat Grass	4.5	2.4	7.0	18.2	107%	AB
AC Knowles Hybrid Brome Grass	4.1	1.9	6.0	18.1	106%	AB
Chief Intermediate Wheat Grass	4.0	1.9	5.9	17.1	101%	BC
Bravo Smooth Brome Grass	3.9	2.4	6.4	17.0	100%	BC
Garrison Creeping Foxtail	4.9	2.0	6.9	16.9	99%	BC
Revenue Slender Wheat Grass	3.1	1.1	4.2	15.3	90%	CD
Joliette Timothy	2.6	1.9	4.5	13.8	81%	D
Aurora Timothy	2.9	1.7	4.6	13.6	80%	D
Arthur Dahurian Wild Rye	2.5	1.4	3.9	13.3	78%	D
Arctic Orchard Grass	2.8	2.1	4.9	13.2	78%	D
Kay Orchard Grass	2.9	1.9	4.7	9.4	55%	E
Courtney Tall Fescue	3.0	1.7	4.7	8.3	49%	E
LSD	0.9	1.0	1.2	2.67		
CV	16.7	36.0	15.2	12.3		

Table 3. Quality analysis for the Alfalfa plots for first cut.

Alfalfa	CP	ADF	NDF	RFV
PS2065MF	23.9	27.2	34.4	184
53Q60	23.4	28.6	33.9	183
Geneva	23.2	28.2	35.1	179
AC Nordica	23.7	29.3	35.7	175
Ameristand	23.4	29.4	36.1	171
AC Longview	22.4	30.8	36.7	166
Gala	21.8	30.8	36.9	165
54V54	22.2	30.1	37.6	163
Beaver	22.4	30.8	38.0	162
Stockwell	21.6	30.1	37.8	162
Hornet	22.7	30.8	37.9	161
PS8925MF	21.0	31.6	38.8	154
AC Grazeland	21.4	31.7	39.7	151
LSD	n/a	n/a	n/a	n/a
CV	n/a	n/a	n/a	n/a

Table 4. Quality analysis for the Grass plots for first cut.

Grass	CP	ADF	NDF
Aurora Timothy	21.5 bcde	29.3 ab	55.4 a
Joliette Timothy	23.5 abc	28.9 a	55.4 a
Arctic Orchard Grass	25.2 a	30.2 abc	56.3 a
Courtney Tall Fescue	22.1 bcde	31.8 cde	57.2 ab
Kay Orchard Grass	22.7 abcd	32.6 cdef	59.0 bc
Garrison Creeping Foxtail	21.5 bcde	33.2 def	59.4 bc
Bravo Smooth Brome Grass	23.8 ab	33.4 def	59.5 bc
Chief Intermediate Wheat Grass	23.5 abc	31.6 bcd	59.6 bcd
Arthur Dahurian Wild Rye	21.0 cde	31.4 bcd	59.9 cd
Paddock Meadow Brome Grass	20.0 e	34.7 f	60.2 cd
AC Knowles Hybrid Brome Grass	20.1 de	34.2 ef	61.0 cd
Common Tall Wheat Grass	21.7 bcde	34.8 f	61.1 cd
Revenue Slender Wheat Grass	22.0 bcde	32.6 cdef	62.1 d
AC Parkland Crested Wheat Grass	21.8 bcde	34.0 ef	62.1 d
LSD	2.64	2.39	2.61
CV	8.3	3.1	5.2

Alfalfa Results

All of these are tap rooted varieties which generally out yield creeping rooted varieties under hay production, although there are a few varieties with a branched tap root. Creeping rooted varieties are better suited for pasture as they tolerate trampling better. There was no significant difference between the alfalfa yields since there was a significant block interaction. These include the top varieties of a number of seed companies and all are quite acceptable. As a group they are all high yielding (over 4 t/a) and fast regrowing.

In first cut each of the plots were individually sampled for quality (CP, NDF, and ADF). Again there was no significant difference between the varieties with a significant block effect. The average RFV for first cut was 167, with second cut lower at 157. Third cut would have been similar to the first cut.

Beaver was included in the trial as a standard to compare the others to. It is an old variety that has been used as a standard for many years and this year did very well. **Beaver** is quite winterhardy and winterkill was noticed in some of the plots. This site is located north of Saskatoon near Osler and can experience cold conditions.

Right at the top for yield was **AC Nordica**. **AC Nordica** is a SeCan variety distributed by Prairie Seeds. It has a branched tap root, and is supposed to be very winterhardy.

Geneva and **Gala** are two Proven Seed multi-foliate tap rooted varieties. Both do quite well, however here **Gala** out yielded **Geneva**. **Gala** is supposed to be a bit more winterhardy with a fall dormancy rating of 2 compared to **Geneva's** rating of 4 and this is starting to show up. **Geneva** is supposed to be faster at regrowing. Second cut yielded much higher than first and whereas for **Gala** both were very similar. **Ameristand** is the other Proven Seed variety. It has a deep set crown and is supposed to tolerate heavy traffic better than others. **Ameristand** has a fall dormancy rating of 2 which is very winterhardy. **Ameristand** had very high quality with the highest average RFV and CP for the two cuts this year.

PS8925MF and **PS2065MF** are two Pickseed (PS) multi-foliate (MF) varieties. Both are quickly regrowing varieties with the **PS8925MF** out yielding **PS2065MF** this year. **PS8925MF** has a slightly higher fall dormancy rating (3.7 vs. 3) so over time winterkill could be expected to lower the yield potential. **PS8925MF** had the lowest quality with the lowest average RFV and CP, whereas **PS2065MF** had the highest RFV in first cut. **AC Grazeland**, also distributed by Pickseed, was bred to have a lower initial rate of digestion and is the first alfalfa to have a lower bloat incidence. Although it is not completely bloat safe, with proper management it can be successfully grazed. This also shows up in that **AC Grazeland** had the highest NDF in first cut which made it the lowest RFV.

54V54 and **53Q60** are two of the Pioneer varieties. **54V54** out yielded **53Q60** here, in spite of **54V54** has a higher fall dormancy rating (4 vs. 3) which would suggest that **53Q60** is more winterhardy. **53Q60** had the lowest NDF on first cut.

AC Longview and **Hornet** are two Promark Seeds varieties. **AC Longview** comes to us from Lethbridge, AB, while **Hornet** was bred in Wisconsin. In the USA, **Hornet** is sold as Magnum V. **Hornet** is supposed to be slightly slower regrowing and **AC Longview** is supposed to be very winterhardy. Both were in the middle of the pack for quality and yield.

Stockwell is a Seed-Link variety. Like **AC Nordica** it is a branched tap root, although it yields slightly less (but not statistically different).

Overall the alfalfas still performed well. The average yield this year (5.59 t/a) was higher than last years (3.87 t/a) and 2004 (5.24 t/a). There was some evidence of winterkill, with some winter annual weeds showing up in the empty spaces where winterkill took out the alfalfa.

Grass Results

In the past grass, has not usually been recommended under intensive irrigation. This was because it is generally lower yielding, always lower quality, and requires nitrogen fertilization compared to alfalfa. When it was recommended it was usually in a mix with alfalfa to lengthen the life expectancy of the stand. However in these plots, several

grasses out yielded the alfalfas by quite a bit. Perhaps in the future we will be recommending and growing more grasses.
In the grass plot there was a statistically significant difference in the plots, both in the yields and qualities without any block interactions.

Paddock Meadow Brome was the highest yielding grass this year. Meadow Brome grass has mostly basal growth with the leaves initiating from the ground. Smooth Brome grass has alternating leaves all the way up the stem. As such Meadow Brome is more suited to pasture situations, while Smooth Brome is more suited to making hay. The leaves are high enough for the haybine to cut on Smooth Brome and low enough on Meadow Brome that the cows don't take it all, so it regrows quicker. Smooth Brome is more aggressively creeping than Meadow Brome. In nature the two flower at different times and do not interbreed. In a greenhouse, Dr. Knowles was able to time the seeding correctly to cross pollinate the two species and produce viable virile seed. **AC Knowles** is intermediate in most growth characteristics. It regrows slower that Meadow Brome, but faster than Smooth Brome. It is also supposed to yield less than Smooth Brome and more than Meadow Brome in a hay situation, although just the opposite was the case here. On the three year total the **AC Knowles** yielded less than the Meadow Brome and more than the Smooth Brome, although not statistically different. In all the grasses, **Paddock** had the lowest NDF in second cut. Of these three **Paddock** had the highest overall quality (lowest ADF, NDF, highest CP over two cuts) with **AC Knowles** intermediate and **Bravo** the lowest. **Bravo** had statistically higher CP levels than the other two in first cut.

Tall wheat grass is known for its tolerance to salinity. It is also really likes the water and is tolerant to some flooding but not drought. It is the top yielding grass of the three year total. The problem with **Tall wheat grass** is that the quality drops off quite quickly. It had the highest ADF in both cuts.

Chief Intermediate wheat grass is not a long lived grass under intensive management; however, still continued to yield almost 6 t/a this year. It is slowly maturing and combines well with alfalfa.

AC Parkland Crested wheat grass is the only crested wheat grass in this trial. Crested wheat grass is known for its early growth in the spring and very long life span. It is very drought tolerant, but not flooding tolerant. It tied for the top second cut yield. Generally the quality is fairly good early, but drops off considerably once the plant has matured. This variety of crested wheat grass was bred to have lower fibre levels and is more palatable over the whole year. However it still had the highest NDF in first cut. Certified seed should now be available.

Garrison Creeping Foxtail is well suited to flooding areas as it has excellent flood tolerance. It also is long lived and strongly creeping rooted. **Garrison Creeping Foxtail** had the heist yield in first cut.

Orchard grass is a highly palatable bunchgrass with excellent regrowth and midseason production. **Arctic Orchard grass** had the highest average protein of the grasses.

Unfortunately, it is not very winter hardy. **Arctic** is a variety bred to have more winterhardiness, which is very evident in our trials. **Kay** died out after the first winter with virtually no production the next year. **Arctic** although it did not produce much, it still survived. Some of the seed must have stayed dormant because there is noticeably more plants this year. Even with removing the dry matter from the weeds the **Arctic** orchard grass out yielded the timothy this year.

Timothy used to be one of the more profitable crops to grow under irrigation. It is probably the only grass worth fertilizing to these fertility levels. The top quality hay for the export market is priced at about $135 a ton this year. Although the two timothy varieties included here did not yield as much as some of the top yielding species, over four and a half tons/acre is still a pretty good yield, especially when you can sell it at a higher price. Timothy loves water and is tolerant to spring flooding but not drought or salinity. This year **Aurora** yielded higher than **Joliette** although not statistically different. These two had the lowest fibre levels of the grasses in first cut and were even comparable to lower quality alfalfa.

Revenue Slender wheat grass is the only native that was included in this trial. It is a short lived, but quite productive native species. Of the natives, it is one that is relatively easy to establish. In this trial under irrigation and intensive management, it out yielded the alfalfas last year. This year, it is beginning to see the end of its life and the yield has dropped off some, particularly in second cut.

Arthur Dahurian Wild Rye is another productive short lived grass. It is a shallow-rooted bunch grass, easy to establish and adapted well to saline conditions. It also is towards the end of its life and the yield is dropping. It was the lowest yielding grass this year.

The other grass that winterkilled was **Courtenay Tall Fescue**. Tall fescue is a pasture grass tolerant to saline, acidic and alkaline soils. It is also drought tolerant, but not winter hardy. Some varieties have high alkaloids which can cause animal health problems.

Conclusion

This article shows some of the results obtained from a randomized replicated small plot near Osler. It shows some of the high qualities and yields that can be obtained from alfalfa under an intensive three cut system as well as the upper end yields from some of the grasses when they are fertilized. These numbers, however, are just from this site. As such they should not be used for variety recommendations, particularly since there was a block interaction with the alfalfa yields. For variety recommendations, please check the Crop Varieties for Irrigation Guide published by ICDC. All of the data presented in this article is included in the dataset used for that publication. To obtain this guide, please call one of the ICDC Agrologists.

Alfalfa Demonstration at Swift Current

By Korvin Olfert, PAg, Irrigation Development Branch, SAF

The purpose of this demonstration was to highlight the production capability of alfalfa under a two cut system destined for the beef market. It is an excellent example of the interdependence of the beef industry on the crops/forage industry and irrigation as a tool to enhance that. It is located at the north east outskirts of Swift Current, right beside where the new hospital is located. This field scale demonstration was established in the spring of 2003 with seven of the top varieties from two seed companies (Proven Seed and Pioneer) seeded at 12 lbs/acre. The plots were 36' wide and a total of 0.7 acres each. Phosphorus was added at 50 lbs per year, and the only Nitrogen added was what came with the P. Quarter meter swards were taken on June 26th and August 5th to get a measure of the maturity at each cut. Bales were counted, weighed, and samples were taken for quality analysis. First cut was harvested July 7th, late due to continuing rain, and second cut was taken August 16th. These were not randomized or replicated, but rather just a demonstration of the varieties, so the information presented here should be considered accordingly.

Table 5. Yield Results in tons/acre

	Cut 1	Cut 2	Total 2006	Total 2005	Total 2004	3 year Total
Geneva	2.23	1.16	3.39	3.40	4.51	11.30
Ameristand	2.31	1.24	3.55	3.75	3.84	11.14
Spreador 3	2.23	1.20	3.43	3.51	4.18	11.12
54V54	2.19	1.29	3.48	3.43	3.81	10.72
53Q60	1.93	1.29	3.22	3.39	3.77	10.38
Absolute	2.27	1.24	3.51	3.02	3.49	10.02
Gala	1.93	1.16	3.09	3.25	3.58	9.92

Table 2. Quality Results from 2006

	Cut 1				Cut 2			
	MSC	Height (cm)	% CP	RFV	MSC	Height (cm)	% CP	RFV
Geneva	3.81	96	16.4	122	4.02	73	19.8	124
Spreador 3	3.50	90	17.3	118	4.27	73	21.0	125
Ameristand	3.61	92	19.5	168	3.57	75	22.1	144
54V54	3.00	98	16.8	125	3.97	69	19.3	119
53Q60	3.55	95	20.1	157	4.24	77	20.2	116
Gala	3.83	91	18.5	141	4.24	64	22.2	141
Absolute	3.11	90	18.4	134	3.96	65	20.8	117

Results

The average RFV for first cut was 138 with second cut at 126. Both are easily sufficient for maintaining beef cows over winter. **Geneva** topped out the demonstration with the highest three year yield. It had the lowest yield and CP in first cut. It usually has good regrowth. Geneva yields appear to be decreasing, although the huge first year still keeps

it in the top spot in this trial. **Geneva** has a Fall Dormancy rating of 4 which might explain some of the yield losses to winterkill.

Ameristand is a variety with a sunken crown. This makes it more tolerant of heavy traffic or trampling. It has a Fall Dormancy rating of 2 which makes it very winter hardy. It overtook Spreador 3 for second spot in yield. It was the highest yielding in the first cut and overall this year. It is not usually noted for its quality characteristics, although this year it had the highest RFV in both cuts.

Spreador 3 was the only creeping rooted variety in this trial. Usually creeping rooted varieties yield less than tap rooted under a hay situation. They are more suited for pasture and usually have more winter hardiness. However, in this case **Spreador 3** did very well and came in third in the three year yield. **Spreador 3** was also the shortest and had the lowest RFV in first cut which are usually opposites. It really showed its regrowth characteristics as the most mature in second cut.

54V54 and **53Q60** are the two Pioneer varieties that were included. **54V54** continues to yield a bit more than the **53Q60**, but tied for the top spot in second cut. The pioneer varieties really show their height with **54V54** being the tallest in first cut and **53Q60** standing above the rest in second cut. **53Q60** has a lower fall dormancy rating (3 vs 4) which should make it more winter hardy. Although the yields still appear to be decreasing. Quality wise **53Q60** had the top CP in first cut. It showed its regrowth potential by being the tallest and had the lowest RFV in second cut.

Gala yielded the least of the treatments, even **Absolute**, the check pulled ahead of it this year. This was not due to a lack of maturity as **Gala** had the highest MSC in first cut and second in second cut. **Gala** has a fall dormancy rating of 2 which suggests that it should be the most winter hardy variety in the demonstration.

On a previous demonstration on this site **Absolute** was the highest yielding. **Absolute** was included this time as a check and to compare to previous years. Since it was the highest yielding in the previous demonstration and almost the lowest yielding in this demonstration it shows how the varieties have improved in the last 5 years. The rest of the field where the plots were seeded was seeded to **Absolute**. **Absolute** does not appear to regrow as well as some of the other varieties since it was the shortest on second cut and the second youngest.

Conclusion

This demonstration shows the high yields can be achieved under irrigation. With a two cut system you can get similar yields to three cuts, although the quality is more suited for a beef cow rather than a dairy cow. With some conflicting results, it also shows the limitations of demonstrations, compared to randomized and replicated research trials. However, it does verify the yield estimations from research trials on a large field scale.

ICDC's Timothy Phosphorus Trial

By Korvin Olfert, PAg, Irrigation Development Branch, SAF

This project was initiated by ICDC to determine the amount and timing of phosphorous required for optimum timothy production. Timothy is a grass hay, high in digestible fiber, that is desired in dairy rations in several Pacific Rim countries. In the past timothy has been quite profitable, although increases in shipping rates, the cost of nitrogen, and the Canadian dollar have decreased the profit margin somewhat in recently. As a grass it does not fix its own nitrogen and requires high nitrogen fertilization (around 180 lbs actual N per acre). Phosphorus recommendations have traditionally been around 50 lbs per year based on nutrient removal. Nutrient removal of phosphorus is around 10 lbs of Phosphate (P_2O_5) per ton, which means a five t/a hay crop removes 50 lbs of Phosphorus. However, due to some earlier demonstrations by ICDC showing no yield difference, this blanket recommendation was questioned. In order to determine the precise timing and amounts required this three year trial was seeded at the Canada-Saskatchewan Irrigation Diversification Center (CSIDC) in Outlook on May 20th of 2004. It was seeded 5 lbs/acre with the variety Colt. The plots were 8' by 20' with 10 treatments replicated four times in a randomized complete block design. The initial soil test reported an average of 61 lbs of Nitrogen, 32 lbs Phosphorus, 515 lbs Potassium, 1.8 lbs Copper, 12.4 lbs Manganese, 3.1 lbs Zinc, 2.9 lbs Boron and 35 lbs Iron from two subsamples of a composite of 30 cores from the 0.25 acre site. Soil samples were measured by ALS Laboratories in Saskatoon. The treatments are listed in Table 1. The phosphorus was broad cast as 11-51-0 with each individual plot being brought up to 100 lbs of actual N per acre per cut with 34-0-0.

Table 1. Phosphorus applied (lbs/a) for each treatment.

Treatment	At Seeding	Second Year	Third Year
1	300	0	0
2	200	0	0
3	100	0	0
4	0	0	0
5	100	100	100
6	200	200	200
7	300	300	300
8	300	100	100
9	300	200	200
10	200	100	100

Harvests were taken August 27th in 2004, July 8th and Sept 20th in 2005, and July 6th and October 5th in 2006. The haldrup from CSIDC was used to take a 4' swath from the center of the plot to measure total bulk weights. A subsample was taken from each plot to determine the moisture content. The plot was sprayed out October 6, 2006.

Statistics

All plots were analyzed using the PROC GLM command of SAS. P values are used to evaluate significance. If the p value is less than the confidence level that it is considered to be a significant interaction. A very low p value shows a significant difference. For example a p value of 0.051 would be significant at the 90% confidence level but not the 95% confidence level and a p value of 0.011 would be significant at the 95% confidence level but not the 99% confidence level.

Results

While there was no significant difference (p = 0.2690) and a significant block interaction (p = 0.0340) at the 95% confidence level in the cumulative dry matter yields, some trends can be noticed. Table 1 shows the dry matter yields of each of the years and the cumulative total. The higher fertilized plots did yield higher. Also there was a significant difference between the highest fertilized plots and the check.

Since there was no significant difference in the timothy yields, the soil P levels were checked at the end of the trial to verify that the soil P levels had indeed been impacted by the fertilization. Table 1 also shows the soil phosphorus levels at the beginning and end of the trial. There was a significant difference ($p < 0.001$) in the soil test of each treatment with also a significant block interaction (P = 0.0057). This means that the treatments did indeed cause the soil levels to change and explained a significant portion of the change ($R^2 = 0.85$).

Table 1. Dry matter yields of timothy and soil phosphorus amounts for various treatments of phosphorus applied in the spring of three successive years.

Phosphorus treatment (lbs P/a)				Soil P (lbs P/a)			Dry matter yields (t/a)			
2004	2005	2006	Total P applied	Spring 2004	Fall 2006		2004	2005	2006	Total
0	0	0	0	32	18.0	E	2.8	6.8	7.1	16.7
100	0	0	100	32	19.0	DE	3.0	7.1	7.4	17.5
200	0	0	200	32	33.0	CDE	2.7	7.7	8.0	18.4
300	0	0	300	32	41.6	CDE	2.6	7.3	7.8	17.6
100	100	100	300	32	57.0	BC	2.5	7.3	7.6	17.4
200	100	100	400	32	49.0	CD	2.9	7.7	8.2	18.8
200	200	200	600	32	80.0	B	2.7	6.7	8.6	18.0
300	100	100	500	32	62.0	BC	2.6	7.7	7.8	18.1
300	200	200	700	32	116.6	A	2.5	8.0	8.4	18.9
300	300	300	900	32	143.6	A	2.6	8.1	8.6	19.2
Mean					62.0		2.7	7.4	8.0	18.1
LSD (p=0.05)					15.2		NS	NS	NS	NS

Conclusions

Applying phosphorus to timothy does not result in a large change in yield. Only by applying large amounts of phosphorus (over 700 lbs per 3 years) was the yield significantly different that the check of no phosphorus. Applying phosphorus to timothy will probably not result in a significant change in yield. It certainly does not show the same response to yield that nitrogen does.

It took 200 lbs of Phosphorus over three years to maintain the P soil levels at the initial rate. This is slightly higher (66 lbs/year) than the standard recommendation of 50 lbs per year based on nutrient removal.

In spite of showing no significant yield increase, timothy producers should continue to apply phosphorus at 50 lbs/acre to replace what is removed in the crop. To maintain soil phosphorus levels this perhaps be increased slightly. However, if economics dictate, this could be postponed for a short time without a large yield loss.

Further Research

This study was only a three year study. Since phosphorus is thought to impact root development and longer term growth, perhaps a longer term study would be more precise. Further research could also be conducted on the impact of P on other quality factors such as brown leaf, forage P levels and maturity.

Estimating Alfalfa's Drying Rate

By Korvin Olfert, PAg, Irrigation Development Branch, SAF

Background

The most risk associated with growing hay is the drying process. Will it dry enough to bale before that next shower comes? Anything that will help speed up this process would reduce the risk associated with unstable weather patterns. There are several different methods of doing this and one simple one is to make a wider swath. In order to determine the magnitude of this effect, ICDC initiated a project with Greg Oldhaver of Miry Creek.

Data collection

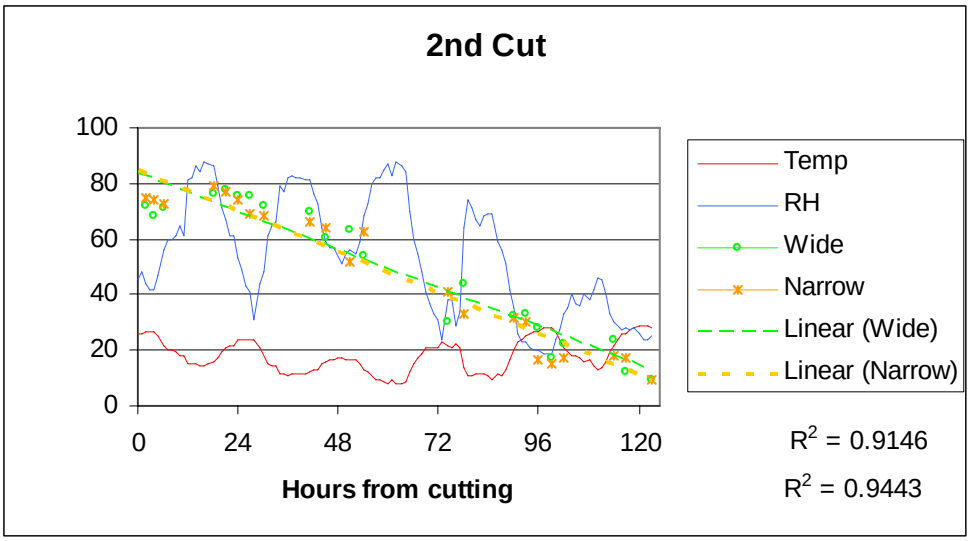
A field of alfalfa was chosen at Miry Creek and evaluated for two cuts. There were extremely good drying conditions during both harvests. First cut took a record two days (about 56 hours) to dry, while second cut took about five days to dry. When cutting each cut Greg closed up the haybine for two passes to produce a narrow swath and a wide (normal) swath to sample. The difference in width between the swaths was about six inches. Each swath was sampled periodically from when the field was cut until the field was baled. At each sampling measurements included the hay moisture (twice), the soil moisture (twice), temperature, relative humidity, and wind speed. Any missing weather information was substituted with hourly data from the Environment Canada weather

station located at Swift Current (45 miles from the field). Moisture values were determined in the field using the microwave method and were taken from the bottom of the swath. Soil moisture samples were taken from underneath the swath with any organic matter removed.

Results

The ideal drying conditions of first cut limited the effect of the swath width. Both swaths dried extremely fast (56 hours). If you take the equations from the linear regression lines and extrapolate how many hours it would have taken to dry to 16% moisture, there is a slight difference (about 45 minutes) between the two swaths. Second cut took longer to dry (about 120 hours). There was a slight shower (1 cm) the first evening after it was cut. This had minimal impact on the quality of the alfalfa since the moisture content was still over 70%, but did increase the moisture content of the hay (about 6%). Again if you extrapolate the two linear regression lines to 16% there was about a difference between the drying rates. Due to the slower dry down, this difference between the swaths was more pronounced with about 5 hours difference. Caution should be used when examining these numbers. The regression lines were not perfect and the differences were small in comparison. There was also a large variation in the moisture contents.

Graph 1. The difference in drying times between a wide swath and a narrow swath in first cut.



Graph 2. The difference in drying times between a wide swath and a narrow swath in second cut.

Conclusions

First cut happened very quickly, with ideal drying conditions. Second cut took slightly longer. There was a small difference between the wide and narrow swaths in first cut and a larger difference in the second cut. Extending the width of the swath even six inches can result in a shorter drying time.

Irrigated Variety Testing

By Terry Hogg, PAg, CSIDC

In 2006, ICDC continued funding CSIDC for conducting irrigated variety evaluation trials. Four ICDC funded sites for wheat, canola, pea and flax were undertaken. However, a hailstorm on August 23 passed through the Outlook area damaging some of the ICDC variety evaluation trials limiting the amount of useful data that could be collected. This limited amount of data will be added to the CSIDC variety database and used to update the annual CSIDC/ICDC publication, "*Crop Varieties for Irrigation 2007*".

Silage Cereal Varieties

By Korvin Olfert, PAg, Irrigation Development Branch, SAF, and Terry Hogg, PAg, CSIDC

As usual, CSIDC hosts a set of annual cereal forage trials to determine the best cereals to grow for silage or greenfeed. This year ICDC provided funding to measure the qualities as well as the yields. The following are results to be included in the much larger dataset for the *Crop Varieties for Irrigation, 2006*. Table 1 shows the qualities from the barley variety trial at CSIDC for 2006. Table 2 shows the qualities from the oat variety trial, and Table 3 shows the qualities from the triticale variety trial.

Table 1. Barley variety qualities for 2006

Barley	CP	ADF	TDN
Cowboy	12.4	31.0	64.8
Battleford	12.4	31.0	64.8
Trochu	13.4	29.9	66.0
Newdale	13.1	33.9	61.8
Dillon	11.9	36.2	59.4
Bold	12.6	31.6	64.3
Copeland	11.6	32.1	63.7
Rosser	12.9	34.6	61.1
Hawkeye	14.1	32.7	63.0
Vivar	11.2	30.5	65.4
Ranger	12.7	29.2	66.8
Average	12.6	32.1	63.7
LSD	NS	NS	NS

* In this plot there was significant block interaction.

Table 2. Oat variety qualities for 2006

Oats	CP	ADF	TDN
Bell	11.8	38.2	57.2
Morgan	10.8	35.5	60.1
Calibre	10.9	40.5	54.8
Baler	10.7	38.4	57.0
Pinnacle	10.1	35.7	59.9
Average	11.6	34.8	60.9
LSD	NS	NS	NS

* In this plot there was significant block interaction.

Table 3. Triticale variety qualities for 2006

Triticale	CP	ADF	TDN
Banjo	14.3 a	37.5 ab	58.0 ab
Ultima	12.6 b	36.2 a	59.3 a
Viking	12.6 b	38.7 abc	56.8 abc
Comet	12.1 b	39.8 bc	55.6 bc
Pronghorn	15.0 a	41.1 c	54.2 c
Average	12.2	38.1	57.4
LSD	0.99	3.53	3.74

Results

As usual, barley was higher quality than the oats or triticale. There was no significant difference in quality between the barley varieties or the oat varieties. Pronghorn and Banjo were both significantly higher in CP than the other triticales. This is just one site years data and should not be used for variety recommendations. Instead consult the *Crop Varieties for Irrigation 2006* which is available from an Irrigation Agrologist.

Fusarium and Leaf Disease Survey 2006

By Penny Pearse, PAg, Disease Specialist, SAF, Grant Holzgang, PAg, Crop Protection Lab, SAF, and Korvin Olfert, PAg, Irrigation Development Branch, SAF

Fusarium Head Blight Survey

Saskatchewan Agriculture and Food (SAF) provincial disease specialists co-ordinate and produce the Fusarium and Cereal Leaf Disease surveys. Agrologists from across the province collect heads at random from commercial wheat, durum, barley and oat fields during the early dough stages of development. These head samples are then sent to the provincial Crop Protection Laboratory in Regina where they are visually inspected for FHB symptoms. A severity rating is determined for each field. The kernels showing visible FHB symptoms are then plated onto a growth medium to determine the causal Fusarium species.

Over the past few years, the survey has indicated that FHB is prevalent across most of Saskatchewan, although predominantly at low levels. The highest values are typically found in the south-east and east-central regions, where environmental conditions are often conducive for disease development. Severity is highly dependent on weather. In the 2001 survey, severity values ranged from 2 to 5%, but in 2002 values were less than 1% due to dry conditions during cereal flowering. In 2003, FHB severity was negligible for most of the province and the irrigation (0.2%). In 2004, the samples ranged from 0% to 1.6%, due to cool temperatures during cereal flowering. In 2005, the average for irrigation was 0.2% which was very similar to the provincial average.

In 2006, 22 cereal fields were sampled from irrigated fields from Consul to Baildon to Osler. This included 3 fields of durum, 5 fields of barley (3 six rows, 2 two rows), 13 fields of HRSW and 1 field of CPS. Of the 22 fields 14 had some level of infection. Only four species of *Fusarium* were detected with only two *F. graminearum* positive. The first was from a wheat field just south of Birsay and included three kernels with *F. graminearum*. There was no *F. graminearum* found in another wheat field three miles away. The second was from a wheat field near Blackstrap Resivoir where one kernel was found to be positive. All the other samples were either *avenecum, sporotrichoides*, or *poae*, which are not considered highly toxigenic species. *F. graminareum* has also been identified in irrigation districts over the past few years and is expected to increase and spread in any of the areas it is found. Remember that Fusarium levels can spread through the heads and be higher in harvested grain if the grain is harvested in wet or humid conditions. It is imperative to store the grain at less than 12-14% to prevent molding in the bin.

This was also the first year in which corn samples were taken as part of the FHB survey. Being the first year we had to determine proper protocols as to sampling, so results may not be representative. At the time of writing the initial results were not yet available, but initial results implicate *F. graminearum* as the predominant Fusarium species being isolated from corn. Since all samples have not been fully processed yet results will be available in next year's summary

3. Create a public awareness of the economic, social and environmental returns to investment in irrigation.

ICDC Technology Transfer

January 9-12	Crop Production Week, Saskatoon
January 19	Prairie Seeds Corn Production, Beechy
January 25	Strawberry Crown Production, Outlook
January 26-27	Western Canadian Forage Summit, Red Deer
January 27-29	Saskatchewan Cattle Feeders Association Conference, Saskatoon
February 9	Fusarium Head Blight Management, Belle Plaine
February 28	Gopher Control at Coop Agronomy School, Swift Current
March 10	Irrigated Grazing, Outlook
May 10	Timothy Insect Update, Birsay
May 11	Ambassador Tour, Swift Current
June 10-13	Saskatchewan Stockgrowers Association Convention, Estavan
June 29	4-H Regional Judging Competition, Swift Current
July 11	Treasure Valley Market Garden Tour, Cadillac
July 13	CSIDC Field Day, Outlook
August 13	4-H Provincial Judging Competition, Swift Current
Oct XXXX	Nutri-Gain Corn Field Day, Hodgeville
November 2	U of S Agriculture Career Fair, Saskatoon
December 5-6	11th Annual ICDC SIPA Irrigation Conference, Moose Jaw

Irrigation Website Update 2006

By Lana Shaw, PAg, Irrigation Development Branch, SAF, and Janice Bennett, Irrigation Development Branch, SAF

We have had a busy year with our website "irrigationsaskatchewan.com" since the launch in November 2005. Interactive mapping is finding a number of uses on the website besides the original irrigation district maps.

An interactive Corn Heat Units map of the province has been completed in the corn area of the website. Select any one of 152 weather stations on a map or alphabetically in a list and you will see the CHU data for every available year between 1980 and 2005. It also gives the average CHUs for that location, as well as the average 90% probability CHUs (historical minimum 9 of 10 years). With this tool, irrigators and other producers will have specific data for their location so they can make informed decisions about corn production and variety selection.

We are working with the Saskatchewan Vegetable Growers Association to provide an interactive map of their members on the Irrigation website, along with other vegetable-related topics and events. You can expect to see it online later this winter.

Irrigation – related events and announcements are found on the scrolling list on the home page. Check it frequently, as new postings are added regularly.

New feature articles on the home page include New Brand for Saskatchewan Tomatoes, "Best Ever" Pumpkin Crop, Saskatchewan Hay Reports, Pocket Gophers, Moisture Testing Forage, and the Corn Heat Unit Map. Watch for additional new weekly articles coming out this winter.

Under the Irrigation Districts section, you can find the interactive maps of irrigation development areas and irrigation districts. This exciting feature has been popular on our website and can serve as a virtual tour of irrigation for Saskatchewan.

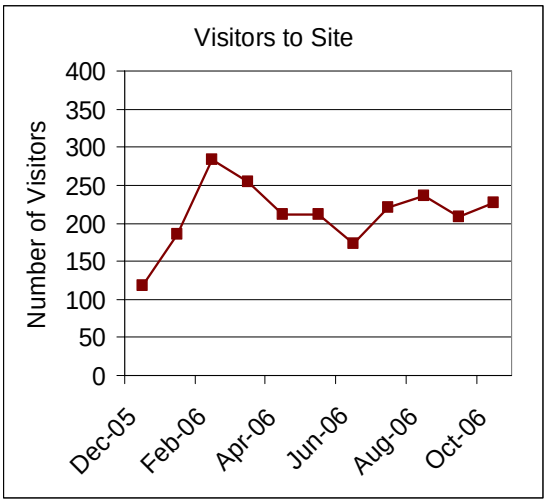
The Production and Processing section has information and links for irrigation crops including Vegetables, Pulses, Corn, Alfalfa Hay, Grass Forage, Oilseeds, Cereals, Fruits, Herbs and Spices.

The Irrigation and the Environment section is a recent addition, with information and presentations on soil and water compatibility for irrigation. Also available are presentations from a national "Sustainable Irrigation for the Prairies Workshop" held on March 22 and 23, 2006.

Don't forget about the Buy and Sell page, where you can post your ad for services, products, land etc. at no cost. You can even post a picture with the advertisement.

We invite you to log on and have a look through our website irrigationsaskatchewan.com. This is your website, irrigators!

Website Usage in 2006
Usage in 2006 has been fairly steady at around 200 individual visitors each month.



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