

Saskatchewan Irrigation Diversification Centre

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Annual Review

April 1, 1998 to March 31, 1999

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*This report and other SIDC publications are available at our internet address:
<http://www.agr.ca/pfrral/sidcgene.htm>*

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Manager's Report

On behalf of the Saskatchewan Irrigation Diversification Centre (SIDC), it is my pleasure to present the annual progress report. The report summarizes the wide range of activities conducted, funded or facilitated by the Centre in 1998. I would like to extend special thanks to the members of our newly formed Executive Management Committee (EMC): Carl Siemens, Don Fox, Gerry Luciuk, Dale Sigurdson and John Linsley. Their input and support have been critical to the operation and success of the Centre. Harvey Fjeld, a long-serving member of our management committee, has recently retired. His input and enthusiasm was highly regarded. We thank him for his past service, and wish him well in the future.

1998 was a year of transition for the Centre. Recognizing the value of partnership and industry participation, a memorandum of understanding (MOU) was signed. This MOU formally added industry representation through the Saskatchewan Irrigation Projects Association (SIPA) and the Irrigation Crop Diversification Corporation (ICDC) to the previous partnership between Agriculture and Agri-Food Canada (PFRA) and Sask Water. Clearly this will add a positive dimension to the operation of the Centre. The signing took place at the annual SIDC field day on July 8, 1998. SIDC had the privilege of having Hon. Lyle Vancilief, Minister of Agriculture and Agri-Food Canada, Hon. Maynard Sonntag, Minister Responsible for Sask Water, along with industry representatives Ron Tittle (SIPA) and Carl Siemens (ICDC) present to sign the agreement.

In view of the newly signed Canada-Saskatchewan-Industry partnership, a strategic planning workshop was held in Outlook on November 17 & 18, 1998. Participants in the workshop included a broad range of producers, industry, university and government stakeholders. Producer delegates from twelve irrigation districts representing 75% of the district irrigated acres were in attendance. The workshop was designed to achieve a consensus on a vision for the role of SIDC, the obstacles which may prevent achieving the vision and the strategic directions the Centre must take.

Staff at SIDC continue to focus on rural growth and resource care issues, particularly as they apply to irrigation. There is a need to diversify and adopt irrigated cropping practices in Saskatchewan to encourage sustainable production of higher value crops with value added potential. SIDC's

Strategic Planning Workshop Recommendations:

1. Publish an SIDC Business Plan by September 1, 1999.
 2. Secure appropriate irrigation R & D funding through
 - i) A-base funding (federal and provincial)
 - ii) Federal/provincial/industry agreements, and
 - iii) Research/industry contracts
 3. Commission the documentation of irrigation personnel, and R & D information applicable to Saskatchewan conditions in an electronic database by December 31, 1999.
 4. Encourage collaborative R & D partnerships on a prairie-wide and on an international basis.
 5. Commission the creation and distribution of an updatable irrigation manual for the Canadian Prairies by March 31, 2001.
 6. Define requirements for and identify mentor irrigators to be involved in a farmer-to-farmer information exchange process by May 31, 1999.
 7. Establish four irrigation demonstration spoke sites located province-wide by December 31, 2000.
-

primary impact has been through crop diversification and intensification efforts. Interest in irrigated crop diversification and higher valued alternatives is clearly evident through ever increasing and large attendance at the annual field day and commodity tours. Depressed commodity prices have accentuated this need for new alternatives. Potato and vegetable production, medicinal herbs and spices, dry bean, and turf grass seed production have all seen huge increases in the requests for information.

Adequate funding is critical to the operation of SIDC. Funding has been provided through federal and provincial A-base dollars along with agreement dollars. The Canada/Saskatchewan Agreement on Water Based Economic Development (PAWBED) provided an excellent source of funding for irrigated research and demonstration. Benefit cost analysis of the R & D portion of this program managed by SIDC displayed returns ranging from 3:1 for cereals to 12:1 for potatoes. The federal portion of this agreement is now completed and the provincial portion will end December 31, 1999.

More recently, an industry driven program, the Canada/Saskatchewan Agri-Food Innovation Fund (AFIF), has provided support for the agriculture and irrigation sectors in Saskatchewan. This program has requested and allowed SIDC to act as a spoke site for irrigated research and demonstration for specialized crops. SIDC has also received R & D funding to support the potato and vegetable and to construct a potato/vegetable storage and handling facility along with retrofitting the greenhouse. These industry driven initiatives will provide SIDC the ability to support the development of higher valued cropping opportunities.

Interest in irrigated crop diversification and higher valued alternatives is clearly evident through ever increasing and large attendance at the annual field day and commodity tours.

Partnerships on a prairie-wide and international basis are important to the development of sustainable irrigation practices. An MOU called the Prairie Irrigated Crop Diversification Group is in place between SIDC, the Manitoba Crop Diversification Centre (MCDC), and the Alberta Crop Diversification Centre (ACDC). This MOU assists the Agri-food industry across the prairies in addressing issues, needs and opportunities in irrigated crop diversification and value adding. It has encouraged working together and the development of joint projects.

SIDC expertise has also been recognized and utilized in the international sphere. This includes technical and administrative involvement in the CIDA sponsored Canada/Egypt National Water Quality and Availability Management program. SIDC staff have also participated and will continue to participate in the training of agronomists from the Hebei project in China.

Finally, SIDC staff are involved in national and international committees. These include the National Potato Research Network, the Canadian Committee on Irrigation and Drainage, and the International Commission of Irrigation and Drainage. This activity continues to bring new ideas and approaches to work at the Centre.

I trust you will find this report a useful summary of SIDC activities.

History

The Saskatchewan Irrigation Diversification Centre (SIDC) originated as the Prairie Farm Rehabilitation Administration (PFRA) Farm at Outlook, Saskatchewan. The PFRA Pre-development Farm was established in 1949, prior to the construction of the Gardiner Dam. The farm was designed to demonstrate irrigation to assist farmers in their transition to irrigated agriculture. Upon completion of the Gardiner Dam and the formation of Lake Diefenbaker, the farm became known as the Demonstration Farm and served a useful role in demonstrating irrigation technology.

At that time irrigated research and demonstration programs conducted by Agriculture Canada, PFRA, the University of Saskatchewan, and Saskatchewan Agriculture were limited. Each program addressed specific organizational or scientific objectives independent of the work of others. The need existed for a co-ordinated, co-operative program.

In 1986, the Saskatchewan Irrigation Development Centre (SIDC) was established as a jointly funded federal/provincial agency as a result of a Memorandum of Understanding between Agriculture and Agri-Food Canada (PFRA) and Saskatchewan Agriculture. Its purpose was to conduct, fund, and facilitate irrigated research and demonstration in response to producer and industry needs. The redesign and rehabilitation of the Centre's irrigation infrastructure created the capacity to perform complex irrigated agronomic and environmental studies. The goal of the Centre was to promote economic security and sustainable rural development primarily through diversified cropping and more intensive management of irrigated cropland.

A new Memorandum of Understanding (MOU) was signed in July of 1998. This MOU includes Canada (PFRA), Saskatchewan (Sask Water) and Industry [Saskatchewan Irrigation Projects Association (SIPA) and the Irrigation Crop Diversification Corporation (ICDC)] at the management table of the newly named Saskatchewan Irrigation Diversification Centre.

Since the formation of SIDC, Canada and Saskatchewan have delivered irrigated research and demonstration information to their clients. This has been done using departmental budgets along with funding from federal/provincial initiatives including the Saskatchewan Irrigation-Based Economic Development (SIBED) program, the Partnership Agreement on Water-Based Economic Development (PAWBED), and the Agri-Food Innovation Fund (AFIF).

In recognition of the importance of partnerships, and particularly the role of industry as part of the partnership, a new Memorandum of Understanding (MOU) was signed in 1998. This MOU now includes Canada (PFRA), Saskatchewan (Sask Water) and Industry [Saskatchewan Irrigation Projects Association (SIPA) and the Irrigation Crop Diversification Corporation (ICDC)] at the management table of the newly named Saskatchewan Irrigation Diversification Centre (SIDC). This agreement places SIDC in a strong position to meet the future needs of its clients.

In addition, an MOU with the Manitoba Crop Diversification Centre, the Alberta Crop Diversification Centre, and the SIDC has been signed. This formal arrangement will guide co-operative activity in irrigated crop diversification for the Canadian prairies.

Objectives

1. Identify higher value cropping opportunities through market research to help target the research and demonstration effort.
2. Conduct, fund and facilitate irrigated research and demonstration to meet the needs of irrigation producers and industry in the province.
3. Develop, refine, and test methods of diversifying and intensifying irrigated crop production in co-operation with research agencies.
4. Demonstrate sustainable irrigated crop production methodology at SIDC.
5. Promote and extend sustainable irrigated crop production methods to ensure clients are well served.
6. Evaluate the environmental sustainability of irrigation and evaluate the impact of irrigation on natural and physical resources.
7. Promote a Western Canadian approach to irrigation sustainability by interacting with staff from similar institutions and industry across Western Canada. This will increase levels of co-operation in marketing, research and demonstration that support diversification and value adding, along with transfer of such technology to strengthen the industry.

Staff

	ICDC Agrologists
Manager	J. Linsley
Administration	L. Bohrson
Secretarial	I. Bristow
Market Analyst	K. Olfert
Field Crops Agronomist	B. Vestre
- Technician	D. David
Irrigation Sustainability	A. MacDonald
- Technician	L. Sexton
Specialty Crops Agronomist	G. Kort
- Technician	N. Warwaruk
Technology Transfer	G. Saraurer

Programs

Specialty/Horticultural Crops

A specialty crops development program was initiated at SIDC in 1987. This program involves the evaluation of specialty crop production under irrigated conditions with the intent of developing cropping alternatives suitable to irrigated conditions in Saskatchewan. It involves a broad range of varietal evaluation, along with irrigation and agronomic adaptation studies. A major effort has been made to identify the most promising market opportunities and to act accordingly. Examples of projects include: varietal and agronomic evaluation of dry bean, pea, lentil, faba bean, mint, coriander, fenugreek, medicinal herbs, etc.

In 1992, emphasis was placed on potato and vegetable crop production. This was in response to industry demand. The potato studies involve a wide range of agronomic research to produce high quality 'seed', 'processing' and 'table' potato. The tests include germplasm evaluation, fertility management, irrigation scheduling, plant population studies and harvest management. The vegetable work is designed to raise awareness of the opportunities that exist in the vegetable industry. This is accomplished by developing cost of production information suited for Saskatchewan and by demonstrating improved production techniques to increase yield and improve quality, thereby optimizing economic returns.

Field Crops (Cereals, Oilseeds and Forage)

Field crops (cereals, oilseeds and forages) are a major part of any irrigated rotation. In 1996, more than 90% of the irrigated acreage in Saskatchewan was planted to field crops. While desirable to introduce new and specialty crops, a priority must also be placed on improving the profitability of the more conventional field crops. This includes examining new and/or existing genetic material (varietal trials) under irrigated conditions with improved disease and lodging tolerance or novel quality traits which could service a niche market. Suitable varieties must be identified and tested for agronomic performance under irrigated conditions. Evaluation of agronomic factors which can lead to more efficient water use, optimize production and lower input costs must also be determined.

Environmental Sustainability

This program attempts to evaluate the effect of irrigation on the environment. It was initiated in 1991 with funding from the Environmental Sustainability Initiative. It was intensified in 1993 as the irrigation sustainability program using funding from the Canada/Saskatchewan Agriculture Green Plan. More recently the National Soil and Water Conservation Program has provided resources to evaluate the environmental effects under intensively irrigated crop production.

Market Analysis

This program was initiated to identify and evaluate potential markets for irrigated crops and to determine opportunities for value-added processing with the goal of promoting economic security and rural development in the irrigated areas.

Technology Transfer

This activity ensures that information developed at SIDC is made available to farmers, extension personnel, private industry and the general public. It includes the annual field day, tours, participation in extension meetings and report writing.

Field Demonstrations

ICDC agronomists conduct field demonstrations of applied research developed at SIDC and other institutions. The Crop Manager project examines crop management practices of dry bean and cereals. The Forage Manager project evaluates alfalfa management for southern Saskatchewan irrigators.

Activities

Presentations

SIDC staff made presentations at the following meetings and conferences:

- Soils and Crops Workshop, Saskatoon, Sask.
- National Potato Research Conference, Lethbridge, Alberta
- ICDC Crop Manager Meeting, Outlook, Sask.
- Pre-Inception meeting on NAQWAM Project, Hull, Quebec
- Water Quality Workshops, Regina (2), and Saskatoon, Sask.
- Irrigation in International Development, University of Regina, Regina, Sask.
- Special Crops meeting, Edmonton, Alberta
- PFRA Service meeting, Russell, Manitoba
- Sask. Seed Potato Grower's Annual meeting, Saskatoon, Sask.
- Sask. Herb and Spice Association public meeting, Saskatoon, Sask.
- Sask. Herb and Spice Association public meeting, Moose Jaw, Sask.
- ICDC/SIDC Program Update meeting, Outlook, Sask.
- Diversification - The Vegetable Option, Outlook, Sask.
- Prairie Potato Council Annual Meeting, Saskatoon, Sask.
- Alberta Agriculture "Opportunities and Profits II into the 21st Century," Edmonton, Alberta

Tours

Tours of the Centre and of the field programs are conducted regularly at SIDC. Noteworthy groups touring the facilities in the past year included:

Dutch research group	Jun 15
SIDC Field Day and signing of new Memorandum of Understanding	Jul 8
Hon. L. Vancief, Memorandum signing and personal tour	Jul 8
Saskatchewan Pulse Growers	Jul 14
British producer group	Jul 14
Japanese trade delegation	Jul 14
University of Regina international development group	Jul 15
SIDC Evening Tour	Jul 15
National Farmer's Union	Jul 16
Brazilian trade delegation	Jul 20
Philippine potato growers	Jul 21
Saskatchewan Vegetable Growers' Association Tour	Jul 30
Chilean irrigation specialists	Aug 4
Canola Council of Canada	Aug 5
SIDC Potato Day (W. Canada Seed Potato Consortium)	Aug 11
Chinese delegation (CIDA project)	Aug 11
Manitoba Agriculture tour group	Aug 12
Western Diversification personnel	Aug 17
Australian producer group	Aug 28
Saskatchewan Treasury Board	Sep 21
Egyptian water resource group	Sep 26
PFRA Service tour	Oct 30
ICDC delegates to the SIDC Strategic Planning Workshop	Nov 18
Russian Potato Agronomists	Mar 24

Additional tours and activities were held for students of the Dinsmore and the Outlook Elementary schools, for private industry managers with projects on station, for members of the media, and for numerous other individuals who stopped to visit the Centre.

SIDC Display

SIDC presented a display at trade shows at the following events:

- Crop Production Show, Saskatoon
- Trade Fair, Beechy
- Saskatchewan Irrigation Projects Association annual meeting, Moose Jaw
- SIDC Strategic Planning Workshop, Outlook
- SIDC Annual Field Day, Outlook
- Diversification - The Vegetable Option meeting, Outlook

Publications

- H. Clark. A Comparison of the Costs and Returns for Irrigated and Dryland Crop Production in Saskatchewan. Soils and Crops Workshop, February 25, 1999, Saskatoon, Sask.
- J. Elliot, A. Cessna, K. Best, W. Nicholaichuk, and L. Tollefson. Leaching and Preferential Flow of Clopyralid under Irrigation: Field Observations and Simulation Modelling. Journal of Environmental Quality, 1998, Vol. 27: pp 124-131.
- T. Hogg, J. Linsley, M. Martinson, and J. Harrington. Challenge and Opportunity: A New Era in Irrigation Research and Demonstration in Saskatchewan. SIDC Strategic Planning Workshop, November 18 & 19, 1998, Outlook, Sask.
- A. Johnston, W. Schatz, G. Lafond, T. Hogg, D. Larsen, E. Johnson, and B. Nybo. Pulse Crop Adaptation in Saskatchewan. Pulse Crops Research Workshop, November 27 & 28, 1998, Saskatoon, Sask.
- A. Johnston, G. Lafond, S. Brandt, B. Nybo, W. Schatz, D. Larsen, and T. Hogg. Fertilizer Response and Placement with Field Pea. Pulse Crops Research Workshop, November 27 & 28, 1998, Saskatoon, Sask.
- G. Larson, L. Townley-Smith, J. Wahab, T. Hogg, I. Bristow, and J. Harrington. Crop Varieties for Irrigation. February, 1999.
- Saskatchewan Irrigation Development Centre Annual Review. March, 1998.
- K. Stonehouse, J. Gillies, and L. Tollefson. Evaluation of LESA technology in the Saskatchewan Environment. Canadian Water Resources Journal, Vol. 23, No. 4, pp 339-350.
- L. Tollefson, R. Wettlaufer, and A. Kassem. National Water Quality and Availability Management in Egypt. Proceedings of the Canadian Water Resources Association technical sessions, June, 1998, Victoria, B.C.
- L. Tollefson. Agri-Food Innovation Fund Specialized Crops Spoke Site Annual Report, March, 1999.
- J. Wahab. New Initiatives in Potato Agronomy. Agriculture and Agri-Food Canada Potato Network meeting, February 2, 1999, Lethbridge, Alberta.
- J. Wahab. New Crops Field Research at the Saskatchewan Irrigation Diversification Centre. Opportunities and Profits II into the 21st Century, November 1 - 4, 1998, Edmonton, Alberta.
- J. Wahab. What's New in Herb Agronomy? Soils and Crops Workshop, February 25, 1999, Saskatoon, Sask.
- J. Wahab. SIDC Herb Research Program. Sask. Herb and Spice Association Industry Conference, November 7, 1998, Regina, Sask.
- J. Wahab. Developments in Seed Potato Agronomy. Prairie Potato Council Annual Conference, December 9 & 10, 1998, Saskatoon, Sask.

Committees

L. Tollefson

- Prairie Potato Council, Chair of the Storage and Marketing Committee
- Agriculture and Agri-Food Canada National Potato Research Network
- Agri-Food Innovation Fund, Horticulture committee
- Canadian Commission on Irrigation and Drainage, Secretary/Treasurer
- Dept. of Agriculture and Bioresource Engineering, Research Associate
- Effluent Irrigation Project Liaison Committee
- International Commission on Irrigation and Drainage Crops and Water Use sub-committee
- Egypt National Water Quality and Availability Management Project (NAWQAM) Project Executive Committee and Canadian Co-ordinator
- USCID conference "Irrigation and Drainage in the new Millennium", Organizing committee
- Partners for the Sask. River Basin Technical Committee
- PAWBED Irrigation Improvement sub-committee
- PFRA Operations committee
- Prairie Crop Diversification Task Force
- Prairie Agricultural Landscapes Technical committee
- Canadian Water Resources Assoc. Technical committee for the year 2000 conference
- Health of our Rural Water steering committee
- 18th Congress & 35th International Executive Council for Montreal 2000, ICID Organizing committee
- Herbfest 2000 organizing committee

T. Hogg

- Environmental Management Strategy Planning committee
- PFRA Universal Classification System Evaluation team
- PFRA North Sask. Region EDP Committee
- PFRA Pesticide Review committee
- Prairie Irrigated Crop Diversification Working Group
- Prairie Regional Recommendation Committee on Grains
- SIDC Strategic Planning steering committee

L. Townley-Smith

- Prairie Agricultural Landscapes Technical committee

H. Clark

- PFRA Human Resources Strategy Group
- PFRA Service Workshop planning committee
- Developing Seed Potato Production Costs working group
- National Cost of Production and Marketing for herbs and spices working group
- Agriculture and Agri-Food Canada Ethanol Working Group
- Saskatoon Branch of the Sask. Institute of Agrologists, Executive member

J. Wahab

- Agriculture and Agri-Food Canada National Potato Research Network
- Prairie Potato Council
- Prairie Regional Recommendation Committee on Grains
- Saskatchewan Seed Potato Growers' Association
- Western Expert Committee on Grains - production section
- Saskatchewan Herb and Spice Association
- Potato Association of America
- Herbfest 2000 organizing committee

B. Vestre

- Environmental Management Strategy Planning committee
- Joint Occupation Safety and Health committee
- PFRA Pesticide Review committee
- Herbfest 2000 organizing committee

M. Martinson

- Environmental Management Strategy Planning committee
- PFRA Communicator Newsletter working group
- SIDC Strategic Planning steering committee

Factsheets

The following factsheets are available from the SIDC. Please contact the Centre for copies.

Cereals:

- Early Seeding of Irrigated Cereals
- Decision Guide for Foliar Disease Control in Irrigated Wheat
- Late Nitrogen to Increase Protein in Durum

Forages:

- Kentucky Bluegrass Establishment for Seed Production
- Effect of Cutting Height on Alfalfa Yield and Quality
- Irrigated Timothy Trials at SIDC
- Alfalfa Establishment under Irrigated Conditions

Herbs and Spices:

- Herbs, Spices and Essential Oils Research & Demonstration
- Annual Caraway Trials at SIDC
- Coriander Trials at SIDC
- Dill Seed Trials at SIDC
- Irrigated Scotch Spearmint Production in Saskatchewan

Marketing:

- Vegetable Price Comparison
- Ginseng Production and Marketing on the Prairies
- Ethanol Industry Set for Recovery

Oilseeds:

- Date of Seeding, Seed Rate, and Row Spacing of Irrigated Flax
- Seeding Rate and Row Spacing for Irrigated Canola
- Crop Management for Sclerotinia Control in Canola
- Innovations in Canola Production

Pulse Crops:

- Dry Bean Production under Irrigation in Saskatchewan
- Irrigated Dry Bean Production Package
- Intercropping Pea with Oilseeds under Irrigation
- Management of Field Pea under Irrigation
- Faba Bean Trials at SIDC
- Management of Irrigated Lentil
- Irrigated Chickpea Trials at SIDC

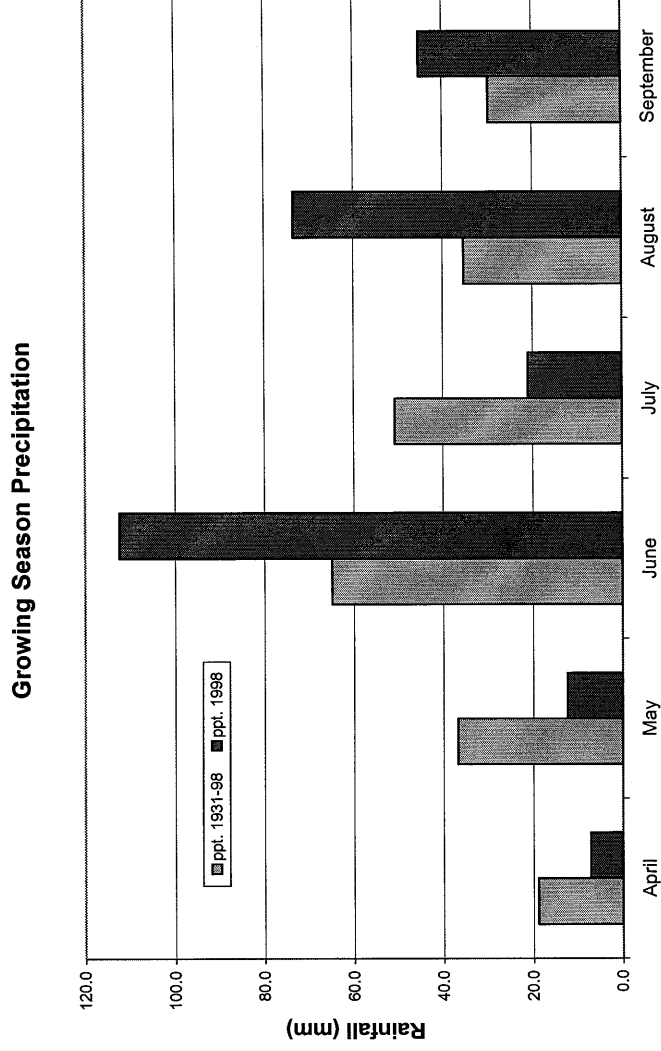
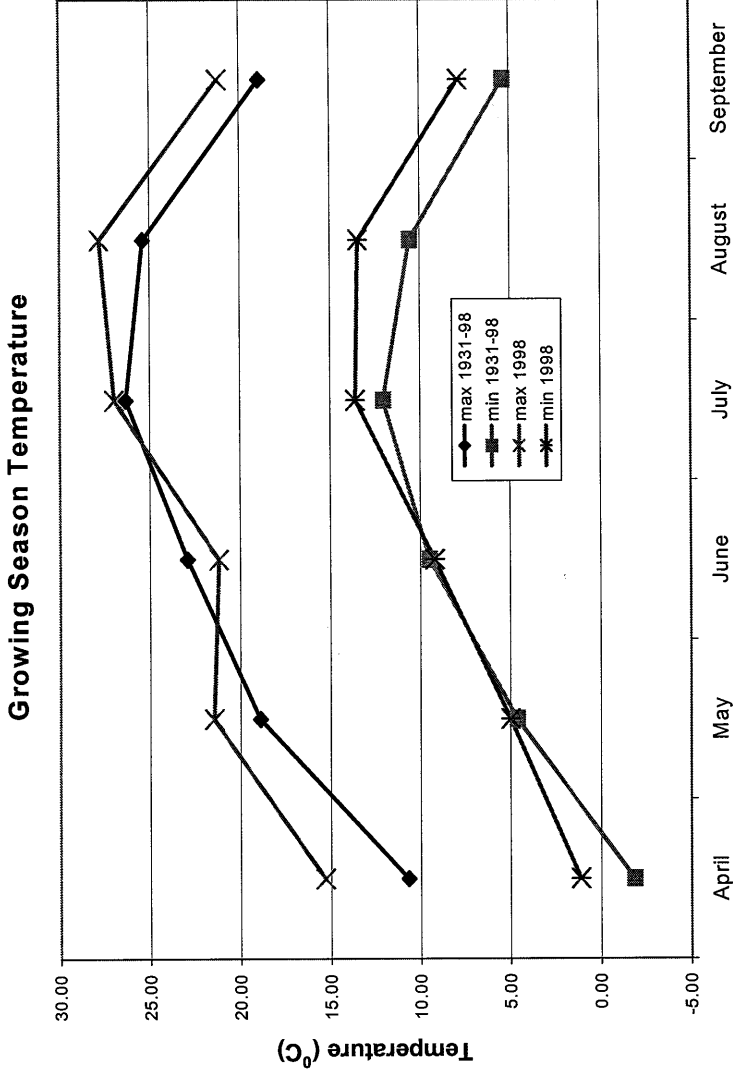
Soils and Fertilizers:

- Reclamation of a Saline Field using Subsurface Drains
- Rate and Placement Effects of P and K Fertilizer on Peas
- Fertility Management of Irrigated Canola
- Canola Fertilization Trials at SIDC
- Hog Effluent Research and Demonstration

Other:

- Crop Varieties for Irrigation
- Overview of SIDC
- Geographic Information System at SIDC
- Northern Vigor™ in Seed Potato
- Xeriscape Demonstration Project at SIDC
- Fruit Crops in Saskatchewan
- Plastic Mulches for Commercial Vegetable Production

1998 Weather Summary



Irrigation Data

Field	Crop	Millimeters Applied				Total Irrigation		
		May	June	July	Aug	Sept	mm	inches
SIDC								
1	Canola	55		125	25		205	8.1
4	Potato	25		90	50		165	6.5
5	Potato	25		90	50		165	6.5
7	Dry Bean	40	75	125			240	9.4
7	Forages	40	75	125	25		265	10.4
7	Potato	25	75	125	75	25	325	12.8
8	Rotation study	40	75	100	25		240	9.4
8	Durum demo	40	50	100			190	7.5
9	Faba bean	40	75	100	25		240	9.4
9	Chickpea	25	25	50			100	3.9
9	Dry Bean	40	75	100	25		240	9.4
9	Lentil	40	75	50			165	6.5
9	Durum	40	50	100			190	7.5
10	Mint	40	75	100			215	8.5
10	Durum	15	75	100			190	7.5
11	Canola		75	115	75		265	10.4
11	Potato		75	115		25	215	8.5
12	Direct Seed demo	25	25	75			125	4.9
12	Durum	25	25	75			125	4.9
12	Forages	25	50	100	25		200	7.9
Off-station site								
	NE quadrant	55	60	135	30		280	11.0
	NW quadrant	30	60	135			225	8.9
	SE quadrant	80	60	135	30		305	12.0
	SW quadrant	30	60	135		50	275	10.8
Rainfall		12	112	21	73	45	264	10.4