



**2011 AgriARM Report  
Applied Research and Demonstration  
Prince Albert AgriARM Site**

**Final Report**



## Overall Summary

### Conservation Learning Centre

The Saskatchewan Conservation Learning Centre Inc. (CLC) is a producer-driven, non-profit corporation with formal status as a registered charity. The CLC was established in 1993 under the Parkland Agricultural Research Initiative, a component of the Green Plan. The CLC demonstrates, on a farm-scale, soil and water conservation technology. It also serves as a field laboratory for evaluation and applicability of new research and technology. The CLC is located on 457 acres of land 18 km south of Prince Albert in the Parkland Region of Saskatchewan.

**Mission:** The Saskatchewan Conservation Learning Centre Inc. (CLC) researches and demonstrates land management techniques which focus on the optimum utilization of the landscape for annual crops, forage, and agroforestry production, employ appropriate soil and water conservation techniques and facilitate wildlife habitat enhancement.

**Mandate:** To provide information to farmers, public school students, researchers, extension workers, and the urban public in the parkland area of Saskatchewan. The CLC will also facilitate interrelationships with all those interested in the objectives of the CLC including the agriculture and agroforestry industry, policy makers, and the media.

### Objectives:

- To increase the awareness of farmers as to the importance of land management systems which include both economic and environmental stewardship. To be a leader in identifying and demonstrating agricultural practices that emphasize sustainability. To have farmers adopt these practices on their own farms.
- To increase the awareness of the interaction of agriculture and the environment among public school students.
- To have the urban public become more aware of how farmers practice stewardship on their farms. To have the urban public become aware of how agriculture and wildlife can co-exist. To have them understand the role and importance of the agriculture supply industry in food production.
- To provide researchers with a location to expand their plot research to field scale and/or landscape research. This will enable them to learn about and investigate applied research techniques, other research projects, new research needs, and the role of industry in the agri-food sector.
- To encourage the corporate sector and interested organizations to promote sustainable agriculture practices. To provide a site where researchers, industry, farmers, agroforesters, technology transfer personnel and the public can be brought together at one location.

Recently, the CLC has started to increase its equipment list. With increased funding, the CLC finds itself in a position to source different equipment to help facilitate future projects. 2011 saw us fail to win a tender for a plot combine. We were able to rent it for the completion of some of our 2011 projects. Presently, we are searching for a combine, along with the necessary equipment to harvest plots. With the support of AgriARM, ADOPT and the Saskatchewan Research Council, along with industry, we continue to develop new relationships while rebuilding old ones. The support has enabled the CLC to address some concerns that were preventing the organization in moving forward with its long term plans.

The recent addition of desperately needed equipment provides the CLC with added opportunities that attract even more participants to the farm. Our extension program is more aggressive so that results can be provided to producers and professionals in a timely manner while developing new opportunities. A state of the art weather station was installed in 2011 as a result of our partnership with the Saskatchewan Research Council.

2011 saw the CLC host its 1<sup>st</sup> Performance Combine Clinic. More than 75 producers traveled as far as 3 hours away to listen to Les Hill. All but 1 dealer was able to attend, with attending dealers extremely happy with the outcome and are looking forward to attending again in 2012. This season we are planning a 2 day workshop, with the 1<sup>st</sup> day hosting a combine clinic, while the 2<sup>nd</sup> day will focus on a sprayer workshop.

One of the most unique features at the CLC is the School Program. Since the beginning, well over 25,000 students, along with hundreds of educators and chaperones, have experienced all the farm has to offer. Our program follows the provincial science curriculum and consists of a two hour tour where students from grades 3 to 11 are exposed to conservation techniques specific to each class's objectives. The program highlights where and how our food is produced while promoting the conservation of our soils, water and wildlife habitat.

### **AgriARM Research Sites**

The CLC is proud to be a member of the AgriARM research site network and to assist AgriARM in achieving its own objectives (see below). The CLC and AgriARM objectives are often aligned and provide opportunities to producers to experience first-hand new and productive forms of agriculture. The funding received from AgriARM helps the CLC conduct trials for adoption by local producers. Once adopted, these new ventures help strengthen agriculture and rural communities while building a better Saskatchewan.

### Agri-ARM's objectives

- Increase the adoption of new agricultural production technologies and practices;
- To provide farmers with more tools for environmental and economic decision-making;
- Develop and maintain an adequate level of infrastructure and expertise for regional applied research and demonstration; and
- Increase public awareness of agriculture's role in environmental stewardship and the overall economy.

### **Agriculture Demonstration of Practices and Technologies (ADOPT) Program**

*The purpose of the ADOPT program is to accelerate the transfer of knowledge to Saskatchewan producers and ranchers. The ADOPT program will provide funding to help producer groups evaluate and demonstrate new agricultural practices and technologies at the local level. The results of successful trials can then be adopted by farming operations in the region*

### **2011 ADOPT and AgriARM List of Projects**

- Fertilizer Effects on Malt Barley
- Investigating Crop Development Opportunities in North Central (NC) Saskatchewan
- Demonstration of New Varieties for NC Saskatchewan
- Fall vs Spring Planting of Haskap
- Demo of annual forages
- Yellow feed demo
- Seeding legumes into old grass stands
- Winter wheat weed management
- Winter wheat seeding depth
- Midge tolerant wheat demo

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## General Site Conditions

The CLC is situated 18kms south of Prince Albert. Soils are considered to be silty clay, but are quite variable; the landscape is hummocky with several potholes. Knolls are primarily sandy and hollows are mostly heavy clay. Weed pressure is high and weed control difficult as a result of large adjacent riparian areas which interfere with timely herbicide applications, especially in the recent uncommonly wet years.

Of the 457 acres at the CLC, 67 acres were seeded to canola, while the SE quarter was chem-fallowed. The remaining land area was for trials.

In 2011, the CLC was faced with difficult conditions as a result of the weather. Spring seeding was delayed due to excessive moisture. Some plots were impacted as a result of very heavy rains following seeding.

**Figure 1. Yearly Accumulated Precipitation and Temperature for Prince Albert 2011**

### Temperature (°C) 2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average high	-13	-8.3	-1.3	9.5	17.7	21.8	23.9	23.1	16.6	9.3	-2.9	-10.8
Average low	-25.2	-20.9	-13.6	-3.4	3.3	8.6	11.1	9.4	3.6	-2.5	-12.2	-21.6
Average	-19.1	-14.6	-7.5	3.1	10.5	15.2	17.5	16.3	10.2	3.4	-7.6	-16.2
Record daily high	12	11	19.8	32.2	35.4	38.8	37.8	36.1	36.1	30.6	19.4	10
Date	Jan 30 1993	Feb 25 1986	Mar 31 1994	Apr 28 1952	May 29 1986	Jun 05 1988	Jul 30 1946	Aug 17 1949	Sep 05 1967	Oct 03 1943	Nov 05 1949	Dec 06 1942
Record daily low	-50	-46.1	-45.6	-33.9	-12.8	-4.4	1.1	-3.7	-15.6	-26.1	-38.9	-44.3
Date	Jan 20 1943	Feb 20 1949	Mar 01 1962	Apr 03 1954	May 03 1963	Jun 10 1947	Jul 24 1946	Aug 27 1982	Sep 30 1961	Oct 26 1951	Nov 27 1970	Dec 10 1977

# Precipitation (mm) 2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly rainfall (mm)	0	0	1	17	44	73	77	58	37	14	2	1

Annual average: 323

Monthly snowfall (cm)	19	13	17	11	3	0	0	0	2	11	16	20
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Annual average: 111

Monthly precipitation (mm)	16	12	16	27	48	73	77	58	39	24	17	18
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Annual average: 424

Single day record rainfall (mm)	9	2	10	41	53	56	74	70	41	20	14	6
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Date	Jan 24 1968	Feb 21 1978	Mar 31 1958	Apr 23 1957	May 30 1968	Jun 10 1978	Jul 06 1944	Aug 09 1974	Sep 12 1973	Oct 15 1959	Nov 01 1983	Dec 15 1969
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Single day record snowfall (cm)	15	12	29	19	20	5	0	0	18	43	17	19
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Date	Jan 07 1957	Feb 12 1961	Mar 21 1953	Apr 07 1970	May 29 1954	Jun 01 1945	Jul 01 1943	Aug 01 1943	Sep 28 1982	Oct 11 1998	Nov 13 1973	Dec 17 1967
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Single day record precipitation (mm)	15	12	29	41	53	56	74	70	41	42	19	16
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## Summary of Activities from 2011

Activity	Type of Activity	Project Title	# at Event	Year Initiated	Ongoing	Demo / Research
1	Horticulture	Living Snow Fence	86	2008	yes	Demo
2	Agriculture	Forage Corn Demo	86	2011		Demo
3	Agroforestry	Alleycropping	86	2011	yes	Research
4	Horticulture	Honeysuckle Varietal Selection	86	2008	yes	research
5	Agroforestry	Slope Stabilization		2009	yes	Demo
6	Horticulture	Demonstration Orchard	86	<2008	yes	Demo
7	Agriculture	ULV Spraying Demo	6	2011		Demo
8	Agriculture	Winter wheat weed management		2011		Research
9	Agriculture	Midge Tolerant Wheat	86	2011		Demo
10	Agriculture	Yellowfeed	86	2011		Demo
11	Agroforestry	Minor Use Registration	86	2011		Research
12	Agriculture	Winter wheat seeding depths		2011		Demo
14	Agroforestry	Eco buffer	42	2010	yes	Demo
15	Agroforestry	Biomass Trial	42	2008	yes	Research
16	Agroforestry	Afforestation		2008		Demo
17	Agroforestry	H. Poplar Clonal Trial	42	2008	yes	Research
18	Agriculture	Seeding legumes into old grass stands	42	2011		Demo
19	Agriculture	Annual forage Trial	86	2011		Demo
20	Agroforestry	Willow Variety Trial	42	2009	yes	Demo
21	Agriculture	Combine clinic	75	2011	yes	Demo
22	Agriculture	Organic grower tour	42	2011		
23	Agriculture	Fertilizer Effects on Malt Barley	86	2011		Demo
24	Agriculture	Crop Development Opportunities	86	2011		Demo
25	Horticulture	Apple Rootstock	90	2010	yes	Demo
26	Horticulture	Fall Haskap Planting	90	2010	yes	Research
27	Agriculture	New Crops	86	2011		Demo



## Research Activities 2011

### ADOPT Trials

- Fertilizer Effects on Malt Barley
- Winter wheat weed management
- Winter wheat seeding depths
- Investigating Crop Development Opportunities in NC Saskatchewan
- Demonstration of New Crop Varieties for NE Saskatchewan
- Fall vs Spring Planting of Haskap

**Figure 2. CLC Field Day**



### AgriARM Trials

- Agronomics of Alleycropping
- Forage Corn Demo
- Living Snow Fence
- Varietal Selections of Blue Honeysuckle (Haskap)
- Demonstration Orchard
- ULV Spraying Demo

## Industry Trials

- SeCan: Midge Tolerant Wheat Demo, CLC
- SeCan: Greenfeed Trial, CLC
- PMRA: Minor Use Registration, CLC
- Saskatchewan Research Council (SRC): Balsam Poplar Progeny Trial
- SRC: Eco-buffer
- SRC: Biomass Trial
- SRC: Afforestation
- SRC: Hybrid Poplar Stooling Bed
- SRC: Willow Variety Trial
- Agriculture and Agri-Food Canada/Agri-Environmental Services Branch (AAFC-AESB) and SRC: Hybrid Poplar Clonal Trial

## Extension Activities 2011

### Summary of CLC extension activities.

<b>Activity</b>	<b>Estimated attendance</b>
Annual Summer Tour	41
Local organic growers group	42
District 32 ADD Board tour	21
Combine clinic	75
Apple fruit budding workshop	5
Unstructured Tours	3
School Program Tours	1242
<b>Total</b>	<b>1470</b>

Other extension activities included:

Crop Production Show

Crop Talk

Web site updates

## Research Results 2011

### AgriArm and ADOPT Projects Initiated in 2011

#### *Agronomics of New Varieties of Midge Resistant Wheat Conservation Learning Centre*

#### **Project Summary**

The objective of this trial was to demonstrate to producers any economic advantage of growing midge resistant wheat vs. conventional wheat. With the increase in farm size, producers are looking for every advantage available in terms of being proactive when reducing pest populations. Wheat midge has cost producers significant losses in the past and these resistant varieties could become a new tool for protecting the producer's bottom line.

#### **Project Description**

May 31, 2011 saw us seed 6 plots of wheat 21' x 54' for each plot. CDC Stanley was our check variety, with Ac Unity and Ac Fieldstar being the 2 selected midge tolerant varieties. 75lbs of N, along with 26lbs of P were placed with the seed. MCPA was sprayed in crop at recommended rate on the 30<sup>th</sup> of June. Monitoring for midge populations was conducted, but economic thresholds were not met. The plots were combined Sept 21.

#### **Results:**

<b>Wheat Variety</b>	<b>Yield (bu/acre)</b>	<b>% Increase over check</b>
Wheat CDC Stanley (check)	35.1	
AC Fieldstar	40.9	14.1
AC Unity	33.8	- 3.84



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## ***Fertilizer Effects on Malt Barley Conservation Learning Centre***

### **Project Summary**

The objective of this project was to demonstrate the effects of different application rates of nitrogen on the grain protein level of new varieties of barley suited for NE Sask. Some new variety releases show signs of maintaining low protein levels when higher rates of nitrogen are applied. The results could provide producers with the choice of a new barley variety tolerant of higher nitrogen fertilizer rates in order that increased yields can be achieved while maintaining lower grain protein levels and higher carbohydrate content that is preferable in the malting process. The impact of these results would be adoption by producers of these new malting varieties.

### **Project Methodology**

Four rates of nitrogen (N) fertilizer were chosen for application to X varieties, in randomly replicated plots. Fertilizer rates of N were determined by soil sampling.

- Plot A received 1X the recommended rate of N,

- Plot B received 1.5X the recommended rate of N,
- Plot C received 2X the recommended rate of N, and
- Plot D received 2.5X the recommended rate of N.

Following harvest, 1 metre samples will be taken from all 4 plots and be measured for protein content and yield.

**Project Results**

Four different rates of fertilizer were applied to the plots. Plot A received 1X of N, while Plot B got 1.5X, Plot C got 2X and Plot D had 2.5X. Following harvest, samples were sent away for protein levels.

Variety	Yield (bushel per acre)
CDC Copeland (check) 1x	95.33
1.5X	97.63
2X	108.62
2.5X	103.12
CDC Meredith 1x	89.83
1.5x	92.12
2x	112.75
2.5x	114.12
CDC Reserve 1x	44.71
1.5x	44.47
2x	33.78
2.5x	Drowned out

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## ***Agronomics of Fall Planted Haskap Conservation Learning Centre***

### **Project Summary**

The objective of this project is to document the agronomic elements of fall planting haskap versus spring planting. Early experience shows some benefits of fall planting. This crop is very early to start growing in the spring. Producers have experienced limited growth in the first year with spring planting due to the tendency of this plant to go dormant if not planted early enough as vegetative growth is compromised and the plant goes into a rooting phase. This new berry crop has exploded onto the marketplace with many commercial orchards established and many more in the planning stages. The agronomics of this crop are not completely understood for Saskatchewan conditions and the industry lacks enough information to publish a grower's manual. This project will help the producer better understand the growing aspects of this plant.



**Figure 3. CLC Field Day, Haskap Trial.**

### **Project Methodology**

Three separate cultivars were hand planted in the fall of 2010 with counterparts planted in the spring of 2011. Spring and fall total numbers were divided into three separate planting dates one week apart. One hundred and eighty plants of each cultivar were planted (90 in the fall - 90 in the spring) and these were replicated in three plots.



## Project Results

Cultivar	planting date	stem ht	mortality	drowned
1 = Borealis	spring	16 cm	32%	17%
2 = Tundra	spring	22 cm	23%	11%
3 = Indigo Treat	spring	n/a	0.05%	0
4 = Borealis	fall	23.5 cm	37%	0.03%
5 = Tundra	fall	7 cm	68%	0.08%
6 = I.Treat	fall	21 cm	98.90%	0

Fall planting in 2010 went well with all cultivars showing typical signs of fall planting including the initiation of rooting. Spring 2011 planting also went fine. The high mortality with fall planting of Indigo Treat suggests rootstock had predetermined issues (storage, etc.) that caused such poor establishment. Several years of growth will be needed to determine if there are benefits to be accrued for spring versus fall planting.

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## ***Investigating Crop Development Opportunities in NC Saskatchewan Conservation Learning Centre***

### **Project Summary**

In partnership with the Ministry of Agriculture (MOA), the CLC has the opportunity to utilize its facilities and capabilities to investigate new crop development for north central Saskatchewan and to evaluate performance under local growing conditions. MOA staff assisted in evaluating crop production potential and accessing market information. Interested local producers were able to observe these potential crops and present ideas to MOA and CLC staff.

### **Project Methodology**

Demonstration strip plots of 16 annual and eight perennial new or novel crops were seeded and planted. The demonstration was done on a small, non-replicated plot

basis designed to be utilized as an extension tool for field days, tours and for use with the school program. The plots were hand-weeded. These demonstration plots are designed to simply provide an opportunity to observe the morphology of new crops and how they grow in the region. More specific details on agronomics are available for most of these crops from various research scientists scattered across western Canada. Interest in these crops came from different producer groups and industries, including organic, fruit, herbs and spice producers and the biofuel, pet food and health product industries.



### **Project Results**

This demonstration plot proved to be one of the more popular plots in 2011 despite having some crops washed away with heavy spring rains. Producers were quite interested and a couple special mini-tours were held for individuals that became aware of the demonstration. It was also viewed by close to 100 participants during CLC field days. Special interest was paid by the local organic growers group that toured the CLC. They were very happy to see such a variety of herbs and other new crops were particularly interested in anise hyssop and carinata. This demo continues to create a lot of interest at the CLC and is one of our most popular demos year after year.



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## ***Demonstration of New Crop Varieties for NE Saskatchewan Conservation Learning Centre***

### **Project Summary**

This demonstration project will showcase the latest variety releases from the Crop Development Centre (CDC) at the University of Saskatchewan. The demonstration will focus on wheat, oats, red lentils and green and yellow field peas. Producers are always looking for new varieties and like to see field demonstrations before committing large acres to a new variety. Each new variety will be compared to a check variety in the field, giving producers hands-on comparisons of the new to existing varieties. The impact of this project should be quite significant, as our research indicates that producers feel this is the most important type of project to get them onto the farm to witness the results. Positive results would suggest producers would adopt these new varieties for future crops.

### **Project Methodology**

Demonstration plots of new crops were seeded on a non-replicated field scale basis designed to be utilized as an extension tool for field days. All seeding and combining was done with plot machinery.

### **Project Results**

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<b>Variety</b>	<b>Yield (bu/acre)</b>
CDC Redberry lentils	47.56
CDC Dancer oats	89.97
CDC Seabiscuit oats	116.07
CDC Patrick green peas	70.83
CDC Golden yellow peas	74.11

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### **Annual Work Plan**

To follow, due Feb.28, 2011

### **Contact Information**

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## AgriArm Financial Statement January 31, 2012

<b>Categories</b>	<b>\$</b>
Salaries and Benefits	20,000
Staff (other than summer students)	17,500
Students	2,000
Consultant Fees	
Rental Costs	1500
Materials/Supplies	4,000
Travel	3,000
Other	1,000
Audit Fees	1,000



