



Irrigation Crop Diversification Corporation

**Irrigation Economics and Agronomics
Saskatchewan
2013**

Disclaimer

The authors of the Irrigation Economics and Agronomics Publication attempt to provide accurate and useful information. Average and target yields were determined by surveying producers in the Lake Diefenbaker Development Area. Fertility requirements are based on the yield targets used. Actual yields achieved are affected by seasonal growing conditions and individual management skills.

The prices used for crops and inputs are based on discussions with grain marketing companies and farm supply retailers and are only accurate at the time of printing. Therefore the authors and the Irrigation Crop Diversification Corporation assume no responsibility for any actions taken by any reader of this publication based on the information provided.

IRRIGATION ECONOMICS AND AGRONOMICS SASKATCHEWAN 2013

These budgets are to be used as guidelines only.

The actual farm-to-farm variation can be significant.

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For more information:

Irrigation in Saskatchewan website:

www.irrigationsaskatchewan.com

Saskatchewan Ministry of Agriculture - Irrigation Branch - Outlook
(306) 867-5500

Irrigation Crop Budget Assumptions

- Projected crop prices and input costs for 2013 are estimates based on the information available on Jan 4, 2013. Readers are advised to use the latest available input costs and crop prices to calculate their returns.
- Seed costs are taken from the Saskatchewan Ministry of Agriculture Crop Planning Guides 2013 where applicable and from industry sources. Refer to Appendix A for more details.
- Seed treatment and inoculant costs are based on suggested retail prices for 2013. For budgeting purposes in this publication cereals are treated with Cruiser MAXX, flax is treated with Vitaflo and the canola seed price includes seed treatment.
- Fertilizer recommendations are based on the assumption that the nutrients available in a 0-12" soil sample are: 30 lb/ac N, 20 lb/ac P and >800 lb/ac K. An actual soil test is required to provide recommendations for fertilizer applications based on soil nutrient levels and crop needs for each field.
- Fertilizer prices are retail prices as of January, 2013:
 - o Nitrogen based on 46-0-0 at \$600/tonne (\$0.59/lb)
 - o Phosphorus based on 11-52-0 at \$715/tonne (\$0.55/lb)
 - o Potassium based on 0-0-62 at \$585/tonne (\$0.43 /lb)
- Sulphur fertilization is generally not required for irrigated crop production when using water from the South Sask River (Lake Diefenbaker) as about 5 lbs of sulphur is applied per inch of irrigation from that source. Other water sources should be analyzed for sulphur when used for irrigation and soil analysis on an ongoing basis is a good practice for all irrigated soils to ensure adequate sulphur is available.
- Herbicide, insecticide, and fungicide costs are based on suggested retail prices for 2013. Refer to Appendix A for more details on herbicides.
- Equipment repair costs are based on Saskatchewan Ministry of Agriculture Crop Planning Guides 2013 numbers for conventionally-tilled grain crops where applicable. Equipment fuel and repair for other crops estimated based on producer experience. Fuel cost based on \$1.00/L of diesel, this cost includes delivery.
- Custom work and hired labour based on industry information (\$20 hour). Refer to Appendix A for more details on custom work.
- Irrigation application rates used for calculation of pumping costs and water service costs are based the long term average seasonal rainfall for the Outlook area, (6.5 inches for shorter season crops like cereals, oilseeds and pulses, and 7.5 inches for longer season crops like perennial forages and corn).
- Irrigation pumping power costs are based on a 40 hp pump and a 7 tower low pressure pivot, with an annual cost being approximately \$1860 for 133 acres.
- Irrigation repair cost is based on 1.5% of \$100,000 (pivot, pump, and mainline cost) over 133 acres.
- Irrigation service charge based on the 2012 rate for SSRID (base \$23.45, with a water usage adjustment; \$3.75 for 12 inches).
- Crop insurance rates are based on the 2012 rates at 70% for soil class E in Risk Area 12. See Generic Insurance Cost Calculator at www.saskcropinsurance.com for 2012 rates released in March.
- Hail insurance rates are based on \$150.00/ac coverage at 5.2% premium for crops insured at the basic rate and 1.75X for canola and 2.00X for mustards and pulse crops.
- Other is a catch-call category for expenses not covered above. Refer to Appendix A for more details.

- Farm overhead costs include property taxes, auto expenses, building repairs and insurance and small tools.
- Operating interest is 4.2% for 6 months (consistent with Saskatchewan Ministry of Agriculture Crop Planning Guides).
- Farm equipment and buildings annual cost is based on 5.5% annual interest being charged against the value of the assets of a sample farm.
- Irrigation system cost is equal to a payment at 5.5% interest based on a system value of \$50,000 (50% of new cost \$100,000) irrigating 133 acres.
- Special Crop Equipment
 - o Row crop equipment costs used in the dry bean and corn budgets (planter, cultivator, etc.) is based on 600 acres of use annually for 10 years.
 - o Grain corn header use cost is based on 300 acres of use annually for 10 years.
 - o Side knife (canola, mustards and fababeans) use cost is based on 600 acres of use annually for 10 years.
 - o Pulse equipment (flex- header, roller) use cost is based on 600 acres of use annually for 10 years.
 - o Hay equipment: baler, mower/conditioner and swath inverter costs are based on 500 ac of use annually for 10 years, bale mover for 15 years.
 - o Cross fencing (10 year life); permanent fencing (15 year life); water supply for grazing corn and perennial pasture (15 year life).
 - o Potato field equipment (10 year life), storage / handling equipment (10 year life), and storage facility (15 year life) costs are based on 500 acres.
- Land investment cost is based on a return of 4.5% on a \$150,000 investment per quarter section of land.
- Freight and marketing costs for non-board grains have not been included in these budgets. These costs are area and situation specific. Rail freight and elevation costs have been deducted for board grains.
- Prices for board grains are based on the December 6, 2012 PRO less freight (www.cwb.ca)
- **Target yields** in this publication reflect yields that can be obtained under ideal growing conditions using the agronomic practices and levels of inputs as stated in the budget.
- **Average yields** reflect what experienced irrigators tell us they are achieving on a regular basis.
- **Average and target yields are based on producer experience. Variations can occur due to environmental conditions, management and soil productivity.**

ECONOMICS

CROP: HARD WHEAT

Item	Unit	My Farm	
		\$/ac	\$/ac
Seed			\$20.90
Seed treatment			\$9.14
Soil test			\$0.65
Fertilizer:	N	135 lb	\$79.89
	P ₂ O ₅	45 lb	\$24.88
	K ₂ O	15 lb	\$6.42
Herbicide			\$15.06
Insecticide *			\$0.00
Fungicide			\$17.05
Equipment fuel			\$17.00
Equipment repair			\$5.64
Custom work			\$7.00
Irrigation power	12 inches		\$16.80
Irrigation repair			\$11.28
Irrigation service/water charge			\$26.95
Crop insurance †	46 bu/ac		\$4.57
Hail insurance			\$7.80
Hired labour	0 hr/ac		\$0.00
Other			\$0.00
Farm overhead			\$9.20
Operating interest	4.2 %		\$5.88
Total Cash Costs			\$286.12
Farm Equipment & Buildings			\$55.61
Irrigation System			\$28.03
Specialized Equipment			\$0.00
Land			\$42.19
Total Non Cash Costs			\$125.82
Total Costs			\$411.94
Returns	AVG	Target	
Yield bu/ac	70	80	
Price \$/bu (#1 13.5%)			\$8.76
Gross Return	\$613	\$701	
Net Return	\$201	\$289	
Specialized Equipment			\$/ac/yr
TOTAL			\$0.00

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Goodeve, Unity, and CDC Utmost are wheat midge tolerant varieties. Glenn, Muchmore, and CDC Abound are high yielding varieties. Carberry is resistant to fusarium head blight. Select an irrigated variety on the basis of high yield, lodging resistance and disease resistance. See 'Crop Varieties for Irrigation' publication.

Seeding: Seed before May 15th.

Plant population	250.0	plants/sq m.
TKW	42.0	grams
Seeding Rate	110.0	lb/ac

Fertilization:

Apply 120-135 lb/ac N, 30-45 lb/ac P₂O₅ and 10-15 lb/ac K₂O.

A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs.

Crop Water Use and Irrigation:

Total seasonal crop water use: 460 mm

Emergence to Tillering: 1.0 to 4.5 mm/day

Stem Extension to Heading: 3.5 increasing to 6.5 mm/day

Flowering to Late Milk: 5.5 to 7.5 mm/day

Early Dough to Maturity: 6.5 mm/day

Critical stages for moisture are tillering and flowering. Maintain soil at >50% available moisture. Use a soil probe to check moisture status.† Allow the canopy to dry between irrigations to minimize disease pressure and lodging.

Harvest:

Swath or desiccate at a kernel moisture content of 30%. The kernel will dent with pressure. In some years the straw may still be green. Decide on the basis of grain firmness and colour.

Handling, Storage and Grading:

Dry 14.5%; Tough 14.6%; Damp 17.0%

Rotations and Crop Protection:

Fungicide seed treatment recommended. Wheat on wheat stubble will yield at least 15% less than wheat on broadleaf stubble due to disease build-up. Break from cereals for one year. Fusarium head blight is a concern on irrigation. Hard wheat is less susceptible than durum, but a fungicide application is recommended for control.

* Wheat midge may require control.

† Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: DURUM

Item	UNIT	\$/ac	My Farm \$/ac
Seed		\$24.00	
Seed treatment		\$9.14	
Soil test		\$0.65	
Fertilizer:	N 165 lb	\$97.65	
	P ₂ O ₅ 40 lb	\$22.11	
	K ₂ O 15 lb	\$6.42	
Herbicide		\$15.06	
Insecticide *		\$0.00	
Fungicide		\$17.05	
Equipment fuel		\$17.00	
Equipment repair		\$5.64	
Custom work		\$7.00	
Irrigation power	12 inches	\$16.80	
Irrigation repair		\$11.28	
Irrigation service/water charge		\$26.95	
Crop insurance †	54 bu/ac	\$6.72	
Hail insurance		\$7.80	
Hired labour	0 hr/ac	\$0.00	
Other		\$0.00	
Farm overhead		\$9.20	
Operating interest	4.2 %	\$6.31	
Total Cash Costs		\$306.78	
Farm Equipment & Buildings		\$55.61	
Irrigation System		\$28.03	
Specialized Equipment		\$0.00	
Land		\$42.19	
Total Non Cash Costs		\$125.82	
Total Costs		\$432.60	
Returns	AVG	Target	
Yield bu/ac	80	90	
Price \$/bu (#2 11.5%)		\$8.58	
Gross Return	\$686	\$772	
Net Return	\$254	\$340	
Specialized Equipment		\$/ac/yr	
TOTAL		\$0.00	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Strongfield and Brigade are high yielding varieties with good lodging resistance. Durum varieties require more days to mature than other wheats. See 'Crop Varieties for Irrigation' publication.

Seeding: Seed before May 15th.

Plant population	250.0	plants/sq m.
TKW	45.0	grams
Seeding Rate	120.0	lb/ac

Fertilization:

Durum can be downgraded due to piebald kernels. Sufficient N reduces the problem. Apply 140-165 lb/ac N, 30-40 lb/ac P₂O₅ and 10-15 lb/ac K₂O. A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs.

Crop Water Use and Irrigation:

Total seasonal crop water use: 460 mm
 Emergence to Tillering: 1.0 to 4.5 mm/day
 Stem Extension to Heading: 3.5 increasing to 6.5 mm/day
 Flowering to Late Milk: 5.5 to 7.5 mm/day
 Early Dough to Maturity: 6.5 decreasing to 2.0 mm/day

Critical stages for moisture are tillering and flowering. Maintain soil at >50% available moisture. Use a soil probe to check moisture status.† Allow the canopy to dry between irrigations to minimize disease pressure and lodging.

Harvest:

Swath or desiccate at a kernel moisture content of 30%. The kernel will dent with pressure. In some years the straw may still be green. Decide on the basis of grain firmness and colour. Durum is more susceptible to weathering and sprouting than hard wheat.

Handling, Storage and Grading:

Dry 14.5%; Tough 14.6%; Damp 17.0%

Rotations and Crop Protection:

Fungicide seed treatment recommended. Durum is more susceptible to fusarium head blight than other wheat classes. Four year break between durum crops reduces risk and build-up of disease. Avoid planting durum on or near corn stubble. Wheat on wheat stubble will yield at least 15% less than wheat on broadleaf stubble due to disease build-up. A fungicide application is recommended. Break from cereals for one year.

* Wheat midge may require control.

† Crop Insurance rates currently under review.

‡ Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: CPS WHEAT

ITEM	UNIT		\$/ac	My Farm \$/ac
Seed			\$25.30	
Seed treatment			\$9.14	
Soil test			\$0.65	
Fertilizer:	N	90	lb	\$53.26
	P ₂ O ₅	30	lb	\$16.59
	K ₂ O	15	lb	\$6.42
Herbicide			\$15.06	
Insecticide *			\$0.00	
Fungicide			\$17.05	
Equipment fuel			\$17.00	
Equipment repair			\$5.64	
Custom work			\$7.00	
Irrigation power	12	inches	\$16.80	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$26.95	
Crop insurance †	52	bu/ac	\$6.52	
Hail insurance			\$7.80	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating int	4.2	%	\$5.28	
Total Cash Costs			\$256.94	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.00	
Land			\$42.19	
Total Non Cash Costs			\$125.82	
Total Costs			\$382.77	
Returns	AVG	Target		
Target yield	bu/ac	75	80	
Price	\$/bu (1 CPSR)		\$7.83	
Gross	\$587	\$626		
Net Return	\$204	\$244		
Specialized Equipment			\$/ac/yr	
TOTAL			\$0.00	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Conquer is the only high yielding CPS midge tolerant variety. Select an irrigated variety on the basis of high yield, lodging resistance and disease resistance. See the 'Crop Varieties for Irrigation' publication.

Seeding: Seed before May 15th.

Plant population	250.0	plants/sq m.
TKW	42.0	grams
Seeding Rate	110.0	lb/ac

Fertilization:

Apply 80-90 lb/ac N, 25-20 lb/ac P₂O₅ and 10-15 lb/ac K₂O.

A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs.

Crop Water Use and Irrigation:

Total seasonal crop water use - 460 mm
 Emergence to Tillering: 1.0 to 4.5 mm/day
 Stem Extension to Heading: 3.5 increasing to 6.5 mm/day
 Flowering to Late Milk: 5.5 to 7.5 mm/day
 Early Dough to Maturity: 6.5 decreasing to 2.0 mm/day
 Critical stages for moisture are tillering and flowering. Maintain soil at >50% available moisture. Use a soil probe to check moisture status. † Allow the canopy to dry between irrigations to minimize disease pressure and lodging.

Harvest:

Swath or desiccate at a kernel moisture content of 30%. The kernel will dent with pressure. In some years the straw may still be green. Decide on the basis of grain firmness and colour. CPS is more susceptible to weathering and sprouting than hard wheat.

Handling, Storage and Grading:

Dry 14.5%; Tough 14.6%; Damp 17.0%

Rotations and Crop Protection:

Fungicide seed treatment recommended. Wheat on wheat stubble will yield at least 15% less than wheat on broadleaf stubble due to disease build-up. Break from cereals for one year. CPS is less susceptible to fusarium head blight than durum. A fungicide application is recommended.

* Wheat midge may require control.

† Crop Insurance rates currently under review.

‡ Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: SOFT WHEAT

ITEM	#	UNIT	My Farm	
			\$/ac	\$/ac
Seed			\$22.00	
Seed treatment			\$9.14	
Soil test			\$0.65	
Fertilizer:	N	140 lb	\$82.85	
	P ₂ O ₅	40 lb	\$22.11	
	K ₂ O	15 lb	\$6.42	
Herbicide			\$15.06	
Insecticide *			\$0.00	
Fungicide			\$17.05	
Equipment fuel			\$17.00	
Equipment repair			\$5.64	
Custom work			\$7.00	
Irrigation power	13	inches	\$18.20	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$27.24	
Crop insurance †	52	bu/ac	\$6.72	
Hail insurance			\$7.80	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating Interest	4.2	%	\$5.99	
Total Cash Costs			\$291.36	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.00	
Land			\$42.19	
Total Non Cash Costs			\$125.82	
Total Costs			\$417.18	
Returns		AVG	Target	
Yield bu/ac		90	100	
Price \$/bu (1 CWSWS)			\$7.15	
Gross		\$644	\$715	
Net Return		\$226	\$298	
Specialized Equipment			\$/ac/yr	
TOTAL			\$0.00	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

AC Andrew and Sadash are high yielding varieties with a good lodging rating. See 'Crop Varieties for Irrigation' publication.

Seeding: Seed before May 15th.

Plant population	250.0	plants/sq m.
TKW	39.0	grams
Seeding Rate	110.0	lb/ac

Fertilization:

Low protein soft wheat production requires a balance between water and nitrogen. Apply 130-140 lb/ac N, 30-40 lb/ac P₂O₅ and 10-15 lb/ac K₂O. A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs.

Crop Water Use and Irrigation:

Total seasonal crop water use: 480 mm
 Emergence to Tillering: 1.0 to 4.5 mm/day
 Stem Extension to Heading: 3.5 increasing to 6.5 mm/day
 Flowering to Late Milk: 5.5 to 7.5 mm/day
 Early Dough to Maturity: 6.5 decreasing to 2.0 mm/day
 Critical stages for moisture are at tillering at flowering. Maintain soil at >50% available moisture. Allow the canopy to dry between irrigations to minimize disease pressure and lodging. Use a soil probe to check moisture status.†

Harvest:

Swath or desiccate at a kernel moisture content of 30%. The kernel will dent with pressure. In some years the straw may still be green. Decide on the basis of grain firmness & colour. Soft wheat is more susceptible to weathering and sprouting than hard wheat.

Handling, Storage and Grading:

Dry 14.5%; Tough 14.6%; Damp 17.0%

Rotations and Crop Protection:

Fungicide seed treatment recommended. Wheat on wheat stubble will yield at least 15% less than wheat on broadleaf stubble due to disease build-up. Break from cereals for one year. Soft wheat is more susceptible to fusarium head blight than hard wheat, but less susceptible than durum. A fungicide application is recommended. Avoid planting soft wheat on or near corn stubble.

* Wheat midge may require control.

† Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: MALT BARLEY

ITEM	#	UNIT	My Farm	
			\$/ac	\$/ac
Seed			\$18.70	
Seed treatment			\$9.14	
Soil test			\$0.65	
Fertilizer:	N	85	lb	\$50.30
	P ₂ O ₅	30	lb	\$16.59
	K ₂ O	15	lb	\$6.42
Herbicide			\$17.75	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$17.00	
Equipment repair			\$5.64	
Custom work			\$0.00	
Irrigation power	10	inches	\$14.00	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$26.37	
Crop insurance †	61	bu/ac	\$7.03	
Hail insurance			\$7.80	
Hired labour	0	hr/ac	\$0.00	
Other			\$5.50	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$4.69	
Total Cash Costs			\$228.06	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.00	
Land			\$42.19	
Total Non Cash Costs			\$125.82	
Total Costs			\$353.88	
Returns		AVG	Target	
Yield	bu/ac	85	100	
Price	\$/bu (2-row select)		\$5.40	
Gross		\$459	\$540	
Net Return		\$105	\$186	
Specialized Equipment			\$/ac/yr	
TOTAL			\$0.00	

More Information:

Call an Irrigation Agriologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

CDC Copeland and Newdale are 2-row varieties with good lodging resistance and high yield. Six-row Legacy has good lodging ratings and high yield. Two-row varieties are more likely to be selected, but six row varieties will resist disease in the humid irrigated crop. See 'Crop Varieties for Irrigation' publication and variety recommendations of CMBTC¹.

Seeding: Seed before May 15th.

Plant population	270.0	plants/sq m.
TKW	41.0	grams
Seeding Rate	110.0	lb/ac

Fertilization:

Apply 80-90 lb/ac N, 25-30 lb/ac P₂O₅ and 15-20 lb/ac K₂O. A soil test will give field specific recommendations for fertilizer application based on soil nutrient levels and crop needs. Consider potassium and zinc status especially on eroded soils.

Crop Water Use and Irrigation:

Total seasonal moisture use: 430 mm

Tillering: 1 to 3 mm/day

Flag Leaf to Flowering: 7 to 8 mm/day

Critical stages for moisture are tillering and flowering. Maintain soil at >50% available moisture from tillering to flowering. Check moisture status with soil probe.† Build soil moisture prior to grain fill and draw down reserve through maturation to reduce stain and lodging. **Irrigated barley is often rejected for malt due to stain.**

Harvest:

Swath at maturity to avoid green kernels in the sample. Delay swathing until kernel is difficult to dent with thumbnail. Barley is more susceptible to weathering and sprouting than hard wheat.

Handling, Storage and Grading:

Dry 14.5%; Tough 14.6%; Damp 17.0%

Rotations and Crop Protection:

Barley is less susceptible to fusarium head blight than wheat and durum, but varieties differ in susceptibility. Net blotch is an important disease of barley, reducing yield and causing downgrading (black point). Reduce net blotch severity by variety selection, burying residue, applying fungicide, and leaving two years between barley crops.

‡ Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

¹ Canadian Malting Barley Technical Centre

ECONOMICS

CROP: FEED BARLEY

ITEM	#	UNIT	My Farm	
			\$/ac	\$/ac
Seed			\$19.50	
Seed treatment			\$9.14	
Soil test			\$0.65	
Fertilizer:	N	100	lb	\$59.18
	P ₂ O ₅	30	lb	\$16.59
	K ₂ O	15	lb	\$6.42
Herbicide			\$17.75	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$17.00	
Equipment repair			\$5.64	
Custom work			\$0.00	
Irrigation power	10	inches	\$14.00	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$26.37	
Crop insurance †	61	bu/ac	\$7.03	
Hail insurance			\$7.80	
Hired labour	0	hr/ac	\$0.00	
Other			\$5.50	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$4.89	
Total Cash Costs			\$237.94	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.00	
Land			\$42.19	
Total Non Cash Costs			\$125.82	
Total Costs			\$363.76	
Returns		AVG	Target	
Yield	bu/ac	95	110	
Price	\$/bu (1 CW-Pool A)		\$4.50	
Gross		\$428	\$495	
Net Return		\$64	\$131	
Specialized Equipment			\$/ac/yr	
TOTAL			\$0.00	

More Information:

Call an Irrigation Agriologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Alston(6-row) has good lodging resistance and high yield. Champion and CDC Coalition ate two row varieties with good lodging resistance. Choose a variety on the basis of yield, lodging and resistance to diseases. See 'Crop Varieties for Irrigation' publication.

Seeding: Seed before May 15th.

Plant population	320.0	plants/sq m.
TKW	41.0	grams
Seeding Rate	130.0	lb/ac

Fertilization:

Apply 95-105 lb/ac N, 25-30 lb/ac P₂O₅ and 15-20 lb/ac K₂O. A soil test will give field specific recommendations for fertilizer application based on soil nutrient levels and crop needs. Consider potassium and zinc status on eroded soils.

Crop Water Use and Irrigation:

Total seasonal moisture use: 430 mm

Tillering: 3 to 6 mm/day

Flag Leaf to Milk: 5.5 to 7.5 mm/day

Critical stages for moisture are at tillering and at flowering. Allow the canopy to dry between irrigations to minimize disease pressure and lodging. Maintain soil at >50% available moisture for tillering through flowering. Use a soil probe to check moisture status.† Irrigation applications should end at the soft dough stage.

Harvest:

Delay swathing until barley kernel is difficult to dent with thumb nail. Barley is more susceptible to weathering and sprouting than hard wheat.

Handling, Storage and Grading:

Dry 14.5%; Tough 14.6%; Damp 17.0%

Rotations and Crop Protection:

Barley is less susceptible to fusarium head blight than most other cereal types, but varieties differ in susceptibility. Reduce net blotch severity with variety selection, burying residue, leaving two years between barley crops and fungicide application. Smuts reduces suitability of feed barley.

‡ Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: MILLING OATS

My Farm

ITEM	#	UNIT	\$/ac	\$/ac
Seed			\$17.64	
Seed treatment			\$3.80	
Fertilizer:	N	50	lb	\$29.59
	P	20	lb	\$11.06
	K	0	lb	\$0.00
Herbicide			\$15.88	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$17.00	
Equipment repair			\$5.64	
Custom work			\$0.00	
Irrigation power	10	inches	\$14.00	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$26.37	
Crop insurance †	68	bu/ac	\$6.34	
Hail insurance			\$7.80	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$3.69	
Total Cash Costs			\$179.28	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.00	
Land			\$42.19	
Total Non Cash Costs			\$125.82	
Total Costs			\$305.10	
Returns	AVG	Target		
Yield bu/ac*	120	150		
Price \$/bu	\$2.90			
Gross	\$348	\$435		
Net Return	\$43	\$130		
Specialized Equipment			\$/ac/yr	
TOTAL			\$0.00	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com. Refer to Prairie Oat Growers www.poga.ca

AGRONOMICS

Milling oats must have a high bushel weight (at least 42 lb/bu) to be accepted for this market.

Variety Selection:

Oat varieties have not been evaluated in irrigated trials. Choose an oat variety based on lodging resistance, maturity, and yield. CDC Minstrel, and Morgan have good lodging ratings, % plump, grain weight, and yield and are suitable for milling. Check with buyer on variety preferences.

Seeding:

Early planting consistently produces oat crops with higher yield and kernel weight than late planting. Plant by May 15th.

Plant population	300.0	plants/sq m.
TKW	41.0	
Seeding Rate	120.0	lb/ac

Calculate seeding rate to reach a target plant population.

Fertilization:

Irrigated oat fertility recommendations have not been established but oats do not respond to strongly to N and are prone to lodging with excellent fertility. Oats perform well on terminated alfalfa stubble with moderate fertilization.

Crop Water Use and Irrigation:

Data for irrigation of oats is not available, However, oats are known to respond well to additional moisture with high yields.

Harvest:

Swath when grain moisture is between 20% and 35%. Adjust combine to minimize dehulling of oats. If the crop is ripening evenly (35% moisture) in mid-August, consider straight combining.

Handling, Storage and Grading:

Store below 13.5% moisture. Do not dry milling oats over 60°C.

Rotations and Crop Protection:

Wild oat control is essential. There are no registered herbicides to control volunteer cereals in oats, but seeding rate will effectively compete with wild oats. Check recropping restrictions on residual wild oat herbicides. Oat is less susceptible to fusarium head blight than most cereals.

* Yield and price per bushel are based on a 34 lb/bu standard weight for oats. Millers require bushel weights of at least 42 lb/bu.

ECONOMICS

CROP: CANOLA

My Farm

ITEM	#	UNIT	\$/ac	\$/ac
Seed			\$57.50	
Seed treatment			\$0.00	
Soil test			\$0.65	
Fertilizer: N	160	lb	\$94.69	
P ₂ O ₅	40	lb	\$22.11	
K ₂ O	15	lb	\$6.42	
Herbicide			\$5.26	
Insecticide *			\$0.00	
Fungicide			\$23.95	
Equipment fuel			\$18.00	
Equipment repair			\$5.64	
Custom work			\$14.00	
Irrigation power	14	inches	\$19.60	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$27.53	
Crop insurance †	37	bu/ac	\$14.17	
Hail insurance			\$13.65	
Hired labour	0	hr/ac	\$0.00	
Farm overhead			\$9.20	
Operating int	4.2	%	\$7.22	
Total Cash Costs			\$350.87	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.17	
Land			\$42.19	
Total Non Cash Costs			\$125.99	
Total Costs			\$476.86	
Returns		AVG		Target
Yield bu/ac		55		70
Price \$/bu				12.00
Gross		\$660		\$840
Net Return		\$183		\$363
Specialized Equipment			\$/ac/yr	
Sideknife			\$0.17	
TOTAL			\$0.17	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com. Use the 'Canola Growers Manual' from the Canola Council of Canada.

AGRONOMICS

Variety Selection:

Select a canola variety that is resistant or moderately resistant to blackleg and resistant to lodging. Refer to the publication "Crop Varieties for Irrigation" for production data specific to irrigation in Saskatchewan.

Seeding: Seed before May 15th.

Plant population		110.0	plants/sq m.
TKW	Hybrid Canola	5.0	grams
Seeding Rate		5.0	lb/ac

Fertilization:

Apply 145-160 lb/ac N, 30-40 lb/ac P₂O₅ and 10-15 lb/ac K₂O. A soil test is recommended for fertilizer application based on soil nutrient levels and crop needs. Sulphate fertilization may be required if fall or spring soil conditions are conducive to leaching.

Crop Water Use and Irrigation:

The active root zone of canola is 1.0 metre. Maintain the soil water content at or above 50% field capacity.† The average total seasonal crop water requirement is 480 mm (19 inches). Critical irrigation period extends from the late vegetative stage through flowering to initial seed ripening.

Daily crop water use:

Vegetative: 1.5-3.0 mm/day
30 day average peak use: 6.0-6.5 mm/day
Flowering: 7.5 mm/day maximum

Harvest:

Swath when 60% of seeds in pods on the main stem have changed colour. Green seed is caused by early swathing or extreme heat or cold while the crop is in the swath. Irrigated canola can be a challenge to swath.

Handling, Storage and Grading:

Dry <10%; Tough 10.1%; Damp 12.5%

Rotations and Crop Protection:

Canola should be grown in a four year rotation to control disease. A fungicide application is recommended for sclerotinia control. Recommended application timing is dependent upon product used, but should occur at 20-50% bloom (prior to petal drop). Scout fields weekly during growing season checking for insects and diseases. An application of insecticide may be required to control flea beetles or bertha armyworm.

† Crop Insurance rates currently under review.

* An insecticide application may be required for Flea beetle, Bertha Armyworm or Diamondback Moth control.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

AGRONOMICS

CROP: FLAX

ITEM	UNIT		\$/ac	My Farm \$/ac
Seed			\$12.80	
Seed treatment			\$4.68	
Soil test			\$0.65	
Fertilizer:	N	100	lb	\$59.18
	P ₂ O ₅	35	lb	\$19.35
	K ₂ O	15	lb	\$6.42
Herbicide			\$17.33	
Insecticide			\$0.00	
Fungicide			\$11.85	
Equipment fuel			\$19.00	
Equipment repair			\$7.52	
Custom work			\$7.00	
Irrigation power	10	inches	\$14.00	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$26.37	
Crop insurance *	26	bu/ac	\$10.36	
Hail insurance			\$7.80	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$5.14	
Total Cash Costs			\$249.93	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.00	
Land			\$42.19	
Total Non Cash Costs			\$125.82	
Total Costs			\$375.75	
Returns	AVG	Target		
Yield bu/ac	40	50		
Price \$/bu			\$12.60	
Gross	\$504	\$630		
Net Return	\$128	\$254		
Specialized Equipment			\$/ac/yr	
TOTAL			\$0.00	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

Variety Selection:

Prairie Thunder and CDC Bethune are high yielding with good lodging resistance. Refer to "Crop Varieties for Irrigation" publication (CSIDC) for assistance. Use certified seed or seed must be tested to be deemed free of GMO flax.

Seeding:

Plant population	500.0	plants/sq m.
TKW	5.0	grams
Seeding Rate	40.0	lb/ac

Early May seeding produces highest yield. If seedbed is dry, irrigate prior to seeding rather than after seeding.

Fertilization:

Apply 90-100 lb/ac N, 30-35 lb/ac P₂O₅ and 10-15 lb/ac K₂O.

A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs.

Crop Water Use and Irrigation:

The active root zone of flax is 1.0 metres. Maintain the soil water content at or above 50% field capacity.† The average seasonal crop water use is 410 mm (16 inches). The critical irrigation period extends from flowering through to the initiation of seed ripening. The scheduling goal of flax is to maintain adequate soil moisture to extend flowering and ensure that all flowers develop seed. Irrigation operations must end by the second week of August to reach maturity.

Daily Crop Water Use:

Seedling: 1-3 mm/day

Flowering: peak use of 7 mm/day

Harvest:

Swath or desiccate when 75% of bolls have turned brown.

Immature seed will blacken from -3 to -5 C frost. Early swathing will reduce seed size but not cause blackening.

Handling, Storage and Grading:

Dry 10% ;Tough 10.1%; Damp 13.5%

Rotations and Crop Protection:

Three or more years between flax crops is recommended to control soil and stubble-borne disease such as Fusarium Wilt and rust. Registered flax varieties are resistant to rust and moderately resistant to Fusarium Wilt. Seeding flax on cereal, corn or legume stubble is the best rotation choice. Flax on canola or potato stubble is not recommended. It is important to note that a flax crop seeded on legume or potato stubble is more susceptible to seedling blight (Rhizoctonia diseases). An application of fungicide is recommended to control pasmo.

* Crop Insurance rates currently under review.

ECONOMICS

CROP: PEA

ITEM	UNIT		\$/ac	My Farm \$/ac
Seed			\$27.00	
Seed treatment / inoculant			\$11.40	
Soil test			\$0.65	
Fertilizer: N	0	lb	\$0.00	
	P ₂ O ₅	30	lb	\$16.59
	K ₂ O	15	lb	\$6.42
Herbicide			\$16.17	
Insecticide			\$0.00	
Fungicide			\$16.28	
Equipment fuel			\$19.00	
Equipment repair			\$9.32	
Custom work			\$5.00	
Irrigation power	8	inches	\$11.20	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$25.78	
Crop insurance*	33	bu/ac	\$5.35	
Hail insurance			\$15.60	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating int	4.2	%	\$4.33	
Total Cash Costs			\$210.57	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$8.55	
Land			\$42.19	
Total Non Cash Costs			\$134.38	
Total Costs			\$344.94	
Returns	AVG	Target		
Yield bu/ac	55	75		
Price \$/bu (#1 yellow)			\$8.50	
Gross	\$468	\$638		
Net Return	\$123	\$293		
Specialized Equipment			\$/ac/yr	
Flex Header			\$5.01	
Land Roller			\$3.54	
TOTAL			\$8.55	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Yellow: Agassiz, CDC Centennial, Argus. Green: Stratus. High-yielding, lodging resistant varieties are recommended for irrigation. See 'Crop Varieties for Irrigation' publication.

Seeding: Seed in late Apr/early May. Roll after seeding.

Plant population	80.0	plants/sq m.
TKW	240.0	grams
Seeding Rate	180.0	lb/ac

TKW is variety specific; adjust seeding rate accordingly. Test seed for disease.

Fertilization:

Inoculate with a pea inoculant. Apply 30 lb/ac P₂O₅ and 15 lb/ac K₂O. Use a soil test for field specific fertilizer application based on soil nutrient levels and crop needs. Peas have strong association with mychoriza to supplement P and micronutrient uptake.

Crop Water Use and Irrigation:

Vegetative Stage: 3 to 5 mm/day

Flowering to Pod Formation Stages: 5 to 6 mm/day

Total average seasonal moisture requirement: 400 mm. Allow the canopy to dry between irrigation to reduce disease pressure and lodging. Use a soil probe to check moisture. †

Harvest:

Swath directly ahead of the combine or straight cut when the peas are mature to avoid wind damage. Use a flex header, pick-up reel and vine lifters. Combine at 16-18% moisture and aerate, to prevent seed damage.

Handling, Storage and Grading:

Dry 16 %; Tough 16.1%; Damp 18.0%

Rotations and Crop Protection:

Three years between pea crops. Check recropping restrictions on Group 2 and Group 4 herbicides.

* Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: RED LENTIL

ITEM	#	UNIT	\$/ac	My Farm \$/ac
Seed			\$16.20	
Seed treatment / inoculant			\$3.20	
Soil test			\$0.65	
Fertilizer:	N	0	lb	\$0.00
	P ₂ O ₅	30	lb	\$16.59
	K ₂ O	15	lb	\$6.42
Herbicide			\$44.60	
Insecticide			\$0.00	
Fungicide			\$16.28	
Equipment fuel			\$22.00	
Equipment repair			\$9.32	
Custom work			\$5.00	
Irrigation power	4	inches	\$5.60	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$24.62	
Crop insurance *	1199	lb/ac	\$8.02	
Hail insurance			\$15.60	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$4.51	
Total Cash Costs			\$219.08	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$8.55	
Land			\$42.19	
Total Non Cash Costs			\$134.38	
Total Costs			\$353.45	
Returns		AVG	Target	
Yield	lb/ac	2000	2400	
Price	\$/lb		\$0.20	
Gross		\$400	\$480	
Net Return		\$47	\$127	
Specialized Equipment			\$/ac/yr	
Flex Header			\$5.01	
Land Roller			\$3.54	
TOTAL			\$8.55	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com. Also refer to SK Pulse Growers website at www.saskpulse.com

AGRONOMICS

Variety Selection:

Red lentil varieties have not been evaluated under irrigation. Choose variety with determinate growth habit.

Seeding:

Plant population	120.0	plants/sq m.
TKW	40.0	grams
Seeding Rate	45.0	lb/ac

Test seed for disease. Seed in late April to early May. Roll after seeding.

Fertilization:

Inoculate with a lentil inoculant. Apply 30 lb/ac P₂O₅ and 15 lb/ac K₂O. Use a soil test for field specific fertilizer application based on soil nutrient levels and crop needs. Lentil has a strong association with mychoriza to supplement P and micronutrient uptake.

Crop Water Use and Irrigation:

Total seasonal average moisture requirement: 275 mm. Allow the canopy to dry between irrigations to minimize disease pressure and lodging. Lentils are sensitive to waterlogging; excessive water application reduces lentil yields. Lentils are sensitive to moisture stress during flowering and pod fill. Use soil probe to check moisture status.†

Harvest:

Desiccate when lower pods are tan and seeds rattle. Combine at 18% moisture and aerate to prevent seed damage. Straight cut with a flex header.

Handling, Storage and Grading:

Dry 14% ; Tough 14.1%; Damp 16.0%

Rotations and Crop Protection:

Three years between lentil crops. Check recropping restrictions on Group 2 (Ally, Everest, Sundance) and Group 4 herbicides. Control the spread of disease by fungicide application.

* Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

AGRONOMICS

CROP: DRY BEAN

ITEM	#	UNIT	\$/ac	My Farm \$/ac
Seed			\$41.25	
Seed treatment / inoculant			\$9.85	
Soil test			\$0.65	
Fertilizer: **	N 60	lb	\$35.51	
	P ₂ O ₅ 40	lb	\$22.11	
	K ₂ O 15	lb	\$6.42	
Herbicide			\$29.95	
Insecticide			\$0.00	
Fungicide			\$70.74	
Equipment fuel			\$19.00	
Equipment repair			\$9.32	
Custom work			\$14.00	
Irrigation power	8	inches	\$11.20	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$25.78	
Crop insurance *	1700	lb/ac	\$35.12	
Hail insurance			\$15.60	
Hired labour	0	hr/ac	\$0.00	
Other			\$14.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$8.00	
Total Cash Costs			\$388.99	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$17.87	
Land			\$42.19	
Total Non Cash Costs			\$143.70	
Total Costs			\$532.68	
Returns		AVG	Target	
Yield lb/ac		2700	3000	
Price \$/lb			\$0.35	
Gross		\$945	\$1,050	
Net Return		\$412	\$517	
Specialized Equipment			\$/ac/yr	
Planter			\$5.01	
Row Crop Cultivator			\$1.34	
Band Sprayer			\$1.50	
Undercutter/windrower			\$5.01	
Tractor accessories - 3Pt hitch			\$3.34	
10" tube belt conveyor			\$1.67	
TOTAL			\$17.87	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com. Use The Pulse Production Manual from The Sask Pulse Growers Assoc.

Variety Selection:

AC Island and Medicine Hat have improved plant structure and high yield potential. 'White Mountain' type pinto beans may receive a quality premium. Choose an indeterminate short vine type plant for irrigated production. Refer to CSIDC's 'Crop Varieties for Irrigation' publication.

Seeding: Seed after the danger of frost: May 20-25th.

Plant population	96000.0	plants/ac
TKW	345.0	grams
Seeding Rate	75.0	lb/ac

Seed weights vary with each market class and seed lot. See 'Crop Varieties for Irrigation' for averages. Row crop equipment is required.

Fertilization:

Inoculate with a dry bean inoculant. Dry beans have a total soil and fertilizer N requirement of 80 to 90 lb/ac. A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs. Apply 50-60 lb/ac N, 30-40 lb/ac P₂O₅ and 10-15 lb/ac K₂O. Dry beans may respond to the micronutrient zinc, a soil test for micronutrients is recommended

Crop Water Use and Irrigation:

Total average seasonal moisture requirement: 370 mm.

Vegetative Stage: 2 to 3.5 mm/day

Flowering Stage: 3.5 to 5 mm/day

Pod Formation Stage: 5 to 6.5 mm/day

Ripening Stage: < 5 mm/day

Allow the canopy to dry between irrigations to minimize disease pressure and lodging. Use a soil probe to check moisture status.†

Harvest:

Undercut when 40% of pods are buckskin colour and leaves are still attached. Combine at 14-16% moisture to avoid seed damage. Handle beans gently, use conveyors and bean ladders.

Handling, Storage and Grading:

Dry 15.4% ;Tough 15.5%; Damp 18.0%

Rotations and Crop Protection:

Check recropping restrictions on Group 2, 4, 6, 27 herbicides. Reduce White Mold (sclerotinia) incidence by with crop rotation to non-host crops like cereals and flax, choosing a less susceptible upright variety like Winchester, and treating at the appropriate stage with a fungicide . Bacterial blight may require control with a copper-based foliar product.

* Crop Insurance rates currently under review.

** May require 5lb./ac of zinc

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

AGRONOMICS

CROP: GRAIN CORN

My Farm

ITEM	UNIT	\$/ac	\$/ac
Seed		\$88.00	
Seed treatment		\$8.00	
Soil test		\$0.65	
Fertilizer: N	120 lb	\$71.02	
P ₂ O ₅	40 lb	\$22.11	
K ₂ O	15 lb	\$6.42	
Herbicide		\$5.26	
Insecticide		\$0.00	
Fungicide		\$0.00	
Equipment fuel		\$14.00	
Equipment repair		\$5.37	
Custom work		\$12.50	
Irrigation power	13 inches	\$18.20	
Irrigation repair		\$11.28	
Irrigation service/water charge		\$27.24	
Crop insurance		\$0.00	
Hail insurance		\$0.00	
Hired labour	0 hr/ac	\$0.00	
Grain Drying		\$0.00	
Farm overhead		\$9.20	
Operating interest	4.2 %	\$6.28	
Total Cash Costs		\$305.54	
Farm Equipment & Buildings		\$55.61	
Irrigation System		\$28.03	
Specialized Equipment		\$8.35	
Land		\$42.19	
Total Non Cash Costs		\$134.17	
Drying Costs			
Custom Drying \$/ac		19	
Total Costs		\$458	
Returns	AVG	Target	
Yield bu/ac	100	150	
Price \$/bu		\$6.00	
Gross	\$600	\$900	
Net Return	\$142	\$442	
Specialized Equipment		\$/ac/yr	
Planter		\$5.01	
Corn Header		\$3.34	
TOTAL		\$8.35	

More Information:

Call an Irrigation Agriologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

Variety Selection:

Select a variety for grain corn production that can reach maturity prior to first fall frost in your area. For corn heat unit map and variety selection information refer to the SK Ministry of Agriculture website. The Alberta Corn Committee website provides variety trial data for Saskatchewan.

Seeding:

TKW	380.0	grams
Seeding Rate	32,000	seeds/ac

Fertilization:

Spring banding of fertilizer prior to seeding is recommended. Apply 100-120 lb/ac N, 30-40 lb/ac P₂O₅ and 10-15 lb/ac K₂O. Soil testing including micronutrients is recommended.

If field conditions or soil texture cause concern for a high nutrient loss, fertigation may be an option.

Crop Water Use and Irrigation:

Total seasonal moisture use - 520 mm

Tasseling Stage: 5 mm/day

Silking Stage: 6 mm/day

Kernel Formation: 5 mm/day

Maintain soil moisture above 50 % field capacity throughout the growing season. Use a soil probe to check moisture status.†

Harvest:

Can combine <30% moisture with more cracking, but aim for <20%. Safe storage is 14-15%.

Handling, Storage and Grading:

Drying costs are based on \$0.125/bushel. Expect to dry corn in most years.

Rotations and Crop Protection:

Specialized equipment is required for seeding, but can be hired custom. Group 3 residues can stunt corn. Be aware of the potential problem of volunteers that may result from the consecutive use of the same herbicide system annually. Early weed control is essential for optimal production. Corn is susceptible to Fusarium infection.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

AGRONOMICS

CROP: CORN GRAZING

Variety Selection:

To select a corn variety for grazing, select an early-maturing silage corn variety. Silage varieties are more palatable and better suited for grazing than grain corn varieties. Refer to the corn heat unit map on the SK Ministry website. Early seeding date is critical to ensuring crop receives adequate heat units for yield potential.

My Farm

ITEM	#	UNIT	\$/ac	\$/ac
Seed			\$88.00	
Seed treatment			\$8.00	
Soil test			\$0.65	
Fertilizer:	N	100	lb	\$59.18
	P ₂ O ₅	40	lb	\$22.11
	K ₂ O	15	lb	\$6.42
Herbicide			\$5.26	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$7.00	
Equipment repair			\$5.50	
Custom work			\$0.00	
Irrigation power	13	inches	\$18.20	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$27.24	
Crop insurance			\$6.18	
Hail insurance			\$0.00	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$5.76	
Total Cash Costs			\$279.99	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$13.53	
Land			\$42.19	
Total Non Cash Costs			\$139.35	
Total Costs			\$419.33	
			Target	
Cow days/ac			500	
Cost \$/ac			\$419	
Cost/Hd/day			\$0.84	
Specialized Equipment			\$/ac/yr	
Planter			\$5.01	
Cross Fencing			\$1.16	
Perimeter Fencing			\$4.27	
Water Supply			\$3.09	
TOTAL			\$13.53	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

Seeding:

TKW	380.0	grams
Seeding Rate	32,000	seeds/ac

Fertilization:

Spring banding of fertilizer prior to seeding is recommended. Apply 90-100 lb/ac N, 20-25 lb/ac P and 10-15 lb/ac K. If corn is planted on a field previously grazed, fertilizer recommendations are 75-80 lb/ac N, 0 lb/ac P and 10 lb/ac K.

Crop Water Use and Irrigation:

Total seasonal moisture use - 520 mm

Tasseling Stage: 5 mm/day

Silking Stage: 6 mm/day

Kernel Formation: 5 mm/day

Maintain soil moisture above 50% field capacity throughout the growing season. Use a soil probe to check moisture status.†

Rotations and Crop Protection:

Early weed competition delays growth and decreases yield. Weed control up until inter-row closure (mid-July) is important.

Grazing Management:

When grazing corn, pregnant beef cows receive adequate levels of energy, protein and phosphorus.

Supplementation of calcium, trace minerals and vitamins is essential when grazing corn. Four oz. of 3:1 mineral per day will generally satisfy these requirements.

Consult a nutritionist to discuss your specific situation.

Controlled grazing through the use of electric fence is essential to efficiently graze standing corn. Three day allocations work well to minimize wastage. Cows with free access to corn will graze the cobs first, putting them at risk of grain overload and rumen acidosis. Corn maturity at the time of a killing frost will also dictate grazing management. If corn maturity has progressed to fully dent stage and is moving into physiological maturity, paddock size should be restricted to less than 3 days grazing. Cattle should receive other forages to reduce onset of acidosis and grain overload.

ECONOMICS

AGRONOMICS

CROP: CORN SILAGE

My Farm

ITEM	#	UNIT	\$/ac	\$/ac
Seed			\$88.00	
Seed treatment			\$8.00	
Soil test			\$0.65	
Fertilizer:	N	120	lb	\$71.02
	P ₂ O ₅	40	lb	\$22.11
	K ₂ O	15	lb	\$6.42
Herbicide			\$5.26	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$7.00	
Equipment repair			\$5.50	
Custom work			\$0.00	
Irrigation power	12	inches	\$16.80	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$26.95	
Crop insurance			\$0.00	
Hail insurance			\$0.00	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating int	4.2	%	\$5.84	
Total Cash Costs			\$284.03	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$5.01	
Land			\$42.19	
Total Non Cash Costs			\$130.83	
Harvest Costs				
Custom Silage \$/ac			264	
Total Costs			\$679	
Returns		AVG	Target	
Yield t/ac		16	24	
Price \$/t *			\$50	
Gross Return		\$792	\$1,188	
Net Return		\$113	\$509	
Specialized Equipment			\$/ac/yr	
Planter			\$5.01	
TOTAL			\$5.01	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

Variety Selection:

To select a corn variety for silage, choose a variety that is high yielding and reaches dent stage before frost damage. For corn heat unit map refer to the SK Ministry of Agriculture website. Early seeding date is critical to ensuring corn receives adequate heat units for yield potential.

Seeding:

TKW	380.0	grams
Seeding Rate	32,000	seeds/ac

Fertilization:

Spring banding of fertilizer prior to seeding is recommended. Apply 110-120 lb/ac N, 35-40 lb/ac P₂O₅ and 10-15 lb/ac K₂O.

If field conditions or soil texture cause concern for a high nutrient loss, fertigation may be an option.

Crop Water Use and Irrigation:

Total seasonal moisture use - 470 mm

Tasseling Stage: 5 mm/day

Silking Stage: 6 mm/day

Kernel Formation: 5 mm/day

Maintain soil moisture above 50 % field capacity throughout the growing season. Use a soil probe to check moisture status.†

Harvest:

Cut at about 3/4 milk line. Moisture content will be about 65 - 70%. Corn silage price is for silage already at the pit. Price (adjusted to 65% moisture) of corn silage per tonne is based on the feed barley grain price times 11. Distance of haul will determine feasibility.

Rotations and Crop Protection:

Early weed control is essential. Early weed competition delays growth and decreases yield. Weed control up until inter-row closure (mid-July) is important.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

* Value very dependent on location and market need.

ECONOMICS

CROP: CEREAL SILAGE

ITEM	#	UNIT	\$/ac	My Farm \$/ac
Seed			\$19.50	
Seed treatment			\$3.00	
Soil test			\$0.65	
Fertilizer:	N	125	lb	\$73.98
	P ₂ O ₅	40	lb	\$22.11
	K ₂ O	30	lb	\$12.84
Herbicide			\$17.75	
Insecticide			\$0.00	
Fungicide*			\$0.00	
Equipment fuel			\$6.80	
Equipment repair			\$5.50	
Custom work			\$0.00	
Irrigation power	8	inches	\$23.45	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$25.78	
Crop insurance			\$0.00	
Hail insurance			\$0.00	
Hired labour	0	hr/ac	\$0.00	
Other			\$0.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$4.87	
Total Cash Costs			\$236.71	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$0.00	
Land			\$42.19	
Total Non Cash Costs			\$125.82	
Harvest Costs				
Custom Silage \$/ac			154	
Total Costs			\$517	
Returns		AVG	Target	
Yield t/ac		12	14	
Price \$/t *			\$45	
Gross Return		\$540	\$630	
Net Return		\$23	\$113	
Specialized Equipment			\$/ac/yr	
TOTAL			\$0.00	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Choose variety based on dry matter yield and disease and lodging resistance. The six-row barley AC Rosser is recommended. Lodging and disease resistant varieties are best suited. Barley, CPS wheat, oats and triticale are grown. Refer to CSIDC's 'Crop Varieties for Irrigation'.

Seeding:

Plant population	320.0	plants/sq m.
TKW	41.0	grams
Seeding Rate	130.0	lb/ac

Fertilization:

Apply 125 N/ac, 40 P₂O₅/ac and 15 K₂O/ac. A soil test will give field specific recommendations for fertilizer application based on soil nutrient levels and crop needs. Consider zinc status on eroded soils.

Crop Water Use and Irrigation:

Total seasonal moisture requirement: 390 mm

Tillering: 1 to 3 mm/day

Flag Leaf to Flowering: 7 to 8 mm/day

Critical stages for moisture are at tillering and at flowering. Maintain soil at >50% available moisture. Use a soil probe to check moisture status.†

Cut cereals at soft dough stage. Moisture content 65 - 70%. Barley silage is commonly priced on a per ton basis at 65% moisture, using the formula of feed barley grain price per bushel times a factor of 10. Distance of haul will determine feasibility.

* Value very dependent on location and market need.

Rotations and Crop Protection:

Fungicide seed treatment recommended. Cereal on cereal will yield at least 15% less than cereal on broadleaf stubble, including silaged cereals. Break from cereal for one year to get higher yields and reduce disease build-up. Spot & net blotch can be severe in irrigated barley.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

* May require an application of fungicide to control leaf disease

ECONOMICS

CROP: SEEDLING ALFALFA (NO COVER CROP)

ITEM	#	UNIT	My Farm	
			\$/ac	\$/ac
Seed (c/w inoculant)			\$37.50	
Seed treatment			\$0.00	
Soil test			\$0.65	
Fertilizer:	N	21 lb	\$12.43	
	P ₂ O ₅	100 lb	\$55.28	
	K ₂ O	40 lb	\$17.12	
Herbicide			\$2.63	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$15.30	
Equipment repair			\$5.00	
Custom work			\$0.00	
Irrigation power	6	inches	\$8.40	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$25.20	
Crop insurance			\$6.18	
Hail insurance			\$0.00	
Hired labour	0	hr/ac	\$0.00	
Other			\$3.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$4.39	
Total Cash Costs			\$213.57	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$10.74	
Land			\$42.19	
Total Non Cash Costs			\$136.56	
Total Costs			\$350.13	
Returns		AVG		Target
Yield t/ac		2.5		3.0
Price \$/t				\$70
Gross Return		\$175		\$210
Net Return		-\$175		-\$140
Specialized Equipment			\$/ac/yr	
Mower/condition			\$4.15	
Round Baler			\$6.60	
			\$0.00	
TOTAL			\$10.74	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Select a variety that exhibits rapid re-growth, good winter hardiness and disease resistance. Refer to the Crop Varieties for Irrigation publication by CSIDC for yield data on 50 different varieties.

Seeding:

Plant population	30 to 40	PLS/sq ft
Seed size	200,000	seeds/lb
Seeding Rate	10	lb/ac

Pure live seed (PLS) = Germination x Purity

Calculate seeding rate using formula:

$$\text{Seeding rate (lb/ac)} = \frac{\text{seeds/sq ft} \times \text{sq ft/acre}}{\text{PLS seeds/lb}}$$

Recommended row spacing for irrigation is six inches

Fertilization:

Soil testing prior to planting is recommended. Ensure purchased seed is inoculated. Apply 100 lb/ac actual P prior to establishment. On coarse textured soils, application of 40-45 lb/ac actual K is recommended.

Crop Water Use and Irrigation:

Irrigate seedling alfalfa to maintain soil moisture above 60% field capacity in top foot of soil. Frequent, light irrigation applications (15 mm/app) following germination are optimal. Once stand is well established, about six weeks after seeding, irrigate to maintain soil moisture above 50% field capacity in the top two feet. Use a soil probe to check moisture status.† Irrigate after cutting for fall regrowth to restore soil profile to field capacity. Monitor soil moisture to ensure that crop enters winter with 70% available soil water in the profile to avoid alfalfa winter kill or injury.

Harvest:

Cut at 25% bloom, mid to late July for a single cut of hay in establishment year.

Handling, Storage and Grading:

% Moisture limits to prevent spoilage: small square bale - 18%; round soft core - 17%; round hard core - 16%

Rotations and Crop Protection:

Do not seed the year after treatment with Lontrel or other Group 4 residual broadleaf herbicides. Annual weeds can be controlled in-crop through cutting of crop prior to weed seed set.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: ESTABLISHED ALFALFA
2-Cut Harvest

ITEM	UNIT	My Farm	
		\$/ac	\$/ac
Seed		\$0.00	
Seed treatment/inoc		\$0.00	
Soil test		\$0.65	
Fertilizer: N	11 lb	\$6.51	
P ₂ O ₅	75 lb	\$41.46	
K ₂ O	75 lb	\$32.11	
Herbicide		\$0.00	
Insecticide		\$0.00	
Fungicide		\$0.00	
Equipment fuel		\$12.75	
Equipment repair		\$5.37	
Custom work		\$0.00	
Irrigation power	15 inches	\$21.00	
Irrigation repair		\$11.28	
Irrigation service/water charge		\$27.83	
Crop insurance		\$6.18	
Hail insurance		\$0.00	
Hired labour	1 hr/ac	\$20.00	
Other		\$5.00	
Farm overhead		\$9.20	
Operating int	4.2 %	\$4.19	
TOTAL CASH COSTS		\$203.52	
Farm Equipment & Buildings		\$55.61	
Irrigation System		\$28.03	
Specialized Equipment		\$13.63	
Land		\$42.19	
Total Non Cash Costs		\$139.45	
Total Costs		\$342.97	
Returns	AVG	Target	
Yield t/ac*	3.0	4.0	
Price \$/t		\$80	
Gross Return	\$240	\$320	
Net Return	-\$103	-\$23	
Specialized Equipment		\$/ac/yr	
Mower/condition		\$4.15	
Round Baler		\$6.60	
Hay rake (21-30 ft wheel)		\$2.89	
TOTAL		\$13.63	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Establishment year losses (p. 21) over 5 years of production are not included in budget.

Fertilization:

Most of the crop's nitrogen needs are met by fixation, if properly inoculated. Phosphorus should be supplied annually. Fertilizer application is optimized with a disc bander or dribble band over broadcast application. Apply 50-75 lb/ac actual P annually. Increase this amount by two to three times if broadcast application is used. Potassium fertilizer can be broadcast supplied at a rate of 50-75 lb/ac actual K annually. Soil testing is recommended.

Crop Water Use and Irrigation:

Total average seasonal moisture requirement: 540-680 mm
Peak moisture use (before cutting): 9 mm/day (First cut)
8 mm/day (Second cut)

Maintain soil moisture above 50 % field capacity throughout the growing season. Use a soil probe to check moisture status. Irrigate immediately following each cut. Irrigate to restore root zone to 100 % available moisture. Manage irrigations to ensure crop enters winter with 70% available moisture in the profile.

Harvest:

For good quality alfalfa, cut at 10% flower. First cut late June or early July; second cut completed by Aug 15. Delaying a cut will set back the dates of subsequent cuts & increase the chance of winter injury. To reduce the incidence of winter injury, the recommendation is to no cut alfalfa during the critical period of four to six weeks prior to the first killing frost of -5°C

Handling, Storage and Grading:

Hay moisture limits to prevent spoilage: small square bale - 18%; round soft core - 17%; round hard core - 16%. Storing for quality is just as important as harvesting for quality.

Rotations and Crop Protection:

Aim for at least 6" regrowth before freeze-up.

* Total yield per year

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

AGRONOMICS

CROP: ESTABLISHED ALFALFA
3-Cut Harvest

My Farm

ITEM	#	UNIT	\$/ac	\$/ac
Seed			\$0.00	
Seed treatment/inoc			\$0.00	
Soil test			\$0.65	
Fertilizer: N	11	lb	\$6.51	
P ₂ O ₅	75	lb	\$41.46	
K ₂ O	75	lb	\$32.11	
Herbicide			\$0.00	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$19.15	
Equipment repair			\$8.06	
Custom work			\$0.00	
Irrigation power	15	inches	\$21.00	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$27.83	
Crop insurance			\$0.00	
Hail insurance			\$0.00	
Hired labour	1	hr/ac	\$15.00	
Other			\$10.50	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$4.26	
Total Cash Costs			\$207.00	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$20.77	
Land			\$42.19	
Total Non Cash Costs			\$146.60	
Total Cost			\$353.59	
Returns		AVG	Target	
Yield t/ac *		4.0	5.0	
Price \$/t			\$95	
Gross Return		\$380	\$475	
Net Return		\$26	\$121	
Specialized Equipment			\$/ac/yr	
Mower/condition			\$6.90	
Round Baler			\$10.98	
Hay rake (21-30 ft wheel)			\$2.89	
TOTAL			\$20.77	

Establishment year losses (p. 21) over 4 years of production are not included in budget.

Fertilization:

Most of the crop's nitrogen needs are met by fixation, if properly inoculated. Phosphorus should be supplied annually. Apply fertilizer with disc bander or dribble band is optimal over broadcast application. Apply 50-75 lb actual P/ac annually. Increase this amount by two to three times if broadcast application is used. Potassium fertilizer can be broadcast supplied at a rate of 50-75 lb/ac actual annually. Soil testing is recommended.

Crop Water Use and Irrigation:

Total average seasonal moisture requirement: 540-680 mm
 Peak moisture use (before cutting): 9 mm/day (First cut)
 8 mm/day (Second cut), 7 mm/day (Third cut)

Maintain soil moisture above 50% field capacity throughout the growing season. Use a soil probe to check soil moisture status. Irrigate immediately following each cut. Irrigate to restore root zone to 100% available moisture. Manage irrigations to ensure crop enters winter with 70% available moisture in the profile.

Harvest:

For good quality alfalfa, cut at 10% flower. First cut late June or early July; second cut completed by Aug 15. Delaying a cut will set back the dates of subsequent cuts & increase the chance of winter injury. To reduce the incidence of winter injury, the recommendation is to no cut alfalfa during the critical period of four to six weeks prior to the first killing frost of -5°C

Handling, Storage and Grading:

Hay moisture limits to prevent spoilage: small square bale - 18%; round soft core - 17%; round hard core - 16%. Storing for quality is just as important as harvesting for quality.

Rotations and Crop Protection:

Aim for at least 6" regrowth before freeze-up.

* Total yield per year

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: SEEDLING PASTURE Greenfeed Cover Crop

ITEM	#	UNIT	\$/ac	My Farm \$/ac
Seed			\$34.35	
Seed treatment/inoc			\$0.00	
Soil test			\$0.65	
Fertilizer: N	60	lb	\$35.51	
P ₂ O ₅	40	lb	\$22.11	
K ₂ O	15	lb	\$6.42	
Herbicide			\$2.63	
Insecticide			\$0.00	
Fungicide			\$0.00	
Equipment fuel			\$17.85	
Equipment repair			\$6.18	
Custom work			\$0.00	
Irrigation power	10	inches	\$14.00	
Irrigation repair			\$11.28	
Irrigation service/water charge			\$26.37	
Crop insurance			\$6.18	
Hail insurance			\$0.00	
Hired labour	0	hr/ac	\$0.00	
Other			\$3.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$4.11	
Total Cash Costs			\$199.84	
Farm Equipment & Buildings			\$55.61	
Irrigation System			\$28.03	
Specialized Equipment			\$13.34	
Land			\$42.19	
Total Non Cash Costs			\$139.16	
Total Cost			\$339.00	
Return		AVG	Target	
Yield t/ac		2.0	3.0	
Price \$/t			\$50	
Gross Return		\$100	\$150	
Net Return		-\$239	-\$189	
Specialized Equipment			\$/ac/yr	
Mower/condition			\$4.15	
Round Baler			\$6.60	
Bale Mover			\$2.60	
TOTAL			\$13.34	

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

Variety Selection:

Species and variety selection for an irrigated pasture should take into account the time of the season when the forage is to be utilized. For intensive grazing, a series of species can be planted, providing a better range in seasonal forage production than any single species. This is preferable to seeding the same grass species together in a mix. Legumes should be included with a grass. Consult a forage specialist for advice on forage selection and matching forage production to your seasonal forage requirements.

If a cereal cover crop is used select a cereal with short, strong straw to minimize lodging and competition. Reduce the normal seeding rate by up to 50%.

Seeding:

Plant population	CPS Wheat	125	plants/sq m.
TKW		35.0	grams
Seeding Rate		55	lb/ac
Plant population	Meadow Brome	30 to 40	PLS/sq ft
Seed size		80,000	seeds/lb
Seeding Rate		10	lb/ac

Refer to seeding rate formula on page 21.

Fertilization:

A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs. Including a legume into a pasture will change the fertility requirements. If the proportion of legume is < 50%, use a grass forage fertility recommendation. If the proportion of legume is > 50%, use a legume fertility recommendation. Deep band N and P fertilizer prior to seeding.

Crop Water Use and Irrigation:

Maintain soil water content above 50% field capacity throughout the growing season. Use a soil probe to check moisture status.† Keep soil surface moist to ensure adequate moisture in the seedling root zone. Overwatering will drown out the seedlings.

Harvest:

If a cover crop is used remove the swaths as soon as possible to avoid smothering the seedling forage.

Rotations and Crop Protection:

Check recropping restrictions if residual herbicides were applied to previous crops.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

AGRONOMICS

CROP: ESTABLISHED PASTURE

My Farm

ITEM		UNIT	\$/ac	\$/ac
Fertilizer:	N	110	lb	\$45.10
	P ₂ O ₅	30	lb	\$16.59
	K ₂ O	15	lb	\$6.42
Soil test				\$0.65
Equipment fuel				\$1.70
Equipment repair				\$1.00
Custom work				\$0.00
Irrigation power	14	inches		\$19.60
Irrigation repair				\$11.28
Irrigation service/water charge				\$27.53
Farm overhead				\$9.20
Livestock cost	\$0.00	\$/hd		\$0.00
Vet/med	\$7.00	\$/hd		\$14.00
Breeding	\$0.00	\$/hd		\$0.00
Min (salt)	\$3.30	\$/hd		\$6.60
Supplements	\$0.00	\$/hd		\$0.00
Hormone Implant	\$3.40	\$/hd		\$6.80
Operating int	4.2	%		\$3.50
Total Cash Costs	\$84.98	\$/hd		\$169.96
Farm Equipment & Buildings *				\$55.61
Irrigation System				\$28.03
Specialized Equipment				\$8.51
Land				\$42.19
Total Non Cash Costs				\$134.34
Total Cost	\$152.15	(\$/hd)		\$304.30
Stocking Rate (hd/ac)				2.0
Days of Grazing				115
Cash Cost \$/hd/day				\$0.59
Total Cost \$/hd/day				\$1.32
Average Daily Gain (lb.)	2			2.5
Total Cost per lb of Gain (\$/lb)				\$0.66 \$0.53
Specialized Equipment				\$/ac/yr
Cross Fencing (1 mile)				\$1.16
Perimeter Fencing				\$4.27
Water Supply				\$3.09
TOTAL				\$8.51

* Varies significantly based on individual's utilization of owned equipment & buildings.

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

Cattle Assumptions:

Stocking Rate	2.0	hd/ac
Days Grazing	115	days
Weight to Pasture	600	lb/hd
ADG (with 3% shrink)	2.0	lb/hd
Weight off Pasture	830	lb/hd

This budget does not include establishment year losses (p. 26). Pastures frequently need to be renovated or rotated out after 7 years in production.

Livestock

Stocking Rate

Yearlings 2.0 head/ac

Estimates of stocking rate are based on a limited amount of information and producer experience. These may change as more information becomes available.

Fertilization:

A soil test will give recommendations for fertilizer application based on soil nutrient levels and crop needs. Including a legume into a pasture will change the fertility requirements. If the proportion of legume is < 50%, use a grass forage fertility recommendation. If the proportion of legume is > 50%, use a legume fertility recommendation. Deep band N and P fertilizer prior to seeding.

Crop Water Use and Irrigation:

Total average seasonal moisture use: 590 mm/day

Peak moisture use (mid-July): 7 mm/day

Maintain good soil moisture throughout the growing season. Use a soil probe to check moisture status.† Irrigate after grazing to encourage regrowth.

Watering Facility:

Ensure watering facilities allow adequate access for a numerous head at one time.

Pasture Management:

Rotational grazing is required. Adequate recovery time must be allocated to each paddock. Forage can be re-grazed when it reaches 6-8 inches in height. Match paddock rotations and/or stocking rate to forage supply and availability to optimize gains. By maintaining the pasture in a vegetative stage, digestibility and ADG can be kept at a high level. Fencing and irrigated pasture must take into account movement of a pivot or other sprinkler irrigation system.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: SEED POTATO

Norland Elite II

My Farm

ITEM	#	UNIT	\$/ac	\$/ac
Seed			\$676.00	
Seed treatment/inoc			\$86.45	
Soil test			\$0.65	
Fertilizer: N	105	lb	\$62.14	
P ₂ O ₅	60	lb	\$33.17	
K ₂ O	30	lb	\$12.84	
Herbicide			\$49.09	
Insecticide			\$21.49	
Fungicide			\$154.98	
Equipment fuel			\$134.20	
Equipment repair			\$75.00	
Custom work			\$80.00	
Irrigation power	13	inches	\$17.50	
Irrigation repair *			\$0.00	
Irrigation service/water charge *			\$0.00	
Crop insurance **	14	tons/ac	\$201.80	
Hail insurance			\$0.00	
Hired labour	15	hr/ac	\$300.00	
Inspection Fees			\$15.00	
Storage O & M			\$71.00	
Farm overhead			\$9.20	
Operating int	4.2	%	\$42.01	
Total Cash Costs			\$2,042.52	
Farm Equipment & Buildings			\$26.50	
Irrigation System *			\$0.00	
Specialized Equipment			\$310.84	
Land Rental Rate			\$250.00	
Total Non Cash Costs			\$587.34	
Total Costs			\$2,629.87	
Returns		AVG		Target
Yield ton/ac		12		14
Price \$/ton			\$440	
Gross Return		\$5,280		\$6,160
Net Return		\$2,650		\$3,530
Specialized Equipment			\$/ac/yr	
Potato Field Equipment			\$130.30	
Potato Handling Equipment			\$60.14	
Potato Storage Facility			\$120.40	
TOTAL			\$310.84	

* Provided by landowner.

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

This potato budget is based on 500 acre potato farm that rents land.

Variety Selection:

Choose varieties based on the intended market.

Seeding:

Plant population	21780.0	plants/acre
Weight of Seed Piece	60.0	grams
Seeding Rate	1.3	tons/ac

Fertilization:

Fertilize according to soil test recommendations. Response to nitrogen varies by cultivar. Apply 90- 105 lb/ac N, 45-60 lb/ac P₂O₅ and 20-30 lb/ac K₂O.

Crop Water Use and Irrigation:†

Average seasonal crop water use: 520 mm

Average weekly crop water use:

June: 19 mm increasing to 38 mm weekly

July: 38 mm weekly through the month

Aug.: 38 mm decreasing to 19 mm in 3rd week

Effect of adequate and consistent irrigation by crop stage:

Planting to Emergence (1 to 2 weeks) - increases stem number and promotes early tuber initiation.

Emergence to Stolon Initiation (2 to 3 weeks) - increases vegetative growth and tuber set.

Stolon Initiation to Tuber Set (3 to 4 weeks) - increases stolon growth and tuber initiation.

65 - 70%. Corn silage price is for silage already at the pit. Price (adjusted to 65% moisture) of corn. silage per tonne

Maintain the soil water content above 70% field capacity.

Harvest:

Top kill: to ensure removal of vine growth that interferes with harvest; to initiate skin set and mature tubers; to control tuber size and to prevent the spread of disease.

Handling, Storage and Grading:

Field & storage inspection must be done by CFIA.

Rotations and Crop Protection:

Use a four year rotation to minimize disease and weed problems. Do not seed where residues of Group 2 and 4 herbicides may be present. When renting out land for potato production, it is the land owner's responsibility to disclose herbicide use, including spot usage for perennial weed control. When in doubt, consult a potato specialist.

** Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

ECONOMICS

CROP: TABLE POTATO

ITEM	Norland		My Farm	
	#	UNIT	\$/ac	\$/ac
Seed			\$396.00	
Seed treatment/inoc			\$59.85	
Soil test			\$0.65	
Fertilizer: N	135	lb	\$79.89	
P ₂ O ₅	60	lb	\$33.17	
K ₂ O	30	lb	\$12.84	
Herbicide			\$49.09	
Insecticide			\$21.49	
Fungicide			\$154.98	
Equipment fuel			\$137.93	
Equipment repair			\$75.00	
Custom work			\$80.00	
Irrigation power	13	inches	\$17.50	
Irrigation repair *			\$0.00	
Irrigation service/water charge *			\$0.00	
Crop insurance **	11	tons/ac	\$167.01	
Hail insurance			\$0.00	
Hired labour	15	hr/ac	\$300.00	
Other			\$0.00	
Storage O & M			\$71.00	
Farm overhead			\$9.20	
Operating interest	4.2	%	\$34.98	
Total Cash Costs			\$1,700.59	
Farm Equipment & Buildings			\$26.50	
Irrigation System *			\$0.00	
Specialized Equipment			\$310.84	
Land Rental Rate			\$350.00	
Total Non Cash Costs			\$687.34	
Total Costs			\$2,387.93	
Returns		AVG		Target
Yield ton/ac		14		16
Price \$/ton				\$330
Gross Return		\$4,620		\$5,280
Net Return		\$2,232		\$2,892
Specialized Equipment			\$/ac/yr	
Potato Field Equipment			\$130.30	
Potato Handling Equipment			\$60.14	
Potato Storage Facility			\$120.40	
TOTAL			\$310.84	

* Provided by landowner.

More Information:

Call an Irrigation Agrologist at (306) 867-5500 or check our website: www.irrigationsaskatchewan.com.

AGRONOMICS

This potato budget is based on 500 acre potato farm that rents land.

Variety Selection:

Choose varieties based on the intended market.

Seeding:

Plant population	14520.0	plants/acre
Weight of Seed Piece	60.0	grams
Seeding Rate	0.9	tons/ac

Fertilization:

Soil test to ensure adequate fertility for yield and quality. Fertigation with 28-0-0 is often utilized to meet fertility requirements and avoid nutrient leaching. Apply 120- 135 lb/ac N, 45-60 lb/ac P₂O₅ and 20-30 lb/ac K₂O.

Crop Water Use and Irrigation:†

Average seasonal crop water use: 520 mm

Average weekly crop water use:

June: 19 mm increasing to 38 mm weekly

July: 38 mm weekly through the month

Aug.: 38 mm decreasing to 19 mm in 3rd week

Effect of adequate and consistent irrigation by crop stage:

Planting to Emergence (1 to 2 weeks) - increases stem number and promotes early tuber initiation.

Emergence to Stolon Initiation (2 to 3 weeks) - increases vegetative growth and tuber set.

70%. Corn silage price is for silage already at the pit. Price (adjusted to 65% moisture) of corn. silage per tonne is based

Bulking (4 to 8 weeks) - increases tuber size and uniformity

Maintain soil water content above 70% field capacity.

Harvest:

Top kill: to remove vine growth that interferes with harvest; to initiate skin set and mature tubers; to control tuber size and to prevent the spread of disease.

Rotations and Crop Protection:

Use a four year rotation to minimize disease and weed problems. Do not seed where residues of Group 2 and 4 herbicides may be present. When renting out land for potato production, it is the land owner's responsibility to disclose herbicide use, including spot usage for perennial weed control. When in doubt, consult a potato specialist.

** Crop Insurance rates currently under review.

† Refer to the Saskatchewan Ministry of Agriculture Irrigation Scheduling Manual

Appendix A

CROP	Seed Cost	Herbicide	Fungicide	Custom Costs	Other Costs
Hard Wheat	\$0.19/lb	Thumper / Horizon	Cruiser Maxx / Prosaro		
Durum	\$0.20/lb	Thumper / Horizon	Cruiser Maxx / Prosaro		
CPS Wheat	\$0.23/lb	Thumper / Horizon	Cruiser Maxx / Prosaro		
Soft Wheat	\$0.20/lb	Thumper / Horizon	Cruiser Maxx / Prosaro		
Malt Barley	\$0.17/lb	Achieve Liquid Gold	Cruiser Maxx		
Feed Barley	\$0.15/lb	Achieve Liquid Gold	Cruiser Maxx		
Oats	\$0.15/lb	Frontline XL			
Canola	\$11.50 lb *	Glyphosate (2 applications – Burn-off and In-crop)	Helix / Proline		
Flax	\$0.32/lb	FlaxMax	Headline		
Pea	\$0.15/lb	Viper	Headline		
Red Lentil	\$0.36/lb	Edge / Odyssey DLX / Reglone	Headline		
Dry Bean	\$0.55/lb	Edge / Solo	Lance (2 applications)		
Grain Corn	\$88 /ac	Glyphosate (2 applications – Burn-off and In-crop)	Poncho	Grain drying	
Corn Grazing	\$88 /ac	Glyphosate (2 applications – Burn-off and In-crop)	Poncho		
Corn Silage	\$88 /ac	Glyphosate (2 applications – Burn-off and In-crop)	Poncho	Silage	
Barley Silage	\$0.15/lb	Achieve Liquid Gold		Silage	
Seedling Alfalfa	\$3.75/lb	Glyphosate 0.5 L			Twine
Alfalfa (2 or 3 cut)					Twine
Seedling Pasture with greenfeed cover	\$0.17/lb \$2.50/lb	Glyphosate 0.5 L			Twine
Pasture	\$2.63/lb				
Seed Potato	\$520/ton	Eptam 8-E; Reglone	Bravo; Dithane; Quadris	8 aerial spray	Inspection
Table Potato	\$440/ton		Bravo; Diathane: Quadris	8 aerial spray	

* Seed price includes the Technology User Agreement for Round-Up Ready corn and canola.

The chemicals used in Appendix A were chose for budget assumptions only and are not suggestions Pursuit, Odyssey, and FlaxMax are not recommended in potato rotation

For more information:

Irrigation in Saskatchewan website:

www.irrigationsaskatchewan.com

Saskatchewan Ministry of Agriculture - Irrigation Branch - Outlook
(306) 867-5500

Canada-Saskatchewan Irrigation Diversification Centre
(306) 867-5400
www.agr.gc.ca/pfra/csfdc/