Potato

Canada-Saskatchewan Irrigation Diversification Centre

Processing Potato in Saskatchewan: Potential and Opportunities

Research Highlights: March 2001

Introduction

The potato industry is growing rapidly on the Canadian Prairies. Since 1990 production has more than doubled. Recent expansion of processing plants in Alberta and Manitoba has increased demand for high quality processing potato. As current production in the Prairie provinces cannot meet this demand, processing potatoes are being sourced from as far away as Washington and Idaho.

Potato processors are now insisting on irrigated production to ensure consistency of supply and to maintain superior processing quality. Any expansion of irrigated potato acres in Manitoba or Alberta would involve either costly development of new water storage and delivery systems or the displacement of other high value crops from preexisting irrigated areas. Saskatchewan, on the other hand, has the potential to significantly expand irrigated production at relatively low cost.

Research has shown that high quality processing potatoes can be grown in Saskatchewan. The potato industry in the province is therefore well positioned to expand and diversify into processing potatoes to supply expanding regional and distant markets. Research conducted by the Canada-Saskatchewan Irrigation Diversification Centre (CSIDC) has demonstrated that competitive yields of high quality processing potato can be successfully grown in Saskatchewan.

Cultivars and Yield Potential

Long-term research on the yield potential of commercial processing potato cultivars grown under Prairie conditions has shown a high degree of variability from year to year and from region to region. This variability is likely due to differences in the soil and weather conditions. The range in yield potential from 1994 to 2000 in small plot trials at the CSIDC site for the varieties Atlantic, Ranger Russet, Russet Burbank, and Shepody are shown in Table 1. The average yields for processing potatoes grown in Saskatchewan compare favourably with those produced in Alberta or Manitoba.

Tuber Quality: Specific Gravity and Fry Colour

Tuber yield, size distribution, morphological attributes, external and internal deformities, specific gravity, and reducing sugar levels are factors that can affect recovery percentage, fry colour, and quality. A combination of high specific gravity and low reducing sugars in potato tubers produces the desired light colour for french fries. Potato tubers with specific gravity greater than 1.086 are considered optimal by the processors. In most years, the specific gravity of all the processing cultivars tested were within the acceptable range (Table 1). Fry colour for all the cultivars fall within acceptable industry standards (Table 1).

Table 1. Fry colour and ranges of yield potentials and specific gravities for standard processing potato cultivars grown under irrigation from 1994-2000.

Cultivar	Yield Potential		Specific Gravity	Fry Colour*
	T/ha	Cwt/ac		
Atlantic	33.0-58.7	294.4-523.6	1.095-1.104	00 - 2
Ranger Russet	38.7-54.6	345.2-487.0	1.098-1.106	0 - 3
Russet Burbank	29.0-63.0	258.7-562.0	1.076-1.120	0 - 3
Shepody	32.4-65.0	289.0-579.8	1.066-1.090	00 - 3

*Based on USDA colour scale of 000 (best) to 4 (unacceptable): a rating of 3 is the maximum tolerance the processors will accept during tight supply situations.

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Opportunity

Research carried out over the past 15 years by CSIDC and the University of Saskatchewan has demonstrated that Saskatchewan's Lake Diefenbaker area is ideally suited to potato production. It has one of the highest heat units in Saskatchewan and similar growing season temperatures to potato growing regions in Alberta and Manitoba (Figure 1). The frost-free growing period is comparable to that of Alberta and slightly shorter than Manitoba's (Table 2). Based on research findings and the environmental conditions (temperature, frost-free period etc.) it is possible to produce high quality processing potatoes under irrigation in Saskatchewan similar to Alberta or Manitoba.

Economic Impact

Saskatchewan is one of the lowest cost potato producers in North America due to (i) lower land cost (ii) minimal disease pressure under less humid environmental conditions, and (iii) availability of irrigated land. Approximately 29 500 ha (73 500 acres) of irrigated land suitable for potato production is available at present in the Lake Diefenbaker Development Area. Another 64 500 ha (161 000 acres) of ideally suited potato land awaits development in this region. If Saskatchewan diversified into processing potatoes at this time, it may help attract a processing plant to the province and therefore generate rural employment opportunities. Recent estimates indicate that a large french fry plant in Saskatchewan would create an opportunity for approximately 300 direct and 1400 indirect jobs with the associated benefits of producing 3000 to 4000 ha (8000-10 000 ac) of irrigated potato in the short term, and 10 000 ha (25 000 ac) at full operation.

Conclusion

There is increasing demand for processed potatoes from both domestic and foreign markets.

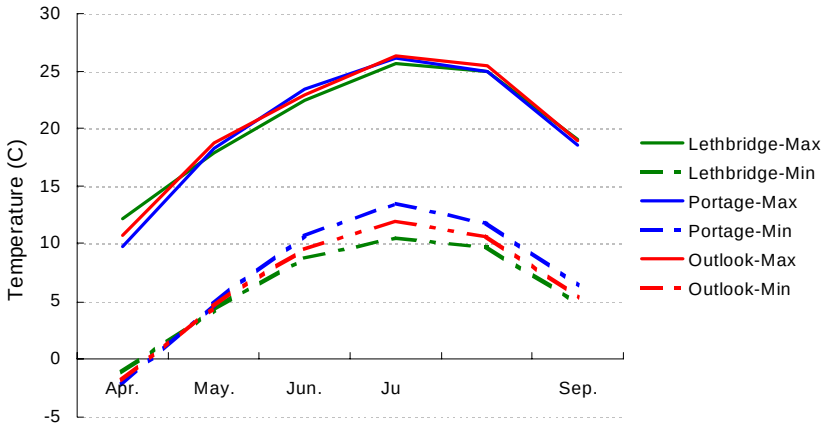

Figure 1. Growing season temperature for Alberta, Manitoba, and Saskatchewan potato growing regions.

Table 2. Frost-free periods for potato growing regions in Alberta, Manitoba, and Saskatchewan.

Location	Last Spring Frost	First Fall Frost	Frost-Free Period
Lethbridge	May 21	September 17	119
Portage	May 29	September 26	129
Saskatoon	May 21	September 16	118

Suitable land, water availability and the cost of irrigation are factors critical for expansion of potato production and the establishment of a processing plant. Potato processors are now requiring irrigated production to ensure supply and maintain quality. Expansion of irrigated potato production in both Alberta and Manitoba would involve significant cost or displacement of other high value irrigated crops. Saskatchewan, on the other hand, has the potential to significantly expand irrigated land suited to potato production at a relatively low cost. In addition to the irrigation potential, research has shown that the soil and climatic conditions in Saskatchewan's Lake Diefenbaker area are well-suited to produce high quality processing potatoes. Expansion of potato production would help elevate farm income in this area and would generate both direct and indirect, short-term and long-term employment opportunities.

Funded by:

Canada-Saskatchewan Agri-Food Innovation Fund

Canada Saskatchewan

The Bottom Line...

Saskatchewan can produce high quality processing potato. Research carried out at CSIDC and the University of Saskatchewan has shown that superior yields of high quality processing potatoes can be grown in the Lake Diefenbaker Development Area. Favourable climatic conditions, low land cost, and availability of irrigation can make Saskatchewan an attractive low-cost potato producer. This will sustain a viable potato processing industry leading to substantial rural economic development.

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