Potential for Vegetable Production in Saskatchewan

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Summary

In Canada the average vegetable farm size is 28 acres.[1] In Saskatchewan in 1996 it was only 4 acres. Moreover Statistics Canada and Saskatchewan Agriculture and Food estimate that Saskatchewan's vegetable area has declined by 60% since the 1996 census. By contrast all Canada's farm cash receipts for vegetables expanded by 38% between 1996 and 2000, while Alberta's and Manitoba's farm cash receipts for vegetables expanded by 19% in the same period. Saskatchewan's self-sufficiency in in-season vegetable production has declined from about 7.0% of in-season demand in 1991 to under 5% in 1999 (see Table 1).

[1]Statistics Canada, Census of Agriculture, 1996, Summary Tabulations, Table 7.1.

Table 1.	Vegetable Self-Sufficiency	Saskatchewan	1999	July to Dec	(%)
Vegetable	Production[2] tonnes	Unloads[3] tonnes	Imports tonnes	Total tonnes	In-Season Self-Sufficiency
Asparagus[4]	5	15	121	140	3.3 %
Beans, Green	11	38	128	177	6.2 %
Beets	7	26	17	50	13.9%
Broccoli[5]	37	332	1180	1548	2.4 %
Brussel Sprouts	4	8	42	53	7.5%
Cabbage	608	926	521	2055	29.6 %
Carrots	61	931	1455	2447	2.5%
Cauliflower(5)	11	554	690	1254	.9 %
Celery[6]	33	217	1256	1506	2.2 %
Corn, Sweet	79	435	375	890	8.9%
Cucumbers	16	805	484	1305	1.2%
Lettuce	7	3768	3870	7645	.1%
Onions, Dry	72	625	3199	3896	1.8%
Parsnips	2	31	2	35	5.7%
Peas, Green	41	0	103	144	28.6%
Peppers	5	174	933	1112	.4%
Pumpkins	114	421	0	535	21.3%
Radishes	10	57	159	226	4.5%
Rutabagas	198	1501	0	1699	11.7%
Spinach	1	17	302	320	.3%
Squash	9	39	417	465	1.9%
Tomatoes	100	357	2870	3327	3.0%
Total[7]	1431	11275	18124	30831	4.6%
Potatoes	39652	1628	2633	43914	90.3%
Total (Incl. Potatoes)	41083	12904	20757	74744	55.0%

With the Canadian dollar declining from an average value of $.74 U.S. in 1996 to under $.65 U.S. now, and wholesale to retail prices for vegetables in Saskatoon rising since 1998, Saskatchewan should be in a position to share in the expansion of its domestic vegetable industry. The U.S.D.A. reports that U.S. imports of vegetables have risen in the past year, and that imports from Canada in particular have expanded. Vegetable studies at CSIDC over the past four years have indicated a greater potential for vegetable production than most growers in Saskatchewan may appreciate. This report summarizes some of the reasons for the optimistic potential for the vegetable industy, some of the challenges faced by new and current growers, and estimates a comparative advantage among the potential vegetable crops.

[2]Estimated where official data unavailable.
[3]Other Canada
[4]Domestic unloads from May until early summer.
[5]Saskatchewan unloads of broccoli, cauliflower, and brussel sprouts from CSIDC.
[6]Celery production estimated using MB yield and average SK area for 1998 and 2000.
[7]Excluding Potatoes.

Reasons for Optimism in the Vegetable Industry

Part of the reason for the agricultural recession in Western Canada is changing exchange rates. With a strong U.S. dollar boosted by an expanding U.S. economy and stock market investment, Canada's currency has actually risen in relation to many other world currencies, although the value of the Canadian dollar is most often quoted in relation to its U.S. counterpart. With North American agricultural products more expensive when viewed from the exchange value of the importing nations, demand for North American grains and oilseeds, in particular, has declined. U.S. farm programs have been designed to compensate for this, and have recently supplied as much as 75% of net income for U.S. farmers. But these programs have been designed to help the sector most hurt by the change in exchange rates, that is grains and oilseeds.

With U.S. assistance focused mostly on the grain sector, vegetable and potato farmers in the U.S. have had to cope on their own with the stronger U.S. dollar. Since Canada imports a large portion of its vegetables from the U.S., and most local vegetables are priced in relation to imported product, this means that Canadian domestic prices for vegetables have risen. With declining production of vegetables in Saskatchewan due in part to a major wholesaler relocating their centre of distribution for the prairies to Calgary, this has also boosted local Saskatchewan vegetable prices, and particularly so in the winter months when domestic vegetable supplies dwindle.

Secondly, vegetable production in North America and elsewhere is most efficient with the use of irrigation. U.S. supplies of water are limited, and when in short supply, it is water for irrigation that is restricted first. California's water supplies in particular are becoming increasingly limited. While the vegetable area and production in California are still expanding, vegetable prices will rise to reflect the limited supplies, thus giving Canadian growers an opportunity to supply more of their own market. In fact, with the falling Canadian dollar and lower water costs, Canada has been able to supply an expanding portion of the U.S. vegetable market.

Higher transportation costs also add to the cost of importing vegetables, while reducing prices for agricultural products which are normally exported.

Much of Saskatchewan's vegetables are traditionally coming from Manitoba and increasingly from Alberta as well. With Manitoba developing export markets for vegetables in the U.S. and elsewhere, this also will allow Saskatchewan vegetable growers more opportunity to compete in their local market.

Finally the research at CSIDC with commercial scale vegetable production has consistently shown that Saskatchewan can not only achieve high vegetable yields, but that these yields are consistently two to six times the average Canadian yields for vegetables reported by Statistics Canada. Whether this is due to the use of irrigation and better management techniques, higher marketable yields than full scale commercial production, or incomplete reporting for vegetable yields in general, it provides a basis of optimism for the Saskatchewan vegetable industry.

Why has Saskatchewan Vegetable Production Been Declining?

As noted Saskatchewan's supply of vegetables has declined to only 4.6% of in-season demand.[8] It has already been noted that one commercial wholesaler chose to move their operation to Calgary for the collection and distribution of vegetables to all the prairies. This, of course, raises the cost of transportation for those Saskatchewan vegetable growers who were supplying this market, and who have chosen not to participate in other direct marketing or commercial wholesale options.

Other reasons which could influence the development of the prairie vegetable industry are: (1) proximity to large retail markets (Saskatchewan's cities are small in comparison to Calgary, Edmonton, and Winnipeg); (2) higher yields for many vegetables in the outlying provinces;[9] (3) a greater abundance of natural rainfall in Manitoba, and a greater need for irrigation in Alberta, giving Alberta an advantage in irrigated vegetables, and Manitoba an edge in rainfed production; and (4) longer established production and marketing for vegetables in Alberta and Manitoba.

In fact, while the Canadian Wheat Board has been challenged of late to justify its centralized marketing arrangement for wheat, Manitoba has benefited from a large co-operative marketing of vegetables, which, while not a monopoly, did develop from a type of marketing board.

Challenges for Saskatchewan Vegetable Growers

While the AFIF vegetable projects have been a success in showing that Saskatchewan can produce commercial vegetables for local sale, they have not diminished the need for a greater co-ordination in marketing among vegetable growers. All budgeted production costs were below the wholesale selling prices for the respective vegetables. But wholesalers exercise considerable control over prices, so that not all commercial buying prices allowed for profitable sales. If a target price for vegetables is used of a geometric mean between the wholesale selling price and the estimated cost of production, then all vegetable budgets will turn out to be positive. Most sales of vegetables at farmers' markets receive a price that is higher than the wholesale selling price. But wholesalers will generally pay a grower only a few cents above their cost of production, because this is the price at which they can bring the vegetables in from other areas.

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[8]This was calculated in 1999 for the six month period (usually July to December) following the availability of local, new crop vegetables. This calculation uses domestic production estimates from Statistics Canada, with estimates from area planted where domestic production is unavailable (thus including farmers' market sales). The discontinuation of the reporting of domestic unloads of vegetables by Agriculture and Agri-Food Canada will make this calculation more difficult to verify in the future.

[9]When comparing prairie yields for specific vegetables corn, green peas, and green beans had higher yields in Alberta, while Manitoba had the highest yields for beets, carrots, cabbage, cucumbers, rutabagas, parsnips, broccoli, lettuce, and cauliflower.

And without storage, a grower will have to sell early in the season before the premiums of winter sales materialize.[10]

A co-ordinated sale of vegetables should net to a grower a price somewhere between that offered by commercial wholesalers, and that offered by direct sales, such as the farmers' market. In other words, the net price should be much closer to or even higher than the target prices. In reality, commercial wholesale trading practises, and the regulations for farmers' markets, do not allow a grower to sell to both markets at the same time. Thus the challenge of marketing to obtain an optimum price for growers still exists. To say that marketing is not a problem for vegetables in Saskatchewan usually means that good quality vegetables can be sold to a wholesaler at a price that will make money for the wholesaler, and be a bargain for the consumer, but usually only allows the grower to do little more than break even.

The challenges for Saskatchewan vegetable growers can be summarized as: (1) marketing; (2) storage; (3) the learning curve; (4) labour costs; (5) machinery; (6) transportation; (7) climate; (8) crop insurance; and (9) irrigation.

Storage

Saskatchewan has a shortage of storage space available for vegetables. Yet the best price for many vegetables is during the winter months. Manitoba stores carrots,[11] beets, rutabagas, parsnips, potatoes, and cabbage through the year. Most of the storage in Manitoba is individually owned, with a small amount of throughput storage owned by the marketing organization.

The Learning Curve

New growers often have higher production costs for vegetables than growers who have been established for many years. It was the experience of CSIDC that production costs tend to fall as more experience is gained with a particular vegetable. Similarly the production costs for vegetables in Manitoba appeared to fall over time as growers gained more experience.

Labour Costs

A large portion of the production costs for any vegetable crop is labour. CSIDC budgets assume a minimal charge of $7.50 an hour for labour. This is comparable to what some growers are paying in the Outlook area, but will be higher in many areas of the province. Saskatchewan does not allow temporary workers from outside the country to compete for local employment opportunities. However both Manitoba and Alberta have developed programs in conjunction with Canadian laws whereby temporary workers can be brought in from areas such as Mexico. Such workers are still very costly as transportation costs, legal issues, and housing must be

[10]One grower from Nipawin reported receiving only $.12 a pound for his commercial sales of cabbage, but the cabbage which he stored beyond December received up to $.50 a pound.

[11]Manitoba supplies carrots from the end of July to early April, with smaller quantities lasting into May of the following year (8 to 10 months).

arranged. Students, aboriginal workers, and colonies have been used to supply the labour requirements of some vegetable growers.

Machinery

Some vegetables such as carrots and onions can be produced at cheaper cost, or sold more effectively, when a large area is grown and proper machinery used for harvesting, cleaning, and packaging. In developing the budgets at CSIDC, the projects used the best equipment available, but since vegetables are not produced on a large scale in Saskatchewan, they often did not use some of the equipment that would be available to commercial producers in other parts of Canada. Investing in additional machinery could reduce some of the costs of production further.

Transportation

Depending on how far a grower is from his or her market will have a great effect on their size of operation and their transportation costs. Growers living very near or delivering to a farmers' market in Saskatoon will be able to receive higher prices for their produce than growers living further away, such as in Outlook. Generally the further a grower is from their major market, the more they will have to specialize in a few vegetables to save on transportation costs. Large vegetable farms are often located within an hour's drive of their target markets. If a grower is too far from their target market, transportation costs can become prohibitive.

Climate

For many vegetables, CSIDC was able to obtain higher yields because the heat units available in Outlook are higher than in other parts of Saskatchewan. Where other areas of the prairies have higher heat units than Outlook, they will often have higher yields as well. Growers need to determine which vegetables grow best with the climate and soils in their area. Rutabagas, for instance, have been infected with maggot when grown too close to canola. The best rutabaga area, therefore, will be farther away from areas where canola is commonly grown.

Crop Insurance

Growers may inquire about some type of government assistance when getting started in vegetables. Very often with higher value crops, there are fewer or no programs available to new growers which has been a disincentive to diversification. However the federal government does have a spring credit program available, which does cover vegetables, but only if there is a crop insurance program available for that crop. No crop insurance program is available yet for vegetables (other than seed potatoes) in Saskatchewan, but this may be developed soon, so growers should be aware of this in case this opportunity becomes available.

Irrigation

Most vegetables in Canada and in North America are grown under irrigation. This helps to reduce production costs per pound. This will be especially so in a moisture deficient area such as Saskatchewan. For some vegetables such as potatoes and carrots sprinkler irrigation will be

sufficient. Trickle irrigation has been used for many vegetables at CSIDC to reduce weeding costs (in conjunction with a plastic mulch). Solid set systems have also been used for vegetables, but require more labour to move. Underground systems need to be flushed prior to winter freeze up. If growing vegetables on a large scale, growers may need to have their water tested by Saskatchewan Water Corporation as to the suitability of their water and soil for irrigation.

Budgets

Table 2 summarizes the budgets developed thus far for the vegetables grown at CSIDC (including carrots, pumpkins, cabbage, green peppers, cucumbers, Romaine lettuce, broccoli, cauliflower, celery, brussel sprouts, and canteloupe). It also includes estimates of costs for other vegetables using the CSIDC budgets for similar vegetables, yields from tests done by the University of Saskatchewan, and budgets for vegetables from other areas of Canada. The vegetables grown at CSIDC tend to show higher returns than the budget estimates for other vegetables, probably because there is some degree of caution in developing budgets for crops which have not been tested on a large scale yet.

Table 2.	Summary	Vegetable	Budgets	2000	
Vegetable	Marketable Yield t/acre	Target Price $/lb	Cost Per Pound	Return on Investment	Net Returns Per Acre
Pumpkins	26.7	.173	.127	89%	$2701
Celery	16.4	.325	.252	59%	2655
Green Peppers	8.8	.635	.512	47%	2400
Brussel Sprouts	5.0	.800	.585	55%	2371
Green Onions	4.9	.681	.478	170%	2211
Zucchini	10.6	.414	.320	70%	2190
Beets	9.1	.396	.290	66%	2131
Cucumbers	16.7	.290	.232	2%	2128
Cabbage	26.1	.152	.116	65%	2097
Parsnips	4.0	.893	.671	44%	1954
Broccoli	7.8	.500	.390	49%	$1886
Cantaloupe	14.1	.308	.249	40%	1828
Squash	8.1	.387	.294	51%	1664
Corn	6.0	.250	.144	62%	1417
Potatoes (Red)	13.3	.107	.059	49%	1413
Rutabagas	14.4	.266	.222	40%	1395
Carrots	18.1	.247	.213	37%	1372
Cauliflower	7.9	.471	.394	34%	1328
Green Peas	2.4	1.194	.943	48%	1313
Snow Peas	2.0	1.411	1.128	45%	1253
Radishes	3.4	.596	.432	33%	1227
Asparagus	1.1	1.430	1.081	10%	1168
Romaine Lettuce	9.3	.352	.305	24%	961
Onions	12.0	.227	.191	25%	953
Green Beans	3.0	.864	.730	45%	885
Spinach	4.3	.468	.412	17%	525
Tomatoes	5.5	.572	.539	19%	435
Average Returns Per Acre					$1566

Comparative Advantage

Some information is available from the self-sufficiency tables as well. The vegetables in which Saskatchewan is most competitive at the moment are potatoes, rutabagas, pumpkins, beets, and parsnips. For these vegetables, Saskatchewan or Western Canada should be able to supply 75% to 100% of our in-season demand.

The budgets also show celery, green peppers, brussel sprouts, green onions, and zucchini as potentially having good returns based on recent prices. In addition to potatoes, Western Canada has exported carrots, greenhouse tomatoes, and brussel sprouts (from B.C.). Most vegetables, however, show a good potential for a positive return, and could be significantly higher if a farmer is selling to a farmers' market.

One large onion grower has noted a difficulty in producing commercial onions once the wholesale market moved to Calgary. Traditionally growers have had more trouble growing some leaf crops such as lettuce and spinach, and field tomatoes still appear somewhat risky.

Notes on Self-Sufficiency

Table 3 supplies further information on the self-sufficiency of vegetables for Western Canada. When potatoes are not included, Saskatchewan produced only 4.6% of its in-season demand for vegetables in 1999 compared to 56% for Western Canada as a whole. For potatoes Saskatchewan produced 90% of its in-season requirements compared to 88% for Western Canada as a whole. If potatoes are included, Saskatchewan's in-season vegetable self-sufficiency rises to 55% compared to 67% for Western Canada. Other than potatoes, Saskatchewan is most self-sufficient in cabbage, green peas, and pumpkins, even though none of the green peas appear to be sold through commercial wholesale channels.

Table 3	Self-Sufficiency	Vegetables	Western Canada	1999	July to Dec
Vegetable	Production[12]	Unloads[13]	Imports	Total	Self-Sufficiency
Asparagus[14]	384	0	1511	1895	20.3%
Beans, Green	4152	0	1154	5306	78.3%
Beets	2529	0	899	3428	73.8%
Broccoli	6022	0	10639	16661	36.1%
Brussel Sprouts	3774	0	375	4149	91.0%
Cabbage	13556	2	4698	18256	74.3%
Carrots	34756	0	13127	47883	72.6%
Cauliflower	3108	0	6161	9269	33.5%
Celery[15]	2158	0	11331	13489	16.0%
Corn, Sweet	24514	437	3384	28335	86.5%
Cucumbers	17943	361	4292	22596	79.4%
Lettuce	7178	86	34903	42167	17.0%
Onions, Dry	20232	2	28853	49087	41.2%
Parsnips	501	0	14	515	97.4%
Peas, Green	7895	0	929	8824	89.5%
Peppers	1502	125	8415	10042	15.0%
Pumpkins	5192	0	0	5192	100%
Radishes	498	0	492	990	50.3%
Rutabagas	2953	0	0	2953	100%
Spinach	469	0	2726	3195	14.7%
Squash	3268	0	3758	7026	46.5%
Tomatoes	39620	448	25889	65957	60.1%
Total	202204	1461	163551	367216	55.1%
Potatoes[16]	168686	0	24095	192780	87.5%
Total (Incl. Potatoes)	370890	1461	187646	559997	66.2%

Future Direction

While the decline in Saskatchewan's vegetable production has been discouraging, there appears to be some turnaround in 2000 compared to 1999. Also cash receipts per acre have been rising steadily since the last census in 1996. In 2000 it appears the average Saskatchewan vegetable grower received over $5,000 per acre in gross returns. CSIDC budgets would indicate this could be doubled yet again in a good production year with careful marketing. The falling Canadian dollar, higher transportation costs, and reduced supplies of water in the U.S. leave hope that there will be expansion in the vegetable industry (in Saskatchewan and other parts of Canada) for many years to come.

[12]Estimated where production is unavailable.
[13]Unloads from provinces outside of BC, AB, SK, and MB.
[14]Asparagus unloads begin in May, ending in early summer.
[15]Estimated.
[16]Fresh market potatoes, excluding seed and processing.