



### INTRODUCTION

There are three opportunities for producers diversifying into vegetable production in Saskatchewan:

1. Market gardening: This involves the production of a large number of different crops on a small scale for direct sale to consumers.
2. Commercial production: A grower produces fewer crops on a larger, more efficient scale for sale into the wholesale/retail trade or to processors.
3. Seed production: A more limited option is the production of vegetable seed.

Based on 1999 domestic unload data, approximately 2.5% of the vegetables sold into the prairie wholesale/retail market were sourced from Saskatchewan, as compared to 46% from Manitoba and 51% from Alberta. Farm cash receipts for vegetables in 1998 were \$22.6 million in Manitoba, \$2.9 million in Saskatchewan, and were \$59.2 million in Alberta.

An analysis of "in-season" self-sufficiency found that Manitoba supplied 57% of its needs, Saskatchewan was at 7% and Alberta was 33% self sufficient. Saskatchewan consumers spend an estimated \$25 million annually on fresh vegetables that could be grown within the province.

### THE LARGE SCALE VEGETABLE DEMONSTRATION PROJECT

In 1996, the Canada-Saskatchewan Irrigation Diversification Centre (CSIDC) began a project to demonstrate new production and storage

technologies for eleven vegetable crops. The project was continued from 1997 to 2000 with funds provided by the Canada-Saskatchewan Agri-Food Innovation Fund (AFIF).

Selected varieties of pepper, pumpkin, cucumber, cabbage, carrot, romaine lettuce, cauliflower, broccoli, celery, Brussels sprouts and cantaloupe were grown on approximately ½ acre plots each year over a three year period to simulate commercial production. Produce was harvested, processed as needed, and marketed to wholesale buyers to simulate the entire commercial production process.

Production technologies such as drip irrigation, plastic mulches, and floating row covers were demonstrated.

### PROJECT RESULTS

The project demonstrated that acceptable yields and suitable quality of a wide range of vegetable crops can be grown in Saskatchewan. Superior quality can be achieved where close proximity to the market allows quick delivery of fully mature, plant-ripened produce.

Pumpkin provided the best net returns (Figure 1). The quality was excellent. a majority of the pumpkin



were completely orange by harvest. The market for pumpkin is limited and is highly seasonal. Growers are advised to use caution when entering this market.

Both carrot and cabbage produced high yield. Consistent yields of 55 to 65 t/ha (25 to 30 tons/ac) of either crop are possible. These crops have year-round demand for a large volume of produce. Carrot has the further advantage of being one of the few vegetable crops for which production can be fully mechanized.

Brussels sprouts and broccoli are cole crops that do well under cool growing season conditions. Both have potential provided some limiting factors can be overcome.

Brussels sprouts is a long season crop that will require a means of mechanical harvest in commercial production unless consumers will accept stalks with sprouts attached. Harvesting stalks with sprouts attached reduced labour costs at harvest to 1/3 to 1/4 of the cost of removing the sprouts.

Broccoli was grown in sequential plantings from May to July using transplants. Produce that matured during hotter periods required immediate harvest to preserve quality. Late season broccoli matured more slowly. Broccoli in the demonstration produced large heads which were well received by the wholesale trade. The crop was easy to harvest and trim, but requires immediate cooling to maintain quality. The produce must be iced for shipment.

Excellent quality celery and romaine lettuce was produced, and was well received by the market. Celery is a long season crop requiring transplants started in mid-March and field planted after temperatures remain above 10°C. It requires, and responds well, to good moisture conditions.

Romaine lettuce was sequentially planted using transplants. The early plantings produced tall well-formed heads with no tip burn. Late season lettuce failed to form adequate heads during periods of hot weather.

Cucumber is a labour intensive crop that produced high gross returns. Mechanical harvest aids would improve the economics of cucumber production. In the early stages of the demonstration, rough handling of the vines during harvest resulted in scarred cucumbers that were not marketable. Careful handling of the vines during picking reduced the problem to manageable levels.

Peppers produce good returns in years of warm growing season temperatures. Yield of mature produce is poor during cooler seasons even with the use of transplants, plastic mulches and mini-tunnel technology. This is a high value crop (especially if red peppers can be produced) but it matures slowly under cool conditions and has no frost tolerance.

While high yields of cauliflower were grown, crop management to produce white heads is needed to make this

crop profitable. Self-blanching varieties and techniques to produce maximum leaf growth is essential, as is timely harvest of the crop in order to maintain the white head color demanded by the market.

Cantaloupe is a high value crop with potential in Saskatchewan. Successful production requires the use of plastic mulch and mini-tunnel technologies. Although growing cantaloupe from transplants is recommended, especially for early season marketing, direct seeded fruit have been harvested in seasons of normal growing season temperatures. Sugar content of Saskatchewan grown cantaloupe picked at maturity (full slip) ranged from 9 to 14%. This is approximately double that of imported cantaloupe. Shelf life of fruit picked at this stage of maturity is limited, so the fruit must be consumed within approximately one week of harvest. There may be potential to supply a premium priced niche market with locally produced cantaloupe.

### LABOUR COSTS

The most significant input cost was labour. Labour costs ranged from 33% of variable input costs for pumpkin to a high of 70% for celery. The development of mechanized and efficient operating systems will be required to improve the profitability of commercial vegetable production.

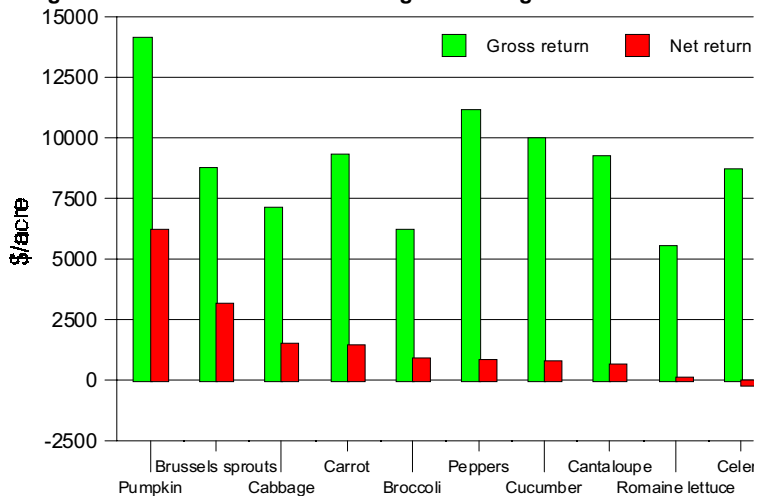
### CONCLUSION

Vegetables can be grown profitably in Saskatchewan using the appropriate technology. This provides producers with a high value crop diversification opportunity.

Mechanization and efficient use of labour will be fundamental to successful operations.

The relative absence of pests in Saskatchewan allows production of “ecologically safer” produce that could offer a marketing advantage for Saskatchewan producers.

Figure 1. Actual returns for the large scale vegetable demonstration



### The Bottom Line...

Vegetables can be grown profitably in Saskatchewan using the appropriate technology. This provides producers with a high value crop diversification opportunity.

Funding for the Vegetable Demonstration Project and the preparation of this brochure was provided by the Canada-Saskatchewan Agri-Food Innovation Fund and the Canada-Saskatchewan Irrigation Diversification Centre