



Case Study

Bringing World Crops to market

Changing Canadian demographics and evolving consumer tastes bring fresh opportunity to the marketplace in the form of crops not traditionally grown in Canada.

Canadians can now buy fresh, high quality and locally grown okra, Asian long eggplant and Indian round eggplant – and that's due to Vineland's research with consumers, growers and retailers into non-traditional crops adapted to Canada's growing conditions.

What are World Crops?

Vegetables popular in other parts of the globe but not traditionally grown in Canada like okra, Indian round and Asian long eggplant, yard long beans, bok choy, Asian greens, callaloo and others.

The World Crops opportunity in Canada

Canadian immigration patterns are changing. Statistics show that Chinese and South Asian immigrants form the largest segment of new Canadians and are expected to continue to do so in the foreseeable future, particularly in larger urban centres.

In fact, between 2011 and 2036 nearly half of Canada's immigrants are estimated to hail from China and South Asia – and eggplant and okra are two vegetables that figure prominently in the diets of this region.

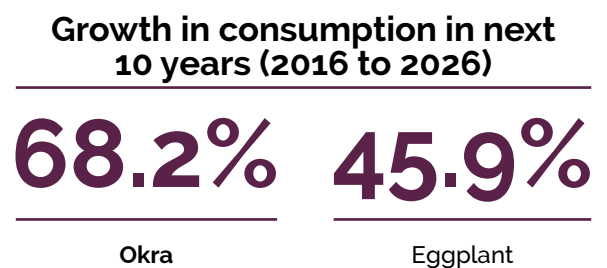
Canadian consumption of eggplant and okra is growing as the traditional Canadian diet evolves alongside immigration patterns. Between 1978 and



2016, annual Canadian eggplant consumption rose from about 0.3 pounds per person to approximately 1.26 pounds, and okra consumption increased from almost zero to approximately 0.38 pounds per person.

Most of these vegetables are currently imported into Canada from the United States, the Caribbean and Asia. And although those imports have been growing in tandem with consumption, research has shown a preference for fresh, locally grown produce if prices are comparable.

Projections of current trends estimate that Canadian okra consumption will grow by 68.2% and eggplant by 45.9% between 2016 to 2026. That's an average annual growth of 3.3% and 5.1% and 2.7% to 3.5% respectively. Prices are expected to be sufficient to both appeal to consumers and generate a profit for growers.



**Vineland's contribution:
Defined the opportunity
for the best World Crops**

***Why World Crops in
Canada?***

- Changing Canadian demographics
- Rising consumption
- Growing import replacement opportunity
- Increasing market potential



A collaborative approach

Vineland's mission for new crop development is simple – to develop what the market wants in collaboration with the people who will grow, sell and eat it.

Vineland's agronomic team tested different varieties of World Crops vegetables at its research farm and greenhouse in partnership with Canadian growers, staff from the Ontario Ministry of Agriculture, Food and Rural Affairs and researchers from the University of Guelph.

This helped Vineland narrow crop selection to eggplant and okra, which could be produced reliably and profitably, as well as determine varieties best adapted to Canada's growing conditions. It also included establishing cost of production, evaluating in-field and greenhouse production systems, and developing best growing practices.

Vineland's consumer insights research team identified which World Crops had the most potential to resonate with different groups of new Canadian consumers and which characteristics were most important to them when buying this type of produce.

There was also a close working relationship with retailers who marketed the different crops and were able to provide valuable feedback on sales as well as how they withstood storage, handling and retail display environments.

One major Canadian retailer reported an increase of local sourcing of Asian long eggplant by almost 50 per cent in 2016 compared to the previous year.

Vineland's contribution:

Defined cultivars and best practices for growers to help maximize profitability

Established linkages with consumers and market buyers for locally grown produce

Developing what the market wants through:

- Variety trials
- Agronomic practices
- Consumer insights
- Retail connections

What is okra?

A tropical perennial plant with large edible green seed pods popular in Indian, Southeast Asian, West African, Brazilian and Creole cuisine.



What is Asian long eggplant?

A close tropical relative of tomatoes and peppers, this longish dark to light purple vegetable is part of traditional dishes in China, Japan, India, Thailand and the Philippines.



What is Indian round eggplant?

Sometimes called baby eggplant in North America, it ranges in colour from purple to white, brown or green and is often used in Indian, Thai and Sri Lankan food.



"We would never have started with World Crops without Vineland. Through their work we know that these markets are growing rapidly and that it is possible to grow these crops here. The availability of their research team and being able to collaborate in a research trial has had a big impact on our production – their support has been invaluable to us."

**Guillaume Cloutier and
Yvon Van Winden, Delfland Inc.,
Napierville, QC**

Impact and outcomes

These new World Crops create real impact for everyone along the supply chain, from growers to consumers.

For retailers, World Crops offer many opportunities to carry locally grown, in-season produce available to their customers and for consumers, it's a chance to buy fresh, good quality tastes and flavours that they are familiar with.

But the biggest impact potential lies with growers. World Crops present an alternative for growers interested in diversifying into new crops and products and Vineland's research program has significantly reduced the risks associated with investing in new production.

Vineland's work has identified the potential of this market opportunity and built economic calculators that include financial information and tools supporting cost-of-production, cash flow overview and break-even point evaluations by growers for their individual businesses.

Years of research at Vineland's farm and with commercial growers has generated valuable agronomic data and grower-friendly recommendations for in-field and greenhouse production, including:

- hybrid varieties
- fertility management
- spacing
- grafting for field production
- direct seeding
- season extension
- pest control
- genetic yield advantages



Delfland Inc. is a large Quebec grower of field vegetables like carrots, onions, dry shallots, and lettuce that is always looking for new markets and new opportunities.

After reading an article about the World Crops program and visiting Vineland, Delfland began experimenting with growing okra and adapting Vineland's agronomic recommendations to their local growing conditions.

In 2017, their harvest was 10 to 15 boxes a week which were sold to a local buyer. Acreage has increased in 2018, both growing their markets and filling in down- time between their more traditional crops.

Vineland's contribution:

Removed barriers to growing World Crops by identifying market opportunities and developing tools to manage risk

Expected marketplace impact

Initial growth in production of both crops is expected to be gradual over 10 to 15 years. Previous new crop introductions in Canada have shown that growers need time to become familiar with the crop, establish production infrastructure, and build market connections before the full market potential can be realized.

However, market predictions for both eggplant and okra paint a positive picture for Canadian production of these crops.

Growth trends for both okra and eggplant were projected using a combination of Canadian consumption data and import statistics.

Canada's shorter growing season, past experiences with adoption of new crops by Canadian growers, and greenhouse production trends were also considered.



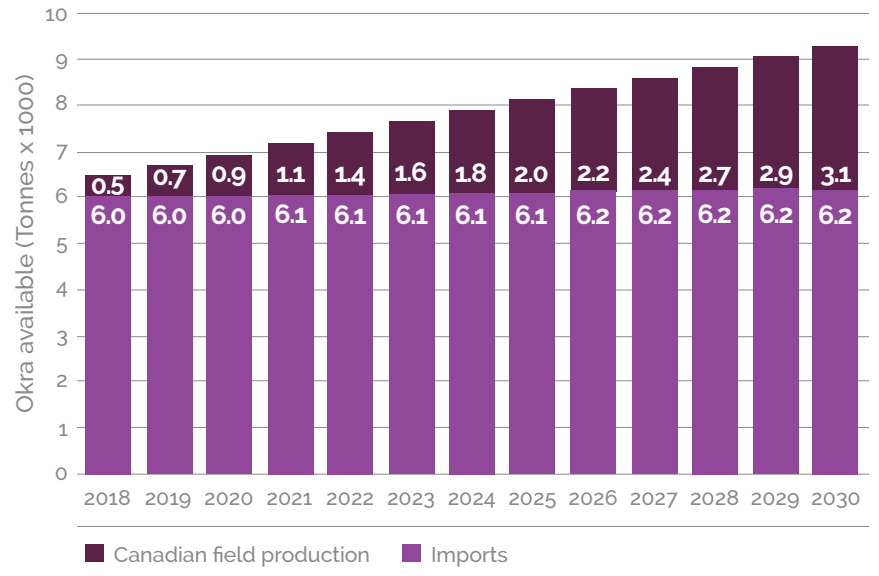
Okra

For okra, it is expected that domestic field production will rise from current levels to 30 per cent of the market by 2030, resulting in 3,100 metric tonnes (MT) of Canadian-produced okra and 6,200 MT of imports. Trials at Vineland found okra to be unsuitable for greenhouse production.

This represents 437 acres of okra across Canada by 2030, at an average yield of 17 MT per hectare and with a farm gate value of approximately \$24.3 million per year. That figure is based on an estimated wholesale price of \$7.82/kg in 2030, calculated using the 2018 wholesale price of \$6.17/kg and assuming two per cent inflation over the 13-year period.



Total projected okra imports and domestic in-field production, 2018 - 2030





Asian long and Indian round eggplant

Canadian field production of Asian and Indian eggplant is estimated to increase from its current level of less than five per cent of Canadian consumption to 30 per cent by 2030. This translates into 12,200 MT of ethnic eggplant produced in Canada by 2030.

It represents 586 to 835 acres of field eggplant crops across Canada by 2030, with an estimated annual farm gate value of \$32.8 million. A wholesale cost of \$2.69/kg in 2030 was used to calculate this figure, based on the 2018 average price of \$2.13/kg and assuming two per cent inflation over the 13-year time period.

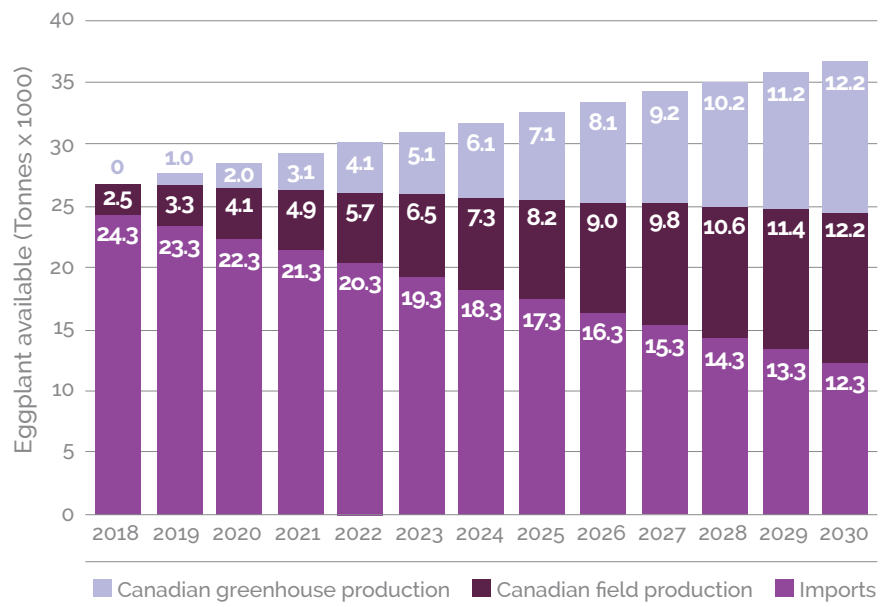


In the greenhouse

If greenhouse production of eggplant is included, domestic production would increase by an additional 12,200 MT and imports would drop to only 12,300 MT per year. The combined farm gate value of field and greenhouse eggplant is estimated at approximately \$65.6 million annually by 2030, representing 586 to 835 acres of field eggplant and 87 acres of greenhouse eggplant across Canada.

Greenhouse production offers yield advantages, a longer growing season, and

Total projected eggplant import and potential import replacement by domestic in-field and greenhouse production, 2018 - 2030



more effective pest control over field production. It is not yet possible for nine-month greenhouse eggplant production to be economically feasible due to high lighting and energy costs. This is expected to change with the emergence of new technology in this area, providing future opportunity for a potential nine-month growing season.

Given Canada's short growing season and maximum four-month harvest window, 30 per cent of the market is the maximum level possible of home-grown production for both okra and eggplant. This would be higher if greenhouse eggplant production is added in the future.



Market potential by 2030

Okra

437 acres of Canadian field production for four months of the year

Farm gate value of **\$24.3** million/year

30% of consumption home-grown

Eggplant

586 to **835** acres of Canadian field production for four months of the year and **87** acres of greenhouse eggplant production for nine months

Farm gate value of **\$65.6** million/year

60% of consumption home-grown

12.3 MT of imports displaced

Success at a glance

Through its World Crops program, Vineland has been able to develop new crop opportunities for Canadian growers and new market opportunities for Canadian retailers and consumers built around locally grown food.

- Crops were selected that are in demand by new Canadian consumers and grow well in Canada
- Agronomic information tells growers which varieties to use and how to grow them for best results, whether in-field or in the greenhouse
- Economic calculators are available to provide cost of production information to growers
- Connections with retailers have reinforced market demand
- Extensive market analysis has established future growth potential

Through detailed, multi-faceted research, a de-risked diversification opportunity for growers is available for implementation, supported by extensive background information and economic calculators at <http://feedingdiversity.vinelandresearch.com/>



World Crops – an opportunity ready to grow

- **De-risked opportunity for growers to diversify crop production**
- **More fresh, local produce for a growing market**
- **Import displacement**

Funding partners

Vineland's World Crops program would not have been possible without the support of many funders and collaborators, including growers, retailers, the Ontario Food Terminal, crop specialists with the Ontario Ministry of Agriculture, Food and Rural Affairs, and researchers at the University of Guelph.

Funding was provided by multiple partners, including Agriculture and Agri-Food Canada, the Ontario Ministry of Agriculture, Food and Rural Affairs, Ontario Fruit and Vegetable Growers' Association and the Friends of the Greenbelt Foundation.