HOLLAND MARSH

PROFILE OF HORTICULTURE

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Abbreviations Used

GTA – Greater Toronto Area

MM – Million

June 2019

Disclaimer

The opinions and views expressed in this report are the sole responsibility of the consulting firm, Take It Up Consulting Inc, and are not necessarily held or endorsed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) nor the municipalities which contributed funding towards the development of this report.

The data sets used for analysis in this report are primarily drawn from the 2016 census, originating with Statistics Canada, with comparison to the previous census year where possible in 2011, as published on the OMAFRA website.

Acknowledgments

Stephen Duff and his team of statisticians at OMAFRA were obliging and forthcoming in directing the consulting team to, and explaining the Statistics Canada data available from, the OMAFRA website.

Growers and owners of value-added businesses in the Holland Marsh granted the consulting team interviews and photos to tell the story behind the statistics. Their cooperation was vital to the compilation of this report.

A Steering Committee was formed to provide advice on the development and content of this report. The Committee consisted of representatives from the economic development departments of the participating municipalities and a representative from the OMAFRA as well as the HMGA's Executive Director, Jody Mott. Their constructive advice contributed to improving the clarity of this report.

Charles Lalonde was a highly valued associate with an intimate understanding of agriculture in the Holland Marsh. His insights contributed signifcantly to the information in this report.

Jody Mott and members of the Holland Marsh Growers' Association (HMGA) Board provided important guidance and support to the project. Most of the pictures used in this report were provided by HMGA.

The following municipalities contributed funding to this report as well as playing important roles on the Steering Committee.

Message from the Chair

On behalf of the Board of Directors and members of the Holland Marsh Growers' Association (HMGA), we acknowledge shared funding provided by the municipalities of the Town of Bradford West Gwillimbury, King Township, the County of Simcoe and York Region to enable this economic profile of horticulture in the Holland Marsh to be completed.

The HMGA is committed to constantly working together on ways to improve the economic contribution of the farms of the Holland Marsh to Ontario's, Canada's, and the global economy while farming in an environmentally responsible and sustainable manner. This report, largely based on 2016 census data, provides an important baseline to serve as a reference point going forward.

The value of the Holland Marsh - The report demonstrates the value of the Holland Marsh, as one of the gems in Ontario's food crown, to the people of Ontario. We believe it is essential to continue agriculture on this highly productive and unique farmland in order to ensure that Ontario consumers receive fresh produce from our farms year-round. The value of the Holland Marsh goes beyond facts and figures related to farm cash receipts, post harvest activities, and exports, impressive as those statistics are. How is it possible to put a value on having on the doorstep of Canada's largest metropolitan area, the GTA, this reliable supply of safe, fresh, nutritious produce?

Year-round supply - The soils of the Holland Marsh are particularly well suited to the production of root crops, such as carrots, onions, beets and parsnips. These root crops are able to be stored in climate-controlled conditions after they are harvested. As a result, they provide a consistent food supply of fresh produce throughout the winter and into spring. Greenhouses of the Holland Marsh contribute produce and floral products many months of the year outside of our normal growing season.

We will use this report to tell our story so that our neighbours, our customers, and the general public of Ontario understand how important the Holland Marsh is to all of us who live in this great province.

Quinton Woods, Chair, Holland Marsh Growers' Association

Highlights of the Holland Marsh

- In 2016, the Holland Marsh produced an estimated $105 million in farmgate value of horticultural crops
- Carrots are the largest vegetable field crop, accounting for $29.8 million, followed by onions at $20.9 million
- An additional $80 million was added in value after harvesting before the crops left the Holland Marsh through storing, packing and processing activities
- Greenhouse agriculture is important in the Holland Marsh, with an estimated farmgate value of $32 million – in addition to providing an almost year-round supply of produce and floral products, greenhouses are an important asset for field vegetable crops, as seedlings are started in greenhouses for transplant to the field in order to shorten the cycle time to harvest
- Production of Chinese vegetables, parnsips and beets is increasing to meet domestic consumer demand
- The crops grown in the Holland Marsh enable a supply of fresh produce, on account of the storage attributes of leading root crops that thrive in the soils of the Holland Marsh, for two-thirds of each year
- There are key enablers of agriculture in the Holland Marsh such as commercial businesses dedicated to building and maintaining specialized farm machinery for planting, spraying, and harvesting the major crops
- While the total number of farms in the greater Holland Marsh geographic area has declined from 780 in 2011 to 740 in 2016, the acres of farmland in production has been stable, indicating that the scale of farming is increasing
- The urban population of the five local municipalities that make up the Holland Marsh is on a growth trend, increasing 12% from the census in 2011 to 164,235 in the latest 2016 census

The Definition of the Holland Marsh

When most people in Ontario think of the Holland Marsh, their minds go to what they observe when they drive across it on the busy corridor of Highway 400. As well as seeing the rich, fertile soil and the crops thriving there, they may also catch the distinct scent of onions or other aromatic crops growing and being harvested, depending on the season. That visual acquaintance is only the tip of the iceberg, so to speak. Most of the farmland of the Holland Marsh lies beyond their field of vision.

In order to compile this report, it was necessary to develop a definition of the Holland Marsh that was aligned with the manner in which available statistical data are published. There is no data set that exactly corresponds to the Holland Marsh.

Making Best Use of Available Statistics

The best approximation was achieved by taking the data disaggregated to the township level and then compiling the information for the five townships that collectively comprise the Holland Marsh as summarized in the following table.

Upper Tier Municipality	Lower Tier Municipalities*
County of Simcoe	Bradford West Gwillimbury, Innisfil
York Region	King Township, East Gwillimbury, Georgina

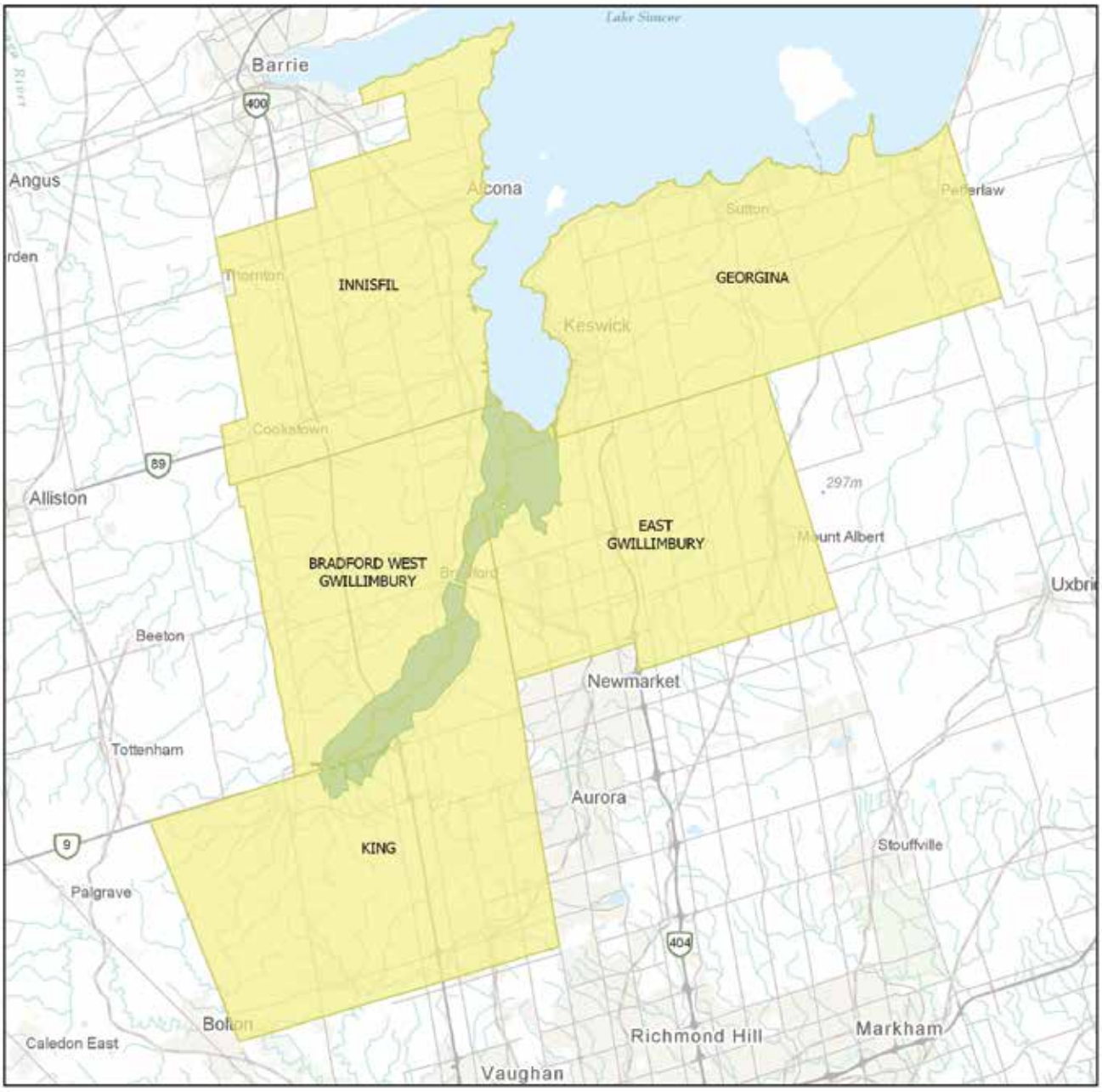
* Referenced as “townships” in OMAFRA’s statistics

While this definition encompasses both the muckland and highland growing areas, the data reported for the highlands was limited to root vegetables, primarily carrots and onions, and does not include conventional cash crops like corn and soybeans nor potatoes nor turfgrass. Greenhouse horticulture, including vegetables, seedling and floriculture production, is included in the scope of agriculture covered by this report.

The more narrowly defined the area for which statistics are sought, the greater the risk that the data will be suppressed by Statistics Canada for reasons of confidentiality. In some cases, data points at the township level were suppressed for this reason. As a result, it was necessary to make informed estimates in these cases to round out the complete data sets available in order to arrive at the figures published in this report. Because estimates were made conservatively, they are more likely to under-estimate than over-estimate. Where possible, the basis of estimates was validated by confirmation with more than one independent source.

The Focus of this Report

The focus of this report is on agriculture occurring in the Holland Marsh and the secondary marshes in Innisfil and Keswick included in the five township data aggregation. Accordingly, the report does not provide data related to other sectors of the economy not directly relevant to agriculture. Within agriculture, a closer look is provided at horticultural production.



Map provided by the Ontario Ministry of Agriculture, Food and Rural Affairs

Map of the Five Townships That Define The Holland Marsh

This map depicts the five townships that make up the Holland Marsh. The shaded area identifies the muck cropland that is almost entirely dedicated to vegetable field crops. In this report:

- data sets related to people in the Holland Marsh include all residents in the five townships
- data sets related to farms in the Holland Marsh encompass all agriculture in the five townships

The statistical databases segregate the data for field vegetables and greenhouse production only to the extent of the farmgate value and acres of land used. This horticultural subset of all agriculture is reported on this more limited basis. Not of all of the horticultural farming reported occurs on muck cropland. Roots crops are also grown on the highlands and greenhouses are located there.

The People

Who Call The Holland Marsh Home

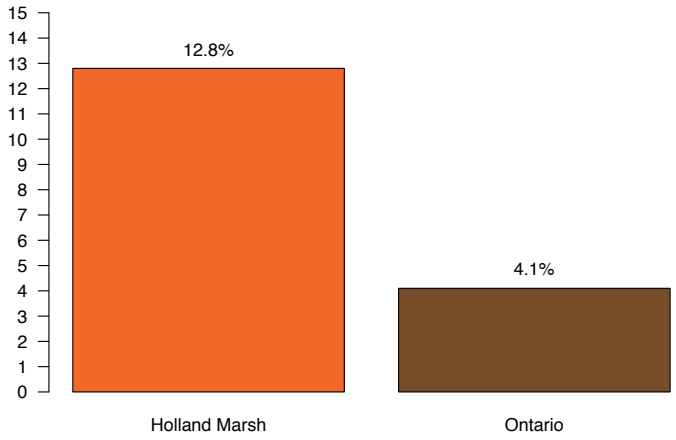
Key facts about the residents of the Holland Marsh in comparison to Ontario as a whole

Based on 2016 census data

- are younger on average
- average household sizes are larger
- the unemployment rate is lower
- average household income is higher
- population is growing faster
- a greater proportion of the population is working

In 2016, 164,235 people lived in the Holland Marsh, up 12.8% from 2011.

Population Growth Rate 2011-2016



The people make the difference

People are the core resource of the Holland Marsh. People bring the skills and entrepreneurial drive necessary to grow and prosper.

Many farm families came to the Holland Marsh in the middle of the 20th century and began producing crops from its unique muck soil. Second and third generations of the original Holland Marsh farm families are often the ones engaged today in working the land and harvesting bountiful crops from the soils of the Holland Marsh.

In October 1954, Hurricane Hazel unleashed record rainfall in the watershed causing extensive flooding and destruction of crops and property. The primary lesson learned from that once-in-one-hundred years kind of setback was the need to improve planning for the canal and drainage systems.

Through the resilience and industry of the first generation farmers, farms were rebuilt. The lesson learned from Hurricane Hazel has been implemented.

Demographic Facts from the 2016 Census

	Holland Marsh	Ontario
Unemployment rate	6.0%	7.4%
Average Household Income	$113,588	$97,856
Average number of people per household	2.83	2.6
Residents in the workforce	60.7%	52.0%

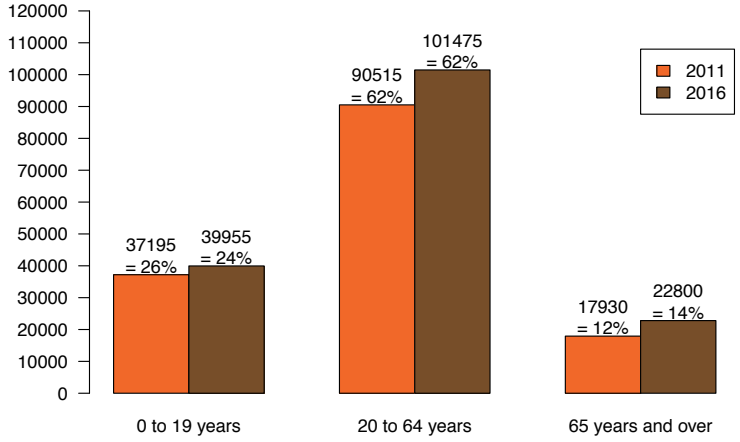
The data on population demographics includes every resident in the five local municipalities identified in the definition of the Holland Marsh on page 4 in both urban and rural areas.

Observations on the population trends

Major infrastructure improvements continue to be made to the major 400 series Highways and GO train service. Among other advantages, the accessible transportation system enables efficient inflow and outflow of workers to their jobs. The transportation system supports expanding residential and commercial development in the Holland Marsh. As more people locate to the Holland Marsh, the local supply of skilled workers continues to grow.

Preserving the rich farmland for high value crop production while allowing the communities in the Holland Marsh to grow and flourish will be an ongoing challenge. Farmers observe that the roadways on which they move their farming equipment from field to field are increasingly congested with motorists from nearby residential developments. Timely access to the fields is vital in order to ensure efficient use of equipment and labour and to address the agronomic needs of perishable crops throughout the growing season.

Age Breakdown of the Population



The Farms

Of The Holland Marsh

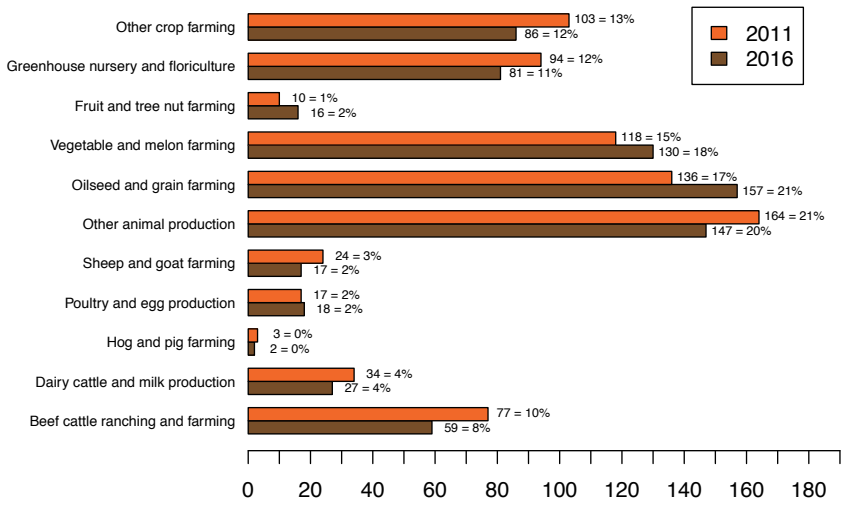
Key facts about farms in the Holland Marsh

The data on farms include every farm in the five local municipalities identified in the definition of the Holland Marsh on page 4.

Based on the 2016 census

- the total number of farms declined 5% between 2011 and 2016, from 780 to 740
- the acres in production did not significantly change between 2011 and 2016
- the number of farms with a capital value in excess of $1MM increased by 14.7% from 442 in 2011 to 507 in 2016
- there was an increase of more than 50% in the number of farms grossing over $2MM between 2011 and 2016
- with the exception of poultry and egg production, the number of farms engaged in livestock agriculture declined between 2011 and 2016
- the number of farms engaged in traditional cash crops and in vegetable farming increased between 2011 and 2016

Number of Farms by Type of Agriculture Comparing 2011 and 2016



Source: Statistics Canada Census data

- the number of small farms for all agriculture, under 10 acres, increased by 35% from 55 in 2011 to 74 in 2016

Farms form the economic core of the Holland Marsh

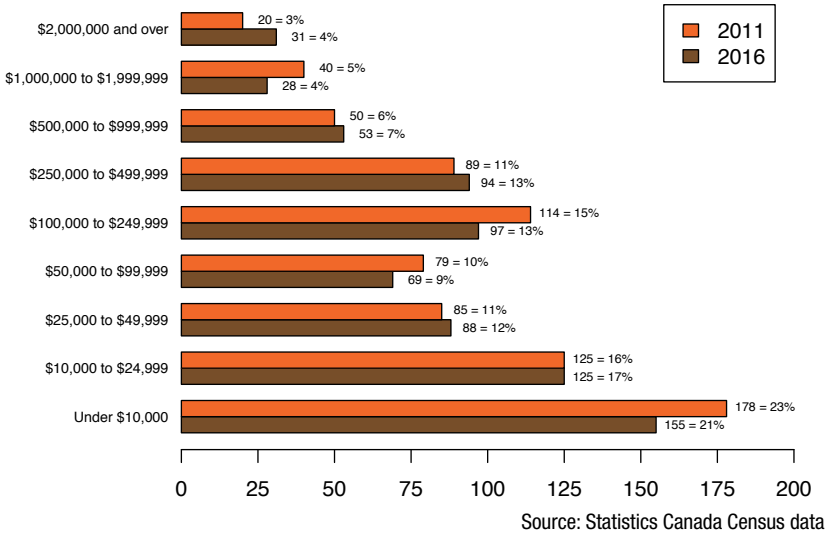
Agriculture in the Holland Marsh accounted for $306.5 MM in farmgate cash receipts in 2016, an increase of 27.8% over the previous census in 2011.

Field vegetables and greenhouse horticulture accounted for an estimated $105 MM in farmgate cash receipts in 2016.

After harvest, more value is added to the horticultural crops through functions such as storage, transportation, washing, sorting, grading, packing and processing.

Farms and the businesses they anchor in the value chain both upstream and downstream are major employers in the Holland Marsh. Total agricultural employment, including seasonal as well as full-time work, in 2016 was 2,831 positions, up 7% from 2011.

Number of Farms by Gross Receipts Comparing 2011 and 2016



Source: Statistics Canada Census data

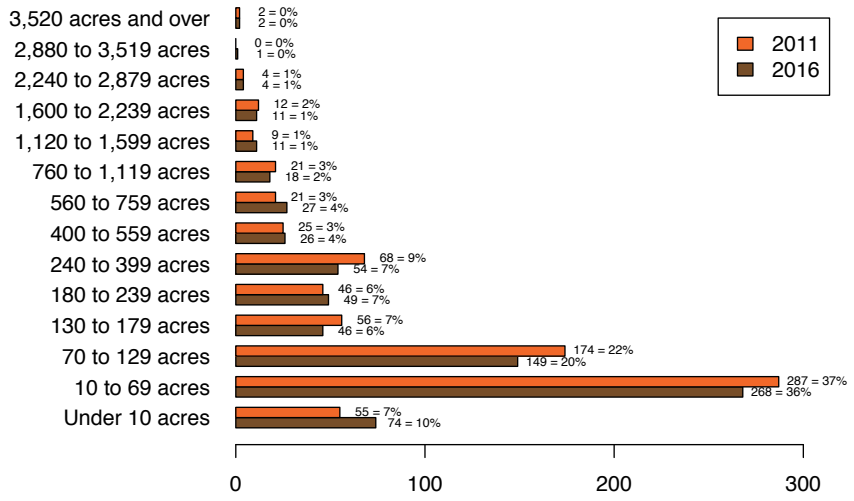
Seasonal workers are an important part of the agricultural workforce in the Holland Marsh. Many of these workers are provided through the Seasonal Agricultural Worker Program and come from Mexico and the Caribbean. Seasonal workers are well integrated into the farms they work on -- many have been returning to the same farm for periods as long as twenty-five years. According to data provided by the Foreign Agricultural Resource Management Service, over 1,450 seasonal agricultural workers were assigned to 112 employers in York Region and the County of SImcoe in 2016.

Observations on the trends in farming

The scale of farming continues to increase, not only in the Holland Marsh, but in agriculture across Ontario. The increases in scale are evident through such measures as:

- the size of farms as measured by acres in production, that is, fewer farmers with the same land base indicating that consolidation is occurring
- the gross receipts generated by the farm

Number of Farms by Size Comparing 2011 and 2016



Source: Statistics Canada Census data

Farming is a sophisticated business requiring diverse technical skills as well as capital investment and business acumen.

Increases in the minimum wage earlier this decade stimulated ways to increase productivity throughout the value chain from field to processing facility. Investments in technology that reduce labour requirements are being made to drive productivity gains.

While the Holland Marsh is especially well suited to the production of root crops (carrots, onions, parsnips, beets), there has been expansion in crops for growing domestic ethnic markets such as Chinese vegetables and greenhouse production of cucumbers and floral products.

Number of Farms and Acres In Farming In The Holland Marsh

	2011	2016
Number of farms	780	740
Area farmed in acres	164,832	165,317
Land in crops in acres	128,117	131,576

Source: Statistics Canada Census data

The number of farms identified as certified organic declined from 12 in 2011 to 8 in 2016. The data does not indicate if this change is due to consolidation, with fewer owners farming the same or greater acreage, or whether it stems from a reduction in acreage overall by repurposing certain previously organic land parcels for conventional production.

Horticulture Production

In The Holland Marsh

The Contribution of Horticulture

- Agriculture of all types accounted for $306.5 MM in 2016 in farm cash receipts
- Horticulture accounted for an estimated $105.1 MM or over one-third of the total farm cash receipts
- Horticulture accounts for less than 10% of the cropland acres
- Horticulture generates much higher farm cash receipts per acre than other crops

Major horticulture crops in the Holland Marsh	Most recent census year 2016	
	In millions of dollars	acres
Carrots	$29.8	4,203
Onions	20.9	3,348
Chinese cabbage	8.9	1,510
Other vegetables	8.3	1,049
Celery	3.3	250
Beets	1.8	485
Greenhouse vegetables & floriculture	32.0	49
Total	**$105.1**	**10,894**

Source: OMAFRA website Statistics Canada 2016 census data and informed estimates made by the authors

Distribution Channels - *Where horticulture production from the Holland Marsh goes*

Distribution Channel	
Grocery Retail Chains' Distribution Centres (DCs)	From the DCs, product is shipped to produce departments in their stores; some greenhouse floral products and fresh produce are marketed under the retailers' own leading house brands in their retail locations
Independent grocers and food service accounts	Produce wholesalers in the GTA maintain their own warehouses to supply independent stores and restaurants; Holland Marsh growers and packer-shippers also sell directly to buyers at the Ontario Food Terminal
Processors	While processing is done in the Holland Marsh in vertically integrated operations, raw product is also shipped for processing beyond the Holland Marsh for use as ingredients in products like soups, stews and muffins as well as fresh in salads and frozen for vegetable medleys
Direct to consumers	Farmers' markets and on-farm retail outlets (especially for floral products) enable consumers to buy direct from farmers in the Holland Marsh

Local and Fresh

Greenhouses in the Holland Marsh produce fresh English cucumbers for about ten months a year. They are out of production only during the darkest months of our late fall and winter.

Holland Marsh greenhouses also produce tomato and other vegetable seedlings for sale to home gardeners so that homeowners can grow and pick fresh vegetables right from their own garden.

Ontario consumers enjoy an abundance of fresh vegetables available in their local supermarkets. Many of the carrots, onion, celery, beets, parsnips and Chinese vegetables come from the Holland Marsh. Because root crops store well in the right conditions, the Holland Marsh supplies Ontario consumers with fresh product at least eight months of the year. Carrots grown in Holland Marsh soils have excellent keeping qualities and therefore can be held in storage until spring.

As measured by its value, the Holland Marsh produces:

- nearly 50% of Ontario's fresh carrot crop
- over 60% of Ontario's onion crop

The Annual
Crop Production Cycle

1 Planting

Fields are either direct seeded in the spring or transplants are set out in the field, depending on the crop and the harvest window targeted. Some growers start their transplants from seed in their own greenhouses and others source them from propagators in southwestern Ontario.

Advanced Farming

4 Storing

Root crops offer the advantage of not being highly perishable as root vegetables retain their quality under optimal storage conditions. Growers and packers in the Holland Marsh invest millions of dollars in advanced storage infrastructure to ensure optimal air circulation, temperature and humidity control. In addition to the capital investment in the infrastructure, growers use their working capital to finance the inventory during the months it is in storage. Storage enables fresh carrots to be supplied to the market constantly up until the early spring of the next year following harvest.

Sustainable Practices

2 Caring

During the growing season, the crops require care. Using integrated pest management science, crop protection materials are applied at optimal times in response to pest or disease pressures. During dry periods, crops require irrigation. During wet periods, in the lowlands an extensive pumping system is deployed to remove excess water from the fields as collected by the drainage channels.

3 Harvesting

Machine harvesting is used for most root crops and celery for processing end use. From the field, crops may be harvested in bulk or in totes for transport and storage.

Hand harvesting is used for more delicate vegetable crops like celery and Chinese vegetables for the fresh market.

After harvesting is completed, when conditions permit, growers plant a cover crop to minimize soil erosion and provide organic material to be added to the soil in the spring.

Adding Value To Horticultural Production

In The Holland Marsh

The total economic impact to the communities of the Holland Marsh from primary horticultural production occurring in the fertile fields and greenhouses goes far beyond the farmgate value as tracked and reported by Statistics Canada estimated to be $105 MM in 2016.

Measuring the economic impact using conventional economic multipliers is challenging because they generally work from macro input-output tables developed by Statistics Canada for sectors of the economy as a whole and therefore are difficult to apply and isolate to a specific region like the Holland Marsh.

An alternative method used in this report required estimating the value-added portion that occurs as the horticultural products grown in the Holland Marsh cycle through post-harvest steps before they are shipped from the Holland Marsh to customers. This page shows graphically typical steps for carrots. Similar processing occurs for onions and other root crops. Fresh market crops like celery are hydro-cooled as soon as possible after harvest from the field and generally shipped the same day, owing to their perishability.

The value-added estimate of $80 MM is made up of the operating expenses of the packer-shippers that provide the post-harvest storage, handling, cleaning, sorting, grading and packaging functions. The largest component of $80MM estimated for 2016 is represented by labour costs for post-harvest employment positions in the Holland Marsh.

Payment of wages is one of the major sources of 'trickle down' impact. Employees spend their wages on goods and services in their local communities. As the vast majority of horticultural production from the Holland Marsh is consumed outside the Holland Marsh, the 'trickle down' multiplier effect is more significant in providing economic stability than if all the produce was sold locally within the Holland Marsh. Value-added horticulture production diversifies the local economy because most of the sales are made outside the local area to customers in Canada and the United States.

Estimate of the Value-Added Post Harvest In The Holland Marsh

	In millions of dollars
Carrots	$30
Onions	17
Chinese cabbage	6
Other vegetables	7
Celery	3
Beets	2
Greenhouse vegetables & floriculture	15
Total	$80

Based on 2016 data

Holland Marsh Horticulture's Direct Contribution to Ontario's Gross Domestic Product (GDP)

	In millions of dollars
Farmgate cash receipts	$105
Value-added after farmgate	$80
Contribution to Ontario's GDP	$185

1.

Root crops are harvested with soil attached as shown in the photo above. The first step in packing is de-dirting the carrots by removing the soil in a sustainable way so that it can be collected and reused.

2.

Once the dirt has been removed, the carrots are moved forward for final rinsing.

3.

Packers use methods to rinse that minimize water use.

4.

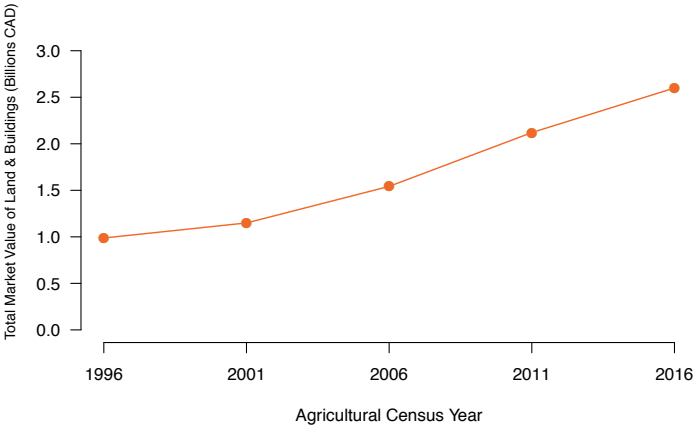
Carrots are packaged in consumer-friendly formats according to the customer's specifications.

Investment

In The Holland Marsh

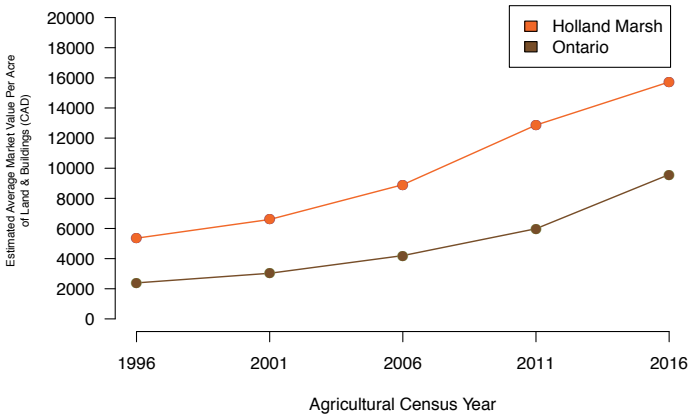
The data on farms include every farm in the five local municipalities identified in the definition of the Holland Marsh on page 4. Farms involved primarily in horticulture production will have higher valuations than the average for the five township area reported.

Total Market Value of Farm Land and Buildings in the Holland Marsh



This graph shows that the market value of farm land and buildings and in the Holland Marsh has more than doubled in twenty years and now exceeds $2.5 billion. Investment in buildings includes advanced and expanded storage facilities for root crops as well as expansion of greenhouses

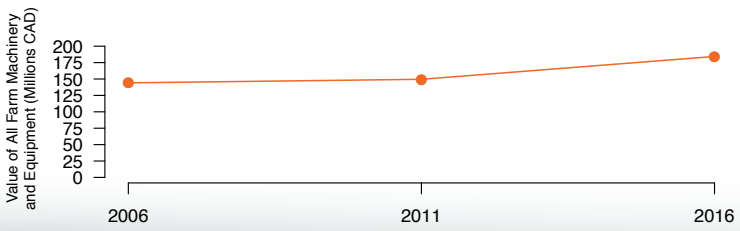
Estimated Average Market Value Per Acre of Farm Land and Buildings



This graph provides context for how farms in the Holland Marsh compare to Ontario as a whole. The average investment per acre is higher in the Holland Marsh and the gap has been growing. These data points are consistent with the intensive nature of horticultural production and the infrastructure needed to support it.

This graph shows that the value of investment in farm machinery and equipment has increased modestly. Based on interviews with farmers and packer-shippers, it is estimated that outlays for farm machinery and equipment, as well as post-harvest processing technology, proportionately increased after 2016 and the increase in Ontario's minimum wage. The cost/benefit case for investing capital to replace lower skilled labour requirements became stronger after the cost of labour increased. The implementation of accelerated capital cost allowance rates for businesses by both levels of government, enabling faster write-off of capital assets, is expected to continue the trend towards more automation of highly manual tasks.

Value of all farm machinery and equipment in the Holland Marsh



Enablers of Agriculture

in The Holland Marsh

To support agriculture in the Holland Marsh, many businesses and organizations exist that enable the Holland Marsh to implement leading edge solutions and manage resources effectively. Examples that serve important enabling roles are summarized below.

Inheriting a machinery and equipment business from his father-in-law forty-years ago, Alex Makarenko and his team of welders and machinists at Simcoe MTI provide a critical role in building customized crop equipment such as the rebuilt carrot harvester depicted. During the growing season, having access to the shop where equipment breakdowns can be quickly fixed and returned to service is essential. Over 70 farms in the Holland Marsh rely on the equipment capacity of Alex and his team. As an employer of skilled help, his business supports seven families.

The Bradford Co-op is a major input supplier for field and greenhouse agriculture in the Holland Marsh. The Co-op has operated a central warehouse and shipping point in Bradford, Ontario for nearly seventy-five years. It serves as a central point where growers can source supplies they need. The Co-op employs 8 people and has 185 shareholder-members from the local farm community.

Operated by the University of Guelph, the Muck Crops Research Station's team of scientists and technicians undertake discovery research on crop protection and production and contribute to constantly improving integrated pest management practices. In addition to field sites for trials and tests, the Station has a pathology lab and cold storage facilities for evaluating storage attributes of carrots and onions. This research facility is accessible and relevant to Holland Marsh growers. They rely on its work and their relationships with its team to support their adoption of advanced farming best practices.

HOLLAND MARSH
DRAINAGE SYSTEM
Joint Municipal Service Board

The Holland Marsh Drainage System Joint Municipal Service Board is an example of a public-private partnership in which municipal governments and growers work together collaboratively to maintain and manage the Holland Marsh drainage system, to plan future development and address any environmental issues proactively.

Under Cover

In The Holland Marsh

Amazing productivity from growing under glass

Greenhouse agriculture is an integral part of the Holland Marsh. Greenhouses enable growers to start plants like onions for transplant to the field in order to get to harvest sooner and capture the early season market. Pictured above is a commercial greenhouse in the Holland Marsh dedicted to English cucumbers production. After harvest, the cucumbers are sorted, shrink wrapped, and packed for shipment to markets in the US and Canada. Biological controls are widely used to control pests in the greenhouse: good bugs are introduced from commercial sources and nurtured in the greenhouse to eat bad bugs that can damage cucumbers and cause fruit to be misshapen or plant vigour to be compromised. Carbon dioxide formed from combustion of fuel for boilers used to heat the greenhouse is recaptured and supplied to raise the CO2 levels in the greenhouse atmosphere in order to boost the yield.

Greenhouse growers of English cucumbers inspecting their seedlings prior to moving them to the trays where the plants will grow to maturity and yield their harvest.

After sorting on an automated packing line, the cumbers are shrink wrapped and packed in corrugated shipping containers for shipments to markets in the US and Canada. Packing operations in the Holland Marsh use highly advanced automated technology to minimize repetitive tasks and drive productivity.

In addition to greenhouses dedicated to supplying products directly to consumers, greenhouses are highly integrated into the field production cropping systems of the Holland Marsh. Greenhouses are used for propagation in the spring for transplants of crops like Chinese vegetables, onions and celery. Transplants allow plants to mature faster than direct seeding and therefore shorten the cycle time until crops are ready to harvest and supply to the market.

A place to grow

Floral greenhouse production has a long history in the Holland Marsh. In August 1956, Francis Ferragine immigrated to Canada from England with his wife Chiara, his sons Tony and Peter, and his daughter Mary. For the next four years, Francis and his family spent their time working as labourers in the Holland Marsh for local farmers. In 1961 Francis purchased property in Bradford and began growing a company. In 1975 Bradford Greenhouses opened a retail operation on Highway #11 in Bradford. Pictured above is the operation in the 1970s after the retail store was opened.

Pictured on the right is a more recent aerial photo of the same location showing the expansion on the original site that has taken place over forty years.

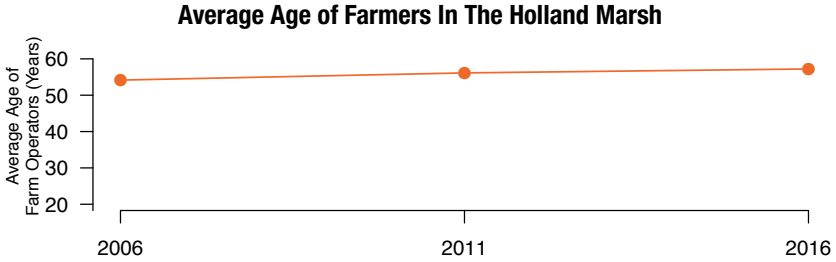
One of the striking differences between greenhouse floriculture and greenhouse vegetable production is the much greater diversity of plant varieties grown by flower growers. Flower growers manage over 1,800 different cultivars across many different species in order to supply customers with the plant selection they need.

Advanced automated watering systems are used to manage water use efficiently and to reduce labour costs. The programmable technology delivers the water at the time and in the precise quantity the plants require.

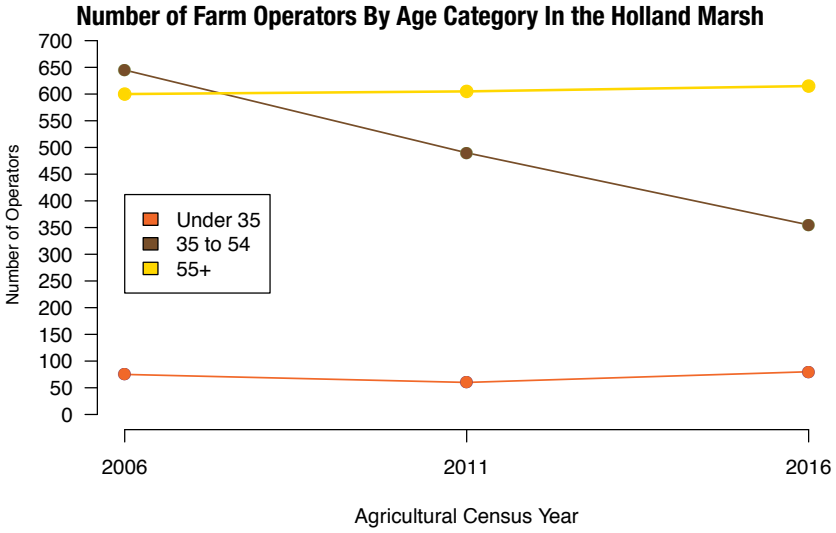
Succession

Orderly succession is vital to the future of agriculture in the Holland Marsh. The significant know-how and skills accumulated over generations of farming need to be passed on to the next generation. Succession has very much to do with demographics -- the age of the farmers. As farmers approach retirement, will they sell their farms? If so, will they be bought by other farmers in the Holland Marsh leading to larger scale farms? Or will they be sold to new entrants who may be absentee landlords buying the land on speculation of earning future gains? If more farmland passes into the hands of non-resident owners and is rented out for production to local farmers, will the kind of investments necessary for long term competitiveness continue to be made? As noted on the opposite page, the next generation is stepping up to the plate to take over and operate farms in the Holland Marsh.

This graph shows that the average age of farmers in the Holland Marsh has marginally increased over the past ten years. It also shows that there are a significant number of farmers who are within ten years of a typical retirement age, indicating that there will significant ownership turnover occurring over the next ten years.

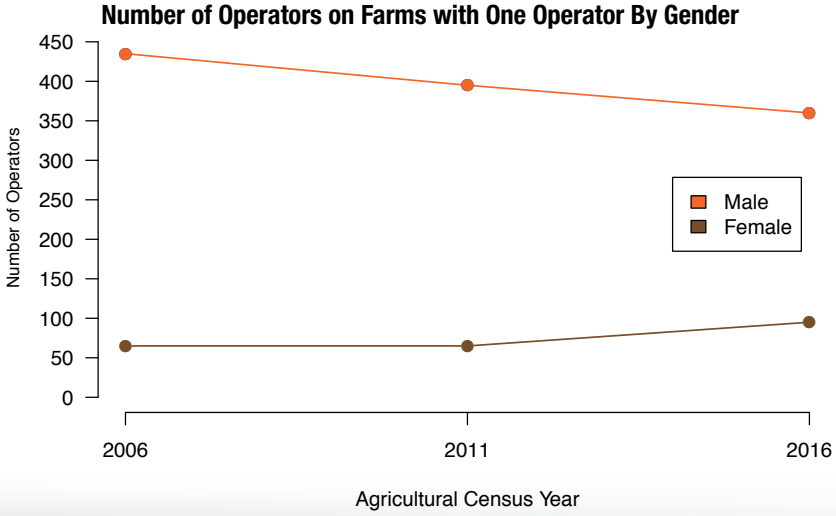


This graph shows that there has been a modest increase in the number of young farmers, under age 35. The decrease has been occurring in the middle age group, between 35 and 54. As representatives of this age segment move up into senior segment 55 and over, an approximately equal number have been retiring, so that there has been little net change in the 55 and up group in terms of numbers.



An increasing number of women are farm operators in the Holland Marsh

This graph shows that while the number of men in Holland Marsh agriculture is in long term decline, the number of women is in long term increase. Whle men still make up a majority of farm operators, the ratio has decreased from approximately 8:1 to 5:1 in ten years. Women stand to be an increasingly important part of succession planning as they take the reins of more farms in the Holland Marsh. In many farm families, while the census may assign the role of operator to a male, there are men and women partners who have complementary roles, with the woman often playing a key role in areas such as accounting and human resources. Therefore the graph above tends to understate the importance of women to agriculture in the Holland Marsh.



The Next Generation

In The Holland Marsh

There are many farms in the Holland Marsh that have been in the same family for generations since the land was first worked in the early and middle decades of the 20th century. In interviews conducted with farmers in the Holland Marsh to understand the story behind the data compiled for this project, the next generation was asked about their reasons for and interest in committing to the family farming business in the Holland Marsh.

"We have a sense of pride in the heritage started here by our father and grandfather. We're doing something important for society. We're growing carrots that are ending up in everything from the high quality food you feed your baby to muffins and soups as well as fresh pack bagged carrots to enjoy fresh. The Holland Marsh has unique growing conditions. The soil is rich in nutrients and the muck produces great crops."

Joe Chapman

With his brother Jim and his father Don, Joe operates Don Chapman Farms and Lakeview Vegetables

"In the Marsh, we are a family - we're a community. We treat our employees like family. We're constanty thinking about the future. We respect our traditions and are open to innovation to enhance our sustainability and avoid any detrimental impact to the land and the environment. We need to continue to increase productivity and work on lowering our carbon footprint. Greenhouse agriculture, together with the highly productive field agriculture of the Holland Marsh, will help feed the growing population. We're excited about and committed to the future."

Chris Voorberg

The Voorberg family, from left to right - Trevor, Hilda, Ron and Chris -- is transitioning to the next generation at Foothill Greenhouses, the largest cucumber greenhouse in the Holland Marsh.

"In the Marsh, we're growing food that feeds Ontario. Many consumers don't understand where the food they buy comes from and the hard work that went into providing it. We will help educate consumers so that they understand the importance of the Holland Marsh and what we do for them here. We have an excellent food safety track record in the fresh produce Holland Marsh growers provide to consumers and we work hard to keep it that way. This farming business is challenging but also rewarding and vital to our future."

TIm Horlings

Tim is taking over the family farming business, Hormar Farms, from his father and mother. Hormar Farms is a major grower of celery for the processing market as well as carrots and onions for the fresh market.

Exports from the Holland Marsh

International trade statistics for agricultural production from the Holland Marsh are not separately tracked and reported by Statistics Canada. The project team discussed exports with individual packer-shippers in the Marsh. Packer-shippers export a portion of their annual carrot and onion pack to customers in the US. Celery for processing, greenhouse cucumbers and live floral plants are among other exports from the Holland Marsh. The graphs depicted show onion and carrot exports from Ontario and imports into Ontario for carrots and onions. Data is compiled from customs manifests on both sides of the border at border crossings between Canada and the US. There is no way of knowing whether carrots or onions that are exported from Ontario were grown in Ontario; nor is there any way of tracking whether carrots or onions imported into Ontario were sold to Ontario consumers. Ontario could be used as a point of entry for products transhipped to Quebec or Atlantic Canada. However, the data are broadly indicative of the trends. The source for all the data presented in the graphs below is the Government Canada website, Trade Data Online accessible at www.ic.gc.ca.

Holland Marsh Export Estimate Summary - 2018

	In millions of dollars
Carrots	$20
Onions	12
Other	3
Total	**$35**

From the data below, estimates have been made of the value of exports from the Holland Marsh using as a basis that the Holland Marsh's relative share of Ontario exports is consistent with its share of total Ontario production output.

Carrots

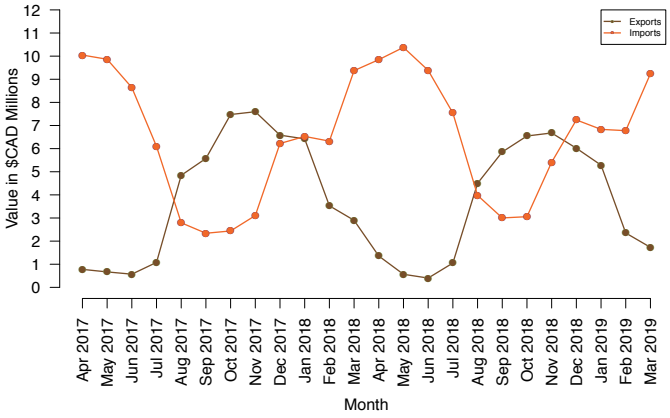
Carrot data is reported under HS code 070610 which, in addition to carrots fresh or chilled, includes turnips. Carrots is the predominant component of the exports and imports. Processed carrots in frozen form are not included in this classification. Processed carrots are also exported from the Holland Marsh.

This graph shows that there is significant seasonality in the pattern of exports and imports. During the period of the year when storage carrots are not available, from May to July, exports drop off and imports peak. The reverse pattern occurs during our peak harvest period in the late summer and fall, when exports peak and imports drop off. Nearly all the international trade in carrots occurs with the US.

Holland Marsh carrot growers use a different business model than in major US growing regions like California. The Holland Marsh model is based on storing carrots and supplying them to the market as fresh carrots for eight months of the year. The US model is based on continuous harvest, pack and ship, owing to the much longer growing season.

Packer-shippers have made arrangements in some cases to source carrots during the off-season from growers in southern states in order to be able to continuously supply their customers with high quality carrots year round.

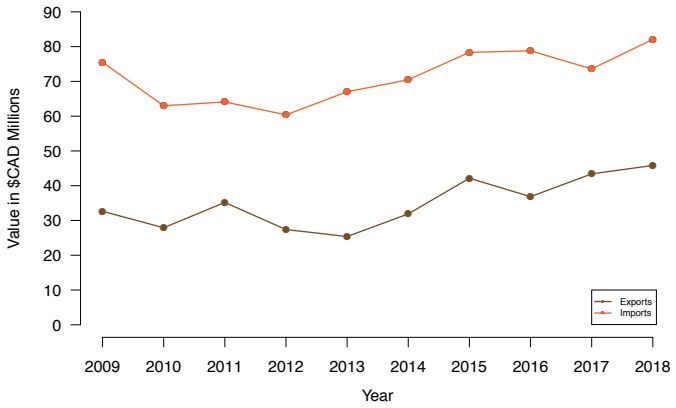
Two Year Trend by Month - Ontario's International Trade in Fresh Carrots



This graph shows steady growth in the value of exports, as well as imports, over the past ten years.

It is estimated that the value of Ontario's carrots exports originating from the Holland Marsh amounted to $20MM in 2018.

Ten Year Trend In Ontario's Fresh Carrot International Trade

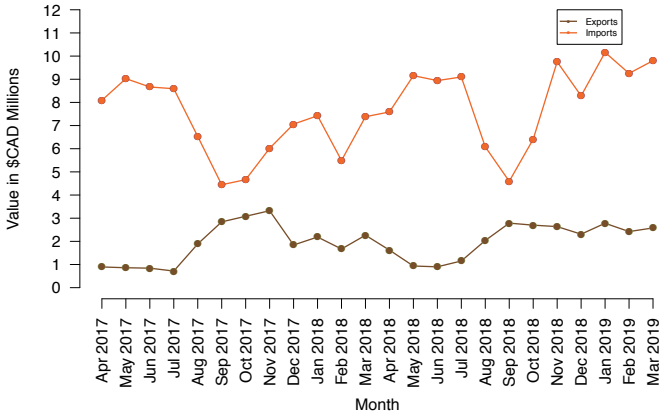


Onions

Onion data is reported under HS code 070310 which references onions and shallots - fresh or chilled.

This graph shows that onion exports have modest seasonal peaks and valleys, the peaks occurring when Ontario's onion harvest is underway and the valleys in the late spring before new crop from Ontario is available. Imports are much more sensitive to the peaks and valleys of seasonality with major reductions occurring when Ontario is at peak production. The data indicate that there is opportunity for Ontario to capture a greater share of the domestic market from imports provided price and quality specifications are met. Over 99% of Ontario's onion exports went to the US in 2018. 81% of 2018 onion imports came from the US, California accounting for two-thirds of all imports, and with Mexico supplying 11% and Guatemala 5% of the balance.

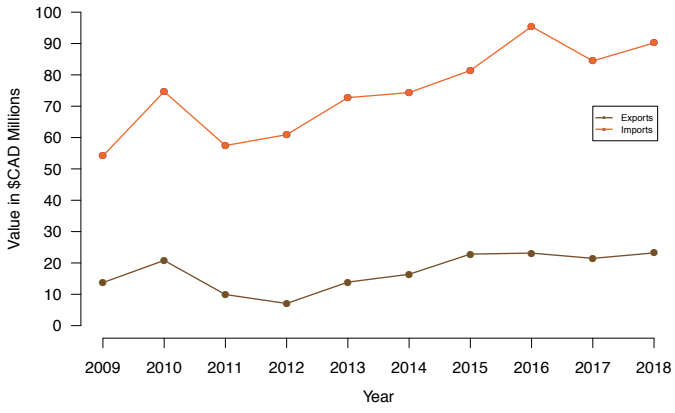
Two Year Trend By Month - Ontario's International Trade in Whole Onions



Ten Year Trend In Ontario's Whole Onion International Trade

This graph shows that dollar value of onion exports from Ontario has been relatively flat over the past decade with recovery over the last six years from the downturn of 2012.

It is estimated that the Holland Marsh accounted for $12MM in onion exports sales in 2018 based on the relative ratio of Holland Marsh output to total Ontario output.



Innovation
in The Holland Marsh

Growers and packer-shippers in the Holland Marsh work in continuous improvement mode, always looking for better ways of achieving outcomes that are economically and environmentally desirable. In addition to constantly assessing technologies that could be used in their operations to improve productivity and quality, there is plenty of local ingenuity in developing unique solutions. Particular areas where innovation is occurring include:

- expansion of automation technology to improve productivity in repetitive manual tasks like sorting and packing including such technologies as advanced optical sorters and automated planters for starting seedlings
- precise application of crop protection materials to specific parts of a plant or field where it is needed using advanced technologies to identify hot spots
- advanced controlled atmosphere storage systems to improve product quality, extend storage keeping, and reduce energy consumption
- intensive efforts to reduce water use required for post-harvest functions through deployment of technologies

Entrepreneurship at work

Shane Singh is a second-generation grower at Springh Farm who has actively responded to market opportunities by expanding the variety of greens his company grows to appeal to a higher end, and diversified population. In addition to lettuces you are familiar with like romaine, iceberg and Boston, he grows red and green oak leaf lettuce, as well as herbs, swiss chard, Bok choy and dandelion greens. Many varieties start early in the greenhouse before being transferred to the field, to give him a head start on competitors. In addition to growing a wide variety of vegetables, he has also broadened his customer base selling to retailers, foodservice and direct to consumers via farm stands and CSA box programs.

John and Cristina Hambly are the owners of Gwillimdale Farms; one of Ontario's largest growers, packers and shippers of root vegetables. John is the President and responsible for farm management, and Cristina is the Office Manager with responsibilities including business administration and marketing. Together, and with their team, they have grown the business exponentially in the past five years with a focus on exemplary customer service and consistent year-round supply of high-quality vegetables. They continually invest in upgrades to improve sustainability and stay ahead of the competition. Examples include growing to three packing lines, a new fully mechanized and automated refrigerated storage facility on site and solar panel installation.

Competitiveness and Food Security

The perfect ingredients for nutritious soups and stews.

Vegetable produce such as carrots and onions are global commodities. Based on Statistics Canada trade data, the primary growing region with which the Holland Marsh competes is California. On account of their bulk in relation to their value, there is currently very modest inter-continental trade in these commodities.

When government policies impose costs on businesses in Ontario that are not experienced by competing businesses in California, the competitive position of the Holland Marsh vegetable production value chain is adversely impacted. The value chain has to bear those costs from total margins available because the selling price is largely determined by international competition. Cost increases are not easily passed on to consumers in the form of higher selling prices unless competing product from California is experiencing the same cost pressure.

How important a national priority is food security? This question directly relates to the importance of the Holland Marsh as highly productive farmland that supplies vegetable produce to Canada.

According to Statistics Canada availability data for 2017, there were 15.8 pounds of carrots available for consumption for each person in Canada. That represents Canadian domestic demand for 288,393 tons of carrots in 2017. In that same year, the Holland Marsh is estimated to have produced about 158,300 tons of carrots. That output represents over 56% of Canada's requirement for carrots.

If there were ever setbacks to California's capacity to supply Canada with carrots, the supply of carrots from the Holland Marsh would take on particular strategic importance to Canada's food security. The business model by which Holland Marsh growers and packers store carrots until the spring of the year following harvest ensures availability for most of the year meaning that it would be a food product that was consistently available. For this reason, root crops from the Holland Marsh are particularly valuable for anchoring Canada's food security.

Per Capita Availability of Carrots in 2017 in Canada

	kg per person	people	tons
Carrots	7.16	36,540,000	288,393

https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210005401&pickMembers%5B0%5D=1.1&pickMembers%5B1%5D=3.257

Keeping the Gem Sparkling

The Holland Marsh is one of the highest value gems in Canada's food crown.

- the productivity of the farmland in the Holland Marsh is among the best in Canada for root crops in terms of yields consistently harvested per acre
- the relationship between the lowlands of the Holland Marsh and Lake Simcoe is unique and mutually beneficial with the Lake serving as a vital reservoir
    - in dry periods, water from the Lake can be accessed to supply the canal and drainage system with essential irrigation water
    - in wet periods, excess water from the fields can be pumped out into the Lake to prevent the soil from becoming overly saturated
- the Marsh is within one hour's drive of Canada's largest metropolitan area and the greatest concentration of affluent consumers for the products grown in the Marsh
- the growers and packer-shippers have developed an effective business model that enables root crops to be stored throughout the Canadian winter and supplied as fresh produce to the market throughout that period of the year when the fields are covered with snow
- the abundance of fresh crops is sufficient to enable robust exporting to the US market through the harvest season and winter months following
- growers are responsible stewards of the land who farm using best practices to ensure sustainability of the soil and water resources for generations to come

This report was compiled as a team effort led by

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Growing the value of organizations

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