

Microgreens with Big Potential

*A discussion on the future of microgreens
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Microgreens, considered an emerging superfood, are young seedlings of vegetables and herbs, produced in seven to fourteen days. They have gained popularity in upscale restaurants, but are still relatively unknown and not well understood, sometimes referred to as “vegetable confetti”. Greenbelt Microgreens (GM), based in Hamilton, Ontario, is attempting to change this perception. GM believes this new food category could disrupt how we consume vegetables and move beyond its function in culinary arts.

Greenbelt Microgreens grows, harvests, and distributes certified organic microgreens. The aim of the case study is to better understand Greenbelt Microgreens’ model and how it could be expanded beyond the region by capitalizing on a growing trend of local, organically grown food products. The case presents how microgreens are positioned in the marketplace. It also describes the company itself, its challenges, and a discussion on specific, strategic elements to consider.

An exploratory case study design was used, with data collected through multiple approaches including a semi-structured questionnaire to collect primary data and individual key informant interviews conducted using open-ended questions.

CONTEXT

An increasing number of studies point to the growing demand for locally sourced, organic vegetables.² Various types of young vegetables, such as sprouts, microgreens and baby greens, are becoming very popular due to their higher nutritional value than their mature plants or seeds. Vegetables and fruits, which are recognized sources for vitamins and minerals, have fluctuating prices. In addition, seasonality has a significant impact on the quality of products being consumed all year around. The Canadian market is highly vulnerable to currency fluctuations as it imports most of its fruits and vegetables. In organics, more than 80% of what is consumed in the country is imported.^{3,4}

Microgreens are new in the market and relatively unknown. They have largely been either ignored or misunderstood by most, known in the industry as “vegetable confetti”.⁵ Microgreens are very young and tender leafy greens, harvested at the first true leaf stage of growth, that are found in a pleasing palette of colours, textures, and flavours.^{6,7} They are gaining popularity as a new culinary ingredient and are used to enhance salads or as edible garnishes to embellish a wide variety of other dishes. Due to higher price points at retail, microgreens are considered a premium product.⁸ Their nutritional value is only starting to be identified through scientific research, but according to some recent studies, vitamin and mineral levels can exceed those of full grown vegetables by more than forty times. They also belong to the group of “functional foods” and have high levels of bioactive compounds.⁹ This can have large implications for human health.¹⁰ They are also perceived to have environmental benefits over other vegetables as they require less water and energy to produce and they can be produced year-round.¹¹

Microgreens are often confused with sprouts. Microgreens are grown in fertilized soil whereas sprouts are grown in water which has a much greater propensity for bacterial growth due to the closed loop system.^{12,13} Over the years, many Salmonella and E. coli infections have been linked to contaminated sprouts. Fresh produce can also be contaminated with harmful bacteria while in the field, during growing or harvesting, or during storage and handling. These infections and contaminations are not a concern with microgreens.

Future demand for microgreens is unknown. They have been available on the market for about twenty years but have never been available for mainstream consumption.



Several studies in recent years have built a case for microgreens from an environmental and nutritional perspective.

According to some studies, microgreens have larger quantities of vitamins and minerals than the vegetable itself. Extrapolation from experimental data presented in some studies suggest that microgreens would require less water than they do to grow a nutritionally equivalent amount of mature vegetables in the field.¹

What are your general first impressions of this food category?

Greenbelt Microgreens

Established in 2010, Greenbelt Microgreens (GM) has been growing at a remarkable rate. The mission of GM is to “be the trusted brand for greenhouse grown, local, organic produce in North America”. It is now Canada’s largest organic grower of microgreens and likely the largest retail-focused microgreen producer in the world. GM is trying to achieve its goals by using special seed and fertilizer agreements with suppliers, and by utilising a soil mixture that allows for higher yields and fast production cycles.¹⁴ The mixture is not patented but it is proprietary to GM.



GM’s major crops include arugula, sunflower, pea shoots, wheat grass, and broccoli. Arugula, the company’s best-selling crop, represents about 10% of the company’s revenue. The company grows about 15 different crops but has also expanded its offering by making key mixes with different varieties. Mixes allow GM to get away from the “vegetable confetti” paradigm, and tend to be more profitable. Mixes also allow GM to generate new opportunities through different products. The company as a whole has about 30 different SKUs.

GM, which is GAP (Good Agricultural Practices Certification) certified, is currently the only major supplier of microgreens in Canada. GM is also Organic certified by ECO-Cert, but it is not HACCP certified and currently has no plans to pursue other certifications.¹⁵

What is unique about GM’s operations is that it is a complete-closed cycle, from sending to packaging, producing a ready-to-market product.

GM is working with the University of Guelph to measure the nutritional value of the crops. Partially funded by OMAFRA, GM will be testing new lighting systems to increase growth performance and evaluate if taste is affected.

The average shelf-life, according to the company, is 13 days. Due to its propriety of growing and production, it can deliver a high-quality product to key customers in the Canada and in the U.S. GM also uses unique compostable trays in their facility.¹⁶

Best-selling crops by percentage of sales	
Arugula	10.4%
Sweet crunchy mix	10.0%
Sunflower	9.0%
Pea shoots	8.3%
Broccoli	7.8%

Considerations for Agri-food Business Expansion

Expanding any capital-intensive model in agri-food is an intricate process.¹⁷ Several options exist for companies willing to extend a proven model. It is important to recognize that not all models are expandable; the nature of some organic and local food production and manufacturing may prevent a company from scaling up.¹⁸ The following five considerations are critical when considering expanding perishable novel food products:

TECHNOLOGICAL OBSOLESCENCE AND ASSET SPECIFICITY can impact the ability of a company to expand its operations.¹⁹ The speed of innovation in agri-food has increased immensely over the last few years, particularly in greenhouses.²⁰ Funding to support agricultural innovation has become more readily available and has helped the sector adopt new ways of producing more efficiently.^{21,22}

PRODUCT CUSTOMIZATION can drive a food product or service provider in local markets. This is due to its capacity to adapt and change product lines beyond what has been systematically accepted elsewhere, in other markets.

KNOWLEDGE CAPITAL and the ability to develop new methods are also critical assets. Food innovation is often driven from existing technologies, which are used creatively in combination with new technologies to form a unique product or method. This strategy can be used to expand a business; however, innovation can also result in increased costs due to patenting, regulatory approval, technology, and branding.^{23,24}

RISK PROTECTION AND MANAGEMENT is also key when expanding operations in food. Food safety is critical to food manufacturing, distribution, and service providers.²⁵ Regardless of the approach, both food safety and consistency of practices need to be preserved.^{26,27} There are always risks for any firms to experience an outbreak. Extending a model compounds risks.²⁸

“When the romaine lettuce recall happened in December, our sales went up. The word is getting out that the product is safer.”

Christina Lee, Quality Manager

CHANGING MARKETING DYNAMICS AND COMPETITIVENESS are also important. A vital challenge to fruitful food product development today is the ability to recognize the emergence of a potentially successful product and/or processing technology.²⁹ Food trends can be short-lived and turn into fads, while others sustain the test of time; the key is determining which is which. Market maturity is also a factor that needs to be captured through the expansion model.



Asset Specificity:

The degree to which an asset can have use across multiple situations and purposes. An asset with high level of specificity has multiple uses and purposes.

Asset specificity applies to capital designed to have a single function, or labour trained to perform a single task, and has its limited uses because of some inherent restriction on other possible uses.

- Investopedia

GM Growth and Facility Expansion to Date

GM has experienced tremendous rates of growth over the last few years, securing several major accounts. In 2012, they secured Toronto-based The Big Carrot, an account the company still has today. In 2013 and 2014, Rowe Farms and 100km Foods started to purchase from GM. Whole Foods Canada joined as an account (13 stores), which is described as a significant change for the company:

"We have been able to explore the notion of microgreens by relying on smaller accounts. Once we got our certifications, we got major accounts. Once you get a hold of Whole Foods, it is easier to get other accounts."

Ian Adamson, President, GM



The company has relationships that allows it to monitor sales. Onboarding of new customers is an interesting process. Sales usually grow exponentially at the beginning but decrease soon after. Nonetheless, once sales have declined, they tend to increase slowly, over time. GM also has relationships in which it is more challenging to access market data.³⁰

In 2016 and 2017, they were able to secure major accounts like Longos (33 stores), Sobeys, and JE Russell. Loblaw (Loblaw stores only) and Metro (120 stores) followed soon after. Sales increased by 117% in 2017 alone, surpassing \$5M for the first time. Projections by the company show that executives are aiming for more double-digit growth over the next few years. Profits, on the other hand, have grown six-fold in 2017 and are expected to continue to grow over the next few years. Leveraged by more efficient profits should be ten times those of 2016 in coming years.

GM's products are now available in over 400 stores within the Greater Toronto Area, and some parts of BC and Alberta.

The company's main marketing strategy is about getting free public relation opportunities. They have been able to set up displays in several stores to promote their products. The company's marketing budget equates to about 2% of total revenues.



Woodhill Facility

The company's 3.5-acre soil-based facility on Woodhill Road in Hamilton, seeds, grows, and packages microgreen products ready for market. Prior to the Woodhill facility, GM had a 1-acre facility in Gormley. This was closed in December 2017 and all operations were moved to the newly acquired, state-of-the-art Woodhill facility to scale up. Beforehand, at the Gormley facility, the company was struggling. Some employees have stayed with the company and are now working at the Woodhill facility.

The Woodhill facility is automated and has been built using unique materials rarely found in other greenhouses in North America.

GM's facility recycles all of its water, as most greenhouses do, but the company has also incorporated other energy-saving features, including a glass that lets UV rays get through, made in Germany.³¹

The new 3.5-acre facility grows all year round and can market a product with a shelf-life longer than the production cycle.

"Climate change is the main reason we chose this roof [which was] engineered in Germany. It was expensive, but it will take 10 cm hail balls."

Ian Adamson, President



photo credits:
Greenbelt Microgreens

Why aren't we producing these types of technologies in Canada?

What are the challenges or barriers for doing so domestically?

Expansion Strategies for Agri-food Businesses

Various strategies may be used for business expansion:

COMPANY OWNED EXPANSIONS imply that the central firm would own and control everything. This could also include a joint-venture with a partner. For partners, knowledge acquisition and learning are critical to joint ventures in a new market.³² If firms employ high technology in their production processes, or patented self-crafted knowledge, good communication between the parties is critical to the efficient functioning of the group.³³

FRANCHISING has been a very popular choice over the past five decades or so.³⁴ The essence of franchising lies in the conduct of business activities on-site in various local markets.³⁵ Franchising allows a food processor to secure present and future market shares and allows for control over promotions.³⁶ The buying restrictions within the agreement can allow an organization to expand quickly. Brand awareness can be built quickly in several markets.³⁷ Franchising has an added advantage of not requiring the company to take on much additional staff management or administrative duties. Training and the acquisition of technical expertise can go through different evolutions. That said, when expanding a business, human judgment and artistic attributes are not easily extendable, new product development and marketing efforts are created to adapt to local markets. With proper terms, support to expand locally is more possible as well.³⁸

LICENSING, the option currently being pursued by GM, has been used in food distribution for decades.³⁹ Outbound licensing may be particularly attractive to companies with well-established, unique product images but with limited financial resources to underwrite the costs of entering a new market. Food processing firms operating in several markets, including internationally, see brand-name licensing as a better strategic alternative to trade and direct foreign investment under specific economic conditions. Licensing has several levels, including business and trademark licensing.

DEALERSHIPS AND DISTRIBUTORSHIPS are another option. The history of dealerships in food processing and distribution is not rich. Dealers tend to see the competition only in a local perspective, giving little importance to the markets where they do not operate. Manufacturers, on the other hand, tend to appreciate the competition with a broader perspective, considering the macro-implications of the competition and demand.^{40,41}

GM Plans for Future Expansion

Even though the Woodhill facility is new, the company is already running out of space. Executives believe GM is scalable across many regions. It now has partner-growers in British Columbia (Maple Ridge) and in New York (Wessell Farms), both established less than two years ago. It takes many months for partners to purchase the proper equipment, calibrate the appropriate soil solution, and sell to market.

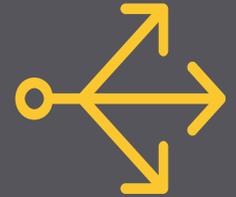
*“I’m comfortable with the growth we are experiencing.
Keeps us on our toes.”*

Christina Lee, Quality Manager

Terms of the contractual arrangement with partners are simple as it is essentially a licensee agreement. There is an existing 2-year relationship with Wessel Farms in New York State, which has a 10-acre greenhouse farm located strategically only 65 km away from the large New York City market. GM is in the process of negotiating the license agreement. Profits are shared equally between the two parties. How information is shared between parties was not disclosed.

Wessel Farms provides greenhouse, equipment, utilities, growing expertise and labour based on a flow-through basis. In return, GM provides all the soil, seed, fertilizer, compostable trays, boxes, labels, and marketing based on a flow-through basis. Given that it is a capital extensive operation, future capital expenditures are equally divided between GM and Wessels Farms. GM finances Wessel by lending the company the capital needed to support any expansion plans in New York State. The plan is to have Wessel Farms own equipment at the end of the term, giving GM the option to purchase.

They have plans to seek new partnerships but are waiting to see how current partnerships will play out. Finding the right grower-partners seems to be a challenge. The Woodhill facility is being developed as a model which can generate a \$4M revenue per acre and 35 crop cycles per year. GM’s aim is to replicate this model elsewhere. In addition to British Columbia and New York, GM is currently negotiating agreements with top quality growers in California and Quebec. GM is attempting to target markets where organic and local foods are in high demand.



“We are in NY for about 2 months now (in production). The U.S. is a large market. The U.S. market is competitive, but not for microgreens. The market is highly immature.”

Ian Adamson, President

Should GM change its approach as a result of the company’s latest outbreak and recall in British Columbia?

Challenges

A significant challenge for the company is **maintaining a cycle production that is highly-intensive**.

Product quality and **hiring** are also challenges at GM. The company has hired Syrian refugees, and temporary workers to make operations work. New equipment and automation is helping offset human capital pressures.

Equipment failure is a major concern for GM. Given that operations are highly centralized, one failure can be sizable. Since the facility will be fully automated, technical problems can affect many crops at once.

Furthermore, the facility is still under construction and the **speed of the expansion** is making GM operations vulnerable.

GM also has **no system to monitor crops and operational** activities in the greenhouse in real time. Currently, all the data is entered onto spreadsheets which typically takes longer to enter than to conduct the actual work in the greenhouse.

“The speed of this crop is keeping me up at night. We go through 52 cycles for certain crops, which is remarkable. Growing problems can compound so rapidly. The yields we are producing is impressive.”

Alice Ferris, Head Gower

What would developing and employing a real-time digital system to monitoring crops and operational activities look like for the greenhouse sector? In your experience, how can a time-saving technology such as this change an industry?

Another concern is **consistency**. Calibrating soil lines has been difficult. Because of such a short production cycle, the soil mixture is critical, but it has at times been inconsistent. Improvements are still being made but GM believes it is about to reach a point where marginal improvement will almost be trivial, compared to a few years ago.

Another challenge for GM is **technological evolution in agriculture**. Lighting systems will help GM to become more productive, but the market sees new technologies being developed constantly. The Woodhill facility is currently being viewed as highly modern but could become obsolete in just a few years. GM will need to maintain productivity and efficiency as technological knowledge in agriculture evolves. Expansion at the current location is possible since more land adjacent to the current facility is available. Upgrading the current facility at Woodhill has been expensive (approximately \$5M), but GM will likely need to invest more soon.

Key Findings

GM Observations to Consider for Future Expansion

- The success of GM rests on one aspect of the business: quality. The focus for GM has been to take away market share from importers, particularly California. Due to climate, capacity and economies of scale, Americans have an advantage, but GM appears to try to replicate foreign suppliers' competitive advantage, while also focusing on organic and local features. In addition, being grown locally, or domestically, GM products are not exposed to currency fluctuations, affecting pricing, as is the case for most imported vegetables.
- The size of the market for microgreens remains unclear. There is little or no information about the potential of these crops. GM believes the microgreen market will peak in about 10 years, but microgreens will always be considered a premium product. Few know how large the market truly is in North America.
- Product positioning in stores is also critical. Time-crunched consumers who mostly shop the grocery store's perimeter are increasingly expecting to find packaged foods in the areas traditionally reserved for fresh produce. Microgreens fit with such a strategy, but they are also competing against many other products.⁴²
- The commercial operation of microgreens is likely to attract notable private investment, allowing a significant level of high quality facilities to enter the market. There are several studies available on similar operation methods like urban farming that deal with their potential and limitations, but few on microgreens specifically. A challenge for the company is to promote the product and essentially create a new category of vegetables in the grocery store.

GM's Current Strategy: Expansion

- GM's expansion strategy is a work in progress but Executives believe the model can be expanded. Barriers to entry are very high in the greenhouse industry, and for microgreens in particular, due to food safety measures. The aim is to create more facilities like Woodhill over the next few years. But time is of essence and how the expansion is executed will be key.
- When asked about the retail distribution landscape in Canada and in the U.S., GM does not seem too worried. Whole Foods is soon to become a lending partner to GM, so an expansion in the U.S. is taking shape.

"We are at the pinnacle of quality. The quality is the reason we are performing well. We need to compete against California. The shelf-life we offer makes the difference. The flavour really pops."

Ian Adamson,
President. GM

GM's Current Strategy: Marketing and Branding

- Marketing and promotion at GM are largely improvised, but very aggressive. The company's story is about the product, a new category in the vegetable section of a grocery store. GM's branding strategy is not overly refined. No plans were given beyond the point of continuing to use Greenbelt Microgreens as a brand.
- It remains unclear if some branding adaptation is a possibility. This could pose a problem for expansion, as Greenbelt Microgreens may not resonate with consumers in other markets. GM's leadership has acknowledged the issue but does not seem to have plans to adapt its brand to other markets.

Future Needs

- Applications for microgreens are endless: they can be incorporated into salads, sandwiches, and other well-known dishes. But building awareness and changing habits will be a challenge.
- More research is needed on the nutritional benefits of microgreens and their relation to human health.
- Additionally, a better understanding of their market potential will be key for GM to expand its operations beyond its current capacity.

Conclusion

This case is about a company's pursuit to create a new product category. In an era in which vegetables and fruits are becoming more central to food policy, GM believes microgreens have a bright future. GM is a unique company with potential but is also facing some challenges in the future. The best path forward for GM to expand its operations and its market is unclear. Licensing seems to be working in both New York and British Columbia, but to determine what is the best approach to establish several more facilities will be a key focus for GM over the next few years. Despite developing robust production methods, connecting with key grocers, and developing good relationships with strong growers, GM is still exploring options.

FOR DISCUSSION

1. Of the four business expansion strategies, which do you think could work for GM going forward and why?
 - a. Company-owned
 - b. Franchising
 - c. Licensing
 - d. Dealership/ Distribution
2. Can you share another story of a food producer or processor that expanded? Which of the four strategies did it use? What was the outcome?
3. What factors do you think make franchising and licensing appealing in the agri-food industry?

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