

### Introduction & Background

Modular Farms Inc. was established in 2014 and is the Canadian manufacturer and distributor of Bright Agrotech's products for hydroponic vertical farming solutions.

**Mission Statement:** Whether you want a small system to grow in your condo or a full-scale commercial farm in a warehouse, Modular Farms can help you achieve your goal of growing pretty much anything, anywhere. We are experts in using ZipGrow products having grown over 15 plant varieties over the past 18 months in our 256 tower farm.



### Design and Logistics

Farm Walls, ZipGrow Towers and Zipfarms were designed to provide a low-maintenance, high-yield hydroponic growing system. It comes as a complete and customizable kit that accommodates 5' and 8' ZipGrow Towers. These Towers can hold 2, 4, or 8 individual towers.



#### The Farm Walls and Zipgrow Tower Design

The wall is made up of two rectangular gutters (made of food-safe PVC) that hold the ZipGrow towers in place.

- The lower gutter serves as the sump for the system and holds the water, nutrient solution, and submersible pump.
- The upper gutter houses accessible and viewable plumbing and drip emitters.
- Towers can be easily taken in and out of the wall for planting, harvest, and live sales.
- Each ZipGrow tower holds two media inserts which can be "zipped" in and out of the tower for easy planting.
- Your Farm Wall can be mounted outdoors or indoors.
- Our Indoor Farm Wall Light Kit is comprised of adjustable light mounting brackets that reach out and stand flush towards the front of the growing towers for optimized light distribution; recommended lights are LED or T5 Fluorescent vertical bulbs



### Environmental, Social & Economical Significance

#### Environmental

- Carbon Footprint and water quality
- Quality, abundance and distance travelled for food

#### Social

- Grow food, sell food, anywhere
- Education

#### Economical

- Job creation
- Small market growth and community stimulus



### Purpose of Internship

As the Plant Health Specialist, my role was to be the Master Farmer of an indoor controlled growing environment facility. Understanding of hydroponic practices specific to the indoor format of farming and preparing controlled environments to begin testing and data collection were the main objectives of my on-going work. Determining best practices for growing seedlings in mature grow areas and measuring environmental data sets and parameters all were significant in establishing the automated environmental growing system for optimal growth. Determine optimal data sets regarding plant health in controlled environment container farming including plant stresses and best farming practices.

**WHY VERTICAL FARMING?**

**PROBLEM 1: FOOD SECURITY**  
 OVER 1 BILLION PEOPLE WOKE UP TODAY WITHOUT ACCESS TO FRESH FOOD. 1 IN 7 CANADIANS ARE AFFECTED

**PROBLEM 2: FOOD DISTRIBUTION**  
 MOST PRODUCE IN GROCERY STORES TRAVELLED THOUSANDS OF KILOMETRES BY TRUCK TO GET THERE. 40% OF FOOD COSTS

**PROBLEM 3: FARMING ROI**  
 FARMERS ARE NOT CONSISTENTLY PROFITABLE

### Future Work & Key Takeaways

Better understanding of crop diversity, specific plant niches, tolerances and technology implementation are the main focal points moving forward at Modular Farms. Increasing R&D with regards to indoor automated farm systems and plant monitoring to optimize plant growth for harvests. Becoming CSA and CFIA accreditation and standards approved to sell produce to grocery stores. Implement a National Education Program to train farmers on hydroponic cultivating techniques and automated indoor growing environments.

