NOV 1

# Beverly Greenhouses - Growing with a Dedicated Team

# Introduction

Welcome to Beverly Greenhouses in Waterdown, Ontario! Today we got the chance to take a tour of the facility with Jan VanderHout. Beverly Greenhouses is a family run business that's been in operation for over 60 years. Jan & Dale's grandfather started the farm in the late 50s, with the farm being taken over by their father and eventually passed down to Jan and Dale VanderHout (pictured respectively). Originally, the main commodity grown at Beverly Greenhouses was tomatoes. They grew tomatoes and cucumber as well for a short time until in 1978 when their focus shifted entirely to cucumber production. Beverly greenhouses have been eagerly expanding since the early 90s and today grow cucumbers under just about 30 acres of housing (including their propagation house where the plants are started from seed).

Jan VanderHout

Dale VanderHout

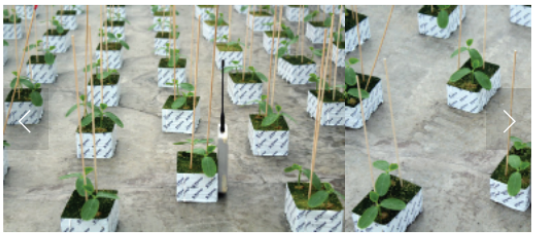
# Propagation

One unique aspect of Beverly Greenhouses is the propagation house on their farm where cucumber plants are started from seed. Typically, growers purchase these seedlings from companies who specialize in propagation. By propagating their own plants in house, Beverly Greenhouses can maintain complete control over all the stages of their supply chain. If for instance cucumber seedlings were in high demand at the start of their growing season, propagating space may be limited, but Beverly Greenhouses would remain unaffected.

Propagation is no simple task, and there's a lot of dedicated technology in place that makes this on-farm propagation process possible. One of the most important being the flood floor in Beverly Greenhouses' propagation house that runs fertigation water by the seedling's substrate, ensuring that all the young plants receive the optimal amount of nutrients (and water). The young plants can also be watered from overhead watering booms that ensure the upper section of the growing media is receiving the necessary supply of fertigation water.

Working in tandem with the water delivery systems are the sensor blocks dispersed among the crop at specified sampling points. These points are strategically selected to represent the block water content to optimize watering times. Therefore, each sensor block gives a general idea of how plants within that specified range are taking up water. These sensors measure water content (moisture), electrical conductivity (nutrient/fertilizer content), and temperature. These sensors are crucial to the propagation process and ensure that the flood floor and watering booms are working effectively.

Another important note about Beverly Greenhouses is that their biological control program is implemented directly from seed in the propagation house. Inside their propagation facility, no chemical pesticides are ever used! When plants have grown to stage where they can be transported into the main greenhouse, the bio-control program is adapted to help these more-mature plants thrive.



David VanderHout - Packing House Manager + Propagation

# Biological Program

Biological pest control is a main area of focus at Beverly Greenhouses since it's their only line of defence against pest and pathogen threats in their propagation house. On the farm there is a dedicated biological control team that monitors pest pressures in the crop, applying bio-controls when necessary that reduce or eliminate these pressures. The team is led by Jess pictured right.

This team not only applies biological controls to the crop, but also monitors the crop to determine the most effective strategies for mitigating pest pressure on the crop. Since the biological program is implemented directly when the plants emerge from their substrate as seedlings, the biological team at Beverly Greenhouses can alter/aid the crop at any point in the growing process. This also allows for the biological team to better react to uprising pest issues, as there will already be a baseline of bio-controls among the crop that can be tailored and targeted to resolve the specific pest problem that has arisen. Among the photos you may have noticed some of Beverly Greenhouses' banker plants located throughout the crop. These plants serve as a food source as well as reproductive site for many of the beneficial insects among the crop!

Jess - Biological Control Program Manager

# Sustainability

Beverly Greenhouses' management is extremely passionate about sustainable agriculture and ensuring that natural resources are being used in a responsible manner. One of the larger commitments to sustainable farming in place on their farm would be their cogeneration system in place, generating electricity for the farm. While the electricity is still being generated by burning natural gas, the key to this technology is that almost all the waste heat from the engine is used in the greenhouse. This system provides roughly half the electricity required to run Beverly Greenhouses behind-the-meter meaning that none of the power generated with this technology is making its way into the Ontario power grid, and instead, Beverly Greenhouses makes use of all the electricity generated.

Beverly Greenhouses also mitigates some of their heating requirements with a biomass boiler that is fueled by waste wood. The boiler is powered with wood chips from other industries waste, like damaged shipping pallets. This system works great in conjunction with their cogeneration system mentioned previously, as Beverly Greenhouses can meet as much of their heating requirements as possible using energy from renewable sources. This is a great setup, as heating can be one of the most expensive and energy-demanding portions of a commercial greenhouse.

Beverly Greenhouses also has a sustainable waste disposal plan. Rather than disposing of waste in a traditional landfill, or somewhere that it will sit and waste away, Beverly Greenhouses has chosen to send their organic waste to a compost site where it can be broken down into valuable crop inputs for the field farming sector.

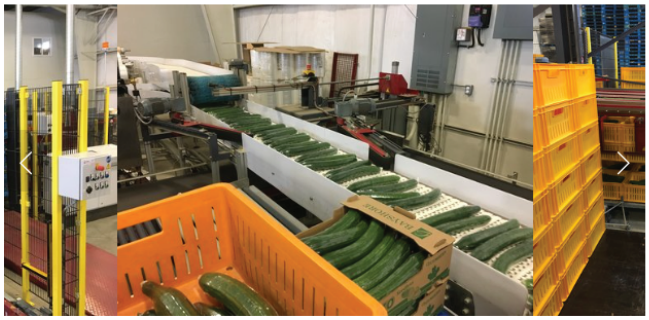
Beverly Greenhouses' is also a supporter of solar power generation and have various solar projects in place on the roofing of their buildings. There are two microFIT solar panels in place generating electricity from the sun's energy and Beverly Greenhouses also rents some of their roof space out to a 240kW solar panel project.

Steve - Head of Maintenance

# Automation

The focus of automation technology at Beverly Greenhouses has been around reducing the physical strain of work on employees. Tasks that are physically demanding and repetitive – like unloading cukes from their picking crates to the wrapping machine – have been automated to reduce injuries and physical intensity of the work. This automation also helps with keeping efficiencies high at Beverly Greenhouses.

As you can see in the video, the machinery loading the cucumbers on the line does a great job of sorting and organizing the cukes for them to be individually wrapped. The machine isn't perfect however, and that's where the packing line employees come in. Employees oversee the wrapping machine infeed and correct any issues with cucumbers that haven't fallen into their appropriate slot. This is a key example of how automation can be extremely helpful when used in tandem with human labour, as there are some aspects of most jobs that still can't quite be completely automated. Overall, the automation in Beverly Greenhouses' packhouse does a great job at reducing physical pressure on their workforce, as well as at keeping the flow of work in the packhouse consistent.



# Workforce

Beverly Greenhouses' success would be impossible without the help of the many dedicated people working on their team. It is this mutual respect and trust that management and employees have for one another that makes for such a productive team. Every employee has their role within the company and are aware of the importance their contributions have to Beverly Greenhouses.

Beverly Greenhouses has put a considerable focus on providing a quality experience for their workforce. This is clear when you see the high-end bunkhouses on site for employees. By providing a nicer living environment, Beverly Greenhouses has a more content and productive workforce. Many employees leave behind their families and friends in their home country to come to Canada and work seasonally. By providing workers with better living accommodations, Beverly Greenhouses helps to reduce some of this stress and pressure of working in a new country away from home. This also decreases the chances of arguments or disagreements among employees, as they'll have more space to themselves and be less likely to wake/irritate one another during personal time.

Bunkhouse at Beverly Greenhouses

Pablo - Supervisor

Jose - Long-term Employee from Mexico

William - Labour Management

Beverly Greenhouses also has a labour monitoring system in place that allows them to track progress at almost all tasks on the farm. Employees have assigned tags with their names on them that they scan into a reader at the start of a shift. These readers are then tapped against the various tags assigned to different tasks around the greenhouse (rows, crates, etc.). Their labour monitoring system tracks and records which employees were working in what rows/with what cases of product and can track productivity over time as well on an individual employee level. This is great ensuring that all areas of the greenhouse are producing optimally while making it possible to reward the highest performing employees.