Vic and Margaret Ball Internship Report based on the experiences of Kimberly J. Cooper at Green Circle Growers

I did not know what to expect when I first arrived at Green Circle Growers. I had envisioned modest accommodations that were enough to serve as place to sleep and cook a meal. I knew I wanted to learn about commercial growing, and I thought I had an idea of what that would be like after taking greenhouse management. I knew there would be Hispanic workers, so I tried to catch up on some of the Spanish I had learned before. I knew there would be a learning curve when it came to interacting with PRIVA because I had never used an environmental control system before. For most of the daily tasks and jobs, I figured it would be like greenhouse management class, just on a larger scale. I was told Green Circle Growers possessed 120 acres of growing space, but I never really knew how large of an operation that was until I saw it for myself. It was like greenhouse management class times at least one thousand. While it was very overwhelming at first, I could not wait to see what I could learn from a company of this size.

Standing by the GCG sign after a day of work in the heat.

Green Circle Growers provided a well-rounded internship experience. The growers integrated me and my fellow interns into the daily tasks of their sections from day one. These tasks included: pH and EC testing, analyzing PRIVA, insect identification and counting, spot watering and overhead watering with boom, fertilizer and PGR applications, assisting in the soil lab, operation of ridable water booms, disease scouting, releasing biological control insects, gassing bromeliads with ethylene infused water, washing and sanitizing floors, moving tables of young plants and final product, overseeing and assisting with sticking of poinsettia and chrysanthemum cuttings. The intern program at GCG rotates the interns from plant to plant, so you always had a new adventure to look forward to.


Using rideable boom to set out pots for testing plant pH and EC.

My rotation started at the Orchid Range. Here, I was introduced to and studied the greenhouse environmental control system PRIVA. I had never encountered an environmental control system like PRIVA before, so getting this opportunity to study PRIVA and learn how it works was very valuable. The growers at the Orchid Range told us that the orchids grow themselves, if the environment stays stable. The growers had their eyes on PRIVA monitors most of the day, especially when it snowed. I think the best part of the

PRIVA office view is the graphs that provide a visual of all the readings PRIVA takes throughout the day and how they interact with one another. I had the opportunity to perform an experiment with PRIVA. I was given handheld devices that could read the greenhouse CO_2 and light (PAR) levels. The purpose of the experiment was to compare the handheld device readings with the corresponding readings taken by PRIVA. If the readings were within range of each other, then the growers would be able to use the handheld devises to determine if the PRIVA readers needed to be calibrated. The readings were very off from one another, so I recommended the experiment be performed again with handheld and PRIVA reading devices that were freshly calibrated. The Orchid Range is where I learned how to drive rideable water booms. The growers use these booms to travel through bays of plants that do not contain walkable aisleways. The growers with rideable water booms rely on the booms to do most of their daily tasks, like disease scouting and testing plant pH and EC. The grower placed in charge of the orchids waiting for shipment informed me about quality control, a new topic for me, and arranged for me to speak briefly with the quality control manager. This is when quality control piqued my interest, and I decided to look further into it. My favorite activity at the Orchid Range was visiting Hark Orchids in Kalamazoo, Michigan. Our supervisor organized this trip so the interns could see how the orchids that GCG received start out. Hark Orchids provides young orchids reproduced through tissue culture. I had never visited a tissue culture lab before, and it was a very exciting experience to view technicians working with the small and very fragile orchids.

Spraying Petunias with Sumagic.

Plant 1 is home to the majority of GCG's seasonal product. The supervisor at Plant 1 gave me the opportunity to set up a quality control protocol for Plant 1 after I noticed many planters filled with finishing product that had a less than ideal appearance. I spoke to the growers and came up with a list of items that they have observed to be the most problematic when they receive finishing product from the production lines. I was able to develop charts and a database in which the growing staff can report of the quality of the product they receive to the production managers. The idea is the production managers can report to the crew leaders the quality of the product and improve it, therefore increasing the quality and quantity of the finished product that can be sold to customers rather than discarded at the end of the season. Plant 1 mostly consists of older greenhouse structures that do not hold heat very well. Due to these structures, some growers must treat the product there with fertilizer drenches to push growth. In one of the newer structures of Plant 1, flats of plugs destined for production and customers are grown. Due to traces of fertilizer in the water source, the growers managing these plugs must spray PGRs quite regularly. The grower I was working with at the time took this opportunity to teach me how to

backpack spray. Not the most comfortable experience, but one that was valuable to my education and internship. The Plant 1 supervisor arranged for each of the interns to spend a day working in the on-site soil and water lab. While the growers had handheld readers for pH and EC, the lab could measure more components like nutrients and contaminants. The best part of working in the lab was working with Brenda, the lab technician. She is one of the nicest people you could meet, and she loved spending time with all the interns.

Assisting in the lab by testing EC of water source samples.

Plant 2 was where we got to learn about the foliage crops. Most of the plant used flood tables to water the plants. My favorite area was the bromeliad section. I found it fascinating that bromeliads must be treated with ethylene to get them to flower, and it seemed almost unreal that starving them of nutrients was also part of the program. I was given the opportunity to treat the bromeliads on my own while the grower was away. I hooked up and disconnected the ethylene injector on my own and operated the boom manually to ensure that only the groups for that week were treated for flowering. While at Plant 2, I worked with production labor regularly. They were surprisingly welcoming, and we did our best to communicate through the language barrier. Plant 2 also had a MX range that housed a large amount of seasonal product. There were so many blooming flowers susceptible to insect damage that the growers released large amounts of biologicals to attempt to keep thrip numbers down.

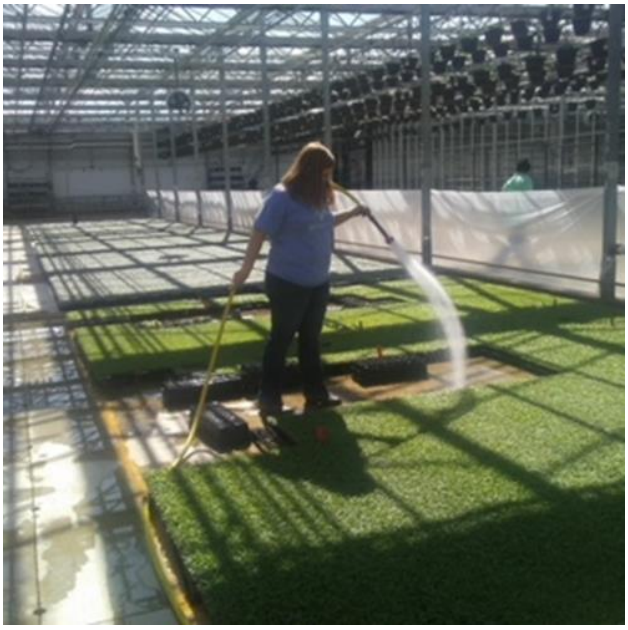
Overseeing poinsettia sticking

Plant 6 produces GCGs plugs and liners. I rotated to Plant 6 just in time for poinsettia season. GCG receives unrooted poinsettia cuttings from breeding companies, then labor crews stick the cuttings into cell flats. I and the growers oversaw the crews, kept the cuttings and soil moist, helped stick when needed, and sprayed the stuck cuttings with Capsil. When GCG knowingly received poinsettias containing white fly eggs, the supervisor entrusted me with sampling as many crates of unpacked poinsettias as possible to get a projective count of how many white flies there could be. When there were not poinsettias being stuck, there was cleaning and sanitation to be done. Growers at Plant 6 made it a habit to clean and sanitize the greenhouse

floors when a section becomes open. Some days this is all that was done, but it was worth it to ensure a clean environment for young product.

Some interns were interested in other departments, and although we were there as grower interns, GCG gave us the opportunity to shadow other departments. I took this opportunity to shadow the Quality Control and Assurance department. With the quality control personnel, I traveled through the staging and shipping areas of each of the four plants. We checked orders that were being prepped for shipping and compared what was there with what the customer

requested on the paperwork. One of the assistants allowed me to help her with many of the orders. We caught a few mistakes made on shipments destined for a high-risk account. We had to show the crew leader what was wrong and what it should be changed to and get their crew to fix the products before they were boxed and loaded onto the trucks. Some of these mistakes, like double labeling, could not be fixed, so we took pictures and reported to the quality control manager. The quality control manager then contacted the customer and gave them a report on the condition of the product they would be receiving. I learned that quality control is a department dedicated to assuring the quality of the company's product, and an important communicator between the company and the customer.



Edge watering marigold plugs on a hot sunny day.

There were a few tasks that did not change from plant to plant. Upon starting the internship, I already knew how to identify some insects, but the growers at Green Circle taught me how to be more accurate with the identifications and identify more insects. Operating the water booms was new for me, but I was able to learn enough that growers allowed me to operate the booms without direct supervision. I used the booms to water plants, scout for disease, and collect bug count data. On hot days, it was necessary to spot water and edge water to prevent the plants from reaching permanent wilt and becoming worthless as a saleable product. I worked with production crews at each Plant. A couple of times, the supervisors had us on stick lines, planting plugs into planters. Concentrated fertilizer mixes had to be made up every week in huge vats that fed into the water supply when growers used designated water lines. At GCG, an intern's typical work day ran from 7:00 am to 3:30 pm. We are given a 15-minute break in the morning at 9:45-10:00, and a 40-minute lunch break at 12:40-1:20. For lunch we had time to go to the intern house. This gave us a chance to rest and eat a good meal before returning to the greenhouses. We had the pleasure of enjoying weekends off along with much of the evening.

Standing in front of the female intern house

Green Circle Growers is a very welcoming host company. The housing accommodations were amazing and beat all expectations. GCG provided us with small essentials like soap, dish detergent, toilet paper, and cleaning supplies. GCG also arranged for a cleaning service to come every two weeks, and trash pick-up 3 times a week. Both intern houses are located on the company property, so getting to work was very quick. This was the first year that GCG provided housing to women. The female intern house was furnished with everything we could possibly need. There were 3 bedrooms with 4 beds, and all the beds came with bed sheets and blankets. The living room had a couch and two recliners, and a HD television with cable, coupled with a Blu-ray/DVD player that could connect to services such as Netflix and Hulu. The basement was the location of the laundry room and recreation room. Having a washer and dryer in the house was awesome, especially since we did not have a laundromat close by. The rec room had a ping-pong table, card/board game table, treadmill, hand weights, a tv and DVD player for workout videos and movies, and a couch. The kitchen was equipped with an oven, refrigerator/freezer, dish washer, and a large sink with garbage disposal. We were provided with a crock pot, rice cooker, coffee maker, mixer, food processor, dishes, silverware, drinkware, pots, pans, baking dishes, and kitchen towels. The two full bathrooms came with all the towels we could need, and the water pressure in the showers was some of the best I have experienced. The house was so amazingly comfortable and so well furnished that after a long, hot day of work I was able to rest and relax without stressing.

Posing with Assistant Grower Hannah in front of a bay of finishing product.

The growers were knowledgeable and always willing to answer questions we had about plants, equipment, chemicals, and the greenhouse environment. Every time a new learning opportunity arose, our growers made sure to include the interns. While there is always something to do in the greenhouses, there is always

a day here and there when activity is low. On these days, growers would often take us around to look at neighboring sections to see what the other growers were doing. The growers often talked about the crops they had and what treatments were being conducted, but there was also friendly mingling involved. I found that this casual chatter was important to the work day. A visit from a fellow grower was a chance for a small break in the long day, and a chance to form a strong workplace relationship. The supervisors were not immune to mingling. During walkthroughs, growers and supervisors would talk about families and activities outside of work as they moved between plant bays. Supervisors also made it a habit to stop by and check on interns to make sure we were learning and getting the most out of our experience.

I became very comfortable living in Oberlin, Ohio. The town was small but filled with kind people. We met a nice older couple that lived in the area, and they became friends with all the interns. The wife introduced me to a poetry group that met in town every Tuesday after work. I never missed a meeting with the poetry group while I was there. Sometimes the interns would hang out on the weekends. We would watch movies, go out for brunch in downtown Oberlin, and sometimes travel out to Cleveland on Saturday nights. If we had a chance to celebrate a birthday, we did so by going out to eat or to a bar. A few times, some of us would drive to a local ice cream stand after work to enjoy a cool treat. A tavern located about 30 minutes from the intern houses had a "wing night" Wednesday special, so we would go to the tavern to have an intern family dinner. One of my favorite trips was to Cedar Point, an amusement park on the shore of Lake Erie, which is within a mile from the intern houses. Oberlin seems like a quiet little place, but if you get out and travel around, its really an amazing place to be.

The intern family and friends out for the Wednesday "wing night" dinner.

I did not know about quality control before arriving at Green Circle. I took this opportunity to learn about a new career, and I greatly appreciate being given this chance. I would say one of my weaknesses is wanting to please others, but with quality control, that weakness becomes a strength. One of my career goals is to produce top quality plants for customers. I believe the best way for me to achieve this goal is to pursue a career in quality control. My education in Horticulture is giving me a strong basis for entering a greenhouse control career. I realize quality control has to inspect a lot of product, and the best way to prepare for that is to study the product and the product's natural habit. My decision to pursue a career in quality control has me considering obtaining an MBA for management qualification. Aside from this, I plan to complete my BAS in Horticulture and graduate in May 2019.

This internship has been a positive improvement to my educational experience and future career goals. I am grateful to GCG for providing both an educational and entertaining environment for interns. My gratitude extends to the Vic and Margaret Ball Intern Scholarship Program. Without the support the program and AFE, it would have seemed impossible to move 700 miles from home and school for 6 months. With the help of your generous scholarship, I can focus on my upcoming classes without stressing about finances.