

## Production in the Absence of Automation

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### Summary

The path of growth at Carolina Native Nursery is discussed. Carolina Native Nursery produces over 200 different native

shrubs, perennials, ferns, and grasses. Procedures becoming more efficient through the years are discussed.

### INTRODUCTION

Alisha Conde has been the Nursery Manager for Carolina Native Nursery (CNN) in Burnsville, NC since January of 2019. As a Nursery Manager one must be thinking about weather, irrigation, plant diseases, pests, production space and rates, personnel,

and equipment maintenance. The list goes on.

All of those responsibilities can be a heavy load, but at the end of the day, working with plants is a fulfilling venture. Additionally, as a professional in this industry, you might be fortunate enough to enjoy the

time spent at a few conferences a year. While at these conferences you might see state-of-the-art facilities with machines that were built overseas for a particular nursery's specific needs. Curved glass greenhouses and entire seas of poinsettias are a sight to behold. Carolina Native Nursery has not made it there yet. This nursery has heart, it has tons of beautiful natives, and it has quite a few folks that could talk your ear off about those plants, is one phrase I would not necessarily choose to describe this nursery.

CNN services garden centers, landscapers, parks, and projects throughout the eastern United States. Truckloads of plants are sold from Atlanta to Maine. The nursery also hosts an ever-growing retail area. Our Full Time Staff is 8 people strong, and in the very early spring we bring on an additional 5–6 seasonal employees.

The nursery produces native shrubs, perennials, ferns, and grasses. The specialty of CNN is growing native azaleas from seed. Seeds are started in November/December, and the seedlings start to sprout on heated tables in as little as two weeks.

Our nursery sits on just under 11 acres of what used to be an old tobacco farm. It was purchased in 2002, and propagation started in 2003 with (1) 30 ft × 96 ft wooden propagation house, (2) 20 ft × 96 ft hoop houses, (2) 16 ft × 96 ft hoop houses, and (1) Lath house. There were two workers who potted up about 100 species of shrubs.

In the beginning, employees at propagated from bare root plants and liners on a long table using lugs of soil. The process was to fill a pot from a soil lug on a table, move the potted plant from the table onto a trailer, fill the trailer with plants, drive the trailers off to a hoop house, and drop the freshly potted plants off (**Fig. 1**).



**Figure 1.** Tractor and trailer setup.

After the plants were loaded into a house, they were top dressed with fertilizer, watered, and tagged. It was a good day if one

person could pot up 100 plants in an afternoon (**Fig. 2**).



**Figure 2.** Potted plants in a hoop house with rice hulls for weed control.

Three years into the business the soil lugs were eliminated, and the switch was made to 18-wheeler soil deliveries. This change removed the time it took to fuss with the soil lugs and made the potting process a bit quicker.

The next step towards efficiency was purchasing a soil hopper. Ten years into the business the nursery acquired a hopper for \$1500.00. Some of you might be familiar with these. Essentially it is a giant soil funnel. There are four spaces in which an individual can stand, and it has wheels. It creates a mobile soil pile. The hopper would be hitched to a tractor and pulled around the nursery to fill up hoop houses with a new crop. The hopper is set up in such a way that your hands and arms are moving ever-so-slightly less drastically which adds up to more efficiency over time. Our motto sort of became, “Take less steps, use less time”.

There were downsides to this method including spatial limitations, and not having protection from the elements. This method was used until the end of the potting season in 2019. In 2021 a stabilized tent prototype was mocked up. Having a stabilized potting area helped us to eliminate set up time at the start of the workday, and breakdown time at the end of the workday. All of our tools and supplies were within the immediate work range. This newly constructed shelter also helped to keep employees out of the elements.

Since the hopper became stable under the tent, this new plan of attack meant that the plants were the ones that needed to move rather than the hopper full of soil. Standard operating procedures again were changed. Employees no longer were fertilizing, ricing, tagging, and watering in the houses. Instead, they did so on the surface

of the trailers that were used to move the plants. This was a back-saving revelation. During this first trail year of having the stabilized potting area, the potting crew only had one tractor. This meant that both sides of the hopper had to share the only means of moving plants. Additionally, the nursery only had two trailers to set the freshly potted plants onto and these trailers would fill up quickly. The goal was to minimize the number of times the trailer left the hopper to drop off plants. Always remember the helpful “Less steps, more efficiency” motto. In 2022, an event tent was acquired to work under (Fig. 3). This was 19 years after opening the nursery. Everything is in one place and under cover from the elements. The tent is tall enough to drive a skid steer under so when substrate is getting low in the hopper, and the trailers move out from under the tent to drop plants off to their new homes, someone can take the opportunity to fill the hopper up.



**Figure 3.** Tent to work under.

An additional improvement to the nursery and the production process was the watering tunnel. (Fig. 4). The prior standard operating procedure had been to water the new

plants by hand, or water them using overhead irrigation. The new water tunnel method is quick and effective. A second tunnel will be added in 2023.



**Figure 4.** Our watering tunnel.

The staff can up 252 1-gal pots per hour, and 168 3-gal pots per hour. Heading toward automation is the goal. A potting machine will allow more than 4 people potting and can eliminate steps such as grabbing stacks of pots and filling those pots with soil. The nursery has acquired 12 more acres of land during the tail end of 2022. This means that CNN has more space to fill with the same amount of time in a year.

You may be wondering, why the heck has the nursery not just bit the bullet and acquired a potting machine? The reason was to avoid feeling so overwhelmed by big changes that the final product suffers. When you make the leap to automation it is not just a one-and-done change. You are essentially changing the whole system. Suddenly you are not able to use your event tent. Instead, you will need an actual building to really keep the potting machine out of the elements. You may not be able to use the

pots that you have been used to using. Perhaps the pacing of what time of year that your seasonal workers are needed will change. There will be unforeseen changes to your standard operating procedures which you have worked so hard to perfect.

CNN has seen sales increase by: 19%, 18%, 30%, 31% over the past couple of years, adding new growing space along the way. Automation is bound to happen. The number one priority for CNN is to always have beautiful plants. The path to that goal can go any which way, the preference is to focus on creating a workday that is as easy as possible while still reaching production goals.

When our seasonal employees see that we are making changes every year to make the seasonal jobs better they are more likely to come back the following year. When they come back, we don't have to spend as much time onboarding and job training. Those types of employees are so important in helping new members of the company feel comfortable and confident in their first year at the nursery.

Growth can be overwhelming and costly. It is helpful to remind yourself that you can always use what you have got and improve where you can. Whatever you do, never stop analyzing your processes for improvements.