

## Lean Flow at North Creek Nurseries: Establishing a Culture of Lean<sup>®</sup>

Steve Castorani

North Creek Nurseries, 388 North Creek Road, Landenberg, Pennsylvania, 19350, USA

Email: [steve@northcreeknurseries.com](mailto:steve@northcreeknurseries.com)

“The three rules of work:

- Out of clutter find simplicity;
- From discord find harmony;
- In the middle of difficulty lies opportunity.”

Albert Einstein

In 2008, North Creek nurseries had its best year ever. Having built a business over a 20-year period, we had grown rapidly, eventually working on two farms. Realizing this growth, and being cramped for space, we felt that we needed to expand our operation. We knew this would allow us to remain relevant in an increasingly competitive marketplace. We felt the need to increase our production capacity and efficiency. In exploring our potential for expansion, we worked with a friend, Robert Hayter, a landscape architect. After pertinent discussions, he asked this question of us: “Had we ever analyzed our processes?” Our answer was that we had not done a thorough analysis, or the due diligence necessary to understand our work processes, product movement, or work flow. We came to the conclusion we needed to delve deeper into understanding our manufacturing processes.

Upon doing so, we discovered our methods were very inefficient and that a simple expansion would not have allowed us to become more efficient or more profitable. Expansion at that point would have only created more expense. As a first step, Robert suggested we look into some training through the JP Horizons “Working Smarter Training Challenge.” This program, developed by Jim Paluch, is based on lean principles and the 5S process. It was being used successfully by many landscape contractors to train their employees on efficiency and time management. We started the program in 2010.

As an outgrowth of this training, we began to investigate, understand, and employ 5S principles. In this work process (5S) all debris and unnecessary items are removed and every tool has a clearly marked storage space, is visible from the work area, and has the support to stay that way. The 5 Ss stand for: Sort, Shine, Set in Order, Standardize, and Sustain.

- 1) Sort. Reduces the number of items in a work area to those that are essential.
- 2) Shine. Cleaning and “shining” your work space, desk, office, truck, bay, or wherever you perform your work (Fig. 1).
- 3) Set in Order. Evaluating and taking actions to improve work flow, reduce motion, and increase efficiency in the setup of your work space (Fig. 2).
- 4) Standardize. Making sure the key steps are understood by everyone — or how to keep the work place like we use the first 3 Ss.
- 5) Sustain. Making sure all employees are trained in the standard procedures to keep the area clean and clutter free while also using visuals like charts and graphs to measure current conditions.

North Creek began a training program to implement the Working Smarter Training Challenge which set us on the course to train our employees in the concepts of Lean and Lean Manufacturing. What we learned is that it is very important that companies attempt to employ lean principles in their work place by making a concerted effort to expose and educate their employees to this understanding thereby developing the mindset so they comprehend, embrace, and adopt lean management principles. This point cannot be overstated.



Fig. 1. Shine.



Fig. 2. Set in Order.

Over the course of this process we had consulted with other companies who had gone through lean manufacturing processes. It peaked our interest and we needed to learn more about lean manufacturing. As North Creek ventured into the educational process of Lean through the Working Smarted Training Program, I attended the IPPS Eastern Region Meeting in 2010 in Rhode Island. Here I heard two talks on this process. One talk was given by Dave Van Belle, of Van Belle Nurseries, and the other by Gary Cortes of FlowVision. Dave Van Belle explained how they implemented Lean Flow at their nurseries and he expressed how successful it was for them. Gary Cortes explained in detail the concepts of Lean and how Lean manufacturing can be employed in the nursery trades. After these talks, I was able to speak with both men along with Dale Deppe of Spring Meadow Nursery who had also employed Lean Flow at his nursery. I left that encounter knowing that if North Creek didn't start to make changes and implement lean in its business, we would eventually lose our edge. Coincidentally, this all happened during the start of the "Great Recession." It was a difficult decision to invest the necessary funds to adopt these processes with a notable reduction in our gross sales.

We hired Gary Cortes of FlowVision that next spring to do an analysis of our methods and two of our primary processes—shipping and plug production. Our propagation facilities lacked a head house and would need a substantial outlay of cash for facility improvements. Realizing this, we turned our attention to our shipping facilities. Our thinking was that we could implement Lean Flow in our shipping process with few initial upgrades. We were encouraged to read books, primarily, "The Toyota Way" as lean manufacturing is based upon principles employed at Toyota Motors. One very important lesson of lean production is learning to do more with less. Another key principle is learning about the seven wastes that need to be eliminated from every process; these are:

- 1) Over production
- 2) Transportation
- 3) Motion
- 4) Waiting
- 5) Processing
- 6) Inventory
- 7) Defects

By not analyzing and eliminating these wasteful processes, your company actually creates one more waste: lost opportunity. This can be the most damaging, as it can prevent a company from realizing its' full potential. The seven wastes are at the root of all unprofitable activity, and all tools of lean should be focused on getting rid of these wastes.

After understanding these concepts and with the help of FlowVision, we set about to train our employees. We learned about progressive assembly and were given the tools to implement these processes in our shipping department. One of the first things we changed

was how we used our employees to process shipments. Prior to implementing Lean, our staff did the majority of their work in the hoop houses where plants were stored prior to shipment. We pulled and prepared the flats we intended to ship that week outside in all weather conditions. Our employees worked bent over or sitting on buckets (Fig. 3). They spent hours moving and touching plants, but adding no real value. Gary suggested we change that process by bringing the work to our employees in a central location, our gutter connected shipping warehouse. Now, the numbers of flats we needed to ship in a week, plus additional donor flats, were gathered by a small crew. They were brought to a central location in the shipping greenhouse where a production line was employed to clean and organize materials and made ready for shipment (Fig. 4). Each flat of plants would be groomed to insure a full count and the highest level of quality. This process was known as “Progressive Assembly” and implemented by small teams of employees, usually three working together. Work could be better supervised and scorecards were used so we knew how many flats we needed to have ready in a day and also in a shipping week. This enabled us to improve the quality of the materials we intended to ship by employing the Progressive Assembly process to make work flow balance so there was less time, motion, and waste in the process. We could also balance our labor force by adding or subtraction employees depending on the work load. From here, plants were moved to a “Super Market” and organized and assembled on vertical carts so that the shipping crew could easily pull and ship in a highly organized fashion (Fig. 5). One other important thing to note was the elimination of excess inventory. We only cleaned and assembled the flats we needed to ship that week and on a daily basis only built boxes one at a time, as needed.



Fig. 3. Inefficiencies and wasteful practices assessment.



Fig. 4. Central location in the shipping greenhouse where a production line was employed to clean and organize materials and made ready for shipment.

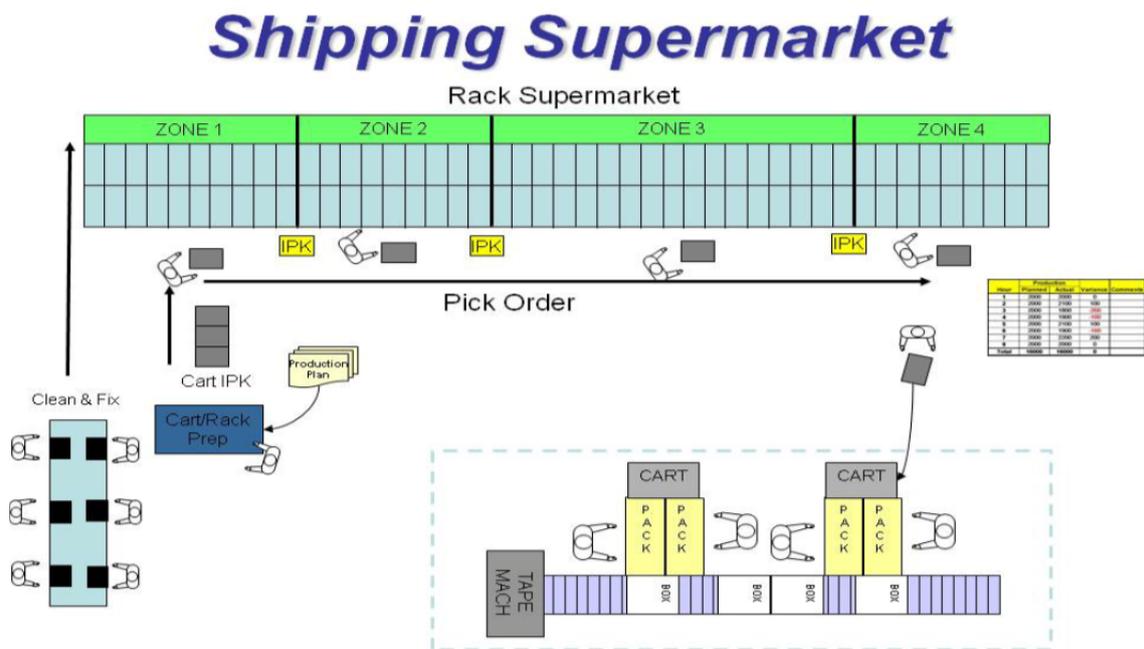


Fig. 5. Supermarket which allows the shipping crew to easily pull and ship in a highly organized fashion.

Prior to implementing Lean Flow in our shipping process we were limited to shipping roughly 6000 flats per week. The effort it took to ship 6000 flats in a week meant overtime for our staff, often working 7 days and often over 10 h a day. In total, after employing the Lean Flow methods, we were able to reduce our work force by as much as 40% during our peak shipping weeks while increasing the number of shippable flats by up to 10,000 units. One of the biggest gains was that our staff was working in a more

hospitable environment, 5 to 6 days per week depending on volume, typically in an 8-h day. I want to reiterate that the quality of the products also improved tremendously. Customers were pleased. We continued to work with the process and refine our methods so the following year we upgraded our facility which added increased efficiencies and more comfortable work environment. We continue to look at other process and brought increased efficiencies to our plant tag organization and fulfillment. As an ongoing process, we continue to chase bottlenecks, thereby allowing us to improve upon any problem we discover.

This year we are finally able to build a new gutter connected propagation facility on our Landenberg farm. Here we designed the entire propagation process using our knowledge of Lean principles and progressive assembly. We look forward to increased efficiency and labor savings moving forward.

In closing, I want to remind everyone about the value of investing in your most important asset — your employees. Spend the necessary time and effort to get your workforce trained. Analyze how they process their work and engage them in how they can improve their work environment. Collectively they will make the largest impact on your bottom line.