

# FUTURE TECH

BY CURT KIPP

**N**URSERY OWNERS used to routinely invoke “Field of Dreams” when talking about their production plans.

In the movie, a farmer hears a voice saying, “If you build it, he will come.” Ignoring family members’ warnings that the farm will go broke, he replaces his corn with a baseball diamond. Eventually, a team of legends shows up to play — and people pay to watch, thus saving the farm.

Similarly, growers used to say, “If you grow it, they will buy” — and they did.

“I used to be able to buy tractors 12 at a time,” said Mark Buchholz, long-time nurseryman and current president at Skagit Horticulture in Mt. Vernon, Washington. “I didn’t have to care about the cost. The nursery business was extremely lucrative.”

Today’s nursery owners face numerous challenges as they seek to remain profitable and market relevant. A labor shortage. Higher labor costs. Greater competition.

“If you look at the nurseries that are no longer with us, they were slow to change,” Buchholz said. “All the survivors have had to look closely at what they do and simplify it.”

New technology can offer some of the best solutions to all of these challenges and more, but the answers don’t end there. As many growers have found, it’s not just what you have. It’s how you use it.



## Mixing Lean and automation

Several Oregon growers are combining better technology with a commitment to site-based process improvement.

The latter is called by a variety of names, such as Lean, the Toyota Production System, Six Sigma or Continuous Improvement, but boiled down, all the names mean analyzing production processes with the goal of making them more efficient by eliminating waste. Waste is any step or ingredient that does not transform the product or add value.

“Lean’s been huge for us,” said Chris Robinson, co-owner and production manager at Robinson Nursery, a grower of tree liners based in Amity, Oregon. “Most of what we do is waste — transporting bundles for example. Maybe we don’t have to move this product. Maybe we can work on it while we’re transporting it.”

Robinson Nursery, among other Northwest growers, works with Lean consultants The Peters Company, owned by Rick and Elizabeth Peters. Both were part of the OAN’s Lean Team initiative, which morphed into the Oregon Lean Nursery Consortium.

“By removing non-value-added steps we

show respect for the people doing the work,” Elizabeth Peters said. “By applying technology thoughtfully, we free up the capabilities and creativity of our staff, which shows our respect for them, and that we value their role in improving the organization.”

Robinson said process analysis is worth carving out time. “With the labor shortage, it’s hard to look outside the box, because we’re working so hard just to get things done,” he said.

Robinson and others feel the greatest efficiencies are realized by deploying both Lean and automation together.

“My favorite tool has been to mechanize the pace of work,” Robinson said. “What separates your best employees from the rest is that they can pace themselves. If you can use a conveyor to set the pace of work, your really good employee will work at the same pace as your best employees.”

For example, workers at Robinson now pot seedlings on a conveyor, not a bench.

“As the tray is coming down the conveyor, we are putting seedlings in these trays,” Robinson said. “At the same pace, all day, every day, there’s a new tray coming down the line every 31.5 seconds.”

Such changes have typically resulted in 30 percent greater productivity, he said — but they also benefit workers. “There’s ergonomic sides of it,” Robinson said. “You’re going to take all that extra motion out of it, whether it’s bending or going up and down.”

The changes also result in more trees that make it to market in saleable condition.

“Our biggest waste is the amount of trees we produce that can’t be sold because of some quality defect,” Robinson said. “The best improvement we can make is to finish a higher percentage of quality plants in a cost effective way.”

In a similar vein, Skagit Horticulture took a careful look at how its greenhouse production system was arranged, find- ➤



Robinson Nursery improved its process of cutting back grafted seedlings (above) by adding an implement from GK Machine to carry workers down the rows and by giving them electric pruners to make the work easier on the hands. As a result, throughput increased from 15,000 to 70,000 seedlings per day. *Left:* At its shop in Donald, Oregon, GK Machine created a computer application to track time spent on each project. Workers scan in and out when they start and stop work on each project. GK plans to sell this setup commercially soon.

PHOTOS BY CURT KIPP

ing that both Lean and mechanization were the answer.

“Lean helps look at what is causing all the obstacles and wasted movement,” said Mollie Hoare, operations manager at Skagit. “Sometimes it’s because we overfill the greenhouses so full of stuff that only a human can walk in there.”

They made wider pathways in the greenhouses, allowed extra space in which to space plants, and purchased 36 small, double-deck trailers.

“We moved away from the big, traditional farm wagons that the B&B growers would traditionally use,” Buchholz said. “They carry a lot of plants but they are very difficult to get in and out of greenhouses. They are difficult to load and unload because they are so wide across. We decided to replace them with some trailers that are 4 feet wide and 10 feet long.”

### Making the investment

Matt Gold is so bullish on automation that he purchased full ownership of Midas Nursery Solutions. Midas sells automated equipment from various domestic and European manufacturers.

Gold advises customers on which improvements will yield the greatest gains in productivity. “I’m having a blast doing this, helping people with their processes,” he said.

Midas sells machines to address various types of transplanting, including container to field, container to container, plug to container, bare root containers and plug to tray.

Movement of plants around the nursery is another area to address with Lean and automation. Gold has found that fork systems add great efficiency for a small investment.

GK Machine in Donald, Oregon is another equipment vendor. They design and build custom equipment for agriculture and manufacturing. Most is built to customer specifications. Very little is designed or built on speculation.

Agriculture drives about 60 percent of GK’s sales, with the rest from industry; about half of GK’s ag-related sales are to nurseries. One of GK’s latest inventions is an automatic weeder being built for a customer in California. It makes use of “vision robotics,” marketing manager Connie Bradley said.

“This can discern the color and shape of weeds versus plants,” she said. “As it goes down the row, it will leave the plants and take the weeds out. It can be operated by one worker, rather than a team of workers.”

The machine is in testing; GK hopes to have it ready sometime in 2017.

Another of GK’s recent creations was a blueberry harvester. It demonstrates the potential for automating processes for any row-grown crop, including trees or shrubs.

The harvester allows a crew of workers to pick 400 pounds per hour, rather than 100 pounds without the machine. The machine carries the pickers down several rows at a time, thus mechanizing the pace of work. It also loads and stacks the flats of picked berries.

### Efficient from the ground up

Smith Gardens is a greenhouse grower headquartered in Bellingham, Washington. The company first deployed continuous improvement philosophies at its facility in Aurora, Oregon, under general manager Wes Bailey.

There, employees and managers worked together, finding enough efficiencies to shave 20,000 hours off their shipping process annually.

“In the future, our goal is one-touch shipping,” he said. “When we pick up the plant, it goes in the rack, and that rack goes to the shipping truck. We want that to be the rack that goes to the customer.”

When the owners saw the benefits of Lean, they agreed to implement it at all locations. Smith appointed a company-wide continuous improvement manager, plus Lean captains at each site. “We’re pretty heavily involved in Lean and making a big commitment to it,” Bailey said.

The company’s new 8-acre greenhouse expansion in Aurora is both Lean and state of the art.

Some plants rest on flood floors. These save labor and recycle any water not absorbed by the plant. Others are watered, fed and treated by booms rather than sprinklers or hand-held hoses. The booms give better returns on the plant starts, and they recognize the reality that no worker, no matter how skilled with the hose, can water as evenly.

That’s not all. The greenhouses have special, light-diffusing glass. This means that even when there are baskets hanging above annuals in trays, there are no shadows. Every plant gets even light. For Bailey, it is all about a more consistent saleable product.

“Eventually, I’m going to get rid of the plant, either by shipping it to the customer, or by taking it to the burn pile,” he said. “That last one generates no return on all that we have invested in.” ☺

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