



The right shift

Process and timing of moving plants up to larger containers is key to healthy, attractive plants

The Javo potting systems (above and below) are known for their adjustability, with many models that can seamlessly switch pot sizes within minutes. PHOTOS COURTESY OF GK MACHINE

BY JON BELL

To John Wayland, a plant health advisor at **Marion Ag Service** (St. Paul, Oregon), plants and people are a lot alike — especially when it comes to diet and nutrition. Like humans, plants need a steady, well-balanced diet that meets their nutritional needs in a healthy way.

“Plants are no different than people,” said Wayland, who’s been working with nurseries and growers on fertility management, plant health and pest management for more than 30 years. “You need a good diet to get your nutritional needs met. But if all you eat is McDonald’s, you’re going to have issues. Plants are the same. So for growers, understanding the physiology and the production systems in which you grow, how you water, when you shift — those are the nuances that determine whether or not plants do well or not.”

It’s that latter nuance — shifting plants from smaller pots to larger ones throughout their growth cycle — that gets a lot of attention from growers. The process, which can happen multiple times throughout a plant’s growth from seedling or liner to salable plant, is key to bringing healthy, attractive plants to market. »



The right shift

Moving them out of smaller containers before they're ready can lead to crumbling root balls and shock that can damage or kill a plant. Leaving them in too long binds up the roots and starves plants of the nutrients they need.

But shifting up to larger containers is work. Lots of work. And it costs money too, in labor, in fresh growing media and fertilizer, in new containers and more.

Nurseries are always trying to optimize their efficiency when it comes to transferring plants. That may mean investing in mechanized potting and mixing machines. It may mean consulting with pros like Wayland who can help them assess and correct issues and optimize their soil mixes. It may mean both.

It's an ongoing process, but one that can ensure a grower's efforts pay off in the end.

"The ultimate goal is to create the best roots in order to do the largest shift

possible for labor-saving purposes without inhibiting growth or creating a problem for the plant," said Todd Nelson, co-owner of **Bountiful Farms Nursery** in Woodburn, Oregon. "It's finding the best soilless media, fertilizers and irrigation practices, doing whatever we can to lesson labor and shift the plant to get it to its ultimate size as quick as possible."

Timing is everything

One of the keys to successful shifting up of plants starts with timing — namely knowing when a plant will reach the right size for when it can be sold. Then you work back from there.

"The best growers will take the knowledge of when the plant needs to be sold and take it backwards, all the way to when to bring in liners, when to shift and how long it will take to grow up in size," said Patrick Peterson, a sales specialist and

fertilizer consultant with the **J.R. Simplot Company** in Portland, Oregon.

That's how Nelson and the team approach it at Bountiful Farms. For example, a large Japanese maple that the nursery wants to sell in a 15-gallon container might take five years to grow, starting out first in a one-gallon container, then shifting to a three.

"The timing is very important," Nelson said. "We will use a sales date and shift according to when we want it to be ready for that. But then there are some varieties that need to be shifted without a sales date just because of the way they grow."

Either way, most shifting should be done when the plant is ready and able to root into a new and larger container. That usually means in the spring, as the warm weather returns, and not much later than September, according to Wayland.

"I like to shift plants when there is

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Nurseries are always trying to optimize their efficiency when it comes to transferring plants. That may mean investing in potting and mixing machines. PHOTO COURTESY OF BOUNTIFUL FARMS NURSERY

enough time for it to root into a new container before it goes dormant,” he said. “If not, it’s harder to manage the water, the soil stays wetter longer, you can get root rot. So I usually recommend that growers shift no later than August or September. If you don’t get it done by then, you can be better off letting it overwinter and shifting in the spring.”

Mix it up

Also important when shifting is the proper mix of soilless media and fertilizers. Although it’s possible to top dress containers with fertilizer, Peterson said shifting allows growers to introduce the plant and its roots to fresh new media — usually built around a shredded fir bark base — and fertilizer.

“They only have so many opportunities to get the fertilizer down low,” he said.

What kind of fertilizer and nutrients go into the mix? That depends on the plant. Usually a blend will include a bit of nutrient charge, some liming agents and micronutrients, all designed to stimulate plant growth and health. There’s also controlled-release fertilizer that can be added to provide nutrients for a particular period — as little as a month or as much as two years.

For plants that might be in a certain-size container for two years before they’re upshifted to a larger one, a slow-release fertilizer with occasional top dressing would be a standard approach.

Wayland said most nurseries have fertilizer regimens that have been developed

over years and via trial and error. It’s usually when something’s not going right with a nursery’s plants that he’ll get a call.

“What we do is troubleshoot when things aren’t growing properly,” he said. “When someone’s having difficulty with a certain plant or size of plant, you have to look at all the different practices, the substrate, the quality of water, the frequency of watering, pest problems, disease problems, to figure out what’s going on.”

Cleanliness can be an issue when it comes to upshifting too. Growers who don’t spend time and effort to keep pots, tools, machinery and other equipment clean during the process are bound to have trouble with weeds or pests.

Peterson shares his simple mantra with growers frequently.

“Start clean, stay clean,” he said. “At each phase, weeds blow in and can impact the mix. More often than not, when there’s weed pressure on a liner or plant, they didn’t do a good job cleaning things up for the next stage.”

It’s automatic

There was a time when Bountiful Farms would tend to its upshifting with nothing but manual labor. Workers would scoop soil mixes off of tables and transplant plants by hand.

“It was very slow,” Nelson said.

But as with many processes at nurseries, mechanization has made its way in and greatly improved efficiency while freeing up workers for other less-mundane tasks.

“Now we have potting systems »

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where the pot is filled, a hole is drilled and you just need one person to place the liner in the new container,” Nelson said. “The container is taken off by a conveyor belt onto a trailer. It’s all done mechanically now with very proficient systems that have taken counts from hundreds to the thousands.”

Bountiful Farms also has computerized soil-mixing machines, which mix up various recipes depending on what’s needed at each stage of shifting.

Aage Wurdinger is an equipment specialist at **Wurdinger Manufacturing** in Silverton. The company makes mechanized potting machines and soil mixing systems that serve everything from small mom-and-pop shops up to multimillion-dollar operations.

Depending on the setup, Wurdinger’s machines can either be installed in a fixed location or made to be mobile so they can be moved around to various parts of a nurs-

ery. Wurdinger said their potting machines, such as the Inline Potting Machine, are easy to use and can be adjusted quickly for different pot sizes. That’s a big help when it comes to shifting up plants.

He said nurseries who are still shifting up manually might want to consider making the jump to automation if their labor team is stretched to the point that they’re not able to keep up with current workloads and more orders are coming in.

“There have been situations where we’ve delivered machines to customers, and what would have taken weeks or months has been reduced by five or 10 times, even a week’s worth of potting in a day,” Wurdinger said.

Just over a year ago, **GK Machine**, an agricultural equipment manufacturer in Donald, Oregon, secured the rights to become the territorial dealership for a Netherlands-based potting machine

and systems manufacturer called Javo Automation. The Javo systems are known for their adjustability, with many models that can seamlessly switch pot sizes within minutes, allowing growers to handle a wide variety of plant types and container sizes.

“Javo potting machines are designed with flexibility and scalability in mind, meeting the diverse needs of nurseries and greenhouse growers across the region,” said GK Machine’s Derrick Bratton. He said some growers might be hesitant to shift to an automated approach, either because of the up-front investment costs or concerns over changing long-established processes. But GK Machines works with growers directly to identify inefficiencies and pain points in their operations, and the Javo systems are easy and safe for employees to learn to use.

And cost-wise, the improved efficiency that comes with automating easily pays for the investment.

“With a starting price of approximately \$18,000 for entry-level potting machines and going up to \$70,000 for large-scale operations, the investment in automation quickly pays for itself,” Bratton said. “Most growers report recouping their costs within two years, thanks to labor savings and increased output.”

No matter what approach growers take with upshifting — whether it’s old-school with manual labor or a potting system with the latest smart technology — the process is one that is crucial for all nurseries to produce the plants that Oregon is renowned for.

“We are all making pancakes, but all of us do it in a different way,” Nelson said. “What matters is the end result: healthy, beautiful plants that represent Oregon. I want all growers to send out the best, most beautiful plants — and we do.” ☺

Jon Bell is an Oregon freelance journalist who writes about everything from Mt. Hood and craft beer to real estate and the great outdoors. His website is JBellInk.com.



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