

Getting Back to the **ROOTS**

by Matt Schlossberg

AMERICAN NURSERYMAN FEBRUARY 1, 2000

A Florida nursery has developed a container system that emphasizes hardy, fibrous roots.

Everyone has heard the story about the blind men who each touched a different part of an elephant. All were wrong guessing the creature's identity because the blind men did not work together to solve the problem. The same can be said of the tools used to develop healthy root systems in containerized ornamental trees. Used alone, containers, growbags and chemicals work with some success. However, many nurseries and wholesalers place one-year guarantees on their stock, and living with "some" success is too risky to their bottom lines. Cherry Lake Tree Farm Inc., in Groveland, FL, wanted to develop a better system for growing quality containerized ornamental trees with healthy, fibrous roots systems. What makes Cherry Lake's system innovative aren't the tools themselves, but rather, how the tools are used.

Cherry Lake is an 800-acre nursery that produces 60 cultivars from 17 genera of ornamentals trees. About 15 years ago, says Cherry Lake president and CEO Michael Sallin, the nursery was re-evaluating the way it produced its plants. "We liked the idea of using containers," he says. "But we were concerned about the quality of the roots." When roots reach the container walls, they grow along them, hindering the growth of a fibrous root system. This spiraling can strangle the tree as the roots get bigger, limiting nutrient absorption and increasing the potential for an unhealthy crown, malformed or stunted growth and a

greater chance of blowing over.

Cherry Lake's Total Quality Liners division, which manages the nursery's propagation, took the problem to task and created a new system for growing trees that focused on developing a fibrous, lateral root system. Using technologies available in the mid-1980's, the company's nursery professionals developed a container system that produced trees from start to finish; the system was patented and named the Root-Enhancement System. (For more information on root-control containers, see "Containing Root Problems" in the June 15, 1998, issue. -Ed.) Not a company to rest on its laurels, it has continuously fine-tuned the program through the years.

From Start to Finish. The system comprises 10 main components that the nursery uses to

manipulate root growth from the time a tree is first planted in a cell tray until the time it is sold. The are: Deep Groove Tube cell-pack trays, Tree Band containers, air-pruning benches, copper hydroxide paint (Spin Out) used on all the containers, 3-gallon container sleeves, 3-gallon grids, 15-gallon container sleeves, Lacebark growbags, Root Control growbags and a final Spin Out-treated container. The program begins in the greenhouse, as soon as cuttings are placed in cell trays. 'You really have to start root control early,' says David Ressler, Cherry Lake's director of production inventory and Total Quality Liners. "That's when root spiraling is difficult to detect - at this early stage. The spiraling will be very close to trunk of the tree. In addition, it is also very important to create a large initial root flush when rooting ornamental trees."



This liner's root system (above) was manipulated by the Root-Enhancement System. This tree (right) was grown in a standard container and has almost no lateral root system.



In the first stage of the Root-Enhancement System, liners are raised in Deep Groove Tube cell-pack trays, available in 38 or 51 cells, by Growing Systems Inc., Milwaukee. The Deep Groove Tube cells are cone-shaped and lined with four vertical ridges that guide a plant's roots to a large hole at the bottom. When the roots reach the holes, the air inhibits their growth by desiccating them. This process is known as air pruning. To enhance air circulation, the tray are placed on raised tables in the greenhouse. In the case of larger, such as those taken from magnolia, the nursery uses larger, separate-cell containers, called Tree Bands, manufactured by Anderson Die and Manufacturing, Portland, OR.

Before planting, these cells, as well as the Deep Groove Tube cell-pack trays, are sprayed with Spin Out, a copper hydroxide paint manufactured by Griffin LLC, Valdosta, GA. The copper element inhibits spiraling roots. As the roots reach the container walls, Spin Out stops the roots tips from growing and encourages the growth of secondary root tips, creating lateral branching and a fibrous root system.

When the liners are mature enough to be potted up, they are inspected and taken through a culling process, says Sallin. Here, liners with root systems that are one-sided, J- shaped or that appear weaker than the general crop are eliminated. Ressler says between 5 percent and 10 percent of liners grown from wood cuttings are culled, about 6 percent are culled from liners originating from seed, and up to 40 percent are culled from cuttings with naturally difficult and

aggressive root systems, such as oak.

Those plants that make it past inspection are potted up into 1- and 3-gallon containers (models 015 and 030, respectively) manufactured by The Lerio Corp. in Kissimmee, FL. Container sleeves, used to girdle the roots, are used in place of Spin Out. Air pruning is also incorporated at this stage to improve the root system. To achieve this, raised grids suspend the liners about 1 inch above the bottoms of the containers. To increase airflow to the root system, workers drill extra holes into the bottom edges of the containers.

These containers are lined with a reusable geotextile pruning fabric developed by Cherry Lake and manufactured by Root Control Inc., Oklahoma City. The fabric serves two purposes: It lowers root zone temperatures and prunes roots. As the roots tips become entangled in the pruning fabric, which is woven from polyester and knitted together, they become inhibited and begin to branch laterally. Lower root zone temperatures and fibrous roots add up to healthy trees.

At this point in Cherry Lake production the young trees are staked and pruned to establish a central leader and uniform branching. When the trees outgrow this stage, one of two things is done: They are placed into pot-in-pot containers manufactured by The Lerio Corp., or transplanted into growbags. Trees are potted up in The Lerio Corp.'s 15- or 30- gallon containers.

These containers are then placed in in-ground 15- or 30-gallon socket pots. A raised center drain hole suspends the potted up container about three inches above the bottom of the socket pot. Water is trapped in this space, creating a moat whose water prunes the roots. Ressler says this produces healthy root systems on all sides of the container because of the cool, uniform soil temperatures.

Trees that are not potted up are placed into growbags and planted into native soil. Cherry Lake uses two types of growbags: the Root Control growbag, manufactured by Root Control, used on everything except oaks; and the Lacebark Knit Fabric Container, manufactured by Lacebark Inc., Stillwater, OK, which, according to Ressler, does an excellent job with oaks' aggressive root systems. These growbags work by girdling the roots, which encourage the growth of smaller, fibrous roots.

Once trees meet the required height, caliper and spread specifications, they are harvested, the containers or growbags are completely removed, and the trees are planted into the final target container size. These containers are also treated with Spin Out. Sallin says that, with its system, Cherry Lake is able to preserve 100 percent of each tree's root structure by the time the tree is ready for planting. This, he adds, is not the case for trees produced by more conventional methods (taken from the ground and transplanted elsewhere), that can lose up to 80 percent of their roots. "There is a risk of (transplant) shock when roots are cut," says Sallin. "Our trees won't have that shock. They will continue to grow year round."



Above: This grid is designed to suspend the root ball 1 inch from the bottom of this 3-gallon container to facilitate air pruning.

Below: Trees grown in standard, untreated containers run the risk of developing a spiraling root system.



The Right Stuff. Cherry Lake's customers swear by the nursery's results with root systems. John Barbour, owner of Bold Spring Nursery Inc., Monroe, GA, has been a Cherry Lake customer for more than six years. Barbour's wholesale nursery specializes in 2-inch to 7-inch caliper B&B trees and sells more than 200 varieties, including oak, maple, crape myrtle and holly. He purchases liners in the 1- and 3-gallon stages from Cherry Lake as starter kits.

Barbour first crossed paths with Cherry Lake when he licensed the company to sell two cultivars he had developed and patented. He says he was very impressed with the nursery's system of growing containerized trees. "The quality standard has made (my trees) a natural choice (for purchase)," he says.

"A spiral root system is one that will haunt you forever," Barbour adds. "You'll have problems with growth rates, stability and health. I've become familiar with the kind of research being done at Cherry Lake. I have to say that I'm a believer. In container-grown trees, there are a lot of ways to screw up the root system. Cherry Lake had taken great pains to develop a healthy root system."

Dareel Turner, CEO of Turner Tree and Landscape, Bradenton, FL, has been a Cherry Lake customer for more than 15 years. Cherry Lake also supplies most of the liners he sells at his 50-acre nursery operation. "I believe in buying for quality control, and Cherry Lake is second to none," says Turner. "I am very impressed with their techniques. They are doing stuff no one else is doing."

Turner is one of Cherry Lake's biggest customers. His business specializes in landscape work for theme parks, planned communities, golf courses and shopping malls. With such large accounts on his plate, including a 20-year, 20,000 acre planned community, he needs low-maintenance trees that establish quickly. Turner says Cherry Lake's Root-Enhancement System gives him just that - along with peace of mind that quality products help him retain his customers. Furthermore, Turner says, the trees he has purchased from Cherry Lake have experienced an accelerated growth rate after they were transplanted, especially in the first year.

"I buy from Cherry Lake based on the way they grow (their trees)," he says. "If you have a multimillion dollar contract guaranteed for one year, you wouldn't do it with something of lower quality."



The holes at the bottom of the Deep Groove Tube cell-pack tray allow air to reach the roots, thereby inhibiting their growth and fostering lateral rooting.

Sallin says Cherry Lake continues to work closely with its customers long after the trees have been sold to wholesalers, answering questions, addressing concerns and dispensing advice. "I've had very few problems with their trees, and when I did, they had someone down here within

48 hours. Service after the sale is very important,"

says Turner. Sallin says the response to his nursery's Total Quality Liners has been tremendous, and future plans include an expansion of the nursery's Total Quality Liner division. Cherry Lake also plans to share its Root-Enhancement System with other nurseries through its Total Quality Liners division.

The revolution in woody ornamental production at Cherry Lake was sparked by a drive to create a high-quality product in mass. Certainly, Cherry Lake's innovative approach to root control through containers has the potential to change the way trees are grown.

*Matt Schlossberg is an assistant editor of **American Nurseryman***