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THE THREAT: BRAZIL

Chapter 3: Model for survival



In Rio Claro, Brazil, uniformed workers care for trees inside a mesh enclosure at Citrograf, one of the world's most secure citrus nurseries.

By [Tom Bayles](#)
Staff writer

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RIO CLARO, BRAZIL - If you want to know why Brazil has surpassed Florida as the world's No. 1 orange producer, one answer can be found in a 50-acre fortress ringed by a 10-foot-high chain-link fence topped with barbed wire and defended by a thick, steel gate. The operation is run with prison-like efficiency. Whistles blow when it is time to go to lunch and sound again when it is time to go back to work. Nobody is allowed to deviate from the litany of strict rules. The only thing missing is guard towers.

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Few outsiders are ever allowed inside Brazil's Citrograf, one of the largest and most secure citrus tree nurseries in the world.

The enemies to be kept out are canker and greening, two deadly tree ailments that have plagued Brazil for decades and decimated Florida's citrus nurseries.

The 650,000 young trees growing here are all indoors, tended by the same workers every day to avoid cross-contamination should disease enter the 10 acres of greenhouses.

The workers strip to their underwear every day to don green uniforms and white boots washed three times a week. Hands are cleansed at every entrance with hospital-grade disinfectant. Boots are coated in canker-killing copper by stepping into a flat tin filled with light green powder.

The fear of disease is so great that workers are even prohibited from planting citrus at home. Company inspectors perform random checks, twice a year, just to be sure.

"Our idea is to do the maximum possible to prevent disease, no matter how much it'll cost," said Christiano Cesar Dibbern Graf, the nursery's owner and a man considered one of the deans of Brazil's cutting-edge nursery industry.

For Florida's suffering growers, this is their new reality.

There are 500 or so indoor citrus nurseries in Brazil producing about 50 million young trees in any given year.

Since 2003, Brazilian government rules have required that the young plants be grown inside to avoid contact with canker, greening and four other citrus diseases that U.S. growers have yet to see but already are worrying about.

Florida growers have been contending with canker since 1996. The U.S. Department of Agriculture spent hundreds of millions of dollars trying to eradicate the disease, largely by cutting down enormous tracts of trees. The effort was abandoned two years ago and the government admitted that canker is now endemic.

Graf, a short, inquisitive, middle-aged man, is well-respected both in and outside of Brazil.

He traveled around the world to citrus-growing regions as far as China gathering ideas for his 7-year-old, \$2 million stronghold -- 40 miles from the nearest orange grove.

"Everyone at the time thought we were crazy coming out here because it is not a traditional orange-producing region," Graf says through a translator. "But we believe the tendency will be toward more secure farms."

Nursery owners would be hard-pressed to get any more secure.

Once buzzed inside the gate, visitors are screened inside a marble-floored guardhouse. Lining the walls are computers that monitor conditions inside the greenhouses. A painting of oversized oranges hangs to Graf's right. The blinds are reminiscent of the bars on a prison cell.

Nothing comes in from the outside. No cameras. No notepads. No pencils. Nothing.

Not even clothing. Visitors find themselves getting cozy, standing around in nothing but their underwear.

Like Graf's workers, they must strip down for protective gear. Those who need to take notes get Graf-approved pencils and paper; photographers, a Graf-approved digital camera.

The compound is covered in gray gravel with patches of grass around each stark white greenhouse. Built into a hillside, each structure is slightly lower than the one to its north.

Tools taken inside are dipped into an ammonia solution that includes a fungicide, bactericide and disinfectant.

The solution is sprayed on trucks coming to pick up young trees, even though the vehicles never fully enter the compound. The trucks are loaded at the edge of the property late in the workday. Those doing the loading are sent home for the day rather than risk them bringing any canker or greening back in.

Washed up with clean clothes on, they are allowed in the next morning for a new workday.

Water is pumped from a well 900 feet deep to make sure that it is pure and clean. It is still put through reverse-osmosis to remove salts and contaminants, just in case.

No visitors are allowed inside the greenhouse containing the budwood, or the heart of a new tree.

The same workers care for the budwood every day, and the people doing so rarely change.

The level of care cannot be overstated: The potted young trees are even watered at their bases. Canker likes to set into wet leaves.

Even the nursery's site was chosen carefully, on poor soil so no citrus farmer would think to build a new grove nearby.

While orange pickers in Brazil make about \$3 a day, Graf has about 60 employees taking home an average of \$200 a month working 44 hours per week.

"We're taking it very seriously," Graf says in a mastery of understatement.

Graf, who has written numerous scientific papers on his work, thinks that Florida and U.S. agricultural officials erred when they stopped destroying canker-infected groves after the hurricanes of 2004-05 spread the wind-borne disease beyond control.

"I'm very concerned with Florida trying to live with canker. It's not a good idea," Graf said. "Living with the problem is not going to work. They need to eradicate it. They need to resume what they were doing before."

In Brazil if a canker-infected tree is found, all the trees within a 30-meter circle -- about 1,000 trees -- are destroyed. If there are multiple trees in the same area found to be infected, the entire block of trees is burned.

Trees afflicted with canker produce less fruit and require more care and expensive chemicals to remain viable.

Jan. 1, 2007, was a watershed moment for Florida's citrus nurseries. Beginning that day, growers statewide had to produce replacement trees in a manner

similar to Graf's in Brazil.

Clewiston's Southern Gardens Citrus was one of the first to step up, even before the change was mandated. In the summer of 2006, the company secured land near Trenton in Gilchrist County -- 25 miles northwest of Gainesville and, like Graf's operation, far from any commercial grove.

"When we started coming up with the issues of canker and greening, all of my input and belief was that we needed to do exactly what they did in Brazil," said Jim Snively, Southern Garden's vice president of grove operations. "Brazil was definitely the inspiration."

Set deep in the woods, Southern Gardens' multimillion-dollar nursery has nearly an acre of trees growing in five greenhouses. From the moment a seed is planted to the time the plant leaves 14 months later as a 24-inch young tree, it is never outside the cover of the screen shelter. All the work -- moving it into a four-inch pot, "budding" it, fertilizing it -- are done indoors, just like in Brazil.

In another section of the complex -- fully screened as well -- Southern Gardens grows the "budwood" that, when transplanted into the base of a young tree, determines what variety the tree will eventually grow into.

Southern Gardens grows 275,000 trees at a time, most destined for its three company-owned groves in Hendry County.

The little trees are in high demand. The company's groves have room for 4 million trees, but have only 2.2 million because of all the damage from greening and canker.

The Trenton operation is just one of 42 that have been built in response to the new law, operations that produced 3.5 million young citrus trees this year. Growers hope to boost that to 5 million next year. Other players are building even bigger versions of these fortress nurseries.

Snively acknowledges the oddity of an outdoorsy breed of people doing so much under cover, but he knows that in many ways the future of the industry depends on their success.

"It is a little bit different staying indoors all the time."

This story appeared in print on page A1

- -
- -
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 -
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- [back](#)
- (17 of 19)
- [next](#)



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