Maury Boyd, a citrus producer with family groves near Immokalee, isn’t one to shy away from controversy.

For the past five years, he’s been successfully applying a cocktail of nutrients and SARs (systemic acquired resistance materials) to his greening-ravaged trees to rejuvenate them.

At first, Boyd [no relation to the author] says he and his manager, Tim Willis, were skeptical.

“I think of a plant like a human, and plants need all of these nutrients. If you leave out one, it’s going to interfere with its metabolism and defense systems against diseases and insects.

“We humans are similar—eat right, and we’re likely to increase our health and longevity.

“We’re applying all of the known ingredients that a plant needs but also the unknown ingredients in an attempt to miss nothing.”

Boyd has bucked conventional wisdom and many university experts who call for removing trees infected with huanglongbing, or HLB, as soon as symptoms are visible.

They advocate keeping infected trees to less than 2 percent, thereby reducing inoculum within the grove.

The Maury Boyd System, as the regime has been nicknamed, caught the attention of scientists at the University of Florida Southwest Research and Education Center, including citrus horticulturist Bob Rouse.

For the past three years, he has been conducting field trials in a grove at the university center near Immokalee to try to determine what parts of the cocktail are crucial for tree rejuvenation.

Adjacent to that trial is a new experiment to rejuvenate existing HLB-infected trees that examines combinations of nutrients with buckhorning trees back to the scaffolding.

The goal is to regrow the canopy in balance with the root system.

Boyd, who has been intimately involved in Rouse’s trials, says he attributes his success to a total nutrient mix. But Boyd admits some components may not be necessary or at least not at the rates he’s currently using.

Boyd says he hopes the research of Rouse and others will define a better prescription for growers.

Finances dictated move

Boyd says he decided to follow a different route than tree removal because of the high incidence of infection in his blocks.

His 400 acres of 17-year-old Valencia and Hamlins had about 40 percent HLB infection in 2008. The level jumped to 90-plus percent a few years later.

His younger 40-acre Valencia block, which was planted in 1999, was 70 percent positive in 2008 and nearly 100 percent in 2010.
Removing all of the positive trees would have put him out of business or caused a severe financial hardship with tree removal and replanting, he says.

**A nutrient life line**

Boyd developed the nutrient recipe after talking to Carl Fabry of Plant Foods Systems and California scientists. He also studied research conducted in other places.

Boyd’s program involves applying a mix of calcium nitrate, DAP (diammonium phosphate), ammonium nitrate, SPM (sulfate of potash magnesium), MOP (murate of potash), magnesium, iron (when needed) and copper (if needed) by ground. Recently, he’s begun adding TurfPro, a mined humic compound from Georgia. In addition, Boyd applies boron in a tankmix with herbicide.

Three times a year—once after each flush—he uses a speed sprayer to apply a nutrient blend to the foliage. He times it so the application is made before the leaf cuticle hardens beginning at feather flush.

Boyd and his manager, Willis, say they believe the trees had been depleted of nutrients by several hurricanes and a drought during the early 2000s. When greening came in, the trees didn’t have the energy to fight off the bacterial disease.

Each treatment costs about $200 per acre, for a total of about $600 per year.

On the other hand, Boyd doesn’t have the scouting or tree-removal expenses that many growers have, says Fritz Roka, a University of Florida economist based in Immokalee. And Boyd doesn’t have to wait for resets to come back into production.

“You're spending more per acre, but you have the production, and that’s where the trade-off is,” Roka says.

Boyd tries to keep soil pH low to reduce problems associated with blight. pH issues also prompted him to avoid using copper. Until recently, he also avoided rust mite flare-ups caused by copper.

Boyd is part of an area-wide spray program to control Asian citrus psyllid. Every four to five weeks, a low-volume application of insecticide is made by plane.

Although the insecticides keep psyllid populations low, Boyd says they’ve disrupted the biological control he’s tried to nurture. That, in turn, has caused mite populations to climb.

He also is still fighting decline caused by blight on trees budded on Carrizo rootstock.

HLB symptoms are visible on some of the tree leaves in his grove, and an occasional piece of fruit also will exhibit the reduced size and discoloration associated with the bacterial disease.

Nevertheless, Boyd says he’s pleased with the overall grove health, and fruit yields have met or exceeded the industry average since he started using the nutrient cocktail. Fruit quality also has improved.

“The response has been slow—you have to be patient,” he says. “It took a few years to collapse. It takes a few years to get it back.”

**Putting the system to the test**

Boyd’s success caught the attention of Rouse, who began a field trial in 2008 to try to determine the essential inputs.

Rouse separated the components of Boyd’s system into micronutrients, K-Phite, SARs (systemic acquired resistance) and Oxidate.

He has five replicates with all possible combinations of the groups as well as an untreated check.
He's also following Boyd's schedule of applying the treatments shortly after each flush.

Initially, Rouse says, he wanted to try to duplicate the success Boyd had in rejuvenating HLB-infected trees. He figures he’s succeeded because he has “brought these trees back from basically dead.”

In fact, the trees were so bad off that even Boyd, a self-avowed opponent of tree removal, says he would have pushed them.

From a more long-term perspective, Rouse says he wants to determine which components “are the ones that are important and result in positive results, because this is expensive for a grower to use all of this stuff.”

In just two seasons, Rouse says he’s seen positive results from some of the combinations.

The addition of phosphites seems to enhance the beneficial effects of the micronutrients, he says.

“I haven’t figured out the contributions of SARs yet,” Rouse says.

**Buckhorning’s effects on greening**

Prompted by the tree response in the first trial, Rouse began a new trial in an adjacent block early this spring that involves buckhorning trees back to the scaffolding. Half of the trees are buckhorned and half remain unpruned.

Three nutrient treatments are applied to both pruned and unpruned trees. A fourth group of pruned and unpruned trees goes untreated and serves as a check.

Rouse says he wants to compare how quickly the different treatments bring the trees back into fruit production.

“The idea is to rejuvenate the trees and balance the root system with the tops,” Rouse says. “If we can get them back into production in one or two years, that’s better than pulling trees and putting in resets that take four years. And then you have two or three more years before you break even.”

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