Food-safety recommendations for fresh market citrus

It's time to prepare for implementation of the Produce Safety Rule.

By Travis Chapin, Michelle Danyluk and Keith Schneider

In preparation for implementing the Food Safety Modernization Act's Produce Safety Rule (PSR), growers, harvesters and packers of fresh citrus are required to attend standardized food-safety training, such as the Produce Safety Alliance (PSA) grower training course, which outlines the minimum requirements of the PSR. The PSR requirements are almost exclusively devoted to preventing microbial contamination and are specifically related to:

- Worker training, health and hygiene
- Biological soil amendments of animal origin
- Wildlife and domesticated animals
- Agricultural water quality
- Sanitation
- Recordkeeping

Due to the diversity of the tens of thousands of farms that will need to implement PSR requirements, the rule provides significant flexibility in how farmers may approach the regulatory requirements to minimize food-safety risks in their operations.

The Food and Drug Administration (FDA) and the state departments of agriculture tasked with implementing the PSR continue to reiterate that their initial approach will be educational. State and federal regulators will work with growers, harvesters and packers to understand and meet the regulatory requirements as they begin scheduling and conducting PSR inspections starting in the spring of 2019.

The FDA released draft guidance in October 2018 on best practices to reduce risk and meet PSR requirements. In addition to implementing practices to meet the minimum regulatory requirements outlined in the PSA grower training course, looking at a few additional considerations that go beyond the minimum requirements in some cases, and paying particular attention to other key requirements, may help prepare growers for a more streamlined and efficient inspection. These include:

VISITOR POLICY

A written visitor policy is a convenient way to make visitors, including inspectors, aware of food-safety policies. Alert visitors to your specific policies before a planned visit to your operation.

For example, you may have a designated area for visitors to park and check in or have bio-security policies, like those in place for citrus canker. The visitor policy should also make visitors aware of the farm's basic food-safety policies, which should include prohibiting visitors who have any signs or symptoms of foodborne illness, and preventing visitors from eating, chewing gum or using tobacco in produce or packing areas.

Visitors need access to restrooms and handwashing facilities and should be made aware of the location of those facilities. Your visitor policy should not prohibit regulatory personnel from taking pictures or collecting samples.

FARM DIAGRAM

Although a farm diagram is not one of the required records under the PSR, it can be a useful tool to visualize potential sources and routes of contamination in relation to the location, layout and flow of your operation. During the initial inspection, an inspector will likely need to create a map or verify a map of the operation's layout, including any structures, water sources and water distribution systems in order to assess the potential for different risks.

Although a diagram of a citrus grove block will be fairly basic in many cases, documenting the location and

Evolution of Citrus Nutrition Programs:

New Tool in Ongoing Struggle Against HLB

Content provided by SQM North America

As Florida citrus growers continue to deal with the devastating effects of Huanlongbing (HLB), new research points to using potassium nitrate in crop nutrition management plans as one of the keys to maintaining healthy trees.

"Citrus greening has completely changed the market," says SQM Agronomist JW Lemons. "Growers with HLB infected groves are trying new agronomic practices to maintain steady yields."

Lemons' research informs the need to move away from the industry standard high chloride mixes, and incorporate more potassium nitrate into nutritional programs.

CRITICAL NUTRIENTS

"Potassium is a primary nutrient, critical for plant health, "Lemons explains. "When it is sufficient there is an increase in the synthesis of the high-molecular-weight compounds such as proteins, starches, and cellulose, which conversely depresses the compounds that sustain development of infections and insect infestations."

Nitrate is no less important. Lemons says it is the form of nitrogen that most plants utilize, and is critical in helping HLB infected trees.

"When infected, the tree's ability to take up water and nutrients is restricted. This eventually causes the tree to produce poor quality fruit, if any at all," he says. "Nitrate fed plants utilize water more efficiently due to a stronger root system. This limits the impact HLB has on nutrient and water uptake."

Lemons isn't the only one who advocates the idea. Justin Cain, a citrus grower in Florida, says he started experimenting with high nitrate mixes on his family grove back in the 1990s.

"That grove never looked as good, or produced as much, as it did when I used potassium nitrate," Cain says. "The problem in the 1990s was cost. The return on investment in using potassium nitrate wasn't there yet."

RE-THINKING CROP NUTRITION

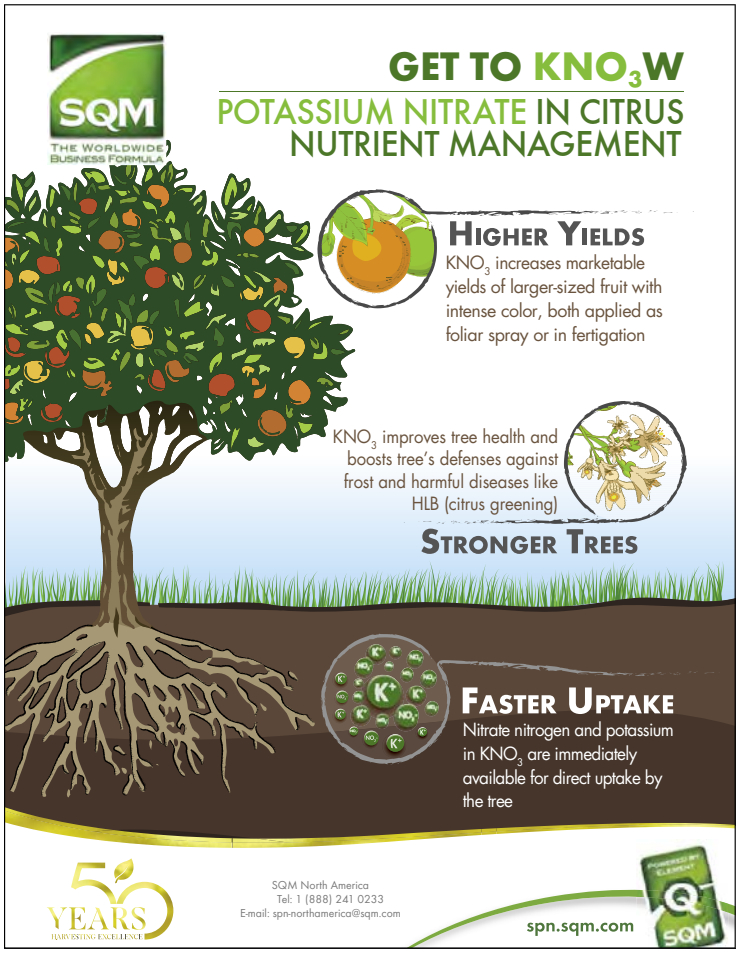
Now, he says, citrus greening is forcing all Florida growers to re-evaluate their nutritional practices.

"Citrus value is about four times what it was in the mid-'90s. We have to totally shift our thinking and start employing technology that growers of higher-end crops like strawberries had been using for decades to make a better crop and capitalize on production value."

Cain revisited using high nitrate mixes about five years ago, in the wake of HLB. He says the primary benefit came in reducing soil salinity around the root system, which ultimately reduced the stress on the tree.

"Less stress on the plant helps it overcome disease," he explains. "Without extra stress on our HLB-infected trees, we saw greener leaves, better leaf expansion, larger fruit, better juice quality, and more fruit."

Other growers in the state took notice, and Cain says roughly 100,000 acres of citrus groves are utilizing similar programs.



Even after Florida lost a significant portion of its citrus crop to hurricanes, growers went right back to using the program.

"I was worried about how many growers would continue on the program," Cain says. "Then we saw the preliminary estimate of our 2018 crop, and it was significantly up from where we were before Hurricane Irma in 2017. Growers are clearly seeing the benefit of high nitrate mixes and recognizing that their groves can thrive despite HLB."

PROACTIVE MEASURES

Lemons hopes citrus growers in other states take note, and take similar approaches to proactively address HLB.

"Just because growers in Texas and California haven't seen greening yet, doesn't mean it isn't coming," he warns. "It is."

The Texas Department of Agriculture first confirmed HLB in Texas nearly seven years ago. According to the USDA the entire state is currently under quarantine for Asian Citrus Psyllid, the carrier for HLB. Only a portion of southern Texas is currently under quarantine for the disease itself.

In California, less than a dozen counties in the south are under quarantine for Asian Citrus Psyllid, and there is no active quarantine for HLB.

"This little bug carries a devastating punch," Lemons says. "We know where it is headed, and it we know it is bringing HLB with it."

Lemons cautions growers that a high nitrate crop nutrition plan is in no way a cure for HLB.

"There is no cure for HLB," he explains. "Changing crop nutrition management practices will not get rid of it. But, it can prolong production of the infected trees by reducing the impacts of the disease."

layout of your operation is a prudent step to show your commitment to food safety. The diagram could also include housing, septic systems, animal grazing or housing, chemical storage, locations of manure storage or composting, trash collection, adjacent land use and slope of land, including runoff potential.

An evaluation of the farm layout may also consider operational flow, including traffic patterns for waste/cull removal and employee or equipment flow between different operations (e.g., between preharvest and postharvest operations). For packinghouses, a more detailed flow diagram should be made to show operational flow within the packinghouse in addition to a diagram showing the location and layout of the property.

ORGANIZATIONAL STRUCTURE

An inspector will need to know some details about the corporate or organizational structure of the operation in order to define the scope of the inspection. For example, many farms may appear to be a single entity, but family members, contractors and cooperatives may separately own or manage certain operations. These operations may require separate inspections if all parties cannot be present or inspected at one time.

Designate who is in charge of various operations. For example, you may indicate that you contract with grove caretakers for hedging, spraying, maintaining irrigation, etc. You may also indicate you contract with harvest companies to harvest fruit and transport fruit to a packinghouse, or that you sell fruit on the tree to buyers who make their own arrangements for harvesting.

PERSONNEL RESPONSIBILITY

Operations with multiple employees will want to identify the person or persons responsible for recognizing, detecting and correcting food-safety issues, and for developing any food-safety plans and procedures. Tasks that should have designated responsibility include monitoring groves for animal intrusion prior to harvest, conducting an annual inspection of the water distribution system, inspecting harvest containers for contamination prior to use and maintaining handwashing and toilet facilities.

WORKER TRAINING, HEALTH AND HYGIENE

All employees should be familiar with procedures to report illnesses and injuries. Records of worker training (for food safety) will be reviewed and should include the topics covered. Training materials may be reviewed or updated if employees don't seem to be following general food-safety practices. Employee practices will be observed when employees are harvesting or packing, entering and exiting the grove or packinghouse, and using restroom/handwashing facilities.

Supervisors and other employees tasked with food-safety responsibilities should receive additional training and be able to describe basic food-safety practices and policies specific to your operation. For example, a supervisor of a harvest crew should receive additional training on how to carry out corrective actions in the event that contamination is identified in a harvest bin. In addition, a supervisor should know how to evaluate the potential for fruit contamination from splashes or leaks due to placement, servicing or other movement of portable toilet facilities. Some operations may choose to send multiple supervisors to a PSA grower training as a way to demonstrate that supervisors have received additional training.

BIOLOGICAL SOIL AMENDMENTS OF ANIMAL ORIGIN

"Biological soil amendments of animal origin" is the phrase coined by FDA to describe soil amendments made from any type of animal by-product, such as manure, fish emulsions, bone meal, feather meal, blood meal or an agricultural tea made with any of these components. The use of these types of soil amendments is not prohibited.

Users should consider whether the soil amendments are defined as treated or untreated under the PSR and evaluate the application method of the amendments for the potential to contact the harvestable portion of the crop at any point during or after application. Although not required under the PSR, it may be helpful to document the date and method of soil amendment application. Class A or Class AA biosolids use is not restricted under the PSR.

WILDLIFE AND DOMESTICATED ANIMALS

Ensure employees are trained and aware of policies related to harvest and animal intrusion. Contamination should be identified and removed. "No

Get trained

THE NATIONAL ASSOCIATION of State Departments of Agriculture's On-Farm Readiness Review program is a resource that provides one-on-one voluntary technical assistance to farms to evaluate their level of readiness to meet the new regulatory food-safety requirements. The Florida Department of Agriculture and Consumer Services has secured funding through the Food and Drug Administration (FDA) and has partnered with the University of Florida Institute of Food and Agricultural Sciences to offer complimentary On-Farm Readiness Reviews across the state.

Visit freshfromflorida.com/FSMA to sign up for an On-Farm Readiness Review in Florida.

See crec.ifas.ufl.edu/extension/events for more information on upcoming Produce Safety Alliance grower trainings.

Find additional details about the Produce Safety Rule at fda.gov/fsma, including information about qualified exemptions and exemptions for fruit receiving commercial processing, along with the recently released FDA Produce Safety Rule draft guidance.

harvest buffer zones" may be used if an extraordinary event of animal intrusion occurs and a significant number of fruit on a tree are visibly contaminated with animal feces.

AGRICULTURAL WATER

Although FDA has proposed to extend the compliance dates for agricultural water requirements, evaluating the potential for agricultural water to become contaminated will still be addressed during an inspection.

If using ground water, consider the construction and condition of your wells, such as being properly capped, elevated and sealed. Also consider the potential for backflow into the well and cross connections. Pay special attention to hoses or faucets connected to the well with no backflow prevention in place. If you're not familiar with your well, have your service technician walk you through the components, taking special note of the location and type of backflow prevention devices. You want to confidently be able to describe your well and how it works.

If using surface water, examine the surrounding areas and/or upstream for potential sources of runoff contamination. Pay attention to the source of water used for crop sprays and premixed liquid fertilizers.

CLEANING, SANITATION AND POSTHARVEST PRACTICES

For harvest crews and packinghouses, it is important to evaluate your ability to document "clean breaks," or the potential for cross-contamination between different lots of fruit. Although establishing a traceability program is not required under the PSR, evaluate your ability to track your product to the specific buyer. When evaluating a packing line or cold storage, pay special attention to the potential for dripping water or condensate onto fruit or onto fruit contact surfaces.

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Evaluating CRDF's Committees

By Rick Dantzler

In last month's column, I shared with you that the Citrus Research and Development Foundation (CRDF) was in the process of updating its business plan. It had not been done since 2009, and just like the industry has changed in the last 10 years, so, too, must CRDF, and we are.

This month, our attention has turned to an update of our bylaws, including committee reorganization.

CRDF's primary purpose is to analyze the research needs of the citrus industry and make the very best decisions on which research proposals to fund, so our committees must be organized in a way that best facilitates that purpose. Currently, we have three committees:

1. The **Industry Research Coordinating Committee** meets biannually to determine gaps for which research is needed.
2. The **Research Management Committee** (RMC) makes recommendations to the board about research proposals that are not likely to soon result in a commercial product. Basic research regarding HLB is a good example of the kind of research proposal this committee considers.
3. The **Commercial Product Delivery Committee** considers research proposals that answer questions needed to soon bring a commercial product to the marketplace.

While this committee structure has resulted in worthy research proposals being funded, it is prudent for any organization, including CRDF, to occasionally examine its organizational structure to determine if it is optimally organized to accomplish its purpose as well and efficiently as possible. For that reason, CRDF is considering such options as creating a subcommittee of the RMC to focus on nothing but the development of HLB-resistant and HLB-tolerant trees.

Another thought is to organize committees around research topics, which would result in smaller committees and the potential for committee members to develop expertise in subject areas. Perhaps some committees are no longer even needed, and in their place could be select committees that would be convened on a time-limited basis for the purpose of addressing a singular task.

Whether the board determines that change is needed remains to be seen, and there is no reason to reorganize simply for the sake of reorganization. Still, there is no harm in reviewing our committee structure to make sure we are organized in a way that gives CRDF the best chance of funding the very best of the proposals it receives. If you have thoughts in this regard, please don't be shy about sharing them with me at support@citrus rdf.org.

Rick Dantzler is chief operating officer of the Citrus Research and Development Foundation.

CRDF Grower Dollars at work for you

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