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Florida orange crop getting wiped out by tree-killing disease

Florida oranges are threatened with destruction if scientists and the government can't find a way to stop an Asian bug from spreading a tree-killing disease.

The harvest for the state's signature fruit could plunge to 27 million boxes by 2026, according to an Oct. 21 report by the Florida Department of Citrus. That's an 82 percent drop from 149.8 million boxes in 2005, the year the bacterium that causes Huanglongbing, better known as citrus greening, was found in southern Florida.

The disease is spread by the Asian citrus psyllid, a tiny winged insect, and there's currently no known cure. Greening already caused industry-wide losses of $7.8 billion and more than 7,500 jobs between 2006 to 2014, the University of Florida estimates.

The outlook is "precarious" for Florida's citrus industry, which "risks losing relevance and economic impact" in the long run if crop yields continue to fall and trees keep dying, the citrus department said in its Oct. 21 report. The current harvest will shrink to 74 million boxes for the season that began Oct. 1, down 24 percent from a year ago and the lowest since 1964, the U.S. Department of Agriculture said Nov. 9. The forecast signals the fourth consecutive seasonal decline, the longest slump since at least 1913, state data show. A box weighs 90 pounds.

The prospects pushed prices for frozen concentrated orange juice to $1.4785 a pound Nov. 23 on ICE Futures U.S. in New York, up 43 percent from this year's low of $1.0345 on Sept. 29. On Nov. 13, prices touched $1.607, the highest since June 2014. This is raising costs for Coca Cola, maker of Minute Maid brands, and PepsiCo, which sells Tropicana and Gatorade.

Demand for America's favorite juice has fallen because of consumer perceptions about its high calorie content and the rise of alternatives such as coconut water. Even so, Florida's industry, which includes grapefruit and specialty citrus, still employs about 62,000 people and has an annual economic impact of $10.7 billion on the state, according to Florida Citrus Mutual, the largest grower organization.

Les Dunson, a 53-year-old farmer in Winter Haven, Florida, calls psyllids "the little monster" and says the insect has been more deadly than hurricanes. He's the president of Dunson Harvesting Inc., which his grandfather started in the 1950s, and currently has about 2,000 acres. His output has fallen to about 600,000 boxes from 1 million a decade ago, even though he's increased his annual pesticide use and feeds his groves with more nutrients to help productivity, he said in a telephone interview.

The invasive psyllid was first found in Florida in June 1998 and is now established throughout the state's citrus-growing region. It feeds on the sap of tree leaves and can carry the bacterium that causes greening a mile without stopping. The insects live for about a month, and females can lay as many as 800 eggs in that time. A recent study by the University of Florida showed the bugs fly earlier in their life cycle, more frequently and farther when they are infected.

The bacterium blocks the passage of nutrients through a tree's vascular system, producing leaves that have yellowing veins, yellow-green mottling and sometimes no green coloring at all. The yellowing typically spreads throughout the tree over a year, causing oranges to drop prematurely, contain aborted seeds or have a salty, bitter taste, compromising their use for juice. Root systems of infected groves often are poorly developed, and new root growth may be suppressed. Infected trees get a "death sentence" after their sap is poisoned, even though symptoms might take several years to appear, said Michelle Cilia, assistant professor at Cornell University affiliate Boyce Thompson Institute for Plant Research, who has studied greening for two years.

One short-term approach under trial is thermotherapy: encasing tree canopies in plastic tents and using steam to raise the temperature and kill the bacterium without hurting the plants. Some growers are applying nutrients directly on the leaves to keep trees productive even as they're dying, and some are using pesticides, although too much can burn the fruit and psyllids have developed resistance to certain chemicals. To avoid a "bad neighbor" impact, some farmers have agreed to jointly apply pesticides in Citrus Health Management Areas.

"If someone makes a decision that they are going to control it aggressively, and if their neighbor doesn't, they constantly get new insects coming from abandoned groves or neighboring groves," said Robert G. Shatters Jr., a research molecular biologist for the USDA Horticultural Research Laboratory in Fort Pierce, Florida, described as the "epicenter of the disaster."

Longer-term, genes from other plants could provide resistance to the psyllids or bacterium, but a transgenic plant would have to go through a lengthy registration process, he said. There also are concerns about the cost of genetically engineered products, not to mention a possible public backlash against them.

By some estimates, the industry needs to plant more than 20 million trees in the next 10 years to restore production to pre- greening levels, said Michael W. Sparks, chief executive officer of Florida Citrus Mutual, which has more than 8,200 members.

While the disease is killing crops in other areas -- including Brazil, the world's top orange grower -- it has caused the most damage in Florida, where urban sprawl and hurricane damage have helped shrink citrus groves to 501,396 acres (202,908 hectares), the lowest in 50 years. High salinity in water can weaken the trees, leaving them unable to fight the bacterium, and strong winds from Caribbean storms carry insects farther into healthy groves. There also are more small farms in Florida, and many have been abandoned or poorly maintained, allowing the insect to proliferate, according to Shatters.

"In Brazil, because they can control at such a large scale, they don't have the 'bad neighbor' effect," Shatters said. "They're able to impose strict rules about removing infected trees, which they were able to apply with more clout, and they all abide by that." Partly because of this, Brazilian growers seem to be more successful than Floridians in battling the psyllids.

"Brazil and U.S. have adopted completely different strategies since the beginning," said Ibiapaba Netto, executive director of industry group CitrusBR in Sao Paulo, the biggest producing state. "They spent everything in finding a 'silver bullet' against the greening, while we focused on controlling it." Some farms have been able to contain the infection, and crops have been restored in some areas once devastated by the disease, "which means producers are getting more efficient in fighting it."

Finding a permanent solution is difficult because the bacterium causing the disease can't be cultured outside citrus groves, Shatters said. Still, "there's hope" for Florida, as scientists pursue all possible options. Short-term fixes, including killing the bacterium with heat, "will provide a window of opportunity for the growers to remain productive while more mid-term and long-term solutions come down the road."

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