Whitefly, tomato growers find truce in new Texas variety

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Dr. Kevin Crosby, Texas AgriLife research vegetable breeder, talks about a new whitefly-resistant variety, T-5, that he recently developed. Credit: Texas AgriLife Research photo by Kathleen Phillips

The whitefly in Texas may be sending up a surrender flag to tomato processors in the state thanks to a Texas AgriLife Research scientist developing a new variety that resists the virus spread by this pesky insect.

A 10-year battle against the insect all but wiped out the tomato industry in Texas, but the new tomato already is encouraging small processors to stay in business, according to Dr. Kevin Crosby, AgriLife Research vegetable breeder.

"We first saw this new virus around 2002 or so," Crosby said. "There were strains of this virus complex always in the Rio Grande Valley, but

they weren't nearly as easily spread by the whitefly as this new strain that originated in the Middle East and then went from Florida to Mexico and then came to Texas.

"It spreads like wildfire. I've seen a 50-acre field just plowed under because they couldn't get a single tomato out of them. There are so many whiteflies down there in that subtropical region, you really can never completely eliminate whiteflies. You can't do it." Dr. Kevin Crosby

The researcher said tomato plants as young as three weeks old can be infected by the whiteflies, causing leaves to curl and turn yellow, ultimately killing the entire plant.

Tomato processing in the Rio Grande Valley pulled the plug rather than fight the prolific fly, industry officials said.

"Whiteflies just devastated the tomato industry here," said Buddy Ault, owner of Rio Valley Canning Co. in Donna. "At one time the Rio Grande Valley was producing about 40,000 acres of tomatoes until the whitefly came along. Acreage plunged. Then, about five years ago we noticed that plants were dying just when the fruit was about to mature. The leaves turned yellow and cut off nutrients to the fruit, causing tomatoes to stay green on the inside."

Growers first blamed the whitefly, then realized a virus carried by whitefly was to blame, Ault said.

"So, we asked Texas AgriLife Research about the possibility of developing an open-pollinated, virus-resistant variety," he said.

Help came from previous research conducted in Texas, aided by national and international vegetable breeding networks, Crosby said.

"Dr. Paul Leeper, who was a scientist at (AgriLife Research in) Weslaco for decades, did a lot of the early work on hot climate, processing tomatoes. As a result, he built a lot of very good varieties for the industry. In fact, his tomatoes at one point were the most popular tomatoes in tropical places because they could tolerate the heat," Crosby noted. "But we found out that they could not tolerate the new viruses that have been brought in by the whitefly."

Crosby called upon colleagues in Florida and Taiwan, who had identified tomato genes that provide resistance to the viral disease, in seeking plants to cross with the Texas varieties. He got a supply to test from Dr. Peter Hansen at the World Vegetable Research and Development Center in Taiwan, as well as from Dr. Jay Scott, a world-famous tomato breeder at the University of Florida.

"We were able to cross those lines with our Weslaco lines and generate material that was adapted to Texas and that had good processing qualities," Crosby said.

For now, the new variety called T-5 is being tested by some producers in the Rio Grande Valley and Crosby said the results are promising.

"Because it combines two distinct virus-resistance genes, resistance has been outstanding," he said.

"The new variety is impressive," said Ault, whose company cans a mixture of diced tomatoes and green peppers for H-E-B's Hill Country Fare label.

"We like the T-5 very much," he said. "It is highly productive, has good flavor, good color and is virus resistant. What we don't like about it is that it is an indeterminate variety, meaning not all the fruit sets and matures on the plant at the same time. As a processor, we prefer one that

sets fruit all at the same time. But considering we had little to work with prior to the T-5, we're optimistic Dr. Crosby's good work will prevail."

Crosby plans to continue the virus-resistance research for the fresh tomato types and to develop varieties suited for growing in the different climate across the state.

"Growers of fresh market tomatoes are interested in our work because there's little to nothing in the vine-ripe class or heirloom-type cultivars, which are well-adapted to the heat and have the virus resistance," Crosby said.

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