Clemson research tackles peach-growing mystery

By JEFFREY COLLINS  Posted: Saturday, March 2, 2013 11:37 a.m.

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Peach farmer Chris Yonce shows off a peach blossom on his farm on Friday, Feb. 22 in Johnston, S.C. Peach blossoms have just started to sprout as peach farmers enter the critical time of the
JOHNSTON, S.C. -- Four generations of growing peaches in South Carolina have taught the Yonce family where to plant trees for the best crop, how to prune for the best yield and what to do to in a late freeze to prevent a devastating frost.

But what the Yonces and thousands of other peach growers still don’t know is this: How does a peach know when the cold winter weather is over and it is time to grow?

A group of Clemson University researchers is trying to find the answer.

“It’s an interesting phenomenon,” Clemson plant biologist Doug Bielenberg said. “These plants count the cold hours and days. If it gets warm for a bit, they stop, and then they pick up counting where they left off.”

The concept has been known for decades in the plant world as chill hours. What Bielenberg is trying to figure out is how a plant has this memory for cold weather and which genes control the process.

If scientists learn out how to manipulate the peach’s chill hours, the research could be groundbreaking. By reducing the hours, plants could be grown in a large number of climates across the earth. For peach farmers, it could mean getting larger, juicer varieties into stores faster, Bielenberg said.

Peaches are ideal for this kind of research because they have a fairly simple genetic structure and are closely related to a number of other fruits, such as berries, apples and plums, Bielenberg said.

Peach farmers are watching the research carefully. Blooms are just starting to come out on the earliest varieties, meaning Larry Yonce will again hang on to the weather forecast through April, when he can be sure freezing temperatures are over until the fall.

“The weather controls our destiny, basically,” said Yonce, who has been growing peaches for four decades. The family business is J.W. Yonce & Sons farm, founded by his grandfather in
1932 in Edgefield County.

Yonce’s 3,000-acre site is the second-largest peach farm in the second-highest peach-producing state in the country, behind California. The area produced cotton for decades before the boll weevil wiped them out. Farmers along the rolling hills of the ridge of South Carolina eventually turned to peaches.

The fruit was perfect for the area. Winter nights are cold enough for the chemical reactions that make peaches sweet, but not cold enough to kill the fruit as it grows. Peaches later need warm to hot weather for the fruit to mature. That’s why the Georgia joins California and South Carolina as the nation’s leading peach-producing states.

Research from Clemson and the University of Georgia has helped up farmers considerably over the years. One of the Yonce farm’s best-sellers is a peach, developed through years of breeding, that doesn’t need as many chill hours so it ripens in May, but has the color, texture and sweetness of peaches that used to not hit the market until July.

But with all the science, there is still plenty of uncertainty in peach farming. Last year’s crop looked promising until a warmer-than-usual March and April left the fruit without enough chilling hours to reach its best taste and appearance. And peach farmers like the Yonces get downright depressed when the April 7 freeze of 2007 is brought up. Temperatures fell into the low 20s on the ridge. The state produced just 9,000 tons of peaches that year, compared with an already fairly sparse crop of 60,000 tons the year before.

In the family’s orchards, Chris Yonce points to blooms already on the tree. What should become a peach is already inside, no larger than an eyelash and about a quarter of the length. In about a month, roughly a third of the blooms will be removed from the tree by hand to maximize yield, a process that will go on for weeks on each of the farm’s roughly 500,000 trees.

Yonce takes his knife and cuts open a bloom. The tiny fleck inside is black. That flower would yield no peach, but Yonce wouldn’t have known until after the pruning.

“Growing peaches is like legalized gambling,” he said.

And that’s something that science will likely never be able to change.