



## Work to Resurrect American Chestnut

It's hardly more than a spindle, a slender 5-foot-tall tree that hasn't yet leafed out for spring.

This unassuming tree, planted last week at Thomas Jefferson's Monticello in Albemarle County, went into the ground carrying the heavy weight of hope.

It's an American chestnut backcross, bred to resemble its all-American forebears, which dominated Eastern forests until a sweeping blight wiped them out in the early to mid-20th century.

This tree is one-sixteenth Chinese chestnut, and scientists think that may confer a genetic resistance to the fungus that has devastated chestnuts in American woods.

### FALLEN GIANTS

In Thomas Jefferson's time, Virginia's forests were thick with chestnut trees, especially in the piedmont and western areas. Their nuts fed animals and people, and their strong wood braced houses and fences.

Chestnuts made up about 25 percent of one forest near Jefferson's home and 60 percent of another, said Peter Hatch, Monticello's director of gardens and grounds. Chestnut timbers were used in Monticello's construction.

But as Jefferson shared native Virginia plants and seeds with his European acquaintances, Americans welcomed exotic foreign species, including imported Asian chestnuts. That's how the devastating *Cryphonectria parasitica* got here in the late 1800s.

By the early 1900s, observers noted that some American chestnuts were developing cankers in their bark. The trees quickly sickened, and within a couple of years they were dead.

Over the next several decades the mighty American chestnut, which had dominated the woodland canopy from Maine southwest through Tennessee and Georgia, all but vanished from the forest.

Though the big old trees are gone now, the species still survives in the wild. From the roots of dead trees sprout suckers, shrubby offspring that for a few years at least are protected from blight by their tight, unscarred bark.

In thick woods, those trees are easily out-competed as oaks, tulip poplars and hickories fill in the canopy and hog the sunlight.

Still, throughout the American chestnut's original range small trees come up in favorable spots where their ancestors once thrived -- sunny and well-drained ridges and slopes.

In Virginia, those spots tend to be west of the U.S. 29 corridor, with notable wild examples in Amherst County and the Mount Rogers area in Grayson County. Many manage to flower and produce nuts before falling prey to blight, and their offspring start the cycle over.

## THE BEST GET A BOOST

For those who admire the grand American chestnut, the persistence of each new generation is some comfort. But it's not enough.

Starting about the 1930s, scientists set out to rescue chestnuts by crossing American trees with blight-resistant Chinese chestnuts. The hope was that the American traits of tall, straight trunks would prevail while the Chinese trees' ability to withstand fungal attack would protect future generations.

One such American-Chinese tree grew tall and strong in Illinois for many years. It finally did succumb to blight in the early 1970s, but its genes live on.

They are part of the genetic stock used by the American Chestnut Foundation, a nonprofit research group that aims to produce a blight-resistant American chestnut tree in the next several years.

The method is backcrossing -- breeding a half-American, half-Chinese tree to an American tree, then breeding the offspring of that tree to another American and so on. Each generation is selected based on its American chestnut physical traits and its blight resistance.

One major orchard is in the Southwest Virginia community of Meadowview.

The Meadowview research station started in 1989 and now has about 40,000 trees in all stages, said Paul Sisco, the Southern regional coordinator for the American Chestnut Foundation.

There are other research plots as well; Sisco spoke to a reporter by cell phone from a stand of about 100 healthy backcrossed chestnuts near Asheville, N.C. "They're looking pretty good," he said.

## GENETIC GAME OF CHANCE

The tree planted at Monticello last week, in honor of Jefferson's 265th birthday, comes from a small stock of trees that are 15 parts American and one part Chinese. Those trees aren't available to just anyone who wants to grow them, but the foundation donates them

for planting at prominent sites. There's one at the White House and one at Mount Vernon, several at the Carter Center in Atlanta and one at Lincoln's birthplace, among other sites.

Whether a particular American tree can withstand blight is a genetic guessing game. Scientists hope that at least one in 20 of their backcrossed generation will show high resistance to the fungus, but Sisco said some probably won't show any resistance.

It takes many generations to achieve desirable traits, but the American Chestnut Foundation, now in its 25th year, is in it for the long haul, he said.

The program recently shipped 500 backcrossed seeds to be planted in 2009 in a test area in Tennessee, in a project overseen by the U.S. Forest Service, Sisco said.

He and others hope that in the next 10 to 15 years the foundation will widely distribute seeds they can reasonably expect to grow into genetically resistant trees.

When that day comes, he said, "We'd like to have every Boy Scout troop and garden club in the country planting these in open areas."

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