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Story Published on Thursday, January 1, 2009

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American chestnuts making comeback

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MEADOWVIEW, Va. — There are only two things not to like about American chestnuts. One is that ever since the 1920s they've all died of the chestnut blight before they could truly mature.

The other is that it's no fun to walk barefoot under a chestnut tree after its fruit has dropped.

Around the turn of the 20th century they were the base of our Eastern hardwood forest products industry. Mature trees were known as the "redwoods of the east," growing up to 5 feet in diameter and 100 feet tall, and often branch-free for the first 50 feet.

The logs are highly resistant to insects. If you see a 200-year-old log cabin still standing, chances are it was made from chestnut logs. In addition to timber, the trees provided tannin for the tanning industry.

For game they provided a never-failing mast crop that was the primary food source for the black bear and deer. The decline of these species went hand-in-hand with the loss of the chestnut tree.

Many of these giants were 8-to-10 feet in diameter, and a record specimen from North Carolina measured 16.5 feet in diameter. Loggers told of loading an entire rail car with the boards cut from just one tree.



An American chestnut at the research farm
(James Brooks / Johnson City Press)

It's amazing that a hardwood tree as hardy and quick growing as the chestnut could be brought down by a fungus, but about 1904 the blight appeared in New York City. It came from Asia, and our trees with no resistance, went down quickly. By 1950 4 billion trees on some nine million acres of eastern forests were destroyed by the blight.

Hikers in the forest can still find chestnut logs lying on the ground, slow to decompose and mute testimony to the course of the disease over its 17 state range.

The ultimate salvation of the American chestnut may be its blight resistant relative, the Chinese chestnut. There are also Japanese and European chestnuts, but none of them have the ability to grow straight and tall like the American chestnut.

It is not unusual to find American chestnuts growing at the edge of our forests, and they do grow long enough to fruit before the characteristic cankers of the blight form on the trunks.

While Chinese chestnuts do get the blight, they are generally resistant to it. By crossing the two and then back-crossing for over six generations the American Chestnut Foundation is on the threshold of introducing new, blight-resistant American chestnut trees.

These trees will begin to be made available next year for ACF members with suitable areas for growing the tree. Although ACF is headquartered in Bennington, Vt., its research facility is on four farms comprising 168 acres around Meadowview, Va., in the heart of the tree's original range.

According to geneticist Fred Havard the American chestnut is distinguished by the serrated edge to its leaf and a red stem, while the Chinese chestnut has a more rounded leaf and the tree does not grow tall.

The genetic experiment is taking place on a massive scale, with over 26,000 trees in the ground in Virginia, plus other plots owned by ACF state chapters in most of the 17 states of its range.

Havard shows a plot of about 150 hybrids. "We hope to get one resistant tree out of this plot," he said. Each generation takes six years before the trees fruit. The young trees tend to be bushy, but Havard said they will grow straighter if forced to compete for light.

The hybrids are inoculated with the virus and most of these second-year trees already show the cankers.

That most resistant tree is then back-crossed with another American chestnut. On the second back-cross the serrations begin to return to the leaf edges, and the red stems again appear.

On other farms the center is growing plots of American chestnuts gathered from surviving trees throughout its range. From these mother trees they hope to pick out those showing the greatest levels of natural resistance to provide the stock for their crosses.

In some cases they get good blight resistance early on. He shows one stand of mature trees planted in 1992. These trees were attacked by the gall wasp in 2002, another Asian pest, but one which the trees eventually survive.

In addition to survivability, they also select for good American chestnut characteristics at each back crossing.

While selection is important, so is genetic diversity throughout the growing range. A Vermont tree may not do well outside of Vermont, and they don't want just one tree in the gene pool, but as many blight-resistant trees as possible.

Ideally American chestnuts should have good drainage, preferably on slopes with shale soil. "They hate wet feet," Havard said. Luckily, ideal chestnut growing conditions pretty well describe land unsuitable for any other crop.

Like many foundations, there are many levels of contribution, ranging from the \$40 annual basic membership plus \$10 state dues, up to plots in memory of an individual with suitable bronze plaque for \$10,000. You can join from their Web site: acf.org.

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