UT Bringing Back Once-Common Butternut Trees: Tennessee Takes the Lead in Saving Tree Species

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The fruit of white walnut trees, commonly known as butternuts, is seen on Friday at the East Tennessee Research Education Center-Plant Sciences Unit. In an effort to fight butternut canker disease, these trees will provide grafting material for a cloning program to produce healthy, genetically pure butternuts. (Paul Efird/News Sentinel)

KNOXVILLE, Tenn. — On Alcoa Highway, just five miles south of the University of Tennessee's Agricultural Campus, is the East Tennessee Research Education Center-Plant Sciences Unit, a 212-acre field laboratory dedicated to research in plant and soil sciences.

In one corner of the property is a small grove of trees that resemble eastern black walnuts. The leaves on these trees are similar to black walnut, but the bark is ash-gray and fairly smooth, not dark brown and deeply furrowed like black walnuts. And unlike the rounded fruit of the black walnut tree, the fruit on these trees are oblong, with dense, sticky hairs.

These are white walnuts, commonly known as butternuts. The Cherokee used the wood to make ceremonial masks, and from the roots, bark and husks they extracted a dye used in basket making. Butternut was used to color homespun clothing, and Confederate troops during the Civil War sometimes were referred to as the “boys in butternut” thanks to the light-brown butternut dye used on some of the uniforms.

The sap of butternut trees can even be boiled down to produce a syrup that’s similar to maple syrup, but with less sugar content.

Once common in the Eastern forest, wild butternuts are now rare. The primary culprit is an exotic fungus that causes butternut canker disease. Trees infected with the fungus develop patches of dead bark, or cankers, that can spread to the main trunk and cause death by girdling.

Researchers believe that 80 percent to 90 percent of the South’s butternuts have been wiped out since the disease arrived in this country almost 100 years ago.

Today, universities and state and federal agencies across the Eastern U.S. are making a coordinated effort to save the butternut. Among the Southeastern states, Tennessee has taken a leading role in the research and development needed to produce disease-resistant, pure butternuts that can be planted in the forest and made available to private landowners.

The butternut trees at the East Tennessee Research and Education Center will provide grafting material for a cloning program to produce healthy, genetically pure butternuts. In restoring butternuts, researchers want to make sure the trees they produce are 100 percent pure and haven’t crossed with the Japanese heartnut, an exotic species used in landscaping that readily hybridizes with the butternut.

Scott Schlarbaum, project leader for UT’s tree improvement program, started working with butternuts in the early 1990s when he asked some of the staff with the Tennessee Division of Forestry if they had seen any butternuts.

“They said no, but the field maps said they were out there,” Schlarbaum said. “So I hired a retired seed orchard manager, and he found some. Turns out, the foresters had lost their eye for the trees because they’re so rare.”

A breakthrough occurred in 1993 when UT researchers went high-tech with their butternut surveys by applying the same Geographic Information Systems techniques that biologists use to estimate black bear populations. As a result, researchers can look at computer models and identify where to focus their search for butternuts on large forested tracts like the Great Smoky Mountains National Park and the Cherokee National Forest.

Schlarbaum said butternuts tend to grow close to streams, and that the highest concentration found so far was on private property west of Smythville in Middle Tennessee.

“Central Tennessee has quite a few butternuts, and they’re all pure,” he said.

The University of Notre Dame is doing DNA tests that indicate whether a butternut is genetically pure or a butternut-Japanese heartnut hybrid. The U.S. Forest Service is partnering in the project, and so is the Tennessee Department of Agriculture's Division of Forestry.

Trees that exhibit a natural resistance to butternut canker disease will lay the foundation for a grafting program to start next year on research orchards across the state. Seeds from those orchards will be grown by the Tennessee Division of Forestry's East Tennessee Nursery near Delano, Tenn. Researchers say that barring the arrival of any new exotic insects or disease, pure, disease-resistant butternut seedlings could be available to Tennessee landowners in 10 or 15 years.

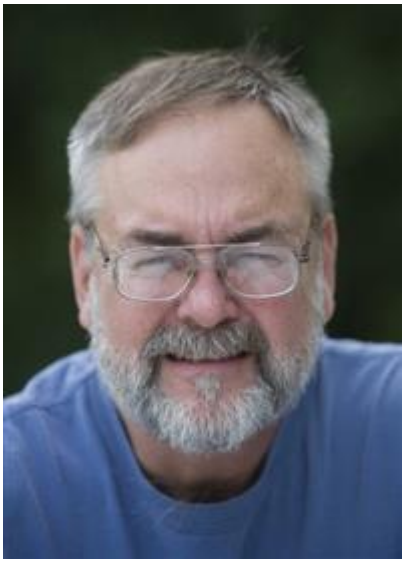
As if butternut canker disease and hybridization weren't enough, researchers have to guard against Thousand Canker Disease, a new fungal disease that can attack butternuts as well as eastern black walnut trees.

With its soft texture and fine grain, butternut wood is highly prized among woodcarvers. Wildlife and humans alike enjoy the taste of the nuts, which have a rich, buttery flavor.

Schlarbaum said that unlike the chestnut blight, butternut canker disease spared enough wild butternuts to ensure the survival of the species in the field.

"The message to Tennessee landowners is that with proper management and selective breeding, we can start restoring butternuts now," Scharlbaum said.

A nursery bed for growing black walnut trees is seen on Friday, June 21, 2013, at the East Tennessee Research Education Center-Plant Sciences Unit. The trees will provide root stock for grafting to white walnuts, commonly known as butternuts, in an effort to fight butternut canker disease. (Paul Efird/News Sentinel)



Scott Schlarbaum, University of Tennessee forest biologist.