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Byron Crawford: **American chestnuts bred for blight resistance**

The nearly extinct American chestnut tree, once known as "the Redwood of the East," may be taking root for a triumphant return to its native range.

Between 1904 and 1950, an estimated one-fourth of the Eastern forest canopy -- 3.5 billion American chestnuts -- were wiped out by a blight believed to have traveled from Asia.

The event was considered by many scientists to be the greatest ecological disaster of the 20th century.

Now, after more than 75 years of research, scientists appear to have developed an American chestnut with the blight-resistant gene of the Chinese chestnut.

"We have a tree that is 15 parts American and one part Chinese, and within the next few years -- we think by 2010 -- we should have a pretty good population of nuts from those trees that we can disperse out into the forest across this native range," said Chris Barton, a University of Kentucky forestry professor. "A lot of people have the belief that this tree is going to make a comeback."

Experimental plantings are under way on reclaimed surface-mine sites in Kentucky and elsewhere in Appalachia. The tree appears particularly well-suited to reclamation sites, where it has a better chance of survival in relatively uncontaminated soil than in fields that may still harbor blight pathogens.

"In Kentucky we've put out more than 1,000 on surface mines right now," said Mike French, vice president of the Kentucky chapter of the American Chestnut Foundation. "We're testing different ways to get them back onto the surface mines so we'll have higher survival and better growth out of them. If you leave the material loose, the roots can expand, water infiltrates into the soil and you get phenomenal tree growth."

American chestnuts, which have been known to exceed 15 feet in diameter, are said to have a growth rate equal to or better than the rapidly growing yellow poplar.

So far, most of the repopulation efforts have been through direct seed planting of chestnuts.

American chestnut breeding orchards have been established in Breathitt, Carter, Madison, Pike and Todd counties. Their trees are the result of crossing Chinese chestnuts with rare surviving species of the American chestnut to produce an offspring of half-American and half-Chinese, then recrossing the offspring with American chestnuts to breed out all but the Chinese blight resistance.

Last year, the Kentucky breeding orchards produced their first good crop of 1,800 nuts from such efforts, and even more are expected for mass plantings from this year's crop.

"At every stage we'd grow up those offspring in an orchard and inject them with the blight fungus so that we could find out which ones had a good degree of blight resistance," French said. "We're getting really close to where we need to be to bring these trees back into the forest."

Although it would take years for the American chestnut to regain its once grand stature, Barton said development of the blight-resistant species holds fascinating possibilities for both scientists and the forest industry.

"Unfortunately, though it's a great tree for the forest, provides a lot of shade and is a great-looking tree, you probably wouldn't want one for your yard," said Barton. "It produces a seed coat, or husk, that has spines on it that are very, very sharp ... and when we handle these chestnuts we have to have pretty heavy gloves."

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