



Ongoing Maintenance and Monitoring of Established American Chestnut (*Castanea dentata*) Test Orchards on Two TNARNG Installations

Project # 10-401

Background:

American chestnut (*Castanea dentata*) was one of the dominant trees on an estimated 9 million acres of eastern U.S. forests until the Asian chestnut blight nearly extirpated the species in the early 20th century.

A few relicts survive in the wild, and the American Chestnut Foundations (TACF) has used them in a long-term program to cross American chestnut survivors and Chinese chestnut, which is naturally resistant to the blight. The hybrid offspring are then back-crossed to American chestnut through repeated generations, with the goal of recapturing the physical characteristics of the native species while retaining blight resistance.

The Tennessee Army National Guard (TNARNG) developed a cooperative agreement with TACF in 2008 to place seedling orchards on unused training land at VTS-Catoosa and VTS-Milan. Under Legacy Project #08-401, two sites were prepared, fenced, and planted with a selection of backcross hybrids, as well as pure Chinese and pure American chestnuts.

Objective:

The purpose of this project is to contribute to the efforts of the American Chestnut Foundation to develop a blight-resistant American chestnut hybrid that may one day be reintroduced into its former habitat across the eastern United States.

Summary of Approach:

Orchards were established on VTS-Catoosa and VTS-Milan. In spring 2009, 780 seeds and seedlings were planted. An additional 236 seeds/seedlings were added in spring 2010 to replace some of the first year mortality.

The orchards are maintained by mowing, bushhogging, and weed trimming. A glyphosate herbicide is applied several times during the growing season along the seedling rows to minimize competition from weeds and grasses.

The chestnut seedlings are watered and/or fertilized twice a month during the growing season. During droughty periods, water was applied without fertilizer in order to minimize drought stress on the plants. A water tank, pump, and trailer were purchased in 2011 to expedite watering efforts.

The plants are monitored during the growing season and measured in the fall to determine survival and growth rates. Additional seeds will likely be added in 2012 to replace unsuccessful individuals, and maintenance will continue for several years. In 2014-15, the oldest trees will be inoculated with the blight to test their resistance and suitability to continue in the breeding program.



Photo by L. Lecher

Fruit on a two-year-old American chestnut hybrid sapling at VTS-Milan.

Benefit:

The TNARNG contribution to the American chestnut breeding program is a small part of the progress toward reintroducing the American chestnut to its native range with the ability to thrive despite the blight. Success in this project will enhance ecosystem quality and biodiversity on TNARNG lands and other forested properties through the range of this species and will enrich the training environment for future military generations.

Accomplishments:

Seedlings from the 2009 planting have been tended and monitored for three growing seasons. Mortality has been high – almost 65% – but the survivors are growing quickly. Many of the young saplings are over 6' tall and three have already produced fruit. Maintenance and monitoring will continue for at least three more years until the saplings are mature enough to test for blight resistance.

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