



Establishing American chestnut test orchards on two TNARNG installations: *contributing to the efforts to restore an ecological and cultural giant to the forest ecosystems of the eastern United States*

Project #08-401

Background:

American chestnut (*Castanea dentata*) was once one of the dominant trees in the eastern forests of the United States. In addition to providing an unparalleled food source for wildlife and holding an irreplaceable position in forest ecosystems, American chestnut seeds and lumber played a significant role in many rural Appalachian economies. Its fast growing and rot resistant wood made it the primary hardwood timber species in the 19th and early 20th centuries.



Photo courtesy of TACF
**Male American chestnut
flowers**

The first occurrence of the Asian chestnut blight (*Cryphonectria parasitica*) in the United States was documented in 1904 in New York City. By 1950, this keystone species on an estimated 9 million acres of eastern forest had all but vanished as a result of blight infection.

Since 1983, the American Chestnut Foundation (TACF) has led and managed an intensive breeding program aimed at instilling blight

resistance into American chestnut trees. One of the most essential resources needed for this breeding program is land for the seed orchards where the hybrid chestnuts can be grown. The Tennessee Army National Guard (TNARNG) has small areas on its training sites that are not actively used for military training, and so a cooperative agreement was developed with the TACF to establish seed orchards at two of its facilities: VTS-Milan and VTS-Catoosa.

Objective:

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

Summary of Approach:

Today, several different approaches are being taken in the effort to restore American chestnut. One of these, the backcross method, seeks to instill blight resistance into American chestnuts by hybridizing 100% American chestnuts with blight resistant Chinese chestnut and then conducting a series of backcrosses with 100% American chestnut trees. Within each generation, only trees exhibiting both blight resistance and phenotypically

American chestnut traits are used to produce seed for the following generation.

Seeds that will be produced from the TNARNG orchards will be those used for some of the first large scale reforestation trials and would be, on average, 93.75% to 96.875% genetically American chestnut.



Volunteers planting American chestnuts at VTS-Milan, April 18, 2009

Benefit:

The orchards on the VTS-Catoosa and VTS-Milan are a small part of a massive project whose long-term goal is to reintroduce to its native range an American chestnut with the ability to resist the blight and thrive again. Success in this project will enhance ecosystem quality and biodiversity on TNARNG lands and other forested properties throughout the range of this species and enrich the training environment for military generations to come.

Accomplishments:

Since being awarded funding from the Department of Defense Legacy Program in FY 2008, two backcross orchards have been prepared and planted on TNARNG properties. Preparation work included clearing trees, controlled burning of grasslands, and, most importantly, surrounding each orchard with an eight-foot tall, deer-resistant fence. In April 2009, 760 chestnut seeds and seedlings were planted at TNARNG facilities. These young trees are in their first season of growth and are currently being monitored for survival, vigor, and general health. Annual monitoring and routine maintenance will continue for the foreseeable future.

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