

Making History: Field Testing of Blight-resistant American Chestnut (*Castanea dentata*) in the Southern Region

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An exotic pathogen, the chestnut blight fungus (*Cryphonectria parasitica* Murr. Barr), decimated the American chestnut (*Castanea dentata* Marsh. Borkh., hereafter referred to as AC) throughout eastern North America in the first half of the 20th century. AC was a keystone species in the eastern hardwood forests, occupying 25% of the dominant canopy. Its demise has changed forest ecosystems through alteration of forest structure and function. In addition, the loss of this species had a significant effect on the availability of hard mast and AC lumber.

The Forest Service (FS) and The American Chestnut Foundation (TACF) signed a Memorandum of Understanding (MOU) in 2004 to collaborate on restoration of AC on National Forest lands. To date, planning for AC restoration has emphasized producing a blight-resistant hybrid tree (AC X Chinese chestnut) at TACF's Meadowview breeding orchard. The FS Forest Health & Protection Unit has contributed substantially over the past six years to support the breeding work.

Successful restoration will also require an understanding of the silvicultural parameters needed to regenerate the species. In 2008 the Research Work Unit 4157 (RWU) of the Southern Research Station and Region 8 National Forest System received hybrid BC₃F₃ AC nuts from TACF. Seedlings were grown at a state nursery facility as bare root 1-0s. In the winter of 2009 field tests with those seedlings were established on three southern National Forests. The field test also included pure AC, pure Chinese chestnut, and various BC generation hybrid seedlings. The FS will continue to receive AC material in subsequent years to continue field testing of new families, per the MOU. Another partner, the University of Tennessee's Hardwood Tree Improvement Program, has provided assistance to the SRS RWU and R8 NFS in developing protocols for seedling size and health, site selections (in cooperation with Forest Health), site preparation, and post-planting care and maintenance. Seedling performance data will be collected annually and statistically analyzed to test predictions that BC₃F₃ material is highly blight-resistant. Growth characteristics will be monitored as well to evaluate if hybrid BC₃F₃ seedling form is similar to pure American chestnut. The Forest Service and TACF may also utilize test plantings for education and demonstration purposes.

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