RESTORATION OF THE AMERICAN ELM ON THE CHIPPEWA NATIONAL FOREST THROUGH GENERATION OF DUTCH ELM DISEASE TOLERANT, COLD-HARDY, AND SITE-ADAPTED TREES

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ABSTRACT

The American elm component of hardwood forests and riparian ecosystems in forested landscapes has been greatly reduced or eliminated by Dutch elm disease (DED). The ecological significance of this reduced role of American elm in riparian ecosystems is likely to be more significant if the ash component is also lost due to emerald ash borer infestation. Efforts to restore the American elm within areas of its former range with unique climatological attributes pose a challenge. The Chippewa National Forest (CNF) and the Northern Research Station initiated a project in 2007 to restore the American elm to CNF's landscape through a unique approach. The goal of this effort is to generate trees that are DED tolerance, cold-hardy, and site-adapted. The approach used for this effort used pollen from large DED survivor American elms on the Chippewa to pollinate flowers on DED tolerant Valley Forge and R18-2 American elm selections to generate progeny trees. These trees, along with control trees will be planted at three sites on the Chippewa, and then challenged by direct trunk inoculations of *Ophiostoma novo-ulmi*. The most vigorous, DED tolerant, and cold-hardy survivor trees will be clonally propagated and the trees used to restore the American elm on CNF. In the spring of 2008 pollen was collected from four American elm survivor trees on the Chippewa, and used in controlled pollinations on flowers in the laboratory and on Valley Forge and R18-2 trees in the Delaware, OH American elm seed orchard. Seeds were planted, and progeny trees were initially grown in a greenhouse and then a lath house until dormancy. Control trees were generated by vegetative cuttings. Six hundred seventeen trees ranging from 3-6 feet in height were shipped to the Chippewa National Forest after dormancy in November 2008, and will be planted in the spring of 2009. The remaining 463 trees needed for this effort will be generated in the spring of 2009 and will be planted in 2010. Partners on this project include State & Private Forestry, St. Paul, MN; Region 9 of the U.S. Forest Service, Milwaukee, WI; and Leech Lake Band of Ojibwe.