



Bur Oak Selections for Bottomland Hardwood Restoration



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Background

There are several characteristics of bur oak (*Quercus macrocarpa* Michx) that make it a desirable choice for bottomland hardwood restoration including but not limited to ease of propagation, marketable wood, good acorn production, and a food source for many wildlife species. Many oak species including bur oak have difficulty surviving short periods of soil saturation and flooding during the growing season, which limits its use for lower stream terraces in Missouri, Iowa and Illinois. Recognizing the many conservation attributes of bur oak, the USDA - Natural Resources Conservation Service, Elsberry, Missouri Plant Materials Center began collecting acorns from trees known to have been inundated with flood waters in flood-plains and tributaries in Missouri, Iowa and Illinois.

The protocol for making bur oak collections was that the parent trees had to have survived the floods of 1993 and 1995 of the Mississippi and Missouri Rivers. Acorns were collected from trees along the major river systems and tributaries in Missouri and Iowa that had been inundated with flood water for a minimum of 3 weeks.



Propagation and Evaluation

After the collection period was over the acorns were germinated in trays and grown in the greenhouse using the Root Pruning Method containers until they were transplanted to the field in April 2002 in a randomized complete block with 10-12 replications. Trees were evaluated for height, spread, vigor, and environmental influences from 2002-2009. Average tree height ranged from 8 to 10-ft at the end of the growing season in 2007.



Tree Selections

In November 2010, 15 trees were selected from the 96 surviving trees, and 12 trees from the 82 Iowa collections on the basis of form, height, diameter, and resistance to environmental influences. These trees will serve as breeder trees for future bur oak selections for use in bottomland hardwood restoration and other conservation programs in Missouri and Iowa.



Seed Collection

The main criterion was to collect acorns from trees that had been flooded a minimum of 3 weeks during the 1993 and 1995 flood of the Mississippi and Missouri Rivers. Twenty-two collections were made from October-December 2000 from locations in Missouri (15) and Iowa (7). Field collections were assembled, accessioned, and held in storage until the collection period ended. Assemblage of collections began at the PMC in October 2000 and ended mid-December 2000.

Unintended Testing

In June 2008, another major flood occurred on the Mississippi River that backed more than 7-ft of flood waters over the bur oak trees for approximately 4 weeks before receding. There were 96 trees from the Missouri collections that survived the 2008 flood.



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