

Regional Feedstock Partnership Highlights—Poplar

The aim of the Sun Grant Regional Feedstock Partnership Poplar Program is to conduct research and demonstration of commercial production to pave the way for highly productive, sustainable commercial biomass production of wood as a raw material for energy. The purpose of current research is to, 1) evaluate biomass yields of current commercial hybrids and recently developed clones under conditions resembling commercial-scale plantations, 2) evaluate promising new clonal material in the various regions of the U.S. capitalizing on the extensive genetic resources of the poplar team and, 3) conduct breeding to improve yield and disease resistance of poplar hybrids for planting across the U.S. as well as establish an infrastructure of new genetic parental material to support long-term woody crop yield improvement.

Clone Testing: Establishment of the most extensive poplar clone testing program in the U.S. and identification of superior genotypes for commercial test plantings and as candidate parent material for future breeding to improve yield and disease resistance. Evaluated clones from breeding programs in clone tests in the Midwest which has demonstrated the potential to greatly improve biomass yield ranging from 1.4 to 1.6 that of current commercial hybrids (Fig. 1). Analysis of new clone tests in the South and Mid-South have demonstrated the potential of hybrid poplar on selected sites in the region.

Breeding Program: Large scale breeding of poplar has been supported by the DOE/SG program in the Pacific Northwest and Midwest to produce new clonal material exhibiting higher biomass yield and disease resistance with over 4,000 new genotypes available for establishment of new field test. New clones of poplar have been used to establish a series of second-generation yield tests in these regions. Critical infrastructure of genetic parent material has been established and maintained. This includes unique collections of *P. deltoides* (the foundation of most hybrid poplar crosses in the U.S.) as well as new collections of *P. nigra* from Europe. These collections have been distributed to all regions to evaluate performance under regional climatic conditions.

Yield Evaluation and National Mapping: Yield trial data were recently assembled from the network of Sun Grant trials and growth models developed from these data to produce a current national database of poplar yields. This work was used as the foundation for development of the regional yield estimates using the PRISM model and national yield mapping effort. The DOE/SG program has allowed the establishment of a series of yield tests using improved genetics at close spacings more suited to short-rotation, coppiced, biomass production systems. The network of yield trials has provided locations for numerous outreach and extension activities to commercial end users, land owners, and policy makers.

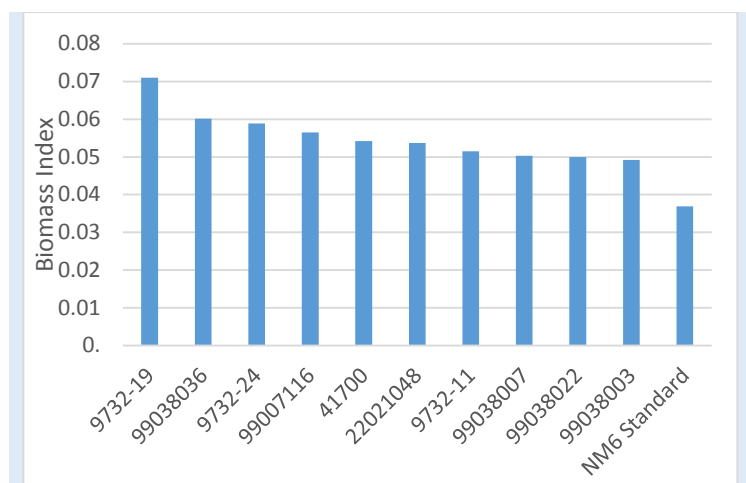


Figure 1. Comparison of new clones from breeding program to NM6 commercial standard in 2010 field test after 4 years at Grand Rapids, MN.



Figure 2. Commercial poplar production in the Pacific Northwest (courtesy of GreenWood Resources).

FUNDING:

This research was supported by funding from the North Central Regional Sun Grant Center at South Dakota State University through a grant provided by the US Department of Energy Bioenergy Technologies Office under award number DE-FC36-05GO85041.

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