

Forest genetics

Forest genetics is the study of genes and the forces that change them in forest tree species. Research in forest genetics at the NCROC stresses improved forest productivity and genetic conservation through knowledge and utilization of the genetic variation inherent in a species.



Current research

Tree improvement

Tree improvement is a branch of forest genetics that produces seedlings for reforestation that have increased growth rates, disease resistance and wood quality while still preserving their adaptation to local growing conditions. Along with researchers at the Cloquet Forestry Center, we manage the breeding and seed orchard management research for the Minnesota Tree Improvement Cooperative (MTIC) in jack pine, red pine, white pine, black spruce, white spruce and tamarack—plus hybrid aspen.

White pine blister rust resistance breeding

White pine blister rust is a non-native disease that affects five-needled pines and was introduced to Minnesota in the 1920s and '30s. The disease continues to decimate white pine, especially near rivers, lakes and streams. This research uses long-term field trials and short-term greenhouse studies to identify individual trees that have higher than average levels of rust resistance.

Genetic conservation of ash species

Minnesota has almost 1 billion ash trees that are threatened by the exotic pest emerald ash borer (EAB). Minnesota's ash resource is being protected by systematically collecting and storing ash seed to preserve genetic variation in the event of an EAB outbreak.

Epigenetic response to climate change

Recent research suggests temperature during seed development may play a role in controlling bud break phenology in trees. Research at this station is testing the ability and extent to which forest tree species can adapt to warmer temperatures by changing their phenology.

North Central Research and Outreach Center

1861 Highway 169 East, Grand Rapids, MN 55744

Phone: 218-327-4490 | Fax: 218-327-4126

<http://ncroc.cfans.umn.edu/research/biology>