



White Oak Genetics and Tree Improvement Project Update

Laura E. DeWald, Tree Improvement Specialist

Department of Forestry and Natural Resources, University of Kentucky.

Laura.DeWald@uky.edu

www.white-oak-genetics.ca.uky.edu

www.facebook.com/whiteoakgenetics/

Phase 1 - Collection of Genetic Material: The acorn collection effort began in the fall 2019 and despite a very poor mast year, resulted in 17,000 acorns planted in the Kentucky Division of Forestry's (KDF) Morgan County nursery. The acorn collections represent 91 parent trees and 9 states. Seedlings from these acorns began emerging the first week of April and although the rate is slowing, the number of seedlings continues to increase. As of May 7, overall seedling emergence was 24% of acorns planted, and ranged from zero to 81% among the seed sources. Only 2 of the 91 parent trees have failed to produce seedlings. Acorn collections will continue over the next few years until all areas of the geographic range of white oak are represented in progeny tests (phase 2). **If you, or you know someone interested in helping collect a 1-gallon bag of acorns per tree please let us know!**

A grafted clone bank of parent material of all seed sources included in the progeny tests was initiated in January 2020. White oak twigs (scions) were grafted onto bur oak (131 grafts) and swamp white oak (115 grafts) seedling root stock. The effort started small to determine feasibility of acorn collectors to obtain suitable scion material, and thus only 21 seed sources representing 6 states were grafted this year. While it is too early to determine overall grafting success, the most successful grafts thus far came from scion material collected from upper tree crowns. For most acorn collectors, getting scion material from upper crowns was not possible, but one acorn collector got an arborist to volunteer his time to climb the tree and obtained high quality scions. Thus, a network of arborists willing to help acorn collectors obtain scion material will result in the most successful grafts. **Suggestions on how we might achieve this network of arborists, or names of willing arborists are welcome!!**

Phase 2 - Progeny Testing: A "master" progeny test located in KY will include seed sources representing the entire geographic range of white oak. At this point in the KDF nursery, 53 of the 91 sources and all 9 states have at least one collection with sufficient seedlings to initiate the master progeny test in the spring of 2021. We will also be establishing many smaller regional progeny tests throughout the geographic range of white oak. These smaller tests will contain subsets of seed sources from the master test that represent each region. All progeny tests will be established over a number of years until the seed source representation within each progeny test is complete. We are looking for individuals interested in coordinating these regional efforts. These coordinators will provide expertise on the appropriate regional area to include in their regional progeny test, and will help us locate and implement tests. **Please contact us if you are interested, or know someone who might be interested in partnering with the white oak genetics and tree improvement project as a regional coordinator.**



Phase 3 – Seed Orchard Establishment: State nurseries seem like the most logical place for locating seed orchards because the nursery won't have to purchase white oak seed, and they are the most effective way to disseminate improved seedlings from acorns obtained from these seed orchards. We will need a network of state nurseries who might be interested in a white oak seed orchard. **If you have connections that might help us with this effort, or if you have ideas about other places to locate seed orchards or ways to disseminate improved seedlings, please let us know!**