

# White Oak Genetics Project

by Laura DeWald

Acorns being hand planted at a Kentucky Division of Forestry nursery.

All photos courtesy: Laura DeWald

The White Oak Genetics Project (<https://white-oak-genetics.ca.uky.edu/>) is a collaborative effort to develop high-quality white oaks (*Quercus alba*) for reforestation throughout the Eastern United States. Development of improved white oak builds on existing white oak genetics research and supports the White Oak Initiative by setting up a program designed to answer a wide variety of white oak genetic variation questions associated with traits that have economic and ecological value. The improvement program also will provide a sustainable supply of high-quality white oak genetic material via acorns and seedlings.

Knowledge gained and material available from this improvement program will increase our ability to conserve and restore white oaks to achieve a variety of ecological, conservation, and economic goals at regional and national levels. To achieve these goals, white oak acorns will be collected from throughout its geographic range, the acorns will be grown in a nursery then planted into test plots to evaluate local adaptation, genetic diversity patterns, superiority in a variety of traits, and expression of specific DNA sequences. Selected trees will then be grown in seed orchards to provide acorns of improved white oak that will support ecological success in the forest and for traits that will provide increased economic value of wood products.

A critical first step in the White Oak Genetics Project is collecting acorns from as many trees as possible from all Eastern U.S. states and from all the different environmental regions within each state. This will ensure we have a broad sample of white oak genetic diversity from across the natural range of the species. If you see a beautiful white oak tree, we would love to have acorns from it. The White Oak Genetics Project needs acorns from single trees in multiple locations within each state. To work toward this goal, 345 collection kits were sent out in September 2019 to volunteers searching for trees dropping enough acorns to fill a one-gallon bag. So far, more than 100 kits have been returned and more than

14,400 acorns from Arkansas, Georgia, Kentucky, Maryland, Missouri, North Carolina, Tennessee, and Virginia have been planted in the Kentucky Division of Forestry's Morgan County nursery in West Liberty, KY. This number will increase as additional collections are still being received. Collecting efforts will continue in 2020 and in 2021.



Acorns collected near Asheville, NC were sent to the White Oak Genetics program.

## How you can get involved in the White Oak Genetics Project over the next several years:

- Volunteer to collect white oak acorns from across the geographic range where the species naturally occurs.
- Volunteer to collect scion material from some of the parent trees whose acorns were collected to be used to create grafted seed orchards.
- Allow the planting of white oak seedlings on your property to evaluate which parent trees produce high-quality seedlings and which sources of white oak are best adapted to different areas.

## Goals of the White Oak Genetics Project:

1. Provide a sustainable supply of high-quality white oak seedlings, which will improve our ability to conserve and restore white oaks to achieve a variety of ecological, conservation, and economic goals at regional and national levels.
2. Provide white oak genetic resources to academic and industrial research and development efforts.
3. Collect and archive white oak genetic material from throughout its range.
4. Establish a breeding program to meet current and future demands for white oak seedlings for reforestation.

### About the Author:

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