

SPRING BUD PHENOLOGY OF *QUERCUS ALBA* SEEDLINGS PLANTED IN A COMMON GARDEN IN SOUTHERN VERMONT, USA

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White oak (*Quercus alba*) occurs throughout Eastern U.S. forests where it is an important component of forest biodiversity. It is predicted that white oak habitat will expand north beyond its historic range in response to changing climate patterns. A common garden was established in East Dorset, VT on the Green Mountain National Forest (GMNF) in 2023 to better inform restoration and assisted migration strategies for white oak at the northern limit of its range. Twenty replicates of 44 half-sibling families sourced from latitudes 35° to 46° and grown at a nursery in Kentucky, were planted in this common garden. The families are broadly grouped geographically into an eastern transect (North Carolina to Vermont) and a midwestern transect (western Pennsylvania to Minnesota). On May 18, 2023, a regionwide freeze event caused significant foliar damage to trees throughout northern New England and New York. In the GMNF common garden, we observed that foliage of white oak seedlings sourced from colder environments was more likely to have flushed and be damaged compared to seedlings from warmer environments. To better understand differences in phenological response of individual families, we conducted weekly assessments of leaf-out in Spring 2024 and will relate our findings to source climate statistics. These results combined with winter injury assessments, growth, and physiologic performance will help refine seed transfer distance recommendations for the species.

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