

FIRST YEAR RESULTS FOLLOWING THINNING OF 12-YEAR-OLD WHITE OAK PLANTING IN SOUTHERN INDIANA

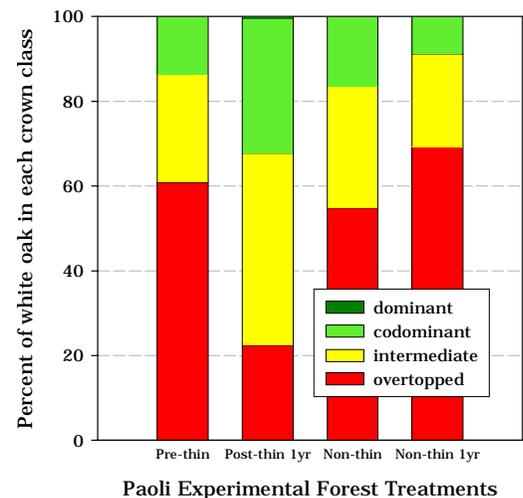
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Numerous recommendations for increasing the presence of oak in regenerating stands have been proposed. One such method is to plant oak seedlings beneath a shelterwood that is removed 3 years after planting (Weigel and Johnson 1998). The shelterwood creates an environment that promotes the development of a competitive oak root system while controlling competing vegetation growing under its partial shade. Despite early successes in regenerating oak in southern Indiana, maintaining oak dominance in developing young sapling stands continues to be a problem.

A study was initiated in 1991 to regenerate white oak (*Quercus alba* L.) by underplanting oak seedlings under a shelterwood in a stand at the Paoli Experimental Forest (PEF) and one at the Martin State Forest in southern Indiana. Initially, survival and growth of white oak seedlings was good but 12 years after planting and 9 years after final removal of the shelterwood the white oak are being relegated to the lower crown classes in the developing forest canopy by more competitive yellow-poplar (*Liriodendron tulipifera* L.), white ash (*Fraxinus americana* L.), and black cherry (*Prunus serotina* Ehrh.).

Twelve years following planting, white oak survival ranged from 42-59 percent and tree height varied from 2.9-3.6 meters among the different study stands. However, the height of competition was greater than 5.0 meters. Therefore, following the 12th growing season half of each planting area was thinned to favor white oak and the other half remained unthinned. Overtopping trees around each white oak were removed by chainsaw felling so that each white oak crown had a “clear view of the sky”.

One year after thinning at the PEF site, survival decreased slightly for the thinned white oak trees, but there was no difference in survival between thinned and unthinned trees. Although, height growth of white oak was unaffected by the thinning, the proportion of white oak in codominant and dominant crown classes did increase at PEF. The proportion of unthinned white oaks in the upper crown classes continued to decrease. Thus, the increase of dominant and codominant white oaks is likely the most important result so far, one year following thinning. Thinning provides the surviving trees with sufficient light and growing space to remain competitive in future years. Thus thinned white oak trees should have greater competitive capacity and higher probabilities of being in the codominant and dominant crown classes in the future. In contrast, survival of unthinned trees is expected to decline as an increasing proportion of white oaks fall into the intermediate and suppressed classes.



Literature Cited

Weigel, D.R.; Johnson, P.S. 1998. **Planting white oak in the Ozark Highlands: a shelterwood prescription.** Tech. Brief TB-NC-5. St. Paul MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 8 p.

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