

RESPONSE OF WHITE OAK AND BLACK OAK SEEDLINGS TO A MID-STORY REMOVAL

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White oak (*Quercus alba* L.) and black oak (*Quercus velutina* Lam.) often dominate stands on intermediate to high quality sites. In these stands there is often a bank of advanced oak regeneration (>1 ft. tall) in place. However, this advanced oak regeneration rarely achieves a co-dominant or dominant status when a regeneration harvest is performed. A mid-story removal has been shown to increase the vigor of oak seedlings, but has not been widely tested. The length of suppression could affect the ability of oak seedlings to respond vigorously when provided with additional light. Seedlings on the forest floor can range from one to >20 years old with minimal height growth. Root ages of these seedlings can be far older than the stem of the seedlings. This study will assess the response of suppressed white oak and black oak seedlings to a mid-story removal.

To obtain information on the above and belowground attributes of the seedling population, 120 white oak seedlings were selected from four stands and destructively sampled. Root age was determined 1 cm below the root collar. The mean stem and root age was 7 years old for true seedlings. The mean stem and root age of seedling sprouts were 6 and 9 years old, respectively. In many stands there are very few true seedlings. Seedling stems older than 10 years are very rare; however, it was not uncommon to find a seedling with a root system older than 10 years. Repeated sprouting could have an effect on the seedlings ability to respond when suitable conditions are created for rapid growth. This rapid growth is needed in order to out-compete co-occurring species.

This study will be used to analyze different age classes of seedlings in the advanced regeneration pool and first year seedlings resulting from planted acorns and 1-0 bareroot seedlings. In order to increase light levels at the forest floor, twenty percent of the basal area was removed from the stands. This study will allow us to assess the timing of treatments, the type (age) of seedlings needed, and the associated vigor of different types of seedlings upon release.