

Rooting Cuttings of Northern Red Oak (*Quercus rubra* L.)

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Poster Abstract

Several techniques have been used experimentally to vegetatively propagate northern red oak (*Quercus rubra* L.), including: 1) rooting juvenile softwood cuttings in intermittent mist, 2) rooting shoots originating from mature buds grafted onto juvenile root stocks, and 3) *in vitro* shoot proliferation of juvenile or mature shoots followed by *in vitro* rooting. Of these techniques, rooting juvenile softwood cuttings has provided the most consistent results for northern red oak (NRO).

Juvenility (or at least the associated ability to form adventitious roots) disappears rapidly among progressive flushes of growth in NRO seedlings. Decreased rooting has been reported for NRO shoots obtained from progressive flushes of growth produced within a growing season, as well as shoots representing flushes obtained from successive seasons of growth. However, as with many other tree species, the process of maturation in NRO can be slowed by pruning to encourage juvenile shoot production. Optimizing the number of juvenile cuttings produced from each stock plant is necessary for efficient rooted cutting production systems. In addition, rooting conditions must be determined for the shoots produced under these pruning regimes.

Two NRO rooted cutting studies are currently being conducted at NCSU. The objective of the first study is to evaluate the effects of stock plant pruning location, diameter, and age on new shoot production. Treatments include pruning first-year seedlings, as well as one-, two-, and three-year-old seedlings to the base of the first, second, third, or fourth flush of growth produced during the first growing season. The objective of the second study is to evaluate the ability of the shoots produced in the first study to form adventitious roots. Treatments include three rooting hormone levels (0.5%, 1%, and 1.5% IBA) and a control (45% EtOH). Preliminary results from both studies will be presented.

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