OPTIMIZING SWEETGUM ROOTED CUTTING PRODUCTION

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A series of experiments were conducted to examine the rooting success and subsequent growth of sweetgum cuttings under a variety of treatments. The studies were designed to discover ways to optimize the efficiency of the rooting process, and to enhance growth rate after rooting. Improvements in both of these areas of rooted cutting production are needed to enhance the utility of this propagation system in support of clonal sweetgum plantation deployment. Rooted cutting production is a tedious procedure, where advances in the ease of production will be welcome. Further, with current technology it takes about 18 months to produce a rooted cutting large enough for field planting. This is a result of using spring greenwood cuttings, which then require about three months to complete the rooting process, and then a dormancy period and a season of growth to reach an adequate size. This is in contrast to a six month period with well developed technology to produce bareroot seedlings. To efficiently capture the gains possible with clonal deployment, greater efficiency in the vegetative propagation phase is needed.

Cuttings from clonal selections were provided for these studies by Union Camp Corporation. Treatments during the rooting phase included: time-of-year of cutting collection (conducted at both NC State and Union Camp), chilling, fertilization, leaf trimming, cutting length and sticking depth. Treatments post rooting included: artificial cold periods, warm periods, and topical application of plant hormones to promote shoot growth. Cuttings were found to root best when taken from hedges during May and June, and a chilling period prior to sticking at that time did not improve results. However, cuttings taken during August rooted substantially better when treated with 30 days of chilling prior to sticking. Other findings support the need for cuttings at least 15 cm long, for leaving leaves intact on cuttings or trimmed only slightly, that sticking at 2 or 5 cm depth is not an important consideration, that chilling periods of up to seven weeks for May cuttings prior to sticking did not improve results, and that fertilizing with slow-release complete fertilizer at four or nine weeks, or not at all, during the rooting phase did not substantially impact results. Results from the studies of cutting shoot growth response to cold periods and topical hormone applications are not yet available. Early indications are that topical applications of shoot promoting hormones may accelerate growth, and that dormancy requirements may be satisfied with artificial cold periods. Incorporating these findings into a production system may make it possible to produce rooted cuttings large enough for field planting in six to 10 months. Further investigations are underway.

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