Factors Affecting Rooting Of Fraser Fir And Virginia Pine Cuttings

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North Carolina currently ranks first in the nation in annual revenue from Christmas trees, over $100 million, and second in the number of Christmas trees harvested annually, about 6 million. This industry is largely based in the mountainous western part of the state were Fraser fir (*Abies fraseri* [Pursh] Poir.) is grown. Nationally, Fraser fir is a popular Christmas tree due to a combination of attributes including pleasing aroma, dark blue-green foliage, natural Christmas tree shape, strong branches for holding ornaments and excellent post-harvest foliage retention. In the piedmont and coastal regions of North Carolina, Virginia pine (*Pinus virginiana* Mill.) is the most common Christmas tree species. Virginia pine is a deserving Christmas tree species because of its rapid growth (3 to 5 years to harvest), short needles, good branch structure for holding ornaments, pleasant pine scent and dark green color. However, Virginia pine also has several significant problems as a Christmas tree species. Chief among these problems are poor stem form, non-uniformity and extreme susceptibility to damage by the
Nantucket pine tip moth (*Rhyacionia frustrana* (Comstock)). In fact, due to the cumulative effect of these and other problems, growers typically only market about 50% or less of Virginia pines planted. Rooted cutting research is underway with both of these species to capture benefits from cloning including: 1) increasing genetic gains, 2) increasing uniformity, 3) combining desirable characteristics and 4) allowing greater
flexibility in meeting customer's needs.

Current research is focused on determining optimum season, auxin type, IBA or NAA, and concentration to use in order to promote root initiation and subsequent rooted cutting growth. Seven concentrations (1 - 64 mM) of each auxin type, 4 combinations of concentrations of both auxin types and a non-auxin control are being tested for winter, spring and fall cuttings collected from juvenile material.

Additionally, research is focused on the production and rooting of vertically oriented (non-plagiotropic) shoots from older trees of these two species. Fraser firs have been hedged to 1 whorl (trees 3 and 5 years in the field) or 1, 3, and 5 whorls (trees 7 years in the field). Virginia pines, 3 years in the field, have been cut to 25, 50 and 75% of their total height. Non-cut controls of both species were also selected. During summer 2001, cuttings from both of these species will be collected and rooted to help understand how to optimize the production and rooting of these two species by managing the 1) stumping height, 2) crown position and 3) age of the parent tree.