

MASS VEGETATIVE PROPAGATION OF SLASH X CARIBBEAN PINE: OPERATIONAL STATUS AND RESEARCH DIRECTIONS

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Techniques developed for the rooting of juvenile cuttings of this hybrid were used to produce over one million rooted cuttings, representing six polycrossed families, for the 1993 planting season. 80% of these were raised as bare-rooted stock, the remainder as container stock for summer planting.

Shoots are harvested from an area comprising 75000 hedged stool plants. A stool plant life of three years (from seed) is used, and a third of the plants are replaced each year. When maximum production is reached in mid 1993, this shoot production area will be capable of producing annually at least four crops, each of up to one million shoots. Stool plants are established, at 40 X 40 cm spacing, in 100 X 1.1 m nursery beds covered with weed matting. A rear mounted rotary slasher with sharpened blades is used to top the stool beds at a height of 15 to 20 cm after the collection of a shoot crop has been completed.

Shoots with diameters greater than 2 mm, and primary needle lengths of over 15 mm, are cut from the stool plants to a length of 10 cm and set to a depth of 4 cm in the nursery bed. "Nursery buggies" have been developed to improve worker comfort and productivity in the collection and setting procedures. Following setting, the cuttings are covered with 50% knitted shade cloth and given 8 to 10 waterings a day each of up to seven minutes duration (applied through the shade cloth). Very effective over-the-top (and through the shade cloth) chemical weed control has been achieved. After 12 to 16 weeks, most of the cuttings have rooted, the shade cloth is removed, weekly applications of foliar fertiliser commence, and the watering is gradually reduced down to 2 or 3 ten minute waterings per day. Cuttings are conditioned for planting using undercutting, lateral pruning and topping techniques that have previously been refined for use with seedlings. Cuttings grown in the nursery bed are normally fully conditioned and ready for planting out 7 to 8 months after setting.

Container cuttings are set into locally developed 170 cc polythene tubes containing equal parts peat moss and sand, with Osmocote 8-9 Month slow release fertiliser added. Set to a depth of 2.5 cm, the cuttings are covered with 50% shade cloth and irrigated during daylight hours for one minute every 30 to 45 minutes. After 14 to 16 weeks, the shade cloth is removed and the watering is cut back to 2 or 3 waterings a day. Container cuttings are ready for planting out 6 to 7 months after setting.

All families have responded well to propagation by cuttings, with an average strike rate of 89% and utilisation rates (the percentage of shoots set that are plantable) ranging from 74% for cuttings raised in the nursery bed to 86% for container grown cuttings. In field trials, growth rate and form of cuttings are similar to those of seedlings. In an experiment subjected to cyclonic winds, cuttings of Caribbean pine displayed significantly greater windfirmness than seedlings of the same families.

Two major research directions have been followed in relation to clonal forestry. Through the application of decapitation and heavy pruning treatments, shoots with apparently juvenile rooting and growth responses can be induced to develop on trees of age 4-5 years (at which some selection is possible), but not on trees at the usual selection age of 7-8 years. The alternative approach followed has been concurrent maintenance of juvenility and clonal testing. Clonal tests involving over 250 clones will be 7 years old in 1993. The ortets of these clones were maintained in a hedged stool plant area. A preliminary assessment of these clonal tests was conducted last year, and multiplication of the more promising clones commenced. Juvenile rooting levels are evident in this material, and several of the best clones are now represented by over 1000 hedged ramets. The commercial viability of both approaches to clonal forestry is now being tested in research trials and development scale projects.