EFFECTS OF JIFFY® FORESTRY PEAT PELLETS ON ROOTING STEM CUTTINGS OF LOBLOLLY PINE

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Abstract:--Vegetative propagation of loblolly pine *(Pinus taeda* L.) by stem cuttings can be used to multiply full-sib families and clones. Propagation protocols for large-scale production of rooted stem cuttings of loblolly pine are under investigation. One aspect of this research is to study effects of different types of containers on rooting and root quality. Experiments were conducted in January (hardwood cuttings) and June (softwood cuttings) to compare rooting of stem cuttings of three full-sib families of loblolly pine in Jiffy[R] forestry peat pellets and Ray Leach Super Cells[TM], the current industry standard. Jiffy peat pellets differed in dry diameters and expanded heights and are referred to by those numbers. Pellets sizes used were 25-65, 30-65, 36-65, 36-75, 42-65, 42-80, and 50-95 mm. Both studies utilized the same size pellets with the exception of the June study which did not include the 36-75 **mm** size pellet. For each experiment, Ray-Leach Super Ce11s [TM] containing a medium of 2 peat:3 perlite (v/v) served as the control. Cuttings were taken from hedged stock plants and rooted under mist on raised greenhouse benches in a humidity-controlled greenhouse. Mist was delivered by a traveling, gantry (boom) system. Twelve weeks after the cuttings were stuck, various data were recorded which included rooting percentage, number of primary roots (> 1 mm in length), root system symmetry (two roots at least 130 degrees apart), stem diameter, stem height, stem dry weight, and total root dry weight. Rooting percentages in January for hardwood cuttings rooted in pellet sizes 42-80 (36%) and 50-95 mm (57%) were less than the control (83%). Cuttings rooted in pellet size 30-65 mm had more roots per cutting than the control (6.6 vs. 4.4, respectively), whereas cuttings rooted in pellet size 42-80 mm had fewer roots than the control (2.2 vs. 4.4). The percentage of symmetrical root systems for cuttings rooted in pellet size 42-80 mm (36%), was less than the control (71%). Total root dry weight for each pellet size was less than the control. Rooting percentage in June for softwood cuttings rooted in pellet size 36-65 mm (77%) was higher than the control (64%) whereas rooting percentages for cuttings rooted in pellet sizes 42-80 (50%) and 50-95 mm (52%) were less than the control. There was no significant difference between pellet size and the control for root number or symmetry. Total root dry weights for cuttings in pellet sizes 25-65 (0.05 g), 30-65 (0.06 g), 36-65 (0.05 g), and 42-65 mm (0.07 g) were less than the control (0.1 g). Total root dry weights for all treatments in June were less than in January. In both experiments, cuttings in the four smallest pellet sizes rooted well but had similar or lower total root dry weights than the control, whereas cuttings in the two largest pellet sizes rooted poorly yet had greater total root dry weights. Therefore, an ideal use of Jiffy forestry peat pellets might involve rooting cuttings for a limited time at high density in smaller sized pellets, followed by transplanting to a nursery bed or containers for bulking up of stock plants.

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