COMPARISON OF POLLINATION BAGS FOR MASS CONTROL CROSS SEEDS IN LOBLOLLY PINE

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Over the past 10 years, deployment of full-sib families has gained prominence relative to traditional improved loblolly pine (*Pinus taeda* L.) seedling stock, such as open-pollinated families or seed orchard mixes. To produce control cross seed, a pollination bag must be used to isolate female strobili from outside pollen contamination, and a single, known pollen is applied at time of maximum female strobili receptivity. In the spring of 2014, the members and staff of the NCSU Cooperative Tree Improvement Program designed and installed a study to compare four pollination bag prototypes. Bags from PBS International were compared to the industry-standard Lawson pollination bag with and without a support wire. Open pollinated flowers were also added as control treatments to this study. The main objective of this study is to compare seed yields and seed efficiencies of cones produced from these bags to determine the optimal bag for maximizing production efficiency of control cross loblolly pine seed.

To quantify utility of each bag, total seed and seed efficiency per bag will be calculated after cone harvest in fall 2015. At this point in the study, we have assessments of female strobili survival at time of bag removal and following June drop. Based on these preliminary results, there was a highly significant difference between two of the PBS prototype bags and the industry-standard Lawson bags. PBS bags constructed of more rigid material and the Lawson bags with a support wire had the greatest survival of female strobili in June. If the preliminary conelet survival results hold true for seed yield and seed efficiency per bag, these better bags could produce about 25% more seed over the Lawson bags with no support wires. This 25% increase in seed production could also have a large economic impact on the mass production of control cross seeds.

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