STRATIFICATION OF LONGLEAF PINE

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Abstract--Stratification for 14 days improved the speed and total germination in almost all of 54 longleaf pine seed lots tested. The grower of longleaf pine seedlings can expect to realize improved seed performance and reduced seed costs by stratifying seed for 14 days. Care is urged in the handling of stratified seed to avoid premature germination, mechanical injury, or overheating of the seed.

Additional Keywords: Pinus palustris, germination, stratification.

INTRODUCTION

The stratification of tree seed has long been practiced to break dormancy and speed germination both in the laboratory and in the field. Stratification of loblloly pine (Pinus taeda L.) for 30 days gives good germination and longer periods of prechilling give marked increases in speed and uniformity of germination (Man, 1956, McLemore and Czabator, 1961). On the other hand, Longleaf pine (Pinus palustris Mill.) is one species that has traditionally been considered nondormant, and no stratification has been recommended. The rapid germination of the seed, and the early germination of seed in cones stored under moist conditions would lead a person to keep longleaf pine seed dry until after it has been planted.

In 1987 there were several longleaf pine seed lots received at the National Tree Seed Laboratory that did not germinate as well as expected from the x-ray test and the care given them in conditioning at the seed plant. Although stratification traditionally would have been an unlikely choice of treatment, it was also one of the easiest treatments to use and one which the laboratory was equipped to routinely apply. A very favorable response to stratification was observed in several seed lots in question. Because of this response it was decided to conduct a paired germination test on all longleaf pine seed lots that would be submitted in the 1988 testing season. A paired germination test is a test that is conducted with and without stratification, or alternatively, with 2 levels of stratification.

MATERIALS AND METHODS

A total of 54 seed lots were available for the paired testing. The first test was germinated without stratification and the second test was germinated after 14 days of stratification. A test consisted of 4 samples of 100 seeds. The germination media was crepe cellulose paper manufactured for seed testing. Stratification was on the germination media at 3 C. Germination temperature was 20 C and 8 hours of light were given during a 24 hour period. Counts of

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TIMETABLE OF PRODUCTION PRACTICES (CON'T)

06-12-87 Lateral root pruned (This operation allowed by row planting)

06-15-87 150 lbs Amn. Sulfate applied per ac.

07-01-87 Lateral root pruned (2nd. time)

07-01-87 Top pruned at 8 1/2 inches

07-22-87 Undercut at 7 1/2 to 8 inches

07-25-87 75 lbs Amn Nitrate applied per ac.

08-20-87 Undercut at 8 inches

09-10-87 Undercut at 8 inches

09-11-87 100 lbs Amn. Nitrate applied per ac.

09-01-87 Top pruned at 10 inches

Benlate at 2 lbs. per ac. and imidan at 1 1/2 lbs. per ac. is applied on a regular basis every 10 to 11 days for insurance against Brown Spot and any insect damage. Rhizoctonia Blight has been detected in some areas where we felt fumigation was inadaquate. Bravo at 10 lbs. AI per ac. was applied to correct this problem.

Lifting of Longleaf is done primarily by hand. An attempt was made this past year to lift with a full bed seedling harvester with moderate success. Eighty to eighty five percent of the seedlings were lifted by approximately five percent were damaged due to the lifter belts mashing the seedling buds. Also the fifteen to twenty percent left in the bed were the ones with the greater root systems.

Longleaf at Walker are packed in kraft pater bags with jell as a packing medium. Baling of Longleaf was tried but because of seedlings having no stem for the bands to hold the seedlings, continued falling out the ends of the bales. An attempt is made to only lift enough seedlings for one weeks shipping, insuring fresh Longleaf seedlings are held in storage.