TOPICS RELATING TO FOREST NURSERY PRACTICES

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WATERING AND GERMINATION

The amount of water present in the soil has a tremendous influence on seed germination and seedling growth. More than in any other operation, watering depends on the personal judgement of individual nurserymen (6). During the initial germination period it is very important to keep seedbeds moist with light applications of water. Excessive water can result in considerable loss to seedlings from damping-off and loss in nutrients from leaching. Generally speaking, southern pine seedbeds need about one inch of water weekly. Timing of watering is more important than application of exact amounts of water. After seedlings have become established, water less frequently and apply only enough water to thoroughly saturate the root zone (1). The root zone will increase in depth as the season progresses. Heavy and infrequent applications of water are recommended over light and frequent ones after seedling growth commences. Nurserymen should dig sample holes or carefully lift seedling samples from time to time to keep up with root development. Pine seedlings should not be watered during August, September, and October unless a prolonged drought exists. Hardwoods need the same attention as mentioned above, but will require more watering than pine.

SEED TREATMENT

Stratification is probably the most widely used seed treatment before planting. Stratification is the storage of seed between moist layers of sand or peat moss at cool temperatures. This procedure helps to break dormancy thus speeding up germination, but can also be harmful as reported by Tom Swofford (5). Stratification is widely used on loblolly pine and several of the hardwood species. Soaking seed in water from 12 to 24 hours prior to planting is a common practice for non-dormant seed.

The germination of many species has been improved by soaking the seed in acids (2). For example, black locust germination is improved with a 1-hour soak in sulfuric acid. Redcedar, baldcypress, and black cherry germination is improved by soaking in diluted citric acid.

Citric acid soak prior to stratification have improved germination of white pine, loblolly pine, slash pine, and redcedar. This combination pre-treatment has increased both the speed of and total germination of these species. A word of caution--before attempting acid soaks, be sure you are familiar with the procedure and follow instructions well. It is very easy to spoil seed lots.

REPELLENTS

Two commonly used bird repellents are Arasan and sublimed Anthraquinone (4). Two commonly used stickers are Flintkotes asphalt emulsion and Dow latex. Both chemical repellents and stickers give excellent bird protection. The combination of Anthraquinone and latex was found to be more desirable than Arasan and asphalt. Anthraquinone is non-irritating to handle. Arasan is very irritating to the eyes, nose, and throat and retards germination. Latex is cleaner to handle than asphalt and is a better adhesive. Latex does not cause seed to stick together after drying.

TUBED SEEDLINGS

Satisfactory progress is seldom reported when direct-seeding longleaf pine and the large-seeded hardwood species (2). This is probably because repellents are not yet available to keep rodents from eating these large seed. Much effort is being put forth to lessen problems in direct-seeding.

Jones (2) reported very favorable results with longleaf pine using the tubed seedling technique. He also mentioned a study that is now in progress on hardwoods. These tubes are made of kraft paper with water resistant non-toxic adhesive. They measure 1½- x 10-inch and 1-inch x 10-inch. Tubes are filled with a media of perlite, soil, and peat. A seed is placed in each tube and lightly covered. Six to 8 weeks later the seedling can be transplanted to the planting site.

Some of the advantages of tubed seedlings are:

1. Permits a young seedling to begin and maintain rapid root growth in a near normal condition.

2. Eliminates improper root development as is often experienced with bar and machine planting.

3. Longer planting season--plant year around.

4. Very effective in handling small seed lots where good survival is required.

Some disadvantages are:

1. Cost--varies from $0.01-1/3 to $0.03 per tube.

2. Transportation and handling of tubes and seedlings.

Seedlings are also being produced in fiber pots. Tony Squillace at Olustee,Florida, for example, produced slash pine seedlings in 3 x 3

fiber pots and transplants to the field very early in order to produce seedlings that will be large enough for micro-chipping in 2 years.

NURSERY PLANTING SEASON

Planting dates for the southern pines and hardwood species will vary somewhat from region to region, and even from nursery to nursery in the same region.

In the lower-South, sowing can start in February or March, but most of the Florida nurseries start sowing April 1. In the middle-South, sowing is done in March and April. In the upper-South, sowing is done in April and early-May.

We plant the bulk of our nursery during the latter half of March. We start planting near March 15 and sow both hardwood and pine seed during this time.

We like to sow our longleaf during October or early-November. At the same time we sow a limited amount of slash seed for summer planting.

Sanford Darby has reported fall planting of many of the hardwood species with good success.

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