

## HARDWOOD NURSERY MANAGEMENT

### MODERATOR'S REMARKS

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During the past 40+ years most of our nurserymen have become rather proficient in growing conifer seedlings. Seedling grades are fairly well standardized. Most past and present research dealt with the problems of conifers.

The few hardwoods produced in southern nurseries have not received too much special attention. Consequently, we do not have many good examples of outstanding hardwood plantations. A few recent studies have shown the need for a completely different type of planting stock for hardwoods. This means that we must develop special techniques for growing and handling hardwoods. This may mean separate nurseries for hardwoods. The least it can mean is that nurserymen must change their attitudes.

Hardwoods as a group include many botanical families and many species that differ in seeding habits and nursery requirements. Techniques that are successful for one species may fail with another species.

Specific problems begin with seed and extend through the shipping and planting. For example,

#### A. Seed production and seed handling

1. May mature in spring, summer or fall.
2. May require 1 or 2 years from flowering to maturity.
3. Seed production may be annually or intermittently--as 33 year intervals for some bamboo.
4. Seed are difficult to collect, clean and store.
5. Seed sizes--variable from a few seed to over 1 million seed per pound.
6. Germination variable due to seed coats and viability of seed.
7. Seed storage is difficult for many species.

#### B. Nursery soil or site requirements

1. Soil fertility: high pH and high nutrient levels; organic matter content of 2 to 4 percent.

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2. Landscape of nursery. Nearly level -- with good drainage.
  - a. Use computer Design Grading System--Ag. Engineering Departments or SCS.
3. Soil-Weed Control Treatments versus mycorrhizae development. Use corn, sorghum or similar host crop for mycorrhizae.

C. Problems associated with seedling production.

1. Predetermine size or quality of desired planting stock.
2. Density or spacing.
  - a. 6-10 per square foot.
3. Sowing, packing and mulching.
  - a. Hand versus machine
  - b. Sawdust, pine straw, wood fibre, soil.
4. Irrigation
  - a. Daily during germination
  - b. Two inches per week during growing season.
  - c. Must have good internal soil drainage.
5. Weed competition

D. Pests - Insects and disease problems with hardwoods are much more numerous and more difficult to control than with conifers.

E Distribution of seedlings

1. Special equipment is needed for lifting.
2. Size of seedlings requires special containers or packing techniques. Usually only 50 to 250 plants per bale, bag or crate.
3. Storage and shipping create problems of space and handling.

F. Problems associated with planting.

1. Site preparation
2. Planting techniques
3. Early care of plantation