Lecture notes  Sept. 10  

Nursery operations and planting

Nursery production
Forest nurseries tend to be large-scale businesses, utilizing specialized equipment, and operated by experts in this field. However, a newly emerging industry is composed of smaller nurseries that specialize in the production of native seedlings for reclamation and habitat restoration purposes. These businesses often grow species not normally available from forest nurseries or landscape nurseries, but you may need to order a year in advance.

Industry grows 1.6 billion trees per year:
- Forest products nurseries-
- Private nurseries-
- State nurseries-
- Federal nurseries-

Regionally, trees are produced:

2.6 million acres planted each year:
- Forest industry-
- Private landowners-
- National forest system-
- Other government and industry-

Outdoor nurseries:
Nursery Location
- Central-
- Topography-
- Soils-

Bed preparation and sowing
- Beds 4 ft. wide, with 2 ft. between beds
- Rip to prevent compaction, disk
- Fumigate – kills fungi, insects. Methyl bromide being used less.
- Fertilize-
- Drill seed in March/April, or sometimes in fall
- Mycorrhizal inoculation-
- Cover seed with mulch –
Maintenance
  • Weed control-
  • Irrigation
  • Monitoring-
  • Root pruning-

Lifting
  • Mechanical-
  • Remove dirt-
  • Graded-
  • Packaged and stored

Greenhouse production
Containers-

Seeding-

Irrigation-

Dormancy-

Sorting and storage

Planting
An experienced planter can plant 2000 seedlings per day.
Planting stock:
  • Check for quality- good root system, size
  • Age- usually
    o 1-0 stock in the South. 1 yr in nursery, 0 yr in transplant bed. Older = more expensive, more difficult to handle
    o 2-1 larger stock
    o 2-0 Eastern white pine

7 main rules for tree planting:
1. Never let the tree dry out
2. Transport carefully- avoid damage to root systems
3. Avoid temperature extremes- do not plant seedlings that have been frozen in storage.
4. Plant promptly- after lifting or removal from storage, avoid extended transport time.
5. Do not trim roots or shake off soil or gel.
6. Plant deeply and maximize soil-root contact
7. Plant between Dec. 15 and April- best time is just after soil thaws

Microsite selection:
- Scarify soil-
- Plant in lee of slash-
- Plant on mound or ridge-

Spacing-every site has a carrying capacity. Good site= higher carrying capacity
- Closer spacing for pulpwood
- Wider spacing for sawtimber
- Row vs. random planting

Protection of planted seedlings:
- Insects (cicadas), rodents, deer
- Repellants-
- Tree shelters-

Planting hardwoods:
Difficulties:
- Less able to adapt to site conditions than conifers –
  - Browsing- deer
  - Vegetative competition
  - Cost and availability

Species:
- Yellow poplar and walnut- only on moist, well-drained, deep soils in valleys and lower north-facing slopes
- Oak- not a pioneer species, competition and browsing are problems
- Sweetgum and ash- less site-demanding. Good for heavy, wet clay soils, and shallow sandy-loamy soils over a clay base. Deer are a problem
- Cottonwood and sycamore- best on well-drained, deep, rich soils. Can be planted at close spacing for biomass production in short-rotation plantations.

Cuttings:
- May be rooted in nursery, or on site
- Genetically identical stand from one individual source
- Used extensively for streambank restoration, some for slope stabilization
- Cottonwood and willow