Overview of State Land Forest Management in Minnesota

Bob Pajala[1]

Pajala, R. E. 1997. Overview of State Land Forest Management in Minnesota. In: Landis, T.D.; Thompson, J. R., tech. coords. National Proceedings, Forest and Conservation Nursery Associations. Gen. Tech. Rep. PNW-GTR-419. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 3-4. Available at: http://www.fcnanet.org/proceedings/1997/pajala.pdf

MINNESOTA FORESTS

Pre-European settlement Minnesota was approximately two-thirds forested. Today the state is approximately one-third forested with some 16.7 million acres of forest land in all ownerships. Some 23% of the current forest is owned by the state. Counties own 16%, the federal government owns 2 1 %, forest industry owns 8 %, and private woodland owners own 32%. A key feature of the forests of Minnesota is that the forest-prairie interface transects the state from north to south. This puts virtually all of the tree species on the western edge of their range and creates some unique silvicultural challenges for foresters.

STATE LAND MANAGEMENT

Minnesota Department of Natural Resources (DNR) Division of Forestry manages some 4.4 million acres of forest land, 60 % of which is classed as commercial forest. Some 30,000 acres are harvested annually. One-third of the harvested sites are reforested by planting or seeding. Two-thirds of the harvested sites are reforested by natural means such as suckering or natural seeding. State law requires all state land harvested sites be reforested with appropriate species and stocking. The annual timber sales from state forest land are now around 600,000 cords or $11,000,000 to $12,000,000 per year. State forest management also includes the maintenance of a 2,000+ mile forest road system (Table 1).

Table 1. FY1996 State Land Reforestation Accomplishments

Natural Regeneration Silviculture Systems	21,900 acres
Planting	3,584 acres
Site Preparation	4,713 acres
Timber Stand Improvement	2,965 acres

REFORESTATION PRACTICES

Natural regeneration

Natural regeneration is the preferred regeneration method. Silviculture systems featuring suckering, stump sprouting, seed tree and shelterwood are typical natural regeneration methods used on state forest land.

Site preparation
If planting is the regeneration method, the first step is site preparation. Patch scarification, often in conjunction with herbicide application, is the preferred site preparation technique. The objectives of site preparation are to leave as much of the organic layer undisturbed as possible, provide micro-sites for successful establishment of seedlings, and reduce competition on the site.

Planting and seeding
All state forest planting is done by private contractors and almost all of that is done by hand. Half of the planting is done by hoedad and half by planting bar.

Survival is similar with both methods. A total of some four million seedlings are planted per year.
Some three-quarters of the planting stock is bare root stock produced by two DNR nurseries. The rest is containerized stock procured from a number of private vendors. Container stock is preferred on very rocky sites where shallow soils make it hard to plant seedlings with long root systems. Three-quarters of planting are conifers. Red pine, white pine, Jack pine and white spruce are the major conifer species planted. Red oak, white oak, green and white ash and black walnut are the major hardwood species planted.

Seeding is almost all done by helicopter. Black spruce seeding constitutes the bulk of the aerial seeding program and has been quite successful.

Timber Stand Improvement
The major timber stand improvement practice is release. Release is used on one-third to one-half of planted sites. Herbicide, both aerial and ground applied, is the typical release practice. Hand release is being used more each year.

Future Reforestation Direction
The amount of reforestation on state forest land is related directly to timber harvesting. The ratio of natural to artificial regeneration silviculture systems will probably remain close to the present 2: 1. Plantations of the future will have increased within-stand diversity and be comprised of native species. Plantings and seedings, as well as natural regeneration sites will incorporate visual quality, water quality and biodiversity best management practices.

---

[1]*Forest Development Program Coordinator, Minnesota DNR, Division of Forestry, Box 44, 500 Lafayette Road, St. Paul, MN 55155-4044; Tel: 612/297-3515; Fax: 612/296-5954; e-mail: (bob. pajala@dnr. state. mn. us).*