



CENTRAL HARDWOOD NOTES

Seeding And Planting Pines

Pines that occur naturally in parts of the region, as well as those that do not, have been introduced throughout. Pines usually produce greater volumes of wood faster than hardwoods, but in many parts of the region there is no market for pine stumpage or logs. Aside from wood production, pines are established for Christmas trees, windbreaks, landscaping, erosion control, and habitat diversity. Often a rotation of pine will build up a poor old field site so that it will once again support quality hardwoods.

Climate, Site, **Seed Source, and Species** Comptability

Pines grow on a variety of sites but do best where the climate is similar to the climate of their natural range. So you should plant red pine and jack pine in the northern part of the central hardwood region; eastern white pine in the eastern part; and shortleaf, loblolly, and Virginia pines in the southern part. Scotch pine, a native of Europe, has been successfully planted in much of the region for Christmas tree production only.

Pines do best on moderate to well drained, acidic soils of coarse texture. Soils less than 18 inches deep over a fragipan should not be planted with pines.

On poorly drained soils use loblolly in the south, white pine in the north. On such sites shortleaf pine is prone to littleleaf disease. Don't attempt to establish pines at all on soils that stay wet or are subject to periodic flooding. Do not regenerate pines for wood production on sites less than black oak site index 45. They may survive, but will not grow fast enough to pay management costs in a reasonable time. Sites with site indices exceeding 65 will grow good hardwoods and will provide severe competition to pines, so generally you should restrict pine planting to sites ranging from 45 to 65.

Unless other species have performed well on eroded areas and mine spoils, plant shortleaf or Virginia pine in the south and jack pine in the north. Except in the extreme southern part of the central hardwood region, winter burn is common on loblolly and shortleaf. Loblolly grows faster than shortleaf on better sites but shortleaf or more northern species should be used where winters are cold, droughty or subject to ice storms. Don't plant eastern white pine in the western part of the region where seasonal droughts are common. Do not plant jack and red pine in the southern part of the region.

Geographic variations.-Growth can be affected by geographic origin of the seed. So get seedlings from seed collected from latitudes similar to the planting site. This is a good rule even within the natural range of the species. If the soil is shallow and accompanied by limestone outcrops, consider planting eastern redcedar.

Reforestation Techniques

Direct seeding.-In the central hardwoods area, many direct seedings have failed. Seeding should be limited to shortleaf pine within its natural range either on large areas following wildfires or where terrain or soils are too difficult to plant. For broadcast seeding, prepare the site so that at least 65 percent of the area has less than one inch of duff or loosened leaf litter above mineral soil. If possible, leave some debris for shade to reduce moisture loss. Broadcast application requires about 1/2 pound of high quality seed per acre. Consider seeding strips, rows (furrows) or spots, to reduce the amount of seed needed, to improve spacing, and to reduce site preparation costs. About 1,000 spots can be seeded with 2 to 3 ounces of seed per acre, 4 to 8 seeds per spot. Sow bird and rodent repellent treated seed unstratified between December and February or stratified from March 1 to April 15.

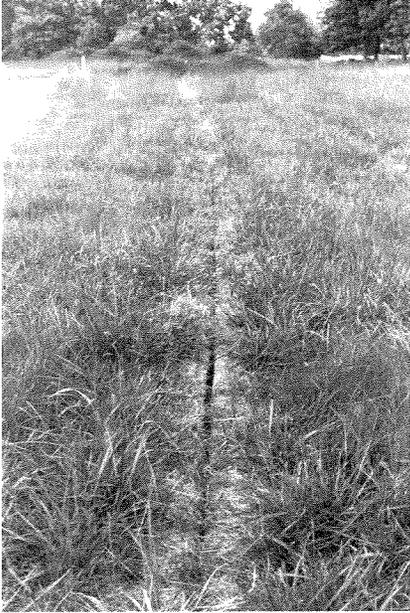
Planting.--Machine or hand planting controls stocking better than seeding does and may reduce the need for precommercial thinning and make harvesting easier. It is also more practical to plant expensive, genetically-improved seedlings than to plant improved seed. For locations with saw log markets only, use 12 x 12 foot spacing for white pine and 8 x 10 or 10 x 10 feet for all other pines. On better sites consider mixed stands of pine and hardwood. Where there is a small roundwood market or where quick crown cover is needed, use 8 x 8 foot spacing or less.

Site Preparation

Both survival and growth of pine seedlings are improved by reducing the amount of competing vegetation. Hardwood sprouts and herbaceous growth may be controlled by fire, machinery, approved chemicals or a combination of these methods.

Use fire in combination with chemicals, as sprouting may intensify after fire. Burning is usually used with direct seeding rather than planting. Before planting old fields, kill herbaceous growth with herbicides. Use a mix which includes a pre-emergent herbicide to kill germinating seeds of annual weeds as well as established plants. Apply the herbicide in spots or strips. This reduces the costs, herbicides used, and erosion. Strips 4 feet wide or spots 4 feet in diameter provide adequate control.

Ripping can enhance soil aeration and root development, concentrate fine-textured soil, and make hand planting easier. In the fall before planting, rip on the contour to a depth of 15 to 24 inches (fig. 1).



A



B



C

Figure 1.--(A) Planting site has been “ripped” and treated with herbicide in the spring, one full year before being planted. (B) On this planting site the rows were first ripped and then “banded” with the herbicide *Roundup*¹, applied in mid-August. (C) Planted seedling. Note that grass is allowed to grow between rows to reduce the effects of drying winds and too much direct sun in the summer. Grass should be mowed in the fall to discourage damage by mice and rabbits during winter. (Lois Schmollinger)

¹The use of trade names does not constitute endorsement of the products by the USDA Forest Service.

Special Practices

Planting stock.-Although bareroot nursery seedlings are commonly planted, container-grown stock can improve survival and growth on sites difficult to regenerate, extend the planting season, and possibly reduce the need for site preparation. You can improve survival of bareroot seedlings by dipping them in a commercially available antidesiccant. If available, use genetically improved planting stock to improve growth, vigor, and disease resistance.

underplanting.-Shortleaf pine and eastern white pine have been successfully underplanted when sites were adequately prepared and the seedlings were released at the proper time. The advantages are better seedling survival in dry years, easier hand planting, less soil disturbance, and less competition from sprouts and annual weeds. Kill all stems 1 to 8 inches d.b.h. with herbicide before you plant, or at least in the same growing season. Plant white pine slightly denser than normal and shortleaf pine on normal spacing. Shortleaf seedlings damaged by logging will sprout. Remove the overstory within 1 to 3 years.

References

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