

WHITE SPRUCE IN NORTHERN NEW YORK ROOT BY LAYERING

GROVER B. KATZMAN, *Instructor*
Forestry and Wood Technician School
Univ. of Kentucky
Quicksand, Ky.

Evidence has been found that white spruce reproduces naturally by layering. This information contradicts previous reports on this subject.¹

¹ Silvics of Forest Trees of the United States, Agriculture Handbook No. 271, USDA Forest Service, 1965, p. 321.

Field-examination of white spruce (*Picea glauca* (Moench) Voss) branches by the author disclosed that some of the lower limbs, which had previously been bowed to the ground by snow pressure and subsequently covered by litter, had

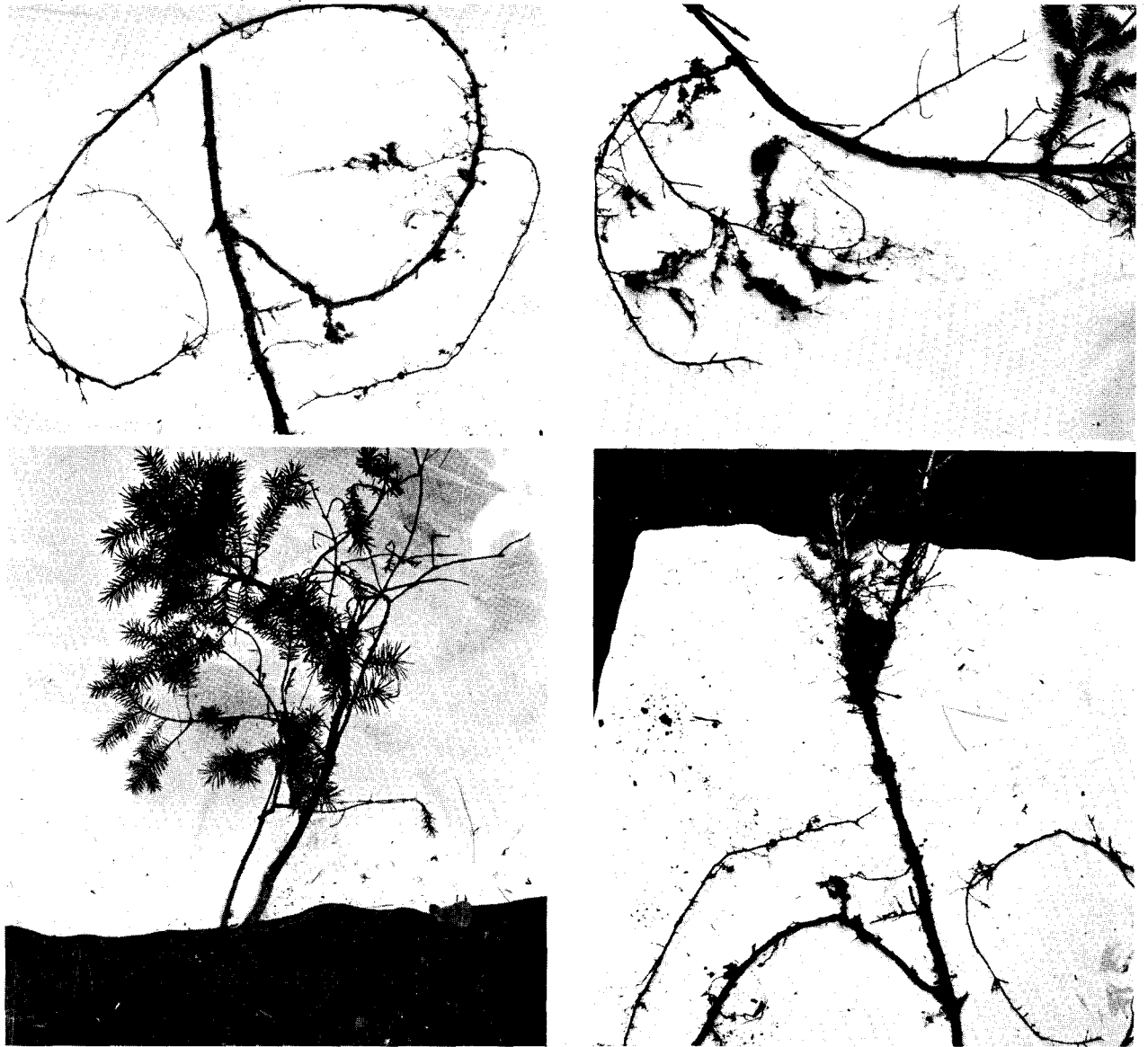


Figure 1.—Excavated layered branches showing extensive root systems.

taken root. The trees were located adjacent to Paul Smiths, N.Y., on sandy loam soil with a coniferous litter layer averaging 2 inches in depth.

The average annual precipitation for this area is 30-40 inches, of which 12 inches is snow. It is very common for the lower branches of white spruce to be bowed to the ground by the weight

of the accumulated snow, a posture from which many of them never recover. During subsequent years, these branches, still connected to the main stem and viable, are covered with litter, remain in close contact with the moist soil, and evidently root, by normal layering procedures. Such layering was observed on several trees averaging 3 to 5 inches DBH in the two areas investigated (fig. 1).

SIZE OF COTTONWOOD NURSERY STOCK RELATED TO SEEDBED DENSITY AND ROW SPACING

B. G. BLACKMON and J. L. GAMMAGE 1
Southern Forest Experiment Station
USDA Forest Service

In areas susceptible to early-season flooding,

cottonwood seedlings are thought to be superior to cuttings as planting material (Maisenhelder and McKnight 1968),² and most, tree planters prefer seedlings with root-collar diameters between 0.2 and 0.6 inch for these areas. Seedlings in this diameter range are generally of acceptable height. The study reported here indicates that production of suitable seedlings will be near maximum with a bed density of about 16 seedlings per square foot. Results also show that in rows 38 inches apart, within-row spacing should be about eight seedlings per linear foot.

The study was done on a silt loam soil at the Southern Hardwoods Laboratory, Stoneville, Miss. Seedbeds were sown at densities of four, nine, and 16 spots per square foot. Rows with centers 38 inches apart were sown at rates of four, six, and eight spots per linear foot. Several seeds were placed in each spot, but seedlings were thinned to one per spot approximately 10 days after germination. Templates were used to obtain the desired spacings.

All seeding was done on June 11, 1968. Seeds were covered with 1/2 inch of sawdust mulch. Beds were watered initially with a garden hose

equipped with a mist nozzle, and later with overhead sprinklers. Survival (live stems at the end of the study) ranged from 85 to 100 percent.

As expected, seedling size increased with spacing in both rows and fully planted beds. In beds, increasing density from four to 16 seedlings per square foot reduced average diameters from 0.34 to 0.20 inch and average heights from 4.1 to 2.7 feet (table 1). A similar trend was apparent in rows, where differences were statistically significant for heights only.

For each spacing, estimates were made of the number of seedlings of each diameter class obtainable per 100 square feet of nursery space

TABLE 1.—Effect of bed density upon size of cottonwood seedlings at the end of one growing season

Arrangement and density	Seedling heights	Rootcollar diameters
	Feet	Inch
Full beds		
4/sq. ft.	4.1 a ¹	0.34 a
9/sq. ft.	3.0 b	.22 b
16/sq. ft.	2.7 b	.20 c
Rows		
4/ft.	5.1 a	.49 a
6/ft.	3.9 b	.37 a
8/ft.	4.2 b	.38 a

¹For a given bed arrangement, values followed by the same letter do not differ significantly at the 0.05 level according to Duncan's multiple range test.

1 Respectively, soil scientist and forestry research technician at the Southern Hardwoods Laboratory (Stoneville, Miss.), maintained in cooperation with the Miss. Agr. Exp. Sta. and the So. Hardwood Forest Res. Group.

²Maisenhelder, L. C., and McKnight, J. S. Cottonwood seedlings best for sites subject to flooding. *Tree Planters' Notes* 19(3):15-16.1968.