Occasional Report 18 November 1963

6.60

PINE---SPOT SEEDING

1962 Results

Virginia Division of Forestry
Department of Conservation and Economic Development

PINE---SPOT SEEDING

RESULTS OF 1962 SPOT SEEDING ON PRIVATE LANDHOLDINGS IN VIRGINIA

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Summary and Remarks

The purpose of this study was to test spot seeding as a practical method of establishing loblolly, Virginia, and shortleaf pine on cut-over land on which remaining hardwoods were treated and poisoned by hand.

The stocking percents obtained on the study plots at the end of the first growing season are discouraging. Only 6 of 31 loblolly pine plots and none of the Virginia pine and shortleaf pine plots had stocking exceeding 40 percent.

Stocking at the end of the first growing season is already low on most of the plots, and it is felt that stocking will become even lower on many plots due to the small size and spindly appearance of the seedlings. Loblolly pine seedlings average less than five inches tall and Virginia and shortleaf pine seedlings average less than three inches tall. Hardwood sprout growth is developing on the plots, and will make it difficult for these seedlings to survive and grow properly.

General

During the late winter and early spring of 1962 a spot seeding study involving loblolly, Virginia, and shortleaf pine was installed on cut-over areas by the Virginia Division of Forestry. A total of 36 one-acre plots were established on private landholdings scattered throughout the Piedmont and Coastal Plain of Virginia as shown below:

Species	*Number of Plots*	
	Coastal Plain	*Piedmont*
Loblolly pine	12	19
Virginia pine	....	3
Shortleaf pine	....	2
Totals	12	24

Description of Cut-over Areas Used

The plots were established on cut-over woodlands on which all remaining hardwoods were treated and poisoned by hand. For the most part, hardwood tree cover was light. Brush and hardwood sprouts were not a serious problem on the plots when the seeding was done.

A layer of organic litter, usually two to three inches thick, was present on the ground surface over much of the area on most plots. Often this layer was full of roots, forming a "root mat" which was difficult to cut through when preparing seed spots.

Installation of Plots

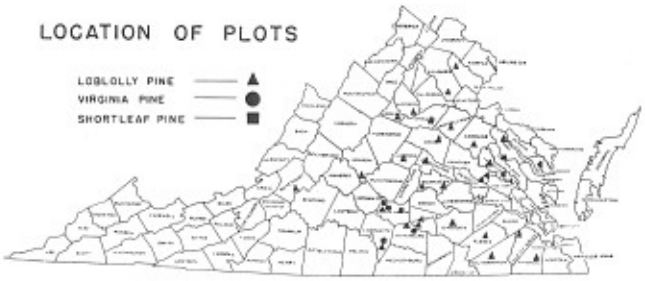
Seed spots were spaced approximately 6½ feet apart, which gave about 1000 spots per acre. A rake[1] was used to remove the litter and expose mineral soil in spots which averaged approximately eight to ten inches in diameter. The depth of the spots varied according to litter depth. Seeds were dropped in the spots and lightly stepped in, but no attempt was made to cover them.

Twelve rows each containing ten seed spots, making a total of 120 spots, were permanently staked on each plot for future sampling to determine results. These 12 rows were randomly scattered over each plot. Seed counts were made for each row.

For loblolly, from one to nine seeds were put down at each spot. Usually from two to five seeds were put down, and the average for the 31 loblolly pine plots was 3.2 seeds per spot. The range for Virginia pine was from one to seven seeds per spot with an average of 2.8, and for shortleaf pine from one to twenty seeds per spot with an average of 6.4.

Stratified seed was used on 28 of the 36 plots and non-stratified seed was used on the other eight plots. All seed was treated with endrin, Arasan, aluminum flakes, and a sticker.

[1] A rake similar to that used for forest fire fighting purposes having mower blades for teeth.



Results

During the following fall and winter (1962-63), after one growing season, the twelve sample rows on each plot were checked for stocking. The heights of all seedlings were recorded.

Most of the seedlings on the plots were small and spindly.

Many seed spots filled up with hardwood leaves. Small and spindly seedlings were frequently found bent over and covered up with leaves.

Loblolly Pine:

Average stocking (stocking refers to the percent of spots containing at least one seedling) for all 31 plots was 28 percent. The twelve Coastal Plain plots averaged 29 percent stocking and the 19 Piedmont plots averaged 27 percent. The 31 plots are grouped by stocking percent classes below:

Stocking Percent Class	*Number Plots*
0-10	5
11-20	8
21-30	5
31-40	7
41-50	4
51-60	1
61-70	0
71-80	1
Total	31

Seedlings averaged 4.8 inches in height on Piedmont plots and 4.6 inches on Coastal Plain plots. Many seedlings were only one to two inches in height, and less than 1 percent of approximately 1600 seedlings measured were over a foot in height. The tallest seedling encountered was almost 16 inches. A summary of the 31 plots by height classes follows:

Average Height in Inches	*Number of Plots*
2.0-2.9	1
3.0-3.9	7
4.0-4.9	11
5.0-5.9	8
6.0-6.9	1
7.0-7.9	3
Total	31

There was very little difference in either stocking percent or seedling height between the four plots sown earlier with non-stratified seed (between February 12 and March 1) and the 27 plots sown later with stratified seed (between March 23 and May 3).

The percent of seed spots containing more than one seedling was found to increase with stocking percent as follows:

Stocking Percent Class	*Number Plots*	*Percent of Stocked Spots Containing 2 or More Seedlings*
0-10	5	18
11-20	8	24
21-30	5	32
31-40	7	36
41-50	4	46
51-60	1	46
61-70	0	0
71-80	1	67
Total	31	

Virginia and Shortleaf Pine:

The results of the Virginia pine and shortleaf pine plots are tabulated below:

Species	*Date Seeded*	*Stratified or Non-Stratified*	*Stocking Percent*	*Average Height in Inches*
Virginia Pine	March 1	Non-Stratified	22	1.8
	March 14	Non-Stratified	28	3.1
	March 16	Stratified	29	2.3
Shortleaf Pine	February 12	Non-Stratified	20	2.4
	February 13	Non-Stratified	23	2.8