SITE-PREPARATION EFFECTS ON EARLY GROWTH OF LOBLOLLY PINE

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In a study in eastern Texas, site treatments aimed at improving initial survival of planted loblolly pines also caused height and diameter differences that were still apparent after 5 years.

The seedlings were bar-planted at 2- by 2-foot spacing in February 1958 on the Stephen F. Austin Experimental Forest, near Nacogdoches, Tex. The site was an abandoned field of Cahaba fine sandy loam with a cover of weeds and grass--chiefly partridge pea, ragweed, Bermuda grass, and goatweed. In drought-prone eastern Texas, seedling survival is enhanced by site preparation that reduces the competition of other plants for soil moisture. The following treatments, replicated three times, were tested on 20- by 20-foot plots:

Scalp-mulch.--The surface 3 inches of soil was scalped off just before seedlings were planted, and a 2-inckt-deep mulch of pine needles was applied in April over the entire plot.

Vapam-mulch.--Vapam, the soil sterilizer, sodium methyldithiocarbamate, 32 percent, was sprayed on the plots in late January 1958, and pine mulch was applied in April.

Mulch only.

Vapam only.

Scalp only.

Check--no site preparation.

Scalping removed the weeds, and two hand weedings kept both mulched and unmulched scalped plots free of competition the first summer. The Vapam-mulch combination was successful, permitting only a sparse growth of Bermuda grass and broadleaved weeds. The mulch retarded weeds and grass until midsummer of 1958; thereafter Bermuda came through it and formed a dense growth. Vapam eliminated partridge pea, but the growing space was promptly occupied by a dense mat of Bermuda.

Seedling survival during the first year was highest (table 1) for the Vapam-mulch and the two scalping treatments- -that is, where competition for soil moisture had been most effectively reduced (1). Early in 1959 the trees were thinned to 20 per plot (a spacing of approximately 4 by 5 feet), and none died thereafter.

Trees grew tallest on the scalp-mulch and the Vapam-mulch plots. They gained about 6 inches of height over the other seedlings in the first year, and about 6 inches more during 1959 (fig. 1). Thereafter they maintained their advantage but did not increase it much. When the study was closed in May 1963, the trees on these plots averaged 20 feet, significantly taller (0.01 level) than those on all other plots. The average height on the check plots in 1963 was significantly less (0.05 level) than on all other plots.

[1] This study was conducted in cooperation with Stephen F. Austin State College.

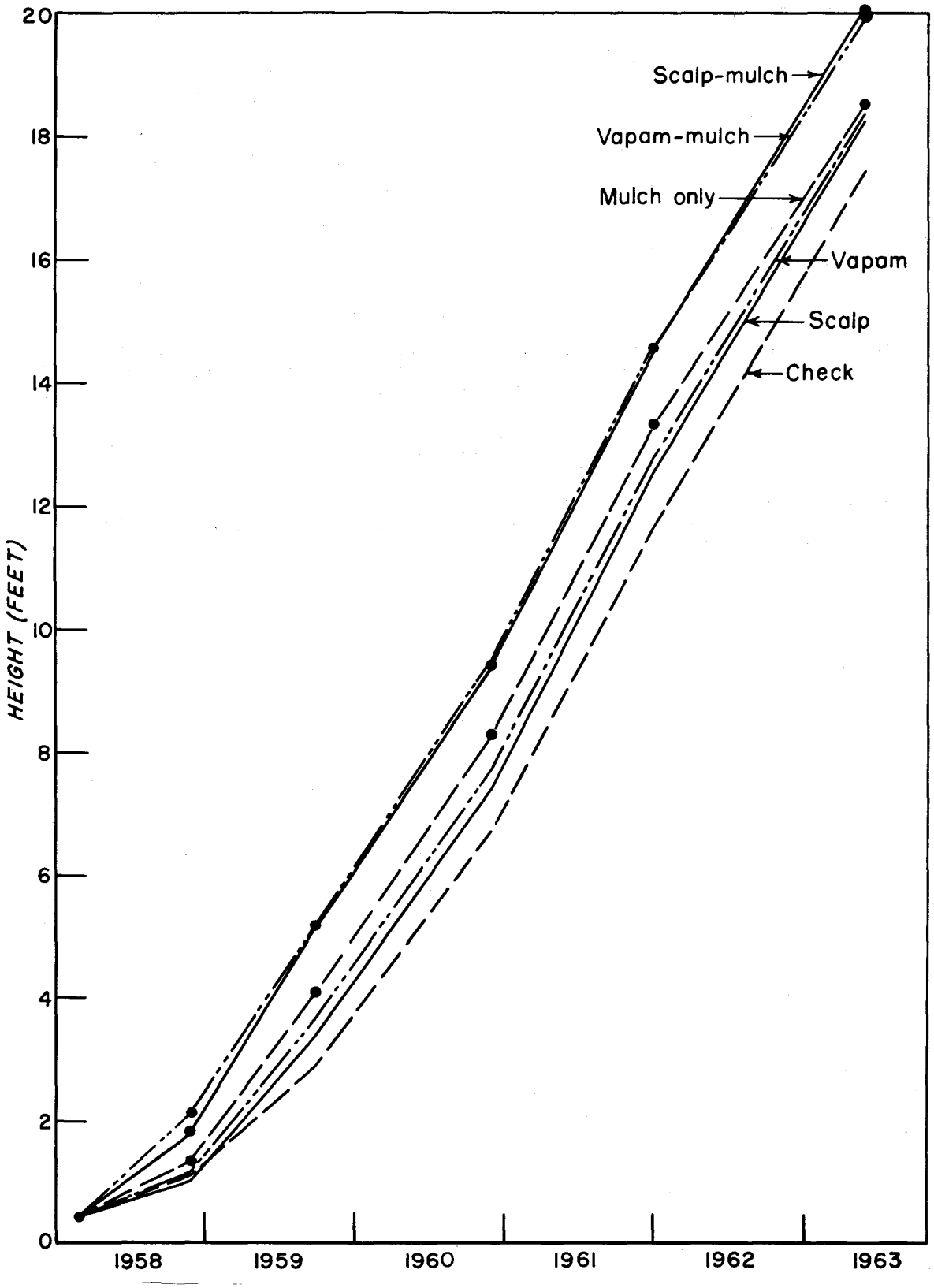

Figure 1.--Height growth, 1958 - 1963.

TABLE 1.--Effects of five site-preparation treatments on early growth of loblolly pine

Treatment	Survival, 1958	Stem diameter	
		1958	1963
	Percent	*Inch*	*Inches*
Scalp-mulch.....	90	0.5	3.5
Vapam-mulch.....	83	.5	3.5
Mulch.....	70	.3	3.1
Vapam.....	57	.3	3.1
Scalp.....	92	.3	3.1
Check.....	30	.2	2.8

Stem diameters, measured at groundline in 1958 and at breast height in 1963, ranked by treatments in about the same order as heights (table 1). Diameters on scalp-mulch and Vapam-mulch plots in 1963 were significantly greater (0.01 level) than on check plots.

Literature Cited

(1) Stransky, J. J.
1961. Weed control, soil moisture, and loblolly pine seedling behavior. Jour. Forestry 59: 282-284, 289-290, illus.