SITE TREATMENTS HAVE LITTLE EFFECT DURING WET SEASON IN TEXAS

John J. Stransky
Southern Forest Experiment Station, Forest Service
U.S. Department of Agriculture
Nacogdoches, Texas

Benefits from preplanting site preparation and later cultivation were not significant in a Texas test that encountered a better than average growing season. Survival and growth were relatively good, even on untreated check areas.

In east Texas (the western edge of the southern pine belt). thousands of acres of abandoned farmlands are planted to loblolly pine each year. Droughts of more than 30 days are frequent in normal growing seasons
and poor plantation survival has been the rule rather than the exception. In exploratory small-plot tests, removal of competing weeds had materially improved seedling survival during drought periods.

To verify these small-plot findings under field conditions, the present study was started in February 1957 at the Nacogdoches Research Center of the U.S. Forest Service Southern Forest Experiment Station. The site was a field uncultivated for the previous 10 years. Unfortunately for the test, rainfall in east Texas in 1957 was ample (63 inches as compared with the normal of 47 inches) and well distributed (growing season soil-moisture levels never approached wilting point), so that evaluation of treatment benefits under the usual severe stresses was impossible. However, the findings are of interest.

Two randomized block split-plot designs were employed, with 3 randomized blocks on a burned area, and 3 randomized blocks on an unburned area. Hence, no valid statistical comparison can be made between burned and unburned areas. Principal soils were Kalwia sandy loam and Cahaba fine sandy loam. The major preplanting treatments were as follows:

1. Furrowing with a middlebuster plow.
2. No treatment.
3. Tandem disking.
4. Flatbreaking--diskplow followed by tandem disks.

Loblolly pine 1-0 seedlings were planted in February 1957. Each major preplanting treatment was then split at random into 2 postplanting treatments:

1. Cultivation twice during the growing season, on May 19 and August 7, 1957, with regular farm tractor and cultivator.
2. Noncultivation.

Maintained at Nacogdoches, Texas, in cooperation with Stephen F. Austin State College.

First-year survival and height data for loblolly pines planted on burned and unburned areas in February 1957 were recorded in January 1958; the means are summarized as follows:

	Survival		Height	
	Burned (percent)	Unburned (percent)	Burned (feet)	Unburned (feet)
Site preparation:				
Furrowing - - - 52	69		1.1	1.2
Tandem disking -56	68		1.3	1.3
Flatbreaking - -78	75		1.4	1.3
No treatment - -52	69		1.2	1.4

The apparent superiority of flatbreaking over all other treatments could not be statistically demonstrated on either burned or unburned areas in either survival or height growth. The 22-percent survival advantage of flatbreaking on the burned area however, suggests the possibility of much greater benefit in drier years.

Growing-season cultivation in this test had very little effect on average first year survival (reduced from 66 percent to 63 percent) and no effect on average first-year height growth.

Although no valid statistical inference as to effects of burning could be drawn, it was found that site preparation took twice as long on the unburned area as on the turned area.

The main conclusions to be drawn from this study are:

1. Cultivation of loblolly pine plantations was <u>not</u> notably beneficial in a <u>wet</u> year.
2. Flatbreaking prior to planting loblolly was slightly beneficial in a wet year (expecially in conjunction with burning), but was not worth the cost; flatbreaking in dry years seems promising but has yet to be tested.
3. Burning greatly reduced the cost of all methods or pre planting site preparation tested in bushy old fields.
4. Furrowing was the least helpful treatment tested; in a wet year, it did not improve survival and tended to reduce height growth.