

The Advantages of



At age six, slash pine on disked strips (right) is at least 3 feet taller than on the burned sites (below).



IS diskling before direct seeding slash pine worth the cost, or are seedbeds of light grass roughs and fresh burns good enough? Foresters are raising these questions because both prepared and unprepared seedbeds are proving successful in large commercial seedings in Louisiana.

The answers are not always clear-cut, for weather is a powerful variable that must, sooner or later, be taken into account. However, results from a series of studies by the Alexandria Research Center may help landowners to decide whether or not to invest in site preparation.

Two facts must be recognized before considering findings from detailed studies: First, direct-seeded slash pine suffers more from lack of rain in the first growing season than either loblolly or longleaf — top

FORESTS & PEOPLE

DISKING

for Slash Seeding

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growth is relatively fast, and the tall, succulent seedlings are easily killed by dry weather. Second, summer droughts are common in Louisiana—about half of the years since 1946 had dry spells severe enough to make first-year survival uncertain.

Since large-scale slash seeding was started in 1957, about 70,000 acres have been sown. Except for 1960, rainfall during the summer months was ample for high survival even on poor seedbeds, causing some landowners to scorn mechanical site preparation. This is an understandable tendency, because disking in strips costs at least \$2.00 per acre.

Disked Plots Better

However, seeding on a fresh burn or a light rough is a gamble. This was clearly shown in 1948 by the Alexandria Center's first slash seeding study. On a grassy site, disked, furrowed, burned, and undisturbed seedbeds were compared to determine their effects on seedling establishment and survival. Germination was excellent on all seedbeds except the furrows, where silting and washing caused some seed losses. The summer was very dry, and mortality on the seeded plots was heavy—survival averaged only 2 per cent on the check and burned plots. In contrast, 22 and 80 per cent of the seedlings survived on the disked and furrowed plots, respectively.

With effective repellents to protect seed from predators, initial catches of at least 5,000 seedlings per acre can be expected on disked seedbeds from the recommended sowing rate of one pound of seed per acre. A survival of only 20 to 25 per cent will assure an adequate stand even in extremely adverse years. But, sum-

mer droughts can all but wipe out stands of 7,000 seedlings per acre on undisked sites. Disking, then, is insurance against dry weather. Consistent success can be achieved if current recommendations for site preparation and sowing rates are followed.

Plowed furrows increase survival even more than disked strips, as shown in the 1948 study. However, germination is often low because of silting and flooding of seed, especially on the poorly drained sites where slash pine is usually sown.

Confirmed in 1959

Results from this first study were confirmed by another test in 1954—also a dry year, but not as severe as 1948. First-year mortality averaged 93 per cent on undisked plots and 62 per cent on those disked in strips. The difference of 31 percentage points in survival can mean the difference between success and failure.

A 1957-58 study shows clearly the effect of weather. Sowing one pound of seed per acre in November 1957 yielded 7,160 seedlings per acre on a grass rough and 5,290 seedlings per acre on disked strips before the onset of summer weather. Survival at the end of the very favorable summer of 1958 was 97 per cent on both seedbeds. Disking was not only unnecessary, it lowered germination, probably because of silting or surface drying during germination. Results such as these in commercial operations have stimulated undue optimism and fostered the belief that site preparation is an unnecessary expense in slash seeding.

More than initial survival and cost should be considered in making the choice between seedbeds. In a test installed during the 1954-55 seeding

season, slash pine was direct seeded on light grass rough, disked strips, and furrows. Seedlings averaged 0.5 foot, 0.6 foot, and 0.4 foot in height, respectively, after one growing season. Mortality during the wet summer of 1955 was less than 5 per cent on any seedbed. This appeared to be another year when mechanical seedbed preparation was not needed. But first-year results didn't tell the whole story.

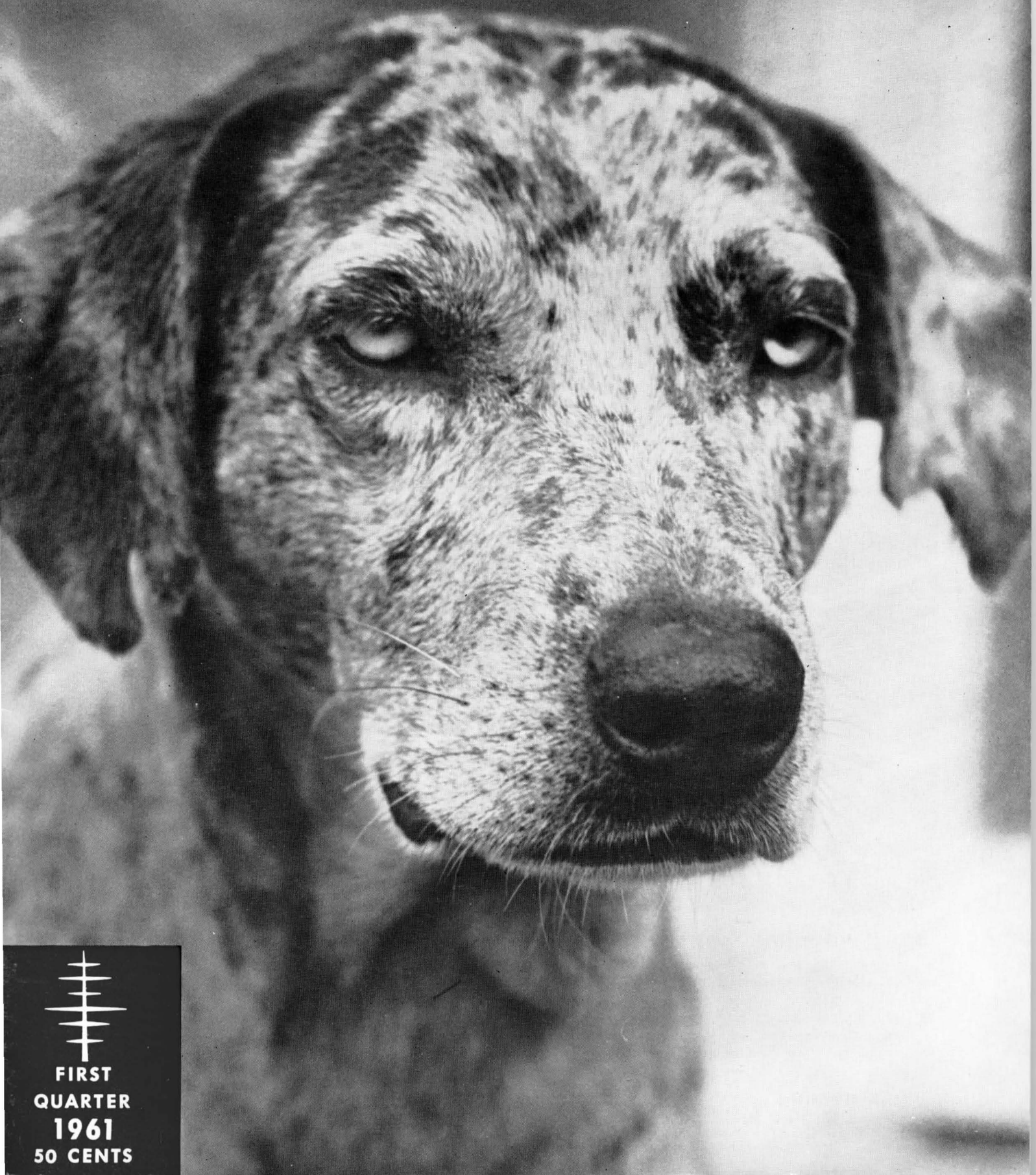
Difference in Height

The heights of these trees, measured in the winter of 1959-60 when they were 5 years old, averaged 5.4 feet on the grass roughs, 8.2 on disked strips, and 7.3 on plowed furrows. Moreover, survival from the end of the first year through the fifth year was 97 per cent on plowed furrows, 83 per cent on disked strips, and 64 per cent on grass roughs.

Slash pine seedlings, planted adjacent to the seedbed plots at the same time as the test sowing, averaged 8.6 feet in height after 5 years in the field, and had a survival of 73 per cent. Direct-seeded slash pine on mechanically prepared seedbeds survived better and were almost as tall as the planted seedlings, even though they were one year younger from seed. Both height growth and survival of seeded slash pine on grass roughs were below that of the planted stock.

The difference of 2.8 feet in height between five-year-old seedlings on disked and undisturbed plots should be enough by itself to justify disking. When added protection against drought and the resulting increased survival are also considered, disked strips are obviously the superior seedbed.

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