

COST OF DIRECT SEEDING SHORTLEAF PINE IN THE MISSOURI OZARKS

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Direct seeding of shortleaf pine (*Pinus echinata* Mill.) on the Clark National Forest in Missouri cost from \$8 to nearly \$15 per acre, depending upon the amount of seed used and the site preparation necessary. This is one-half to one-third the cost of planting seedling trees. Six areas totaling 142 acres were seeded in December 1960, and the over story was poisoned.- Sites ranged from old fields to uncut oak stands.

The treated seed was broadcast over each tract by a two-man crew using cyclone seeders. One man carried a spool of light string on his back to mark the seeded zone. Size of the poisoning crew varied from three to five men.

The greatest variation in costs resulted from the degree of release needed (table 1). All hardwood trees 2 inches or larger in diameter were poisoned using tree injectors. Dense stands of sapling-size blackjack oak (*Quercus marilandica* Muenchh.) on uncut areas were the most expensive to poison, more per acre than the seeding expenses. On heavily cut areas where only scattered, nonmerchantable trees were left, the cost of killing the overstory was only a third of that for the uncut oak areas. Old fields and a clear-cut area required no herbicide treatment.

Seed at \$10 per pound was an important cost in all areas. Chemicals and labor to treat seed added only a small amount to the total expense. All labor cost \$1.25 per hour and supervision \$2.50 per hour.

From 1,500 to 6,000 well-distributed pine seedlings were established on all areas after direct seeding in 1960, a year with favorable rainfall distribution. Results have not been as good in drier years, of course, but during these years planted pine also failed to survive.

TABLE 1.--Direct seeding and release costs per acre in 1960,
 Clark National Forest, Missouri

Costs	Old fields	Forest cut			
		Clear	Heavy	Light	None
Seeding costs:	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Seed (@ \$10 per lb.)	7.92	8.00	7.00	7.64	5.77
Repellents ¹	.16	.16	.14	.16	.12
Sowing	.28	.37	.37	.64	.29
Other ²	.12	.25	.25	.54	.29
Subtotal	8.48	8.78	7.76	8.98	6.47
Release costs:					
Chemicals ³			.34	.69	1.42
Application			1.75	3.41	6.39
Other ⁴			.50	.41	.58
Subtotal	--	--	2.59	4.51	8.39
Total	8.48	8.78	10.35	13.49	14.86

¹ Anthraquinone, endrin, aluminum powder, and sticker.

² Treating seed, supervision, etc.

³ 2, 4, 5-T in fuel oil.

⁴ Supervision, etc.