

Site Preparation Techniques

www.arkansastimber.info

Teddy Reynolds, BSF, RF, SR

There are six primary Loblolly pine reforestation practices in SW Arkansas which are similar to practices found throughout the southern pine belt's 13 states (Southeast Oklahoma to North Carolina):

- A) Burning.
- B) Chemical.
- C) Subsoil-Chemical.
- D) Two Pass Plow.
- E) Three Pass Plow.

The above three methods are used in various combinations to accommodate a wide variety of goals and objectives as follows (burning can be included with any of the below combinations; provided costs are general estimates and will vary by acres, site and location):

- 1) **Burning:** This method simply consists of planting with no site preparation other than burning:

Intensity Rating:	Low.
Cost Rating:	Low.
General Risk:	High.
Aesthetics:	Poor for six years.
Seedlings/acre:	681 (8x8 spacing).
Seedling type:	Arkansas Native 1 st Generation.
Hand Planting:	\$0.09 per seedling.
Seedlings:	\$0.036 per seedling (\$36/1,000 seedling).
Seedling Pickup/Storage:	\$0.005 per seedling.
Burning:	\$25 - \$45/acre (depends on number of acres).
Rotation:	35 years.
Rate of Return:	6.2%
Tons/Acre/Year:	4.4 tons
Preferred Soil Type:	Infertile soil types supporting low competition.
Recommended:	No, except when financial restrictions apply.

- 2) **Chemical Site Preparation and Grass Spray:** This method consists of a chemical application in the summer following harvest (controls hardwood competition), hand-planting, and a spring grass band-spray (controls spring grasses following planting):

Intensity Rating:	Medium.
Cost Rating:	Medium.
General Risk:	Low - Medium.
Aesthetics:	Poor for four years.
Seedlings/acre:	681 (8x8 spacing).
Seedling type:	Arkansas Native 1 st or 2 nd Generation.
Hand planting:	\$0.09 per seedling.
Seedlings:	\$0.036 per seedling (\$36/1,000 seedling).
Seedling Pickup/Storage:	\$0.005 per seedling.
Chemical & Application:	\$90 - \$110/acre (primary agent Arsenal).
Grass Spray (band):	\$35/acre (primary agents Arsenal and Oust).
Rotation:	30 years.
Rate of Return:	6.8%
Tons/Acre/Year:	5.4 tons
Preferred Soil Type:	Well drained deep sandy-loam.
Recommended:	Yes, in deep sands.

- 3) **Subsoil (rip) and chemical combination (may also require a shear before ripping):** This method consists of a chemical application in the summer following harvest (controls hardwood competition), sub-soil (rip) in the summer prior to planting, hand-planting, and a spring grass band-spray (controls spring grasses following planting):

Intensity Rating:	High.
Cost Rating:	High.
General Risk:	Low.
Aesthetics:	Poor for three years.
Seedlings/acre:	545 (10 x 8 spacing) or 558 (12 x 6.5).
Seedling type:	Arkansas Native 2 nd Generation (Atlantic Coastal 2 nd Gen. optional).
Hand planting:	\$0.08 per seedling.
Seedlings:	\$0.046 per seedling (\$46/1,000 seedling).
Seedling Pickup/Storage:	\$0.005 per seedling.
Chemical & Application:	\$90 - \$110/acre (primary agent Arsenal).
Grass Spray (band):	\$35/acre (primary agents Arsenal and Oust).
Sub-soil (rip):	\$80/acre (18 - 24 inches long shank & 3 - 4 inches wide).
Shear (if required):	\$105/acre (shears stumps level to the ground).
Rotation:	28 years.
Rate of Return:	7.4%
Tons/Acre/Year:	6.2 tons
Preferred Soil Type:	Sandy-loam with clay base and red clay gravel/rocky soils (gently rolling to steep topography).
Recommended:	Yes, where soil types compliment.

- 4) **Mechanical shear and plow (two-pass):** This method consists of shearing the stumps and snags level with the ground (debris left between the shear rows) followed with a 4-1 plow (coulter blade slices roots, ripper sub-soils, discs till and packer compacts bed) in the summer prior to hand-planting, and a spring grass band-spray (controls spring grasses following planting). Release spray may be required if woody competition exceeds seedling growth.

Intensity Rating:	High.
Cost Rating:	High.
General Risk:	Low (high if performed in coarse or deep sands).
Aesthetics:	Poor for two years.
Seedlings/acre:	558 (12 x 6.5).
Seedling type:	Atlantic Coastal 2 nd Generation
Hand planting:	\$0.07 per seedling.
Seedlings:	\$0.046 per seedling (\$46/1,000 seedling).
Seedling Pickup/Storage:	\$0.005 per seedling.
Shear:	\$105/acre (shears stumps level to the ground).
4-1 Plow:	\$90/acre (sub-soils, tills, and compacts).
Grass Spray (band):	\$35/acre (primary agents Arsenal and Oust).
Rotation:	25 years.
Rate of Return:	8.0%
Tons/Acre/Year;	7.0 tons
Preferred Soil Type:	Bottomland sites and fine-sandy-loams with clay base (primarily flat topography).
Recommended:	Yes, where soil types compliment.

- 5) **Mechanical shear, rake, and plow (three-pass):** This method consists of shearing the stumps and snags level with the ground, raking debris into piles and a 4-1 plow (coulter blade slices roots, ripper sub-soils, discs till and packer compacts bed) in the summer prior to hand-planting, and a spring grass band-spray (controls

spring grasses following planting). Release spray may be required if woody competition exceeds seedling growth.

Intensity Rating:	High.
Cost Rating:	High.
General Risk:	Low (high if performed in coarse or deep sands).
Aesthetics:	Good.
Seedlings/acre:	558 (12 x 6.5).
Seedling type:	Atlantic Coastal 2 nd Generation.
Hand planting:	\$0.07 per seedling.
Seedlings:	\$0.046 per seedling (\$46/1,000 seedling).
Seedling Pickup/Storage:	\$0.005 per seedling.
Shear:	\$105/acre (shears stumps level to the ground).
Rake:	\$85/acre (rakes debris into windrows).
4-1 Plow:	\$90/acre (sub-soils, tills, and compacts).
Grass Spray (band):	\$35/acre (primary agents Arsenal and Oust).
Rotation:	25 years.
Rate of Return:	7.9%
Tons/Acre/Year:	7.0
Preferred Soil Type:	Bottomland sites and fine-sandy-loams with clay base (primarily flat topography).
Recommended:	Yes, where soil types compliment.

Special Notation:

The best of techniques can fail and the worst of techniques can succeed. However, all reforestation success is dependent upon a combination of multiple influencing variables:

- 1) Temperature high during day of planting.
- 2) Temperature during days following planting.
- 3) Soil moisture day of planting.
- 4) Precipitation following planting.
- 5) Soil type.
- 6) Site preparation.
- 7) Seedling Genetics.
- 8) Seedling Morphology.
- 9) Existing Grass Competition.
- 10) Grass control.
- 11) Planter crew (handling, tightness, field bag packing, etc.).
- 12) Satellite Storage during day of planting.
- 13) Post Nursery Storage.
- 14) Nursery Storage.
- 15) Nursery lifting.

End