

GROWTH OF HARDWOOD PLANTATIONS ON BOTTOMS IN LOESS AREAS

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Though the possibilities of and the need for hardwood forestry are becoming increasingly evident, few hardwood species have been successfully planted in the South.

This article briefly describes, in pictures (figs. 1-12), some 17- to 25-year-old plantations within the loess soil belt of Mississippi and Tennessee. A 17-year-old stand of bald cypress and a 6-year-old cottonwood plantation have been included for comparison. While the choice of species was not always optimum for the sites, the plantations nevertheless serve as examples of specific performance. Taken all together, they also indicate the need for more information on the methods of hardwood reforestation.

All plantations are on abandoned farm land in stream bottoms or branch heads. They were established with 1-0 nursery seedlings set 6 feet apart, except that the cottonwood stand is from cuttings spaced at 9 feet.

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Figure 1.--Southern red oak, *Quercus falcata* Michx.

Age: 21 years.

No measurements were made on this plantation because it had been heavily cut, probably for firewood, Local alluvium phase of Collins silt loam.



Figure 2.--White oak, *Quercus albs* L.

Age: 21 years.

The three largest trees average 9.2 inches d.b.h., 50 feet tall, but many large trees had been cut for firewood. Local alluvium phase of Collins silt loam.

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Figure 3.--Yellow-poplar, *Liriodendron tulipifera* L.
Age: 25 years. Survival: 60 trees out of 98.
Basal area: 91 square feet per acre.
Diameters: 2.3-10.6 inches; average 5.3 inches.
The five largest trees average 8.8 inches d.b.h., 63 feet tall.
In a fine sandy loam, moist phase.



Figure 4.--Sweetgum, *Liquidambar styraciflua* L.
Age: 25 years. Survival: 42 trees out of 51.
Basal area: 106 square feet per acre.
Diameters: 1.4-7.5 inches
The five largest trees average 7.5 inches d.b.h., 53 feet tall.
In a fine sandy loam, moist phase.



Figure 5.--Sweetgum.

Age: 17 years. Survival: 39 out of 45 trees.
Basal area: 153 square feet per acre. Diameters: 1.1-6.1 inches; average 3.9 inches.
The five largest trees average 5.2 inches d.b.h., 42 feet tall.
Falaya silt loam, dry phase.



Figure 6.--Water tupelo, *Nyssa aquatica* L.

Age: 17 years. Survival: 64 trees out of 72. Basal area: 96 square feet per acre. Diameters: 1.4-5.9 inches; average 3.7 inches.
The five largest trees average 5.2 inches d.b.h., 49 feet tall.
Falaya silt loam, moist phase.



Figure 7.--Water oak, Quercus nigra L., and willow oak, Quercus phellos L., in mixture.
Age 17 years. Survival: 27 trees out of 40. Basal area: 131 square feet per acre. Diameters: 1.4-5.9 inches; average 4.3 inches.
The five largest trees average 6.7 inches d.b.h., 46 feet tall.
Falaya silt loam, moist phase.



Figure 8.--Swamp chestnut oak, Quercus michauxii Nutt. Age: 21 years. Survival: 49 trees out of 94 (29 were cut). Basal area: 81 square feet per acre. Diameters: 2.9-8.8 inches; average 5.3 inches.
The five largest trees average 6.9 inches d.b.h., 45 feet tall.
Collins silt loam, dry local alluvium phase.



Figure 9.--Green ash, Fraxinus pennsylvanica Marsh. Age: 19 years.
Diameters: 2.7-4.9 inches; average 3.8 inches.
The five largest trees average 4.2 inches d.b.h., 39 feet tall.
Falaya silt loam, dry phase.



Figure 10.--River birch, Betula nigra L.
Age: 25 years.
No measurements were made in this plantation. In a
fine sandy loam, moist phase.



Figure 11.--Eastern cottonwood, *Populus deltoides* Bartr. Age 6 years.
Basal area: 60 square feet per acre (after a thinning).
Diameters: 2.6-9.9 inches; average 6.4 inches.
The five largest trees average 8.6 inches d.b.h., 54 feet tall.
Falaya silt loam, moist phase.



Figure 12.--Baldcypress, *Taxodium distichum* (L.) Rich. Age: 17 years. Survival: 38 trees out of 71. Basal area: 181 square feet per acre. Diameters: 2.0-12.2 inches; average 6.6 inches.
The five largest trees average 9.9 inc'.es d.b.h., 54 feet tall.
Falaya silt loam, moist phase.