

MISSISSIPPI STATE UNIVERSITY  
AGRICULTURAL EXPERIMENT STATION

HENRY H. LEVECK, Director

STATE COLLEGE

MISSISSIPPI

SOIL SUITABILITY FOR FOREST TREES IN DEEP LOESS AREA

By W. M. BROADFOOT AND J. S. MCKNIGHT

This paper reports on the suitability of soils within the Deep Loess area for growing forest trees.

These soils are in a belt adjacent to and just east of the Mississippi River flood plain, or Delta. They developed in wind-blown deposits greater than 4 feet deep. Their texture is uniform, and they usually range from silt loam to silty clay loam. Also in this area are terrace and bottom-land soils derived principally from silty materials of the nearby loess hills.

The suitability of the soils in the Deep Loess area for growing hardwoods, bald-cypress, and pine is shown in the table. Solid black blocks indicate species that occur frequently and should be favored in management. Grey blocks indicate common species that should be managed for harvest at the first profitable opportunity

Southern Forest Experiment Station<sup>1</sup>  
Forest Service, U. S. Department of  
Agriculture

but not favored as components of future stands. Dots show species occurring only occasionally on a particular soil; here a gain black means "favor", and grey indicates "manage, but do not favor."

The table was compiled from observations, experience, and research of hardwood and soil specialists familiar with forests within the Deep Loess area. It is subject to alteration with further develop-

<sup>1</sup>The authors are stationed at the Stoneville Research Center, Stoneville, Mississippi. The Stoneville Center is maintained by the Southern Forest Experiment Station in cooperation with the Mississippi Agricultural Experiment Station and the Southern Hardwood Forest Research Group.

ments in research. Particular emphasis is made of the fact that these relationships are based on timber stands as they occur naturally, and by no means imply that other growth relations may not come about through planting.

Some of the soils in the Deep Loess area are the same as those in the Delta. There are more tree species in the Deep Loess, however, and their soil requirements are not necessarily the same.

Pines are listed primarily to show that eroded loess ridges and eroded terraces in the area are better suited for pine than for hardwoods. Moreover, when pine does come in on poorly drained, hardpan soils like Henry and Calhoun, it should be favored over any of the hardwoods. Such soils are too dry in summer to produce hardwoods of log size.

Table 1.--Soil suitability for forest trees in the Deep Loess area

Important commercial species <sup>1/</sup>	Deep loess (uplands)						Terraces from loess and mixed materials						Bottom land from loess			Bottoms from mixed loess and Coastal Plain sands			
	Memphis, Loring, Ridge and upper slope		Natchez Middle and lower slope <sup>3/</sup>	Grenada		Calloway	Henry	Lintonia Dexter		Freeland Richland Pearson		Hatchie Olivier Brittain	Calhoun Carroll Almo	Vicksburg Collins	Falaya	Waverly	Shannon Hymon	Ina	Beechy
	Non-eroded	Eroded <sup>2/</sup>		Non-eroded	Eroded <sup>2/</sup>			Non-eroded	Eroded <sup>2/</sup>	Non-eroded	Eroded <sup>2/</sup>								
Ash, white or green			●	●				●		●									
Baldcypress														●				●	
Basswood								●	●	●	●			●				●	
Beech, American								●	●	●	●								
Cherry, black		●						●	●	●	●			●	●				●
Cottonwood, eastern			●					●		●							●	●	●
Cucumbertree										●				●	●		●	●	
Elms, slippery & Am.		●							●	●			●						●
Hackberry								●		●			●	●	●		●	●	●
Hickories (exc. water)								●		●			●						●
Honeylocust								●		●			●						●
Magnolia, southern	●							●	●	●	●			●				●	
Maple, red		●						●	●	●									●
Oak, cherrybark													●						
Oak, chinkapin	●	●		●	●			●	●										
Oak, laurel										●	●		●	●	●		●	●	●
Oak, Nuttall								●		●			●				●	●	●
Oak, overcup										●	●						●	●	
Oak, Shumard	●							●	●	●	●			●			●	●	●
Oak, southern red								●	●	●	●			●			●	●	●
Oak, swamp chestnut								●	●	●	●								●
Oak, water		●						●	●	●	●								●
Oak, white								●	●	●	●								●
Oak, willow			●	●				●	●	●	●						●	●	●
Pecan								●	●	●	●			●	●		●	●	●
Persimmon, common								●	●	●	●			●					●
Pines								●	●	●	●			●					●
Redcedar, eastern								●	●	●	●			●	●		●	●	●
Sassafras								●	●	●	●			●			●	●	●
Sweetgum								●	●	●	●								●
Sycamore, American			●	●				●	●	●	●								●
Tupelo, black								●	●	●	●								●
Tupelo, water								●	●	●	●								●
Walnut, black			●	●				●	●	●	●			●			●	●	●
Yellow-poplar								●	●	●	●			●	●		●	●	●

<sup>1/</sup> Common names are those found in Agriculture Handbook 41, U.S. Department of Agriculture. 1953.

<sup>2/</sup> Soils with less than 6 inches of topsoil.

<sup>3/</sup> Includes all slopes greater than 17 percent.

POST AND SPECIALTY SPECIES: Black locust and flowering dogwood, occurring extensively and growing well on the well-drained soils; mulberry, abundant on all soils.  
 SPECIES LIMITED COMMERCIALY OR IN OCCURENCE: Boxelder, river birch, American holly, post oak, chestnut oak, black oak, sugar maple, sumac, chinaberry, catalpa, and northern red oak on well-drained soils; swamp cottonwood, cedar elm, water hickory, swamp tupelo, and black willow on poorly drained soils; winged elm and buckeye on all soils.  
 WEED SPECIES: Eastern hophornbeam, American hornbeam, and blackjack oak on well-drained soils; swamp-privet, planertree, and common buttonbush on poorly drained soils; hawthorn on all soils.

 Occurs frequently; favor for management.  
 Occurs occasionally; favor.

 Occurs frequently; manage, but do not favor.  
 Occurs occasionally; manage, but do not favor.