

Simple to use field guide provides easy way to determine potential growth on each site

# WHERE TO PLANT HARDWOODS

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**B**efore anyone invests in planting hardwoods, he wants to know that his trees are suited to the site and will grow well. That assurance is now available to those interested in green ash, cottonwood, sweetgum, sycamore, or Nuttall, water, willow or cherrybark oaks.

With a copy of a new field guide, it is possible to estimate site index to within five feet at age 30 for cottonwood and five feet at age 50 for the other species. The guide also allows evaluation of a site for growth-limiting factors and, for cottonwood gives estimates of potential volume production at various ages.

### How It Works

In Table 2, the sweetgum site evaluation guide, soils are divided into four major factors: physical condition, moisture availability during the growing season, nutrient availability and aeration.

Each major factor is subdivided into many soil-site properties. For example, physical condition has as its properties soil depth, texture, compaction, structure and past use. Next to each soil-site property are three categories (best, medium and poor) that indicate a range in soil-site conditions. Each property of any soil should fit into one or another of these categories. Note also that the categories each have a number in brackets under them; these numbers are the key to the method.

### Sample Application

Determining how well a species will do on a site involves a little field work; each property of a soil must be examined to decide whether the soil-site condition is best, medium or poor. Once this is done, the appropriate bracketed number is assigned. Then numbers are added to obtain the quality rating of the site.

Here's an example. Assume that the location to be evaluated is recently abandoned pasture land (grass cover) on a stream terrace of the Coastal Plain. The area is level and not subject to flooding. The soil is a sandy loam with a well developed profile and has a seven-inch A-horizon; it is granular in structure. The soil is deep and moderately compacted, but there are no pans. It is reddish-brown and mottled at 20 inches. The water table is at a depth greater than 10 feet, pH is 6.0 and there is one to two percent organic matter in the A-horizon.

By assigning site-quality rating from the sweetgum evaluation guide (Table 2), the site is evaluated as shown in Table 1. This evaluation indicates that the site index for sweetgum on this particular area is 86 feet at 50 years.

By comparing the values obtained for each major factor with the maximum values possible for an ideal site, it can be determined which major factor limits growth. In the example, physical condi-

tion received 83 percent (25 of 30) of the points possible, while aeration received 100 percent of the total points possible. Moisture and nutrient availability, however, received only 50 and 54 percent of their total possible points. Thus, lack of moisture and nutrients are probably the growth limiting factors for sweetgum on this site.

Perhaps the best feature of the new technique is that it can be used by any forester who has a little soil experience or a few hours of instruction from a soil scientist. The method does not require identification of soil series and it can be used on any site in the southern hardwood region except where aspect is important in mountainous areas.

For a copy of the complete field guide, write Southern Forest Experiment Station, 701 Loyola Avenue, New Orleans, Louisiana 70113. Ask for *A Practical Field Method of Site Selection for Eight Important Southern Hardwoods*. General Technical Report SO-14. □

**EXAMPLE — Refer to chart on following page**

**TABLE 1**

MAJOR SOIL FACTORS			
Physical condition	Moisture availability	Nutrient availability	Aeration
	Water table . . . . .3		
	Pans . . . . .6	Geologic source . . .2	
	Position . . . . .3	Past use . . . . .3	
Soil depth and pans .6	Microsite . . . . .1	% organic	
Texture . . . . .4	Structure . . . . .5	matter . . . . .2	Structure . . . . .8
Compaction . . . . .4	Texture . . . . .5	Topsoil . . . . .5	Swampiness . . . . .8
Structure . . . . .6	Flooding . . . . .0	Soil age . . . . .0	Mottling . . . . .7
Past use . . . . .5	Past use . . . . .1	pH . . . . .1	Color . . . . .7
	<u>          18 Ft.</u>	<u>          13 Ft.</u>	<u>          30 Ft.</u>
	(Total Possible) (30 ft.)	(24 ft.)	(30 ft.)
			<b>SITE INDEX = 86 ft.</b>

**A five-year-old stand of sycamores planted eight feet apart and averaging 40 feet tall**