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Coppice Regeneration of Sweetgum

Abstract. Numerous thrifty sprouts developed when pole-sized sweetgums in Mississippi were cut to low stumps. At age 6 years, dominant sprouts averaged 16 feet tall on clay sites in a stream bottom and 22 feet on a moist silt loam in the uplands.

To evaluate the ability of sweetgum (*Liquidambar styraciflua* L.) to reproduce from sprouts, four pole-sized stands were clearcut in April 1956. Six years later sweetgum sprouts dominated the clearings with 800 to 900 stems per acre (Fig. 1).

The stands were near Laurel, Mississippi, on land owned by Masonite Corporation. One covered one-half acre in a stream bottom on clay soil; the other three, a combined area of one-half acre on upland silt loam soil. Both sites were suitable for hardwoods. The upland stands were in seepage pockets where soil moisture was plentiful. This upland should not be confused with the high, relatively dry pine sites where sweetgum is common in the understory.

Of 283 sweetgum trees cut, 157 were on the clay site. Stumps ranged in diameter from 4 to 25 inches and none were taller than 6 inches.

One year after the cutting, nearly three-fourths of all the stumps had at least one sprout. Six years after, 80 percent of the stumps on the upland plots and 64 percent of

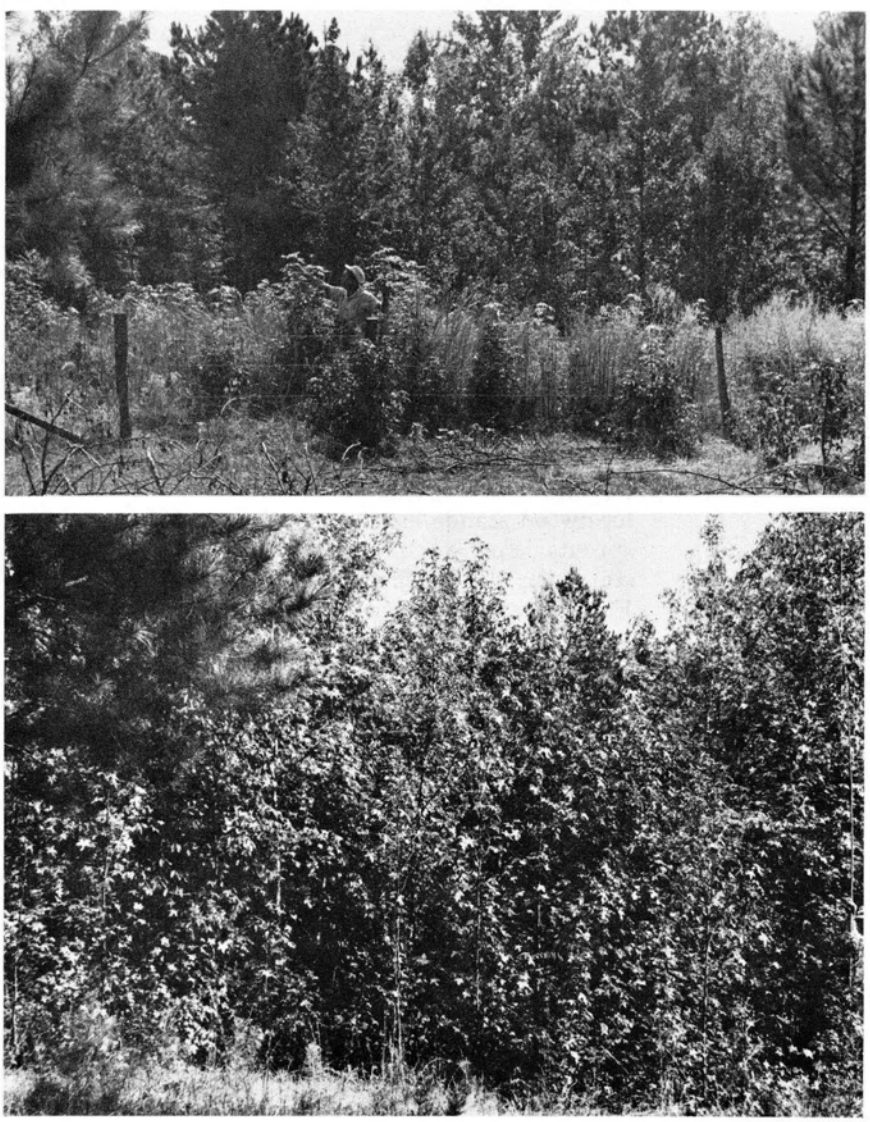

FIG. 1.—Upland plot regenerated by sweetgum sprouts, one (upper photo) and six years after cutting.

upland. Root sprouts, generally considered the most desirable kind, were growing from about one-half of the productive stumps in the bottom land and from two-thirds of those in the upland.

When one year old, dominant sprouts (one from each stump) averaged about 4.5 feet tall. At age 6 years they averaged 16.1 feet on the clay soil and 22.2 feet on the silt loam soil. Average diameter at breast height was 1.5 inches on clay, 2.3 inches on silt loam. Though 56 percent of the dominants were top sprouts, sprout origin and height growth were not related. When root, collar, and top sprouts occurred on the same stump, there was generally very little difference in their heights.

So far as could be determined without cutting, none of the 6-year-old sprouts were rotting, even though the stumps had deteriorated to shells.

There is considerable evidence that many of the small, even-aged patches of sweetgum throughout hardwood stands have grown from sprouts. For example, one 20-inch stump on the Bluff Experimental Forest near Vicksburg, Mississippi, produced 150 first-year sprouts over an 8- to 10-foot radius. In 4 years the sprouts, grown to heights of up to 15 feet, dominated the opening.

Sweetgum's ability to reproduce through coppice is important in management, especially on marginal sites where the primary goal is pulpwood production. Top sprouts, while able to stay ahead of competing vegetation, may be undesirable because rot often causes them to develop into cull trees. But sprouts of low origin may be more desirable than seedlings because (1) they start developing soon after the parent tree is cut, eliminating the need for seed trees and site preparation, and (2) they grow quickly for the first 3 or 4 years and overtop the myriad of vines, briars, and weeds that invade openings in hardwood forests.

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