

Growth and Survival of Water Tupelo Coppice Regeneration After Six Growing Seasons

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ABSTRACT. *In the lower Atchafalaya Basin, water tupelo (Nyssa aquatica L.) trees were cut in May and November at three stump heights to study coppice regeneration. Sprouting was extremely good after one growing season, and live sprouts grew well through the third and fourth seasons. However, some stumps began to deteriorate and sprouts die after the second growing season. After six years, only 9 percent of the stumps cut in May and 18 percent of those cut in November had live sprouts.*

Water tupelo is found in cypress-tupelo swamps from southern Virginia to northern Florida; in southeastern Texas; and in the Mississippi Valley northward to Illinois, western Kentucky, and Tennessee. It normally grows in dense stands with or without cypress (*Taxodium distichum* (L.) Rich.) and other tupelos, and typically has a long, clean, strongly buttressed bole.

Trees are either cut near the top of the butt swell or felled and bucked to leave the basal wood. The butt swell may be from as little as one foot above ground line to as much as 8 to 10 feet, depending on flooding depth in the swamp. Water tupelo wood is valued for a number of products because of its white color, lack of odor or taste, good staining qualities, and nail-holding characteristics. The wood is exceptionally clear and used for veneer, box lumber, and furniture stock. The butt-swell portion has been shown to be suitable for pulpwood with the possibility of use in grease-proof papers and corregating medium (Laundrie and McKnight 1969).

Vast acreages of water tupelo are at or near merchantable size. When these stands are cut, we need to know if we can rely on the coppice method of regeneration to produce the next stand, and, if so, what effects stump height and season of cutting have on this regeneration.

METHODS

The study area is in Assumption Parish, about five miles east of Morgan City, Louisiana. Plots were located in a water tupelo stand on the western

edge of the cleared area of a former oil well drilling site. The cleared area was about five acres, so trees in our plots had full access to sunlight from the east.

The stand was about 50 years old when cut and was almost pure water tupelo with a few scattered cypress. Basal area was 200 square feet per acre and trees were considered healthy. Trees averaged 15.9 inches diameter at stump height and 70 feet tall. The site is classified as swamp, with mixed clay alluvium soils.

The study area is outside the protection levees (floodway) of the Atchafalaya River, but part of a one million-acre area known as the Atchafalaya Basin. It is a permanently flooded swamp with water levels remaining about 12 inches deep throughout the year. The area is typical of large acreages found in deep swamps which do not dry out each year but dry only occasionally during periods of drought.

A split-plot design with three replications was used for this study. Three blocks, approximately 0.3 acre each, were laid out and divided into two subplots each. Either a May or November cutting date was randomly assigned to a subplot. One cutting height was randomly assigned each tree within a subplot. Five trees were cut at each height, a total of 15 trees per subplot or 45 trees per cutting date. All trees in a plot not used as study trees were cut when the study was installed.

Cutting was done in May and November 1971. Trees were cut at three stump heights: 6, 18, and 30 inches above the average 12-inch water level.

Variables measured after the first, second, fourth, and sixth growing seasons were survival (percent of stumps with at least one live sprout), number of sprouts per stump, sprout heights, and diameters. Tests were made at the 0.05 level of probability.

RESULTS AND DISCUSSION

Sprouting was extremely good after one growing season for both the May and November cuts (Table

CONCLUSIONS

Coppicing of water tupelo in the Atchafalaya Basin does not appear to be a satisfactory method of regeneration. The surviving sprouts are too few to fully utilize the site. Only 9 to 18 percent of the stumps had live sprouts after six growing seasons, and, as reported by Allen (1962), tupelo reproduction would be patchy and insufficient. Other researchers (Hook et al. 1967) have reported good reproduction with coppice tupelo, but flood water depths and duration may have been different in their studies. It appears that coppicing water tupelo may or may not be successful. Water management to create the right environment may be very important in determining success or failure.

Literature Cited

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