



Atchafalaya River Basin and main channel.

The Southern Swamplands

Potential Timber Bonanza

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new planting and management techniques.

Scientists of the Southern Forest Experiment Station are seeking ways to re-establish trees on bare swamp sites and to manage the extensive stands of second-growth tupelo that have come up in some areas where virgin forests were logged.

Their outdoor laboratory for this research is one of the largest swamps in the South. An area of some one million acres, the Atchafalaya Basin is the flood plain of the Atchafalaya River and a diversionary channel for Mississippi River floodwaters.

It originates near Simmesport, at the junction of the Red and Old rivers, and ends at the Gulf of Mexico near Morgan City. The basin is about 15 miles wide and 75 miles long and is delineated by east and west protection levees extending all the way to the Gulf. The river follows a single



One of the plots where Southern Hardwoods Laboratory scientists tested growth of water tupelo seedlings under soil and water conditions like those in the Atchafalaya Basin.

channel through the northern end of the basin, but fans out into a series of channels, lakes, and other drainages through the southern part.

In much of the basin the cypress and tupelo were removed in the late 1800s and early 1900s by railroad skidder and pullboat logging methods, which were so destructive that little second-growth timber can be found where they were applied. Planting will be required to make these lands productive again.

Many parts of the basin are flooded for extended periods each year, and researchers have been learning what species to plant in such areas. In 1967, scientists at the Southern Station's Southern Hardwoods Laboratory in Stoneville, Miss., built a

series of levees to duplicate conditions found in the Atchafalaya Basin. Water levels on 66 plots surrounded by the levees were controlled by a pumping system. One-year-old water tupelo seedlings at least 15 inches tall were planted, and the plots were flooded to several depths for varying periods.

The results were encouraging. Seedlings survived flooding above their tops when the water receded early in the growing season. When the water was not above the tops of the plants, seedling survival was high even when flooded through the summer. Water tupelo grows as rapidly in swamps as some trees do on dry land, and its wood is in demand. The ability of planted seedlings to survive flooding, therefore, makes the species a prime



A typical second-growth stand of water tupelo during the short dry season.

Researchers Using Atchafalaya Basin as Outdoor Laboratory in Efforts to Restore Swamp Sites to Timber Productivity

candidate for swamp reforestation.

Green ash is also showing promise. It grows well, and does not mind getting its feet wet during the growing season. Other species such as Nuttall oak, sycamore, and cottonwood can tolerate flooding during the dormant season and may be usable where water recedes early in the year.

Flooding conditions in the basin are determined largely by the levee system. Inside the protection levees, which form the boundaries of the basin, are guide levees. They are somewhat lower in elevation, and extend along the river from its origin to south of Krotz Springs about 10 miles on the east and 20 miles on the west side. These levees restrict headwaters of the river and prevent overflow.

Waters of the Mississippi River have dumped millions of tons of soil into the area. This sediment has built up the land inside the protection levees 10 feet higher in some places than land outside the levees. Where the guide levees end, sediment spreads out like an ever-widening fan. The guide levees, by preventing overflow, enable the soil to stabilize so that it will support many of the bottomland

hardwoods found throughout the South. In the northern part of the basin where soils have stabilized and there is good drainage, sycamore, pecan, hackberry, elm, and ash are thriving.

In some sections of the basin less destructive flotation logging was done 20 to 60 years ago. In these areas there are now some second-growth stands of water tupelo which need thinning. A typical stand averages 12 inches in diameter above the butt swell, 65 to 70 feet tall, and up to 250 square feet of basal area per acre.

Industry is experimenting with logging methods and equipment to get this timber out of the swamp. Meanwhile, Southern Station scientists are finding out whether it is best to thin the trees or to clearcut. The key question is how the trees that are left will respond to thinning. Getting timber out of the swamp is expensive, and unless growth of trees left standing is stimulated by thinning, clearcutting is advisable.

If clearcutting is the choice, need for the information that is being gathered on regenerating the swamplands becomes even more urgent.