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NEW IDEAS ABOUT REGENERATION OF HARDWOODS

by

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SUMMARY

Hardwoods reproduce naturally through seedlings established in the understory, through sprouts that emerge from the stump or roots of cut trees, and through seedlings that start in new openings. Some species reproduce in all three ways. Understory reproduction is usually of shade-tolerant species with inherently slow early growth rates. Generally, the taller an understory tree is before release, the faster it will grow after release. Seedlings that start in new openings are usually shade intolerant and fast growing but require seed trees and a relatively bare seedbed to get started. Whether of tolerant or intolerant species, sprouts grow rapidly for the first 5 years or so.

Most conditions under which hardwoods reproduce are considered in Form 1, which can be used for preharvest sampling to predict postharvest reproduction. The form is preliminary and will be improved as experience and research information become available. Certain events, though, may never be predictable, such as a major overflow that deposits silt and forms a suitable seedbed and at the same time carries seeds that establish dense seedling stands.

Where reproduction is unsatisfactory, planting is a reliable method for establishing most hardwoods. But the system being used by industry in the South for establishing plantations requires clearing, raking, and disking followed by straddle-cultivation or disking around the planted seedlings. This combination of treatments usually gives good results but is expensive and requires terrain suitable for farm equipment.

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[1]For presentation at the Hardwood Committee's Symposium on Hardwood Regeneration presented January 29, 1980.

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Regeneration research is now being directed toward treatments that lie between the extremes of natural reproduction and total conversion to expensive plantations. Two treatments show early promise--direct seeding of oaks and supplemental planting of large seedling stock.

Research to date suggests that acorns germinate best when sown 1 to 2 inches deep in 2-acre or larger forest openings where essentially all trees have been brought to ground level. Acorns are spot-seeded, two to three per spot, in the fall at a relatively close spacing of perhaps 5 to 10 feet. Close spacing increases the number of oaks that do not become overtopped by faster developing trees of other species.

Supplemental plantings of 15 to 20 well-spaced 2- to 3-year old trees/acre may be enough for sawtimber if such trees can survive and compete with the natural stand. In one study, 5- to 15-foot tall nursery-grown trees of four oak species were top- and root-pruned and planted 2-½ feet deep in 9-inch diameter holes dug with a power auger. Rootcollars were a foot deep. After 1 year, all species had good survival in the absence of flooding, and some trees had 4 feet of height growth.

The time to begin planning for the regeneration options discussed here is well ahead of overstory harvest. Landowners have to decide what kind of harvesting system and site preparation to use and the kind and amount of seed to collect or nursery stock to produce.

Date_____

Plot number_____

Location_____

Form 1

REPRODUCTION INVENTORY

Circular 1/100-acre plot (11.8' radius)

Points per tree and number of trees by species and size class

Species	Height (feet) <1.0 Pts.	<1.0 No.	1.0-2.9 Pts.	1.0-2.9 No.	3.0+ Pts.	3.0+ No.	DBH (inches) 2-5 Pts.	2-5 No.	6-10 Pts.	6-10 No.	11-15 Pts.	11-15 No.	16-20 Pts.	16-20 No.	Tot. Pts.
Ash	1		2		3		3		3		2		1		
Red oaks															
_____	1		2		3		3		2		1		0		
_____	1		2		3		3		2		1		0		
_____	1		2		3		3		2		1		0		
White oaks															
_____	1		2		3		3		2		1		0		
_____	1		2		3		3		2		1		0		
Hickory	1		2		3		3		3		2		1		
Sweetgum	1		2		3		3		3		2		1		
Blackgum	1		2		3		3		3		2		1		
Elm	1		2		3		3		2		1		0		
Yellow-poplar	1		2		3		3		2		1		0		
Maple	1		2		3		3		2		2		0		
Sugarberry	1		2		3		3		2		1		0		
Persimmon	1		2		3		3		2		1		0		
Other															
_____	1		2		3		3		2		1		0		
_____	1		2		3		3		2		1		0		

Stocked - 12 points or more

Total points this plot_____

Yellow-poplar or sycamore seed tree within 100 feet	+6
Seedbed bare	+2
Seedbed weedy	-2