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CATTLE GRAZING IN DELTA FORESTS

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What effects do grazing cattle have on the hardwood forests of the Mississippi Delta? What is the value of the forage to the cattle? To answer such questions, grazing studies were conducted in 1957 on the Delta Experimental Forest, near Stoneville.

The Study

The study area is typical of many depleted hardwood forests in the Mississippi Delta. After a long history of destructive cutting and burning, ten years of management have put it on the way to recovery. Numerous openings created by timber harvest and control of cull trees now support abundant shrubs and vines and many young trees. The main tree species, grouped according to their commercial value, are:

High; Green ash, Nuttall oak, Willow oak, Sweetgum, Persimmon.

Medium; American elm, Hackberry, Overcup oak, Red maple.

Low; Bitter pecan, Cedar elm, Boxelder.

None; Deciduous holly, Swamp dogwood, Hawthorn, Mulberry, Swamp privet.

The most abundant understory plants are poison ivy, trumpet-creeper, buckvine, and climbing dogbane. Grasses, which normally contribute the greatest portion of cattle diet, are very scarce.

Four 20-acre paddocks were established. Two were grazed in the spring, from May 1 to July 15, and two in the fall, from August 1 to October 15. Three 500- to 600-pound yearling Hereford steers grazed each paddock. Salt and water were available at all times. Steers grazing in fall were given 1 pound of cottonseed meal each week.

Results

All tree species were grazed to some extent. The relative preference, as judged by proportion of plants browsed, was approximately the same for spring as for fall:

Most preferred; American elm, Hackberry, Mulberry, Boxelder, Green ash.

Moderately preferred; Oaks, Swamp privet, Dogwood, Red maple, Sweetgum.

Least Preferred; Deciduous holly, Bitter pecan, Hawthorn, Persimmon, Cedar elm.

Of the trees that were most preferred, only green ash has high commercial value; hackberry and American elm are of medium value.

On the whole, the stand of trees having high to medium commercial value was not seriously damaged by spring grazing. Of the 5,107 trees per acre in these groups, 3,214 were not grazed at all, and 871 were utilized less than 25 percent (table 1). If the grazing had been heavier (as it usually is) or the trees fewer, the damage would have been more serious.

In fall, grazing was heavier than in spring. The fall-grazed paddocks supported 3,965 trees per acre of high to medium commercial value. By mid-October, 1,036 of these had been heavily grazed. This constituted rather serious damage which, if continued, could easily reduce the timber stand to an understocked condition. Certainly if an area were grazed continuously or at a higher intensity through both spring and fall, the total amount of damage could prevent the formation of a good stand of commercial hardwoods.

Non-tree species averaged about 48,330 plants per acre; vines were most abundant and were grazed more than any tree species. Trumpet-creeper was grazed heaviest—83 percent of the plants showed signs of browsing. Slightly less preferred were smilax, dewberry, blackberry, and rattan. Poison ivy, buckvine, and redvine were of least importance.

Ansonia, goldenrod, wildcarrot, and wild lettuce was used to some extent, but contributed only a little of the total cattle diet.

Table 1. Proportion of trees grazed in a bottom-land hardwood forest.

Relative commercial value of trees	Trees per acre	Degree of grazing		
		None	Light[1]	Heavy[2]
	Number		Percent	
GRAZED IN SPRING				
High	2,392	81	16	3
Medium	2,715	47	18	35
Low	857	77	21	2
None	1,857	70	19	11
Total	7,821	—	—	—
GRAZED IN FALL				
High	2,268	42	37	21
Medium	1,697	46	21	33
Low	1,286	80	17	3
None	1,356	56	23	21
Total	6,607	—	—	—

[1]Trees with less than 25 percent of current season's growth removed.
[2]Trees with more than 25 percent of current season's growth removed.

[1]Stationed at the Stoneville Research Center, Stoneville, Mississippi. The Stoneville Center is maintained by the Southern Forest Experiment Station in cooperation with the Mississippi Agricultural Experiment Station and the Southern Hardwood Forest Research Group.

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How did the steers fare on this forest forage? Being grass eaters, they did poorly when forced to subsist almost entirely on browse. They came out of the paddocks at the end of the test weighing no more than when they had gone in.

A Recommendation

From the standpoint of both trees and cattle, it appears that if bottom-land hardwoods are to be grazed at all, they should be used only as holding places for short periods in the spring. Even then extreme caution should be taken to make sure that grazing intensity is light. In most instances the meager returns will not justify the possible jeopardy to the hard wood timber.

Protection from grazing aids the establishment and development of small hardwoods. The area to the left of the fence has been grazed continuously, while cattle were excluded from the area on the rignt.