

LSU FORESTRY NOTES

AGRICULTURAL EXPERIMENT STATION RESEARCH RELEASE
LOUISIANA STATE UNIVERSITY & A & M COLLEGE
School of Forestry
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Note #5

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DIAMETER GROWTH OF SELECTED BOTTOMLAND HARDWOODS AS AFFECTED BY SPECIES AND SITE ^{1/}

As management is intensified in bottomland forests, efforts will be made to control species composition. One criterion for the selection of species to favor is growth rate, about which relatively little is known for bottomland species. This study was made to compare the relative growth rates of certain bottomland hardwood species in southern Louisiana.

For 160 trees, ten-year radial growth at breast height was determined by increment borings of soft elm (*Ulmus americana*), hackberry (*Celtis laevigata*), green ash (*Fraxinus pennsylvanica*), cow oak (*Quercus michauxii*), cherry-bark oak (*Q. falcata* v. *pagodaefolia*), Nuttall oak (*Q. nuttallii*), and water oak (*Q. nigra*) growing on ridges, flats and sloughs. ^{2/} The observations were made in the first bottom of the Mississippi River near Baton Rouge, Louisiana. The stands were well stocked. All trees were in the dominant or codominant crown class.

Growth rates were calculated by means of a least squares regression analysis, and the results are shown in Table 1 (reverse side). The species are listed in descending order of growth rate for each site.

Analysis of the data indicates that:

1. Growth on flats and ridges was essentially equal.
2. Growth in sloughs was slower than on flats or ridges.
3. Growth varies between species, but species were not affected to the same degree by change in site; therefore, no species was the fastest growing on all sites, nor was any species the slowest-growing on all sites. Any statement as to relative growth rates between species must be qualified as to site.

These results are only preliminary and are based on a few observations on a limited area. Although the growth rates shown are not likely to hold exactly for Louisiana bottomland species, they probably indicate generally the relationships existing between the species and sites studied.

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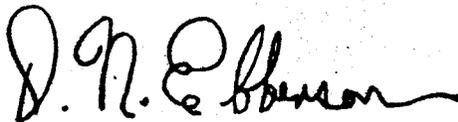
^{1/} Preliminary study, LSU Agricultural Experiment Station Research Project #874, "Ecology of Bottomland Tree Species."

^{2/} Physiographic sites are those defined by the Southern Hardwood Forestry Group, 1952. Guiding policies for the growth study of the Southern Hardwood Forestry Group. 7 pp. plus supplement (mimeographed).

Table 1

CALCULATED TEN-YEAR DIAMETER GROWTH OF
SEVEN BOTTOMLAND SPECIES ON THREE SITES

<u>Species</u>	<u>Growth rate, inches</u> <u>in ten years</u>
<u>"Slough" site</u>	
Nuttall oak	2.7
Green ash	2.1
Water oak	2.1
Cherrybark oak	1.6
Soft elm	1.3
Hackberry	1.3
Average of 6 species	1.8
<u>Flat site</u>	
Cherrybark oak	4.7
Cow oak	4.2
Nuttall oak	3.4
Water oak	3.4
Soft elm	2.7
Hackberry	2.7
Green ash	2.1
Average of 7 species	3.3
<u>Ridge site</u>	
Cherrybark oak	4.3
Water oak	4.2
Soft elm	3.3
Hackberry	3.3
Nuttall oak	3.0
Cow oak	2.8
Green ash	2.4
Average of 7 species	3.3



Director

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