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SITE INDEX CURVES FOR OLD FIELD LOBLOLLY PINE PLANTATIONS IN THE INTERIOR WEST GULF COASTAL PLAIN

by

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Before 1956, very few old fields in the Interior West Gulf Coastal Plain had been planted with loblolly pines. Since 1956, loblolly pine regeneration efforts in old fields in this region have increased many–fold. Information on land productivity is essential to plantation owners' management decisions. One common method of expressing productivity is in terms of site index.

As a basis for the development of site index curves for these old fields, plantation ages and average total heights of dominant and codominant trees determined on 261 temporary sample plots in Northeast Texas for a site index study by Lenhart and Fields (1970) were combined with similar data obtained from 438 additional sample plots measured in 1970 throughout the Interior West Gulf Coastal Plain (Fig. 1). The distribution of the 699 sample plots by age and site index classes is given in Table 1.

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Table 1. Distribution of the sample plots by age and site index classes.

Age (Years)	Site Index					Total
	40	50	60	70	80	
9 - 12	17	130	110	22	1	280
13 - 17	31	172	138	9		350
18 - 22	3	13	16			32
23 - 27		4	7	8		19
28 - 30		1	3	14		18
Total	51	320	274	53	1	699

From the data, an equation to predict height from age has been developed as:

$$\text{Logarithm of height} = 1.87985 - 3.72183\ (\frac{1}{\text{age}}), \quad (1)$$

with r^2 = 0.518, and

$S_{y \cdot x}$ = 0.056, and

where height = average total height of dominant and codominant trees, and

age = plantation age. [2]

Using the regression coefficient from the height - age equation (1), an equation to predict site index at an index age of 25 years was developed as:

$$\text{Logarithm of site index} = \text{logarithm of height} - 3.72183\ (\frac{1}{25} - \frac{1}{\text{age}}). \quad (2)$$

From equation (2), curves for determining site index were drawn (Fig. 2).

To calculate the site index for a given plantation, obtain the plantation age and the average total height of the dominant and codominant trees. Site index may then be calculated by inserting these values into the site index prediction equation (2) or interpolating between curves in Figure 2.

LITERATURE CITED

Lenhart, J. D. and H. L. Fields. 1970. Site index curves for old–field loblolly pine plantations in northeast Texas. Texas Forestry Paper No. 3. 4pp.

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[2] All logarithms in this paper to base 10. $S_{y \cdot x}$ = standard error of estimate; r^2 = coefficent of determination.

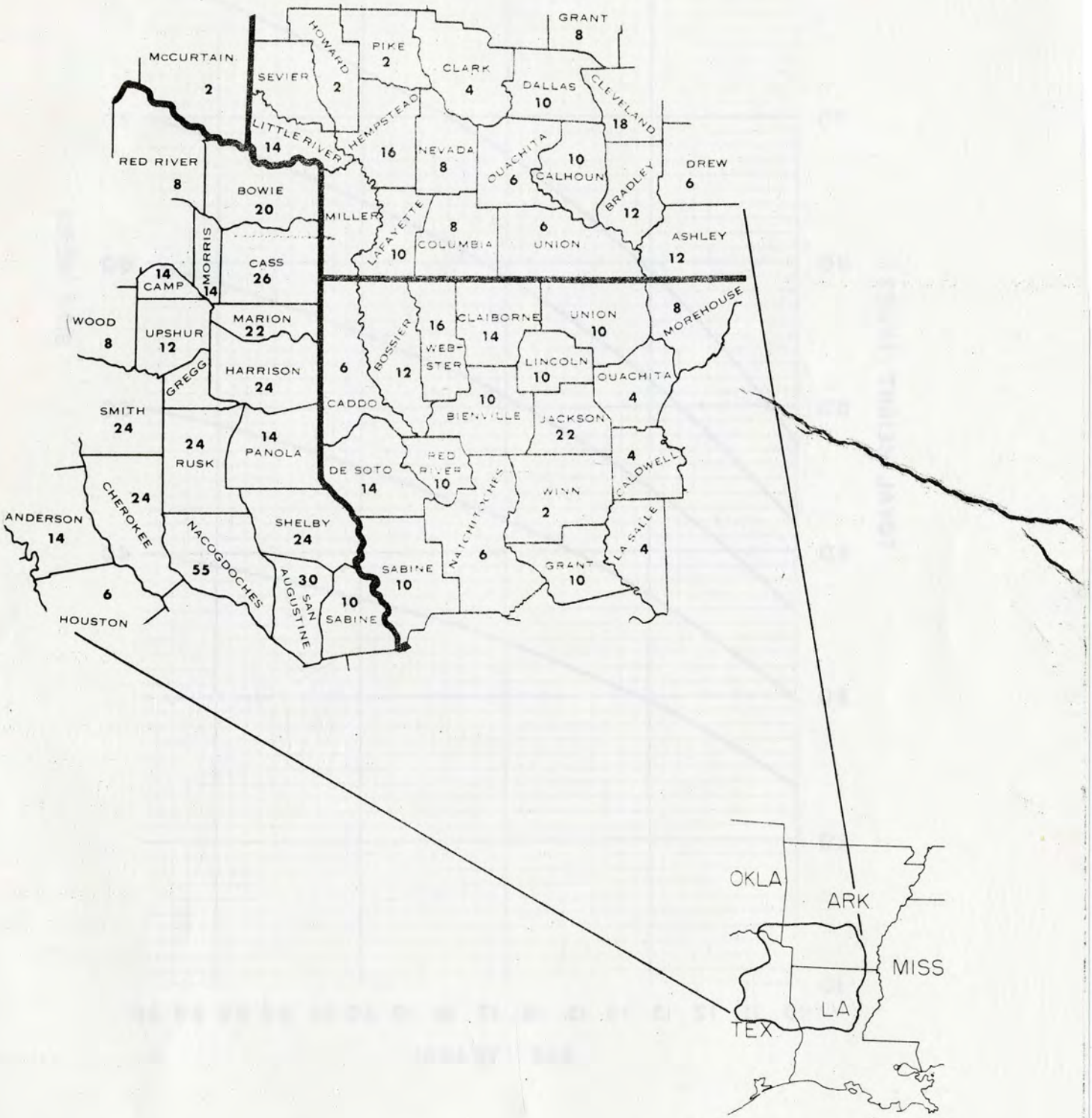

Figure 1. **Distribution of 699 temporary sample plots by counties within the Interior West Gulf Coastal Plain.**

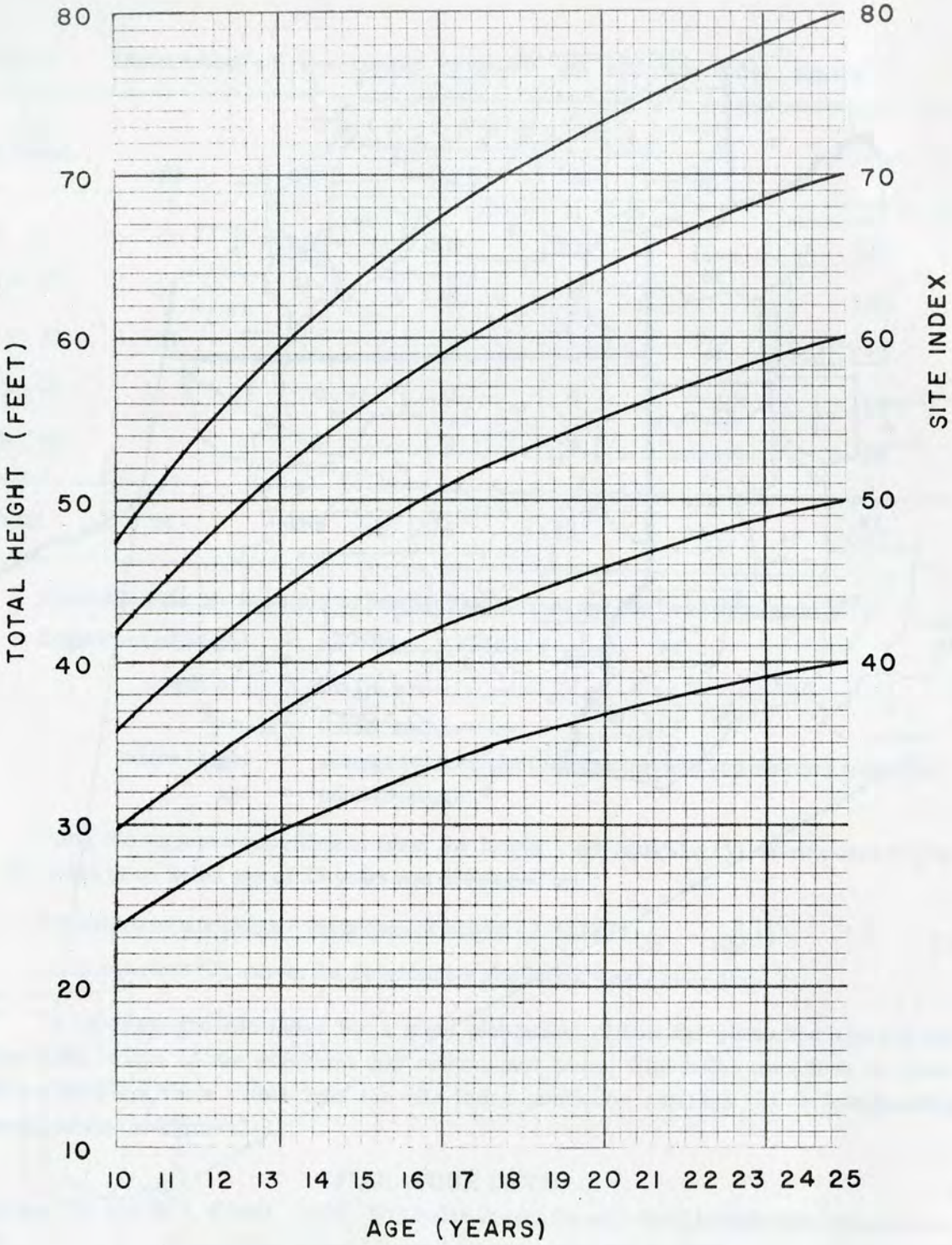

Figure 2. **Site index curves at an index age of 25 years for oldfield loblolly pine plantations in the Interior West Gulf Coastal Plain.**