LSU FORESTRY NOTES

AGRICULTURAL EXPERIMENT STATION RESEARCH RELEASE
LOUISIANA STATE UNIVERSITY & A & M COLLEGE
School of Forestry Baton Rouge, La.

Note #14 April, 1957

CALIBRATION OF THE WEDGE PRISM

Since the introduction of plotless cruising in this country by Grosenbaugh[1] and the later suggestion of using a wedge prism as an angle-gauge by Bruce[2] this method of determining basal area has been widely adopted in the South. One of the factors contributing to the occasionally unsatisfactory results obtained is failure to calibrate the prism used. As noted by Bruce the inexpensive prisms commonly used require the computation of a basal area factor for each prism. This is done by setting up a target of convenient width (w), sighting on it through the prism, then moving the prism forward or backward at a right angle to the target until one side of the refracted portion of the target exactly coincides with the other side of the unrefracted portion. Measure the distance (d) from the center of the prism to the face of the target.

$$\text{Basal Area Factor}^{2/} = \frac{43560}{1 + 4\left(\frac{d}{w}\right)^2}$$

When using a prism with a converting factor other than 10 it is somewhat more convenient to use a 10-factor, then correct from that. That is, if the actual prism factor is 9.6 it is easier to multiply the number of trees by 10 and subtract 4% than to multiply by 9.6.

Table 1 (on back) has been compiled for convenience from Bruce's formula, above. The prism-to-target distances are based on a target width of six inches. Distances vary directly as target width; if target width is one foot, distances are doubled.

1/ Grosenbaugh, L. R. 1952. Plotless timber estimates--new, fast, easy. Jour. Forestry 50:32-37.

2/ Bruce, D. 1955. A new way to look at trees. Jour. Forestry 53:163-167.

Table 1. Basal Area Conversion Factors for Wedge Prism Based on Six-Inch Target.

Target-to-Prism Distance (Feet)	Basal Area Conversion Factor	Correction Factor from 10 %
15.1	12.0	+ 20
15.2	11.8	+ 18
15.3	11.6	+ 16
15.5	11.4	+ 14
15.6	11.2	+ 12
15.7	11.0	+ 10
15.9	10.8	+ 8
16.0	10.6	+ 6
16.2	10.4	+ 4
16.3	10.2	+ 2
16.5	10.0	
16.7	9.8	- 2
16.8	9.6	- 4
17.0	9.4	- 6
17.2	9.2	- 8
17.4	9.0	- 10
17.6	8.8	- 12
17.8	8.6	- 14
18.0	8.4	- 16
18.2	8.2	- 18
18.4	8.0	- 20

Charles B. Briscoe
Assistant Forester