A Branch Protractor

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The production of trees with near horizontal branching and branches of small diameter is frequently listed among the objects of tree breeding Programmes. The measurement of branch angles cannot be made very readily with conventional protractors and the instrument shown in *Figure* 1 has given very satisfactory service in progeny tests of *Pinus radiata* at Canberra. Main features of the device are that curvature of stems and branches does not affect the precision of measurement, one-handed operation is easy, the reading is retained until required, angles can be measured to about 1 degree and construction is strong enough to withstand normal abuse.

The arms and axis are made from 1" X ¼" (25 X 6 mm) aluminium bar; the handle from 3/16" (5 mm) bar. Pivots are ¼" diameter Whitworth bolts – locked by tapping the hole adjacent to the nut. Oil holes are drilled through the bolts. Nylon washers are used at the pivots and adjustable nylon bushes fit around the axis inside the handle. Appreciable wear has not occurred in the moving parts.

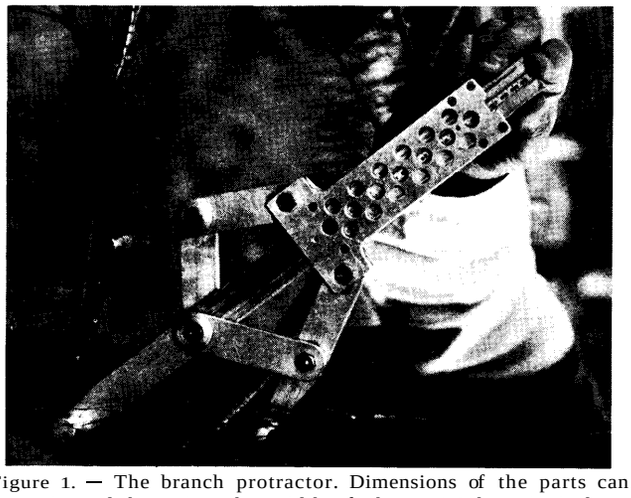

Figure 1. — The branch protractor. Dimensions of the parts can be estimated by using the width of the metal bars (1 inch or 25 mms.) as a guide. The curvature and angle of the branch have not been affected by the instrument.

The scale is a piece of diameter tape fixed to the axis with resin glue. The ultimate graduations are 0.03" apart — about as small as can be read easily – and serve as units of measurement. A near-linear relationship shown in *Figure* 2 exists between values read from this scale and the angle in degrees, within the range of branches examined. The minimum angle which can be measured is 26°, the maximum is over 90°.

In use, the lateral arms are retracted before an angle is measured. The axis is placed in the fork and the handle moved along until the lateral arms touch the stem and the branch.

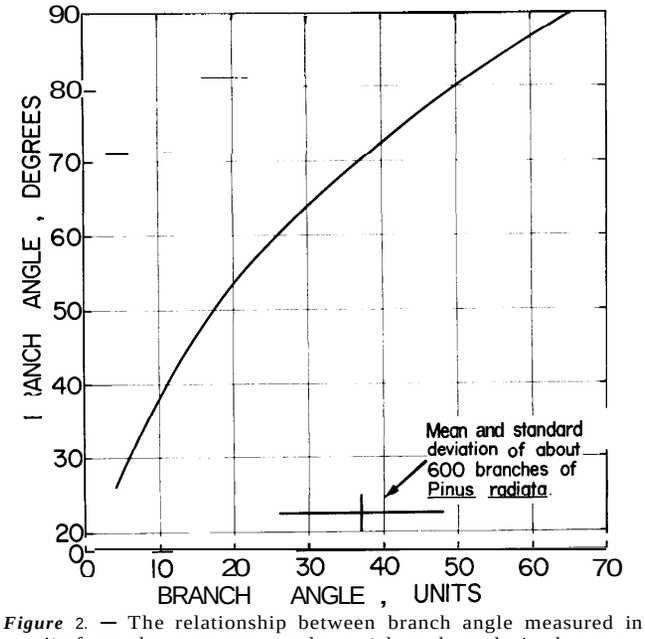

Figure 2. — The relationship between branch angle measured in units from the protractor scale, and branch angle in degrees.

Newsletter

Proceedings of the 1965 Meeting, Western Forest Genetics Association, Olympia, Washington, 71 pp. (1966).

HADDOCK, P. G.: Information available for other western species having sufficient generality to be applied to Douglas-fir seed movement problems (pp. 8—22). —

This paper reviews international literature on plant geography and provenance of ponderosa pine, lodgepole pine and Sitka spruce, and relates the available information to Douglas-fir seed-movement problems in the Pacific Northwest.

STAEBLER, G. R.: What are the economic irnplications of using off-source seed? (pp. 25—29). —

Causes of economic loss from using off-source seed are divided into two categories: (1) failure of off-source seed to produce a crop with any merchantable value, or (2) production of a below-value crop due either to reduced quantity or quality. Based on a model with hypothetical but realistic values, two cases of category (1) are examined — where stand failure is discovered after: (a) 10 years, and (b) 25 years. Present-worth calculations for each case are made to compare the situation where an acre stands by itself in financial calculations, vs. the situation where the acre is part of a regulated forest. Conclusions are: (1) losses from using off-source seed are evaluated the same as any total or partial loss of a crop, (2) a lengthened rotation without a compensatory increase in yield is surprisingly expensive, and (3) losses are even more serious when mistakes disrupt a regulated forest.

SILEN, R. R.: Regeneration aspects of the 50-year-old Douglas-fir heredity study (pp. 35—39). —

This report is limited to regeneration aspects of a study that includes 120 half-sib families each planted in four locations in southwestern Washington and northwestern Oregon. Plantations were from 1,100 to 4,600 feet in elevation. Source of seed-parents ranged over 3,800 feet of elevation in western Washington and Oregon. When averaged over all plantations, survival percentage was 92, 68, and 45, at ages after outplanting of 2, 20, and 50 years, respectively. Survival differed greatly among plantations, but