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ESTIMATING STAND AGE FOR DOUGLAS-FIR

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Stand age for Douglas-fir has been defined^{1/} as the average age of dominant and codominant trees. It is commonly estimated by measuring the age of several dominants and codominants and computing their arithmetic average.

Since dominant trees in natural stands have a tendency to be slightly older than codominant trees, estimated stand age can be influenced by an arbitrary proportion of dominants to codominants in the sample. This could introduce a bias if the stand age estimates are used with the Douglas-fir normal yield tables to determine normality, growth, or site index.

An analysis of data from the composite plots upon which the Douglas-fir normal yield tables were based has indicated that this bias in stand age estimates is likely to be small compared to the combined effect of other biases and of sampling error. For many purposes it probably could be ignored.

If necessary the bias can be removed by including one dominant for every four codominants in the stand age sample, since this was the proportion used for the normal yield table plots. If it is not convenient to select trees in this proportion, average age can be obtained from a sample consisting only of the dominant trees. Average age of dominants

^{1/} McArdle, R. E., and Meyer, W. H. Yield of Douglas-fir in the Pacific Northwest. U. S. Dept. Agric. Tech. Bul. 201, 74 p. Rev. Oct. 1949.

can then be reduced so that it corresponds to an average based on one dominant for every four codominants by using the following reductions:

<u>Average age of dominant trees</u>	<u>Reduction</u>
30 to 80 years	1 year
80 to 130 years	2 years
130 to 180 years	3 years

In the regression analysis which led to these reductions, Y, the dependent variable, was the difference between average age of dominants only and average age of dominants plus codominants using data from the normal yield table plots. The independent variable X was the average age of dominants only. This relationship resulted:

$$Y = 0.151 - 0.0209X$$

Although the regression coefficient 0.0209 was statistically significant, no underlying reason is apparent for a larger reduction in older stands.