

Tree Volume Estimation

Composite Hardwood Volume Equations, By T. W. Beers, (October, 1964), Excel formulas by David R. Larsen

These volume equations have been useful for student inventory projects in Missouri. The equations are implemented with Excel examples for ease of use.

Three base equations are needed.

$$a = \frac{D^2(D + 190)}{100,000}$$

$$b = \frac{1}{100} \left[\frac{H(168 - H)}{64} + \frac{32}{H} \right]$$

$$c = 475 + \frac{3H^2}{128}$$

Volume in cords = a * b

Volume in board feet (Int. ¼" rule) = a * b * c

A cord is assumed to contain fit into 128 cubic feet, but will have 79 feet of solid woods

Volume in cubic feet (excluding bark) = 76 * a * b

Volume in cubic feet (Including bark) = 92 * a * b

Excel formulas

The following equation assume DBH is in cell A1 and merchantable height H is in cell B1

Formula a:

$$=((A1^2*(A1+190))/100000)$$

Formula b:

$$=(1/100)*(((B1*(168-B1))/64)+(32/B1))$$

Formula c:

$$=475+((3*B1^2)/128)$$

Natural Resource Biometrics

Also See:

Beers, T. W. 1964. Composite Hardwood Volume Tables. *Purdue University, Agricultural Experiment Station, Lafayette, IN. Research Bulletin 787.* 12p.

Chapman, H. H. and W. H. Meyer. 1949. Forest Mensuration. McGraw-Hill Book Co. New York. 522 pp.,/p>

Clark, J. F. 1906. Measurement of Sawlogs.*Forestry Quart.* 4:79-93.

Chapter 8 in :

Husch, B., T. W. Beers and J. A. Kershaw. 2003. Forest Mensuration. Fourth Edition. John Wiley and Son 443 p.

