



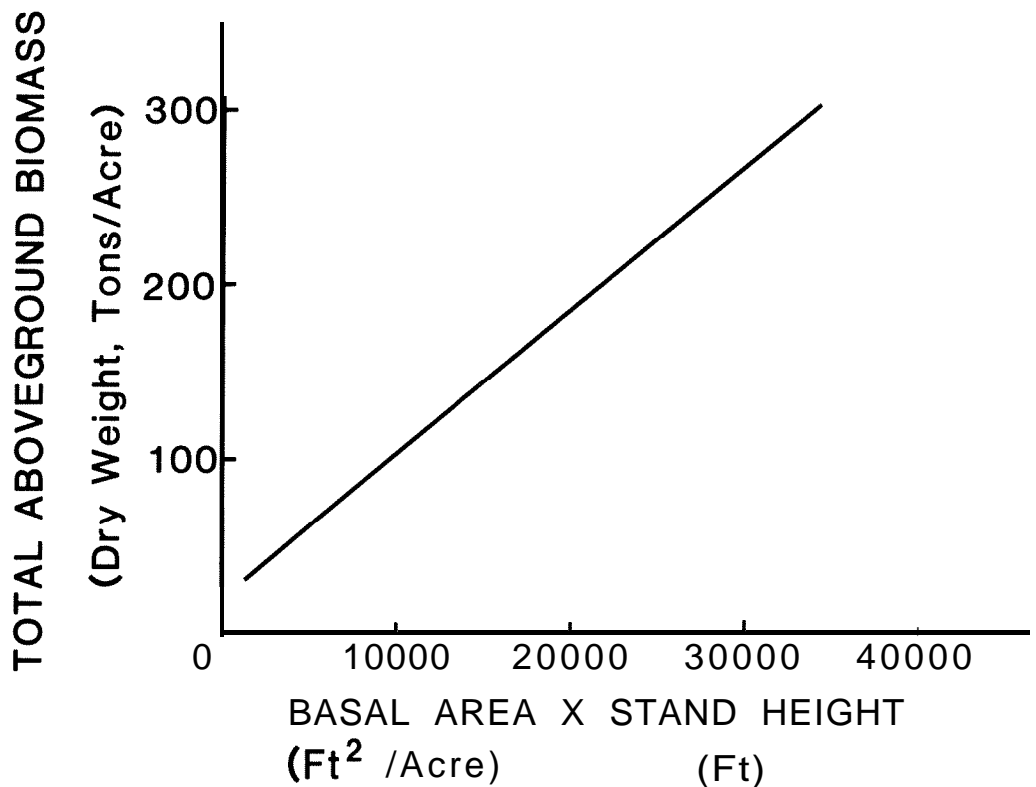
NORTHERN HARDWOOD NOTES

Stand Weights

As the demand for wood products increases, hardwoods will be used in larger amounts and trees more completely utilized. As a result, foresters will have a greater need to predict weight yields of hardwood stands.

We have learned to estimate stand weight very easily from stand height and basal area. This relation seems to be the same regardless of the mixture of hardwood species. Our data come from 52 hardwood stands in the eastern United States (about half of the stands are located in the Lake States). Each has a different composition; included are mixed aspen-maple stands in Wisconsin, red maple dominated stands in Michigan, beech-maple-birch stands in New Hampshire, oak-pine stands in Minnesota, and cove hardwoods in the Appalachians.

You can roughly estimate dry weight of the aboveground stand by using the following figure, or get a more accurate estimate by using the equation below. To use the figure, multiply the total stand basal area (in square feet per acre) by the mean stand height (in feet) and find this amount on the horizontal axis. Project this value vertically to the slanted line and then horizontally to the vertical axis to get total aboveground dry weight in tons per acre.

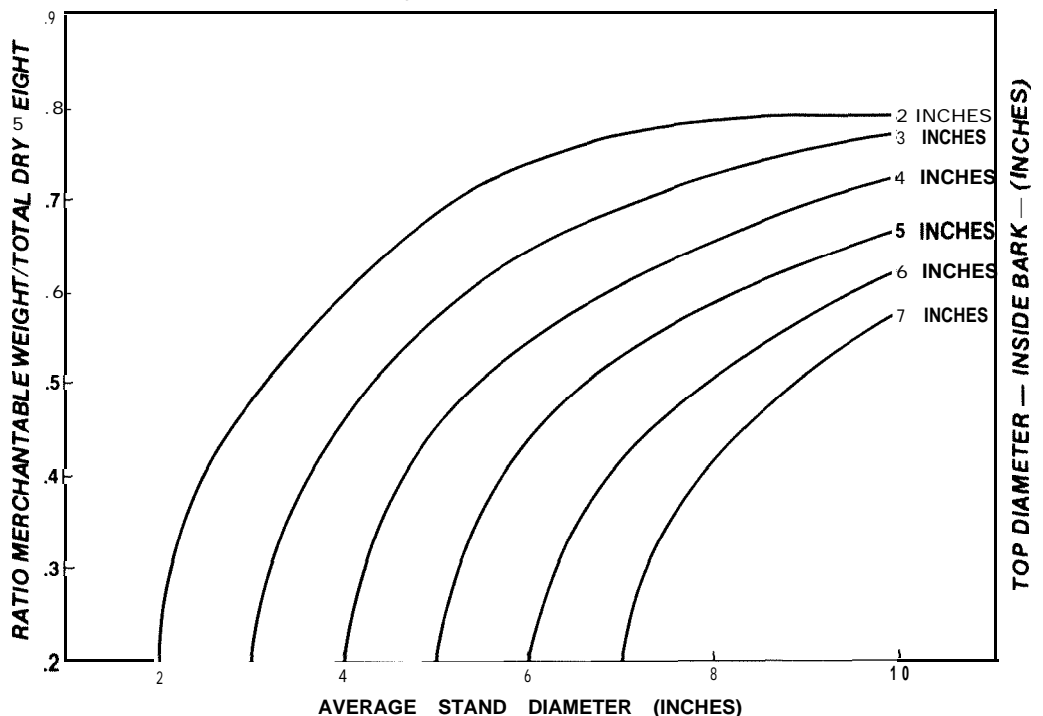


The equation is: Stand weight (tons per acre) = 18.5 + 0.00835 BA (sq. ft. per acre) X Ht. (ft.)

To use the equation, "plug in" the basal area and stand height. For example, a stand with 126 feet per acre of basal area and a mean height of 61 feet has an estimated aboveground stand weight equal to 82.7 tons per acre (or 165,000 pounds): $82.7 = 18.5 + 0.00835 (126 \times 61)$.

This is dry weight and includes all aboveground tree parts including leaves. You can apply this equation to any hardwood or mixed hardwood-conifer stand in the Lake States.

To estimate merchantable stem weight, simply apply the ratios of merchantable weight to total weight shown in the following figure. By using average stand diameter (horizontal axis) and merchantable top diameter (vertical axis on right), you can find merchantable weight (vertical axis on left). For example, given an average stand diameter of 8.5 inches, and a 2-inch top diameter utilization limit, the ratio of merchantable weight to total weight obtained from figure 2 is 0.79. So, 0.79×82.7 (the estimated stand weight from above) = 65.3 tons per acre.



Because of seasonal variations in moisture content (see Note 5.03) and differences in moisture content among parts of the tree, it is more difficult to estimate green weight than dry weight. Based on sampling in late summer, we obtained a green-to-dry weight ratio of 1.52. So, by multiplying dry weight estimates by 1.52, you can get a rough estimate of green weight.