SIZING THINGS UP

(Student Information Page)

Lesson #1

I. A **forest inventory** provides land managers with information about:

- forest type
- approximate age and size class of timber
- disease or insect pests
- timber volume
- stand density
- tree reproduction (regeneration)
- site productivity (ex: site index)
- topography
- noteworthy features, unique plants, or wildlife

II. Units of measurement

Wood volume is one of the most common bits of information provided by a forest inventory. It is measured in order to obtain a fair selling price when marketing timber.

In the United States, we use three different units to measure wood volume: **cubic feet, board feet,** and **cord**s. Most of the rest of the world uses cubic meters. It is also becoming more common to measure wood, especially pulpwood, by weight (usually in tons) rather than by volume.

A **cubic foot** measures 1 foot by 1 foot by 1 foot. It equals 1,728 cubic inches. This measure is usually used to describe the total amount of wood in a forest stand and for pulpwood. **Pulpwood** is used to make paper and paper products.

A **board foot** is the volume of a board that is 12 inches wide, 12 inches long, and 1 inch thick. It equals 144 cubic inches. Board feet are used when lumber or veneer (a thin layer of wood that is peeled or sliced from logs) is the most likely product.

A standard **cord** is a stack of wood that contains 128 cubic feet of wood, bark, and air. A standard cord usually contains 79 cubic feet of actual wood. The common dimensions of a cord are 8 feet long, 4 feet wide, and 4 feet high. The weight of a standard cord or any volume of wood **varies** depending on the species and the moisture content of the wood. The standard cord is used to measure pulpwood and fuelwood (wood for heating/energy).

End: Lesson #1

Lesson #2

To determine a tree's volume, you first need to measure its diameter and merchantable tree height.

Tree diameter is measured at breast height, which is defined as 4.5 feet above the ground on the uphill side of the tree. We abbreviate the term "diameter at breast height" as **dbh**, usually written without capital letters and without periods.

Lesson #3

Merchantable tree height is the usable portion of the tree. It is the distance between the presumed stump height and the point where the trunk becomes unusable.

For hardwoods (deciduous trees), this is a measure 1 foot above the ground and for softwoods (coniferous, or evergreen, trees) from 6 inches above the ground.

Merchantable height ends where the trunk tapers to a diameter of 4 inches for pulpwood or 8 inches for sawtimber (logs used for lumber) or where a large fork, rot, or another defect limits its use.

Lesson #4

In Pennsylvania, as in most of the northeastern United States, we estimate merchantable height in 16-foot lengths called **logs**. For example, a tree with 48 feet of merchantable sawtimber height has 3 logs in it. A tree with 24 feet of merchantable material has 1 ½ logs in it.

Another method of measuring merchantable height is in 8-foot lengths called **bolts** or sticks. There are 2 bolts in 1 log.

Once you have measured a tree's height and diameter, you can find the volume of usable wood in that tree. Foresters generally use volume tables to determine the amount of wood per tree.

Taken from Hansen, Robert S. and Finley, James C. Trees + Me = Forestry. College of Agricultural Sciences, Cooperative Extension. Penn State University.