

## “Measuring Tree Heights Properly”

Measuring tree heights is an important part of timber cruising and volume determination. It is best to do the height measurement with a laser rangefinder with a built-in tree height function. This function is usually a three point system in which the forester shoots the bole of the tree, shoots the top of the tree, and then shoots the base of the tree. The top and base measurements are used to record the angle, not for re-shooting the distance to the tree. This is very significant because the person doing the measuring doesn't have to hit the top or base of the tree, just make sure the angle is correct. It is very common that the base of the tree will be obscured with dense brush. If just a hint of the base is visible, the tree height can be accurately measured. It is similar for the top of the tree, because if the measurement is being made to total height, it is nearly impossible to hit the exact top of the tree. In the three point measurement routine, the forester is measuring angles for the second and third parts of the routine.



**TruPulse 360B Laser Rangefinder**

The horizontal distance to a tree is a very important part of accurate tree height measurement. If the forester accidentally hits a branch and not the bole of the tree, the horizontal distance is off and therefore the tree height will be incorrect. Another common error is hitting a tree in back of, or in front of the tree being sighted. It's more common than most people think, because tree bole edges are not that easy to distinguish in dark rainy forest conditions. Laser rangefinders such as the TruPulse series and Impulse series by Laser Technology help considerably by making it extremely easy to repeat measurements. Foresters can press one button and then retake any of the three height functions.

To achieve the best possible accuracy in measuring tree heights, foresters should try to be far enough back from the tree to keep the upper angle to less than 45 degrees. On level ground, with a tree 100 feet tall, the forester should be roughly 100 feet back from the tree or more. When angles exceed 45 degrees, any lean present in the tree can throw the height measurement off. The problem of tree lean is more serious as the forester gets closer and closer to the tree. If the tree is perfectly straight up and down, distance is not as much of a problem. Unfortunately, trees seldom grow perfectly straight.

Another major advantage of using a laser rangefinder is that the forester can find a location where the tree is easily measured. If a forester uses a loggers tape and measures back a specific distance such as 66 feet, they frequently find that they can't see the tree very well. This can be due to brush, foliage, or tree branches in the way of a clear line of sight. If the forester purposely finds a place with a clear line of sight, the measurement of height is very easy (and accurate) with a laser rangefinder.

For the best tree height measurements, use a quality laser rangefinder, take plenty of measurements, and make sure you are far enough away from the tree to avoid problems if it is leaning.

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