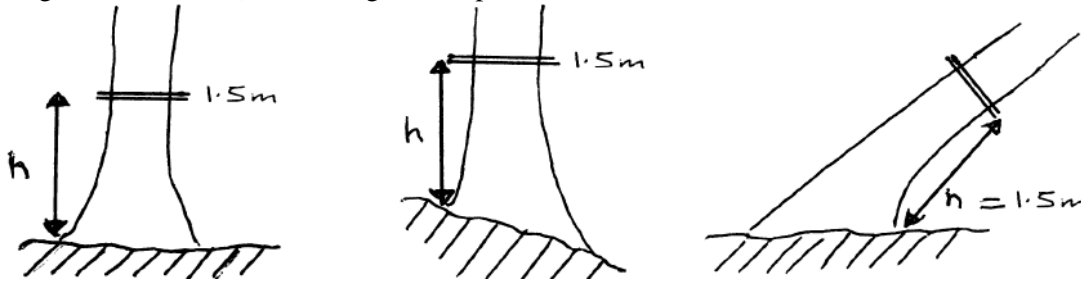
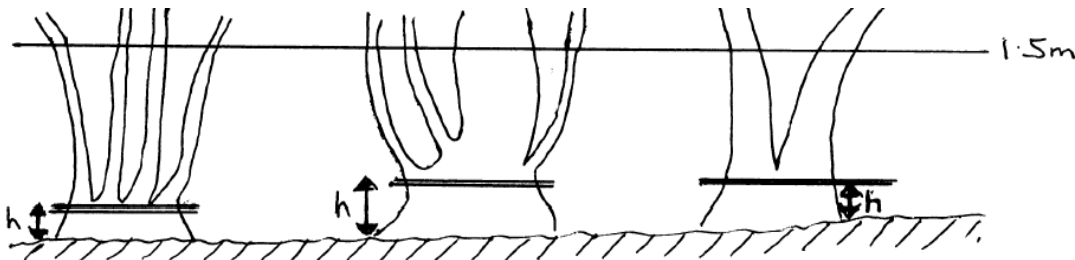


Measuring the girth of a tree

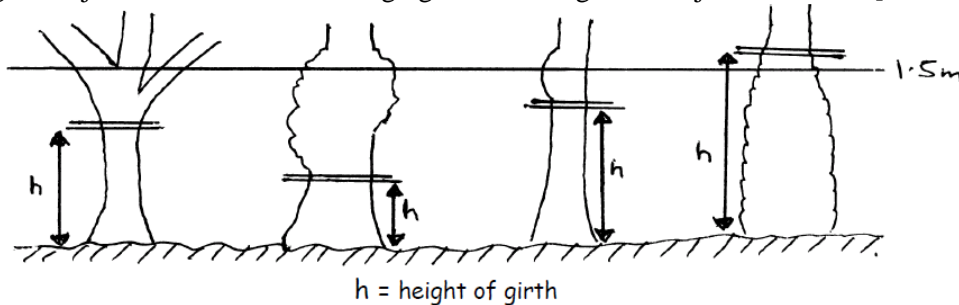
The girth should be measured at the height of 1.5m above the ground or 1.5m above the highest point of the surrounding ground (if the ground is uneven). A leaning or collapsed tree should be measured on its lower side.



For trees with flared bases it is especially important to be measured vertically at 1.5m above the ground – don't measure their height along the sloping trunk. As for coppiced and multi-stemmed trees, their girth should be measured below any branching. This may well be at the ground level. [If the girth of individual branches is over 3m, this can be recorded in the comments column.]



If the tree forks or is swollen at 1.5m, then measure its girth at the narrowest point below 1.5m, as well as measure the height of the tree from the ground at which that girth measurement was taken. [In case of exceptional circumstances you may need to measure the girth at just above 1.5m if the bulging is from the ground to just above 1.5m]



For a tree with a completely burred trunk, or covered with ivy, the measured girth will be an estimate and should be recorded as such. [A 5cm deep layer of ivy all round a tree equates to a 0.3m increase in apparent girth.] Some cedars and cypresses have very low branches, which often rest on the ground. If there is an obvious main

stem, measure this at 1.5m (even if the branches are below 1.5m). If a trunk splits, then treat this as a multi stem and measure its girth below the split. There may well be a combination of a split trunk and low branches. A photo might be particularly useful here. Try to take some to show the branching details as well as the whole tree. It might be useful to prop the tree with a 1.5m long stick for taking accurate height measurements; the stick can also be used to hold back bracken and nettles! Don't stretch the tape. You may need to take measurements two or three times in order to ensure accuracy. If there is a discrepancy in repeated measurements, choose the smallest value. From time to time check your tape to make sure that it has not been stretched or damaged.

Tree girth is one of the parameters commonly measured as a part of various champion tree programs and documentation efforts. Other common parameters outlined in the Tree measurement include the height of a tree, as well as its crown spread and volume. The additional details on the methodology of Tree height measurement, Tree crown measurement, and Tree volume measurement are presented in the links herein. American Forests, for example, uses a formula to calculate Big Tree Points as a part of their Big Tree Program that awards a tree 1 point for each foot of height, 1 point for each inch of girth, and $\frac{1}{4}$ point for each foot of average crown spread. The tree, whose point total is the highest for that species, is crowned as the champion in their registry.

https://www.americanforests.org/wp-content/uploads/2014/12/AF-Tree-Measuring-Guidelines_LR.pdf

https://www.nationalregisterofbigtrees.com.au/tree_measurement.php

Calculate the diameter of your tree

Step 1. Using the measuring tape and starting from the ground, measure 1.4 meters (= average breast height) up the tree trunk. If the tree is on a slope, measure 1.4 meters on the side of the tree that is uphill.

Step 2. Measure the circumference of the tree by wrapping the measuring tape around the smallest part of the trunk between the ground and the 1.4-metre mark. Read the measurement off the tape and record the circumference in meters in the Results chart. You may want to do this several times to be sure you have positioned the tape properly. Use the smallest of your measurements for step 3.

Step 3. Calculate the mean diameter of the tree: divide your measured circumference by pi (=3.14). This is known as the DBH or “Diameter at Breast height”. Record it in meters in your Results chart.

Step 4. Calculate the DBH arithmetic mean (average).

Step 5. Select environmental factors that may affect the growth and development of the trees.

Step 6. Record the influence of selected factors on each of the trees.

Step 7. Make a bar chart based on the DBH data.

Step 8. Statistical validation of the DBH data (Standard range of variation or SRV):

$$\sigma^2 = \frac{\sum (x - \bar{x})^2 f}{\sum f} \quad \sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Step 9. Assess the dependence on one of the factors (the most noticeable manifestation). Consider only the data which has been included in SRV.

Step 10. Spot which of the variables appeared in your research are independent, dependent or controlled.