



INFORMATION SHEET 25



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013001

HOW TO MEASURE A TREE

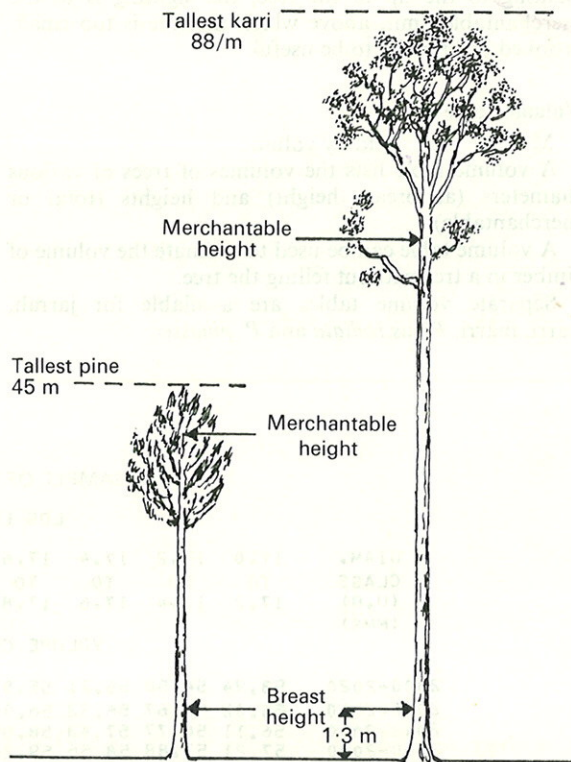
G. W. HEBERLE

Diameter

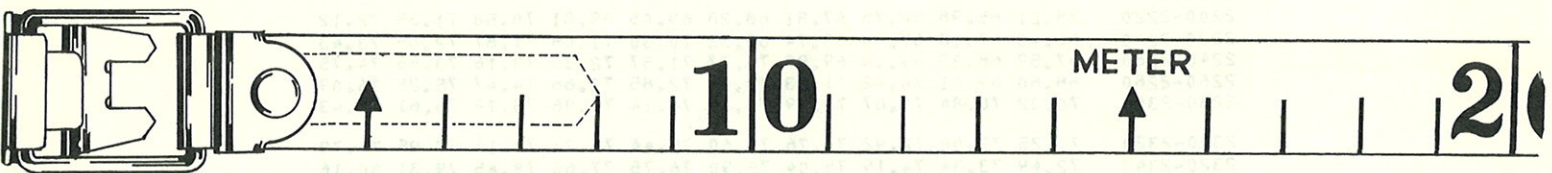
The diameter of a tree trunk is commonly measured at "breast height" which is taken as 1.3 m above ground level. Tree diameter may be measured with calipers, but is usually measured with a tape calibrated to read directly in diameter. This is possible because trunks of trees are approximately circular in cross section. Red tingle trees (*Eucalyptus jacksonii*) which grow in the Walpole area attain the largest diameter in W.A.—up to 600 cm. By comparison, the largest karri trees are not quite 400 cm in diameter.

Girth

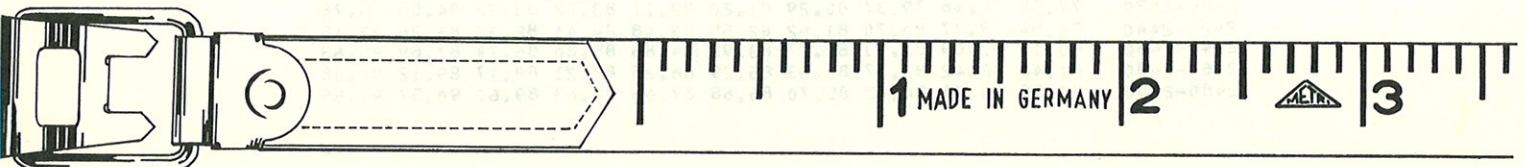
Mostly the circumference of a tree trunk (called the girth of a tree) was measured as an indication of the size. However, since metrication in 1973, in order to standardise with the rest of Australian and with many European countries, tree diameter has been used in Western Australia.



Tape calibrated for girth (cm)



Tape calibrated for equivalent diameter (cm)

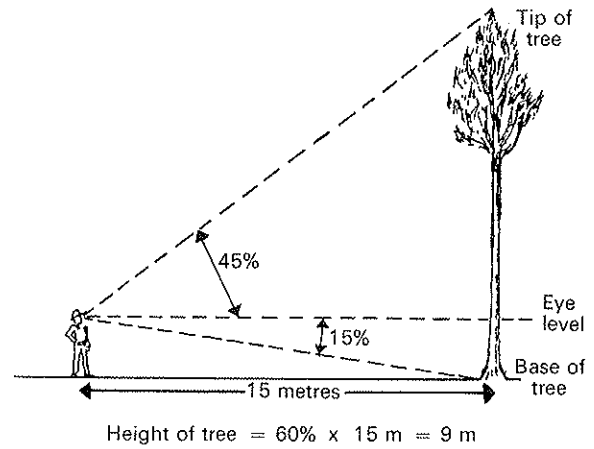


Illustrated is a double-sided tape for measuring girth and corresponding diameter.

Total height

Tree height is usually measured with a clinometer, an instrument which measures vertical angles. Most clinometers read in degrees and percentage (%). Measure out from the base of the tree a horizontal distance about the same as the tree height. From this point use the clinometer to take a percentage height reading to the tip of the tree. Take percentage height reading to base of tree also. If base of the tree is lower than your eye add these two percentage readings together, if base of the tree is higher than your eye level then subtract the base reading from the tip reading. Convert total percentage reading to height in metres by multiplying by the distance from the tree; e.g. 60 per cent by 15 m = 9 m.

Karri trees are the tallest in Western Australia. One from near Manjimup is nearly 88 m high. For comparison, pine trees grow only to about 49 m.



Merchantable height

This is measured in a similar way but instead of sighting to the tip of the tree, the sighting is to the merchantable limit, above which the tree is too small, crooked or branchy to be useful.

Volume table

Most timber is sold by volume.

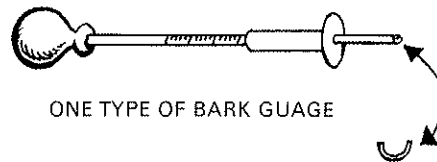
A volume table lists the volumes of trees of various diameters (at breast height) and heights (total or merchantable).

A volume table can be used to estimate the volume of timber in a tree without felling the tree.

Separate volume tables are available for jarrah, karri, marri, *Pinus radiata* and *P. pinaster*.

Bark thickness

Wood is used for boards (sawn), paper (pulped), particle board (chipped) and other functions. The bark is generally not used, and its thickness can be measured with a special gauge to determine diameter "under bark".



SAMPLE OF VOLUME TABLE

DIAM. CLASS (U.B.) (MMS)	LOG LENGTH CLASS-METRES									
	17.0	17.2	17.4	17.6	17.8	18.0	18.2	18.4	18.6	18.8
	TO 17.2	TO 17.4	TO 17.6	TO 17.8	TO 18.0	TO 18.2	TO 18.4	TO 18.6	TO 18.8	TO 19.0
VOLUME CUBIC METRES UNDER BARK										
2000-2020	53.94	54.58	55.21	55.85	56.48	57.12	57.75	58.38	59.02	59.65
2020-2040	55.02	55.67	56.32	56.96	57.61	58.26	58.91	59.55	60.20	60.85
2040-2060	56.11	56.77	57.43	58.09	58.75	59.41	60.07	60.73	61.39	62.05
2060-2080	57.21	57.88	58.56	59.23	59.90	60.58	61.25	61.92	62.60	63.27
2080-2100	58.32	59.01	59.69	60.38	61.07	61.75	62.44	63.12	63.81	64.50
2100-2120	59.44	60.14	60.84	61.54	62.24	62.94	63.64	64.34	65.04	65.74
2120-2140	60.58	61.29	62.00	62.71	63.43	64.14	64.85	65.56	66.28	66.99
2140-2160	61.72	62.44	63.17	63.90	64.62	65.35	66.08	66.80	67.53	68.25
2160-2180	62.87	63.61	64.35	65.09	65.83	66.57	67.31	68.05	68.79	69.53
2180-2200	64.04	64.79	65.54	66.30	67.05	67.80	68.56	69.31	70.06	70.82
2200-2220	65.21	65.98	66.75	67.51	68.28	69.05	69.81	70.58	71.35	72.12
2220-2240	66.40	67.18	67.96	68.74	69.52	70.30	71.08	71.87	72.65	73.43
2240-2260	67.59	68.39	69.18	69.98	70.77	71.57	72.36	73.16	73.96	74.75
2260-2280	68.80	69.61	70.42	71.23	72.04	72.85	73.66	74.47	75.28	76.09
2280-2300	70.02	70.84	71.67	72.49	73.31	74.14	74.96	75.78	76.61	77.43
2300-2320	71.25	72.08	72.92	73.76	74.60	75.44	76.28	77.11	77.95	78.79
2320-2340	72.49	73.34	74.19	75.04	75.90	76.75	77.60	78.45	79.31	80.16
2340-2360	73.74	74.60	75.47	76.34	77.21	78.07	78.94	79.81	80.67	81.54
2360-2380	75.00	75.88	76.76	77.64	78.52	79.41	80.29	81.17	82.05	82.94
2380-2400	76.27	77.16	78.06	78.96	79.86	80.75	81.65	82.55	83.44	84.34
2400-2420	77.55	78.46	79.37	80.29	81.20	82.11	83.02	83.93	84.85	85.76
2420-2440	78.84	79.77	80.70	81.62	82.55	83.48	84.41	85.33	86.26	87.19
2440-2460	80.14	81.09	82.03	82.97	83.92	84.86	85.80	86.74	87.69	88.63
2460-2480	81.46	82.42	83.37	84.33	85.29	86.25	87.21	88.17	89.12	90.08
2480-2500	82.78	83.76	84.73	85.70	86.68	87.65	88.63	89.60	90.57	91.55