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THE VALUE OF TREES

Transcribed from an article by Mr A. Raad in "Groen", April, 1970, and from information in the May, 1955, issue of "Trees".

The assistance of the Australian Institute of Horticulture is gratefully acknowledged for their translation of Mr Raad's paper.

The tree-value factors suggested in this article for local calculation in each country is a project that this Institute could undertake at some time. There are many situations where members would welcome such a professionally-backed guide to tree valuation. - Ed.

For a variety of reasons a value has, at times, to be placed on ornamental trees. Although the timber value of such trees may be high, it is the aesthetic value, in the case of ornamental trees, that has to be assessed. These values are required in order to estimate how much has to be claimed for trees damaged in traffic accidents, or in acts of vandalism, or when costly remedial treatment has to be carried out in order to save a particular tree either from damage by public utility services or in new road alingments.

Different methods have been adopted in various countries. Three of these will be described. They are

(a) the German method of Maurer-Hoffman,
(b) the Swiss method of the V.S.G.S., and
(c) the American method adopted at an International Shade Tree Conference.

A. THE GERMAN METHOD is based on the following values:

B stem diameter, (basic value) varies from 15 cm = 450 marks to 160 cm = 9770 marks.
G tree species, 4 groups.
S importance of tree, 6 classifications.
Z health of tree, 6 classifications.
L locality of tree, 5 classifications.

The value is calculated as follows:

B x G x S x Z x L = value of one tree in German marks.

The factors used are as follows:

B. Stem diameter cm	base value in German marks April 1970	Stem diameter cm	base value
15	450	90	5150
20	650	95	5480
25	900	100	5810
30	1190	105	6140
35	1520	110	6470
40	1850	115	6800
45	2180	120	7130
50	2510	125	7460
55	2840	130	7790
60	3170	135	8120
65	3500	140	8450
70	3830	145	8780
75	4160	150	9110
80	4490	155	9440
85	4820	160	9770

G - Tree species

Group 1:0.2 - 0.4

Alnus, Fraxinus exc., Populus. Salix. Sorbus auc., ets.

Group 11:0.4 - 0.6

Acer plat., Acer sacch. Acer pseudopl., Ailanthus alt., Betula, Robinia pseud., Sorbus area, Sorbus suecica, etc.

Group III: 0.6 - 0.8

Aesculus hipp., Crataegus, Fagus silv. Fraxinus ornus, Gleditsia intriac., Juglans, Platanus acerifolia, Quercus rubra, Tilia, Ulmus.

Group IV: 0.8 - 1

Acer camp., Aesulus carnea, Carpinus, Catalpa big., Corylus colurna, Liriodendron. Magnolia, Quercus ped., Sophora jap.

S - Importance of Tree

0.5 unimportant
0.6 too closely planted
0.7 sufficient room between trees
0.8 wide planting
0.9 groups or rows at regular intervals
1.0 solitary

Z - Health of Tree

0.5 valueless
0.6 diseased, weak
0.7 badly shaped
0.8 slow growing
0.9 growth - average
1.0 healthy and vigorous

L - Locality of Tree

Group A 0.25 undeveloped country
B 0.75 rural country
C 1.60 suburban area
D 2.55 city area
E 3.55 reserves and park development area.

B. SWISS METHOD

1. Species value - every tree is valued from 3 to 10.
2. Health of tree - 10 values
3. Locality of tree - 5 values
4. Stem circumference - 30 cm to 700 cm

The value is calculated as follows 1 x 2 x 3 x 4 = value of one tree in Swiss francs.

The factors used are as follows:

1. Species value (every species is given a value from 3 up to 10). Some examples are given.

Acer,
Campestre 5, negundo 4, platanoides 4, plat.globosum 6.

Aesculus
Carnea 5, hippocastanum 4,

Ailanthus
Altissima 5.

Alnus
Glutinosa 3.

Betula
Papyrifera 4, pendula (alba) 3.

Castanea
Sativa 8.

Fagus
Sylvat. pendula 9.

Abies
Pinsapo 10.

Cedrus
Atlantica 9.

2. Health of Trees

10 healthy, strong, good as single specimen.
9 healthy, strong, good in groups of 2 to 5, eye catching.
8 healthy, strong, good in groups or rows.
7 healthy, average growth, good as single specimen.
6 healthy, average growth, good in groups of 2 to 5.
5 healthy, average growth, good in groups or rows.
4 slow growing, old single specimen.
3 slow growing, in groups or badly shaped.
2 weak - diseased.
1 useless.

3. Locality of Tree

10 in the centre of the city
9 in suburban areas
8 in the outer suburbs
7 on the outside of the city
6 in rural areas

4. Stem Circumference

Circumf. cm	factor	Circumf. cm	factor	circumf. cm	factor
30	1	150	15	340	27
40	1.4	160	16	360	28
50	2	170	17	380	29
60	2.8	180	18	400	30
70	3.8	190	19	420	31
80	5	200	20	440	32
90	6.4	220	21	460	33
100	8	240	22	480	34
110	9.5	260	23	500	35
120	11	280	24	600	40
130	12.5	300	25	700	45
140	14	320	26		

C. AMERICAN METHOD

1. Area of stem taken from a cross section at chest height (4½ feet = 1.35 m) measured in square inches.

2. Unit price of $6 per square inch of the cross section according to the buying power of the dollar in 1957.

3. Condition of tree: 100% for a perfect specimen and respectively 80%, 60%, 40% and 20% for tree with varying degrees of defects.

4. Values classified according to species and varieties and their suitability in the area of the United States.

The value is calculated as follows:

Factor 1 x factor 2 x factor 3 x factor 4 = value of one tree in US dollars.

Trees are classified into States or Regions and the trees in each are given one of 5 classifications from class 1 (100%) to class 5 (20%) - much abbreviated example for only one region is given.

New England Region

Class 1 100%

Acer platanoides
"Erectrum" rubrum.
Betula papyrifera
Fagus sylvatica
Fraxinus americana
Gingko biloba
Liquid ambar styraciflua
Liriodendron tulipifera

Class 2 80%

Aesculus carnes.
Fraxinus nigra.
Picea pungens
"Glauca".
Platanus acerifolia
Quercua palustris
Sophora japonica

Class 3 60%

Acer pseudoplatanua
Aesculus hippocastanum
Gleditsia triacanthos
Picea glauca
Platanua occidentalis
Salix alba

Class 4 40%

Ailanthus altissima
Morus sp.
Populus alba
Prunus serotina
Robinia pseudoacacia
Ulmus americana

Class 5 20%

Acer negundo
Catalpa speciosa
Pinus rigida
Populus bolleana
Populus canadensis
Populus nigra
"Italica"

The layout of the work sheets could be as under. An example of a tree in poor condition in regional class 5 is given.

Species and variety - Acer negundo
Diameter of trunk in inches - 20
Square inches in cross section - 314
Basic value in dollars - 1884
Species and variety class 5: factor, 20%
Condition class 5: factor, 20%
Value of tree - $75.36 (i.e. $1,884 x 20% x 20%)

Instances will undoubtedly be encountered of such remarkable specimens that the basic value should be increased. This is a matter for the appraiser's judgment as is the determination of the Condition Class of any tree.

Any means or formula for evaluating shade trees must be flexible, and this is probably the most flexible formula of any kind ever devised. Always the judgment and opinions of the individual will be a large, if not the largest, factor.

In conclusion, it is suggested that the U.S.A. method (using the cross-sectional area) appears to be the most logical. It does not, however, take into account the locality or layout of the planting.

A method using the best of the above valuations could be a multiplication of the following factors.

Unit Value

Based on cross-sectional area.

Species value

100% except for selected species with inbuilt disabilities such as root aggressive poplars.

Locality

City centre	100%
Suburban	90%
Outer suburban	80%
Outside city	70%
Rural	60%

Health and Condition

100, 80, 60, 40, 20%

Planting Layout

Solitary	100%
Street tree	80%
Groups of 2-5	60%
Groups over 5	40%
In wooded areas	20%

Values applicable in various countries should be worked out by park administrators in conjunction with councils to suit local conditions.

Manjimup,
March 21, 1975.

The Editor
FOREST NOTES.

TREE VALUATION.

Your article on Tree Valuation (Forest Notes 12:3, December 1974) and later correspondence refers.

The formula for calculation of Tree Value cited may well apply to Melbourne City, but can greatly underestimate the value of certain trees in rural situations, as the following example for Gloucester Tree indicates.

Using the formula quoted,

$$V = T \times S \times A \times 4 \times L$$

where V = Tree Value, S = Species
T = Size, A = Aesthetic Value
H = Health, L = Locality

for Gloucester Tree, (diameter 220 cms).

T = $280 + $3320
S = 0.8 (Group III)
A = 1.0 (Specimen Tree)
H = 0.8 ('reasonable' health - some rot in crown)
L = 0.8 (rural area)

So, Value = 3320 x 0.8 x 1.0 x 0.8 x 0.75
= $1593.60

which you will agree is an absurdly low value for this particular tree.

Factors not taken into account in the case of Gloucester Tree, are:

(i) The tree is well-known Australia-wide and is a significant tourist attraction in its own right;

(ii) The tree is part of the "folklore" of the karri country, regarded with pride and affection by the people of the district.

(iii) The tree is a fire lookout tower, the replacement cost of which is about $30,000.

It therefore appears that in calculating the value of a tree there perhaps also needs to be account taken of historical, utilitarian and recreational values, all of which in the case of our karri fire lookout trees would involve huge multiplying factors.

R.J. UNDERWOOD.