

JOURNAL OF ARBORICULTURE

April 1977
Vol. 3, No. 4

PLANT MATERIAL EVALUATION

by Gordon S. King

General observations

There are at least seven basic ways to place a dollar value on plant material. No one way is ideal for all cases. Some of the methods used in the past are being changed or have been changed within the last year. Very often the many conditions under which the damage occurred will determine the method to be used and in some cases, several methods may be used.

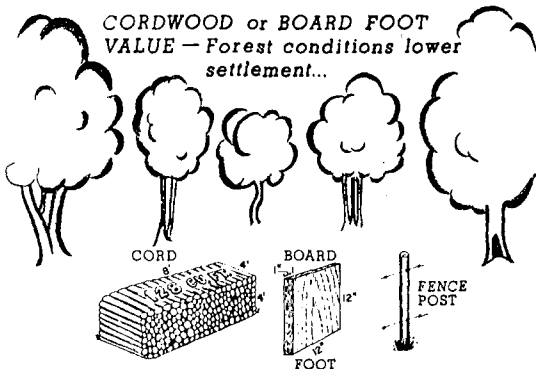
Why evaluate

1. Settlement for damage to plant material—in court or out of court.
2. Income tax deduction.
3. Appraisal of the value of plant material for real estate purposes, etc.

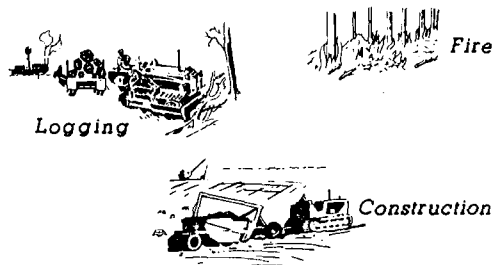
Methods of evaluating

1. Board Foot or Cordwood Value.

This method is used under forest conditions or to force a lower settlement when a higher value is reached by some other method. If trees are cut for lumber, cordwood, or for other forest products on land that is trespassed, then the value of the forest product and the amount is used.



FOREST TREES INJURED OR KILLED



TRIPLE DAMAGES — NEGLIGENCE

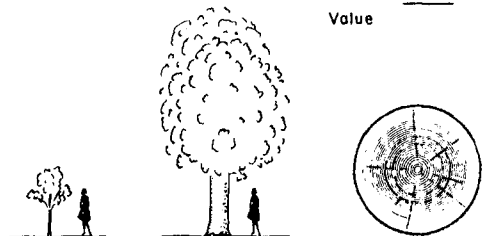
It is often best to have an extension or consulting forester help in deriving the amount.

2. Capital Gain.

This method is seldom used today but is mentioned in some texts. If the cost of planting a 2½ inch tree were deposited in a bank,

INVESTMENT VALUE - SELDOM USED...

- a. ORIGINAL PLANTING COST
 $40.00 \times 5\% \times 100 = ?$
 - b. MAINTENANCE ... COST X INTEREST X AGE = ?
 $3.00 \times 5\% \times 100 = \underline{\hspace{2cm}}$
- Value



and the interest computed for a number of years the tree is old; and if an estimated yearly maintenance cost were also deposited, and the accrued interest estimated; a figure could be reached.

Rather than figure this out yourself, call a bank and ask the final value of say, \$50.00 left in their bank for 100 years, plus say, \$3.00 deposited yearly for 100 years.

3. Replacement

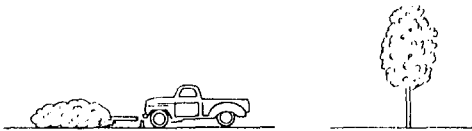
This method is most commonly used and best understood by the public because it is a method used for settlements in other matters.

It may be divided into several areas:

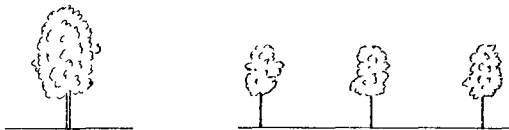
- a. Replace the same number and size of plants. This is usually used on small trees, shrubs, or turf. For trees over 18 inches in diameter, this may be impractical.
- b. Replace a large tree with several small trees which may equal the total diameter of the large tree.
- c. Replace a large tree with a smaller tree plus a cash settlement.

REPLACEMENT - MOST OFTEN USED

A. Same size



B. Smaller size



4. Income Tax Deduction—Federal

This is sometimes called real estate value and is presently under considerable criticism

and review because it is determined primarily by real estate appraisers. Supply and demand of real estate in the area at that particular time may affect the value.



The Internal Revenue Service holds that the allowable deduction is the difference in the market value of the property as a whole immediately before and after the tree loss has occurred, as determined by a competent real estate appraiser.

There are cases where other methods of determining the value of plants have been used, and permitted by the IRS, especially where the demand far exceeded the supply of real estate.

INCOME TAX DEDUCTION

Interpretation Varies

a. Real Estate Appraisers

Before		\$ 25,000
After		\$ 24,000
	<i>b. Cost of cleaning up</i>	\$ 1,000
		X
		\$ 1,000+X

5. Square Inch Method, Felt-Spicer Method

This is based on the number of square inches in cross-section at dbh, computed at \$10.00 per square inch; species, physical condition, and aesthetic value being considered.

This method is used quite commonly on specimen trees in the urban and suburban areas, and is recommended for trees over 12 inches in diameter.

To obtain a clear and complete understanding of this method, a booklet, A Guide to Professional Evaluation of Landscape Trees, Specimen Shrubs, and Evergreens, is available from the International Society of Arboriculture, P.O. Box 71, 5 Lincoln Square, Urbana, Illinois 61801.

Cost to members of the ISA is \$5.00. To nonmembers the cost is \$25.00.

SQUARE INCH METHOD

\$ 9.00/Square Inch

D.B.H.	SQUARE INCHES	BASIC VALUE	SPECIES VALUE	PHYSICAL CONDITION	AESTHETICS	FINAL VALUE
20"	314	\$2826	100 %	100 %	100 %	\$2826
20"	314	\$2826	60 %	50 %	25 %	\$212

WHEN...

1. Value on public trees for budget purposes.
2. Insurance
3. Negligence

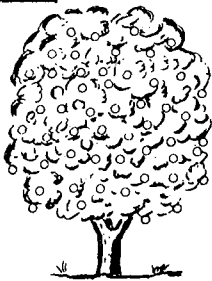
6. Crop Value Lost

This method is used where the plants have a crop value, such as fruit trees, berry bushes, Christmas trees, etc. Multiply the crop value per year by the years of remaining life expectancy of the plants. The life expectancy figure may be cut if the replacement cost of the destroyed plants is considered.

It is desirable, if not a must, to consult an extension pomology specialist in the particular area.

CROP VALUE

Fruit

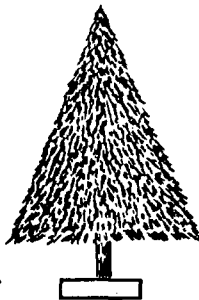


10 bushels

@4.00=\$40 x life expectancy

Xmas Trees

\$ 4.00



7. The British Arboricultural Association Method

A point system is used to evaluate these factors:

Factor	Points Evaluated			
	1	2	3	4
1. Size of tree	small	medium	large	huge
2. Useful life expectancy	10-20	20-40	40-100	100 plus

3. Importance of position in landscape	little	some	considerable	great
4. Presence of other trees	many	some	few	none
5. Relation to the setting	mod. suitable	fairly suitable	very suitable	especially suitable
6. Form	poor	fair	good	excep. good
7. Special factors	none	one	two	three

Points for each evaluation are multiplied and the final figure is in British pounds. The conversion then may be made to other currencies.

Conclusions

There are various ways to place a value on plant material and probably the list here is not complete. Good judgment through experience is important in selecting the method to use, for no one method can be used under every condition. Always charge for your services in evaluating the plant material on a fee basis and not on a percent of the evaluation. A percentage fee may influence the method used and judgment beyond justification.

References

Abbott, R.E. 1976. *Arboricultural and horticultural appraisal*. The Arboriculturist 1(3): 1-9.

Allison, J.R. 1974. Costs and expected returns from pecan groves. Department of Agricultural Economics, Georgia Station, Experiment, Georgia, Research Bulletin 151.

Anonymous. 1975. A guide to the professional evaluation of landscape trees, specimen shrubs, and evergreens. International Society of Arboriculture.

Anonymous. 1976. *Tree evaluation for tax purposes*. Shade Tree Digest. January.

Armstrong, N. 1947. *Shade tree evaluation formulas and their use*. Proc. International Shade Tree Conference 23: 38-48.

Baer, W.C. and P. Gordon. 1972. *Tree planting reconsidered: an argument for big transplants*. Landscape Architecture 3: 236-239.

Baldwin, V. 1958. *Should trees be planted in business areas?* Proc. International Shade Tree Conference 34: 239-243.

Bingham, C. 1968. *Tree preservation and protection on private property*. Proc. International Shade Tree Conference 44: 234-246.

Blettner, R. 1969. *Mass appraisals vis multiple regression analysis*. The Appraisal Journal 37(4): 513-521.

Brigham, E. 1965. *The determination of residential land value*. Land Economics 41(4): 325-334.

Brooke, D.L. 1974. *Citrus production costs and returns in Florida, season 1972-73 with comparisons*. University of Florida, Economics Report 67.

Bylund, B. 1965. Homeowners characteristics affecting their landscape planting. Pennsylvania State University Agricultural Experiment Station Bulletin 719. April.

- Connell, E.A. 1930. *Five billion dollars worth of street trees*. The American City. p. 143. January.
- Coughlin, R. and J. Fritz. 1971. Land values and environmental characteristics in the rural-urban fringe. RSRI Discussion Paper Series 45, p. 1-36.
- Dilmore, G. 1974. *Appraising houses*. The Real Estate Appraiser 40(4): 42.
- Dressel, K. 1973. *Street and park tree evaluation*. Midwest ern Shade Tree Conference 18: 105-112.
- Eldin, H. 1963. Amenity values in British forestry. *Forestry* 36: 65-89.
- Felt, E.P. 1930. *How a tree may be valued*. The American City, p. 102. March.
- Forest Industries Committee on Timber Valuation and Taxation. 1967. *Timber Tax Journal* 3(1): 951 pp.
- Foster, C. 1965. *Forestry in megalopolis*. Proceedings of Society of American Foresters 1965: 65-67.
- Friedman, E. 1960. *Encyclopedia of real estate appraising*. Englewood Cliffs, New Jersey. Prentice-Hall.
- Gould, E. 1971. Values, trees, and the urban realm. *Trees and Forests in an Urbanizing Environment*, Amherst, Massachusetts, University of Massachusetts Cooperative Extension Service, pp. 79-90.
- Guinan, D. 1966. *We duck the Dutch elm disaster*. The American City p. 102-103. March.
- Hafstad, G. 1964. *Realistic evaluation of shade trees*. Proc. Midwestern Shade Tree Conference 19: 77-81.
- Hammer, T., E. Horn, and R. Coughlin. 1971. The effect of a large urban park on real estate value. RSRI Discussion Paper Series 51: 1-32. September.
- Hatcher, O. 1965. *Scope of shade tree care in Region 5 of the International Shade Tree Conference*. Proc. International Shade Tree Conference 41: 114-119.
- Horticultural Research Institute, Inc. 1965. *Marketing of ornamental nursery stock*. American Association of Nurserymen, Inc. 5 p.
- Internal Revenue Service. 1971. *Condemnations of private property for public use*. Publ. 549(10-70). 19 p.
- Internal Revenue Service. 1970. *Tax information on diseases, casualty losses and thefts*. Publ. 547(10-70). 19 p.
- International Shade Tree Conference, Inc. 1970. *Shade tree evaluation*. Urbana, Illinois, p. 6-9.
- Jacobs, P. and D. Way. 1969. *How much development can landscapes absorb?* *Landscape Architecture*. 59: 296-298.
- Johnson, I. 1956. *Planning and implementing a municipal street tree program*. Proc. International Shade Tree Conference 32: 219-229.
- Kaiser, E. 1970. *Natural landscape and housing location decisions*. *Landscape Architecture* 60: 105-107.
- Kenney, K. 1964. *Locational decisions of residential land development and building firms in Greensboro urban area*. Center for Urban and Regional Studies, University of North Carolina, p. 4-8.
- Kielbaso, J.J. 1971. *Economic value of trees in the urban locale*. Symposium on the Role of Trees in the Souths Urban Environment, University of Georgia. p. 82-94.
- Kielbaso, J.J. 1975. *Economic values of trees in the urban locale*. *Trees Magazine* 34(1): 9-13.
- Lansing, J. and R.W. Marans. 1969. *Evaluation of neighborhood quality*. *American Institute of Planners Journal* 35: 195-199.
- Lehman, H.O. 1959. *The effect of trees and planting on property values*. *Appraisal and Valuation Manual* 4: 173-176.
- Lessinger, J. 1969. *Econometrics and appraisal*. *The Appraisal Journal* 37(4): 501-502.
- McMichael, S.L. 1956. *McMichaels Appraising Manual*. 4th edition, Prentice-Hall, Inc., Englewood Cliffs, New Jersey. p. 383-393.
- McNable, H. 1968. *Determining the value of shade trees effect on the economy*. Proc. International Shade Tree Conference 44: 224-232.
- Morse, H. 1961. *Branches of the law*. *Trees Magazine* 21(4): 5.
- Munger, J.A. 1964. *Components of rural land values in northern Wisconsin*. *Land Economics* 40(1): 87-91.
- Niles, J.A. and C.L. Anderson. 1973. *Economic strategy for rehabilitating, selling or abandoning a 'Valencia' grove under varying situations*. Proc. Florida State Horticulture Society 86: 75-79.
- National Association of Homebuilders. 1958. *Home Builders Manual*, Washington, D.C. p. 198.
- Paige, R.E. 1964. *20,000 money trees in the streets*. *Landscape Architecture* 55: 68.
- Payne, B.R. 1973. *The twenty-nine tree home improvement plan*. *Natural History* 82(9): 74-75.
- Peters, L.C. 1971. *Shade and ornamental tree evaluation*. *Journal of Forestry*. July.
- Pirone, P.P. 1972. *Tree Maintenance*. 4th edition. Oxford University Press, New York. p. 3-13.
- Purcell, C.R. 1956. *The realty value of trees*. Proc. National Shade Tree Conference 32: 128-136.
- Rabinowitz, C. and R. Coughlin. 1970. *Analysis of landscape characteristic relevant to preference*. RSRI Discussion Paper Series No. 38: 1-89. March.
- Rabinowitz, C. and R. Coughlin. 1971. *Some experiments in quantitative measurement of landscape quality*. RSRI Discussion Paper Series No. 43: 1-57. March.
- Savage, Z. 1966. *Citrus yield per tree by age*. *Agricultural Extension Service, University of Florida, Economics Series* 66:3.
- Schiff, C. 1969. *What is happening in municipal arboriculture in New York?* Proc. International Shade Tree Conference 45: 121-127.
- Shelger, K. 1957. *Techniques of analyzing residential areas*. *The Appraisal Journal* 25: 566-574.
- Simoneau, E.T. 1961. *Legal aspects of shade trees*. New York State Arborists Association Shade Tree Notes Supplement 1.
- Smith, F. 1971. *Trees and the urban ecology*. Symposium on the role of trees in the souths urban environment. University of Georgia. p. 1-5.
- Tilford, P. 1957. *How many street trees?* *Trees Magazine* 17(5): 24.
- Waller, J. 1965. *Cooperative enterprises—activities of civic groups, organizations and individuals in beautification programs*. Proc. International Shade Tree Conference 41: 195-201.
- Waters, W. and R. Brandt. 1970. *Trees for people—or pests?* *American Forests* 76(9): 21-23.
- Wistrand, G.L. and A.B. Wooten. 1968. *Use of the income approach for the appraisal of pecan orchards*. *Journal American Society of Farm Managers and Rural Appraisers* 32(2): 40-44.

Department of
University of Massachusetts
Amherst, Massachusetts