

# **Guide to Appraisal of Trees and Other Plants in Ohio**

**Eighth Edition, 2020  
Second Printing**

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**A Publication of  
The Ohio Chapter International Society of Arboriculture**

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## **Purpose and use of the Ohio Guide for Plant Appraisal**

The year 2019 marked the publication of the 10<sup>th</sup> Edition of the Guide for Plant Appraisal (hereafter referred to as the 10<sup>th</sup> Edition). In preparing the 10<sup>th</sup> Edition the objective of the Council of Tree and Landscape Appraisers (CTLA) was to “provide the appraiser with a systematic process for defining the appraisal problem, identifying the appropriate appraisal approach(es), and developing a credible conclusion.” (Page ix) The members of the Council of Tree and Landscape Appraisers (CTLA) made notable changes in the 10<sup>th</sup> Edition compared to previous editions of the Guide for Plant Appraisal with the goal of bringing the process of plant appraisal more in line with those of the broader appraisal professions and standards, and ultimately leading to more reasonable and defensible assignment results.

The Ohio Guide for Plant Appraisal is intended to be a supplement to the 10<sup>th</sup> Edition of the Guide for Plant Appraisal and not as an alternative. The Ohio Guide addresses a narrow range of regionally specific information as recommended by the 10<sup>th</sup> edition. It is highly recommended that a person who performs plant appraisal acquire, read, and understand the concepts presented in the 10<sup>th</sup> edition, and apply the approaches, methods and techniques that are appropriate to the task.

## **The Regional Plant Appraisal Committee**

The responsibility to prepare this text was passed to the Shade Tree Evaluation Committee of the Ohio Chapter, International Society of Arboriculture (which functions as the Regional Plant Appraisal Committee). This committee chair was previously charged with publishing the Ohio Species Guidelines. Because the pricing of small-scale trees and shrubs is most often done in landscape construction and installation, it was decided to include within the

Evaluation Committee individuals with retail and wholesale experience as well as municipal or urban forestry experience.

The committee consisted of the following individuals from the appraisal community: We were fortunate to have the AmericanHort representative, Richard Gooding, to CTLA serving on the state committee. The National Association of Landscape Professionals (NALP), and AmericanHort were represented by Robert Siebenthaler. American Society of Consulting Arborists (ASCA) was represented by William King, and Tom Mugridge. Municipal or urban forestry was represented by Bill Hahn, Robin Hunt, and Steve Schneider. Bill Hahn also represented the American Society of Landscape Architects. The Tree Care Industry Association (TCIA) was represented by William King. John Siefer represented the Ohio Chapter ISA. Davis Sydnor chaired the committee. Robert Laverne co-authored the final draft.

### **The intended purpose for regional data**

The goal for the appraiser is to determine to the best of his or her ability a cost or value of the subject plant material that is based in realistic conditions and reasonable, non-biased assumptions. As stated in the 10<sup>th</sup> Edition:

Plant appraisers should strive to produce reasonable and credible work products. They should conduct their work in the absence of bias or advocacy and meet high professional standards. They should take necessary steps to ensure that their work is credible in the eyes of their clients, their peers, the courts, and the general public. The appraiser who walks the narrow path of objectivity and competence will produce reasonable and credible assignment results and will communicate the results accurately and without ambiguity. (Page 109)

Toward this objective, the 10<sup>th</sup> Edition provides more guidance on the appropriate and relevant valuation approaches, methods and techniques used in plant appraisal. It is the responsibility of the plant appraiser to understand and employ the appropriate approach(s), method(s) and/or technique(s) for the assignment. Within the appraisal toolbox are two specific techniques that require locally or regionally acquired data to properly arrive at an assignment result. According to the 10<sup>th</sup> Edition:

When appraising trees that are larger than commonly available from a local nursery, the appraiser can extrapolate from the cost of a nursery plant using the Trunk Formula Technique (TFT) or cost compounding technique (CCT). For common landscape applications, use the largest commonly available nursery plant as the basis for these calculations. Regional Plant Appraisal Committees (RPAC) can provide guidance on selecting the diameter of nursery trees to use with these techniques. (Page 57)

There are several approaches, methods, and techniques that are appropriate for a range of appraisal assignments, and indeed in many cases more than one may be employed in a given situation. The purpose of providing regional data is to support one of these techniques, namely the Trunk Formula Technique. This does not imply that the Trunk Formula Technique is the preferred or appropriate tool for appraising landscape trees in all situations. It is one tool that has application in some, but not all situations. It is the responsibility of the appraiser to select and properly employ the approach, method, and technique appropriate for the assignment.

### **Determining the size of the largest commonly available nursery-grown trees**

Appendix 4 of the 10<sup>th</sup> Edition provides additional guidance for Regional Plant Appraisal Committees on how to determine the largest commonly available nursery-grown tree for that region. Toward that end, the Ohio Regional Plant Appraisal Committee surveyed 14 nurseries throughout Ohio in late 2019 and early 2020 to enquire about the largest commonly available tree for several species.

Most nurseries and landscape contractors deal within a 200-mile radius at the retail level and about a 500-mile radius at the wholesale production nursery level. To be sure of an accurate statewide price, fourteen wholesale nurseries were chosen to survey (representing NE, SE, NW, SW, and Central Ohio). The committee determined the size and availability for commonly available trees at wholesale nurseries in Ohio. Five commonly available genera were surveyed across the 14 chosen nurseries. Our survey indicated that trees were equally available in the 2-4-inch range. There are certainly larger trees that can be found in Ohio, but the *largest*

*commonly available nursery-grown* tree for practical purposes is approximately 3 ½ inches (9 cm) in trunk caliper measured at 6 inches (15 cm) above grade.

The appraiser should not interpret this reported trunk caliper as being the only and best starting point for using the Trunk Formula Technique or the Cost Compounding Technique. Rather, it is highly recommended that when practical the appraiser seek out data from multiple local sources for the largest commonly available nursery-grown tree of the same species (and cultivar or variety when relevant) of the subject tree being appraised.

### **Determining a unit cost for the largest commonly available tree**

In addition to suggesting the largest commonly available nursery-grown tree for the region, RPAC's are also charged with gathering regional costs for the largest commonly available species. Costs are specified as wholesale cost to a landscape professional not including costs to transport or install the tree. Costs are reported as unit cost defined as the cost per reported size. In Ohio, the size of nursery grown broadleaf trees is commonly reported as trunk caliper or trunk diameter; the size of nursery grown conifers is commonly reported as tree height; the size of nursery grown shrubs and small trees is commonly reported by the size of the container in which the plant is grown or sold. Toward that end, the Ohio RPAC gathered data on costs to purchase several genera of commonly available trees, including species and cultivars of maple (*Acer*), oak (*Quercus*), honeylocust (*Gleditsia*), crabapple, (*Malus*) and spruce (*Picea*). These data suggest that for a 3 ½ -inch caliper nursery-grown broadleaf tree a reasonable unit cost for this period of time is \$30.08 per cross-sectional square inch of trunk area. For a 3 ½ -inch caliper (10-foot tall) nursery-grown conifer a reasonable unit cost for this period of time is \$21.90 per cross-sectional square inch of trunk area (or foot of height). (See Appendix A for the formula to calculate cross-sectional area from trunk diameter. See Appendix B for suggested Basic Cost for broadleaf landscape trees between 3.5 inches and 60.0 inches in trunk diameter)

While this reported unit cost is a value based in reputable data gathered in 2019 and 2020, it must be recognized that there is great variability in wholesale cost among species and cultivars. For example, the unit cost for Japanese maple (*Acer palmatum*) may be multiple

times the unit cost for other maple species such as Norway maple (*Acer platanoides*). Also, costs for a particular species or cultivar may change radically over a period of time, particularly when a species or genera-specific pest or pathogen arrives. When encountering conditions concerning uncommon species the appraiser should consider seeking costs for the species (and cultivar when appropriate) of the subject tree from at least three local nurseries.

The unit cost suggested in this document may be used to extrapolate the basic cost for a tree that is larger than the largest commonly available tree. For subject trees smaller than the largest commonly available tree it is recommended that the appraiser seek out costs for that particular species from at least 3 local nurseries to determine an appropriate unit cost.

One common mistake that should be avoided is using unit costs derived from costs for nursery-grown trees as the basis for appraising trees grown in natural forest settings. The 10<sup>th</sup> Edition states “For forestry or woodland settings, it is generally more appropriate to use the cost of seedlings rather than larger nursery trees to develop the basic cost.” (Page 57) Chapter 9 of the 10<sup>th</sup> Edition specifies the approach, method, and techniques that are appropriate for use when appraising trees in woodland settings. The unit cost published here is based on the cost to purchase nursery-grown trees and in most cases is not appropriate for use as the basic cost when appraising trees in natural woodland settings.

### **Determining tree species attributes**

In addition to determining the largest commonly available nursery-grown tree, and for providing guidance on the unit cost for such trees, the Regional Plant Appraisal Committees are charged with “comprehensive descriptions of plant species” that are found within the region. Unlike the Trunk Formula Method that was employed in previous editions of the Guide for Plant Appraisal, the current Trunk Formula Technique does not directly apply a species percent rating as part of the depreciation process. Rather, species attributes are now considered as a component of the Functional Limitations depreciation element within the Trunk Formula Technique. Guidance in calculating functional and external limitations and species ratings are presented in a separate publication tentatively entitled *Evaluating Functional Condition, and External Factors for Midwest Trees* (Sydnor, in review). Species ratings are not to be used as

direct percentage depreciation, but rather as indicators of relative performance of individual species (and cultivars when appropriate) in average landscape settings.

### **Guideline for rounding values**

When calculating trunk cross-sectional area (see Appendix A), basic cost, and other values, the resultant sums, differences, products, and quotients should be calculated to the precision of hundredths of a unit (two digits to the right of the decimal). For example

$$254.47 \text{ square inches} \times \$31.08 / \text{square inch} = \$7,908.92$$

Use this value for subsequent calculations such as depreciation. Do not round values until the final assignment result is achieved, and then round to 3 or 2 significant figures, in which case \$7,908.92 can be rounded to \$7,910 or \$7,900.

### **Summary**

The intent of this guide is to supplement the 10<sup>th</sup> Edition of the Guide for Plant Appraisal and to offer data that may be relevant to some (but not all) appraisal tasks in Ohio. The appraiser is encouraged to carefully consider the assignment, the setting, and the full range of appraisal approaches, methods and techniques when preparing the appraisal. In situations where the Trunk Formula Technique is applicable and appropriate for the situation, the information presented in this document on largest commonly available nursery-grown tree, unit cost, and species attributes may be useful in reaching an assignment result. When practical, an appraiser is encouraged to gather additional data that is more specific to the species of the subject tree, the location of the site, and the point in time of the assignment.

It is the intent of the Ohio RPAC to update these data at minimum every two years, and more frequently as needed.

### **Appendix A: Diameter to Cross-sectional Area Conversion**

The cross-sectional area of a tree trunk or branch can be estimated from the diameter by using the formula for calculating the area of a circle. The most familiar formula is

$$A = \pi r^2$$

which can be written

$$A = \pi \left(\frac{d}{2}\right)^2$$

where A = area;  $\pi = 3.1416$ ; r = radius; and d = diameter.

The same result is achieved with the formula

$$A = 0.7854 d^2$$

where d = diameter

Appendix 2 of the 10<sup>th</sup> Edition provides additional information on calculating area and volume.

#### **Appendix B: Basic cost by trunk diameter for broadleaf landscape trees**

Undepreciated functional replacement costs for broadleaf landscape trees between 3.5-inch and 60-inch diameter in increments of one-half inch are given. Cross-sectional area of the trunks is also included. Increases in cross-sectional area are compensated at \$31.08 per square inch for areas in excess of 9.6 square inches (cross-sectional area of a 3.5-inch caliper stem). Values for trees are given to the nearest dollar.

Basic costs for trees less than 3.5 inches in caliper should be determined by the appraiser for the subject tree species by gathering wholesale cost information from at least three local nurseries.

Note: The basic cost information shown here is provided as a guide, and not as definitive values intended for all areas within Ohio at all times. Appraisers are encouraged to gather relevant wholesale costs from reputable sources for determining basic cost values when using the Trunk Formula Technique.



Trunk Diameter (inches)	Cross Sectional Area (square inches)	Undepreciated Basic Cost at \$31.08/sq inch
3.5	9.62	\$299.03
4.0	12.57	\$390.56
4.5	15.90	\$494.31
5.0	19.64	\$610.26
5.5	23.76	\$738.41
6.0	28.27	\$878.77
6.5	33.18	\$1,031.33
7.0	38.48	\$1,196.10
7.5	44.18	\$1,373.08
8.0	50.27	\$1,562.25
8.5	56.75	\$1,763.64
9.0	63.62	\$1,977.23
9.5	70.88	\$2,203.02
10.0	78.54	\$2,441.02
10.5	86.59	\$2,691.23
11.0	95.03	\$2,953.64
11.5	103.87	\$3,228.25
12.0	113.10	\$3,515.07
12.5	122.72	\$3,814.10
13.0	132.73	\$4,125.33
13.5	143.14	\$4,448.76
14.0	153.94	\$4,784.41
14.5	165.13	\$5,132.25
15.0	176.72	\$5,492.30
15.5	188.69	\$5,864.56
16.0	201.06	\$6,249.02
16.5	213.83	\$6,645.69
17.0	226.98	\$7,054.56
17.5	240.53	\$7,475.63
18.0	254.47	\$7,908.92
18.5	268.80	\$8,354.40
19.0	283.53	\$8,812.09
19.5	298.65	\$9,281.99
20.0	314.16	\$9,764.09
20.5	330.06	\$10,258.40
21.0	346.36	\$10,764.91
21.5	363.05	\$11,283.63
22.0	380.13	\$11,814.55

Trunk Diameter (inches)	Cross Sectional Area (square inches)	Undepreciated Basic Cost at \$31.08/sq inch
22.5	397.61	\$12,357.68
23.0	415.48	\$12,913.01
23.5	433.74	\$13,480.55
24.0	452.39	\$14,060.29
24.5	471.44	\$14,652.24
25.0	490.88	\$15,256.40
25.5	510.71	\$15,872.75
26.0	530.93	\$16,501.32
26.5	551.55	\$17,142.09
27.0	572.56	\$17,795.06
27.5	593.96	\$18,460.24
28.0	615.75	\$19,137.62
28.5	637.94	\$19,827.21
29.0	660.52	\$20,529.01
29.5	683.49	\$21,243.00
30.0	706.86	\$21,969.21
30.5	730.62	\$22,707.62
31.0	754.77	\$23,458.23
31.5	779.31	\$24,221.05
32.0	804.25	\$24,996.08
32.5	829.58	\$25,783.31
33.0	855.30	\$26,582.74
33.5	881.42	\$27,394.38
34.0	907.92	\$28,218.23
34.5	934.82	\$29,054.28
35.0	962.12	\$29,902.53
35.5	989.80	\$30,762.99
36.0	1017.88	\$31,635.66
36.5	1046.35	\$32,520.53
37.0	1075.21	\$33,417.61
37.5	1104.47	\$34,326.89
38.0	1134.12	\$35,248.38
38.5	1164.16	\$36,182.07
39.0	1194.59	\$37,127.96
39.5	1225.42	\$38,086.06
40.0	1256.64	\$39,056.37
40.5	1288.25	\$40,038.88
41.0	1320.26	\$41,033.60

Trunk Diameter (inches)	Cross Sectional Area (square inches)	Undepreciated Basic Cost at \$31.08/sq inch
41.5	1352.66	\$42,040.52
42.0	1385.45	\$43,059.65
42.5	1418.63	\$44,090.98
43.0	1452.20	\$45,134.52
43.5	1486.17	\$46,190.26
44.0	1520.53	\$47,258.21
44.5	1555.29	\$48,338.36
45.0	1590.44	\$49,430.72
50.0	1963.50	\$61,025.58
50.5	2002.97	\$62,252.19
51.0	2042.83	\$63,491.01
51.5	2083.08	\$64,742.04
52.0	2123.72	\$66,005.27
52.5	2164.76	\$67,280.70
53.0	2206.19	\$68,568.34
53.5	2248.01	\$69,868.19
54.0	2290.23	\$71,180.24
54.5	2332.83	\$72,504.49
55.0	2375.84	\$73,840.95
55.5	2419.23	\$75,189.62
56.0	2463.01	\$76,550.49
56.5	2507.19	\$77,923.56
57.0	2551.76	\$79,308.84
57.5	2596.73	\$80,706.33
58.0	2642.09	\$82,116.02
58.5	2687.84	\$83,537.92
59.0	2733.98	\$84,972.02
59.5	2780.51	\$86,418.32
60.0	2827.44	\$87,876.84