



## **PROMOTING STEWARDSHIP FOR MISSOURI'S COMMUNITY FORESTS**

# RECOMMENDED TECHNICAL REFERENCES FOR URBAN TREE CARE IN MISSOURI

### Preface

In order to encourage scientifically based, and technically correct urban forest tree care and management, the Missouri Community Forestry Council's Technical Oversight Committee has reviewed a number of publications pertaining to various aspects of urban tree care and management. Following, is a compilation of those publications/references which the Committee feels do the best job of explaining each management action or technique. The references are grouped by subject area, and they will be revisited periodically by the Technical Oversight Committee to be updated with new and/or better information. In addition, some subject areas may still be under review, and are thus not included at this time. They will be added as the Committee continues their work. The Missouri Community Forestry Council endorses the noted references, and recommends them to those individuals and entities requiring technical guidance for managing trees in Missouri communities.

April, 2008

## Tree Care After Storms

Few things can physically alter the landscape of a community as devastatingly as wide-spread tree damage resulting from an ice storm, tornado, hurricane, or other major weather disturbance. The pounding of rain or hail, ice accumulation on limbs, trunks, and twigs (and sometimes even on foliage), and the fury of wind test the strength of each tree from the time it casts its tiny shadow on the ground. It is a miracle that trees should live to become the oldest living things, since they are fastened in one place and cannot get out of the way of all the natural perils that constantly confront them.

There is nothing people can do while the storm rages, except watch and hope that the tree(s) survives and that the damage is minimal. Once storms damage trees, cleanup and recovery can be bewildering, unless one knows what to do in order to prevent or minimize the impact of the storm. The key to minimizing the storm's impact lies in the care the tree(s) receive(s) before, and immediately after, a storm strikes. To increase awareness and knowledge about what to do when a storm strikes, the Missouri Community Forestry Council endorses and recommends the following publications as the best technical and practical guidance on this important subject:

1. Fazio, James R. 2005. When A Storm Strikes. Tree City USA Bulletin No.2. The National Arbor Day Foundation. Nebraska City, NE. 7 pp. \$3.00.
2. Missouri Department of Conservation. 2006. Tree Care After Storms. Pub. F00135. Mo. Dept of Conservation. Jefferson City, MO. 10 pp.
3. Andresen, John and Lisa L. Burban. Storms Over The Urban Forest. USDA Forest Service, Northeastern Area. 1992 Folwell, Ave. St. Paul, MN. 55108-6148.
4. Coder, Kim D. Storm Damaged Trees: Prevention And Treatments. The University of Georgia Cooperative Extension Service, Athens, GA. 30602-2151.
5. U.S. Forest Service. 2006. Trees & Ice Storms: The Development of Ice Storm-Resistant Urban Tree Populations. 2nd Edition.  
[http://web.extension.uiuc.edu/forestry/publications/pdf/urban\\_community\\_forestry/trees\\_and\\_ice\\_storms\\_2006.pdf](http://web.extension.uiuc.edu/forestry/publications/pdf/urban_community_forestry/trees_and_ice_storms_2006.pdf)

## **Selecting Trees for Planting in Urban Settings**

Considering the hundreds of tree species available from nurseries and mail order sources, it may be a challenge to select those that are most appropriate for the climate and soils in Missouri landscapes. Urban trees must often survive extremes in temperature, moisture and light as well as compacted, poorly drained and alkaline soils. Certain tree species are known to survive better and establish more quickly under such adverse conditions than others. There are also differences among tree species in the amount of irrigation, pruning and pest management required to maintain them in good condition. Following are some references endorsed by the Missouri Community Forestry Council as resources to assist with selection of tree species for planting in urban locations across the state.

1. Missouri Community Forestry Council. 2005. Regional Lists of Recommended Tree Species for Missouri. Missouri Community Forestry Council, c/o Donna Baldwin, P.O. Box 180, Jefferson City, Mo 65102-0180.

2. Missouri Department of Conservation. 1997. Missouri Urban Trees. Mo. Dept. Of Conservation, P.O. Box 180, Jefferson City, Mo. 65102-0180. 65 pp. Or: <https://mdc.mo.gov/sites/default/files/downloads/MissouriUrbanTrees.pdf>

3. Kurz, Don. 2003. Trees of Missouri. Missouri Department of Conservation. P.O. Box 180, Jefferson City, Mo. 65102-0180.

## **Municipal Tree Ordinances**

A municipal tree ordinance reflects the values of a community with regard to the trees that collectively make up “their” urban forest. The urban forest is a community asset that deserves to be protected and managed for the common good. A tree ordinance encourages beautification, air cooling and purification, noise abatement, and property value enhancement. A well-managed urban forest makes the community “a great place to live” in the minds of citizens and citizens-to-be. Perhaps most importantly, an ordinance gives force and direction to professional tree care within the community’s work force and helps control unscrupulous or careless operators.

Ordinances vary in length and complexity, but the key to effectiveness is to write the ordinance simply, clearly, and tailored to the needs of each community. A tree ordinance is just another tool for proper tree care, so it needs to be of high quality, matched properly to the job, and used with skill and care. In addition to an ordinance, there should be an appended document that spells out standards and specifications for management practices such as species selection and placement, pruning, watering, fertilization, mulching, etc.; details which should not be included in the ordinance itself. Including such a large amount of detail directly in the ordinance itself is cumbersome and difficult to change.

There are many sources of detailed information about writing municipal tree ordinances. The Missouri Community Forestry Council endorses, and recommends those listed below.

1. Fazio, James R ed. 2003. How To Write A Municipal Tree Ordinance. Tree City USA Bulletin 9. The National Arbor Day Foundation. 100 Arbor Ave. Nebraska City, Ne.68410 6 pp.

2. Bernhardt, E. And T. Swiecki. Guidelines For Developing And Evaluating Tree Ordinances. California Dept of Forestry & Fire Protection. Urban and Community Forestry Coordinator, 2524 Mulberry St. Riverside, Ca. 92501. Also: (<http://phytosphere.com>)

3. Sample Ordinances - contact: Program Services, National Arbor Day Foundation, 100 Arbor Ave. Nebraska City, Ne 68410. Phone: 402/474-5655.

## Tree Maintenance Practices

Trees deserve planned, ongoing management, such as we give to vehicles, buildings, streets, or other parts of our environment. Commonly, trees receive little or incorrect maintenance due to lack of understanding of trees' needs. The references listed below are recommended to provide up-to-date information about tree care.

Common tree maintenance practices include pruning, fertilizing, and mulching. Information about these practices is available from leaflets and various publications from federal, state, and local agencies.

Other practices include insect and disease diagnosis and controls, trunk injections, cabling and bracing, wound treatments, installation of lightning rods, soil aeration systems for fill over roots, and other tree protection strategies. This information is more likely to be found in books or technical publications.

**Free On-line References for Common Tree Maintenance Practices**---These pamphlets can be downloaded from the internet, and contain good, basic tree maintenance information:

Shigo, Alex L. *Homeowners Guide for Beautiful, Safe, and Healthy Trees*, Northeastern Forest Experiment Station, USDA, 370 Reed Road, Broomall, PA 19008. 3 pp.

Access:

[https://www.fs.fed.us/ne/newtown\\_square/publications/brochures/pdfs/for\\_homeowners/guide\\_homeowners.pdf](https://www.fs.fed.us/ne/newtown_square/publications/brochures/pdfs/for_homeowners/guide_homeowners.pdf)

(no author) *Pruning Landscape Trees*, Penn State University, 7 pp.

Access: <http://pubs.cas.psu.edu/FreePubs/pdfs/uh099.pdf>.

(no author) *Mulch: Your Tree's Best Friend*, MO Dept of Conservation, 2pp.

Access: <https://mdc.mo.gov/sites/default/files/downloads/mulch.pdf>

Starbuck, Christopher J. *Fertilizing Shade Trees*, University of MO Extension

Access: <https://extensiondata.missouri.edu/pub/pdf/agguides/hort/g06865.pdf>

Starbuck, Christopher J. *Preventing Construction Damage to Trees*, University of MO Extension

Access: <https://extensiondata.missouri.edu/pub/pdf/agguides/hort/g06885.pdf>

**Tree City USA Bulletins**---A set of 92 tree care bulletins on various subjects from the National Arbor Day Foundation may be purchased for \$3 each. Six may be downloaded free from their website. Each bulletin is well written and illustrated. To browse available bulletins and order them:

<http://www.arborday.org/programs/treeCityBulletinsBrowse.cfm>

**Detailed Tree Maintenance References**---These are books or booklets that offer more in-depth information and must be purchased:

Harris, Richard W. 1992. *Arboriculture, Integrated Management of Landscape Trees Shrubs, and Vines*, Second Edition. Prentice Hall, Englewood Cliffs, N.J. 674 pp

(This book is considered by many to be the bible of arboricultural reference)

Head, Constance P., Robinson Fisher, and Maureen O'Brien. 2001. *Best Management Practices for Community Trees, A Technical Guide to Tree Conservation in Athens-Clarke County, GA*. Landscape Management Division Office, 350 Pound St. Athens, GA 30601 134 pp.

Access:

[https://athensclarkecounty.com/DocumentCenter/View/280/Tree\\_BMPs?bidId=](https://athensclarkecounty.com/DocumentCenter/View/280/Tree_BMPs?bidId=)

(Although not from Missouri, this booklet contains good tree management advise for managers of publicly owned trees. The tree list does not apply to MO.

Available on-line as a pdf file or may be purchased for about \$10 from the address above)

Shigo, Alex L. 1991. *Modern Arboriculture*. Shigo and Trees, Associates, 4 Denbow Road, Durham, NH 03824-3105. 424 pp.

(Dr Shigo was the father of modern arboricultural concepts. This book includes important, easy to understand information about trees and tree care. Many illustrations.)

Barrett, Bruce A. *Tree and Shrub Pests Around the Home: Symptoms, Signs and Control*, University of Missouri Extension, 27pp. \$5 Can be purchased on-line:

<https://extension2.missouri.edu/M145>

**ANSI Standards for Tree Maintenance**--The American Standards Institute (ANSI) is developing national standards for tree maintenance which are recognized by experts, and which can be used for writing specifications for arboricultural work. ANSI standards may be purchased on-line: [www.ansi.org](http://www.ansi.org), click on eStandards Store, then search for A300. More arboricultural standards are also being developed.

T.Frevert, April 2008

## **Right Tree in the Right Place**

Trees growing in the wrong places cause many problems in the urban forest. Specifically, trees may be too large for the space available to them, or are otherwise poorly adapted to their surroundings. This results in costly, ongoing maintenance as well as ugly trees. ***Right Tree in the Right Place*** is a popularized way of saying that trees can be selected to fit their growing sites and to minimize their maintenance.

Fortunately, the mature size and other characteristics of each tree are predictable. Before planting any tree, be sure to consider the following: the purpose for planting, available growing space for the future tree size, growth habit, hardiness, soil conditions, possible pest problems, and local ordinances.

A very common example of a *wrong tree in the wrong place* is one that grows into electric distribution wires. Electric service providers can save huge amounts of money for their investors if they can avoid trimming tree branches interfering with their overhead wires. Communities can benefit from fewer power outages and better trees along their streets.

### **Free on-line references for Right Tree in the Right Place information are:**

*Right Tree in the Right Place*, National Arbor Day Foundation website-- includes tree sizes and shapes for 130 species, nice illustrations.

Access at <https://www.arborday.org/trees/righttreeandplace/>

*The Right Tree in the Right Place*, Kansas City Power and Light Company, 19 pp.--in pdf format, emphasizes placing trees in proximity to power lines and transformer boxes, along with other information. Access at

<https://www.kcpl.com/involvement/safety/tree-trimming-and-planting/planting-guidelines>



*Landscape design* is a more comprehensive planning process that seeks to harmoniously place all site elements, including drainage, construction, trees and plants.

**Some on-line references for residential-scale design guidelines are:**

*Developing the Landscape Plan* by Denny Shrock, University of MO Extension website--A concise guidesheet to developing a scaled, residential landscape plan drawing.

Accesss: <https://extensiondata.missouri.edu/pub/pdf/agguides/hort/g06901.pdf>

<http://www.the-landscape-design-site.com> --S&S Designed Landscaping, contains a menu of many design topics for residential properties, links to other websites, tutorial video.

**Reference textbook for landscape design:**

Booth, Norman and Hiss, James *Residential Landscape Architecture: Design Process for the Private Residence 4<sup>th</sup> Ed.*, Prentice Hall, 496 pp.

(Note: I have not seen this book but it seems to be very popular with lots of copies and possibly newer editions available. It has many good reviews. It is used as a text in major universities. Can be purchased new at Amazon and other book dealers for about \$90 to \$130 and used for about \$20 to \$50)

## **Amending Landscape Soil To Improve Tree Growth**

In many urban landscapes, the soil has been disturbed and compacted to the point that tree roots have difficulty growing. While it may be costly to do extensive soil amendment to improve tree growth, it may eventually be less expensive than repeatedly replacing trees. Incorporating organic and inorganic amendments can significantly improve the chances that trees will survive and grow in a disturbed soil. In street tree plantings, research has shown that artificial or “structural” soils placed under sidewalks can improve tree growth relative to that in conventional tree pits. Recommended references on soil amendment and structural soil are listed below.

Improving Lawn And Landscape Soils

<http://www.extension.missouri.edu/explorepdf/agguides/hort/g06955.pdf>

Using CU-Structural Soil In The Urban Environment

<http://www.hort.cornell.edu/uhi/outreach/pdfs/CU-Structural%20Soil%20-%20A%20Comprehensive%20Guide.pdf>

Living With Urban Soils. Tree City USA Bulletin No. 5. The National Arbor Day Foundation. 100 Arbor Ave. Nebraska City, NE 68410

Christopher Starbuck, July 2008