

## **Introduction**

Whether a community is large or small, its trees need active management. A case in point is Dutch elm disease. Since the early 1960's in Minnesota, Dutch elm disease has devastated the many majestic American elms that lined our streets and shaded our homes and businesses for decades. However, the impact from diseases such as Dutch elm disease and oak wilt or insects like gypsy moth, can be lessened through community forestry programs. Fortunately, many communities across the state now recognize that their community forest resource needs routine maintenance and replacement, as it occurs with streets, sidewalks, sewers and public buildings. Trees are a living component of every community's infrastructure.

The goal of the Tree Inspector Certification Program is to identify needs and provide technical information assistance to you- the tree inspector, community forester, or tree care practitioner. As your community's tree expert and resource, you are uniquely situated to provide tree expertise to the public. You also help insure continued citizen interest in planting and maintaining trees in your community.

The Tree Inspector Manual was first issued in 1990 by the Minnesota Department of Agriculture's Shade Tree Program and was revised in 1999. It was again revised in 2006 by the University of Minnesota Forest Resources Extension. The manual helps you organize technical information and makes it accessible as you perform your daily field work. Inside you will find copies of the most pertinent printed material on shade trees currently available from the Minnesota Department of Agriculture, Minnesota Department of Natural Resources, University of Minnesota Extension Service, the University of Wisconsin Extension Service, Iowa State University Extension, the U.S. Forest Service, and others are included.

## **How to use your manual!**

This manual is designed for field use. The references have been organized into the following ten sections:

- 1. Diagnosis**
- 2. Dutch Elm Disease and Elm Disorders**
- 3. Oak Wilt and Oak Disorders**
- 4. Biotic Disorders of Hardwoods**
- 5. Biotic Disorders of Conifers**
- 6. Abiotic Disorders**
- 7. Selection and Planting**
- 8. Maintenance**
- 9. Regulations**
- 10. Resources**

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An introduction and list of contents is found at the beginning of each section. Please read these introductions and page through the contents to become familiar with the information and how it is organized. As new shade tree publications become available, add them to the manual and enter their titles on the list of contents at the front of that section. As you remove bulletins to make copies for homeowners, take care to return the material to the same place. Instructions for ordering quantities of publications from their sources are given in the resources section at the back of the manual. Any other references you add depend on you and your needs. We recommend, however, that you DO NOT use this manual to stockpile supplies of forms, such as tree condemnation notices and laboratory diagnostic forms. To keep your manual in good condition, keep these documents in another notebook or folder.

We do hope and expect that you will take pride in personalizing this manual for you and your community's needs.

### **Important Note on Pesticide Recommendations**

Some publications provide cultural and chemical control recommendations based on information and laws applicable at the time of publication. If unsure, check with the University of Minnesota Extension Service for current control recommendations. Remember, any public employee who applies restricted use pesticides must obtain a pesticide applicator's license, and commercial applicators must be licensed whether they handle/apply general use (available over the counter) or restricted use pesticides. For detailed information on pesticide applicator training and licensing visit: <http://www.extension.umn.edu/pesticides/>. Always read and follow pesticide label directions.

For more information about Tree Inspector Certification, or to order additional copies of this manual, contact:

**Tree Inspector Program**  
**651-259-5300** (MNDNR- Division of Forestry)

<http://www.dnr.state.mn.us/forestry/urban/certifiedtreeprogram/index.html>

We hope this manual serves to help build and support your community forestry program. Sound community forest programs are our best assurance that Minnesotans will continue to reap the benefits of trees for generations to come.

## **Introduction- Section 1, Diagnosis**

When tree problems are detected early and properly diagnosed, trees in communities can often be saved from unnecessary loss. Since diagnosis is not always easy, you may need additional help from a more experienced forester or a diagnostic laboratory.

### **Steps in Diagnosis**

Diagnosis of tree problems is analogous to detective work. Searching for clues and placing these into a diagnostic frame work (such as below) will help with diagnosis.

1. Identify the *tree species*. Most pest problems are specific to a limited number of tree species.
2. Evaluate the unusual or abnormal *appearance* (symptom) of the unhealthy tree. The references in this manual should help you recognize symptoms. Trees in your community, however, are vulnerable to multiple stresses, caused by both living (biotic) and non-living agents (abiotic). Symptoms are sometimes the expression of multiple stresses.
3. Look for *direct evidence* (sign) of the cause of the problems (*e.g.*, beetle exit holes, the insect, a fungal fruiting body, or possibly a wire girdling the trunk).
4. Examine the tree systematically. Note the *location* of the signs or symptoms- are the leaves or needles, branches, trunk, or roots showing signals of distress?
5. Trees often show symptoms a year or more after damage has occurred, so consider the *history* of the tree. Homeowners, especially those who have lived in the area for awhile, can be very helpful in providing background information.
6. Use your *Tree Inspector Manual* and other resources to guide your diagnosis. The tree inspector manual was designed to include the most commonly encountered tree problems. However, there may be disease, insect, or abiotic problems beyond the scope of the Tree Inspector Manual.
7. Sometimes even experts need *laboratory assistance* to look for other clues or confirm a tentative diagnosis. Remember, you may not be able to diagnosis all problems. Consulting with others to develop a correct diagnosis is preferred to providing an incomplete or inaccurate diagnosis.

### **Diagnostic Laboratories and Services**

Diagnostic laboratory services for shade tree diseases are offered by the University of Minnesota Plant Disease Clinic.

Website: <http://pdc.umn.edu/>

An **Information Request Form (AG-FS-3171)** can be found at the end of this section along with a description of **How To Submit Samples For Disease Diagnosis**.

The University of Minnesota Extension Service provides the Yard and Garden service through INFO-U for diagnosing tree problems. You may talk to a university expert or listen to a variety of INFO-U tapes. See the Master Gardener, Extension, and Other Useful Contacts fact sheet in **Section 10- Resources**. If you are unsure or want confirmation of a problem you believe is causing the tree problem, consult with the Plant Disease Clinic to have the pathogen cultured (grown).

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Submit your sample to:

**Walk-In Samples**

Plant Disease Clinic  
105 Stakman Hall  
1519 Gortner Avenue  
St. Paul, MN 55108  
612-625-1275  
Fax: 612-625-9728  
Hours: Tu-F 8-4:30

**Mailed Samples**

Plant Disease Clinic  
495 Borlaug Hall  
1991 Upper Buford Circle  
St. Paul, MN 55108  
612-625-1275

There is a charge for this service.

**Tools**

As you begin to diagnose tree problems on a regular basis, you will find many of the following items useful:

Hand lens	Knife	Hand Saw	Hand Pruning Shears
Pole Pruner	Garden Trowel	Soil Probe	Screwdriver
Notebook	Diagnostic Forms	Bags for Samples	Vials
Tags	Permanent Marker	Cooler for Samples	Maps of Tree Locations

**Record Keeping**

Three of the most useful tools for improving your field diagnosis of tree problems are a camera, calendar, and disease tree map. The pictures and notes of tree disorders and usual weather occurrences taken one year will be valuable information to refer to in future years. Consider keeping a calendar in the front of this field manual. By recording, for example, when elms begin wilting this season, you will know when you begin your detection survey next year. Maps that document disease or insect infestations are also valuable records for planning your tree pest program.

**Section References**

**Definitions of Terms Used in Diagnosing Tree Diseases**

**Glossary of Forest Protection Terms**

**How Forest Trees Grow**

**Tree Functions**

**Diagnosing Tree Problems**

**Understanding Decline in Trees**

**How To Submit Samples For Disease Diagnosis**

**Information Request Form (AG-FS-3171)**

**Disease Management Recommendations for Trees and Shrubs**

This publication is a starting point for management recommendations. Pesticides listed may be out of date and are not guaranteed to be currently registered. It is very important to remain aware of current pesticides and their availability in the state of Minnesota. "Disease Management for Trees and Shrubs" in Minnesota can be found at:

<http://www.extension.umn.edu/distribution/horticulture/DG6659.html>

## **Introduction- Section 2, Dutch Elm Disease and Elm Disorders**

Our predecessors had the foresight to plant trees in communities throughout Minnesota. At one time, the American elm was touted as the perfect street tree and was planted almost exclusively. The implications of creating such a vast monoculture were not realized until later.

Dutch elm disease (DED) has since become one of the most significant tree problems for many Minnesota communities. As a result, much time and effort has been spent conducting scientific research and producing large volumes of technical information about DED. Therefore, we felt it necessary to devote an entire section to this disease and other elm disorders commonly mistaken for DED.

Dutch elm disease is a manageable disease. Communities which have adopted an active DED control program still have elm trees in their community. Communities that have eliminated their DED control program or never initiated one have seen a dramatic loss of elm trees- as much as 10 to 20 percent in one year. Active DED control programs involve prompt identification and removal of infected trees. Communities that have adopted and maintained an active DED program only lose 1 to 3 percent of their elm trees in an average year, which coincides with normal tree mortality. Thus, an active DED program helps maintain mature elm trees in communities and saves money by reducing tree removal and replanting costs. Active DED programs make economic and environmental sense.

## **Section References**

### ***Diseases:***

**Dutch Elm Disease Resistant Elm Cultivars**

**Dutch Elm Disease Cause and Prevention**

**The Dutch Elm Disease**

**How to inject Elms with Systemic Fungicides**

**Identifying Elm Firewood**

**What's in that wood pile? Identifying 3 groups of trees found in MN wood piles**

**Therapeutic Pruning: An Effective Treatment for Dutch Elm Disease**

**Black Spot of Elm Trees**

**Wetwood**

### ***Insects:***

**Elm Leaf Beetle**

**Native Elm Bark Beetle Control**

### ***Problem Comparisons:***

**Comparison of Elm Problems in the Upper Midwest**

## **Introduction- Section 3, Oak Wilt and Oak Disorders**

Oak trees are one of the most valued trees in Minnesota. They are a major component of native woodlands in and around many Minnesota communities. The very existence of oak trees in some areas is threatened by a fatal oak disease, oak wilt. In fact, oak wilt has been regarded in the past as a greater problem in Minnesota than anywhere else in the world. Active oak wilt control programs are helping to change this picture.

As with Dutch elm disease (DED), extensive research on oak wilt has produced a vast amount of technical information. This makes it necessary to devote a separate section to this disease and the other oak disorders commonly mistaken for oak wilt.

Oak wilt is a controllable disease. The management strategy for oak wilt is different from DED. Possibly 90 percent or more of the DED infections occur via insect transmission (overland spread). In contrast, the majority of oak wilt infections (possibly 90 percent or more) occur via transmission of the disease from diseased to healthy trees through the root system (underground spread). The term root graft is used to describe the common connection of root systems between trees.

Effective oak wilt control programs require disrupting the root system between healthy and diseased oak trees. Without disrupting root grafts, oak wilt will spread from diseased to healthy oak trees. Oak trees may develop fungal fruiting bodies (spore mats) and spores in spring. Spores can be transmitted to healthy oaks on bodies of picnic beetles and introduced into wounds. Thus, picnic beetles do not create wounds but carry fungal spores on their body from diseased to healthy trees. Control of overland spread of oak wilt requires removal of red oak trees (*e.g.*, Northern pin oak and Northern red oak) that are producing spore mats in the spring.

### **Section References**

#### ***Diseases:***

- Oak Wilt in Minnesota**
- Root Graft Barriers for Oak Wilt Control**
- Protect Your Trees from Oak Wilt**
- Organizing a Community Oak Wilt Control Program**
- Oak Anthracnose**
- Anthracnose & Oak Wilt: Symptoms are Different**
- Smooth Patch**

#### ***Insects:***

- Acorn Insects**
- Twolined Chestnut Borer**

#### ***Problem comparisons:***

- Oak Diseases**
- Identifying Oak Disorders**

**CAUTION:** Control recommendations, especially for pesticides, are subject to change. For the most up-to-date information, contact University of Minnesota- Pesticide Safety & Environmental Education.

<http://www.extension.umn.edu/pesticides/>

## **Introduction- Section 4, Biotic Disorders of Hardwoods**

Biotic disorders of trees are those induced or caused by living organisms. Examples of biotics that affect trees include insects, fungi, bacteria, animals, viruses, phytoplasmas, and nematodes. Diagnosing plant problems is a skill that is refined like most other skills through time. To simplify information, references are listed in species or species non-specific subsections. Host specific problems are listed by tree species. Host non-specific problems are listed by the disease or insect problem. When diagnosing biotic problems, using the approach outlined in the diagnosis section should be helpful.

### **Section References**

#### ***Host Specific:***

##### **Apple**

**Recognizing Common Apple Diseases in Iowa**

**Apple Scab**

**Cedar-Apple Rust**

**Fire Blight**

##### **Ash**

**Anthracnose of Ash Trees**

**Ash Rust**

**Ash and Honeylocust Plant Bugs**

**Emerald Ash Borer- A Threat to Minnesota Ash Trees**

**Emerald Ash Borer**

##### **Birch**

**Birch Leafminers**

**The Bronze Birch Borer and its Management**

##### **Cherry**

**Black Knot**

##### **Honeylocust**

**Thyronectria Canker of Honeylocusts**

**Nectria Canker**

##### **Maple**

**Anthracnose & Other Fungal Leaf Spot Diseases of Maple**

**Boxelder Bugs**

**Maple Gall Mites**

**Maple Petiole Borer**

##### **Poplar**

**Identification of Aspen Cankers**

**Hypoxylon Canker on Aspen and Willows**

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**Non-Host Specific:**

**Diseases:**

**Anthracnose Disease**  
**Armillaria Root Rot**  
**Cankers on Trees**  
**Leaf and Needle Diseases of Trees**  
**Lichens on Trees**  
**Powdery Mildew on Ornamental Plants**  
**Sooty Mold**  
**Verticillium Wilt in Woody Ornamentals**  
**Wood Decay**

**Insects:**

**Aphids on Deciduous Trees and Shrubs**  
**Asian Longhorned Beetle**  
**Asian Longhorned Beetle (*Anoplophora glabripennis*)**  
**Borers of Woody Plants**  
**Spring and Fall Cankerworms**  
**Eastern Tent Caterpillar**  
**Forest Tent Caterpillar**  
**Gypsy Moth in Minnesota**  
**Gypsy Moth**  
**Honeysuckle Witches' Broom Aphid**  
**Insect and Mite Galls**-for colored pictures visit:  
<http://www.extension.umn.edu/distribution/horticulture/DG1009.html>  
**Japanese Beetle Management for Homeowners**  
**Leafminers**  
**Scale Insects of Trees and Shrubs**  
**Wood-boring Insects of Trees and Shrubs**

## **Introduction- Section 5, Biotic Disorders of Conifers**

As with hardwoods, biotic conifer disorders are those induced or caused by living organisms. The biotic conifer disorder section covers a range of problems specific to each genus (i.e., pines, spruces, junipers). This division is made to help assist you in diagnosing disorders of conifers. The non-host references at the front of this section are included as keys to diagnosing biotic disorders of conifers.

### **Section References**

#### ***Non-host specific:***

**Parts of a Pine Tree**

**Common Pests of Ornamental Evergreens**

**Pathogenic and Nonpathogenic Disorders of Ornamental Evergreens**

**Common Disease of Conifers in Iowa**

**Evergreen Condition: Seasonal Needle Drop**

#### ***Pine Specific:***

##### **Diseases:**

**Dothistroma Needle Blight**

**Pine Needle Rust**

**Pine-Oak and Pine-Pine Gall Rusts**

**Sirococcus Tip Blight**

**Sphaeropsis Shoot Blight**

**White Pine: How to Prune for Blister Rust**

##### **Insects:**

**How to Identify and Manage Pine Bark Beetles**

**Pine Moths**

**Conifers Disorder: Pine Needle Scale**

**New Introduction – Common Pine Shoot Beetle, *Tomicus piniperda***

**White Pine Weevil**

#### ***Spruce Specific:***

##### **Diseases:**

**Cytospora Canker of Spruce**

**Rhizosphaera Needle Cast**

##### **Insects:**

**Spruce Gall Adelgids**

#### ***Fir Specific:***

##### **Diseases:**

**Rhizosphaera Needle Disease of Fir**

## **Introduction- Section 6, Abiotic Disorders**

Abiotic literally means “without life” or “non-living.” Abiotic disorders of trees are those induced or caused by non-living agents. Causes of Abiotic disorders include:

- ✿ malnutrition (*e.g.*, excess or lack of nutrients)
- ✿ climatic extremes (*e.g.*, drought, sudden cold, wind, ice)
- ✿ pollution (*e.g.*, air)
- ✿ mechanical (*e.g.*, construction damage, weed whips and lawn mower damage)

Remember, symptoms often overlap. A tree under stress from an Abiotic agent is often susceptible to secondary attacks by insects or pathogens (biotic agents). Therefore, knowing the history of the tree is important in diagnosing abiotic disorders.

## **Section References**

**Noninfectious Diseases**

**Minimizing De-Icing Salt Injury to Trees**

**Scorch and Related Problems in Trees and Shrubs**

**Deciduous Trees Disorder: Springtime weather injury to foliage**

**Iron Chlorosis**

## **Introduction- Section 7, Selection and Planting of Trees**

Trees mature when they are properly selected for a site and properly planted and maintained. Selecting the right tree for the right place is an often-said phrase. But what does it mean? Trees in communities often encounter situations they would not encounter in their natural habitat. Soil compaction, soil profile disruption, and depleted soil organic matter; sidewalks, streets, and buildings; utility lines above and below ground; de-icing salts, herbicides, and other chemicals; and human activity are just a few things to consider when selecting trees for a site. The function of the tree should also be considered- is it for shade, fruit or flower, snow control, architectural functions, and/or other functions?

After the right tree for the right place has been selected, purchase quality planting stock, select types of trees that maintain a diverse tree population, and properly plant and maintain your community forest investments. First, planting unthrifty planting stock is money wasted. Tree quality characteristics to consider include tree form (single leader and no major stem defects), tree size (root system is adequate for the tree size), and insect and disease free (stock certified in accordance with the plant pest act). Second, tree diversity in community forests is important to prevent major tree losses, Dutch elm disease as an example. A general rule of thumb is that one tree species should not comprise more than 5 to 10 percent of the tree population. Finally, consider your available resources (monetary and human) and the ability to meet tree requirements during establishment. It is wiser to plant smaller planting stock and spend resources on tree establishment than to plant larger trees and not spend money on establishment. For example, watering trees during establishment is critical. Without adequate moisture, trees establish more slowly, are more susceptible to pest problems, and are more likely to die.

Having selected the right tree and considered establishment requirements, planting a tree properly is one of the best ways to insure tree planting success. Plant tree root systems at landscape grade. The simple act of planting the root system at grade will help ensure longevity. Many trees die prematurely from being planted too deep. Many people have asked how deep is too deep? Plant them, don't bury them! It is not uncommon to have balled and burlapped trees come from the nursery with their tree root system too deep in the soil ball or container. Planting techniques are provided in this section to overcome this problem.

Follow-up care during establishment is vital to ensure tree planting success. Watering newly transplanted trees is critical for insuring rapid establishment and long-lived healthy trees. Recent research suggests watering frequency is important. Newly transplanted trees benefit from daily watering for the first one to two weeks, applying approximately 1.5 gallons per caliper-inch per watering. Thereafter, water trees every 2 to 3 days for the next two to three months and then weekly until established (one year at least). Newly transplanted trees are absorbing water from a diminished root area. Apply water directly to the root ball at first. Roots must generate and grow into surrounding soils before a larger soil volume can be tapped for moisture. Trees in Minnesota will become established within 1 to 1.5 years for each caliper inch of stem. Thus, it takes 2 to 3 years before a 2 inch caliper tree is established.

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## **Section References**

**Planting Trees and Shrubs for Long-Term Health**

**Save Energy with Trees**

**Field Windbreaks**

**Fitting Trees and Shrubs Into the Landscape**

**Guidelines for Selecting Trees**

**Identification of Conifer Trees in Iowa**

**Identification of Hardwood Trees in Iowa**

**Power Lines and Trees**

**Recommended Trees for: Southeast Minnesota**

## **Introduction- Section 8, Maintenance of Trees**

The science of tree care (arboriculture) has evolved greatly during the last 20 to 30 years. Many past practices such as flush cut pruning, painting all tree wounds, and filling tree cavities, once standard practices, have been found to often hurt trees rather than help them. Other practices have been refined as our understanding of tree biology increases. The references in this section reflect the latest recommended practices for maintenance of tree health.

One major revolution in how trees are maintained is the Plant Health Care concept. Plant Health Care uses an integrated approach to maintaining healthy trees. Plant Health Care starts with selecting the right tree for the site and properly planting the tree. See the previous section for details. Throughout the life of the tree, maintaining tree health is the goal. Healthy trees are able to tolerate biotic and abiotic problems to a greater extent than less healthy trees. An example is flatheaded borers that attack birches (bronze birch borer) and oak (two-lined chestnut borer). Birch and oak trees that have low energy reserves are more easily overtaken and killed by flatheaded borers than healthy trees. Properly pruning trees, managing tree nutrition, and minimizing damage to leaf and woody tissue from insects and diseases are vital to maintaining tree health.

The majority of your community forestry program's time and resources go to the maintenance of newly planted and established trees. The information provided in this section applies to individual tree maintenance. Add articles and information about larger scale maintenance activities, such as establishing a community-wide street pruning rotation. You might find it helpful to include a map which delineates your community's maintenance regions, or labels and specifications for maintenance products you have used and would recommend to homeowners.

## **Section References**

### **Mature Tree Care**

#### **Controlling Seedlings or Small Buckthorn Plants**

#### **Mulching Trees and Shrubs: Advantages & Disadvantages**

#### **Protecting Trees from Construction Damage**

#### **Protecting Trees and Shrubs from the Wicked Winters of the Upper Midwest**

#### **Preventing Frost Cankers/Sunscald and Frost Cracks- Wrap or No Wrap?**

#### **Pruning Shade and Flowering Trees**

#### **Rabbit Damage to Tree Plantings**

#### **After the Storm: What to Do With Storm-Damaged Yard Trees**

#### **Insecticide Suggestions to Manage Landscape Tree and Shrub Insects**

Insecticide registration can change from year to year. It is very important to remain aware of current insecticides and their availability in the state of Minnesota. "Insecticide Suggestions to Manage Landscape Tree and Shrub Insects" can be found at:

<http://www.extension.umn.edu/distribution/horticulture/DG0704.html>

## **Introduction- Section 9, Regulations**

For any city forester or tree inspector to be effective, your community shade tree program must provide you with the legal authority to carry out your responsibilities. Public and private trees must be condemned. Contracts for special services must be written. Tree services and consultants working in your community may need to be licensed. Adopting a local tree ordinance is normally the first step in establishing a program.

The state statutes, rules and regulations and sample ordinance provided in this section can help you get started. As your program develops and you find it necessary to contract for certain services, you will want to add copies of:

- 🌳 your community's tree ordinance
- 🌳 your community's tree condemnation notice
- 🌳 your community's licensing requirements for tree services or private consultants
- 🌳 current contracts and specifications for tree planting, removal, pruning, stump removal, etc.
- 🌳 labels of any pesticides you use

## **Section References**

**Update with Website - 2007 Minnesota Statutes**  
**City Tree Ordinances**  
**Sample Shade Tree Disease Ordinance**

## **Introduction- Section 10, Resources**

This manual is not intended to answer all your questions. In fact, it may raise more questions than it answers. Resources listed in this section should help you obtain any additional information you may need.

The city foresters and tree inspectors across Minnesota represent your greatest human resource. By sharing ideas with neighboring communities, you may find answers to your local program needs and concerns.

### **How to Order Bulletins**

To order quantities of any publications in this manual, please use the following addresses. Be sure to use the publication number and exact title when ordering.

<p><b>University of Minnesota Extension</b> Distribution Center 405 Coffey Hall 1420 Eckles Ave St. Paul MN 55108-6068</p> <p><i>Phone:</i> 800-876-8636 or 612-624-4900 <i>Fax:</i> 612-625-6281 <i>Email:</i> <a href="mailto:ShopExtension@umn.edu">ShopExtension@umn.edu</a> <i>Extension Store:</i> <a href="http://shop.extension.umn.edu/">http://shop.extension.umn.edu/</a></p>	<p><b>University of Wisconsin Extension</b> Cooperative Extension Publications 4000 West Burnham St. Milwaukee, WI 53215</p> <p><i>Phone:</i> 877-WIS-PUBS (947-7827) <i>Fax:</i> 414-389-9130 <i>Ordering Site:</i> <a href="http://learningstore.uwex.edu">http://learningstore.uwex.edu</a></p>
<p><b>Iowa State University Extension</b> ISU Extension Distribution 119 Printing and Publications Bldg. Iowa State University Ames, Iowa 50011-3171</p> <p><i>Phone:</i> 515-294-5247 <i>Fax:</i> 515-294-2945 <i>E-mail:</i> <a href="mailto:pubdist@iastate.edu">pubdist@iastate.edu</a> <i>Extension Store:</i> <a href="http://www.extension.iastate.edu/store/">www.extension.iastate.edu/store/</a></p>	<p><b>MN DNR</b> DNR Information Center 500 Lafayette Road St. Paul, MN 55155-4040 Telephone: (651) 296-6157 or (888) 646-6367</p>
<p><b>MN Department of Commerce</b> <i>Phone:</i> 651-296-5175</p>	<p><b>USDA Forest Service</b> <i>Website:</i> <a href="http://na.fs.fed.us/">http://na.fs.fed.us/</a></p>

## **Section References**

**Minnesota's Shade Tree Resources**  
**Index of Yard and Garden Articles Relating to Trees**  
**Master Gardeners, Extension and other Useful Contacts**