



# Community Trees

## Community Tree Steward Program

### SHADE TREE FERTILIZATION

Proper soil nutrition encourages rapid growth and development of shade trees. Fertilization may improve plant vigor, make trees less susceptible to pests and may help overcome adverse sites and general tree decline. Excessive fertilization is wasted resources and may increase susceptibility to some diseases such as fire blight and may increase moisture stress on trees because of excessive foliar growth. In general young trees develop more rapidly when fertilized, while mature trees need little fertilization as long as they exhibit good leaf color and reasonable growth.

#### Soil Testing

Application of fertilizers without a soil test is only asking for trouble. Before fertilizing for trees, do a good soil test and determine levels of N, P and K. Phosphorus (P) should be 60-100 pounds per acre

and potassium (K) should be 150-300 pounds per acre. Nitrogen levels will vary in the soil test and generally most trees will benefit from additional nitrogen fertilizer. Caution must be exercised to not over fertilize with nitrogen.

#### Application Rates

If the lawn is fertilized with a lawn fertilizer, additional fertilization is probably not necessary unless soil test indicate a nutrient deficiency. If you are going to fertilize with a nitrogen fertilizer, use a balanced fertilizer such as a 12-12-12. Try to apply approximately 100 pounds of elemental nitrogen per treated acre, which is approximately 2 pounds (2 pints) per 100 square feet of treated area for hardwoods or deciduous trees; use half the recommend amount of nitrogen for evergreen or conifer trees.

April, 2001

**IOWA STATE UNIVERSITY**  
University Extension

Ames, Iowa

#### ...and justice for all

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Many materials can be made available in alternative formats for ADA clients. To file a complaint of discrimination, write USDA, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Stanley R. Johnson, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

For individual tree fertilization, an area 25-50% larger than the crown of the tree should receive the fertilizer application. There has been much discussion about applying the fertilizer in holes made throughout the area to increase the availability of the fertilizer to the tree's root system. Newer research, indicates for most applications, simple broadcast of the fertilizer is adequate. Nitrogen is very mobile in the soil profile and the response to nitrogen will be very rapid. P and K are less mobile, but will eventually move to a position where a tree's roots can absorb them.

A split application of the fertilizer is more beneficial than a single application, especially for nitrogen because of its mobility and loss during the growing season. The goal is to get the tree to utilize the fertilizer, therefore for split applications, use late spring and mid summer.

Trunk implants and injections are used only when other methods are ineffective. Boring holes and injecting essential elements can damage trees and lead to decay. Use of tree spikes will work but is a fairly ineffective and expensive technique to fertilize trees.

### Special Considerations

Soil reaction, expressed as pH, refers to the acidity or alkalinity of a soil. Soil pH influences tree growth by affecting solubility of essential

elements and the activity of micro-organisms. Trees grow best when soils are slightly acidic, and tree growth becomes restricted when soil pH exceeds 7.8. Most trees will grow in the pH range of 5.5-7.8; conifers prefer more acidic conditions than hardwoods, and will grow in soils as low as pH 4.0.

Many soils in Iowa have a pH in excess of 7.4-7.8; some species of trees such as pin oak, silver maple, river birch, red maple are more sensitive to these high pH soils and often exhibit iron deficiency. Avoid planting trees with a high iron requirement on these sites because correction of this problem is a never ending battle. Correcting iron chlorosis includes acidifying the soil by applying acid forming material such as sulfur or repeated applications of soluble or chelated iron. Remember in almost all cases, application of lime or pH raising materials is never a recommended practice for tree growth.

---

Prepared by Paul H. Wray, Extension Forester,  
Iowa State University