

## Dutch Elm Disease Control Program

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The majestic American elm is still found throughout the Chicago region despite the Dutch elm disease (DED) epidemic. There are a few municipalities, cemeteries, parks, and golf courses that have managed to preserve most of their original elms. However, the disease continues to take its toll. Although costs for DED control can be high, they don't necessarily have to be.

1. Establish a priority for the elms on the course. This is best done with an inventory of the golf course trees. Rank landscape and key trees higher than fairway and rough trees. Landscape trees are those around the buildings that add value to the property by their size, stature, and location. Key trees are those so positioned on the fairway that their loss would affect the play of the game, making the hole less difficult.

2. Look for a source of the disease from the properties surrounding the golf course. If DED is not being controlled on the properties surrounding the course, there is a greater threat to the golf course elms. The courses surrounded by forest preserves stand the greatest threat of all.

3. The most important control strategy is sanitation. It is absolutely essential to remove all diseased trees before the beetle vectors can emerge and transmit the disease to adjacent healthy elms. The beetles begin emerging in April and continue emerging until cold fall weather. Therefore, dead elms should be removed before April. Trees that begin dying during the spring and summer should be removed immediately. The wood has to be removed from the grounds or burned. It should not be kept for firewood. When a tree begins to die, do not wait more than 30 days after the onset of symptoms. The disease may spread to adjacent trees via root grafts when they are left standing and will provide a source of beetles.

4. If there is a threat of root graft transmission, especially to key and landscape trees, root grafts will need to be interrupted. This can be done with a trench (24-36" deep) or chemicals (under the direction of a trained arborist).

5. Surveillance: If disease symptoms are observed early enough, there is about a 75% chance to save the tree by pruning. The pruning MUST be done immediately.

Elms are most susceptible to DED in the spring when they are growing rapidly. Beetles emerging in April and May will carry the disease to healthy trees. The disease, often transmitted to the top of the tree, will begin moving downward. The windier and hotter the weather, the faster the downward spread.

This makes May and June the period for an active surveillance program. Once each week someone should be scanning the tree tops looking for the "flags", an off green, yellow, or brown leaf color. This can be done by someone mowing around the trees. If a flag is spotted, it should be watched for a day or two. The flagging symptoms for DED will move progressively down. DED causes the wood beneath the bark to turn brown, healthy wood is white. When the flag is high in the tree the brown streak will fade out. If the branch is cut 7-10' below the point where the brown streak fades, there is a 75% or more chance of saving the tree by pruning alone.

A tree that has had DED pruned out must be closely watch-

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ed. If additional symptoms are observed, the trees should be completely removed if there are any elms within 50 feet to prevent root graft transmission. Branch samples can be sent to the Extension Service for DED identification. But don't wait for the results. By the time the results come back, it may be too late to save your tree.

6. Insecticide Sprays: Key and landscape trees can be considered for insecticide treatments. A dormant oil spray (in late winter or early spring) containing Methoxychlor is recommended. The insecticide is like an insurance policy, but sprayed trees can still get DED. Some Chicago area municipalities have dropped spray programs because of costs. They found spraying only reduced losses by about 1-1.5%.

7. Systemic Fungicide: Systemic fungicides can be used to prevent DED and also to "cure" trees infected with DED. When more than 20% of the crown shows symptoms, the chances of recovery are greatly reduced. Again, key and landscape trees should be considered for fungicide treatment. There are three year guarantees being offered by some arborists.

When DED is discovered early, pruning (below brown streak) and fungicide injection have been found to be quite effective.

The key to a successful DED program is regular surveillance by a trained scout and immediate action (i.e. removal, pruning, fungicide injection) when DED is suspected.

For additional information on DED and its control, see Illinois Cooperative Extension Publication No. 647.

## The Relationship Between Water pH and Spraying

by Richard Kensinger

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Have you ever wondered why some of your spray applications did not accomplish the job you had expected? After spraying at known targets, such as, dollar spot, brown patch, or cut worms, etc., with proven chemicals, the results did not meet your expectations - or - perhaps you did get some control, but only for a few days. The problem may not be with the chemicals you are using, but with the pH of your water.

Many golf courses are irrigated with well water which contains high amounts of calcium, iron, and magnesium (known as hard water). Such water has a pH of 7 or greater.

The definition of pH is the measure of the hydrogen ions in a solution, which stated in equation form is:  $pH = -\log [H^+]$ . Because this is in the logarithmic form, an increase or decrease by one number would indicate a solution ten times more acidic or basic. For example, a pH of 7 is ten times more acidic than a pH of 8, and a pH of 6 is 100 times more acidic than a pH of 8.

The high pH of well water could cause a pesticide to undergo alkaline hydrolysis. This could greatly reduce its effectiveness, or in some cases, even cause it to be totally inoperative. Chemicals such as Actidione, Proxol, Sevin and Malathion are quite sensitive to a high pH. In general, most fungicides and insecticides should be applied with a slightly acidic pH.

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