

## HELP FOR DROUGHT-DAMAGED TREES

Dry soil conditions can significantly reduce the life span of valuable landscape trees. Because trees are both difficult and expensive to replace, they need attention both during and after a period of drought.

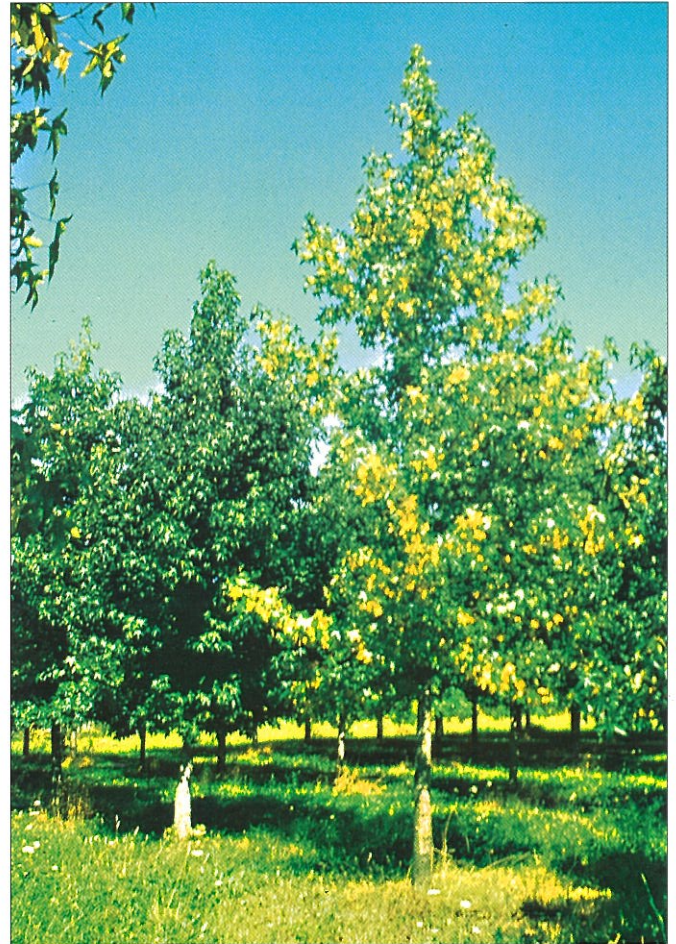
**SYMPTOMS:** Noticeable symptoms of drought stress include wilted foliage, a sparse canopy of off-color and undersized leaves, leaf scorch, yellowing, leaf drop, and premature fall coloration. Closer inspection will reveal limited twig growth and small, poorly formed buds. Growth the next season will be stunted even if there is sufficient rainfall later in the year.

Surface-rooted trees, such as maples and dogwoods, and newly transplanted trees are especially susceptible to damage resulting from dry soil conditions. However, even large established trees may show the effects of drought. Elm, maple, sycamore, ash, tuliptree and beech are often affected in forests as well as in urban landscapes. Other species may be injured if a drought is severe.

Perhaps more life-threatening than anything to trees weakened by drought is invasion by borers and other secondary pests. Studies of trees' annual rings have shown that the growth of trees can be reduced for several years following a drought. During this recuperation period, trees are more susceptible to attack by various insects and disease-causing organisms. For example, elms subjected to drought are more likely to succumb to Dutch elm disease, sweetgums are more vulnerable to bleeding canker, and white-barked birches are extremely susceptible to bronze birch borer.

**SOLUTION:** The practices that have been saving drought-stressed trees for years are still valid today: watering whenever the soil is dry, fertilizing to enlarge root systems, mulching to conserve moisture, using pest management to control insects and diseases, and pruning to remove dead and dying branches.

- **Water, Water, Water!** Since most of a tree's active roots are within the top 12 inches of soil, a watering lance attached to a hose is the most efficient way of getting water directly to the roots while reducing evaporation and runoff. Apply 1 to 3 gallons of water using 3-foot spacings with the lance. If this is impractical, simply place a lawn sprinkler beneath the tree and let it run slowly until 2 inches of water has collected in a coffee can. Be sure to water the entire root zone beneath the tree canopy.



*Figure 1. Symptoms of drought stress include wilting and yellowing of foliage. Tree in right foreground was not fertilized. Tree in left background was fed with Davey Arbor Green®.*

- **Fertilize** – Fertilizer will help reduce the severity of drought injury and enable trees to recover more quickly. Fertilizer enhances root development, and the expanded root system supplies more water to the tree. In addition, fertilizer helps promote the production of carbohydrates, which supply the energy necessary for growth and development.

Because of the concentration of salts found in most fertilizers, drought-stressed trees are particularly sensitive to overfertilization. Davey Arbor Green® is specially formulated to avoid injury to trees weakened by drought. This unique deep-root fertilizer releases nutrients slowly to provide a continuous, uniform supply.

Arbor Green is injected with a high pressure watering lance to a depth of 6 to 12 inches. This technique not only distributes the nutrients for more efficient absorption by roots but also improves the porosity of soil. Dry soils, particularly those subjected to high temperatures, often become compacted and resist both water and oxygen penetration, thereby restricting root growth and function. See Figure 1 for the difference fertilizer makes.

- **Mulch** – Mulching the soil surface around the root system will help reduce water loss and keep the soil cool. Use wood chips, bark shavings or other suitable material. Add the mulch to a depth of about 3 inches. Be careful not to mound mulch against the base of the trunk.
- **Use Pest Management** – Insect infestations and disease should be controlled to prevent further weakening or death of declining trees. Drought-weakened trees are particularly susceptible to wood-boring insects that can tunnel through the nutrient-conducting tissues and cause rapid death of the tree or shrub. Proper identification of a pest and its life cycle is necessary for effective control.
- **Prune** – Remove dead and dying branches that attract bark beetles and other wood-boring insects and that are susceptible to destructive fungal disease. Pruning will also enable tree roots to sustain the rest of the tree more efficiently.