# Drought Stress

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According to weather predictions, the Chicago area is destined for a long, dry summer. If landscape plants are not maintained properly, excessively dry soils can cause roots to die, reducing plants' capacities to absorb water, even after sufficient water becomes available. To replace lost roots, precious energy reserves must be used, which decreases the stored food that affects subsequent growth in the following year.

Drought affects plants in various ways. Besides reducing growth, symptoms can include marginal leaf scorch, wilting, tip dieback, premature leaf drop, chlorosis, and, if severe enough, plant death. Plants that are subjected to water stress drastically decrease their resistance to opportunistic pathogens, such as Cytospora. Bark beetles, borers, and other insects infest stressed trees more easily than healthy, vigorously growing trees.

Plants vary in their ability to tolerate drought. Plants that are well-established and adapted to their site are less affected, unless the drought is unusually severe. Since root systems of established plants are wide-spreading and deep, it is vital that enough moisture be applied to reach them. Established trees and shrubs should be watered deeply every 10 to 14 days during dry periods.

The most effective watering methods are soaker hoses and drip irrigation. A slow trickle of water is applied directly to the root zone under the tree or shrub, allowing for even distribution. When combined with a three to four inch layer of mulch, this method allows plants to use nearly all the added water, with very little water lost through evaporation or runoff. If a sprinkler system is used, place a small can in the range of the sprinkler. When one inch of water has accumulated in the can, one-inch of water has been distributed in the soil.

Newly planted trees and shrubs, especially transplants dug with a small amount of soil volume or container grown plants in soil-less mixes, should be deeply watered once a week. By allowing the soil surface to dry out somewhat between watering, roots will grow deeper into zones where soil moisture is the highest. Frequent light watering is not recommended. The roots of plants watered frequently, but lightly, remain close to the soil surface, making them more vulnerable to desiccation.

Establish effective watering habits:

- Learn the cultural requirements of your plants. Some plants are more drought sensitive than others (see list below).
- Know your soil. Observe how quickly soil dries out after a rain or watering.
- Mulch plants with a 3-to-4-inch layer of organic mulch (woodchips, shredded bark) to reduce soil evaporation and temperature fluctuations, and to conserve moisture.
- Irrigate slowly so water percolates down into the soil.
- Do not fertilize unless adequate irrigation is available.
- During late fall, water trees and shrubs well, especially evergreens, when soil moisture is low.

Trees That Are Known To Be Drought Sensitive

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| *Abies* | Firs |
| *Acer palmatum* | Japanese maple |

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| *Acer rubrum* | Red maple |
| *Acer saccharum* | Sugar maple |
| *Aesculus* | Buckeye/horsechestnut |
| *Alnus* | Alders |
| *Betula* | Birch |
| *Carpinus caroliniana* | American hornbeam |
| *Cercidiphyllum japonicum* | Katsuratree |
| *Cornus florida* | Flowering dogwood |
| *Fagus* | Beech |
| *Halesia carolina* | Silverbell |
| *Larix* | Larch |
| *Liriodendron tulipifera* | Tuliptree |
| *Magnolia* | Magnolia |
| *Psuedotsuga menziesii* | Douglasfir |
| *Salix* | Willow |
| *Sorbus* | Mountain ash |
| *Thuja* | Arborvitae |
| *Tsuga canadensis* | Hemlock |
| *Taxus cuspidata* | Japanese yew |