

## Tree Tips Column for March 21, 2003

By Steve Rasmussen, District Extension Forester

# Watering trees during dry times

Moisture for plant growth is the predominate limiting survival and growth factor for most planted trees in our landscapes. Assuming the proper selection was made for hardiness (zone 3 and 4 for northeast Nebraska), adequate water for plant growth is a more common concern than nutrient deficiency or fertilization needs. When we have the extended periods of dry conditions and below normal rainfall events like we experienced in 2002 and is continuing into 2003, then we need to be prepared to offset the lack of natural moisture with watering.

Young and newly planted trees are especially vulnerable to dry periods and moisture stress for several reasons. First, these plants do not have an established root system that extends into different locations of the soil profile. Established trees will have roots out away from the trunk to a distance of one to two times the height of the tree. This allows them to utilize water in a much larger area of space. Newly planted trees barely have roots out to the edge of the branches and are limited to the water in that small area.

Second, young trees do not have the energy reserves and stored food that a larger and established tree has to draw upon. The young tree needs to expend energy to make food to grow roots for itself through photosynthesis (which uses water). Older trees are not under as much demand to photosynthesis during dry periods because they have energy reserves to draw upon. The established tree is in much better condition to expand its root system into areas where there may be better moisture available.

Third, the annual root system (very fine roots that grow each year and only live for part of a season) takes up the majority of the water for a tree. Young trees have difficulty growing these fine roots when under stress. Annual roots are not the woody roots seen when a tree is dug. The annual roots are very sensitive and do not survive in dry soils. It is these young roots that are the major absorbers of water and essential elements for the tree that are most easily killed by dry conditions. If killed, then the tree has to regrow them again.

Fourth, nutrients for tree growth need to be dissolved in water for the plant to make use of them and take them up. Without moisture in the ground, these elements are not available for plant uptake. Dry soils are harder for roots to penetrate. Also, dry soils crack open that allows air into the soil profile that can also kill sensitive annual roots.

Watering recommendations involve keeping the soil profile moist. Watering young trees every 7 to 10 days with a slow method of soaking the soil profile is best. Two to five gallons of water per one foot of tree height would be a guide. Newly planted trees can die in two weeks if there is not water in the soil to help roots grow. Before watering again, dig into the soil to a 6 to 8 inch depth. If there is moisture, do not water yet. If however, that upper zone has become dry, then water again to replenish the water that has moved downward or has been used by the tree. The vast majority (60 to 75%) of the absorbing root system of the tree is in the upper 24 inches of soil profile. Deep probe watering is not necessary or efficient for tree growth.

Mulching with wood chips or organic material for a four to six inch depth is very important toward creating a healthy environment for root growth. The organic mulch conserves moisture, insulates and cools the soil, returns nutrients to the soil as it decomposes, and keeps grass sod from growing around under the tree and competing with the tree roots.

Summer is the time for insects to feast on tree leaves that can cause unsightly (ugly) defoliation, webbing and other potential damage to the foliage in favorite landscape trees. This year the insects seem to be especially bad in shade trees. August is the month when many different types of bugs hit their peak numbers and are munching their way through the tops in trees before the end of the summer.

Caterpillars are the most gregarious and aggressive insects in trees this time of year. Black walnut caterpillar, tussock moth larvae and tent caterpillar are common leaf-eaters of broadleaf trees in this area. Although the eating of the leaves and defoliation of individual branches in a tree is concerning to owners, the need to completely control these pest is usually unnecessary on larger established trees. Established trees (older than 10 years growing in one location) should have enough energy reserves stored to withstand periodic defoliation attacks. In addition, at this time of year the leaves are beginning to lose the capability of producing sugars and food for the tree and will start dropping off the tree soon anyway. On younger trees, control is may be warranted since there are less leaves, defoliation will be more complete and the tree does not have the energy reserves of an older tree. Watching closely and picking the insects off the tree in the evening when they congregate, washing the crawlers off with a garden hose or using insecticides or naturally safer biological sprays are options to consider on smaller trees.

Sucking insects like aphids in honeysuckles, maples, willows and green ash or lacebugs in hackberry trees initially cause a loss of green color on the leaves or a curling of the leaves. Eventually after the feeding has been extended, then the leaves drop off the tree. These bugs are harder to wash off and can not effectively be picked off. Insecticide sprays or using registered soaps with aphids is the best approach to use with young trees severely infected.

Chewing bugs like elm leaf beetle on elm leaves or pear slugs on fruit trees cause a “skeletonizing” of the leaves with the eventual dropping of the leaves off the tree. These insects are the least damaging since they rarely completely destroy individual leaves and will not cause complete defoliation. On fruit trees, insects may want to be controlled early in the season to help with fruit development.

Web forming insects like the mimosa webworm on honeylocust and fall web worm in cottonwoods are the most unsightly and noticeable pests in trees this time of year. Usually these webs are in high locations of larger trees and very difficult to get to and control. Again, control of these web forming bugs is not usually necessary for the health of the tree, but more desired for the aesthetics for the owner. Getting into the crown of the trees and clipping off the webbing for isolated cases or spraying insecticides for larger problems is the recommendation for these situations.

Contact your local garden center / tree care business or the local University of Nebraska - County Extension Office for NebGuides and other information sheets on tree pests and tree care information.