Weather Effects Upon Trees

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Hendricksen, the Care of Trees

This year, we observed a great deal of injury to trees and shrubs that occurred over the winter. This injury was apparent in many forms. Twig dieback, leaf tattering, and thin foliage are some of the more mild effects. At the other extreme, many trees did not leaf out at all, or leafed out very slowly.

Just exactly what transpired to cause all of the different symptoms is not clear. It is likely that several different factors interacted to produce the variable symptoms we observed.

In areas where excessively cold temperatures occurred during the winter, marginally hardy species were affected. In the Chicago area, redbuds and saucer magnolias were injured by the cold temperatures.

More puzzling was the number of ash, honeylocust and Norway maples which didn't leaf out this spring. While the temperatures were cold, they shouldn't have been cold enough to freeze the plant. In fact, the twigs and buds of many of the trees were still green. Still, they did not leaf out. What happened?

It appears that the root systems of many of these trees were damaged during the winter. Inspection of many trees showed that while the twigs, buds, and stems were green, the roots were brown or drying out.

Root tissues are actually more susceptible to cold injury than are the above-ground tissues. Usually, however, the roots are protected and insulated by the soil. This past winter, where temperatures were cold and snow cover limited, environmental conditions must have been correct for root death to occur.

Many damaged trees were located on berms, parking islands, or other areas with raised or limited root areas. Exposing roots to temperature extremes increases the likelihood of injury. In addition, many landscape trees are grafted. Tissues of a named cultivar are inserted onto a seedling understock in the nursery. The cold tolerances of the understocks can vary widely. Also, plants that were grafted in warmer regions of the country and then installed in colder regions often encounter root damage because their root systems may not be hardy.

Only time will tell if root damaged trees will recover or not. Trees that were slow to leaf out will be very susceptible to hot, dry winds should they occur during the summer. Mulching will help these trees maintain soil moisture while the root systems recover. Trees where the root systems were totally lost typically show the following symptoms: 1) the twigs will begin to shrivel, wrinkle, and crack as they dry out (they may remain a light shade of green for awhile); 2) the roots will be brown beneath the bark and will appear very dry; 3) the stems will lose their green color, fading through a light green and take on a brown or dark appearance; 4) fungal pathogens will take advantage of the dying tissues, forming cankers on the twigs.

Then, along with the cold injury, we were hit with about six weeks of dry weather in June and early July. Trees that were already struggling with root related problems took it on the chin again. Where root systems were still functioning, but failing, we saw drooping foliage, partial wilting, or scorching of the crown. In some cases, the root systems suddenly died, causing rapid browning of the entire tree or shrub. We observed many sugar maples suddenly failing in this manner. An eight-inch diameter sycamore on my own property failed during late June. It weakly leafed out this spring, and suddenly, what foliage was present wilted and turned brown within a few days. The root system just gave up. Inspection of the root system revealed brown roots with the outer covering falling off. I cannot explain why this tree failed. The other trees on my property came through the winter in fine shape. Why this particular tree? Often, we never find a suitable answer.

How do we try to prevent this type of injury to our trees? How do we treat the trees already struggling? There are no silver bullets. Preventive cultural practices are our best bet. Mulching and watering is the best recommendation for such trees. Watering will help keep the soil moist. Mulching will help conserve the soil moisture present by reducing soil temperatures and water loss from the turf. It will also provide the best environment possible for new roots to form to replace those lost. A light fertilization will be of benefit in the fall.

Even if we do all these things, we should be aware that water can be lost faster than it can be replaced by the damaged root system. In such cases, foliage injury can continue even though water is being provided. Environmental conditions through next spring will have a major impact on how our trees can recover. ■