Freeze Damage - What Now?

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Background:

Extensive damage resulted from approximately two weeks of 80 degree temperatures in March 2007 followed by four nights of low temperatures (+/-20 degrees F) during the end of the first week of April. Trees and shrubs were up to 4 weeks ahead of normal flowering / leaf-out date at the time of the freeze.

Nature of Damage:

Many trees and shrubs have suffered damage. The extent of the damage for any species varies not only with the part of the state but even the part of the yard. Some plants suffered more severe damage on the south and west sides than on the east and north sides. More damage is often seen at the top of the plant than at the bottom. This is because many species begin growing first on the south and west sides and at the top. This is especially dramatic on the callery pears.

What to Do?

The recommendation continues to be to wait. The ultimate severity of damage that will develop is going to dictate treatment. However, the human urge to do something, anything is almost beyond control for many individuals. Rather than being masters of the plant kingdom it is more important to understand that we live on earth as guests of the plant kingdom and that it is fortunate that plants have an amazing ability to withstand adversity.

(1) Fertilizing - We normally do not recommend fertilizing trees and shrubs in the spring. The case for making this recommendation is even stronger as a result of the recent freeze. Unlike annuals and agronomic crops, adding phosphorus and potassium has not been shown to benefit perennial woody plants growing in this region. While there are always a limited number of examples, the only growth response for most woody plants is from the addition of nitrogen. Adding nitrogen during the dormant period (November - December) encourages root growth through the time while shoots remain dormant. When spring growth begins, shoot growth occurs in relation to what the root system will be able to support during the coming summer.

Fertilization with nitrogen in spring encourages shoots that are visible to the applicator at the expense of root growth that is not visible. At many different levels, roots are clearly the best example of the old adage, "what is out of sight is out of mind." The problem of spring fertilization is that plants can potentially produce more leaves than plant roots can support (provide water for) during the hot, dry periods of summer. Normally this is no more serious than a little tip burn on leaves. The 2007 spring freeze only complicates this potential problem.

The freeze damaged or killed flowers, leaves and even shoots on some species. This is what we see most readily and, as a result is most significant to most individuals. What is not seen is cambium damage. Cambium is the slick, slimy layer that is just under the bark. It divides to make new phloem (responsible for downward conduction) and xylem or wood (responsible for upward conduction of water and mineral elements). It doesn't matter how much you water the roots if the plant does not have the ability to absorb and, in the case of trunk damage, transport water to the leaves. Even minimal damage to the xylem producing cambium

will result in significant point of constriction during the hot, dry months of summer. Encouraging plants to use a large amount of their stored energy to produce an abundance of new leaves is unwise if this new foliage is just going to dry up and die.

2) Pruning - Plants have an amazing ability to tolerate and adapt. The ability to deal with dead leaves, twigs and branches is no exception. Dead plant parts generally fall harmlessly to the forest floor where they decay recycling their mineral elements into the biological community. Most of the pruning in landscapes is done for the benefit of humans rather than for the plant's best interest. Removal of large branches and defective trees is for protection of cars, homes, etc. Problems on a lesser scale arise with human expectations for order and neatness in the landscape. The following are a few examples of pruning for aesthetics with a few example of plant types.

Boxwoods (and other small leaved evergreen shrubs) - The dead foliage is now as crispy as cornflakes. Put two hands in among the damaged foliage and rub it gently like you would rub a dog's fur to praise your poet. All of the dead foliage and many small twigs will fall harmlessly to the ground. This may be a challenge on some of the spiny hollies where gloves may be in order. If the shrub has been sheered into a formal hedge, light sheering can be done now and /or later.

Japanese Maples - These slow growing, high priced dwarf trees are often used as focal points in the landscape. We saw considerable damage to this species in 1988 and earlier years as a result of late freezes. With time they will regrow but may look bad for several years. Many of these unique cultivars are grafted. Shoots that arise from below the graft may look entirely different from the original plant. If this occurs and the old form or size is a requirement, replacement is the only option.

Callery pears (including Bradford), Mimosa - The freeze may be your best excuse to remove and replace with a more desirable species. The same holds true for all of the different types of ash tree. With the potential for emerald ash borer it might be prudent to look at this as an excuse for change.

Large trees which are not leafing out - Give them more time. Among these are katsuratree. This and many other species were damaged in 1988 but recovered.

How to make lemonade from a sack of lemons:

1) If the severely damaged tree or shrub was not the pride and joy of your landscape, replace it with something that will bring more joy to your heart. Change can be good.

2) If your tree or shrub is the same species found in most of the other yards in the neighborhood, replant with something else for greater species diversity. Species diversity makes for healthier and greener communities. Diversity is also aesthetically more pleasing. There is no single best tree or even a short list of good trees.

3) If you had been topping the crape myrtle (Lagerstroemia indica) every year thinking that you

were encouraging flowering, cut it to the ground and selectively train it back to a single leader. An even better option is to replace it with one of the newer varieties that has been selected for even more strikingly beautiful bark.

4) If you did not like the branching structure on the young tree that was severely damaged, cut it to the ground and selectively retrain to a single trunk. Many young trees will regrow a straighter trunk and will reach a height of 8 feet in one or two years. (Caution: Grafted trees will not be the same type.) The same applies to many shrubs. (Trees and shrubs regrow rapidly because of the strong influence of cytokinins produced in roots. Without auxins from existing shoots to counterbalance cytokinins, plants regrow their shoots extremely rapidly. This is why topping does not effectively control plant height. This is also why we do not recommend that people prune the top of plants to compensate for root loss resulting from transplanting. This is the miraculous way that Mother Nature balances shoot growth and root growth. The amount of roots dictate the amount of shoot growth and the amount of shoots dictate the amount of root growth. Thus, everything stays in balance.)

Advice:

1) Do not fertilize trees and shrubs until fall (Thanksgiving to Christmas).

2) Water this summer during dry periods. Water is always more important than fertilizer.

3) Diseases and insects are opportunistic. They attack damaged and stressed plants more frequently. If a species typically has a problem with life-threatening or extremely disfiguring diseases or insects, prevention and control will be more critical than normal.

4) If the plant is severely damaged, unattractive, too large or has not been thriving, look at this as an opportunity to make a change. Always match the plant to the site.