

# PROBLEM SOLVERS

By Balakrishna Rao, Ph.D., and Thomas P. Mog, Ph.D.

**Q:** We were told that our arborvitae, which were beautiful last fall but look terrible this spring, have "winter injury." What exactly is winter injury and what can be done to save our trees? (Iowa)

**A:** Winter injury is a catchall for various kinds of injury which show up after the winter. Most so-called "winter injury" results from low temperatures, desiccation or sunscald.

Any time nondormant plant tissue is subjected to abnormally low temperatures it may be damaged or killed. Damage caused by low temperatures occurs in early fall, late spring or in winter when the temperature fluctuates enough to break dormancy.

Desiccation means to drying up of something; in this case, plant tissue. When above-ground parts are getting less water from the roots than they are losing, desiccation occurs. Water loss from dormant plants, while less than that of actively growing plants, still goes on in the winter. If the soil is frozen or very dry, the lost moisture is not replaced by water entering the plant via the roots. The result is dead foliage, buds and branches.

Winter sunscald is damage to the trunk where bark or cambium is killed. High temperatures on a sunny, bright winter's day followed by low temperatures after sunset lead to this sort of injury. In this instance it is not simply the cold but the rapid change in temperature which destroys tissue. Winter sunscald is more often seen on thin-barked and transplanted trees, being more prevalent on the south and west sides of the tree.

To improve the appearance of the injured plant and to increase the chances of survival, prune out the dead branches, protect what is still alive and increase overall vigor. Wait until this year's foliage is out before pruning. This makes decisions as to what branches are truly dead and should be removed easier. If defoliating agents such as insects or fungi attack the winter-injured plant, control them quickly. Fertilizing and watering the damaged trees or shrubs will improve vitality and maximize growth. Be aware that additional mortality may show up after the spring flush. This is because the cambium and the vascular tissues, produced by the cambium, were injured or killed and cannot supply enough water and nutrients to the new growth. These branches should also be removed as the damage becomes apparent.

**Q:** What is your opinion of tree injections? (Missouri)

**A:** If for no other reason than to get others to send in their comments and data, let's toss out a few thoughts on the subject.

Wounds of any origin are harmful to the tree and should be avoided. The smaller the wound, the smaller the chances are of doing permanent damage to or killing the tree. Injections/implants should be used only when established treatments fail. Why? Because we know the strengths and weaknesses of sprays and soil treatments. To date, we have not acquired enough information, i.e., efficacy tests with controls to evaluate injections/implants.

The concept of injections is appealing from several standpoints—ease of application, lack of drift and cli-

ent acceptability to name a few. We've all gotten a "shot" from the doctor. I am for innovation, and the tree injection technique has merit in certain situations; however, my major reservations lie with the materials being injected and the benefits attributed to the injections.

A consensus of opinion, either for or against, does not exist among tree care people. We simply need more research on tree injections before we can judge their performance and cost effectiveness as compared with what we are using now.

**Q:** We like grass as opposed to mulch under our trees. Does turf really hurt the tree? (Ohio)

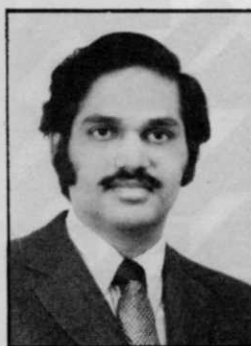
**A:** Experience has shown that trees and other woody ornamentals do better when grass is kept away from the trunk or stem(s). Grass takes moisture and nutrients from the soil so there has to be less available to the tree. Experiments at the University of Rhode Island have shown allelopathy may be involved. Allelopathy is any direct or indirect harmful effect of one plant on another through production and liberation of chemicals into the environment.

Dogwoods and forsythia were grown in plots with and without turf. The "turfless" plants grew better. When water and fertilizer did not improve the growth of the species of grass were soaked in water and this water was then applied to potted forsythia plants. Shortly thereafter the rate of growth decreased. Apparently something from the grass roots leached into the water and inhibited the growth of the forsythia.

Possibly the biggest problem associated with having grass extend to the tree trunk is wounds caused by lawn mowers. Wounds can lead to decay and/or wood boring insects.

Proper mulching will inhibit the growth of weeds and grasses. Mulching also reduces the need for mowing close to the trunk. Mulching provides a barrier which may keep people and machines away from the basal portion of the trunk. For all of these reasons, mulching about the base of woody ornamentals in lawns makes sense.

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**Questions should be mailed to Problem Solver, Weed Trees & Turf, 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Please allow 2-3 months for an answer to appear in the magazine.**