

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.

Continued on page 105



Balakrishna Rao is plant pathologist and Thomas Mog is pest management specialist for Davey Tree Expert Co., Kent, OH.

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.

GET TOUGH

on
Cut Worms
Chinch Bugs
Sod Webworms
Billbugs, Grubs and
Many Other Insects

overlapping generations, more than one miticide application is needed. Also, a superior oil applied while the trees are dormant is effective against the overwintering stages. Oil should be used no more than once a year. Oil may result in a temporary loss of the waxy bloom, especially on blue spruce. The needles should produce more wax and regain their normal color in four to eight weeks.

Q: *We have a large purple-leaved plum tree and for several years now limbs have died off. I have pruned them out but it doesn't stop. I found some gummy stuff coming from what looks like holes. What can we do? (Illinois)*

A: A common problem of purple-leaf plum especially older, larger trees is borers. Borers are detected by looking for small, usually circular areas of sap-soaked bark or gummy sap which oozes from wounds caused by these insects. The sappy exudate may be mixed with "sawdust" (larval borings).

Most garden centers carry borer sprays which you could apply not to the trunk and branches. The adult, a clear-winged moth, is controlled with insecticide sprays which are applied in May or June. Phermone traps are available for this insect (*Synathedon* spp.) and can be used to determine the presence of egg laying moths in your locality.

If there are many small holes as if the tree was blasted with a shotgun, the problem is caused by bark beetles. The "shotholeborer" (*Scolytus rugulosus*) can also be controlled with a borer spray such as Lindane.

Cut out and destroy all borer-infested, dead and dying branches. Keep the tree healthy by watering and fertilizing regularly. Healthy trees are more resistant to borer attack.

PROBLEM SOLVER *from page 20*

Q: *The needles of several spruce trees around our patio have turned a dingy gray. Many but not all of these needles have fallen. Will a fungicide help? (Indiana)*

A: A fungicide will help if the problem is caused by a foliage disease. As head of the plant problem diagnostic clinic for tree care, I've seen a marked increase this year in the number of samples having spruce needle-cast. This disease is caused by the fungus, *Rhizosphaera kalkhoffii*. The samples have off-color foliage, i.e., the needles were a mottled yellow-green, brownish-purple or chocolate-brown color. If fruiting bodies are present they look like small, black "pimples" and they emerge from the needle pores or stomata. Bordeaux is the fungicide most often recommended. Timing varies but the first application should go on about the first week in June. If the infection is severe repeat once or twice at approximately 14-day intervals.

Another pest problem on spruces with symptoms fitting those you describe is mites. A heavy infestation will cause the foliage to lose its color and appear yellow, reddish-brown, olive-green or gray. To confirm the presence of mites look for eggs, egg shells, silk between the needles or the mites themselves. You will have to look closely because mites are very small animals. A 10X hand lens will help, or beat the foliage. Collect what drops on a white surface. If you see tiny dots scurrying about they are mites. If you could count the legs there would be four pairs for an adult and three pairs on the immatures or nymphs. Mites are not insects and it's better to use a miticide rather than an insecticide on them. Since spruce mites have many and

GET DYMET™

Insecticide

Broad-spectrum,
dual formula works
safely and economically.
Labeled for turf and ornamentals.

At your distributor now!

Tough new ways
to protect your turf

Mallinckrodt

Mallinckrodt, Inc.

St. Louis • Jersey City • Los Angeles
(800) 325-7155

In Missouri: (314) 982-5241