CULTURAL NOTES

Winter Damage to Azaleas

Arthur and Anita Frazer

Winter is not far away, and as described in this article, winter damage can be affected by actions we take. This article is reprinted (with some editing) from the August 1996 issue of the ***Azalea Clipper****, the newsletter of the Northern Virginia Chapter by permission of Anita Frazer. Anita and her late husband, Dr. Arthur Frazer, operated Columbia Nursery near Mount Vernon, Virginia, and published the following information in their newsletter in 1970..*

To prevent winter damage (or "winter-kill"), or to remedy it once it has occurred, it is essential to understand something about its nature. Winter-kill is not a disease. However, shrubs that are diseased or infected or for some other reason go into winter in a weakened condition are inevitably the most likely to suffer fatal consequences of winter-kill.

Winter damage or winter-kill,if it is that drastic—is a functional problem. In its least severe form, it is evident by a larger than normal dropping of leaves. In more severe damage, parts or all of the shrub is completely defoliated, i.e., loses all of its leaves.

In the kind of damage just described, there is usually no winter-kill in the customary context of the term. The extensive leaf drop, given a hard, cold winter, is nature's method of reducing the demand for moisture from the roots to supply the leaves with moisture which in turn is evaporated from the leaf surfaces by the winter wind—the regular transpiration process. (It is primarily for this reason that deciduous trees and shrubs shed their leaves in the fall.) First, because the compact rootballs of evergreen shrubs are periodically frozen during the winter they have a limited moisture supply to send to the leaves. Second, wintry winds, often lower in humidity than summer winds, tend to increase transpiration (evaporation of moisture) from the leaves. Third, if there is excessive new growth, it simply overloads the call for moisture from the root system. If any one, or all, of these conditions is especially severe, then complete defoliation occurs. But remember, in addition, that we may have extended periods particularly in January and February, when the ground is solidly frozen for weeks on end, depriving shallow-rooted evergreens of the means of obtaining and storing moisture.

So much for winter damage represented by leaf defoliation—with an explanation later what to do about it. What about the more severe stage of winter damage? The next stage is functionally compatable to a burst waterpipe or perhaps more aptly comparable to a burst hose on the radiator in your car. The cambium layer (directly underneath the bark) freezes and bursts causing what is appropriately called "bark split". The damage is easily visible along the stem, or on one of the affected branches.

The cambium layer is the artery which provides the means of transporting water and nutrition between the roots and the upper part of the shrub. If freezing causes a minor rupture, the cambium layer will heal over with minor (temporary) damage to the affected section of the shrub above the rupture. If the rupture is severe, the cambium layer above the rupture will die—and so will the affected section—or the entire plant, if the bark split occurs on the main stem.

The freezing and rupture of the cambium layer, or bark split if you prefer, is the result of two conditions, or actually only one. It's a problem of "not enough anti-freeze"—just like in your car. Of course, the plant may have enough "anti-freeze" in its system for a normal winter—but some winters are not normal for this area.

But what is this anti-freeze business, sez [sic] you? The hardening-off process of shrubs in the fall is typified by a process of concentrating carbohydrates in preparation for winter. This concentration of carbohydrates in the sap raises its resistance to freezing. But if the shrub gets a lot of late, new, lush growth in the fall, this new top growth calls on the roots to provide a greater supply of moisture. So the root system does the best it can and the sap is proportionally diluted, and is proportionally more susceptible to freezing. In popular language, the plant hasn't had a chance to harden-off properly. For those of you who possibly may have become engrossed in this long-winded explanation of a fascinating subject, see: *Rhododendrons of the World*, by David C. Leach, Chapter VII.

What to Do To Prevent Bark Split

On azaleas, and other broadleaf evergreen shrubs, this kind of damage shows up as an apparently dead branch or entire shrub—which it may be. But again it may be only minor damage, and it's worth checking to find out. Bark split is easy to spot by

examining the affected stem or branch. Bark split is self-descriptive—it is a rupture in the bark where the cambium layer underneath has burst and forced the bark to rupture. It is usually a wound an inch or so long and running parallel along the stem or branch. Check above and below the rupture by using your fingernail or a penknife blade to gently scrape back a tiny sliver of bark. The cambium layer is directly beneath the bark. If it appears green when you scrape back the sliver of bark, the damaged section will recover. If the cambium layer is brown or a dirty green (dying), make further checks back down the branch of the stem, until you reach a place (usually below the bark-split) where the cambium layer is green—and prune back to there.

Preventing Winter Damage

Preventing a problem is always better than trying to cure one, once it has happened. It is not always possible to prevent winter damage if we have an unusually severe winter. But a few simple rules will generally prevent such damage.

(1) Plant shrubs and varieties that are known to be hardy in this area. Avoid the southern shrubs (especially azaleas) which are very lovely in the South—and which may survive one or two winters here—but a cold winter will surely wipe them out. Don't be confused—some of the azaleas grown in North Carolina and elsewhere are in fact Kurume varieties and others perfectly hardy here. It is the "INDICA" (Indian) Hybrids which are so lovely in North and South Carolina (and Norfolk) that will not survive our winters here. Every year 'Formosa' (tender early purple) azaleas are trucked into this area and sold to unsuspecting customers.

(2) Plant only vigorous, healthy shrubs. Plants from truck hucksters or wayside markets with loose and/or dried out rootballs have two strikes against them. A "bargain", remember, has to be something worth more than you pay for it. Nursery bargains do not mean "cheap" plants. A sick or unthrifty plant is a prime candidate for winter damage, for reasons explained earlier.

(3) Any pruning and fertilizing should be done before the end of June to avoid the stimulation of late, tender growth.

(4) Water regularly during summer if the rainfall is inadequate, to maintain vigorous healthy shrubs, and to minimize the stimulation of new growth caused by late wet weather following a drought period. Azaleas should have one inch of water every ten days, either rainfall or by watering. The fact that a shrub does not look like it is suffering from lack of adequate moisture is not an acceptable standard. By the time leaves droop, or appear withered, an azalea has suffered the calamity of major shock.

(5) If the late fall has been dry, it is especially important to water azaleas well in November and December before the ground (and rootballs) freeze.

(6) Mulching under azaleas is an excellent practice to conserve moisture and even out sudden changes in temperature. Mulch of two to three inches can be leaves, wood chips, sawdust, etc. [Use of sawdust requires some finesse. As sawdust rots it may draw nitrogen from the soil. But as the Frazers point out, application of fertilizer must be timed to avoid interference with the hardening off, ed.] Leave the mulch on the year round and replace as necessary. Keep and/or pick fallen deciduous leaves out of the azalea branches. They restrict air circulation and may cause some defoliation.

Post Script to Winter Damage
Phil and Frances Louer

Also reprinted from the August 1996 issue of the ***Azalea Clipper.***

Art and Anita Frazer's article addresses the effects of weather, but many of us suffer damage in winter from wildlife. The following is how we (the Louers) came out with the least amount of deer damage this last winter that we have had. First, we bought some fencing from the Benner's Gardens in New Hope, PA. It is 7-1/2 feet high, made of plastic mesh and it comes in rolls of 100 feet or 330 feet. We installed the fencing surrounding two selected areas where we had trees to support the corners, and 20 large plants enclosed. Both of these were completely effective, with no deer damage. Some small animals chewed a couple holes at the ground level, presumably rabbits, but no damage was done. This fence can be rolled back up in the spring and stored out of sight. For the other plants outside of the fencing, we used "Deer-Away" spray. It is expensive, especially when spraying about 400 medium size plants. We sprayed in late November, and again when the temperature was high enough in early February. The spray was very effective for the first couple of months, but the second spraying seemed to be a little late (the freeze lasted too long). Some damage was beginning to occur. Even so, it was the least we have had, in spite of the fact that a number of deer spent the winter in the back woods close to the plants. ❑