I. Predict the Stresses of Winter.

Winter damage – or maybe more precisely, damage that occurs during the winter or from the winter – to woody landscape plants, attacks trees and shrubs along three main fronts:

- **Damage that is mechanical.** Most commonly from animals either feeding on various parts of trees and shrubs, or for whatever reason, wounding the plants because they can.

  Mechanical damage can also occur on the stems of trees that are near busy roads where melted snow and ice along with cinders and other abrasive materials splash and abuse the tender bark tissues of young trees and shrubs.

  Also, the weight of wet snows or ice accumulated on branches may be more than the strength of the branches can bear. Wet snow storms and ice storms – especially when accompanied by wind – can tear apart or disfigure them permanently.

- **Desiccation of the foliage.** This is a problem with evergreens (obviously), and the darker the foliage, the bigger the problem. Pick a nice, sunny day in January. The sun beats down on the dark green foliage and heats it up (granted, “heats it up” is a relative term in the upper Midwest). When this happens, the foliage transpires to cool off the surface and cells of the plant.

  Since the ground is frozen and water isn’t moving readily into the plant roots at that time of the year, sap quickly gets consumed and the leaf tissues begin to dry out.

  Desiccation is usually caused by one of three factors: 1) Sunlight exposure as with the previous example, 2) Wind exposure, which is a constant drying agent, and 3) Deicing salt spray, which is phytotoxic (affecting cell membrane stability and other processes), drying out the leaf tissues as well as doing other bad things too horrid to mention.

- **Cold temperature damage.** Freezing of tissues. Ironically, the least cold-hardy part of most woody plants is the root system. Guess that is why the roots are normally below ground, where they receive insulation from the soil, mulch and (many years ago in Minnesota) snow. Next in the vulnerability line would be cambial tissue, flower buds and finally vegetative buds.

  Cold hardiness is an inherent quality and it has a tremendous impact on whether
or not there will be damage to the plant from cold temperatures. Wouldn’t it be nice if that was it? Provenance (source of the seed or cutting that began the plant) messes around with species cold hardiness, so if the red maple came from a seed source in northern Alabama (part of its native range), it is likely to be less cold hardy than seed from a red maple growing in Winnipeg (part of its native range). It’s hard to see provenance, darn it, so you need to find a reputable supplier of nursery stock that is from seed (or any propagule) sources native to your range.

It gets more complicated. Stresses from exposure to sodium and chlorine ions (a.k.a., deicing salts), impacts cold hardiness…and not in a good way.

So does any other stress: early defoliation (like from gypsy moths), construction damage to root systems, seasonal drought, over-pruning, and pH extremes. So, cold hardiness is a lot more difficult than opening up some book and reading the assigned hardness zone.

II. Do Something About It!

Although not all winter damage can be predicted or avoided, there are some (bio-) logical precautions that may be taken to minimize the normal damage.

Having said that, most winter damage is the result of a combination of stressful events, so employing only one of the following techniques will probably only have minimal benefits in a “normal” winter. Do your best to predict the type/s of winter damage and then focus your efforts on those avoidance techniques.

• Damage that is mechanical. To minimize this type of damage, try the following techniques:

Stem Protection.

To reduce the damage from abrasive materials hitting the bark of young, thin barked trees, wrap the stems with crinkled kraft tree paper, plastic spirals, cardboard “sleeves” or tree shelters. Apply these in mid-late autumn and remove in early to mid-spring.

To reduce the damage of animals feeding on or rubbing tree stems with thin and/or smooth bark, protect the stems with “hardware cloth” (1/4 to 3/8 inch openings). Apply this product as a protective cylinder around the stem and up to the first branches or at least to the point where most of the animal damage is likely to occur. Make the cylinder large enough in diameter to leave at least one inch between the tree bark and the wire.
To prevent stems from splitting out from ice and heavy snow loading events, provide temporary support to the multiple leaders. This is usually a problem with multiple-stemmed evergreen trees and shrubs, most commonly northern white cedar, junipers and yews.

Either interior or exterior temporary supports may be used. Interior support can be provided by “tying” the stems together. Materials such as ARBORTIE or tree chain (interlocking plastic chain) are good ones to use since they are quick and simple to apply and may be re-used. Read further for exterior support ideas.

**Stem and Foliage Protection.**

Exterior support can be provided by binding the branches/stems together from the outside of the branches. ARBORTIE, burlap wrapping, green jute rope, or just about anything that is strong enough to hold the branches together may be used. If you don’t want to be staring at something artificial or constructed all winter long, choose something that is green or black in color.

Begin wrapping the supportive material from the bottom of the tree or shrub. Secure the material around the stem at the ground line, and then gently hold the branches in place while you wrap the material around the plant tight enough to provide support, but loose enough to avoid breaking branches or ruining the form of the plant.

Bud capping can be used where the animal damage is to the uppermost, growing shoots of conifers. This technique is very simple and very effective. Simply fold an index card in half, put it over the top shoot of the evergreen tree and staple the ends together so that it stays over that top shoot. Sounds too simple to be true, but it works.

- **Desiccation of the Foliage.** Desiccation will result from above ground exposure and below ground water supply.

**Above Ground Exposure.**

About the only things that can reduce this type of damage involve either building a screen to slow down the drying winter winds or deicing salt spray drift, or wrap the plants’ foliage to minimize exposure.

Screens may be made with snow fences (really attractive!) or some of the “plastic” fences now available in many colors including green and black. Drive two stakes in a line perpendicular to the prevailing winds on the windward side of the plants and
stretch the screening material from one stake to the next. If the screen is placed a few feet away from the plant, closer to the offending exposure, it won’t be necessary build a screen as tall as the plant. Winds will be deflected up when they hit the screen, so often a four foot high fence will protect a 6-8 foot tall evergreen.

Burlap, plastic fencing, bird or deer netting can all be used to wrap and protect the foliage if you don’t want to or can’t use a screen.

Occasionally, trees and shrubs in landscapes may be wrapped in bright blue tarps or saran. Don’t do that. Friends don’t let friends use bright blue tarps in their landscapes or wrap their plants like they’re chicken breasts at the meat counter in the grocery store.

**Below Ground Water Supply.**

Water the plants well into the autumn. Water until the ground freezes. **YOU WILL NOT FORCE PLANTS OUT OF DORMANCY BY WATERING THEM!** By mid-autumn, plants are well on their way to full dormancy. Water won’t trick them out of it.

If the landscape is poorly drained, don’t water to the point that the trees are flooded. This is as evil as allowing them to enter winter in a droughty state. Correct that drainage problem as soon as possible.

Mulch, mulch, mulch as much of the root system as possible with 2-4 inches of wood chips or some other nice mulch. Don’t apply the mulch if the soil is dry. Make sure the soil is nice and moist before the mulch is laid on the surface. Mulch doesn’t make soil moisture…it conserves it.

**Antidesiccants are really novel ideas. So are time-machines.**

* Cold Temperature Damage.

To avoid or minimize cold temperature damage keep the trees and shrubs healthy during the growing season.

Don’t over prune, wound their stems, forget to water them, accidentally spray them with herbicides, plant them in wicked compacted and/or poorly drained soils, mess up the soil’s natural pH, or anything that would unnecessarily stress the plants.

Mulch the root system or as much of it as possible. It’s really amazing just how much mulch insulates and regulates soil temperatures. Just like in a forest!
For landscape/patio trees or shrubs that are growing in pots or containers, if possible, bury those containers in the landscape during the winter and mulch over the root system.

**III. Where are all of these magical materials for protecting woody plants during the winter?**

- Garden centers and nurseries. Don’t ask for advice. Ask for the product.
- Home improvement centers, neighborhood hardware stores, feed and grain stores. Don’t ask for advice. Ask for the product. Also, ask for any extra burlap that they may have and are wanting to discard.
- Fabric stores. Great places to buy bolts of burlap at pretty reasonable prices.
- Mail order companies that specialize in gardening, forestry, nursery and landscape supplies. However, don’t assume that these places will always be less expensive than your local hardware store.