How to Identify and Treat Salt Damage on Plants

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From freezing temperatures to blistering winds, the harsh winter elements can pose a challenge for people and plants alike. One common issue many gardeners face during the wintertime is salt damage on plants. While deicing road salts help to ease our troubles by keeping roads, driveways, and sidewalks clear, they only intensify winter damage on the ecosystems and plants nearby. As a country, the U.S. is estimated to apply about 20 million tons of salt per year for public safety on roadways. The most common form of deicing salt used to keep ice from forming on the roads is sodium chloride, or rock salt, which can be very damaging to vegetation. Deicing salts contribute to the damage and dieback of landscape plants each year, however there are steps one can take to identify salt injury and minimize its effects.

What are Symptoms of Salt Damage in Plants?

When deicing salts inevitably wash off the roads, they threaten plants both directly through contact with the foliage, as well as indirectly by changing the soil chemistry. In what is known as "spray zone" injury, salt water collects on plant foliage and enters the plant cells directly. This type of salt injury results in discoloration beginning at the margins of the plant and may eventually lead to premature leaf or needle drop. Salt spray can also dry out bud scales, exposing the developing leaves and flower buds to reduce growth later in the spring. Spray zone injury often produces a distinct pattern of damage, where symptoms are restricted to foliage facing the roadside and increase in severity as plants are found closer to the road.

Another way plants are affected by road salts is when runoff salt water dissolves in the soil and is taken up by plant roots. Within the soil, sodium chloride breaks down into ions that compete with the other nutrients plants need to survive. As a result, plants take in more of the harmful sodium salts and less of the beneficial nutrients they require. Plants tolerate small amounts of salt naturally, but toxic concentrations can result in symptoms of wilting, scorch, and burn. Overall, deicing salt exposure causes symptoms similar to drought and root damage in plants, such as tip browning, bud death, stem dieback, stunted growth, marginal burn and discoloration, and even tree death. These effects may vary depending on the plant species and degree of exposure, with salt applications in late winter thought to be most damaging to plants and less likely to be leached away from roots.

Deicing salt exposure can result in the damage and discoloration of plant foliage along roadsides. Photo courtesy of Joseph LaForest, UGA, Bugwood.org.

How can Road Salt Injuries be Managed?

In order to minimize the harmful effects of road salts and be sure your plants will make it to see a healthy spring, there are some steps you can take to reduce salt injury. One obvious option is to limit the use of road salts when possible, especially near lawns and landscapes. This can be done by mixing salt with other materials such as sand or sawdust to help maintain road traction, as well as choosing other salt options like calcium chloride that are less harmful to plants, although more expensive. Gardeners can also protect their plants from salt damage by covering them with materials like wood or burlap, and being careful to plant salt tolerant species near roads and sidewalks. Trees such as hedge maple, paper birch, and Northern red oak are more tolerant to salt exposure than sensitive species including red maple, boxwood, and Eastern white pine.

While it is not always possible to prevent salt damage from becoming an issue during the winter months, other management strategies can be used to treat salt injury. If you do identify exposure to salt damage in your landscape, be sure to wash salts off plant foliage as soon as possible. Prevent snow piles, sand, and runoff from building up near sensitive plants, and maintain healthy soil salinity levels through the addition of organic matter. The most effective way to minimize salt damage is by leaching salts away from the plant roots. Apply fresh water often to flush salts down through the soil when the ground is not frozen, and plant roots should be less vulnerable to the toxic effects of road salts.

Laurel Humphrey is a student employee working with the Plant Diagnostic Lab and Home & Garden Education Center. For questions on road salt or if you have any other gardening questions, contact the UConn Home & Garden Education at (877) 486-6271 or www.homegarden.cahnr,uconn.edu or your local Cooperative Extension Center.