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For more information, contact Jesse Gilmore  
Horticulture Agent, Wildcat Extension District  
[jr637@ksu.edu](mailto:jr637@ksu.edu), (620) 724-8233

## **Before Trying to De-Ice, Think Twice**

When snow falls or roads freeze and cities need to clear off streets and sidewalks, they turn to salt to de-ice. Salt is great for hard surfaces, but creates problems when introduced to soil and plants. Salts can impact plants in two different ways – via physical contact with plants thanks to spray, or by salt particle runoff into the soils where plants are present.

Spray will have very noticeable damage on the sections of the plants it physically touches. Often this will come in the form of burn patches because water is physically pulled out of the tissue by the salt particles. Salts applied to roads can travel up to 1000 feet from the application site in the form of sprays. This is usually due to high-speed traffic hitting salted patches of road or highway. People who live next to well-traveled roads might want to consider plants more tolerant to salt spray, like those native to the east coastline.

Most plants that don't have active growth will only be slightly affected by salt spray, but evergreen plants can be affected at any time during the winter. Arborvitaes and yews are typically hit the hardest by salty conditions. Deciduous plants will be hit hardest after late snowfalls or ice, when the plants are starting to bud or leaf out. Sadly, plants hit by salt spray will find it hard to recover scorched sections due to the dehydration that it causes. These sections will likely need to be pruned out at the first opportunity.

Salt in the soil also causes problems for plants, but the problems span the entire plant and are much harder to diagnose at a glance. Salts like those used in most deicers occur naturally in the soil, but start causing problems when the concentration of the salts gets too high. With salt spray, the salt that lands on plant tissue pulls water out of it. Soil salt, on the other hand, influences the soil's osmotic potential.

In biological systems, water always flows from an area of high water concentration to an area of low water concentration. When salt is introduced to one side of the equation, it lowers water concentration because water makes up a smaller amount of the total molecules present. Roots can overcome a small imbalance in osmotic potential, but if salt builds up in excess, the water concentration in the soil becomes so low that water can get pulled out of plant roots and stems instead. This reverse water flow will almost always look like drought damage, even if you have been diligent in your watering.

When we hear salt, most people think of sodium chloride, but chemically, salts are more than just sodium. In most cases, saline soils – soils with too many salts – can be remedied by heavy rainfall or watering, which carries the salt molecules deeper into the soil profile where they cannot affect most plant roots. Sodium buildup is harder to rectify, and if you are getting deicer at the store, you will want to choose a product that does not use sodium salt as its active ingredient so that you don't accidentally introduce sodium to your yard or landscape. If you can, focus on purchasing products that increase traction such as sand, before turning to deicers, as you reduce your risk of chemically impacting your landscape.

If you are looking for salt-tolerant plants for your garden, here are a few to consider: For trees, serviceberry, buckeye, white and red oak, hackberry, arborvitae, crabapple, and pin oak are all at least partially tolerant to soil salt buildup. Maples, redbuds, and lindens are not. For shrubs, look for sumacs, lilacs, boxwoods, junipers, viburnums, and flowering quince, while steering clear from dogwoods.

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