ROAD SALT DAMAGE AND TOLERANT GRASSES

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Landscape plants do well preparing themselves for winter. They develop a reduced metabolism and begin living off of stored reserves. Most of the competitors of plants lie dormant also during the winter months, assuring that both will start on an even keel at spring's outset.

There is one enemy of plants though that works exclusively in winter, the street and highway snow removal crews. Their use of salt in deicing roads leads to serious alteration of a plant's biota. And, if the landscape industry doesn't solve this salinity problem, there'll be fewer landscaped medians, fewer contracts and more medians and roadside areas covered with blacktop and concrete.

Paul Drolsom and Lou Grueb of the University of Wisconsin have been conducting a study to examine the effects of salinity on plants and soils. They've hit upon some interesting reasons for the adverse effects and are working at identifying and developing varieties that resist high salt levels.

Road salt, principally sodium chloride, can move to the surrounding roadside in a number of ways. It can fall on neighboring soil directly from the salt truck, through brine splash or runoff. Salt can also be kicked off the road by passing vehicles or recrystallize and form a fine white powder that is easily scattered by the wind. A highway industry study showed that half of the salt applied to pavement is carried away only hours after application either on the vehicles themselves or through brine splash and crystal movement.

All this salt laying on the soil and plants neighboring roadways affects the plant biota in many ways.

The soil structure, a basis for fertility, drainage and ultimately plant survival, is drastically altered by salt. Excessive sodium (Na) levels in the soil reduce the cation exchange capacity. Simply, reduced cation exchange sites create a tighter soil that results in poor drainage. Also fewer exchange sites prevent other nutrients from bonding in the soil and making it more difficult for the plant to get the nutrients it needs.

"The high salt levels also create drought conditions for the plant by increasing the osmotic potential of the soil solution according to Grueb. This means simply that more water is tightly retained in the soil structure rather than being made available to plants. This drought stress is especially a problem in dry years.

High sodium levels cause havoc in a number of ways, but the chloride irons "cause greater direct damage to more species of plants adds Drolsom. "We're not sure in what ways the chloride is toxic, but we do know later stages of chloride toxicity are manifested in burning and firing of leaf tips and margins, bronzing, yellowing, premature leaf abscission and sometimes chlorosis" according to a Pennsylvania study.

Grasses With High Road Salt Tolerance

Alkali Socaton	Rescuegrass
Inland Saltgrass	Canada Wildrye
Nuttall Alkaligrass	Western Wheatgrass
Bermudagrass	Tall Fescue
Tall Wheatgrass	Barley
Rhodesgrass	*Puccinellia distans*

Landscapers can protect themselves from excessive salt problems by planting salt tolerant grass species. Most salt tolerant species are native to the western U.S. alkaline soils. Some of these grasses do not persevere in the harsh winter cold of the areas that demand the salt applications for road safety.

One grass that appears to overcome this problem is *Puccinellia distans* or alkalai grass. This grass which is native to western Nebraska and Alaska may have the best potential for use in the upper midwest. The grass was observed growing naturally in the salt contaminated soils along the interstate highways surrounding Chicago according to University of Wisconsin researcher Robert Newman.

The old standby in cool climates, Kentucky blue, has low tolerance to salt even though Fylking, a cultivar of Danish origin was slightly more tolerant than common, Merion or Windsor Kentucky blue.

The following list of grasses shows grasses with good tolerance of high salt levels. The list will be helpful if you land a job landscaping a road right of way or homes along busy thoroughfares.
Alkali socaton; Inland saltgrass; Nuttall alkaligrass; Bermudagrass; Tall wheatgrass; Rhodesgrass; Rescuegrass; Canada Wildrye; Western wheatgrass; Tall fescue; Barley; plus *P. distans* which is sometimes improperly identified as Nuttall alkaligrass. **WTT**