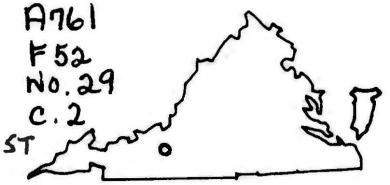


LD  
5655  
A761  
F52  
No. 29  
C. 2  
ST



V.P.I. & S.U. LIBRARY

# Forest Tree Diseases of Virginia

BLACKSBURG, VIRGINIA

November 1977

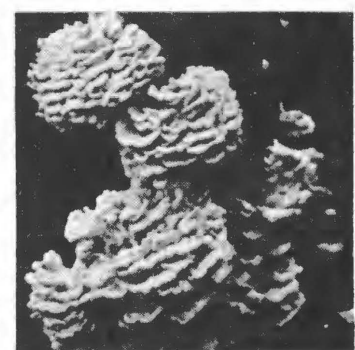
MR-FTD-29



**RUST**



**DECLINE**



**DECAY**



**CANKER**

## Salt (De-Icing) Injury to Roadside Trees

by

John M. Skelly and Samuel A. Alexander  
Extension Specialist and Assistant Professor  
Plant Pathology, Respectively

Virginia Polytechnic Institute and State University  
Blacksburg, Virginia 24061

The use of deicing salts (primarily  $CaCl_2$  or rock salt  $NaCl$ ) on primary and secondary roads to assist in ice and snow removal is important in maintaining highway safety during hazardous conditions. However, the accumulation of salt on or within plants growing adjacent to salted highways often causes a severe browning of the foliage resulting in associated aesthetic and in some few cases economic loss. In several New England states tens of thousands of trees (maple) have been removed because of salt injury; the problem is not as extensive in Virginia but symptoms and tree death have been noted along several major arterial highways.

### Mechanism of injury:

Salt accumulation may occur in one of two ways or through a combination of both. Deposition of salt on plant surfaces occurs due



Figure 1. Salt damaged eastern white pine. Note dead branches on road side tree only. The tree to the right will also die due to stress following exposure to salt.

to spray originating from passing vehicles. The most severe damage occurs on evergreens adjacent to the roadway and in many instances only that portion of the plant exposed directly to the road becomes injured (Figure 1).

The second form of deposition of salt within plant tissues occurs following runoff from road surfaces of water following salt application and snow and ice melting. After being absorbed by roots the salt ions are slowly translocated to the terminal portion of the plant and become phytotoxic when concentrations become excessive in leaf tissues.

#### Symptoms:

Conifers, due to having year round foliage, may become symptomatic even during the winter months since their needles have some degree of continuing activity. Terminal portions of needles turn redbrown in color then become darker brown and brittle. They usually break off during windy periods. Branches may die and even entire tree death may follow acute salt injury. Bud scales provide protection for the next years needles but even these may be killed. Large pines located in drainage areas several hundred feet from a road surface may be affected and/or killed (Figure 2).

Hardwoods exhibit virtually no symptoms of salt injury during the winter months with the exception of branch and limb dieback which may be evident from previous years of impact. The first symptoms of salt uptake occur in the current years foliage as a slight yellowing of the leaf margins that is quickly followed by marginal necrosis. Twig dieback follows defoliation of severely affected leaves. Large branch, limb, and tree death may follow. Premature autumn coloration may also be a symptom of salt injury.

#### Control and alleviation of losses:

Since salting of highways is an integral part of highway safety, little can be done to stop the practice entirely; perhaps amounts applied could be reduced in some instances. In the forest situation little can be done because of economic restrictions. Injured trees should be removed due to obvious hazards. In parks and recreational areas, drainage patterns may be altered to reduce salt uptake and valuable trees can be fertilized and watered extensively to reduce the salt uptake and its effects. Salt-sensitive trees such as pines, spruces, firs, maples, walnuts, and several others should not be planted adjacent to roads when salt use is evident or planned.

Fertilization, watering to leach salts from soil and removal of dead plant parts will minimize damage to valuable roadside trees in the park, landscape, or home yard situation.



Figure 2. Injured white pines 50 - 75 feet from road surface where salt is used in considerable amounts. Note thin tops and weak appearances.