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ABSTRACT

Smith, E.M. and S.A. Treaster. 1982. **Sodium chloride phytotoxicity to sugar maple.** OARDC Research Circular 268. pp. 7-8.

Sodium chloride (NaCl), the most commonly used salt for de-icing streets, may affect plant growth by: 1) increasing osmotic pressure differences and causing desiccation, 2) accumulating specific ions in toxic concentrations within plant tissues, and 3) altering mineral nutritional balances. High salt concentrations are manifested in sugar maple as marginal necrosis, small or pale green leaves, premature defoliation, and terminal twig dieback which leads to tree decline. The usefulness of sugar maple planted along streets is limited due to its habit of developing leaf necrosis beginning in early to mid-summer and continuing throughout summer and autumn. In many instances, the condition is related to stress from lack of adequate soil moisture. However, in certain situations, de-icing salts may be a significant contributor to the necrosis and early leaf defoliation. Sodium chloride was applied over a 3-year period under 10-year-old sugar maple trees isolated from highways to correlate foliar injury with known rates of application to the soil surface. Increasing foliar necrosis and defoliation were tested with increasing rates and times. The most severe phytotoxicity was observed at foliar sodium levels of 82-452 ppm, which corresponded to sodium chloride treatments of 8-20 lb/100 sq. ft.