



Studie über die Auswirkung stickstoffhaltiger Auftaumittel

Auswirkungen auf Boden und Bewuchs

Vergleich mit herkömmlichen Auftaumitteln

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Abstract

The respective literature was reviewed comparing and evaluating the ecological impact of different deicers, focussing on nitrogen containing deicing-chemicals, especially urea and ammonium sulfate.

The impact on soils, vegetation, percolating and groundwater is discussed in detail and compared with the impact of other deicers, especially common salt. Using arguments from analogy derived from fertilizer experimental data with excessive nitrogen applications, the effects of high N-loads caused by N-containing deicing chemicals are concluded.

Calculations based on different settings (type and quantity of deicer, size of tree disc) are presented related to a model tree.

High N-loads cause excessive contaminations of surface and ground water, hazardous changes in soil chemistry and indirect damages of the concerned vegetation. Ill-balanced N-loads cause malnutrition and disposition for several stresses. Urea application causes alkalization, cationexchange with losses of other cations and its hydrolysis causes high oxygen demand. Ammonium sulfate causes pH-decrease and as well cationexchange and cationlosses.

Recommandations for accompanying measures for deicer applications are listed.

An environmental assessment ranking for the concerned deicers related to the urban tree site without regarding surface- and groundwaterquality is given as following:

Puffed clay with urea \equiv puffed clay with potassium carbonate \gg ammonium sulfate \geq urea \equiv potassium carbonate $>$ NaCl