

Effects of Salinity Induced by Ammonium Sulfate Fertilizer on Root and Shoot Growth of Highbush Blueberry

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Abstract

Ammonium sulfate fertilizer is commonly used in highbush blueberry (*Vaccinium corymbosum* L.), but due to a high salt index, it often causes salt damage, particularly in young plants, when too much of the fertilizer is applied. A study was done to determine the sensitivity of blueberry to ammonium sulfate and identify the salinity threshold in which plant growth is affected by the fertilizer. One-year-old 'Bluecrop' blueberry plants were transplanted from 0.5-L pots to 8-L pots filled with a 1:1 (v/v) mixture of peat and pine bark and fertilized with four rates of 0, 0.25, 0.75, and 1.5 g·L⁻¹ ammonium sulfate solution. Each solution was applied 2-3 times per week as needed for a total of 8 weeks. Electrical conductivity of the solutions (EC_w) increased linearly with fertilizer rate and averaged 0.1, 0.5, 1.5, and 3.0 dS·m⁻¹, respectively. Fertilizer rate had no effect on total shoot dry weight but significantly affected new root dry weight and partitioning of shoot biomass. Plants fertilized with 1.5 g·L⁻¹ ammonium sulfate produced less roots and had a lower leaf to stem dry weight ratio than those fertilized with 0 or 0.25 g·L⁻¹, which indicates that root and leaf growth in blueberry was sensitive to EC_w between 1.5 and 3.0 dS·m⁻¹. In the field, fertilizer programs and practices (e.g., fertigation) that maintain EC_w in soil solution < 1.5 dS·m⁻¹ are recommended for rapid establishment of highbush blueberry.