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Specific Ion Toxicity

High concentrations of some minerals in irrigation water may cause foliar injury to crops. The minerals of primary concern are sodium (Na), chloride (Cl), and boron (B). Sprinkler irrigation water containing high concentrations of these minerals may cause leaf burn when applied to growing crops. In general, concentrations should not exceed 70 mg Na/L, 105 mg Cl/L, and 0.7 mg B/L for sensitive crops or 200 mg Na/L, 350 mg Cl/L, and 2.0 mg B/L for moderately tolerant crops. Factors that increase the degree of leaf injury from Na, Cl, and B are high concentrations of these minerals in the water, high air temperature, low relative humidity, and high wind speed.

Surface applied irrigation water high in soluble salts and sodium may adversely affect crop productivity by increasing the electrical conductivity (EC_e) and the exchangeable sodium percentage (ESP) of the soil. Please refer to the section on Management Practices for Irrigation with Saline or Sodic Water for additional information. EC_e and ESP values increase in soil primarily from the presence of high concentrations of Na and Cl in irrigation water and/or from a high water table with elevated concentrations of Na and Cl. Please refer to our website, www.olsenlab.com, for additional information regarding salinity, sodium, chloride, and boron toxicity guidelines.