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Management Practices for Irrigating with Saline or Sodic Water

One or more of the following practices should be implemented if saline or sodic irrigation water is used for irrigation.

1. Provide adequate internal drainage. If a hardpan or other barriers restrict the movement of water through the soil profile, irrigation water with a SAR greater than 8 or an EC_w greater than 1.50 – 2.00 mmhos/cm should not be used unless proper internal drainage can be provided.
2. Meet the necessary leaching requirement depending on crop and salinity of irrigation water (EC_w). Proper leaching reduces the accumulation of soluble salts and sodium in the soil. The leaching requirement can be calculated from water test results and tolerance levels of specific crops.
3. Do not allow the soil profile to become less than 50% to 75% of its water holding capacity during the growing season. Salt toxicity to crops increases as soil moisture decreases.
4. Monitor the EC_e and Exchangeable Sodium Percentage (ESP) of soils annually when irrigation water high in soluble salts and sodium is applied to soils. When monitoring these soil parameters, collect soil samples at 12 inch intervals to a depth of 36 inches.
5. When reclamation of sodic soil conditions is necessary, gypsum should be broadcast prior to planting and thoroughly incorporated into the soil. The ESP concentration should be less than 8%. The gypsum requirement should be based on the soil test. If the soil contains free lime, elemental sulfur (Agri-sul) may be broadcast and incorporated at a rate of 20% of the gypsum application rate.
6. Saline or sodic irrigation water can be blended with good quality irrigation water to reduce the quantity of salts and sodium applied to the soil. If blended water is applied, monitor salt and sodium accumulations annually by soil testing.
7. Assuming normal concentrations of soluble salts and exchangeable sodium are present in soil, the maximum amount of soluble salts and sodium that should be applied to soil annually from the application of irrigation water is 4000 lbs salt/acre and 500 lbs Na/acre. When applying irrigation water high in soluble salts, do not allow the EC_e to exceed the guideline for the crop to be grown. To maintain good water infiltration and percolation, the concentration of exchangeable sodium should not exceed 300 ppm and the ESP should be less than 8%.