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Use of Sulfur Compounds for Soil and Irrigation Water Treatments

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Maintenance and improvement of crop yields by irrigation depends on soil and water management techniques which maintain Na and salt levels as low as practical, based on soil properties and quality and quantity of irrigation water available. Sulfur and a number of S-containing compounds are commonly used for maintenance and improvement of soils and waters affected by salts and Na. This chapter deals with defining soil and water problems, characteristics of commonly used amendments, a discussion of methods of treatment useful for reducing salt and Na hazards in soils and irrigation waters, and the effects of S materials on fertility of alkaline soils.

I. SOURCES OF SALINITY AND SODIUM

Salinity and sodicity are common problems in arid and semiarid areas of the world and may also be found in humid regions. The chemistry of saline and sodic soils is well known and adequately treated by numerous soil chemistry texts and other reference materials (e.g., Bohn et al., 1979). Salinity and sodicity will be described briefly in order for the reader to have a basis for understanding the use of S materials for treatment and reclamation.

Salts accumulate in soils from various sources. These include weathering products of parent minerals, precipitation, capillary rise from a high water table, application of amendments and fertilizers, use of irrigation waters containing dissolved salts and combinations thereof. With insuf-