

NEBRASKA TECHNICAL NOTE

U. S. DEPARTMENT OF AGRICULTURE



SOIL CONSERVATION SERVICE

July 1985

AGRONOMY TECHNICAL NOTE NO. 96
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SORDAN REMOVES SODIUM FROM SOILS

Credit for this information is given to ARS soil scientist Charles W. Robbins, Soil Management and Water Quality Research, Snake River Conservation Research Center, Route 1, Box 186, Kimberly, ID 93341.

Sordan is a sorghum-sudangrass hybrid used for livestock forage. Its roots produce 2 to 2½ times more carbon dioxide into the soil than cotton, barley, alfalfa or tall wheatgrass.

The significance of Sordan's elevated output is in carbon dioxide's ability to form carbonic acid in moist soil. This, in turn, dissolves lime or calcium carbonate in the soil. When calcium is in solution, it replaces the unwanted sodium attached to the clay in the soil. The released sodium can then be leached out by irrigation. After leaching, the soil can be planted to crops less salt tolerant than Sordan.

Saline or high-sodium soils severely limit one's choice of crops. Most plants cannot extract water from a salt system. When sodium builds up, either because rainfall is unavailable or insufficient to flush out salts as they weather out of minerals, soil collapses, seals up and loses its permeability to air and water.

Sordan may be the cheapest, most effective way to reclaim salt-affected soils while providing an abundant source of silage for livestock. To offset the effects of salt and reclaim marginal soil, dryland farmers have had to apply from 10 to 50 tons of gypsum per acre, a mineral form of calcium sulfate. At \$65 to \$70 per ton for gypsum, it is an expensive practice. In addition, costs to transport, grind and apply it makes the practice prohibitive.

It is also noted that when Sordan grows vigorously, its roots also give off formic and acetic acids, which dissolve still more calcium than that dissolved by the carbon dioxide, further speeding soil reclamation. Better results have been achieved by planting Sordan than by applying gypsum.