

TOXIC SALT REDUCTION SPECIFICATIONS

Recharge Area:

Growing deep-rooted perennial crops in the recharge area utilizes sufficient soil moisture to reduce percolation beyond the root zone in the soil profile. Alfalfa should be the first choice for this purpose. Other deep-rooted crops which may be used under special conditions include biennial sweetclover, sunflowers, and safflower. Tall wheatgrass, Russian wildrye, slender wheatgrass, and western wheatgrass may be used if grass cover is necessary for erosion control. Treatment of the recharge area must include a major portion (75 to 100 percent) of the total recharge area.

When soil moisture has been depleted to a maximum possible soil depth (usually 2 to 5 years), flexible intensive cropping must be implemented as part of the cropland management system within the recharge area. Minimizing summer fallow should prevent recurrence of the seep problem. Growing a crop each year minimizes the amount of water moving through the soil and out of the root zone. Management practices such as grass barriers, field windbreaks, and conservation tillage may be necessary to trap snow and maintain additional soil moisture in the root zone. (General information on identifying recharge areas and the effects of continuous cropping are given in ND Ecological Sciences Circular No. ND190-1: Subject: Agronomy)

Discharge Area:

Treatment of the discharge area is usually not needed if the recharge area is properly treated and managed. In cropland seedings, barley and sunflowers are two of the more salt-tolerant crops. If soil conditions are highly saline, then more permanent, salt-tolerant plant cover is recommended.

Germination, emergence, and stand establishment are the most successful under moist soil conditions. Dry soil conditions intensify salt concentration near the surface; the germinating seed is then exposed to salt concentrations much higher than encountered by roots during later growth stages. A mulch cover will reduce surface evaporation and increase seed germination and stand establishment.

The discharge areas should be seeded only when soil conditions are favorable to seed germination. Recommended perennial species for seeding into seep areas include tall wheatgrass, western wheatgrass, slender wheatgrass, beardless wildrye, basin wildrye, altai wildrye, mammoth wildrye, and alkali sacaton. These species have been shown to exhibit high salt-tolerance, and moderate to high flooding tolerance. Forage yield increases can be expected with diminishing levels of salinity.

Recommended dates for seeding perennial grass in seep areas are late fall (last half of October or November) or a snow free period during winter. Spring moisture has the potential for diluting surface salts at the time of germination. Overwinter stratification is needed for several of the recommended species. For planting criteria and seeding specifications, refer to 512, Pasture and Hayland Planting; and 550 Range Seeding, in the Technical Guide; and ND Ecological Sciences Circular No. ND190-2, Subject: Plant Materials.