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How to More Profitably Manage Saline Soil Spots

Q&A

A lengthy wet cycle in the 1990's, along with a shift from diverse cropping systems to corn/soybean cropping, led to an explosion of saline soil problems across South Dakota. As many as 8.5 million acres are now losing production statewide, with a concentration of saline soils in the James River Valley.

Q1 Where does that salt come from that makes the unproductive white spots in my field?

A: At one time, much of South Dakota was underwater from an inland sea. When the salty sea retreated, the salts were left in soil sediments.
When the water table rises with more rain, capillary action moves the salts upward to the soil surface.

Q2 Why not farm through those spots?

A: While modern large equipment allows farmers to plant rowcrops through saline seep areas, most have seen it's costly, with higher inputs and significantly lower yields. The longer the seeps are cropped, the more the land is degraded. Over time, the accumulated salt deposits severely limit crop production.

Q3 What's the solution?

A: Anthony Bly, Extension Soils Field Specialist at South Dakota State University, has observed and studied saline soils for years. He underscores the importance of integrating soil conservation practices, including:

- Maintain or reintroduce perennial grasses and pastures in areas prone to salinity.
- Implement diverse crop rotations that include deep-rooted plants that help regulate soil moisture.
- Use precision agriculture to identify and manage saline-prone areas separately from other parts of the field.
- Understand that tile drainage can have unexpected consequences on salinity in other parts of a field.

Q4 Is this working for farmers

A: Jeff and Scott Hamilton's land near Arlington was persistently flooded in the 1980's. Land that had once grown wheat and small grains was becoming barren from increasing salinity. After years of struggling to disk and plant crops unsuccessfully, they turned to perennial grasses, working with a seed company to develop the "Hamilton Blend." Since 2016, they have converted 150 acres of saline land into productive forage with a diverse mixture of wheatgrass, garrison creeping foxtail, fescue, and salinity-tolerant alfalfa. Land that once produced nothing now yields up to 3½ tons of hay/acre. More efficiency comes from grazing the areas, and using variable rate planting and fertilizing.

Q5 Any other proof?

A: The 8-year Cain Creek Project in Beadle County planted salt tolerant alfalfa and AC Saltlander wheatgrass on severely degraded land in 2015. After 8 years, the study concluded this perennial vegetation reduced salinity and sodicity by 100 times, by drawing salts deeper into the soil profile, rehabilitating saline soils.

GROWING RESILIENCE THROUGH OUR SOILS

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