Northeast North Dakota Extension Soil Health Program
NDSU Langdon Research Extension Center (Since 2012)
House and Senate Ag Committees - February 14, 2019

Critical Soil Health Issues

- High Levels of salinity, sodicity and fluctuating groundwater depths.
- Loss of topsoil through wind, water and tillage erosion.

Impacts on Farm Profitability

- Average 2019 direct cost of planting soybean, spring-wheat, canola and corn in NE North Dakota will be $82.10, $111.44, $154.87 and $187.22 per acre.
- These investments will be a net loss on saline-sodic areas and will cost North Dakota farmers millions of dollars.

Extension Focus on Soil Health Activities

- Helping landowners determine what is causing barren spots or marginal stands.
- Suggest suitable salt-tolerant annual crops and perennial grasses to establish vegetation on unproductive areas.
- Encourage planting of shelterbelts and suggest practices that minimize loss of topsoil.
- Update all stakeholders of the key observations of the Langdon REC Groundwater Management Research Project.

Helping Landowners with Soil Sampling

- Landowners needing help call Extension Agents with questions.
- Extension Agents coordinate meetings with Extension Soil Health Specialist on the phone or in-person and setup a date to help landowners with sampling the unproductive areas.

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- Once samples are taken, landowners are given information on what to get tested by a soil lab of their choice.
- Upon receiving the soil results, a thorough explanation along with the recommendations are provided to rehabilitate saline-sodic areas back to planting annual cash crops.
- In 2018, 39 landowners were helped with sampling 130 unproductive sites in nine Counties.

Key Observations of the Langdon REC Groundwater Management Research Project

- Under drier weather, tiling may not be necessary as the average annual growing season groundwater depths may lower naturally.
- Tiling alone under drier weather will not lower salinity as moving the excess salts out of the topsoil will also require decent amount of rain.
- Under drier weather, despite tiling salinity levels can increase due to the increased evapotranspiration and resulting capillary rise of soil water.
- Tiling alone will not remediate soil sodicity as sodicity remediation will require application of amendments that add calcium to the soil.
- If sodicity is established, soil amendments should always be applied before tiling as amendments will convert sodicity into salinity first followed by the salinity remediation.