

Soil is a Biological System

Soil Health: the capacity of the soil to function, infiltrate water and cycle nutrients

Cropland Soil Health

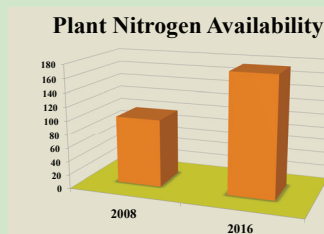
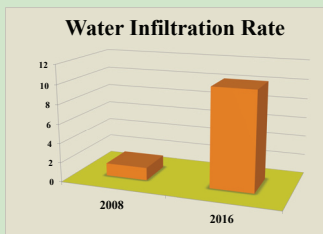
Reduce soil disturbance

Increase plant, animal diversity

Maintain living roots in the soil

Keep soil covered with plants and residue

- feed soil organisms
- prevent erosion
- foster water, nutrient savings



SWND Soil Health Demonstration Project 2008-2016 (NDSU-SCD-NRCS)
J. Stika, T. Stroh

Rangeland Soil Health

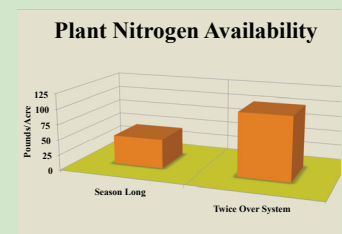
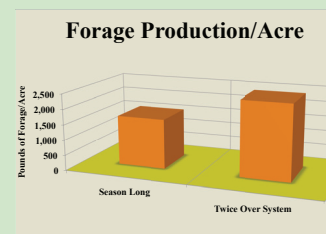
Grazing stimulates plants

Plants energize soil microbes

Soil microbes renew land

Twice-over grazing system increases:

- secondary plant shoots
- forage production per acre
- available plant nitrogen



The Renewability of Grazingland Ecosystems
Llewellyn L. Manske

Crop Rotations and Beef Cattle Grazing

S. Senturklu, D. Landblom, L. Cihacek, E. Brevik

Yield increase: Wheat yield increased on diverse crop rotation while continuous wheat yield declined

\$ return: Average annual return of diverse crop rotation is \$85/ac. vs. continuous wheat \$70/ac.

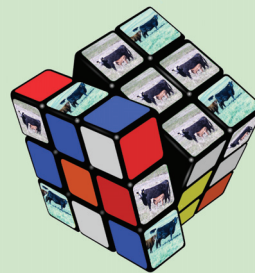
Increased beef gain: Currently, 105 days of 2.1 lbs/day beef gain when grazing annual crops.

Plant and Animal Genomic Research

Evaluating population diversity

Exploring heterozygosity

Using sound stewardship



Exploring the many diverse genetic outcomes using scientific methods to find sensible solutions that are sustainable.

Understanding Soil Health Is The Future of Agriculture

www.ag.ndsu.edu/DickinsonREC/