

# Soil Movement

A quick 5-mile trip outside of Jamestown can tell you a lot. At first you can admire how beautiful the snow on the landscape is with great looking sundogs reminding you how cold and brutal ND winters can be. I went out to look at what was happening on the landscape; shelterbelts are full of snow, corn and wheat stubble are full of snow, creeks are froze up, wind is pushing snow and other debris across the land scape (specially this winter it seems the winds have blown harder and for longer periods of times), but with the other debris floating across the landscape soil particles are also identified, shelterbelts with soil covered drifts, alfalfa fields catching soil and bare fields fully exposed with snow that looks dirty.



Why is it important to go out and look at your fields and know what is going on?

Snow covered ground acts as insulation protecting the soil and organisms below the surface.

Fields with early snow before it freezes can prevent heat from escaping into the atmosphere and block cold air from moving into the soil. By trapping the heat energy, the snow helps restrict the depth of the frost layer or area of soil containing ice. The area below the frost layer serves as a refuge for animal and plant life that call it home. In turn, thinner frost layers provide more room for organisms to live during the winter.

Soils that are well insulated tend to thaw more quickly in the spring time than their bare counterparts. Thawed soils are far better at taking in and storing meltwater than frozen soils. If snow melts before the soil has thawed, the soil cannot absorb the water. Instead, ponds of water will form or it will run off the surface of the land, leading to water erosion.

Organic matter also plays a role in insulating soils, holding in heat stored below ground during the warmer months. The organic matter can be mulch or compost. Fields that have residue left over on top can help provide more insulation for the ground under the snow.

Soil microbes-(bacteria and fungi that live in the soil year-round) can be active in winter months. Once spring comes, the microbes become even more active. This ensures the biodiversity that is so important to keep plants and animal life healthy.

[Wisconsin Pollinators- What Happens to Soil in Winter?](#)

Look at the pictures and you will notice the erosion from soil particles blowing around. The one picture with corn stubble shows an even layer of snow cover across the field providing moisture in the spring and providing cover to protect the ground from soil particles flying around. The other pictures provide a look at erosion during the winter month. Tree belts and alfalfa catching soil and an open field that has been tilled is bare with not much protection and the snow looks dirty from the winds picking up the soil and moving it. The problem is that sediment and other nutrient particles will be deposited in other areas including waterways that lead into the tributaries and other water bodies. The sediment and other nutrients can effect the rivers and lakes that can harm aquatic species and provide nutrients for harmful algae blooms.



# Soil Movement

Through out the next few newsletters we are going to identify and go into depth of The Five Principles of Soil Health. If you are able to adapt and start moving toward installing these principles your soil will slowly start improving and seeing the benefits.

The soil Health foundation consists of five principles which are: soil armor, minimizing soil disturbance, plant diversity, continual live plant/root, and livestock integration.

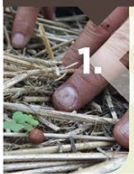
Soil armor or cover, provides numerous benefits for cropland, rangeland, hayland, gardens, orchards, road ditches, and more. Let's take a closer look at some of the soil armor benefits:

- Controlling Wind and Water Erosion—armor protects soil from wind and /or water as it moves across the soil surface. It holds the soil in place along with valuable soil organic matter and nutrients.
- Evaporation Rates—armor reduces the soil evaporation rates, keeping more moisture available for plant use.
- Soil Temperatures—armor helps soils maintain a more moderate range of soil temperatures, keeping soil warmer in cold weather, and cooler in hot weather. Like us, the soil food web functions best when soil temperatures are moderate.
- Compaction— rainfall on bare soils is one cause of soil compaction. When rainfall hits the armor instead of bare soil, much of the raindrop energy is dissipated.
- Suppresses Weed Growth—limits the amount of sunlight available to weed seedlings.
- Habitat—provides a protective habitat for the soil food web's surface dwellers.

NRCS Photo Caption: The picture below shows the residual armor after corn planting was completed at Menoken Farm, located just east of Bismarck, ND. At a minimum, the armor should last until the new crop is fully canopied. How quickly this residue decomposes depends on the carbon/nitrogen ratio of the residue. High carbon residue (eg: wheat at 80:1) decomposes much slower than low carbon residue (eg:pea at 29:1). When we supply the soil surface with a diversity of residues from one year to the next, we can achieve the benefits of soil armor and still maintain a fully functioning nutrient cycle.



## The Five Principles Of Soil Health



1.

**SOIL COVER: Keep plant residues on the soil surface.** Look down, what percentage of your soil is protected by residue? Erosion needs to be minimized before you can start building soil health.



2.

**LIMITED DISTURBANCE: Minimize tillage as much as possible.** You will start building soil aggregates, pore spaces, soil biology, and organic matter.



3.

**LIVING ROOTS: Keep plants growing throughout the year to feed the soil.** Cover crops can add carbon to the soil, providing a great food source for micro-organisms. Start small to find the best fit for your operation.



4.

**DIVERSITY: Try to mimic nature.** Use cool and warm season grasses and broad leaf plants as much as possible, with three or more crops and cover crops in rotation. Grassland and cropland plant diversity increases soil and animal health.



5.

**INTEGRATING LIVESTOCK:** Fall/winter grazing of cover crops and crop residue increases livestock's plane of nutrition at a time when pasture forage quality can be low, increases the soil biological activity on cropland, and improves nutrient cycling. Proper grassland management improves soil health.

Information was from the NRCS/USDA website and article written by Jay Fuhrer, NRCS Soil Health Specialist.

# Stutsman County Livestock Manure Management Program Phase 2 Update

The primary goal for the project is to limit runoff from feedlot systems into nearby tributaries, rivers or lakes. Reducing the amount of nutrients that make it into water bodies. Excess nutrient in lakes can have a harmful affect on aquatic life species. Water bodies can be affected in many ways; dissolved oxygen levels not meeting standards to sustain aquatic life and harmful algae bloom from excess phosphorus levels in lakes that can kill or make animals and humans sick. This program focuses on feeding cattle out on the crop or hayland and limiting them in a feedlot type system. This is the last year for this Program, stop in or give us a call to see how we can help your operation. 701-252-1920 ext. 3 ask for Dustin.

Here are some accomplishments from throughout the project. One Ag waste system was implemented and we have helped 14 other partial manure management systems.

Practice	Amount
Cover Crops	1496 ac
Fencing	125,931ft
Pasture Planting	140ac
Pipelines	11,282 ft
Rural Water hookup	3



Practice	Amount
Trough and tank	14
Well	3
Waste Management system	1
Portable Windbreaks	2,256 ft
Waste Utilization	5,000 tons



Soil Health=Nutrition?

Darin Hirschhorn, District Conservationist

I recently read a study that tested nutrient values of crops and animals from different farms and ranches throughout the United States. They tested nutrient values from operations that use conventional farming practices and ones that use conservation practices. They called it regenerative agriculture and some of the practices used were no till, cover crops and limited uses of synthetic chemicals and fertilizers. The conservation farms basically farmed to increase their soil health. The reason I read it was because one of the farms they used was from the Bismarck area. I have read and heard some lectures about how our food nutrient value has declined in the last 50 or so years. A lot of the produce we eat does not hold the same (less) nutrients then the stuff we bought at the store in the 50s.

In the study they tested vegetables, different crops and beef and pork carcasses for different vitamins and nutrients. Without going into a lot of detail, they found a lot of nutrients that were higher in the produce from conservation farms then the conventional farms. The authors of the study attributed the increase in nutrients to better health in the soil with higher organic matter, higher carbon and higher microbial activity. This study was small, but it did show a correlation between soil health practices and nutrient values in food. Which I think should lead to more studies on this subject to give us more information to make our food choices.

Here is the article that I referenced:

**Soil health and nutrient density: preliminary comparison of regenerative and conventional farming. PeerJ 10:e12848 DOI 10.7717/peerj.12848**

## High Tunnel Systems

The NRCS has an Environmental Quality Incentives Program (EQIP) sign-up going on right now for cost share of a High Tunnel System (if applicable and selected for funding through the ranking process). The goal is to assist producers to extend the growing season for high value crops in an environmentally safe manner. **Sign up ends Friday, March 4th, 2022.**



Photos by Amanda Brandt of High Tunnel Systems.



## General CRP Sign-Up



On January 26, 2022 USDA announced that the next general CRP signup (signup 58) will be held **from January 31, 2022 through March 11, 2022**. Land that is not currently enrolled in CRP may be offered for enrollment during general CRP signup 58. In addition, a CRP participant with a contract scheduled to expire on September 30, 2022, may submit an offer for land enrolled under that contract that, if accepted, will have a contract beginning on October 1, 2022. Contact the Local Farm Service Agency (FSA) for mor information at 701-252-1920 ext. 2.



## Now taking applications:

The Northern Plains Water Quality and Wildlife Program emerged from a North Dakota concept called the Working Wetlands program. Farmers and conservation leaders worked together to find a new approach to conserve small wetlands in working cropland. The North Dakota project was instrumental in guiding the development of the new NRCS program.

**NRCS is now taking applications until Friday, April 1, 2022. Give the office a call at 701-252-1920 ext. 3. if you are interested in applying for this program.**

# Help Wanted

The Stutsman County SCD will be looking for seasonal workers to work from early May thru July. We will be taking applications in April. You may contact us by stopping by the office or giving us a call 701-252-1920 ext. 3.

*Skills necessary to perform the job include but are not limited to:*

- ◇ Lifting bundles of trees and rolls of weed barrier fabric
- ◇ Riding tree planter and fabric machine
- ◇ Being able to work longer days

## District Activities

- ◇ In January the district had a booth at the Winter Ag and Construction Expo.
- ◇ April we will have a booth at the Home and Garden Show, come find us and see what we are up to
- ◇ At the end of February beginning March we are visiting all 5th graders in Jamestown to talk about soil and water quality.
- ◇ September the District held Eco-ed for all 6th graders in Stutsman County 162 students showed up.

## Outdoor Heritage Funding for Tree Plantings

There is a sign up for trees through Outdoor Heritage Fund, the deadline to have the applications in is **March 11th, 2022.**

The trees will be planted in 2023. Plan for this sign up is to be able to have your plan accepted by August and ready to go for 2023.

If you are interested in a tree planting stop in or call today to get an appointment set up. 701-252-1920 ext. 3

Hi everyone! My name is Kade Thompson. I am the new district technician for the Stutsman County Soil Conservation District. I grew up in Idaho Falls, Idaho and moved to North Dakota in 2015 after receiving a wrestling scholarship to the University of Jamestown. I graduated with a Biology degree in 2020. I currently live in Jamestown with my wife, Teagan and dog, Hilda. Outside of work, I enjoy hunting, fishing, coaching wrestling and spending time with my family. I'm looking forward to this opportunity to be a part of the conservation efforts in my community.





Stutsman County Soil Conservation District

1301 Business Loop East

Jamestown, ND 58401-5946

All programs and services of the Stutsman County Soil Conservation District are offered on a non-discriminatory basis, without regard to race, color, national origin, religion, sex, age or handicap. In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

## Board & Staff Members

### Stutsman SCD

#### Board of Supervisors

- ◆ Robert Hess, Jud
- ◆ Bernie Wanzek, Courtenay
- ◆ Cody Kreft, Streeter
- ◆ Gloria Jones, Jamestown
- ◆ Bob Martin, Jamestown

Find us on the web at:  
[www.stutsmanscd.net](http://www.stutsmanscd.net)

We are located in the  
USDA Service Center  
1301 Business Loop East  
Jamestown, ND 58401  
701-252-1920 ext. 3

### NRCS

**Darin Hirschhorn**

District Conservationist

**Marc Murdoff**

Soil Conservationist

### Soil Conservation District

**Gina Olson**

District Manager

**Kade Thompson**

District Technician

**Dustin Krueger**

319 Watershed Coordinator

**Cody Hoggarth**

Farm Bill Specialist

## Tree Planting!



It's never too early to start talking about tree plantings, stop in today!

The District was formed to assist people in Stutsman County through the District Mission:

*"To take available technical, financial, and educational resources, whatever their source, and focus or coordinate them so that they meet the needs of the local land user for conservation of soil, water, and related resources."*