South Dakota Soil Health Coalition

Soil Visions

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Inside this issue:

Whether the Weather

As spring arrived like a lion, many are dealing with additional hurdles to overcome.

Flooded soils create significant challenges for agricultural lands. As the water recedes on otherwise productive soils, steps to bring the area to a plant able state include:

- **Remove sediment and debris barriers to crop production** *If there are drifts of debris or residue, removal can begin after the field dries and firms up .*
- **Repair the physical damage to the soil.** *Erosion occurs when soil is carried away with the flood water. If gullies or gaps are evident in the field contact your local USDA NRCS office, conservation district, or SDSHC technician for guidance with a recovery plan.*
- **Stimulate soil microbial activity** *Arbuscular mycorrhizae(AM) are symbiotic fungi that grow on and in the plant roots. It is important to have something growing on this flooded ground as soon as possible. Anaerobic soil conditions followed by lengthy periods without living roots to support the mycorrhizae will result in lower fungal population. They will come back but you will likely suffer yield loss until they re-populate. Consider planting a covercrop with a diversified mix including plants highly associated with mycorrhizae.*

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The Land is Our Legacy:

Mitchell Farmers Reflect on Business of Farming & Building Soil Health

Craig and Gene Stehly

Brothers, Gene and Craig say as far back as they can document, the Stehly family has farmed. "In fact, we have the deed for the quarter our great-great-grandfather homesteaded in South Dakota, signed by Grover Cleveland in 1865," Gene explains.

However, when the men reflect on their farming practices and business philosophy, the brothers don't focus on traditions or conventional practices, instead for nearly 40 years, they have focused on building their soils' health and in return, their farm's profitability.

"Soil health isn't just one thing. It's a system approach, combining no-till, crop rotation, cover crops and planting native grass seed into our sensitive areas – in our wetlands, and our salinity areas along our watersheds to try to make our land not only profitable but sustainable for the future," Craig explains. Read the entire article and check out their video profile.

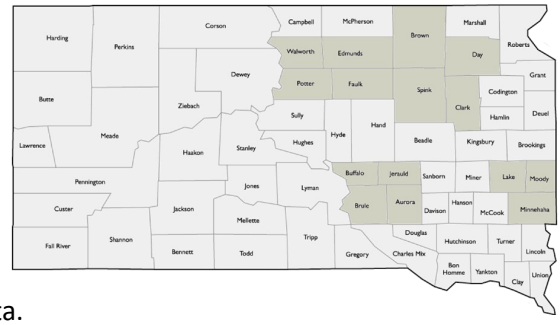
In a cooperative effort with SD Conservation Districts, SD Soil Health Coalition, SD Grassland Coalition, and USDA NRCS, Voices For Soil Health have been established to provide a producers experience on soil health practices.

The South Dakota Voices for Soil Health are part of USDA NRCS' Earth Team volunteer network. These people are stewards of their natural resources. As a Voice for Soil Health, they actively advocate for soil health and were recently nominated and awarded the Chief's Cup National Volunteer Service Award.

Soil Health News

EVERY ACRE COUNTS
production practices for greater profitability

As South Dakota farmers struggle to be profitable in today's depressed farm economy. Options for working lands are being developed for producers. Sponsors of state level project, Every Acre Counts, joined forces for the betterment of agriculture in South Dakota. Most farms contain marginal lands, where the production of agricultural crops using conventional methods is challenging and they require additional expenses.



These marginal areas may include wetlands, saline/sodic soils, or eroded soils where conventional farming often shows economic losses. The newly funded program is currently focusing on four areas, with the future goal to reach other parts of South Dakota.

Program Directors, Anthony Bly, Soil Field Specialist and Matthew Diersen, Risk/Business Management Specialist for SDSU Extension, lead this new venture and are available for additional information by emailing anthony.bly@sdstate.edu or matthew.diersen@sdstate.edu.

2019 Soil Health Conference

South Dakota Soil Health Coalition hosted their third annual Soil Health Conference January 22-23, 2019 on the campus of South Dakota State University in Brookings. Attendees traveled from throughout the upper Midwest to learn about opportunities to improve soil health. Speakers Allen Williams, Keith Berns, and Dwayne Beck provided motivational insight throughout the conference. Did you miss the event or need to refresh your memory on content? Check out all three presentations plus the producer panel on the videos page of our website.. **sdsoilhealthcoalition.org**

The 2019 winners of the "Friend of Soil Health" award were Ruth Beck, South Dakota State University (SDSU) Extension Agronomy Field Specialist, and Dwayne Beck, Dakota Lakes Research Farm Manager. Chosen for their many, many years of work in education and research, they have impacted countless numbers of individuals. "The Becks will always have a legacy of promoting the adoption of no-till, diversity, and cover crops, for the betterment of the soils not only in the United States but worldwide" Levi Neuharth, SDSHC Board Member

The SDSHC "Legacy Award" was created to honor past board member Al Miron who passed away suddenly in November of 2017. He was often heard imparting the wisdom that "the best place to stop ero-sion is at the top of the hill, not at the bottom" and left behind a life long legacy of conservation and commitment to increasing soil health. Craig and Gene Stehly were honored as the first recipients of this award for their work to improve soil health and water quality on their farm near Mitchell, SD. All four of these award winners are making a real difference both within the State of South Dakota and beyond. **Mark your calendar for January 15-16, 2020!**

Soil Health News

Growing Soil with Continual Live Plant/Root

Our perennial grasslands consist of cool season grasses, warm season grasses, and flowering forbs. Consequently, adaptable plants are able to grow during the cool spring and fall weather, as well as the summer heat, allowing for a continual live plant feeding carbon exudates within the soil food web during the entire growing season.

Our cropland systems typically grow cool or warm season annual cash crops, which have a dormant period before planting and/or after harvest. Cover crops are able to fill the dormant period and provide the missing live root exudate, which is the primary food source for the soil food web. Cover crops may be incorporated into a cropping system as annuals, biennials, or perennials. Starting on a small scale allows farmers and ranchers to find the best fit for their operation. Keeping continual live plant roots feeding your soil micro-organisms provides one step to healthy soil. We don't grow plants. We grow soil, the soil grows plants.

Soil Health Coalition Providing Resources

Providing an additional link for producers and educators was determined a priority by the SD Soil Health Coalition. SDSHC proudly introduces Jamie Chalcraft, Pierre and Jim Clendenin, Watertown. Jamie Chalcraft, Pierre native and a proud mom of Curtis, my six-year old son. I received my degree in Agronomy from SDSU with minors in soil science and pest management. My passion for sustaining the family farm and rural life continued to grow through the years. With that came my passion for soil health. Soil is arguably agriculture's greatest resource. I strive to provide quality service to our farmers through education and outreach and my work as a soil health technician. I am so looking forward to working with many of you and helping you to be successful by thinking outside the box on your family farm or ranch.

Jim Clendenin grew up near Watertown SD. After graduating from SDSU I taught in Morris, MN and LATI in Watertown until my retirement in 2018. While at LATI I helped to start an Agronomic Demonstration Center emphasizing no till practices. Managing this farm became one of my duties and it provided an opportunity to learn about good soil health practices as a result of work. This farm was one of my great joys while at LATI, we could take students out to the farm and show them what we were discussing in class. My students and I had many friendly "discussions" about no till and tillage along the way and hopefully some of the concepts taught are productive for my former students today. Helping students create careers was also a source of great pride and satisfaction as I progressed through my career at LATI

I am now working with the Soil Health Coalition which is made up of people dedicated to taking care of the soil and preserving it for the next generation. These positions were made possible through a combination of grants awarded to the Soil Health Coalition .

Stuck in a Rut?
–how to deal with field ruts this spring!

By Sara Bauder, Anthony Bly, and Eric Barsness

It is no secret that this past fall and seemingly never-ending winter have caused many hardships for farmers. As spring approaches, planting comes to mind and for many, this means deciding what to do about last fall's field ruts. There is no easy fix, but there are ways to mitigate the issues associated with ruts before planting begins.

Photo : Anthony Bly

In many cases, people assume that deep tillage is the best 'fix' for ruts and compaction, but in this case deep tillage may be more of the culprit than the cure. When soils experience compaction like we see in wheel tracks, a lasting impact is made, often resulting in a few inches to several feet of compaction in those areas. The degree of compaction depends on many factors, with one being how saturated the soils where when harvest occurred, as the number of water versus air filled pore spaces in the soil can change the level of compaction. Deep ruts are usually noticed first, but keep in mind that even shallow ruts of a few inches can cause issues with optimal seed depth during planting if they exceed planting depth. Regardless, when running a 20+ ton loaded combine or grain cart over wet soils, it is not surprising that compaction of any kind may happen. It is best to survey your fields and determine if your rutted areas are severe enough to effect planting before taking action.

Allow Soils to Dry

Before hooking up the tillage equipment, it is important to allow soils to dry. Attempting to repair ruts while soils are still very wet may only complicate matters. This act of 'repairing ruts' will work best when waiting for top soil (top 2-4 inches) to dry adequately prior to planting to avoid making issues worse with smeared, compacted soil surfaces. Essentially, if you would not plant into the soils, it is not dry enough to repair ruts.

Another helpful option for some growers may be to allow any winter annual cover crops or volunteer crops to grow up until you prepare for planting, and then chemically burn down the growing plants before no-tilling your cash crop. This can help producers looking to dry out saturated soils prior to planting this spring; however, careful management of these types of practices is needed for success. For more information on cover crops see the SD NRCS Cover Crops Resource page.

Choose Target Areas to Lightly Till

The key to repairing ruts is targeting specific areas rather than taking a pass at the entire field; essentially, make the field plantable without full width tillage. Ideally, we should shallowly fill in the areas where ruts occurred, rather than turning over the entire soil layer down to the plow pan. This type of deep tillage will reach back down into soil with excessive moisture and may cause even more compaction damage in the end. Keep in mind, that when filling in ruts, there is likely nothing growing in your soils so you are solely relying on evaporation to dry out these soils, therefore pulling up additional moisture is not going to help. Simply using a light tillage pass such as a vertical tillage tool, light disk, soil finisher, or harrow (in shallow rut cases) is going to be most ideal to fill in ruts and prevent further compaction as best as possible. In some cases, with very compacted ruts, multiple tillage passes may be needed with time (at least 2 weeks) in-between passes for drying before tilling slightly deeper than the previous pass if needed; see Figure 1 as an example of a multiple tillage pass repair. Just level the surface to make planting possible this spring and look towards dealing with any major compaction issues next fall.

Preventative Actions

Although we cannot change what happened last fall, some options can help avoid soil compaction and improve soil structure moving forward. In many southeastern SD fields last fall, it became apparent that some producers who had established no-till fields and followed the main principles of healthy soils were able to enter fields earlier and had minimal to no issue with field ruts as compared to conventionally tilled neighbors.

the disruption of soil particles. Moving in the direction of no-till can help producers build soil structure, giving soils a stronger shear strength and structure. These properties allow producers to get out into fields faster during wet times. However, these changes do not happen overnight and are an investment in the soil. There are many additional soil health principles that, when added to minimal soil disturbance, can greatly improve the health and productivity of soils. For more information on these topics, see the SD Soil Health Coalition Technical Resources

Master Gardener Credits No-till Gardening with Increased Soil Health and Decreased Weeds

For those who know her as the Garden Lady, it may come as a surprise to learn Donna Adrian didn't always enjoy gardening. In fact, "chore" is the nicest word she used to use, to describe the task. "My parents always had a big garden, so I grew up gardening. It was a lot of hard work hoeing the hard ground to get rid of weeds," she explains. When I first put in my garden, my soil was silty clay, hard as a rock and full of weeds," she says.

Today, a small garden trowel quickly reveals a difference – soft, crumbly and rich, black soil, full of Adrian's favorite invertebrate – earthworms. As for weeds? They are few and far between. And, it's not because Adrian spends time hoeing. *"My hoe handle broke 20-years ago and I've never fixed it," she admits.*

"Working with nature and finding ways to take care of the soil instead of damaging it, makes us gardeners stewards of the land," Adrian says.

Access Full Article Here

Weedy or compacted soil an issue?
Donna Adrian recommends the lasagna method. Layering cardboard, top soil and grass clippings atop weedy or compact ground, the lasagna method allows gardeners to begin no-till gardening quickly, with little effort or investment.

Sign up Today !!
2019 Soil Health School
September 4-6

Plants are the most powerful tool for improving soil health!

Graduates testimonial: Provided me necessary information in a way I could relate it to my operation to improve my Soil Health and bottom line!

Classroom and Field based education!

Seeing is believing event!

Local and Midwest Experts!

We aren't growing plants, we are growing soil. The soil grows plants!!

Calendar Of Events:

April 7th-9th SD FFA, 2019 State Convention,

June 4th-5th SD Professional & Youth Range Camp Sturgis

June 5th Faulkton Ag Women's Day

June 7th-8th Birds, At Home On The Range Tour, Hansen Ranch

June 10th-13th NCSS National Conference, Charting The Future Of Soil & Ecological Sciences

June 18th-19th Soils Days & Rangeland Days Redfield

July 10th Bus Tour

September 4th-6th SDSHC Soil Health School, Salem

September 21st AgriCulture on the Square, Rapid City

October 10th-11th SD Women in Ag Conference, Deadwood

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Warm season grass crop species including sudan-grass, millet, and sorghums are highly associated with mycorrhizae as well as flax. Options are available when developing a diversified plan.

- Limit indirect impacts like soil crusting.

As the wet areas dry, you can manage them. The best case scenario is a well managed long-term no-till field with high soil water infiltration capability and stubble or stalks that are mostly intact and standing. Give these adequate time and they will dry out fine.

Monitor pasture and range land ensuring additional sediment or debris build up does not impact the grass stand.

Each field and farm will endure varying degree of aftermath effects from the flooding depending on the soil structure and amount of flooding.

Disaster Relief Fund

SD Conservation Districts are collecting funds and items to send to Nebraska Farmers and Ranchers.

Donations can be sent to **"Disaster Relief"**

c/o Hamlin County Conservation District,
PO Box 165,
Hayti, SD 57241

Deadline to submit is
April 20th
All donation's will be sent to
Nebraska Cattlemen's Association
100% of collected will go to producers affected by the flooding

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