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Cover Crop usage in South Dakota: Impact on Economic Profitability

Is planting cover crops and grazing them profitable? When producers are weighing the pros and cons of cover crops, one hurdle brought up ... economics. During these tight bottom line times, spending additional dollars without knowing the benefits deters producers from taking that next step.

South Dakota State University conducted a survey of farmers in thirty-four eastern counties in 2018. Tong Wang, SDSU Extension Economic Specialist described the results of the six hundred fifteen responses returned at a presentation at Dakotafest in Mitchell.  Cont.  Pg 6

FFA Regional Land Judging Winners Receive Scholarships

Bath (October, 2018) – The South Dakota FFA Foundation is proud to announce the recipients of four $100 scholarships for students placing first in one of the four SD Regional Land Evaluation Competitions this fall. 2018 scholarship recipients are: Jalen King Winner; Hunter Eide, Gettysburg; Garett Warkenthien, Willow Lake; Kayle Lauck, McCook Central.

The scholarships are designed to encourage and reward students’ accomplishments in the field of land & soil management. Scholarships are made possible by a contribution to the SD FFA Foundation from the South Dakota Soil Health Coalition. "The South Dakota Soil Health Coalition is excited to be partnering with South Dakota FFA to help inform young people about the dramatic effect management has on water infiltration, microbial activity and production. The SDSHC continues to provide the soil health bucket to vocational agriculture departments which includes the needed tools and curriculum that assist teachers in educating their students about the importance of soil structure and health. We believe the future of agriculture depends on the next generation." said Dennis Hoyle, Chairman of the South Dakota Soil Health Coalition.

The SD FFA Land Judging contest, hosted by the USDA Natural Resources Conservation Service, SDSU Extension, SD Conservation Districts and the US Forest Service, is designed to emphasize the importance of soils and their limitations. Students evaluate soil texture, depth, past erosion, slope, and stoniness, estimate permeability and surface runoff, list the limiting properties, and determine the land capability class. They interpret their measurements to make intelligent land management practices, for both agricultural and urban uses. Many of the properties important for agricultural uses are also relevant for urban/rural uses, such as building, sewage systems, and lagoons. Students gain knowledge that will make them better agriculturalists, homeowners, and construction workers.

The South Dakota Soil Health Coalition is proud to support Agricultural Education and the FFA's mission to make a difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.  For more information about the South Dakota FFA Foundation and South Dakota's FFA programs, visit www.sdffa.foundation.org.
Three Day Soil Health School Held at Stiefvater Farm
Near Salem, SD

SOUTH DAKOTA SOIL HEALTH COALITION (SDSHC), Pierre, S.D. September 26, 2018 - The 2018 Soil Health School, held near Salem, SD, with hosts Kurt and Kathy Stiefvater drew a record number of participants and included soil health and agricultural experts from across the region. This annual event is designed to give participants a comprehensive understanding of the five basic principles of soil health as well as practical ways they can apply them on their farm or ranch. The school includes both classroom style presentations as well as hands on demonstrations out in the field where they can begin applying the knowledge presented during informational sessions.

“We are glad to have hosted the Soil Health School in sharing our incorporation of soil health principles and engaging the participants in hands on demonstrations for application to their own farming situations.” Said Kurt and Kathy when reflecting on the event. As hosts for this year’s group of 40 participants, September 5-7, 2018, the Stiefvater family provided both an interactive classroom setting as well as many invaluable resources to the participants. Their farm includes both a cow-calf livestock operation as well as a diverse rotation of corn, soybeans, alfalfa, and oats. Additionally, they utilize no-till as well as plant cover crops with the goal of increasing plant, animal, and soil health as well as conserving and retaining moisture. With all these practices present on one single operation participants were able to experience firsthand how these practices work together across the landscape.

The school began on Wednesday with several sessions centered around the basics of how soils function, soil health concepts, as well as information on agronomics, cover crops, no-till, and a producer panel. Outdoor activities the first day included a grazing exercise where participants learn how to determine the correct stocking rate for a cover crop plot as well as a tour of cover crop plots seeded earlier in the year. Livestock were subsequently turned out into the paddocks created by the participants and their grazing was observed and paddocks adjusted throughout the remainder of the school.

Thursday and Friday included informational sessions on crop rotational diversity, Precision Ag utilizing soils, temporary fencing options, soil biology, beneficial insects, soil salinity, soil carbon, the economics of soil health, no-till equipment options and additional presentations on cover crops. Participants witnessed a rainfall simulator, slake test, soil structure demonstration utilizing latex, participated in a soil pit exercise, as well as assisted in retrieving several pairs of men’s cotton underwear which had been buried in different areas of the farm. This “Tighty Whitey” demonstration shows visually,

USDA Releases Standard Indicators and Laboratory Procedures to Assess Soil Health for Public Comment

Indicators will provide consistency in evaluating soil health across the nation

September 18, 2018, WASHINGTON – The U.S. Department of Agriculture (USDA) is releasing a set of standard indicators and associated laboratory procedures to assess soil health. These measures – recommended through a multi-organizational collaboration among soil health experts in the federal, university, public and private sectors – are being developed to improve conservation planning and implementation across the United States.

The USDA's Natural Resources Conservation Service (NRCS) has posted a draft Technical Note detailing these soil health indicators and associated laboratory methods in the Federal Register for public review and comment. NRCS is accepting comments on this Technical Note through December 13, 2018.
the affect that different management has on soil biological activity.

When asked about his impression of the School, participant Austin Carlson expressed that for him attending “was almost life changing, I thoroughly enjoyed the experience and fully believe that the concepts that are being brought forth by the Coalition are the way forward for production agriculture.” Roughly twenty speakers and staff helped to make the 2018 Soil Health School a success and planning for the 2019 school has begun. Visit www.sdsoilhealthcoalition.org for additional information on the Five Principles of Soil Health, next year’s Soil Health School as well as to view a “Profiles In Soil Health” video featuring the Stiefvater family.

**Feed Your Soil, Livestock and Pheasants With Season-Long Cover Crops**

By Ben Lardy Pheasants Forever Biologist

Sunflowers, millet, radishes, flax and even a little buckwheat are just a handful of cover crop species that are growing on the Ristau Farm west of Warner, S.D. This spring, Dave Ristau and his brother Jim felt that production on their cropland had plateaued due to a lack of biological activity in their soils. Their solution? A 30-species blend of cover crops planted this summer to feed the soil while providing additional forage for their livestock.

Recently, after taking a quick walk through the jungle of cover, it was clear that nature was responding. We saw dozens of pollinator species visiting blossoms from radishes, sunflowers and vetch, while a variety of insects were crawling in the understory.

The broadleaf cover crops that provide food for insects above ground also provide important habitat for below-ground microorganisms. One of the most important, mycorrhizal fungi, creates a symbiotic relationship with many crop species. Although it cannot be seen with the naked eye, the fungi is a critical component of healthy soils by making nutrients available to plant roots. The network of fungi being built this year with the cover crop will aid next year’s cash crop with more efficient nutrient uptake.

Although the Ristau’s are farmers first, they’re also avid pheasant hunters. It’s no coincidence that the season-long cover crop also provides 60 acres of prime bird habitat come fall. Even better, the open understory and dense canopy provides ideal brood-rearing habitat for pheasant chicks. Many of the grain species are already putting on seed heads that will provide a food source well into the fall.

As the Ristau’s graze their cattle through the cover crop, they are resting pastures that will provide nesting habitat the following spring. The system provides several benefits to resident wildlife, starting in the nesting season all the way into winter.

There aren’t many situations where an agricultural practice can benefit pollinators, pheasants, soil health and future cash crops all in the same field. As a wildlife biologist it’s difficult to not get excited about the expanded use of season-long covers across the state, and they remain an intriguing option for producers who feel their soil may be stuck in a rut.
Newly Available Resources and Projects

New Technology for Landowners and Resource Managers Revolutionizes Rangeland Monitoring

America’s vast western grazing lands produce food for the nation, recreation revenues for local communities, and habitat for wildlife. Producers often manage large swaths of rangelands, making it a challenge to track how vegetation has fared over time.

To meet this challenge, the Rangeland Analysis Platform (RAP) provides the first-ever vegetation cover maps for rangelands from the Great Plains to the Pacific Ocean.

Created by the University of Montana in partnership with USDA and U.S. Department of Interior (DOI), this easy-to-use technology provides trends in rangeland resources from 1984 to present at the ranch, county, and watershed scales. “I’ve waited my whole career for this kind of tool,” says Shane Green, USDA Natural Resources Conservation Service (NRCS) range management specialist in Utah. “It provides the context for landscape planning that’s been lacking in the rangeland profession.”

The RAP revolutionizes monitoring because it provides a view of rangeland resources at an unprecedented blend of time, space, and scale. This is accomplished through field data, satellite imagery, and the cloud-based computing power of Google Earth Engine.

The app is available for free at rangelands.app. Access Full Article Here

SDSU Seeks Farmers & Ranchers To Participate In The Soil Resiliency & Crop Insurance Project

Researchers with the South Dakota Agricultural Experiment Station at SDSU are working with SDSU Extension, faculty and staff on a study to help determine the long-term economic benefits of conservation practices, such as no-till, cover crops and diverse crop rotation, to South Dakota’s agriculture producers and citizens in general.

They need 100 South Dakota producers to participate in the study. $900 worth of soil sampling conducted. This is a three-year study, which will begin with soil sampling spring 2019. Each year of the study, soil health and soil microbial health tests will be completed.

Study participants will receive approximately $900 worth of soil data from the field enrolled in the project. The labor for collecting soil samples will be completed by SDSU faculty or staff. Landowners are welcome to be present when samples are taken, but their presence is not required. Conventional as well as conservation practice adopters are needed.

To learn more about this study or to sign up, contact Gessner at 605-782-3290 or heather.gessner@sdstate.edu.
How to Restore and Maintain Soil Health

In the preface, Jon Stika relays that *The Soil Owner’s Manual* was written out of both compassion and frustration. Stika highlighted the content as he presented at South Dakota Association of Conservation District’s Convention, September 17th in Pierre. “Compassion for the farmers, ranchers, gardeners and others who make a living from the soil, who continue to struggle with all the symptoms of dysfunctional soil. Frustration with the status quo of agriculture, focused on yield with little or no understanding of how the soil is designed to function. There is no system of production, or soil amendment, that will fix what is wrong with your soil. Only your understanding of how the soil functions will fix what ails your soil. You must become a student of what makes soil healthy. It’s that simple and there are no shortcuts.”

Stika, one of the founders of the soil health movement, explained the importance or necessity of everyone to realize “It’s Alive, Soil is a Habitat”. Stop treating the symptoms of dysfunctional soil; but look how to solve the problem of dysfunctional soil. Stika looking around the room asked for answers ‘including what functions do you expect your soil to perform?’ Obviously growing crops jumps to the top of the page with specifically infiltrating water and supplying nutrients.

Biology of the soil is key in the understanding of how is healthy soil supposed to function. Microbes must be well fed in order to make good soil aggregates for the habitat and storage areas of the living organisms. Managing for soil health and knowing the most limiting chemical element in the soil is carbon. Carbon is the currency of the soil. Energy from the Sun is carried on the backs of carbon atoms. This energy builds and sustains the soil and everything that lives in and on it. Seeing progressing differences below, as the rotation of wheat-fallow to diverse crops and cover crops shows how management decisions affect your soil bank.

Another point Stika highlighted, how do I restore the health of my soil? Create the most favorable habitat possible for the soil food web by utilizing the principles of soil health. Mimic nature, there is no waste in nature. Closing the session with encouraging those in attendance to

* determine problems by asking “why”
* symptoms are manifestations of problems,
* goal is a desired condition,
* be aware tools can be applied to achieve desired condition or to make a problem worse.
Continued from page 1....

Wang learned that if producers have patience and gain experience they are successful. Producers who have grown covers for six to ten years said labor is not an issue while those with no experience reported they thought cover crops would be a lot of extra work. Cover crop termination another challenge seen by those without experience, but for those who have been growing them again didn’t have that concern. Additional outcomes from the survey showed, producers with five plus years of growing cover crops were seeing the yield bumps and using less inputs.

Wang’s partner study based on data from Southeast Research Farm compared the average cost of planting cover crops for grazing versus buying forage to feed the livestock brought positive results for soil health. A partial budget analysis indicated that utilizing cover crops for a grazing practice will increase the first-year economic profit by $17.23/ac and increase second year economic profit by $43.61/acre with long term economic profit increasing even more due to increased cash crop yield and reduce nitrogen need.

Wang, Anthony Bly, and Jack Davis are continuing the research on economics of soil health utilizing Southeast Research farm and producers interested in sharing their experiences. Contact Tong Wang at tong.wang@sdsu.edu or jack.davis@sdsu.edu for further information on economic studies on soil health practices in South Dakota.

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**Calendar Of Events:**

**October 16-18th**

Introduction To Holistic Management: Managing Land, Wealth, & People For Success—Bowman, ND

**November 7-8th**

Soil Health Summit: Regenerating Soil With Diversity —Bismarck, ND

**November 27-28th**

Ag Horizons—Pierre, SD

**November 27-29th**

SD Cattlemen’s—Huron, SD

**January 22-23rd**

SD Soil Health Coalition Annual Meeting

Brookings, SDSU Club 71