



Newsletter

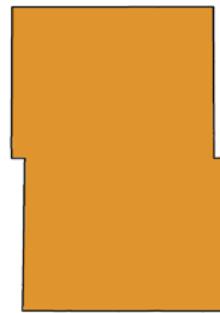
Volume 13 Issue 4
December 2018

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For more info
and updates....

Kidder County



**Soil
Conservation
District**

You're Invited!!

CO-ED

Kidder County Ag Night

hosted by

Kidder County Soil Conservation District

Tuesday, February 5th at 6:00 p.m.

Steele Community Center

\$5 Admission at the door

Join us for supper, conservation award recognition, education, entertainment, and door prizes.

RSVP by January 25th.

Call 701.475.2241 ext. 3

Email Cortney.Kartes@nd.nacdnet.net

Or find us on Facebook @kiddercountyscd

Season's Greetings!



JUSTIN OLSON

CURT HAIBECK

ALDEN FITTERER

JACK SPAH

BETH LEIER

2018 Achievement Winners



planted many trees on difficult soils to protect the farmstead and livestock. Through their continuous efforts, they have earned the 2018 Achievement Award. On November 19th, David and Laura attended the Achievement Banquet hosted at the State Convention of the North Dakota Association of Soil Conservation Districts in Bismarck, ND. They will be recognized again at our upcoming **Kidder County Ag Night** in February. We would like to express our appreciation to David and Laura for being active stewards of the land.

The Kidder County SCD would like to present David & Laura Remmick and family with the 2018 Achievement Award. David and his family live on the family farm North of Robinson where they farm along with his Grandpa Marvin and Grandma Nadine Remmick. Together they raise small grains, livestock, forage and cover crops in a minimal tillage system. They have a large herd of Simmental/Angus cross cattle. Remmick's have installed wells, tanks, pipelines and a solar pump system along with cross fencing to improve rangeland. Many acres of expiring CRP have also been fenced for grazing. David has



Avery, Laura, David & Carter

Our Water Keeping it Clean

North Dakota Department of Health Environmental Health Section

World Water Day... The Answer is in Nature

By Jim Collins, Jr., Environmental Scientist, North Dakota Department of Health



Tributary to Clausen Springs in Barnes County.
Photo by Jim Collins.

World Water Day

March 22, 2018 marks the 25th anniversary of World Water Day. The United Nations General Assembly set forth the designation and each year focuses on a specific water-related issue. This year the focus is, reducing floods, droughts, and water pollution by using solutions found in nature. Let's take a look at four methods we can implement in North Dakota.

Wetlands

- Like the shock absorbers on your car, wetlands smooth the peaks in flooding by storing the water and releasing it slowly to another wetland or into the soil. If there are enough wetlands, the runoff water reaches rivers at a slower rate, reducing "flash" peaks.
- Wetlands help ease droughts by storing runoff water and recharging much needed groundwater for growing crops.

- Wetlands trap nutrients and sediment carried by runoff, then plants and bacteria break down or use the excess nutrients, keeping them out of our rivers and lakes.
- Constructed wetlands are being used by municipalities to treat wastewater effluent and stormwater runoff.

Buffer Strips

Buffer strips are a no- to low-cost method to reduce pollutants that would normally flow into our rivers and lakes. According to the Natural Resources Conservation Service, a properly installed and maintained buffer strip has the capacity to:

- Remove 50 percent or more of nutrients and pesticides.
- Remove 60 percent or more of certain pathogens.
- Remove 75 percent or more of sediment.

Grassed Waterways

A grassed waterway slows runoff, traps sediment and prevents gully erosion in areas where water typically flows. With today's precision application of pesticides, grassed waterways can be easier to maintain. It is very likely that a properly functioning grassed waterway will save producers money in lost soil, seed, and fertilizer. Equipment repair costs may also be reduced, because farm equipment would not be getting

stuck in a waterway or bouncing over gullied areas, causing excess wear and tear.

Trees

Trees help prevent erosion of our limited topsoil by slowing prairie winds. In addition, their root structure plays a critical role in holding riverbank soils in place, preventing bank collapses that claim cropland and may threaten structures.

Everyone can play a part during World Water Day! Get involved and plan a natural solution to a water quality problem.

For more information contact the North Dakota Department of Health Watershed Management Program or your local soil conservation district.



Effective best management practices.
Courtesy of USDA - NRCS, Ohio.

North Dakota Department of Health
Environmental Health Section
Gold Seal Center, 4th Floor
918 East Divide Ave.
Bismarck, ND 58501-1947
701-328-5150
www.deq.nd.gov



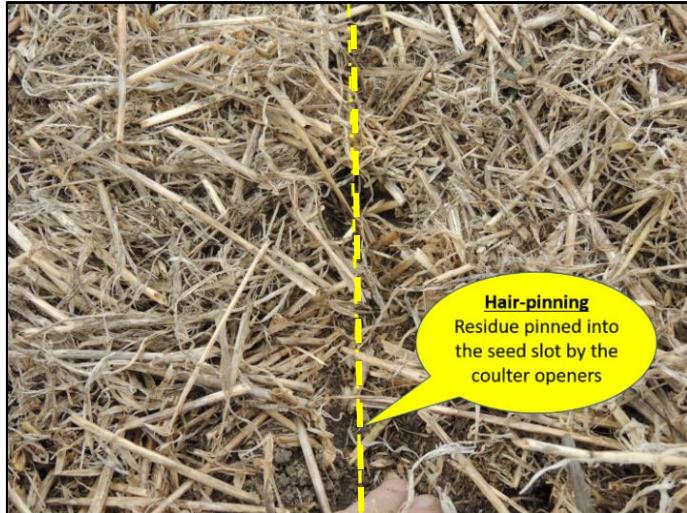
Plant Chat

January 2018 Volume 18, Issue 1

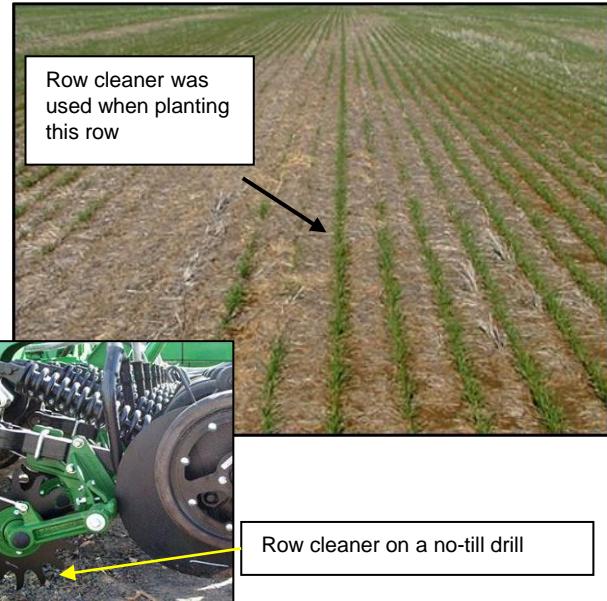
A Newsletter Published by the Bismarck Plant Materials Center for NRCS Field Offices in North Dakota, South Dakota and Minnesota

Challenges of Shallow Seeding in No-Till

Correct seed placement is extremely important for successful establishment of perennial grasses, forbs, and legumes. The challenge is having seed to soil contact without seeding too deep. Drill seeding into tilled and packed soils with little to no surface residue is less challenging than no-till seeding into fields with considerable soil surface residue. Most good grass drills are well equipped to provide proper seeding depth in tilled and properly packed soils where residue is not a concern. However, in a no-till environment, heavy amounts of residue can make seeding a challenge. Vertical standing stubble is not as concerning as horizontal residue laying on the soil surface. Residue concerns can first be addressed with good distribution of straw and chaff behind the combine. However, even with good distribution, remaining residues can be a problem for shallow seeding. With substantial residue on the soil surface, conventional grass drills will not be adequate for the task and no-till drills may not perform well if not properly equipped. When seeding shallow in heavy residues, coulters and/or disk-type openers can't run deep enough to prevent hair-pinning of residues into the seed slot. Instead of cutting through the



residue, they pin it in with the seed. This inhibits seed to soil contact and severely impacts germination. Heavy amounts of residue will cause depth bands or depth control wheels to ride on top of the residue rather than the soil surface. Seed ends up in the residue, not in the soil. Packer wheels are ineffective in this scenario. With no soil around the seed, they only push more residue into the seed slot. It is in this seeding environment that row cleaners do their best work. The photo at upper right illustrates the effectiveness of row cleaners when residues are an issue.



Retesting Seed

If seed purchased or harvested in prior years was held over or stored, it may need a new germination test. Listed in the table below are germination testing time limits related to NRCS cost share programs in North Dakota, South Dakota, and Minnesota. If seed was stored in conditions with high humidity and/or high temperatures, seed deterioration may have occurred. Therefore, seed should be retested even though the germination tests may meet testing date requirements. When sampling, make sure the sample is representative of the seed lot. Bulk several small samples from the lot for the testing sample. This may mean opening several bags. Allow enough time to get test results back prior to seeding. The length of time for a laboratory to run a germination test is related to the species. Some species require as much as 28 days in the germination chamber. Mixes will take longer, as species have to be separated by lab personnel before germination tests can be conducted. Test results may also be delayed if the laboratory is experiencing large numbers of samples. Contact the seed laboratory for the amount of seed required for testing of your particular species or mix.

STATE	Species	*Maximum Age of Germination Test
Minnesota	Native	15 months
Minnesota	Non-native	12 months
North Dakota	Native and Non-native	12 months
South Dakota	Native and Non-native	9 months

* Maximum age is exclusive of the test month.

Do your livestock like their table?

Grazing systems mix resources of sun, soil, air, water and plants

By JON STIKA

DREC Webmaster

What do livestock think of their meal table?

Livestock are at the mercy of the producers and the grazing systems.

Grazing systems are an intricate web of many resources in balance with each other. Sun, soil, air, water, plants, and animals all play a part in how forage is produced and harvested, and how well soil, plants, and animals, are maintained.

The main players, livestock, plants and soil, work together to maintain a balance, each caring for itself and providing for their partner-players. This partner relationship is critical so all will be able to continue functioning together into the future.

How does a cow view a grazing system? As cattle move around a grazing paddock they use their many senses to determine what parts of which plants they wish to graze.

Livestock graze to meet their nutritional needs for energy and protein, drink water and rest to ruminate, all in a day's existence. When there is a wide variety of plants and sufficient growth available, a cow, for example, selects the portion of particular plants to meet her needs.

If there is insufficient plant growth, particularly if most of the plants are the same species, livestock will be less selective and probably spend more time grazing to meet their needs. Ultimately, a cow sets out each day to meet her nutritional needs

from what is available within the paddock to which she is confined.

The affect on the plants and soil within a paddock depends upon where and how long the livestock graze. Livestock left to graze too long in a paddock will re-bite plants as soon as they grow enough to be attractive again.

This often results in degradation of plants: some from over grazing and some from not being grazed at all. This often occurs to plants that are side by side in the paddock resulting in a patchwork of spot grazing.

Livestock left in a given paddock for an extended period of time may overgraze all of the plants in an attempt to meet their nutritional needs. Ideally, all plants in the paddock would be stimulated by grazing so they remain leafy and can grow unmolested until they have produced enough growth, and gathered enough energy to maintain themselves, before being grazed again.

Grazing animals do not begin their day thinking about degrading the plants in a paddock. Livestock utilize what has been provided to them to meet their daily nutritional needs.

If plants in a grazed paddock are



This calf is well hidden among some old structure and new growth forage.

degraded and become less productive, it is not through the fault of livestock, plants, or soil. Livestock are the tools used to harvest forage and turn that forage into something of value (beef, milk, lamb, wool, etc.) in the marketplace. A well-designed and executed grazing system will maintain (or perhaps improve) the soil and plants and produce saleable commodities.

Biologically effective management of grazing lands is an important facet of the research and education taking place at the Dickinson Research and Extension center. To learn more about this important topic please visit the DREC website at: <https://www.ag.ndsu.edu/dickinsonrec>.

The next installment will cover a plant's view of a grazing system.



Set the table: good pasture management for livestock is a positive mixture of sun, soil, air, water and plants.

Cows eat less, gain more and save grass

Early wean advantages

- Cow gain increase near .5 lbs/day
- Cow intake decreased 18.9 lbs/day
- Cow body condition score increased .58
- 36% more forage left

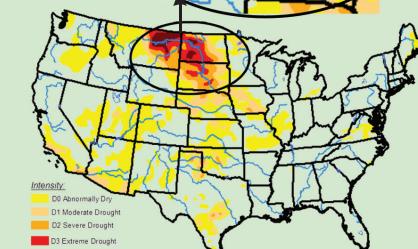
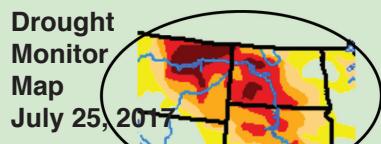
By DOUG LANDBLOM
DREC Animal Scientist

Early weaning of calves can improve pasture forage and increase cow weight gain. Research data shows 36% more forage left in native pastures, cows consumed 18.9 pounds less forage per day, gained 45 pounds, nearly a half a pound per day, and increased body condition score .58.

This research was especially appropriate after the drought in the Dakotas and Montana in 2017 with large portions of the states in the extreme and exceptional drought categories. (See map.) Thousands of cattle were sold or moved to rented pastures in unaffected neighboring states.

The same fears exist going into the 2018 grazing season. Subsoil moisture is inadequate but snowfall and timely spring rains can change that outlook.

Next month, a discussion on annual-forage grazing options to feed early weaning calves.



Much of the Dakotas and Montana experienced severe drought in 2017.

Autecology of Purple prairie clover

By JON STIKA
DREC Webmaster

How well do you know your plants?

The Purple prairie clover, *Dalea purpurea*, is one prairie plant species that has been studied for 67 growing seasons (1942 to 2012) at the Dickinson Research Extension Center. The current autecology study is coordinated by DREC Range Scientist Dr. Llewellyn Manske.

Autecology: what is it?

Autecology is the study of the interactions of an individual organism or a single species with the living and nonliving factors of its environment. Autecology is primarily experimental and deals with easily measured variables such as light, humidity, and available nutrients in an effort to understand the needs, life history, and behaviour of the organism or species.

www.britannica.com/science/autecology

Manske's research reviews the presence of the Purple prairie clover since the first record of the plant in 1891 by J.I. Bolley. Manske's research describes the changes in growth and development and the changes in abundance through time as affected by various pasture treatments: non-grazed; season long and twice-over rotation.

Purple prairie clover is a member of the legume (bean, pea) family. Purple prairie clover is a native, perennial warm season herb that is moderately drought tolerant, and fairly shade tolerant.

The plant can have several stems 8 to 24 inches tall with compound leaves 0.4 to 1.6 in long with a woody taproot that may go 6 to 8 feet deep into the soil. Survival is highly dependent upon mycorrhizal fungi for uptake and transport of soil nutrients.

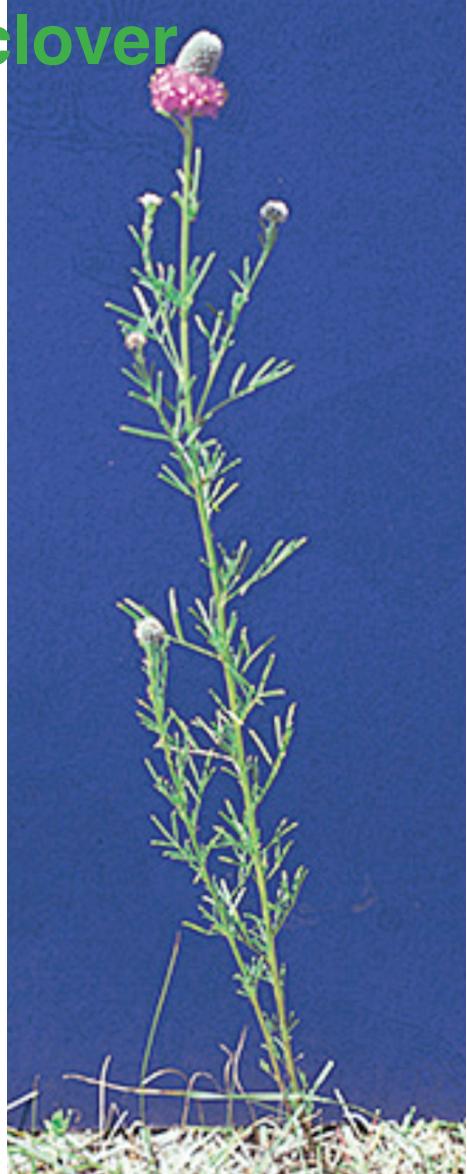
The flowers are tiny, pea shaped with five purple to rose colored petals. Blooms start a bottom row and progressively move upward during late June to early August. Pollination is by bumblebees, beetles, and other insects. Fruits are a one seeded legume pod.

Above ground parts of the plant are eaten by livestock. Purple prairie clover had a greater presence and stem density in native range pastures where twice-over grazing was practiced than those pastures that were not grazed or grazed all season long.

The twice-over treatment was the only management treatment that Purple prairie clover was present during the drought stricken growing season of 1988.

The thick, woody caudex with several lateral branches, the deep woody taproot, and the coarse deep lateral roots help Purple prairie clover persist through the harsh conditions on the Northern Mixed Grass Prairie.

The full report is available on the web: <https://www.ag.ndsu.edu/DickinsonREC/annual-reports-1/2017-annual-report/2017-annual-report-drec-1137.pdf>



Prairie purple clover is a native legume on the prairies of the region.

BeefTalk: Helping beef producers

Beef production is an economic force, providing production techniques, management protocols and evaluation metrics to all phases of the industry throughout the world.

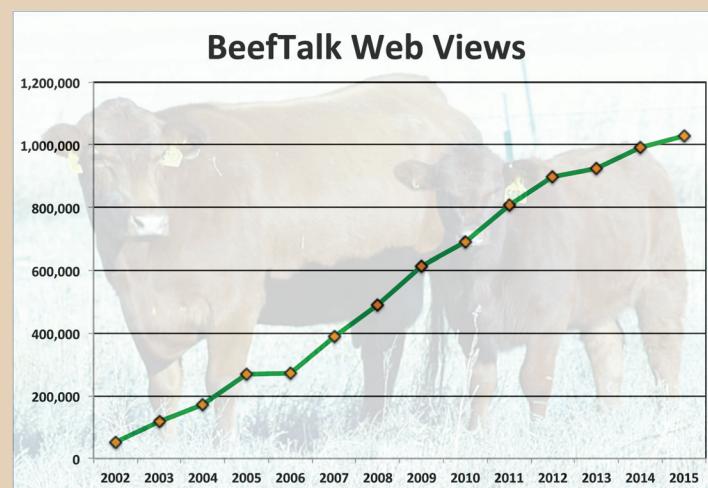
Since 2001, NDSU Extension Beef Specialist Dr. Kris Ringwall has authored a weekly column mixing statistical analysis, livestock trends, and production opportunities for all elements of the beef production chain. Woven into this storyline is relevancy with non-beef production events.

The BeefTalk column is provided world-wide in two languages (English and Spanish). Over 1,000,000 internet views of the column occurred in 2015. The internet audience continues to grow.

Additionally, thousands of beef producers regularly read the column in weekly and daily newspapers, livestock journals, agricultural publications and periodicals, and classrooms.

In addition to the publication and internet reads, there is great acceptance on the international stage for the wit, humor, philosophy and dedication to provide producers with meaningful information based on scientifically collected and analyzed data.

The science supporting the BeefTalk column is the Cow Herd Appraisal Performance Software, a major tool which offers producers an opportunity to analyze herd performance and animal production. Since the introduction of the CHAPS program, over 1,000,000 cattle records have been processed, providing producers with benchmarks in signifi-



cantly important production and economic traits for the beef industry.

The BeefTalk column is also a strong proponent of practicing stewardship, preserving resources and preparing youth to be future leaders. There is a graphic associated with each BeefTalk column.

Access the BeefTalk columns on the web at www.ag.ndsu.edu/news/columns/beeftalk/ or www.ag.ndsu.edu/DickinsonREC/beeftalk-articles-1.

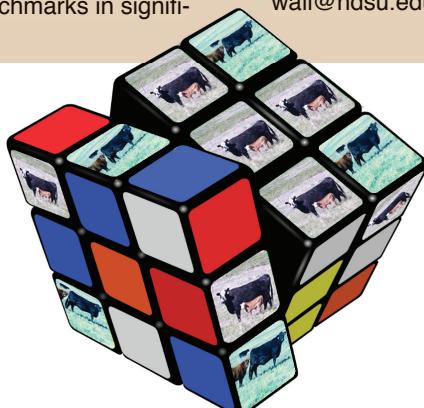
For information, contact Ringwall by email at kris.ringwall@ndsu.edu or by phone at 701-456-1103.

Cropland Soil Health Project

The Dickinson Research Extension Center hosted the Southwest North Dakota Soil Health Demonstration Project from 2008 – 2016. The project was a cooperative venture with North Dakota State University, Stark-Billings Soil Conservation District, the Dunn County Soil Conservation District and the USDA Natural Resources Conservation Service.

Soil health was looked at closely and improvements noted. Areas of research investigated included but were not limited to feeding soil organisms, preventing erosion and fostering water and nutrient savings.

One major improvement was the water infiltration rate of over 680% in eight growing seasons.



Plant and Animal Genomic Research

There are billions of possibilities present within plant and animal biology. The Dickinson Research Extension Center continues to use scientific methods to find sustainable, sensible solutions.

Areas of DREC plant and animal genomic research include the following:

- Evaluating population diversity
- Exploring heterozygosity
- Using sound stewardship

Contact the DREC via the internet at www.ag.ndsu.edu/dickinsonrec or call 701-456-1100 for more information.

Crop Rotations and Beef Cattle Grazing

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

Research has been ongoing at the Dickinson Research Extension Center regarding various ways to improve soil health and provide opportunities for livestock.

During the process of seeking various options for soil management, a variety of outcomes were discovered. A synopsis is as follows:

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

For more information on this research project, contact DREC Animal Scientist Doug Landblom, 701-465-1109 or email him at doug.landblom@ndsu.edu

Plant Chat

May 2018 Volume 18, Issue 2
A Newsletter Published by the Bismarck Plant Materials Center for
NRCS Field Offices in North Dakota, South Dakota and Minnesota

Western Wheatgrass

Western wheatgrass is a prevalent grass in mixed-grass prairie communities throughout the northern Great Plains. This native, perennial, cool-season grass is an important component of seed mixes designed for grazing and rangeland, or revegetation and soil stabilization of disturbed sites and critical areas. Western wheatgrass has good drought and salinity tolerance, and is a high-quality forage grass for domestic livestock and several wildlife species.

Western wheatgrass is most adapted to, but not limited to, well-drained clay and loam ecological sites. It is tolerant of environmental extremes that range from spring flooding, high water tables, and considerable silt deposition, to extended periods of moderately-severe drought. Because it spreads from rhizomes, it can recover quickly from prolonged drought. It is often the first species to fill areas that have lost vegetation due to long dry spells. It does well in moderate to higher soil moisture regimes but is most common in areas that receive 10-16 inches of annual precipitation. Where precipitation on rangelands is above 20 inches per year, it behaves as an increaser, but is considered a decreaser where precipitation is less. It responds well to good grazing management strategies designed to maintain productivity and persistence.

Newer growth of western wheatgrass has very high forage quality and is particularly palatable to cattle and to domestic sheep. Western wheatgrass is best utilized in the spring or later after fall regrowth has occurred. As plants become coarser by early summer, palatability and crude protein decline with maturity. Fall regrowth however, cures well on the stem and is considered good winter forage for domestic livestock.



Western wheatgrass grows in association with many species, the more common being blue grama, buffalograss, green needlegrass, slender wheatgrass, switchgrass, and big bluestem. It begins growth about 2 to 3 weeks before blue grama. Primary pests are grasshoppers, ergot, and stem and leaf rusts.

There are several varieties of western wheatgrass developed for use in this region including Rodan, Walsh, Flintlock, Rosana, Recovery, and W.R. Poole. Be sure to consult with your local NRCS Field Office to determine which varieties are approved for conservation program plantings in your locality.



Potential for a Pine Wilt Nematode Resistant Scots Pine

Commonly available Scots pine comes primarily from European and Eurasian seed sources. It has been used extensively throughout the Midwest for conservation, Christmas trees and landscaping. These Eurasian sources of Scots pine are extremely susceptible to pine wilt, caused by the pine nematode *Bursaphelenchus xylophilus*. The nematode is native to North America. Native conifers are tolerant or resistant to the nematode.

Mongolian Scots pine, *Pinus sylvestris* var. *mongolica*, native to Nenjiang, Kedong, Bayan, Shangzhi and Heilongjiang Provinces in northeastern China proved tolerant/resistant to the nematode in a 1989 Chinese study. Pines native to North America also proved tolerant or resistant in this study while native Asian pines were highly susceptible.

PMC staff processed seed from established Mongolian Scots pine trees in Minnesota, and seedlings were grown by Towner State Nursery. In late April 2018, 345 seedlings were provided to 15 individuals in Iowa, South Dakota, Missouri and Nebraska for planting and testing of the potential resistance. Kansas, North Dakota, South Dakota, and Minnesota had field plantings of these seed sources from earlier distributions.

Our hope is that these test plantings in the Central US will exhibit resistance or tolerance as witnessed in the 1989 Chinese study. Due to the nature of the nematode, evidence of mortality or resistance will not be observed until trees are 7-10 years old. Once infested, trees can die within 3 weeks.

To speed the study results, individuals at South Dakota State and Iowa State Universities will inoculate the seedlings with the nematode. Preliminary results from these inoculation studies should be available within 3-4 years.

For more discussion on this topic, contact Craig Stange at craig.stange@nd.gov or Wayne Duckwitz at wayne.duckwitz@nd.usda.gov.



NEW FARM BILL SPECIALIST

My name is Zach Compson and I am the Farm Bill Specialist located in Mandan ND. I am serving Morton, Burleigh, and Kidder counties. I was hired by the North Dakota Association of Soil Conservation Districts in August 2018.

I grew up in Jamestown, ND and graduated high school in 2011. After high school I continued my education at Valley City State University, where I earned my Bachelor of Science in Fisheries and Wildlife Sciences and Biology and graduated in December 2015.

I started my career in natural resources in 2010 working for the U.S Fish and Wildlife Services as a Youth Conservation Corps member. I continued working for the USFWS for three more summers as a biological science aid at Arrowood NWR and J. Clark Salyer NWR. Then went to work for the ND Game and Fish Department for two summers in Jamestown, ND.

Once I graduated college I moved to Devils Lake, ND and worked for the NDGF for two years as a temporary wildlife technician. After my two years

in Devils Lake I moved to South Dakota where I was hired on as a Farm Bill Wildlife Biologist with Pheasants Forever, before coming back to North Dakota to work for the NDASCD.

I'm an avid outdoorsman and spend my free time hunting and fishing. I look forward to continuing my career with NDASCD as the Farm Bill Specialist and working with landowners and producers by promoting conservation practices.

**Don't Forget To RSVP for Kidder
County Ag Night!!**



Kidder County SCD offer **SCHOLARSHIPS** to Seniors in Kidder County. The applications are due **April 1st**. Contact the SCD Office or your school for an application.

COVER CROP FACTS

Cover Crops at Work: Increasing Soil Organic Matter

An overview of cover crop impacts on soil organic matter¹



Photo Credit: Edwin Remsberg

ABOUT COVER CROPS

Cover crops are tools to keep the soil in place, bolster soil health, improve water quality and reduce pollution from agricultural activities.

- They include cereals, brassicas, legumes and other broadleaf species, and can be annual or perennial plants. Cover crops can be adapted to fit almost any production system.
- Popular cover crops include cereal rye, crimson clover and oilseed radish. Familiar small grain crops, like winter wheat and barley, can also be adapted for use as cover crops.

Learn more at
[**www.sare.org/cover-crops**](http://www.sare.org/cover-crops)

What is Soil Organic Matter?

- Soil organic matter is decomposed organic material (leaves, roots, microorganisms) that exists in the soil and acts as a reservoir of water and nutrients.
- Many analogies have been drawn likening organic matter in the soil to a sponge, a medium in which water and nutrients are stored.
- Soil organic matter is often a measure of a soil's fertility, and even a soil's resilience.

Cover Crops Increase Soil Organic Matter

- Cover crops are able to increase soil organic matter by protecting the soil surface from erosion, adding biomass to the soil (especially below the soil surface), and creating a habitat for microorganisms like fungi that contribute to the soil biology and provide more pathways for nutrient management in the soil ecosystem.
- Legume crops were found to increase levels of soil organic matter by 8% to 114%.
- Non-legume cover crops, including grasses and brassicas, were found to increase soil organic matter levels by 4% to 62%.

Soil Organic Matter is a Boon for Water Quality

- By providing these services, cover crops contribute to enhanced water quality because soil organic matter enhances soil processes and properties, including soil structure, and alleviates soil compaction.
- Additions of organic matter also increase water retention capacity, stabilize the soil during extreme weather events like drought or rainfall, and absorb and filter pollutants in runoff.
- Research into the composition of soil organic matter has shown that it's comprised of about 58% carbon.² Attempts have even been made to put a dollar value on soil carbon, asserting that restoring soil carbon levels could result in savings of about \$25 billion per year.

In summary, cover crops are a good management strategy for increasing soil organic matter levels, a benefit that also has positive water quality, air quality and soil health implications. Cover crop management decisions are very important in maximizing their benefits, especially the decision to use no-till practices in conjunction with cover crops.

¹ Unless otherwise cited, all data comes from a bibliography compiled by SARE and the University of Missouri.

² Pribyl, D.W. 2010. A critical review of the conventional SOC to SOM conversion factor. *Geoderma*. 156(3-4):75-83.

North Dakota Nutrient Reduction Strategy

Frequently Asked Questions (FAQ's)

- What are the effects of excessive amounts of nutrients (nitrogen and phosphorus) in our rivers, streams, lakes and reservoirs?

While nitrogen and phosphorus are natural parts of aquatic ecosystems, when too much of these nutrients enters the environment (usually from human activities) water can become polluted. Nutrient pollution in water causes algae to grow faster than the ecosystem can handle. Significant increases in algae can harm water quality, food resources and habitats, and decrease the oxygen that fish and other aquatic life need to survive. Some algae blooms are harmful to humans because they produce elevated toxins that can make people sick when they come into contact with the polluted water or drink contaminated water.



Algal bloom on a North Dakota lake. Photo courtesy Jim Collins Jr., NDDoH

- Are there waters in North Dakota currently being impacted by nutrients?

Yes, since the department began monitoring for harmful algal blooms (HABs) in 2016, 19 separate lakes have had algal blooms producing toxins above safe levels. Currently, 47 lakes and reservoirs are assessed as impaired due to nutrients; 93.3 percent of rivers and streams are impacted by excess nitrogen, and 77 percent are affected by excess phosphorus ([2016 Integrated Report, North Dakota Department of Health](#)).

- What are the major sources of nutrients in North Dakota?

Some of the more common sources are erosion and runoff from cropland, runoff from animal feeding operations, industrial and municipal wastewater treatment, stormwater runoff (e.g., residential fertilization) and failing septic systems.

- Is this a new regulation?

No, the nutrient reduction strategy is not a new rule or regulation. It utilizes current rules in a coordinated way to address the problem. A successful strategy means no new rules or regulations will be required.

- Will this strategy restrict how I can apply fertilizer or require certification?

The strategy will highlight methods that can help ag producers use fertilizer more effectively to prevent losing nutrients off the fields. It doesn't govern fertilizer application or add any new requirements for certification.



A producer applying nutrients. Photo courtesy Lynn Betts, USDA-NRCS

6. Will preventing nutrient pollution hurt my profitability?

In many cases, the strategy may help with profitability. More efficient use of fertilizer can lead to lower input costs and higher yields. Improvements to soil health increases the soil's productivity. At the same time the water quality of nearby water resources is improved because nutrient runoff is reduced.

7. What limits will Publicly Owned Treatment Works have to meet and when?

The limits and timing for municipal wastewater treatment plant will vary depending on the waterbody to which they discharge. Municipalities will have time to plan for upgrading their treatment systems and many have already started.

8. How will the strategy be implemented?

The North Dakota Department of Health (soon to become the North Dakota Department of Environmental Quality) will begin by changing its internal policies to focus on the nutrient reduction actions in the strategy. Other stakeholders will take the steps they've agreed to as they can. Some things are already being done by the department and stakeholders, such as watershed implementation projects and the Pheasants Forever Precision Agriculture and Conservation Program.

9. When will the department develop numeric nutrient criteria?

First, the department will prioritize waterbodies across the state, then collect data and review the science of the waterbody to determine appropriate criteria. Stakeholders will have an opportunity to comment on our work before anything is finalized. Only after that is completed will criteria be adopted.

10. What are other states doing?

Most states are going through similar processes and taking actions that address their state specific conditions.

Iowa:

www.nutrientstrategy.iastate.edu/

Minnesota:

www.pca.state.mn.us/water/nutrient-reduction-strategy



Figure 3. Checking the soil to determine fertilizer needs. Photo Courtesy Amy Smith, USDA-NRCS

Questions or comments?

Karl Rockeman or Mike Ell

701.328.5210

Email: EHS@nd.gov

Intercropping can increase production

Improves microbial population, diversity and nutrient cycling

By JON STIKA
DREC Webmaster

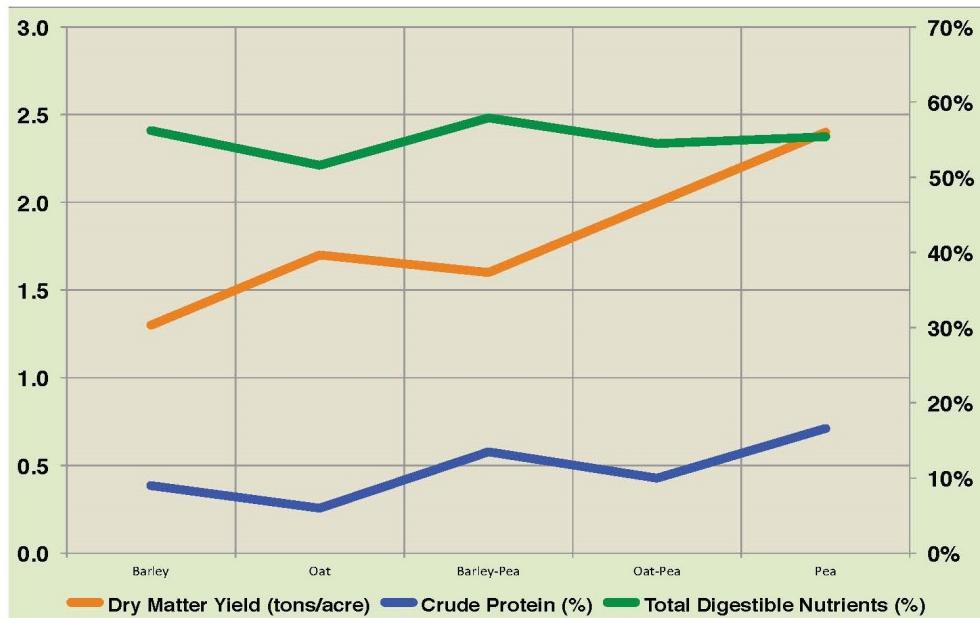
Intercropping, growing two or more species of crop at the same time, has the potential to increase tonnage and crude protein. The study conducted at the Dickinson Research Extension Center showed forage crops like peas and oats or peas and barley together outperforms growing pea, oat, or barley in a single-species stand.¹

Intercropping for forage production at DREC is practiced routinely with combinations of winter triticale-hairy vetch harvested for hay, and corn-soybean-rape harvested by grazing steers.

Graph 1 shows basic results from the DREC study where crops were grown without additional nitrogen fertilizer on soils that had less than 14 pounds of nitrogen per acre in the upper 24 inches of soil.

Additionally, there is a symbiotic relationship that occurs when planting multiple species together. There are increases in the overall diversity of the crop rotation and increases in the diversity of microbial populations in the soil. This diversity contributes improved crop nutrient cycling and soil health.

¹2003 DREC Annual Report. Barley, Oat, And Cereal-Pea Mixtures As Dryland Forages In The Northern Great Plains. P. M. Carr, R. D. Horsley, and W. W. Poland



Graph 1: Intercropping can produce many positives for producers.

Continuing our Commitment

to serve the people of North Dakota with meaningful research work and protecting our natural resources.

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OFFICE CLOSING DATES

*December 25th—Christmas Day
January 1st—New Years Day
January 21st—Martin Luther King Jr. Day
February 18th—President's Day*

Meetings are held at 8:00 a.m. at the USDA conference room and are open to the public.

Tentative Board Meeting Schedule
*December 12th
January 9th
February 13th
March 13th*