Cover Crops

Jerry Doan, Chairman NDGLC

If you are considering planting cover crops this year, early to mid-June is the time to plant the warm season mixes. Our goal in using cover crops is to build soil health, to reduce winter feed costs and to propagate wildlife. To accomplish this, we like to use a mix with a lot of diversity. There isn't magic to how many species you use, but having a combination of legumes, brassicas, taller species, forage species, and species for good quality in the winter are important. The legumes are important to produce nitrogen in the crop. We have not added extra fertilizer most times on the cover crops and, with good legumes in the mix, still produce very good tonnage. The brassicas, like radish and turnips, scavenge nitrogen from deeper down in the root zone as well. The species we like to use to give quality to the winter ration include collards, several millets, a good quality Sudan cross, and grain sorghum.

Our ultimate goal with these cover crops in to not only reduce winter feeding to the cowherd but eliminate it. However, we realize the Northern Plains winter can be brutal. A back-up plan needs to be in place to supplement the cows when winter comes. We like to utilize hay and other supplements when needed, but actually feed the cows on the cover crops to continue to build soil health. This also saves costs by keeping manure and urine where it's needed and not having to haul it out of corrals. We have had cost savings of around $200 per head by utilizing this system. Rotating the cattle can be a big help in utilization and keeping forage quality up. We do utilize the nutritional balancer program from Texas, where you take manure samples and send them in to be tested. This gives you a snapshot of the performance of the cattle, and will help you decide if and when you need any supplementation or when to rotate the cattle to a new cover crop strip or field.

The next goal in our system is to build soil health. Having a very diverse crop mix, as well as livestock on the landscape, will increase soil biology and start to improve organic matter. We soil test for the biology every year and definitely see how this system brings all the little creatures underground back into the system to build good, healthy soil. It is very apparent when you pull up a shovel of soil, as Jay Fuhrer, North Dakota's soil heath expert, has done many times. You see worms, granulation and soil structure very conducive to good soil health.

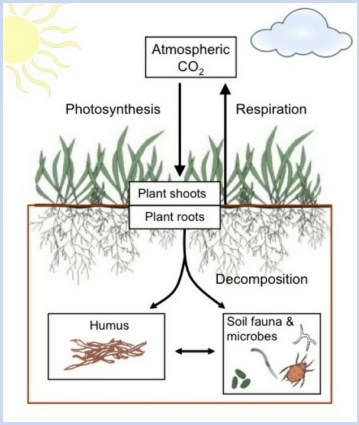
The last goal in our system of cover crops is to propagate wildlife. The excellent cover provided for wildlife and the food source the diverse mix provides helps get wildlife through our harsh Northern Plains winters.
In these trying times in agriculture, it is more important than ever to look for cost saving ideas and ways to use Mother Nature to our advantage. I hope you all have a very successful summer!

Carbon Connections to Ruminants, Methane and Soil Health in the Great Plains

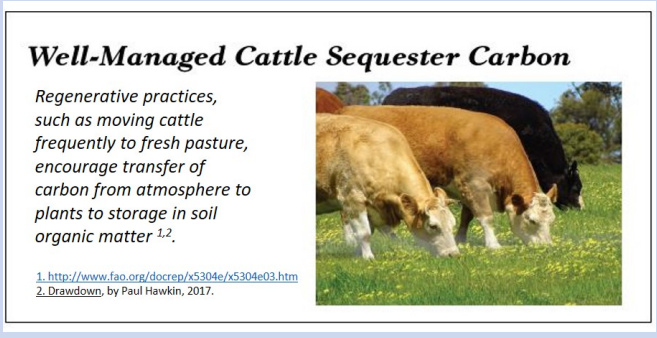
Rebecca L. Phillips, North Dakota Grazing Lands Coalition and Ecological Insights Corporation
Jerry Doan, North Dakota Grazing Lands Coalition
Lucy Britton, Michael Bush and Meghan Carter, Audubon Dakota

Ruminants are unique in their capacity to convert grassland plants to useable food through fermentation in the rumen. This conversion cannot occur (and the ruminant animal survive) without removing hydrogen gas build-up through reaction with carbon to form methane. Production of methane through enteric fermentation sets ruminants apart from other organisms that produce methane primarily through waste products.

Methane, much like carbon dioxide, is a carbon-based molecule. Carbon is the backbone of the food web that moves through organisms in various molecular forms and states — from gaseous to solid to aqueous. The metabolism of carbon compounds is not 100 percent efficient. Some carbon is lost as gaseous forms to the atmosphere — usually carbon dioxide or methane. Plants transform and move gaseous carbon from the atmosphere to storage compartments below ground (see figure). Carbon molecules below ground are fundamental to the soil microbiome, fertility and structure. Soil carbon that is not immediately used but is stored below ground is commonly referred to as sequestered carbon. Studies supported by NASA and the USGS report that grasslands of the Great Plains sequester an average of 24 tons per square kilometer per year (Zhang et al 2011) or 220 pounds per acre.



Prior to European settlement, the 10-state region of the Great Plains (2.9 million square kilometers) was inhabited by 30 million ruminant bison. The historical bison herd met their energy requirements through enteric fermentation, which released 2.2 million metric tons of methane per year, or 11 pounds of carbon as methane per acre per year over the Great Plains region. Today, bison grazers in the Great Plains have largely been replaced by 40 million ruminant cattle. These cattle meet their energy requirements through enteric fermentation, which releases 2.5 million metric tons of methane per year, or 13 pounds of carbon as methane per acre per year. This historical context is important as we try to understand the role cattle play in current debates about methane. Methane emissions by cattle in the Great Plains, while substantive, are comparable to bison emissions. These analyses, published by Kelliher and Clark in the journal “Agricultural and Forest Meteorology,” call into question if ruminant methane is a contemporary environmental issue or a natural part of the grazing land ecosystem.



So, what is the connection between grassland carbon and ruminant methane? Grazers co-evolved as part of the grazing land ecosystem to optimize use of carbon and carbon storage. As grazers stimulate plant production and carbon uptake, they are participating in the process of carbon sequestration. A fraction (<10 percent) of carbon stored below ground is lost in ruminant emissions as methane. In summary, the data presented here indicate a) methane emissions are just one piece of the larger carbon cycle, b) ruminants have to produce methane to convert plants to useable energy and food, c) emissions of carbon as methane are balanced by carbon sequestration, and d) the ruminant methane-producing energy conversion system has been integral to grazing ecosystems and building soil health for eons.

Field Report

Trisha Feiring

Grassland Regeneration Program Update

NDGLC has written its first contract and installed its first cross fence in the last month. This contract was written in conjunction with the Partner's for Wildlife Program and the Bakken Working Lands Program to install boundary fence, cross fence, a pipeline, and water tank.

NDGLC is also currently working with several other producers on grazing plan assistance, conservation funding assistance and financial planning assistance. Please contact Trish if you are interested in learning more about the program, which is being funded by the National Fish and Wildlife Foundation and several North Dakota conservation partners.

Upcoming Events

Menoken Farm Garden Tour – June 25
Jon Stika, author of *"A Soil Owner's Manual: How to Restore and Maintain Soil Health,"* is the featured speaker at this year's Menoken Farm Garden Tour. The Thursday, June 25, event will be held at Menoken Farm, Burleigh County Soil Conservation District's conservation demonstration farm east of Bismarck. Participants can participate via livestream. There will be a walk of life at 3 p.m. followed by a garden tour at 5:30 p.m. and a complimentary meal at 7:30 p.m. The deadline for registration is June 22. Email Connie to register.

Women Caring for the Land – July 14 and 30
Please join women in ranching for a night of women-centered learning on the prairie July 14 at Rider Ranch and July 30 at Feiring Ranch! Participants will hear from host the host on a variety of topics as well as enjoy a locally sources meal. Registration is limited to 20 participants. To register for July 14, email Trish at Feiring Ranch.

NDGLC Summer Tour – July 31
The North Dakota Leopold Conservation Award and North Dakota Grazing Lands Coalition Summer Tour will take place at 1 p.m. on Friday, July 31, at the ranch of the 2019 N.D. Leopold Conservation Award Winners, Gene and Christine Goven. Tour highlights include maximizing cross fencing, applying prairie practices to cropland, managing regrowth, diversity, and soil health. Please register each person separately for an accurate meal count. Register here.

Northern Prairie Grazing Lands Ecology Workshop – Aug. 10-15
This workshop will provide teachers with new knowledge regarding grazing lands and the impact of grazing on ecosystem properties and functions, such as biodiversity, avian habitat and greenhouse gas exchange, while providing credit towards their pursuit in higher education. The course will be instructed by Dr. Rebecca Phillips, NDGLC Biologist. Learn more.

Bird Bonanza – Aug. 15
The Bird Bonanza will take place on Aug. 15 at Gene and Christine Goven's Farm close to Turtle Lake, ND. The theme of the tour is how grazers can be used as tools to enhance biodiversity: flora (including medicinal plant species), habitat, fauna, avian nesting success, soil health, etc. Learn more.

Mentor Guided Workshop - Oct. 27-28
A Mentor Guided Workshop will be held in Bismarck Oct. 27-28. Details will be available soon on the NDGLC website.

NDGLC Membership

The mission of the NDGLC is to promote the health and regeneration of North Dakota's grasslands. Farmers and ranchers can become members of the NDGLC for annual dues of $30. Members will receive newsletters, plus email notifications of pertinent events, legislation and other opportunities, on a regular basis. Members may also attend field days and other workshops at a discounted rate. Join today.

Your News

Contact the NDGLC office regarding inclusion in future newsletters.

North Dakota Grazing Lands Coalition
www.ndglc.com