SOUTH DAKOTA GRASSLAND COALITION

GRASSROOTS

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Kirk Gadzia Recap

On January 6 we had a meeting with grazing expert Kirk Gadzia. Gadzia is from Bernalillo, New Mexico and operates Resource Management Services, LLC.

Gadzia is a certified educator with the Holistic Management International Center. He has more than 20 years of experience teaching the concepts of Holistic Management worldwide. Gadzia's discussed of these experiences and was an interesting speaker. He is a leading expert on holistic management. The morning session of Gadzia's talk focused mainly on the principles of holistic management and the afternoon session he discussed financial planning. Financial planning is one of the biggest items overlooked by family ranches today. Gadzia stressed the importance of monthly "working on the business" or WOTB meetings to discuss the direction of the business. He also said that family ranches should have a large annual meeting, or retreat, to discuss plans for the upcoming year such as the goals you want to obtain, enterprises you want to pursue, and setting or revising your holistic goals. These goal decisions should be based on last year's business performance as well as the direction you want to go with your business. People came away from this presentation with much valuable information. Two weeks ago I was in Albuquerque, NM and I saw Kirk again. He asked me to thank the SDGC members that attended his workshop and he enjoyed his time in South Dakota.

For more information or other events the SOUTH DAKOTA GRASSLAND COALITION is involved with, please contact Kyle Schell or visit the website: http://www.sdgrass.org

Terry Gompert's HRM based workshops highlights

Throughout the month of January the South Dakota Grassland Coalition sponsored four grazing workshops in four different locations. Terry Gompert was the key speaker at all of these workshops.

Terry at HRM based grazing workshop in Ipswich

The first workshop was held in Mobridge on the 14th, followed by Ipswich on the 15th. The following week there were two more workshops in Miller and Ipswich on the 22nd and the 23rd of January, respectively. All of the workshops were well attended and nearly 35 new members joined the SDGC. Terry is always well-received and some of the material that he discussed at these meetings included grazing cover crops, year round grazing, grass finishing beef, invasive weed control, balancing the forage diet, and rotational grazing. All of the workshops were successful and we are planning some follow up pasture walks in these areas this summer.

SDSU students who traveled to Albuquerque, NM for SRM

SDSU Competes at SRM Meeting in Albuquerque, NM

SDSU was well represented at the Society for Range Management Meetings held recently in Albuquerque, NM. The URME Team tied for 8th in their contest out of 23 participating universities. They were coached by Sandy Smart. Gary Larson coached the SDSU Plant ID Team which placed 7th out of 18 universities. Congratulations to Sandy Smart, who was awarded the Early Career Teaching Award by the Range Science Education Council of the Society for Range Management. Other faculty in attendance from SDSU included Pat Johnson, Roger Gates, Ken Olson, Lan Xu, Sandy Smart, Gary Larson, and Kyle Schell. Graduate students Matt Hubers and Shannon Ims also attended.

Posters were presented by:

• Melissa (Staples) Gabrielson, "Effects of Prairie Dogs and Cattle on Vegetation Composition and Disappearance in the Mixed Grass Prairie"

• Matt Nelson, "Floristic Quality of Native Northern Tallgrass Prairie Pastures in Eastern South Dakota"

• Josh Peterson, "Geospatial Analysis of Aerial Photography to Identify Patterns of Grazing on Northern Great Plains Rangelands"

• Heather Richter, "Clinoptilolite as a Supplement to Reduce the Toxic Effects of High-Sulfate Water"

• Kyle Schell, "Birds at Home on the Range: South Dakota Grassland Coalition Bird Watching Tour"

Benefits of Organic Matter
By: Terry Gompert

Organic matter can be considered a pivotal component of the soil because of its role in physical, chemical, and biological processes (Table 2). Many of these functions interact. For example, the high cation exchange properties of organic matter are a major means by which organic matter is able to bind soil particles together in a more stable structure. The reactive regions present in humus are numerous, and give these molecules a capacity to bind to each other and to mineral soil particles, and also to react with cations (positive charge, e.g. Ca2+, K+) in the soil solution.

The density of cation exchange capacity (CEC) of organic matter is greater than it is for clay minerals (Table 3). While a high CEC is an important attribute of soil organic matter, please note that organic matter does not have an anion (negative) exchange capacity, and is therefore not able to bind anions like phosphate and sulphate. However, organic matter is a substantial reservoir for phosphorus and sulphur, as well as nitrogen. These elements are bound within the organic structure, and are released to the soil solution when microbes break down organic matter.

The ratio of carbon:nitrogen:sulphur:phosphorus in organic matter is roughly 100:10:1.5:1.5. A hectare of soil 10 cm deep with a bulk density of 1 tonne/m^3 weighs 1,000,000 kg. Therefore, soil with a carbon content of 3% would contain 3,000 kg of organic nitrogen, and 450 kg each of organic phosphorus and sulphur per hectare. Not all of this is mineralized each year, but there is considerable potential for nutrients in organic matter to contribute to plant requirements. These should be taken into account, particularly the nitrogen.

Table 2. Functions of Soil Organic Matter

Physical functions	Chemical functions	Biological functions
• Bind soil particles together in stable aggregates • Influence water holding and aeration • Influence soil temperature	• Major source of cation exchange capacity • Source of pH buffering • Binding site for heavy metals and pesticides	• Food source for microbes and small animals • Major reservoir of plant nutrients

Source: Sparrow et al.(1999); Cotching et al. (2001, 2002)

Table 3. Cation exchange capacity of different soil particles

Soil particle	CEC (cmol/kg)
Humus	100-300
Smectites (black swelling clays)	60-150
Kaolinite (white potter's clay)	2-15
Iron and aluminium oxides (from ferrosols)	<1

Source: McLaren and Cameron (1996)

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Calendar of events:

Event	Date	Location	Contact Person	Phone No.
Bird Tour	June 5-6	Belvidere	Judge Jessop	605-895-0127
Bus Tour	July 21-22	Yankton	Kyle Schell	605-688-6623
Riparian Training	June 8-12	Sturgis	Judge Jessop	605-895-0127
Grazing School	Sep 15-16	Oacoma	Kyle Schell	605-688-6623

Please remit any comments, suggestions, or topics deemed necessary for further review to: Kyle Schell, SDSU Box 2170, Brookings SD 57007, kyle.schell@sdstate.edu, (605) 688-6623