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Grassland Studies, Center for

Summer 2009

Center for Grassland Studies, Summer 2009, Volume 15, No. 2

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"Center for Grassland Studies, Summer 2009, Volume 15, No. 2" (2009). *Center for Grassland Studies Newsletters*. 59.
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Sustaining Ecosystem Services on Farms: The Healthy Farm Index

By John Quinn and James Brandle, School of Natural Resources, UNL
Ron Johnson, Department of Forestry & Natural Resources, Clemson University

Introduction

The concept of healthy farms brings to mind fertile soils, clean water, and abundant wildlife. These amenities or ecosystem services were at one time taken for granted, but are now increasingly in the news and scientific literature, as we recognize that many are degraded. Ecosystem services are the benefits that people receive from nature. Global agricultural intensification, with a focus on maximum production, has resulted in decline of many ecosystem services. Our research program is designing a Healthy Farm Index that seeks to measure and optimize multiple ecosystem services, communicate their value, and ensure that ecosystem services remain in the decision-making process of farmers, agency personnel, and other stakeholders.

Services from nature's ecosystems, including from well-managed working landscapes, benefit society and each of us. Although we are well aware that food production costs dollars, time and labor, we often do not consider the fact that agriculture depends on natural processes to assemble sunlight, water and soil nutrients into an ear of corn, to pollinate a fruit crop, or to provide benefits of pest suppression. These services, and the management practices that support them, are difficult to value in a traditional sense. Consequently, conventional economic means of valuing agricultural landscapes do not typically recognize these essential services or include them in economic decisions. Furthermore, despite their value and importance, many individuals remain unaware of ecosystem services. Recognizing and communicating the value of ecosystem services is essential to ensure their protection in the future.

Services provided by healthy agricultural systems include the production of food, fiber and fuel, biological control, pollination,

biodiversity conservation, aesthetic landscapes, carbon sequestration, climate control, purification of air and water, production of high quality soil, flood control, and breakdown of waste into nutrients. Though ecosystem services are provided free of charge, their estimated global value exceeds \$33 trillion dollars per year.

Beneficial species such as insects and birds provide an estimated \$4.5 billion in biological pest control and \$3.1 billion in pollination services annually (Isaacs et al.).

As an agricultural state, much of Nebraska's landscape is devoted to working farms and ranches. To improve the sustainability of this land and associated rural communities, it has become increasingly necessary to view agricultural land as an agricultural ecosystem, or agroecosystem, which is part of nature and a source of a variety of ecosystem services. Agricultural practices such as conservation buffers, agroforestry, mixed-farm systems, and organic management can improve the quality of these and other services. These practices improve habitat for pollinators, natural enemies of crop pests, and wildlife. They also provide food and fiber, sequester carbon, moderate crop microclimate, and reduce soil loss.



Figure 1. Windbreak, flowers, crop production (credit E. Sarno)

Current Projects

Our current research efforts are focused on ecosystem services provided by wild biodiversity in organic farm systems. The response of birds to organic farm management is being monitored on 27 organic farms in Nebraska and Kansas (Figure 2). We recently completed our third season of breeding bird surveys. We also collected measurements on relevant insects and vegetation

(continued on page 5)

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The Center for Grassland Studies is a unit within the University of Nebraska–Lincoln Institute of Agriculture and Natural Resources. It receives guidance from a Policy Advisory Committee and a 50-member Citizens Advisory Council. This newsletter is published quarterly.

Note: Opinions expressed in this newsletter are those of the authors and do not necessarily represent the policy of the Center for Grassland Studies, the Institute of Agriculture and Natural Resources or the University of Nebraska.

Martin A. MassengaleCGS Director
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Anne Moore Newsletter Layout



FROM THE DIRECTOR

I would like to bring to your attention a new book published recently on grasses and grassland, *Grassland: Quietness and Strength for a New American Agriculture*. This book is a comprehensive treatment of grasslands with 69 authors and edited by Walter F. Wedin and Stephen L. Fales. The book is published by the American Society of Agronomy, Crop Science Society of America and Soil Science Society of America.

The editors state in the Preface that the idea for this book occurred when a small group of people saw the need to communicate the value of grass-based agriculture in our nation's life, and especially to increase the awareness of the vital role that grasses have in ensuring a sustainable future for America. They also indicate that the inspiration for the book came from the 1948 Yearbook of Agriculture titled, *Grass*, and that the book was written for agriculturists, students, the public and decision makers.

One of the interesting observations about the new book is how the subjects revolving around grasses have changed over the years. Topics such as environmental quality, amenity grasses and human nutrition have gained much more visibility. The whole topic of cellulosic bioenergy and biobased products from grasses and other cellulosic substrates has exploded. Also, we hear much today about genetically modified plants (GMOs), genomics, breeding with transgenic traits, etc., which were not discussed in 1948. One wonders what new topics would be considered in another book fifty years in the future.

It is obvious that the different farm bills passed by Congress have had a significant impact on grasslands. Many of the programs have been developed to retire land from growing row crops when there has been surplus production and for environmental protection of the land. In more recent years, the Conservation Reserve Program (CRP), Grassland Reserve Program (GRP), Conservation Security Program (CSP), and Environmental Quality Incentives Program (EQIP) have all impacted grasslands. I anticipate these environmentally related programs will continue to grow and expand in the future.

One of the topics of great concern referenced in the book has to do with the declining support for research, extension and education programs dealing with grasses and grasslands. The research and extension budgets for grasses and grasslands of the United States Department of Agriculture and Land Grant universities have been significantly reduced over time. There has not been a strong advocacy group for forages as there has been for most row crops. It is difficult to place a monetary value on forages, as most of them are marketed through animals. Several different groups that use forages need to come together to provide strong support for these programs. As the cellulosic biofuels industry grows and becomes more economically important, new and additional support groups may develop.

M. A. Massengale

Impact of Supplementing Modified Wet Distillers Grains with Solubles to Long Yearling Steers Grazing Native Range

By Kelsey Rolfe and Terry Klopfenstein, Department of Animal Science, and Dennis Bauer, Extension Educator, UNL

Introduction

The current inconsistency of corn prices has led many beef producers to focus on achieving maximal cattle gain with minimal corn. Fortunately, co-products of the corn dry milling industry fit very well into most grazing systems because they are high in protein, phosphorus and energy. To complement this, the long yearling system capitalizes on the use of the animal to harvest forage, as opposed to the calf-fed system, which requires additional harvesting costs associated with any forages utilized. Consequently, the objective of this research was to determine the effects of supplementing modified wet distillers grains with solubles (MDGS) to yearling cattle while grazing native Sandhills range.



Research Project

In 2008, 240 long yearling steers (BW = 504 lb) were backgrounded on cornstalk residue from late fall to mid-spring (144 d). While grazing cornstalks, calves were supplemented 5.0 lb/steer daily of wet corn gluten feed. The wet corn gluten feed, a byproduct of the wet milling industry, supplies all of the protein and phosphorus needed by calves grazing cornstalks. The energy in the wet corn gluten feed is in the form of readily digestible fiber, which complements the digestion of the fiber in the corn residue. The wet corn gluten feed is priced roughly equivalent to corn on an equivalent dry pound-for-pound basis, so cattlemen can obtain a nearly complete supplement at a relatively inexpensive price. Our research shows that distillers grains are equal to or better than wet corn gluten feed as a supplement to calves grazing cornstalks. Following backgrounding, steers were allowed to graze smooth brome pastures for 21 d. After grazing smooth brome, calves were assigned to summer grazing treatments, and relocated to graze Sandhills range at the Barta Bros. Ranch south of Ainsworth. Summer grazing treatments included grazing native range with no supplementation (CON), and grazing native range with MDGS supplementation at a level of 0.6% BW (SUPP). MDGS was fed daily on the ground with a tractor and feed wagon. Steers were allowed to graze Sandhills range for the rest of the summer (135 d) before entering the feedlot in early fall. Initial and final BW for summer were the average of two weights taken on consecutive days.

Results

Table 1 provides the descriptive statistics for the current experiment. At feedlot entry, steers supplemented with distillers grains were 116 lb heavier than steers that were not supplemented. Using these summer performance data, it was also determined that 0.74 lb grass was saved for every 1.0 lb MDGS (dry matter) fed using the National Research Council energy equation. Research studies where dry distillers grains were supplemented to yearlings grazing during the summer show a response in daily gains. The response to the distillers grains was .58 lb/day additional gain when supplemented at the same level as the cattle in the current study. In all of those studies, the dry distillers grains were fed in feed bunks and, of course, drying increases the cost of dry distillers grains relative to wet distillers grains. Economically, it is advantageous to producers to be able to supplement wet distillers grains on the ground. Because the wet (modified, 45% dry matter) distillers grains in this study gave cattle performance superior to the cattle performance achieved on dry distillers grains, it suggests the wet byproduct can be fed on the ground. Visual observation indicated the cattle were eager to consume the wet byproduct and were efficient in cleaning it from the ground. Further, feeding on the ground allowed distributing cattle over the pastures, and there was no visual detrimental effect on the range.

Table 1. Effect of summer supplemental modified wet distillers grains on long yearling performance.

Item	CON	SUPP	P value
Initial wt, lb	506	504	0.801
Spring wt, lb	730	735	0.539
Feedlot wt, lb	915	1030	<0.001
Summer ADG, lb	1.36	2.20	<0.001

It is important to note that these results are based on one year of data. Therefore, it can be concluded that in one year, supplementing MDGS at 0.6% BW to long yearling steers grazing native range increased ADG during summer grazing. A simple economic analysis was conducted on the data from the cattle performance. The MDGS was priced at \$.07 per lb of dry matter, and \$.10/per animal daily was charged for feeding the MDGS (above routine animal care). The grass saved (.74 lb/lb MDGS) was priced at \$.04/lb (equals \$27/AUM). Based on these prices, the cost of gain for the additional 116 lb gained by supplementing MDGS was \$.35/lb.

Lots Happening with PGA Golf Management University Program

From the title of this article, you may have already figured out the first “happening,” which is that the program has a new name. The Professional Golfers’ Association of America recently changed the official name of its accredited program from Professional Golf Management to PGA Golf Management University Program, of which there are currently 20 in the country.

We bid a fond farewell to our fearless leader, Dr. Terry Riordan, who helped establish the program in the early years of this decade and served as the first PGM Director. Terry officially retires in July, but will be helping out during the fall semester on a contractual basis as we transition to new leadership.

We welcome the new Director, Dr. Alan Baquet (pronounced BAYquit). Alan’s educational background is in business. He has held professorial and administrative positions at Oklahoma State University, Montana State University, and since 1998, UNL. He is an avid golfer, and is very excited to have the opportunity to build on the great foundation that has been laid with this program.

In the previous issue of this newsletter, you read about some of the accomplishments of our Internship Coordinator, Scott Holly, which included PGA certification in

general management, an education award for superior work from the Nebraska Section of the PGA, completion of an MBA degree, and a tournament finish in the 2008 Nebraska PGA Professional Golf Championship that qualified him to play in the 2009 PGA Professional National Championship this June in Albuquerque. To top it off, he and his wife, Amy, welcome into the world their second child in July.

And congratulations to Tara Lea, our Educational Specialist, who just received her Master of Science in Leadership Education, with a minor in Teaching, Learning and Teacher Education.

All three PGM staff members were recognized at the College of Agricultural Sciences and Natural Resources Spring Banquet. Terry received the North American Colleges and Teachers of Agriculture Teaching Award of Merit. Tara and Scott were both nominated for Outstanding Staff Member, and Tara for Outstanding Teacher. Various PGM students were also recognized.

We’re looking forward to an exciting year as we help approximately 170 students toward their goals of graduating with their degree in PGA Golf Management and beginning their careers as PGA professionals!



Terry Riordan



Scott Holly



Alan Baquet



Tara Lea

August 1 is Pre-registration Deadline for Nebraska Grazing Conference



The previous issue of this newsletter provided detailed information about this year’s Nebraska Grazing Conference at the Kearney Holiday Inn on August 11 and 12 (see the CGS website, www.grassland.unl.edu, for conference details). While walk-in registrations are accepted, you’ll want to take advantage of the pre-registration prices.

The two-day pre-registration fee is \$75. One-day registrations are also available. Registration form and check (made out to 2009 Nebraska Grazing Conference) should be sent to the Center for Grassland Studies. Late fees apply to all registrations postmarked after August 1 and to walk-ins.

Registration fee will be waived for students who will be in high school next year and who pre-register by August 1, compliments of the UNL College of Agricultural Sciences and Natural Resources. Reduced registration fees apply for other full-time students.

Participants of any of the previous Nebraska Grazing Conferences as well as all Nebraska extension educators should have received a brochure in the mail in June. The Center for Grassland Studies is one of the underwriting sponsors and provides overall coordination of this conference, which draws around 250 people annually. Contact the Center with any questions.

CGS Associates

Wheat geneticist **Stephen Baenziger** has had a busy spring! He has been selected as a member of the board of trustees of the prestigious International Rice Research Institute. Currently only one person from the US sits on the 15-member board. Headquartered in the Philippines, IRRI has as its mission to reduce world hunger, improve the health of rice farmers and consumers, and work for environmentally sustainable rice production. Baenziger was also named a Nebraska Hall of Agricultural Achievement honoree during a May 1 banquet.

Chris Calkins has been named educator of the year by the North American Meat Processors Association. Among the accomplishments for which he was honored is the work he has done with muscle profiling and new cutting procedures for previously under-valued cuts, including being part of the team that developed the flat iron steak.

In June **Darrell Mark** and **Bryan Reiling**, two of the faculty who advise our Grazing Livestock Systems students, received the 2009 Teacher Fellow Award from the North American Colleges and Teachers of Agriculture (NACTA).

Sustaining Ecosystem Services on Farms: The Healthy Farm Index (continued from page 1)

that function as food and habitat for birds and support many of the services mentioned previously. More than 100 migratory and breeding species are found on these farms. Surveys tallied a mix of rare and threatened species across grassland, edge and woodland guilds. A few highlights include loggerhead shrike, long-billed curlew, bell's vireo, grasshopper sparrow, horned lark, sedge wren, burrowing owl and lark bunting.

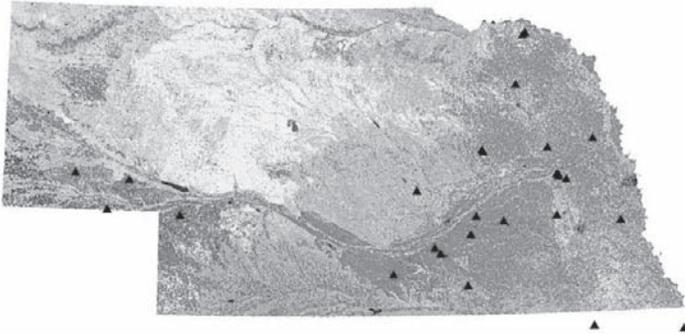


Figure 2. Organic Farm Research Sites

By enhancing native and planned biodiversity in the fields, farms and surrounding landscapes, farmers will be better able to benefit from the ecosystem services that sustainable farm management practices support through bird conservation efforts. As an additional output of our project, the bird community at each farm will be modeled as one measure of biodiversity along with other measures of farm success, including profit, yield, land protection and grower satisfaction, as components of the Healthy Farm Index.

The Healthy Farm Index — Momentum to include ecosystem services in management and economic decisions is growing. Governmental agencies and non-governmental agricultural, economic, and conservation organizations are working together to include ecosystem services in the decision-making process. To meet the needs of these agencies and to engage individual landowners in the process, new assessment and decision-making tools are required. Building on past and current research efforts, an interdisciplinary organic working group at the University of Nebraska-Lincoln, in cooperation with organic producers in Nebraska and Kansas, has designed a new assessment and decision support tool, the Healthy Farm Index, which encompasses the multi-functional nature of sustainable farm systems and reflects a vision of sustainable farming.

Agricultural systems are typically managed to maximize the provision of food and fiber. The multiple goals of farmers and society, however, include food production, ecological and environmental health, and a high quality of life now and in the future. To diversify management goals, the Healthy Farm Index incorporates multiple outputs from a farm system. The values of these outputs are reflected in a group of indicators within ecological, environmental, and socio-economic categories using measures of farm profitability, biological diversity, and ecosystem services to and from agroecosystems. Research, feedback from farmer advisory groups, and evidence of the benefits of a practice are being used to set target values for each indicator. The structure of the index allows for the integration of future components as research and shared goals evolve. Listed below are 11 selected indicators and future indicators under consideration (Table 1).

Table 1. Current and Potential Indicators for the Healthy Farm Index

Current Indicators	Indicators in Development
Production: 1) yield, 2) diversification, 3) acres	Functional species (biological control, pollination)
Biodiversity: 4) habitat, 5) birds, 6) crops & livestock	Energy balance, carbon sequestration
Conservation practices: 7) soil, 8) water 9) landscape	Land tenure (duration) and farm succession (is there a plan in place)
Satisfaction with: 10) profit, 11) farm management	Civic engagement (involvement in farming, civic and other organizations); Rural amenities or landscape elements related to rural community satisfaction

We have designed the Healthy Farm Index to address management decisions on fields and farm — the area over which the farmer or landowner has the greatest level of control. Understanding the driving forces, tradeoffs, and relationships at field and farm scales will improve the effectiveness of whole farm management. The index does have the potential to be scaled up. For example, collective use of the index by many stakeholders in a region could shape decisions made at the watershed or larger scales, resulting in measurable benefits to all.

Conclusion

Recognizing the importance of ecosystem services to human well-being is an essential first step to sustaining healthy ecosystems now and for the future. Although research will continue to assess both the economic and non-economic values of ecosystem services to and from agricultural lands, it is essential to ensure that the broad array of services is part of the decision-making process. The Healthy Farm Index seeks to improve how decisions are made by providing a full range of outcomes from farm decisions, not just how yield or profit will change.

This first iteration of the Healthy Farm Index is based on data from the Great Plains. It brings a tool that farmers and others can use to visualize outcomes when managing to optimize multiple ecosystem services from land in row-crop production. Although there are tradeoffs, preliminary assessment indicates that managing land cover and land use to sustain soil and water will sustain multiple ecosystem services without significant losses in total production. Ultimately, we foresee the Healthy Farm Index as a potential means to bring about payments for ecosystem services. Direct payments or subsidies would be a way for society, which benefits from these services, to compensate the landowners who provide the services. The concept of payments for services will be discussed further in the next issue of this newsletter.

For more information on the integration of farming and bird conservation, the Healthy Farm Index, and to suggest further indicators, please visit our websites at <http://hfi.unl.edu> and <http://organic.unl.edu>.

References:

Isaacs, R., J. Tuell, A. Fiedler, M. Gardiner and D. Landis. 2009. Maximizing arthropod-mediated ecosystem services in agricultural landscapes: the role of native plants. *Frontiers in Ecology and the Environment* 7:196-203.

Teff – Potential for Nebraska

By Bruce Anderson and Jerry Volesky, Department of Agronomy and Horticulture, UNL

Teff is a warm-season annual grass originally grown as a cereal crop in Ethiopia and other African countries. Recently it has received increased attention in our region as a hay crop to be grown during the same time of year and similar growing conditions as summer annual forage grasses that are currently used such as sudangrass, sorghum-sudan hybrids, forage sorghum, pearl millet and foxtail millet. It is very sensitive to frost as a seedling and develops slowly in cold soil like other summer annual grasses, so plantings should occur after all threats of frost are past and soil has warmed to around 65 degrees.

Teff has several characteristics that make it attractive as a hay crop. It has rapid seed germination, and seedlings develop quickly after the initial root system is established. Although it is relatively shallow rooted, it is well adapted to dry climates once established. Teff hay is very leafy with fine stems that make it much softer

to the touch than other summer annual grasses (Figure 1). It has been compared favorably with timothy hay. As a result, it enjoys popularity with owners of horses, llamas, alpacas, and similar livestock. It also may be well suited for starting recently weaned calves or lambs onto hay.

Forage quality of teff is relatively high compared to other cereals grown for hay or other summer annual forages. Crude protein is usually between 12 and 17%, while TDN runs between 55 and 65%.

Teff grows rapidly. In studies conducted on irrigated land at North Platte, teff consistently has produced over two tons per acre within 40 to 50 days of planting, even when planted as late as late July. Thus, it can provide excellent forage with a late planting following a crop failure, or as a double crop following wheat. It also has fast regrowth, producing up to 2.3 tons per acre after only 26 days (Figure 2).

Teff can be grown with relatively low inputs. Thus far, insects and diseases have not been a serious problem on teff, but as the crop gets used more extensively, it is likely that pests will become more common. Broadleaf weeds can be controlled following herbicide programs, similar to other annual grasses. Although teff does not require high rates of nitrogen fertilizer, it uses small additions quite efficiently. At North Platte, 70 pounds of N per acre under irrigation produced an additional 1.6 tons of hay per acre.



Figure 2. Teff growth in early August. Plots had been harvested 26 days earlier.

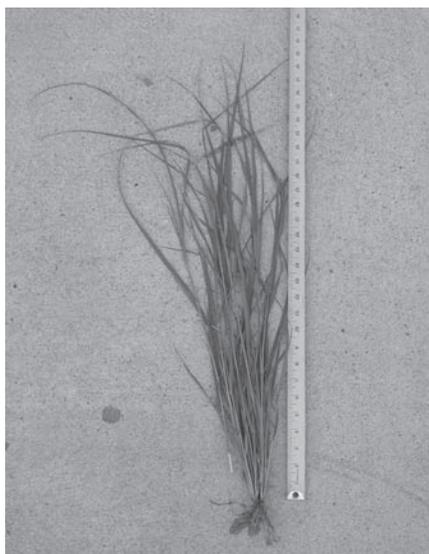


Figure 1. Teff plant at nearly 50 days after planting and averaging about 26 inches in height.

Teff's greatest weakness is establishment. Much of the challenge is due to its tiny seed. Teff seed must not be planted too deep. Many stand failures or spotty stands have occurred due to excessive depth of planting. Because the seed is so tiny, it should be planted no more than 1/8th inch deep. When a drill is used, the seedbed must be very firm. Cultipacker seeders may work best; broadcasting seed on the soil surface and either sprinkler irrigating or waiting for rain often work better than using a drill with inadequate depth control.

Tiny seeds also have few reserve nutrients to support their growth once germination begins. Teff needs to have adequate soil moisture very near the soil surface for about one week once germination begins so that top growth will emerge and seedlings will develop sufficient roots to survive. Dryland stands of teff have been successful in western Nebraska, especially when there has been periodic rainfall during the two- to three-week period after planting. When planted as a double crop following wheat harvest, lack of sufficient, consistent rainfall has caused several plantings to fail.

Tiny seed also can be difficult for equipment to accurately distribute. Older, worn drills may be unable to be set low enough to allow proper seeding rates. To reduce this problem, seed merchandisers have developed a seed coating that makes the product larger. While seeding rates of raw seed may be 4 to 8 pounds per acre, coated seed is planted at a rate of 8 to 14 pounds per acre.

Research data are limited on harvest timing for teff, but most recommendations suggest cutting slightly before heading to very shortly after heading. If a 3- to 4-inch stubble remains after cutting, regrowth is very fast when moisture and fertility are adequate. With irrigation at North Platte, teff has produced up to 5.2 tons per acre over three harvests. Late summer growth after the second harvest does slow, and amount of forage present may not be enough for mechanical harvest. However, that forage could be grazed.

CGS Advisors and Associates Toured South Central Nebraska

On June 9, 2009, Center for Grassland Studies Citizens Advisory Council members, CGS Associates and guests participated in the CGS summer tour, which this year took place in south central Nebraska.

We began the day at the Smith Softball Complex in Hastings. While the morning rain prevented us from getting “up close and personal” with the turf, we had a great view of the fields from the tower as Terry Brown with the City of Hastings Parks and Recreation Department explained how the fields are managed, some of the challenges they have encountered, and how those challenges were addressed. Roch Gaussoin, UNL extension turf specialist, helped arrange and was on hand as a resource person for this portion of the tour.

From there we headed to the USDA Meat Animal Research Center (MARC) near Clay Center where Scott Opbroek gave us an overview of the various programs and facilities. Mike Wallace, sheep operations manager, Gordon Hays, cattle operations manager, and John Rieckman, farm operations manager, shared their knowledge and expertise in the lecture hall as well as in vehicles as they gave our group a driving tour of the MARC operations.

The next stop was the Crooked Creek Country Club in Clay Center. Superintendent John Story provided a history of the formation of the nine-hole course, which was built in 1991 by the residents of this small town. By this time the rain had ceased and tour participants were able to get “up close and personal” with one of the greens

while they discussed management issues with Story.

The final portion of the tour was hosted by Tim Horst, conservation specialist/land manager with Ducks Unlimited and Matt Steffl with the Nebraska Game and Parks Commission. These two organizations partner in the management of the Verona Complex east of Clay Center. Tim discussed DU’s management goals for the

area, showed a map of the current properties, and explained DU’s process of purchasing and restoring properties and often putting them back on the market with a conservation easement in place. Tim and Matt discussed the high diversity local “ecotype” seed used on the restorations and the general techniques used in the wetland and upland to complete the restoration. We toured multiple sites that were in various



A view from the tower at the Smith Softball Complex in Hastings.



Tim Horst (left) with Ducks Unlimited describes management techniques used on the lands of the Verona Complex.



Cattle graze on the lands at the Meat Animal Research Center near Clay Center.



Superintendent John Story (third from left) discusses turf management issues at the Crooked Creek Country Club in Clay Center.



Rancher Roger Chesley (left) and grass seed producer Dave Stock find things in common to talk about on the Center for Grassland Studies tour.

stages ranging from pre-restoration to approximately five years post-restoration. The oldest sites had reached a point at which management such as prescribed burning was now necessary. We had the opportunity to view one of these sites that had been burned this spring to see the results of that burn. We also looked at sites where both drilling and broadcast seeding were used to compare the results of the two techniques; the sites showed that a few years after establishment, there was no significant difference in the established habitat.

The CGS is grateful to all who helped with the arrangements, gave presentations, and participated in this year’s tour. Thanks, also, to Gerald Horst for the great photos!



4th National Conference on Grazing Lands



In keeping with its Reno/Sparks, NV location, "Grazing Lands – A Winning Hand" is the theme of the Fourth National Conference on Grazing Lands (4NCGL), December 13-16, 2009.

Hosted by the Grazing Lands Conservation Initiative (GLCI), the Society for Range Management, and a number of other sponsoring organizations, the

conference objective is "to heighten awareness of the economic and environmental benefits of grazing lands."

The target audience includes producers, academics, consumers, government agency officials, conservationists, environmentalists, urban based resource interests, grazing land managers, landowners, and others interested in effective natural resources management. Cooperators are expected to come from the public sector (natural resource agencies and entities), and from the private sector (agricultural and natural resource entities, the farming and livestock industry, and environmental conservation organizations). The conference is designed to provide a forum for discussions and exchange of information, technology transfer, identification of research and program needs, marketing of

products, services, and other benefits of grazing. It will generally be organized into four tracks: 1) western grazing lands, 2) central grazing lands, 3) eastern grazing lands, and 4) dairy grazing land management. Topics to be addressed include economic and environmental benefits of grazing lands, science-based technology and conservation programs for grazing lands.

For details, see <http://www.glci.org>.

Info Tufts



CGS Citizens Advisory Council Member News: **Allen Overcash** was recently recognized by the Nebraska State Bar Foundation as a Distinguished Fellow. In addition to lecturing at the University of Nebraska College of Law, Overcash has been active in helping increase awareness of the Foundation's law-related educational programs and supporting scholarships to Native American students at the College of Law. After serving as vice chairman for a year, **Robert Milligan** assumed chairmanship of the U.S. Chamber of Commerce in June.