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Center for Grassland Studies

Spring 1997 Newsletter

Volume 3, No. 2
Spring 1997



From the Director

Most of the problems that society faces today are increasing in complexity and are not easily addressed by a single discipline. To successfully challenge and resolve these issues, we need to approach them from an interdisciplinary basis. Thus, the formation of teams comprising multiple disciplines is of critical importance. This is one of the primary reasons that the Center for Grassland Studies was established.

To meet this challenge, we have been working with a number of our Associates in developing project proposals for submitting to different granting agencies. These proposals have involved numerous individuals both from Nebraska and other states in the region. The Associates involved in these projects have an array of disciplinary backgrounds, expertise and interests.

I continue to be impressed with the effort and dedication of members of our University faculty, associates from outside the University, and cooperators from state and federal agencies and other universities. The cooperation, the mutual support for each other, and the willingness of these people to work long hours to develop proposals and to follow up as needed are a great asset to the Center and a tribute to the individuals.

The Center is also fortunate to have many dedicated citizens across the state who are willing to devote time and resources to serving on our Advisory Council. Several of these members drive long distances and contribute valuable time and ideas on behalf of their fellow citizens. Another group that contributes greatly to the Center is the Policy Advisory Committee. Indeed, we are fortunate to have such great people who are willing to share their expertise and resources freely with others when called upon. The Center is living proof of the statement, "People make the difference."

To repeat a phrase often used on campuses these days, "Farmers, ranchers and citizens have problems, while universities have departments." Centers like ours are designed to address this very issue. As the Center looks to the future, we will try to encourage more interdisciplinary teamwork and the development of more partnerships, both internal and external to the University. These include other universities, federal and state agencies, and industry groups. I have no doubt that we can develop many more outstanding teams to better serve our clientele.

Environmental Quality Incentives Program

*by Dayle Williamson, Director
Nebraska Natural Resources Commission*

The Nation's farmers and ranchers will soon have an opportunity to become acquainted with a new

USDA program, the Environmental Quality Incentives Program (EQIP). This program is part of the Freedom to Farm Act, and the goal is to maximize the overall environmental benefits per dollar spent.

A number of long-standing programs, such as the Great Plains Program and the Agricultural Conservation Program, have been incorporated into EQIP, but there are some major differences. Priority areas will now be established, with a special focus on significant environmental concerns. Landowners will now compete for five- to ten-year contracts that address multiple resource concerns. Farmers and ranchers who live in these priority areas will be eligible for program assistance. Producers who agree to address the primary concerns in the priority area will be given preference for an EQIP contract; producers wishing to address secondary concerns will be eligible, but their applications will rank lower.

In Nebraska, a priority area has been established in each Natural Resources District. In addition, the North Blackbird Creek with \$70,000 above and beyond the state allocation assistance, and the Nebraska Grassland Improvement Project priority areas have been established, for a total of 25 areas in the state. Nebraska is also working in cooperation with Kansas and Colorado on a Tri-State High Plains priority area that takes in the Upper Republican River NRD. The state will receive an additional \$70,000 from the Kansas allocation this year to ensure the project gets underway. After these priority areas were submitted to the Natural Resources Conservation Service (NRCS) state office, the State Technical Committee, a group of almost 100 representatives with a wide range of interests, reviewed the proposals and provided recommendations to NRCS State Conservationist, Steve Chick. Chick gained concurrence from the State Farm Services Agency before forwarding recommendations.

Funding levels have been established for each state, and Nebraska will receive \$5,294,000 for 1997. This was the sixth highest allocation among the states. This level brings conservation cost-share funds back to the level seen in the early 1990s, which is certainly good news, as funds have been declining in recent years.

The Nebraska plan provides for at least 65% of the funds to be allocated to priority areas and up to 35% to statewide concerns. In addition, there is a special incentive award of \$233,000 for Grazing Lands Management. The EQIP law also requires that 50% of the allocated funds be used to address conservation issues related to livestock operations. The development of a rating system for each project area is now underway. The Nebraska funding plan for each of the priority areas has recently been sent to the NRCS national office for approval. However, the final rules for EQIP have not been published in the Federal Register at the time of this writing, so it could be from early to mid-summer before the program gets underway.

High Quality Seed: Importance for Grasslands

*by Roger Hammons, Acting Secretary-Manager
Nebraska Crop Improvement Association*

Control What You Can

Two proven agronomic keys to the satisfactory performance and suitability of a pasture, wildlife habitat, turf or other grasslands are the choice of cultivars and the quality of the seed. Those decisions are an important responsibility, and entirely within the control of the seed buyer.

The cost of selecting and planting high quality seed is a sound investment, considering the lifetime of the perennial grassland produced. Even in the use of annual grasses, the value of quality is realized. The use of quality seed results in an improved opportunity for rapid establishment, and reduces the risk of failure and the cost of reseeding and renovation. When coupled with other sound management practices, high quality seed helps ensure success.

This fact has been proven on farms and ranches over many years and sites. The recognition of the value of quality allowed the Agricultural Stabilization and Conservation Service to apply a premium rate in cost-sharing programs for the use of Nebraska grown certified seed of adapted varieties for over twenty years. In the late 1980s, establishment data collected by Soil Conservation Service personnel from multiple sites seeded for the Conservation Reserve Program again proved the advantage of using high quality seed.

Quality Is Performance

Most people recognize the value of high quality seed for pastures, parks, golf courses, home lawns and other grassland situations. However, it is difficult for most people to evaluate seed quality and calculate applicable seeding rates for grasses such as super chaffy warm-season grasses. The term "high quality seed" does not mean the same to everyone.

High quality seed results from a combination of genetic, physical, and physiological factors that enable the seeds to respond productively and effectively in an adapted environment. It is a reasonably pure supply of an adapted cultivar that: has acceptable germination and viability; is relatively free of objectionable weed seeds, other grass seeds, crop seed and debris; is healthy; and meets the specific needs of the seed buyer. Those specific needs may include suitability for the grassland environment, availability in sufficient quantities, and seed cost. The most unreliable indicator of seed quality is appearance; the most detrimental quality factors (e.g., poor germination, variety mixtures, weed seeds, etc.) are not easily seen.

Read All About It

Federal and state seed laws require that each seed package must have an analysis label clearly stating important information about the identity, origin and physical quality factors of the seed. This information includes germination, pure seed content, presence of other crop seeds, weed seeds, and inert material. The seed buyer should study this information carefully. It can provide a partial explanation of the difference between "bargain" seed and a good seed value.

Certified Seed Is High Quality Seed

Quality-conscious seed buyers should also look for the Certified seed label. It is a widely recognized symbol of high quality, genetically pure seeds that are produced with care, attention and the expertise of professionals. It is awarded to identified seedlots which have been produced, harvested, and conditioned using approved procedures, under the supervision and inspection of a certifying agency, and that meet or exceed minimum certification standards for seed quality.

Seed certification is a process for maintaining excellence in cultivar identity, genetic purity, and physical quality factors while increasing the supply of seed. Specialists in the production, conditioning, and blending of grass seeds voluntarily use seed certification services to assure their customers that extra care has been taken to provide them with high quality seed. The production and marketing of high quality seed involve plant breeders, seed producers, the seed industry, seed certifying agencies, and seed regulatory officials.

State seed certification programs are administered by seed/crop improvement associations, Cooperative Extension, state departments of agriculture, or other agencies officially designated to carry out the requirements of a pure seed, buyer assurance program. While the structure of the certifying agency will vary from state to state, the objectives and general procedures are the same.

There are several steps that must be completed in certifying seed:

Variety Eligibility. The cultivar for which certified seed is to be produced must first be accepted as having merit for certification. Acceptance is based on research data and information which must show the variety to be distinct or novel in one or more respects. Most grass cultivars are accepted upon favorable

action by the National Grass Variety Review Board or the U.S. Plant Variety Protection Office.

Land Eligibility. Seed crops must be planted on land that is free from volunteer plants of the same species, objectionable other grasses, and weeds. The field must be properly isolated to prevent outcrossing and mechanical mixtures with other cultivars.

Seed Eligibility. Documentary evidence must be provided to the certifying agency to show the field was planted with Breeder, Foundation or Registered seed.

Field Management. Every field must be properly managed for seed production, including being rogued of objectionable weeds, other grasses or crops, and off-type plants. Timely cultural practices are necessary for optimum yields of high quality certifiable seed.

Field Inspection. Each field is inspected thoroughly by a specially trained representative of the certifying agency during the growing season. The inspector walks the field at a time when genetic identity is most evident and evaluates other factors affecting seed quality.

Timely Harvest. Combines, trucks, and bins are carefully cleaned before each seed field is harvested to prevent mechanical mixtures. Seed is harvested on a timely basis and with the utmost care to avoid mechanical damage (e.g., broken seeds, heating, etc.). Seed is handled and stored in a manner to maintain seed quality and uniformity.

Conditioning. Seed is conditioned (cleaned) using specialized equipment to remove weed seeds and inert matter, and to improve uniformity.

Laboratory Testing. A representative sample of each conditioned seedlot is tested in an official seed analysis laboratory using methods approved by the Association of Official Seed Analysts. Seed must meet or exceed minimum quality standards to be awarded the Certified Quality Seed label.

Interagency Assurance. Seed is often marketed in different areas of the country than where it is produced. In such situations, certifying agencies and seed marketers may use a procedure known as interagency certification where two agencies cooperate to provide documentation, testing and necessary buyer assurance.

For more information, contact the Nebraska Crop Improvement Association, PO Box 830911, University of Nebraska, Lincoln, NE 68583-0911, 402-472-1444.

Management Intensive Grazing Basics

*by Steven Melvin, Extension Educator Chair
South Central District (Nuckolls County), UNL*

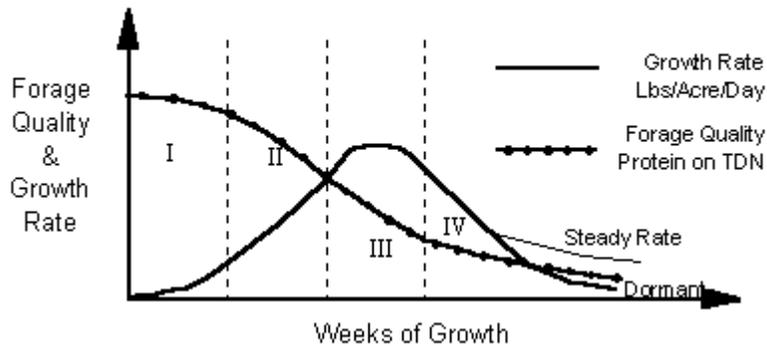
Management intensive grazing is a term that emphasizes management as the key to making grazing systems work. A good system should focus on three goals: (1) provide adequate nutrition to the livestock to meet production goals while optimizing yields per acre over time; (2) protect and enhance the natural resource base; and (3) make money while achieving goals 1 and 2.

The goals that are associated with management intensive grazing are very challenging, but are also something that can be accomplished. The big picture can be broken down into just two parts. First, keep the plants in your pasture growing at a fast pace and of high quality. Second, harvest the forage in an efficient manner.

The process of growing more forage and efficiently harvesting it while it is of high quality is fairly simple if one thinks about how alfalfa is managed. The plant is allowed to grow until its quality starts to decline significantly (bud to early flowering stage), after which it is harvested quickly and efficiently. This cycle is repeated three to five times each year.

Grazed pasture can be handled in the same manner by allowing the plants to grow until the quality starts to decline significantly (producing mostly stalk and seed heads). The livestock are then put in a small area so they eat 40 to 50% of the forage in a short time (one to three days) before they move to the next paddock. The plants need about 30 days in the spring and 40-45 days in the summer to regrow before they will be ready to regrow.

Figure 1 - Basic Growth Curve



This idea can be illustrated by looking at the two graphs. Figure 1 is an illustration of how a leaf, a plant, or a whole pasture grows (most all biological growth follows this pattern). The curve is broken into four phases. Phase I is characterized by plants that are just coming out of dormancy in the spring, have just been harvested, or grazed very short and have lost their ability to collect sunlight, so plant growth is slow. Phase II is the period when the plants have a lot of green leaves to

collect the sun's energy, and the pasture is increasing its growth rate each day. The forage is of high quality, and no seed heads are present. In Phase III the growth rate is at its fastest point, then begins to slow down, seedheads are produced, and the forage quality quickly declines. In Phase IV the plant growth rate slows and/or stops. From this curve one can see that it is desirable to keep the pastures toward the end of Phase II as long as possible. The pasture should be allowed to grow until it reaches the end of Phase II, then quickly grazed back to a level equal to the middle of Phase II.

Figure 2: Harvest Efficiency

Relationship of utilization rate to number of days spent on paddock

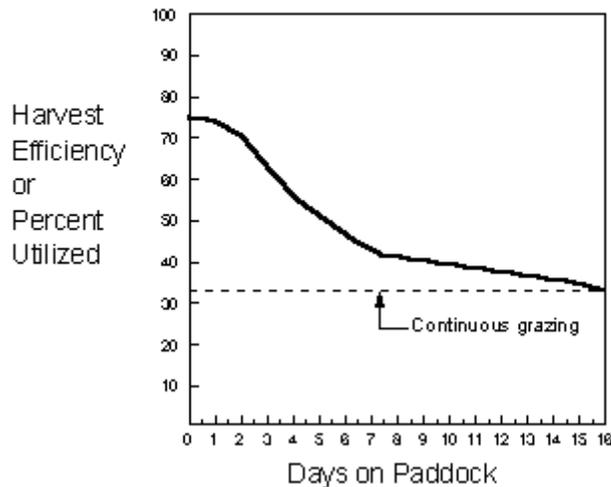


Figure 2 illustrates the impact of different lengths of time that cattle are allowed to graze in a paddock. In a recent experiment, cattle were put in at the appropriate stocking rate so they could remove this amount of forage in the desired time. Note that the three-day grazing duration resulted in utilization rates of 65%, compared to 40% for the nine-day rotations, and about 32% for continuous grazing. The objective was to keep similar quality forage in front of all of the cattle so that at the end of the experiment they would have all gained the same amount of weight. The difference in this utilization rate is mainly the wastage of the forage from trampling, bedding, and manure. This is why cattle are not given an entire winter's supply of hay at once.

These two basic concepts are the keys to management intensive grazing. Many different techniques and technologies are available to help achieve these objectives.

Editor's Note: The CGS has print and video materials on intensive grazing that can be viewed in our reference center or checked out for a short time.

Rangeland Grasshoppers of Nebraska

*by John Campbell and Gary Hein, Entomologists
West Central and Panhandle Research & Extension Centers, UNL*

The most important pests of rangeland in the Northern Great Plains are grasshoppers. There are about 100 species that inhabit this area, but only about 8-10 of these ever reach population levels that cause economic damage.

Grasshoppers tend to be more numerous during drought years, but they also tend to cycle with gradually increasing numbers for a few years and then decline. The decline may be the result of increasing predation, parasitism or weather. Most species of grasshoppers deposit eggs in pods in the fall which hatch as temperatures increase in the spring. A few species overwinter as nymphs sheltered by bunchgrass crowns and grass debris. Hatching starts in late May and continues until early July. Hatching time is temperature and species dependent.

Grasshoppers can generally be divided into three groups based on their feeding habits which is dependent on their mandibular structure. These groups are grass feeders, mixed feeders and forb feeders. Economic damage is generally caused by mixed feeder and grass feeder species.

Plant damage resulting from grasshopper feeding goes beyond the amount of forage consumed. In the feeding process some grass blades and stems are cut and fall from the plant. This results in both loss of leaf tissue and seed stock which may reduce grass production. A population of 20 grasshoppers per square yard has been reported to eat or destroy as much vegetation as a 1,000-pound steer will consume. However, assessment of potential loss to rangeland by grasshoppers is complicated. Climatic factors play an important part in this assessment. If adequate moisture is available, forage regrowth will offset much of the grasshopper damage, and cool, wet weather will increase grasshopper mortality from diseases. Conversely, most grasshopper outbreaks occur when drought conditions are prevalent.

Overstocking of range is common during moisture shortages. Many of the outbreak grasshopper species prefer overgrazed range as a habitat. In addition, biological control agents of grasshoppers, such as diseases and predators, are not as prevalent in overgrazed, droughty habitats. Recent research between the USDA Agricultural Research Service (ARS) and North Dakota State University entomologists indicates that rangeland with a twice-over rotational grazing regime reduced grasshopper nymphs by 79% when compared to continued grazing for five months.

Ranchers can no longer rely on grasshopper control cost-share from the USDA Animal and Plant Health Inspection Service (APHIS), which did pay one-third of the cost. Consequently, control efforts are only economical when used to protect the more valuable forage production areas, such as hay meadows and alfalfa. The ARS and APHIS have developed a computer model which when supplied with current data on range conditions, climatic data, cattle prices, grasshopper species and numbers will provide an economic, cost-benefit analysis for treatment decisions. The Hopper computer model is available to Extension Educators free of charge.

Editor's Note: For a related article and information on obtaining the Hopper model, see the Spring 1996 CGS Newsletter.

Pastured Poultry Organization Formed

Pastured poultry producers will be excited to learn of the organization of the American Pastured Poultry Producers Association (APPPA). A quarterly newsletter is planned to promote the exchange of ideas and information among producers. Reviews of federal and state laws regarding onfarm processing of poultry will be featured in the newsletter. Sources of chickens, feed and rations, new and used production and processing equipment, marketing ideas and referrals will add to the usefulness of the newsletter. APPPA will also develop a database of farmers actively producing pastured poultry, not only for networking purposes among members, but also for consumers looking for highquality chicken in their area. Joel Salatin of Swoope, Virginia is one of the founders of APPPA. To join, send \$20.00 to APPPA, c/o Diane Kaufmann, 5207 70th St., Chippewa Falls, WI 54729. For more information, contact Diane at 715-7232293, or e-mail: dkaufman@discovernet.net.

Eastern Gamagrass: Forage and a Whole Lot More

Eastern gamagrass (*Tripsacum dactyloides*), an ancient relative of corn, was once a very common plant found in the wetter areas of the tallgrass prairie of the U.S. Its occurrence may become common again if research sponsored by several government agencies is successful. Its primary role has been that of a warm-season forage grass for livestock consumption. However, its potential uses may go beyond this traditional function. Research today in using eastern gamagrass as a perennial silage which could cover highly erosive ground and reduce soil erosion and farmer inputs has been initiated by the Big Flats Plant Materials Center in New York. The Agricultural Research Service (ARS) has also pioneered studies with gamagrass to increase its seed yield, check its genetic similarities to corn, and determine the nutritional content of the grain for human consumption.

Gamagrass is a highly palatable, nutritious forage for ruminant livestock. With a protein content similar to alfalfa and annual dry matter yields of 7 to 10 tons/acre under irrigation, it is no wonder livestock producers are excited. However, recent chemical analyses of gamagrass grain have indicated that protein content is approximately three times that of corn and double that of whole wheat. In preliminary nutritional studies, ARS chemist Robert Becker reported that gamagrass grain contains an abundant store of unsaturated fatty acids, primarily linoleic, and half as much vegetable oil as ordinary corn. These findings along with preliminary baking studies may provide the conveyance which introduces gamagrass into a modern diet.

Source: Manhattan Plant Materials Center newsletter, January 1997.

Public Input Sought on Grassland and Forest Plans

In our last newsletter you read how the U.S. Forest Service is revising land and resource plans that will affect the management of national grasslands and forests on the Northern Great Plains (2.9 million acres) for the next 10 to 15 years. From now until the end of July the Forest Service will be disseminating information and gathering the public's ideas on the following topics: rangeland and forest health, community and lifestyle relationships, livestock grazing, oil and gas leasing, plant and animal control, recreation and travel management, and special area designations. To get on the mailing list or find out how you can provide your input, contact: Northern Great Plains Management Planning Team, 125 North Main Street, Chadron, NE 69337, phone: 308-432-0300, fax: 308-432-0309.

"There is a mysterious something about the native grasses a power, a spirit, a mystique that both stirs the soul and quiets it. ... What words does one use to describe a noble man? Character - integrity - individuality - strength - steadfastness? Use these same words to describe these noblest of all grasses."

in *Grass Land*, written by Jim and Alice Wilson, published by Wide Skies Press, 1967

Info Tufts



Nebraska's system of Natural Resources Districts, the only one of its kind in the U.S., celebrates its silver anniversary this year. The 1972 legislation consolidated 154 natural resources-related districts into 24 NRDs (later trimmed to 23).



According to the USDA brochure, "Conservation of Private Grazing Lands: Importance to the Plains Economy," privately managed grazing lands contribute \$250 billion annually to rural economies in the U.S., and \$4.3 billion in local, state, and federal taxes.



The Nature Conservancy is adding a second herd of bison at the Niobrara Valley Preserve (first one established in 1985), making this one of the largest programs in the country where the large herbivores are used to enhance grassland biodiversity.



Nearly 24,000 miles of rivers and streams add to Nebraska's bountiful natural resources.



Five ecoregions lie within Nebraska: (from east to west) Central Tallgrass Prairie, Central and Northern Mixed-grass Prairies, Central Shortgrass Prairie, and Northern Great Plains Steppe.

CGS Associate News

In April **Stephen Baenziger** was elected to the Nebraska Hall of Agricultural Achievement. CGS Citizens Advisory Committee member **James Girardin** of Arrow Seed Company also received this honor.

Resources

Detailed satellite images of any part of Nebraska are now available for the cost of reproduction from the Center for Advanced Land Management and Information Technologies at UNL. The images are an outgrowth

of work on the national biodiversity project known as the Gap Analysis Program. For more information, contact CALMIT at 402-472-2565, <http://www.calmit.unl.edu/calmit.html>

Grazing in Dairyland: The Use and Performance of MIRG on Wisconsin Dairy Farms. Free. Describes and analyzes results of two surveys of Wisconsin dairy farmers, paying special attention to graziers. It explains Management Intensive Rotational Grazing (MIRG), and compares MIRGbased operations with confinement operations. Center for Integrated Agricultural Systems, UW-Madison, 1450 Linden Drive, Madison, WI 537061562, carlisle@ssc.wisc.edu, <http://www.wisc.edu/cias/atffipub.html>

The Center for Rural Affairs of Walthill, Nebraska is reactivating its Conservation Options Hotline to assist farmers and ranchers wanting to enroll in the Conservation Reserve Program, the new Environmental Quality Incentives Program, and the Conservation Farm Option. The hotline number is 402-994-2021, and is staffed by Duane Hovorka.

Attention CGS Associates: The Center has recently acquired a copy of *Environmental Grantmaking Foundations 1996 Directory*. The directory is comprehensively coded and crossreferenced. If you are looking for funding sources for project activity, stop by our reference center (221 Keim Hall) or contact CGS Coordinator Pam Murray.

Calendar

[Contact CGS for more information on these upcoming events:](#)

1997

June 8-19—XVIII International Grassland Congress, Manitoba and Saskatchewan

June 13-26—Training Workshop on Sustainable Agroecosystems and Environmental Issues, West Texas A&M University

July 8-12—Private Grazing Lands in the 21st Century: Integrating Pastures, Environment, & People, Logan, UT

July 16—Turfgrass Field Day, Ithaca, NE

July 23-26—Soil and Water Conservation Society Annual Conference (focusing on ecosystem management within watersheds), Toronto, Ontario

Sep. 6—Festival of Color (features many native plants and grasses), Ithaca, NE

Sep. 23-25—Sustainable beef management workshop, Linneus, MO

Sep. 24, 25, 26,—One-day bison workshops for Extension

Oct. 1 or 2, 6, 7—and NRCS, various locations in NE

Oct. 7-9—Sustainable beef management workshop, Springfield, TN

Dec. 7-10—59th Midwest Fish and Wildlife Conference, Milwaukee, WI
(<http://www.dnr.state.wi.us/fh/fish/mwfwc.htm>)



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