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Center for Grassland Studies

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Slopes: Maintenance Hassle or Landscape Asset?

by John Fech, Extension Educator, UNL

Gentle slopes are desirable; a 2-3% drop-off facilitates water movement away from buildings, yet generally allows for water movement downward through the water profile. When the degree of slope is 5% or greater, problems commonly arise in several areas of landscape maintenance.

There are four undesirable outcomes associated with a severe slope:

1. Decreased Infiltration Rate

On flat or relatively flat ground, water has a long time to soak in before runoff occurs. As the slope increases, there is a direct increase in runoff and erosion potential, causing decreased infiltration.

The result of less water moving downward through the soil profile influences the landscape in two ways: (1) plants at the top of the slope don't get enough water, and (2) plants at the bottom of the slope get too much water. Both results create an unhealthy growing situation for plant roots. Overly dry roots will slough off, while soggy roots will soon develop root rot.

Mowing on severe slopes can result in scalping.

The outcome of reduced infiltration rate is also influenced by soil type. Every landscape soil has a different infiltration rate. Sandy soils allow water to move through them rapidly, while those soils predominant in clay offer great resistance to water infiltration. As you might imagine, a severe slope comprised of a heavy clay soil combines two factors responsible for problem landscape areas.

2. Hard to Mow

Slopes are difficult to mow safely, if not outright dangerous. When mowing a slope, the weight of the mower is not evenly distributed, with more than half of it being supported by the wheels on the downward side of the hill. This leads to two negative results: (1) increased risk of the mower overturning, leading to injury of the operator and damage to the mower, and (2) difficulty in steering, which usually results in excessively worn turf as the wheel crushes turf plants during turning.

In addition, there is a tendency by most operators to compensate for the uneven weight distribution by shifting their weight to the upward side of the slope, usually by sitting half on and half off of the mower seat. Of course, unsafe seating arrangement adds to the increased potential for injury to the operator and damage to the mower.

3. Hard to Fertilize

Related somewhat to the problem of uneven water infiltration, fertilizer application and uptake is also potentially nonuniform. There are several factors to consider with fertilizer as well.

On slopes, there is greater potential for fertilizer to move. Moderate to heavy rainfall can cause the particles to tumble down the slope, causing too much to be absorbed on the down side, with too little on the top. Again, this is problematic, with fertilizer burn in one area as well as a lack of nutrients in others as the result. In the case of fertilizer application combined with preemergence herbicide, the uneven application can leave the turf with a less-than-optimal product concentration, possibly resulting in an increased number of weeds.

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Policy Advisory Committee Members

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.

Martin A. Massengale ..... CGS Director
Pam Murray ..... CGS Coordinator
Jan Shamburg ..... CGS Secretary
Anne Moore ..... Newsletter Layout

From the Director

The Center had the pleasure of being one of the sponsors of the Grazing Conference and Field Day held June 20-21 at Brush Creek Ranch north of Atkinson, Nebraska. This ranch is owned by Dr. Mickey Keim of Omaha, who has practiced management intensive grazing for several years. The event provided a great opportunity to share results of management strategies used on the ranch and to hear from many grazing specialists located in different regions of the United States. Dr. Barry Dunn, economist from South Dakota State University, described which ranchers are making money and some of the practices they are using. Allan Nation from Ridgeland, Mississippi shared information on running a land company versus a cattle company, and what the expected returns from each could be. Jim Gerrish, formerly with the University of Missouri and now a grazing lands consultant, discussed the optimization of plant and animal production with planned grazing practices. Local ranchers Doug Crouse from Valentine and Tom Dearmont from Rose shared their experiences with grazing management. Kit Pharo, a producer from Cheyenne Wells, Colorado, talked about matching livestock to one's individual ranch. Dr. Dick Richardson from the University of Texas spoke of our ecological footprint, while Dr. Pat Richardson, also from the University of Texas, discussed the beneficial work of dung beetles, other insects and microbes.

On June 24, members of the CGS Citizens Advisory Council toured the University's Dalbey-Halleck farm and learned of the grazing research UNL faculty and graduate students are conducting at that site.

Several well-known individuals will share the program at the 2003 Nebraska Grazing Conference on August 11 and 12 in Kearney (see related article for registration information). Greg Simonds, a ranch management consultant from Utah, will talk about low-cost grazing strategies, while Jim Gosey from UNL will discuss matching livestock to your resources. Fred Provenza of Utah State University will visit about learned grazing behavior, and Bob Budd from the Wyoming chapter of The Nature Conservancy will share information about grazing stewardship and biodiversity. There will be panel discussions on grazing under drought conditions and on irrigated pastures. Currently, there is considerable interest in feeding corn by-products from ethanol plants, and Don Adams, beef specialist from UNL, will address winter grazing and feed supplementation of livestock.

The 4th Annual Open House at the Gudmundsen Sandhills Laboratory will be held August 27. This free event will feature speakers from UNL and the private sector as well as Nebraska Cattlemen Executive Vice President Greg Ruehle. There will also be many exhibits and demonstrations throughout the day.

The six-session Nebraska Ranch Practicum began its fifth year in June. There are also several multi-county events that take place during the summer such as the Advanced Grazing Series that was held in northeast Nebraska in April and May. All in all, it is a great summer for sharing information and data on livestock grazing management.

Finally, I want to mention our seminar series this fall that treats a wide range of subjects on grasslands. Several distinguished speakers have already been scheduled (see related article). We invite you to join us for presentations and discussions on topics of mutual interest to those who share a concern for grasslands.

M. A. Massengale

Potentials and Precautions in Turfgrass Biotechnology

by Charles Francis, Department of Agronomy and Horticulture, UNL

Biotechnology currently captures wide excitement and substantial research funding with the promise of higher crop yields. We read of the hope for greater convenience in golf course management. There is an expectation of creating turfgrasses resistant to Roundup© herbicide that will simplify control of broadleaf weeds and other grasses perceived as less desirable. In the previous Center for Grassland Studies newsletter (Spring 2003), Dr. Terrance Riordan described issues in biotechnology as "some real, some perceived, and some where we just don't know what will happen." These issues need to be explored, and others added to the list.

First, it is useful to examine the success of the Roundup Ready© gene in current U.S. field crops. Wide adoption of the new technology is apparent in corn and soybean systems and regions. In 2003, it is estimated that nearly 70% of U.S. soybeans and over 30% of the U.S. corn crop will contain genes for Roundup© resistance and other genes in varieties and hybrids transformed by biotechnology. Rapid adoption of the weed control technology has occurred because of the simplicity of weed control by spraying a single product on both crops, the effectiveness of Roundup© under ideal conditions for controlling a wide spectrum of broadleaf and grass weed species, and the need to cover more acres in a short time with confidence that additional follow-up chemical treatments or cultivation will not be needed.

As a result of this efficiency, the new chemical technology promotes the consolidation of fields and farms into larger management units and the homogeneity created through large areas of monoculture crops. This represents a new and more specialized pinnacle in the climb toward an industrialized agriculture.

Next, it is useful to explore the economics of this advance in chemical technology to see what farmers have gained. Seed companies promoting sales of Roundup Ready© varieties and hybrids as well as Monsanto that sells the herbicide herald the advantages of a single-pass application to burn down weeds with a product that is highly effective against all vegetation except the genetically-resistant crops. This practice promotes use of minimum till and zero-till methods that allow planting into a weedy seedbed and chemical application after the crop emerges to eliminate unwanted weeds. In areas of low rainfall such as the Great Plains, any reduction in primary tillage or cultivation is a boon to the crop, as most growing seasons are short on moisture at some point in the crop cycle. This technology appears to solve two problems on large farms: (1) reduced time in the field as more acres can be covered by one operator, and (2) timely control of weeds in no-till systems that saves fuel. For all farms, this practice would help save critical soil moisture.

In fact, the technology is not always quite so miraculous. The herbicide is not totally effective in all situations, and additional chemical or mechanical methods may be needed in some seasons for adequate weed control. Research in Iowa reported by Dr. Mike Duffy in the meeting of the American Seed Trade Association in December, 2001 in Chicago included a survey of a large number of soybean and corn farmers who found, on average, no higher profits from using Roundup© for weed management than other chemical or mechanical methods. Technology costs for seed and chemical product, plus additional weed control costs where the chemical was less than totally effective, were the reasons for the results in this report. In 2002, a follow-up survey by Duffy of soybean producers in Iowa confirmed these results.

The appearance of Roundup© resistant weeds in corn and soybean fields should come as no surprise to any thoughtful biologist. Over the past several decades, even repeated use of other chemicals on the two crops rarely selected for weed resistance, since different chemicals were used in an alternating two-year crop rotation, and mechanical weed control employed as an alternative or when chemicals were ineffective. This diverse management strategy, even in a two-year rotation, provided some diversity and resilience in the system to preserve the wild types of weeds that would usually have a reproductive advantage over any mutants. Just as few farmers would plant all their acres to a single variety of soybean or a single corn hybrid, it is not a prudent strategy to spray all areas with the same chemical year after year. Such a practice has a very low potential for sustainability over the long term.

Complicating the lack of field diversity in the Roundup Ready© technology is an apparent lack of other products in the development pipeline that could replace or complement this chemistry when it becomes ineffective in the near future. The transformation of each variety and inbred line is an expensive process — one that requires additional testing for safety and for yield once the genetic change is made and seed increased. With the initial patent expired on Roundup©, it will be less profitable for Monsanto to continue to depend on proceeds from this product to finance development of the next generation of chemicals. There is also an opportunity cost of neglecting other research dedicated to increased yield potential, specific adaptation to unique systems and environments, and product quality, for example. It is likely that this technology will be viewed in the future as an expensive and elegant genetic scheme that had limited lasting value to agriculture.

(continued on page 6)

Slopes: Maintenance Hassle or Landscape Asset? (continued from page 1)

4. Hard to Mulch

The fourth category of trouble with slopes is retaining mulch around ornamentals that may be planted as specimens in the midst of turf or in beds that comprise the hillside. Just as fertilizer, herbicides and water are prone to tumbling down the slope, mulch has a hard time staying put.

In general, most horticulturists and arborists (myself included) are much fonder of a plant by-product such as bark nuggets, cypress pieces, stump grindings, cocoa bean hulls, cottonseed hulls or wood chips than the "inorganic" sources commonly used such as river rock, washed stone, and the newest product on the market, colored rubber tire chunks. Plant residues are short-lived, but have a better capacity to cool the soil, retain moisture and suppress weeds than inorganic materials. However, on slopes, the weight of rock, stone and rubber allows for a significant advantage in terms of keeping the mulch where it belongs for moisture retention, weed suppression and aesthetic value.

Solutions

The first step in conquering problems with slopes is to decide whether to keep growing grass or change the plant material. All of the possible solutions are steeped in the heart of sustainable landscape design in that the last step in the design process is to thoroughly evaluate how well the plan is working after a season of growth. If you've got problems with a slope for any or all of the above reasons, it's time to create a new planting design.

Probably the simplest design solution is to leave the slope alone and simply replace the existing turf with groundcovers and/or ornamental grasses. There are hundreds of choices, depending on your locale. For more information on these plants, check out *The Encyclopedia of Ornamental Grasses* by John Greenlee, *The Color Encyclopedia of Ornamental Grasses* by Rick Darke, The American Horticultural Society Flower Finder by Jacqueline Heriteau, Ortho's *All About Groundcovers*, or *Groundcovers of the Midwest* by Tom Voigt.

Just as the existing grass can be difficult to grow because of runoff and poor infiltration, establishment of alternative plants can be problematic, at least initially. The big advantage of these other choices is that they do not need to be mowed, thus removing a safety hazard while providing a good looking landscape feature.

There are three design solutions to consider if you are keeping turfgrass:

1. Re-Grading

In some scenarios, you're dealing with a steep slope that is surrounded on all sides by large areas of flat ground. Re-grading the site will spread out the slope over a larger area and make it easier to maintain. It's quite possible that simply moving the dirt around and re-grassing the area will suffice.

2. Terraces and Retaining Walls

When the hill is steep and adequate room does not exist to spread it out to a more gradual slope, consider installation of a terrace or retaining wall. Consult a landscape architect for advice and a set of drawings. These experts have the necessary training to calculate details such as the dimensions of the various pieces of lumber, the number and size of the "deadmen" to be installed, and placement of the elements.

Lots of concrete makes it tough to keep turf alive in this hell strip.

3. Changes in Management

In addition to physical changes, consider changing your management strategy. Various maintenance techniques will greatly improve the sustainability of a sloped landscape.

Delayed Irrigation Starts. On flat turfs, you may be able to irrigate for 30 to 40 minutes without runoff, providing one-third to one-half inch of water with one application. Many slopes just won't allow for that. Instead of one big soaking, split the application into two or three smaller sprinklings. You'll have to experiment to discover how much you should reduce it. Crank up the system, and run it in the "manual" mode. Watch the slope (and your watch) closely, and when runoff begins, shut the system off. Let the water soak in for a couple of hours, and then run the system again. Repeat this process until the water penetrates to the bottom of the turf roots.

Aeration/Topdressing. Any technique that improves infiltration will reduce runoff. The common maintenance practice of aeration will increase the percolation rate, enhancing downward water movement. After aeration, consider topdressing with compost or processed clay amendments such as Profile©. These products can have a dramatic effect on the sloped landscape.

Plant Growth Regulators. This strategy is quite simple. PGRs are artificial agents that slow the growth of the grass plant, which results in fewer mowing operations and less

chance of injury to the turf, mower or operator. Identify the times of the year when the turf is growing fiercely and focus the suppression efforts accordingly. Spring and fall are likely targets for cool-season turfs, while late spring and early summer are appropriate times for warm-season grasses.

Switch to "No Mow" Buffalograss. Recent breeding efforts have produced several new cultivars of turf-type buffalograss that may fit in well in the landscape you maintain. Buffalograss naturally grows at a very slow rate — so slow that you may not need to mow all season. In addition to slow growth, buffalograss grows to a short height. Unmowed buffalograss seldom reaches more than 8 to 9 inches, which might be quite acceptable on a slope.

Water Top of Slope. Earlier in this article I mentioned the importance of irrigation uniformity. So, does it make sense to water the top of the slope, and not the bottom or the middle? Absolutely. Depending on the degree of slope, water applied to the top will flow downhill, soaking in along the way. In fact, on a slope, if water is applied at the same rate to the top and bottom, the bottom will end up with much more — probably twice as much as the top. This technique is most effective when used in conjunction with aeration and delayed irrigation starts.

Well placed, drought tolerant groundcovers are good choices on sites like these.

As a grounds manager, you have several choices when dealing with slopes. You can continue to curse them or choose to implement changes that will help turn the eyesore into an asset.

Author's Note: This article was adapted from one published in *Grounds Maintenance*, July 2002. Used with permission.

CGS 2003 Fall Seminar Series

The Fall 2003 Center for Grassland Studies Seminar Series will be held 3:00-4:00 p.m. in the East Campus Union on the dates below. Note the **date change for Richard Knight** from October 20 (as listed in an article in the previous issue of this newsletter) to October 27. Knight, a wildlife biologist with the Department of Forest, Rangeland, and Watershed Stewardship at Colorado State University, is the 2003 Leu Distinguished Lecturer. Refreshments will be available prior to each seminar, compliments of the Frank and Margaret Leu Foundation. Videotapes of these seminars and selected seminars from past series will be available for onsite viewing or checkout from 221 Keim Hall. If you have questions, please call the Center office at 402/472-4101, or see www.grassland.unl.edu.

Aug. 25 — **Martin Massengale**, UNL Center for Grassland Studies
Introduction to and Instructions for Seminar *(for students only)*

Sept. 8 — **Rob Mitchell**, USDA, Agricultural Research Service
"Improving Perennial Grasslands for Livestock Production"

Sept. 15 — **Guillermo Norrmann**, Instituto de Botanica, Universidad del Nordeste, Corrientes, Argentina
"Big Bluestems of the Americas: Biosystematics, Hybridization and Evolution"

Sept. 22 — **Ken Vogel**, USDA, Agricultural Research Service
"Biomass Energy: Perennial Herbaceous Crops vs Corn Stover"

Sept. 29 — **Craig Derickson**, USDA, Natural Resources Conservation Service
"An Overview of the Grassland Reserve Program"

Oct. 6 — **Larkin Powell**, UNL, School of Natural Resources
"Grazing and Grassland Birds in the Nebraska Sandhills"

Oct. 13 — **Kent Pfeiffer**, Platte River Whooping Crane Maintenance Trust
"Managing Prairies for the Long Term"

Oct. 20 — No seminar (Fall Break)

Oct. 27 — **Richard Knight**, Colorado State University, Department of Forest, Rangeland, and Watershed
"For the Health of the Land: Honest Conversation about Land Use"

Nov. 3 — No seminar

Nov. 10 — **Tyler Sutton**, Conservation Alliance of the Great Plains
"Restoring Grasslands Ecologically and Economically"

Nov. 17 — Reserved for student seminar

Nov. 24 — Reserved for student seminar

Dec. 1 — Reserved for student seminar

Dec. 8 — Reserved for student seminar

Potentials and Precautions in Turfgrass Biotechnology (continued from page 3)

Is this chemical approach a viable strategy for turfgrass? All of the above challenges are likely to come about with the widespread use of the product with a handful of turfgrass species. Rather than pursue the "perceived perfection" of homogeneity in a golf course landscape, would it not be more prudent, profitable, and sustainable to cultivate and promote diversity? Given the concern in agriculture about consolidation in the chemical and seed industries, creating monopolies and thus reducing growers' choices, is this a viable direction for those who use turfgrasses? Do you want to find management choices — both grass species and chemicals — in the marketplace in the future?

We are well advised to seriously consider Dr. Riordan's admonition that "we just don't know what will happen," and extend this concern beyond the possibility of gene escape and resistant species to the environmental, economic, and social impacts of a singular strategy to pursue transformed varieties of turfgrasses. It would be foolish to ignore the potentials of science and new technologies, of course. Establishing turfgrasses in a golf course or other public use area is a long-term investment. It is unwise to pursue those technologies that are highly likely to provide only short-term solutions. An emerging interest in creating sustainable golf course plantings should lead us to seek more diverse and creative strategies.

CGS Citizens Advisory Council Tours Southeast Nebraska

This summer's Citizens Advisory Council meeting/tour took the Center for Grassland Studies Associates and Council members to the Beatrice area on June 24.

Our first stop was Homestead National Monument of America, located on one of the very first land parcels claimed (by Daniel Freeman) under the Homestead Act. The Homestead Act of 1862 was one of the most significant and enduring events in the westward expansion of the United States. By granting 160 acres of free land to claimants, it allowed nearly any man or woman a chance to live the American dream. It also had a significant impact on the American prairie. The natural tallgrass prairies had to be cultivated in order to validate one's claim, so today only a small percentage of the original tallgrass prairie remains. Homestead hosts the second oldest restored prairie in the nation. The 195-acre monument abounds with plant and animal life scarcely seen all in one place. The tallgrass prairie is alive with long slender grasses such as Big Bluestem, Indiangrass, Switch Grass, Little Bluestem, and Cordgrass. Many different animals find refuge among these grasses like the white-tailed deer, ring-necked pheasant, bob-white quail, deer mice, and the prairie vole.

Southeast Community College instructor Mark Goes, a member of the Stakeholders Advisory Board for the UNL Grazing Livestock Systems major that is administered by the CGS, stands in front of one of the fields used in the SCC grazing education program.

Cattle enjoy a mid-afternoon snack at the Dalbey-Halleck research farm, the last stop on the CGS summer tour.

Next we headed to Southeast Community College where instructor Mark Goes led a tour of the Agriculture Center facilities and explained the SCC educational programs relating to grazing. Instructor Jody Starr then showed the group the turf plots she uses in her horticulture courses.

After lunch at the Beatrice Country Club (BCC), UNL turfgrass specialist Roch Gaussoin and BCC Superintendent Casey Crittenden talked about the remodeling efforts and management techniques used on the course. To the best of their knowledge, BCC is the only golf course in Nebraska that uses reclaimed (effluent) water for irrigation, and the first and only course in Nebraska certified (in 1996) by the Audubon Cooperative Sanctuary Program sponsored by the New York State Audubon Society. Environmental efforts have focused on planting native grasses and bluebird nesting habitats.

Our final stop was the University's Dalbey-Halleck farm near Virginia. UNL beef specialist Rick Rasby took us on a brief tour and described grazing research projects being conducted on the farm, which has 640 acres of warm-season pasture, 320 acres of cool-season pasture, and 160 acres of mixed grasses.

Editor's Note: Some of the above information was taken from the Web site for Homestead National Monument of America, www.nps.gov/home/home.htm.

Applications for Grassland Reserve Program Due Sep. 30

The Commodity Credit Corporation (CCC) has announced the availability of $49,492,000 to implement the Grassland Reserve Program (GRP) in fiscal year 2003. The announcement appeared in the Federal Register, June 13, 2003, Vol. 68, No. 114, pages 35360-35363. You can access this online at www.nrcs.usda.gov/programs/farmbill/2002/rules/grp. Below are excerpted sections from the announcement. See the Web site or contact your local Natural Resources Conservation Service office for details on program requirements, enrollment options, funding allocations, application and selection processes.

SUPPLEMENTARY INFORMATION

Grasslands constitute the largest land cover on America's private lands. Privately-owned grasslands and shrublands cover more than 525 million acres in the United States. These lands contribute significantly to the economies of many regions, provide biodiversity of plant and animal populations, and play a key role in environmental quality. Specifically, grasslands and shrublands impact water quantity and quality and, when properly managed, can result in cleaner water supplies, healthy riparian areas, reduce potential for flooding, and control sediment loadings in streams and other water bodies. These lands are vital for the production of forage for domestic livestock, and provide forage and habitat for maintaining healthy wildlife populations. These lands also improve the aesthetic character of the landscape, provide scenic vistas and open space, provide recreational opportunities, and protect the soil from water and wind erosion.

Large expanses of grassland acreage are annually threatened by conversion to other land uses such as cropland and urban development. Approximately 23 million acres of grassland and shrubland were converted to cropland between 1982 and 1997, and about six million acres were converted to urban and other uses (1997 NRI).

Background

Section 2401 of the Farm Security and Rural Investment Act of 2002 (Pub. L. 107-171) amended the Food Security Act of 1985 to authorize GRP (16 U.S.C. 3838n-3838q). The purpose of the program is to assist landowners with restoring and conserving grassland, rangeland, pastureland, and certain other lands. The statute provides that no more than two million acres of restored or improved grassland, rangeland, and pastureland can be enrolled in the program through FY 2007. The program offers landowners the option to grant an easement to the Secretary or enter into a long-term agreement to preserve and protect the ecological benefits of eligible land.

The GRP statute requires the Secretary to consider grazing operations, biodiversity, and grassland under the greatest threat of conversion when evaluating and ranking applications. In FY 2003, CCC plans to use GRP to protect grazing lands from conversion and support efforts to maintain or enhance biodiversity.

Although CCC is implementing the program nationwide in FY2003, it recognizes that with limited funding and a large pool of eligible acreage, nationwide implementation may result in a large number of applications remaining unfunded. Therefore, the application selection criteria are critical to ensure only the highest priority areas are protected.

Program Requirements

Effective upon the publication date of this notice, CCC announces the availability of $49,942,000 for GRP, from June 30, 2003 until September 30, 2003. Applications for participation will be accepted on a continual basis throughout this period at local USDA Service Centers from landowners of private land. NRCS State Conservationists will establish funding cut-off periods throughout FY 2003 to batch and select applications. These cut-off periods will be available in program outreach material provided by CCC. Once funding levels have been exhausted, eligible applicants will remain on file until additional funding becomes available or the applicant chooses to be removed from consideration.

GRP contracts and easements prohibit: (1) The production of crops (other than hay), fruit trees, vineyards, or any other agricultural commodity that requires breaking the soil surface; and (2) any other activity that would disturb the surface of the land except for appropriate land management activities identified in the easement or agreement. For applicants who are interested in restoring grasslands, forbs, and shrublands, the program offers an opportunity to enroll in restoration agreements.

The GRP statute provides that eligible land includes grasslands; land that contains forbs; shrubland, including improved rangeland and pastureland; or, land that is located in an area that has been historically dominated by grassland, forbs or shrubland when these lands have the potential to enhance plant and animal biodiversity. Other eligible land includes land that is incidental to the eligible land when it is considered necessary by CCC for the efficient administration of an agreement or easement.

Applicants may submit applications for easements, rental agreements, and restoration agreements. Offers for participation must include no less than 40 contiguous acres, unless CCC determines a small parcel is appropriate

(continued on next page)

Applications for Grassland Reserve Program Due Sep. 30 *(continued from page 7)*

to achieve the purposes of the program. When selecting offers of eligible lands, CCC shall emphasize support for grazing operations; plant and animal biodiversity; and other eligible land under the greatest threat of conversion. The conversion threat may include conversion to agriculture or non-agriculture uses.

Pursuant to section 1604 of the Farm Security and Rural Investment Act of 2002, benefits under this part shall not be available to a person whose adjusted gross income exceeds $2.5 million, as determined under the standards set forth in 7 CFR part 1400.

CGS Associates

Initiated by a lead gift from Cattlemen's Consulting of Lincoln, the **Terry Klopfenstein** Student Excellence Fund has been established in the NU Foundation, and with additional contributions is now more than halfway to its goal of $100,000. The endowment honors the nationally known animal scientist, who has taught and conducted research at UNL for nearly 40 years. He is a member of the CGS Policy Advisory Committee.

Reminder of Nebraska Grazing Conference

The third annual Nebraska Grazing Conference will be held at the Kearney Holiday Inn on August 11 and 12, 2003. Topics include low-cost grazing strategies, matching genetics to resources, winter grazing and supplementation of cows, stewardship of grazing and biodiversity, and learned grazing behavior. The two-day registration fee is $70 if paid by August 1, $90 after August 1 (walk-ins accepted). One-day registrations are also available. More information is available from the Buffalo County Extension Office, phone 308-236-1235, e-mail Buffalo-County@unl.edu, or access information and the registration form at the CGS Web site (www.grassland.unl.edu).

Calendar

Contact CGS for more information on these upcoming events:

2003

Aug. 11-12:	2003 Nebraska Grazing Conference, Kearney, NE, www.grassland.unl.edu/grazeconf.htm
Oct. 21-22:	The Practice of Restoring Native Ecosystems, Arbor Day Farm/Lied Conference Center, Nebraska City, NE, www.arborday.org/programs/conferencereg28.html
Nov. 2-6:	ASA-CSSA-SSSA (Agronomy, Crop Science and Soil Science) Annual Meetings, Denver, CO
Nov. 3-7:	Invasive Plants in Natural and Managed Systems: Linking Science and Management and 7th International Conference on the Ecology and Management of Alien Plant Invasions, Ft. Lauderdale, FL, www.esa.org/ipinams-emapi7
Dec. 7-10:	2nd Annual National Conference on Grazing Lands, Nashville, TN, www.glci.org/2NCGLindex.htm

If you have articles, events, resources, CGS Associate News, or other items you would like to submit for inclusion in future issues of this newsletter, please contact the editor, Pam Murray, at the CGS office.

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