

# Center for Grassland Studies

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UNIVERSITY OF  
**Nebraska**  
Lincoln

## Another Successful Nebraska Grazing Conference

More than 200 people and 19 exhibitors participated in the 11th annual Nebraska Grazing Conference held August 9-10, 2011 in Kearney. The following comments from the evaluation forms illustrate what attendees thought about this year's program.

*"[Greg Judy's presentations were] very informative with ideas I will use. He stimulated my thinking – try new ideas!"*

*"[It is] very good for young people to hear this."*

*"Scott's [Stout's presentation on the benefits he has seen from prescribed fire on his land] was very applicable – feel like I could go home & implement."*

*"This [information on winter grazing] is something we will really use."*

*"Good job presenting things clearly, good examples, sound experience."*

*"Good information with recent research."*

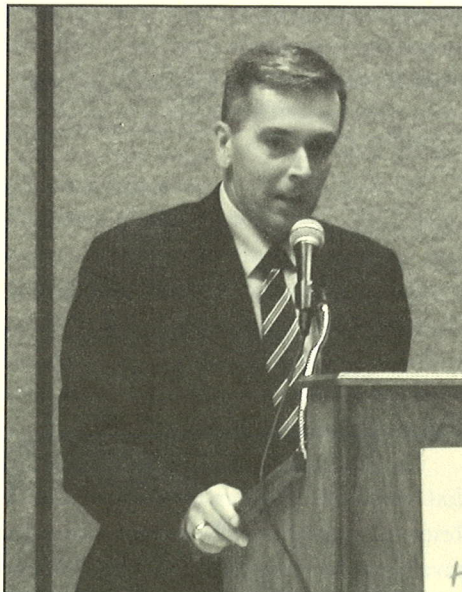
*"Great to see and hear about landowner groups and benefits that are coming from them."*

*"Interesting to see vegetation changes throughout the state's history."*

*"Good data from a ranch that makes its living from ranching."*

*"The interaction with others is great, great topics, always a learning experience."*

*"Really appreciate the inclusion of practicing innovative producers. I like the actual experience."*



**Ronnie Green, NU Vice President and IANR Harlan Vice Chancellor, UNL, set the stage for the conference with his opening remarks. Dr. Green's professional background is in beef cattle breeding and genetics, and he has served the animal science profession in several capacities while in positions in academia, government and the private sector.**

Proceedings from the 2011 and previous conferences are still available for purchase; they contain the material submitted by most of the presenters prior to the conferences. The conference website ([nebraskagrazingconference.unl.edu](http://nebraskagrazingconference.unl.edu)) contains the list of speakers and topics for each conference and the cost. To order proceedings, send a check payable to Nebraska Grazing Conference to the CGS office – note which year(s) you are ordering.

If you have not attended previous conferences but would like to be on the mailing list to receive notice of next year's conference, to be held in the same location on August 14-15, simply send your name and address to the CGS office. Details of the 2012 program will be posted on the conference website as they become available early next year.

The Nebraska Grazing Conference has several sponsors including this year's conference underwriters: Center for Grassland Studies, Nebraska Game and Parks Commission, Nebraska Grazing Lands Coalition, and Farm Credit Services of America.

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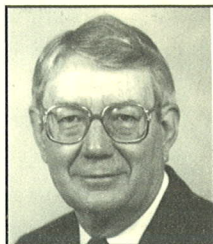
*Formerly with Nebraska Department of Natural Resources*

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 Citizens Advisory Council.

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. Massengale .....CGS Director  
Pam Murray..... Newsletter Editor  
Anne Moore ..... Newsletter Layout



## FROM THE DIRECTOR

There has been much discussion recently about the size of the U.S. national debt and the need to reduce government spending in the current and future budgets. If this occurs, and it almost certainly will, we are likely to see several important projects now funded by the federal government reduced significantly or totally eliminated. These include projects in the United States Department of Agriculture (USDA) that impact both production agriculture and conservation practices.

With global population projected to exceed 9 billion people by the year 2050, experts predict that the world will need twice as much food as we produce today, and the demand for water will also double. To meet that need, it would seem that we should be investing heavily in agriculture and agriculturally related research and education. Grasslands (grazing lands) will need to be a major component of that effort. In this context, grasslands or grazing lands include rangelands in their broadest sense, pasture and hay lands, conservation reserve lands and any other lands used by grazing animals.

Because of their importance in the animal industry, grasslands increase significantly the amount of land involved in food production. A large percentage of these lands is not suitable for cultivated crop production because of topography, soil or other conditions. However, they do support vegetation that can be used by grazing animals to convert this renewable resource into products used for food and fiber. Well managed grasslands will grow and support a vegetative cover that provides good animal feed and prevents soil erosion. They are also a renewable and sustainable form of production agriculture.

Two of the USDA's Natural Resources Conservation Service (NRCS) programs that have been popular, productive and efficient for grasslands are the Conservation Reserve Program (CRP) and the Grassland Reserve Program (GRP). These programs have protected many acres of land from wind and water erosion. Ever since the Dust Bowl days, the NRCS (formerly Soil Conservation Service) has been highly successful in carrying out various conservation practices and protecting our soil and water resources. Society overall has benefitted from these programs because of improved air quality through carbon sequestration, improved water quality through reduced sediments in streams and reservoirs, and improved wildlife population and habitat. Planning and implementation of conservation practices on our grasslands benefit all individuals, although they are hard to quantify in economic terms.

Grasslands involve a delicate set of interactions among plants, soils, water, air, sunlight and animals. The well-being and sustainability of these areas are dependent on reliable interdisciplinary research-based information and good management practices. We need to be active in our support for research and education in agriculture, food and nutrition, conservation of our natural resources and other agriculturally related entities in the interest of a sustainable society.

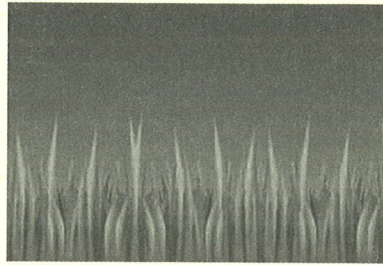
*M. A. Massengale*

# Rethinking Late-fall Fertilization

by Zac Reicher, Department of Agronomy and Horticulture, UNL

## Introduction

Fertilizing in the fall near the last mowing has been practiced for years. This results in a deeper green later into the fall, and then quicker green-up, higher carbohydrate (CHO) storage and improved root growth the following spring (Powell et al., 1967a, 1967b). The typical recommendation has been a September application of 1.0 lb N/1000 sq ft on almost all cool-season turfs, followed by another 1.0 lb N/1000 at the last mowing with all soluble N or 1.0 lb N/1000 applied early to mid-October with a fertilizer containing some slow-release N. Late-fall N works because applied nitrogen will almost immediately increase photosynthesis at a time when growth and respiration are minimal, leading to higher CHO storage over the winter, and thus improved root growth and high CHO level throughout the year. This is shown in Figure 1 (from 1967!) where late-fall N dramatically increases photosynthesis. A common misperception is that the N is taken up and stored over the winter in the plant, but it is the downstream products from increased photosynthesis that are stored for use next spring. These recommendations resulted from research primarily in the mid-Atlantic states in the 1960s and have worked incredibly well over the years. The practice of late-

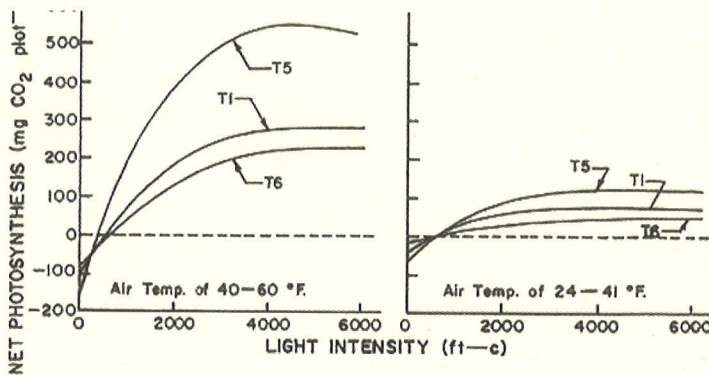


done in more temperate climates of the mid-Atlantic states, where winters were warmer and cool-season grasses were dormant for shorter periods. Longer periods of warmth and growth translate into longer periods of water uptake (and thus N uptake) in the mid-Atlantic states compared to Nebraska. So does the 1960s research apply to Nebraska? Historical experiences would indicate that the basic recommendations about late-fall N are

very applicable to Nebraska. However, like all turf management practices, more experiences and more research will further refine our techniques.

Late-fall N recommendations have been tweaked over the years. Data from Connecticut and Michigan show that although nitrogen leaching from turf is rare, it will mostly likely occur when high rates of N are applied in the late fall and winter (Frank et al., 2006; Mangiafico and Guillard, 2006). In response, recommendations from across the country have been gradually reduced from as high as 2.0 lbs N/1000 sq ft applied in the last application to a more moderate 1.0 lb N/1000 sq ft. Recent data from Wisconsin have put an even finer point on the late-fall application (Lloyd and Soldat, 2009). At the January 2011 Nebraska Green Expo, Dr. Doug Soldat presented data showing that cool-season grasses take up greater than 70% of the September-applied N, regardless if it is applied at 0.5 up to 2.0 lbs N/1000 sq ft (Fig 2). However, uptake efficiency of N decreases with applications later in the fall, and only 50% or less of the N is taken up with a November

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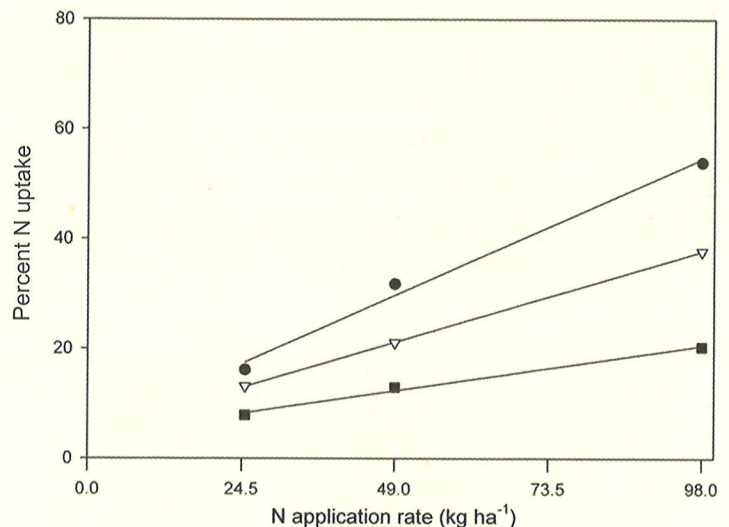


**Figure 1. Cohansy bentgrass data from 1967 showing increased photosynthesis from higher rates of fall-applied nitrogen (T5 vs T1 and T6) when air temperatures are greater than 40F (left). However, at lower air temperatures, fall nitrogen had little effect on photosynthesis. (Powell et al., 1967a)**

fall fertilization of cool-season turf is still one of the key developments in the last century for improving turf conditions.

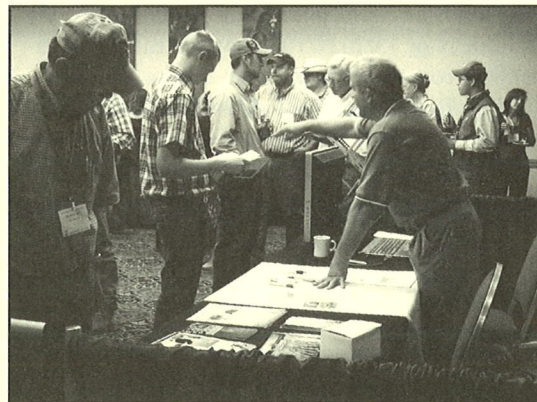
## Rethinking the late-fall applications

Nitrogen is taken up by the plant through water absorbed by the roots, thus more N will be absorbed during high water use periods than in low water use periods. Since most water used by turf is for cooling, it takes up only limited water in the cooler temperatures of late fall, and thus N uptake can be limited. Much of the early published research on late-fall N applications was

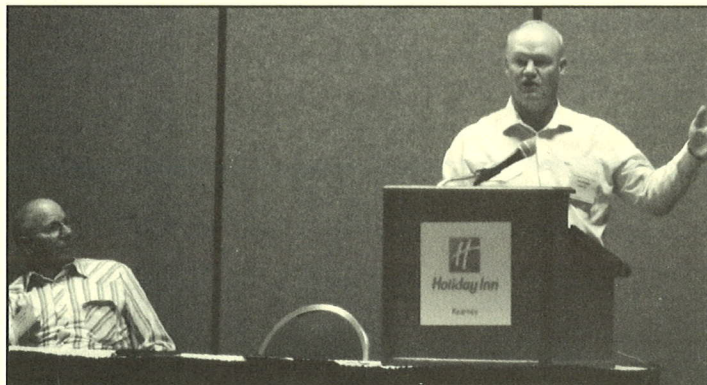


**Figure 2. Wisconsin growth chamber data from 2007 showing N uptake efficiency as a function of application rate (49 kg/ha=1 lb/1000 sq ft) and timing on Kentucky bluegrass. September applications (solid circles) resulted in >72% uptake regardless of the rate, but uptake efficiency declines with October (triangles) or November applications (solid squares). (Used with permission from Lloyd, 2009.)**

**Nebraska Grazing Conference** *(continued from page 1)*



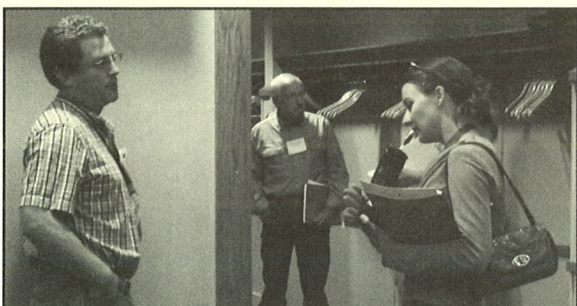
Participants always enjoy the time they have to browse the company and organization exhibits.



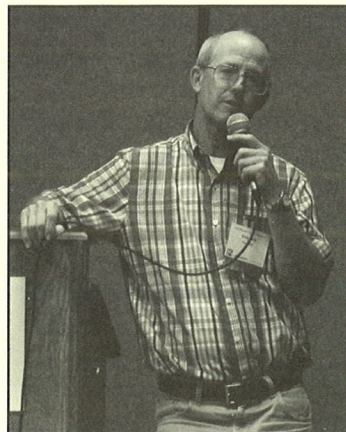
John Maddux (right) and Harlow Hill described the program used at the Maddux Cattle Company in Wauneta, NE, to winter graze yearlings on cornstalks and pasture residue.



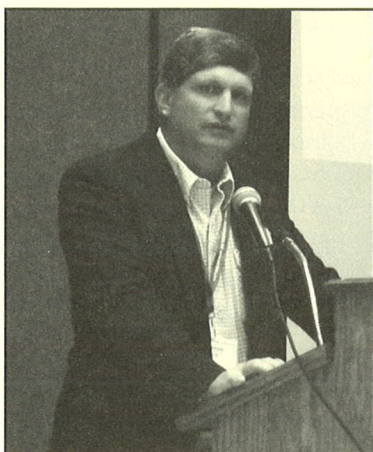
Fun for the whole family... and we mean the **WHOLE** family. Representing three generations are members of the Cool family from Arnold, NE, including Joe (left), his father Jerry, and oldest son Sam.



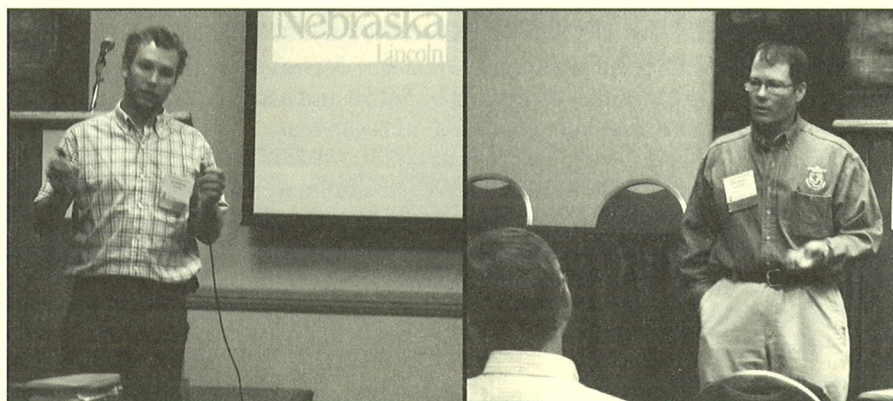
Jason Rowntree from Michigan State University visits informally with a conference goer after his presentation on maximizing gain on grass.



Beginning, middle and end. That's when the audience heard from Greg Judy, who owns and manages Green Pastures Farm with his wife in Clark, MO. Judy's morning talk on the first day was on the advantages of mob grazing. He provided additional information on animal performance with mob grazing at an evening discussion session, and he gave the final conference presentation on working with landowners to achieve grazing and wildlife enhancements.



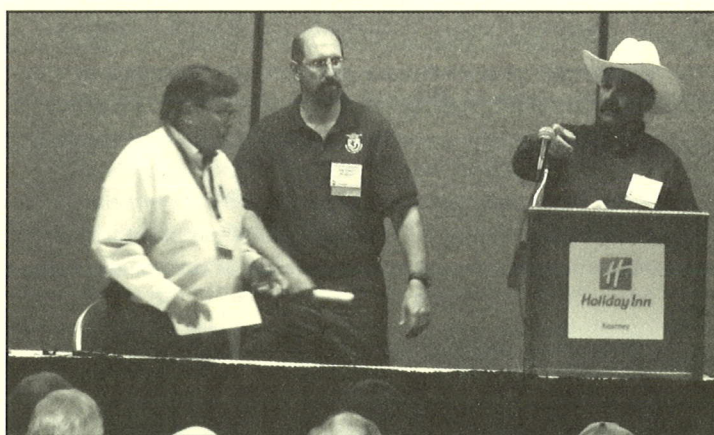
Chip Ramsay, manager of Rex Ranch in Ashby, NE, discussed how decisions are made using long-term baseline financial and production data.



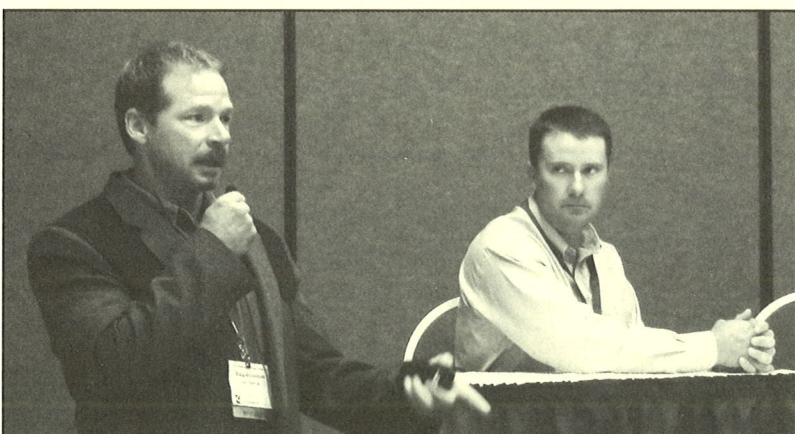
UNL graduate student Lars Anderson and Tom Koerner with the Sand Lake National Wildlife Refuge Complex, Columbia, SD, gave presentations on habitat management as it relates to grazing.



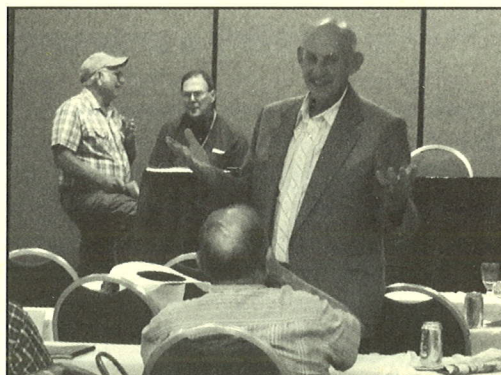
Brothers Tim and Chris Kalkowski answer questions after their presentation on some of the management practices used by their family, which won the 2010 Leopold Conservation Award for Nebraska.



Our neighbors to the south had some interesting information to share about private land owners and public agencies organizing to benefit prairie ecosystems. Ted Alexander (left) and Bill Sproul (right) are Kansas ranchers who have been recognized with numerous awards for their stewardship. They are joined for this presentation by Greg Kramos with the US Fish and Wildlife Service.



Doug Whisenhunt, NRCS state prescribed burn/grazing specialist, talked about how the Loess Canyon Rangeland Alliance – a group of ranchers, business and agency people – was formed and continues to function to help conduct prescribed burns to control invasive species (primarily eastern red cedars). Rancher Scott Stout (seated) from Curtis, NE, described his involvement with LCRA and the benefits to the family operation since introducing prescribed fire into their program.



After their talks on using by-products on pastures, Terry Klopfenstein from UNL (center) and Lyle Lomas from Kansas State University (second from left) visit individually with audience members.

## Rethinking Late-Fall Fertilization *(continued from page 3)*

application at 0.5 lbs N/1000 sq ft and uptake efficiency decreases as the rate increases (Fig 2). Studies conducted by Soldat and his colleagues showed that the maximum amount of nitrogen that the grass could take up from November application regardless of application rate was about 0.25 lb N/1000 sq ft. Their studies were done in a growth chamber using average Wisconsin temperatures. Daily temperatures in Lincoln, NE, average about 7F higher than Madison, WI, throughout the months of August to December. Therefore, we can add another week or two to their timings to fit eastern Nebraska weather, and N uptake might be slightly higher with our warmer temperatures.

### Take-home messages

- Early and mid-to-late-fall N applications are still critical for cool-season turf! No dramatic changes are suggested.
- On putting greens where spoon feeding is practiced all summer, spoon feeding can continue effectively into the fall. Slightly higher rates than during the summer at up to 0.25 lbs N/1000 sq ft can be applied with a soluble source every other week until near the end of October or the last mowing. An alternative is to use granular applications of about 0.5 lbs/1000 sq ft/month until near the end of October or the last mowing.
- On fairways, athletic fields not used in the fall, home lawns and other higher mowed turf, always apply 1.0 lb N/1000 sq ft in early to mid-September. Use a product containing 25-50% slow-release to allow the N to be taken up effectively over the next 3-4 weeks. Then in mid- to late-October or fairly close to the last mowing, make another application at a slightly lower rate of 0.5 to 0.75 lbs N/1000 sq ft with a primarily soluble source. The closer to last mowing, the lower the N rate and the more soluble the nitrogen should be. This rate is slightly lower than our previous recommendation at 1.0 lb N/1000 sq ft.
- On fall-used athletic fields or heavily damaged turf from

summer, N should be applied at slightly higher rates to encourage as much growth as possible. Make an application of 0.75 to 1.0 lb N/1000 sq ft prior to the football playing season, and then another 0.5 to 0.75 lbs N/1000 sq ft every 3 to 4 weeks until near the end of October or the last mowing. Reduce the later applications to 0.5 lbs N/1000 sq ft.

- Though “winterizer” fertilizers that are available in retail outlets often have high potassium and maybe phosphorus, there is no benefit from additional potassium or phosphorus unless soil tests indicate a deficiency. Potassium and phosphorus tend to be the most expensive nutrients in the bag, so they can often be minimized unless a soil test justifies the need.

### Literature

1. Frank, K. W., K. M. O'Reilly, J. R. Crum, and R. N. Calhoun. 2006. The fate of nitrogen applied to a mature Kentucky bluegrass turf. *Crop Sci.* 46(1):p. 209-215.
2. Lloyd, D. 2009. Low temperature nitrogen uptake and utilization of turfgrass. M.S. Thesis. University of Wisconsin-Madison.
3. Lloyd, D., and D. Soldat. 2009. Late-fall nitrogen applications: Not as important as you think!. *Grass Roots.* 38(5):p. 40-41.
4. Mangiafico, S. S., and K. Guillard. 2006. Fall fertilization timing effects on nitrate leaching and turfgrass color and growth. *J. Environ. Qual.* 35(1):p. 163-171.
5. Powell, A. J., R. E. Blaser, and R. E. Schmidt. 1967a. Physiological and color aspects of turfgrasses with fall and winter nitrogen. *Agron. J.* 59(4):p. 303-307.
6. Powell, A. J., R. E. Blaser, and R. E. Schmidt. 1967b. Effect of nitrogen on winter root growth of bentgrass. *Agron. J.* 59(6):p. 529-530.

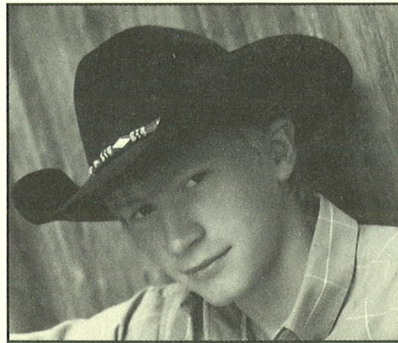
## CGS Associates

At the Joint American Dairy Science and American Society of Animal Science annual meetings in July, **Rick Rasby** received the American Society of Animal Science's Extension Award and **Chris Calkins** received the Meats Research Award.

The Center for Grassland Studies extends congratulations to one of its Citizens Advisory Council members. Earlier this year **Ray Ward**, founder and president of Ward Laboratories Inc. in Kearney, NE, received the J. Benton Jones Award at a conference in Greece. The international award is given annually to an individual who has made significant contributions to the development and advancement of soil testing and plant analysis.

## Meet our 2011-2012 Grazing Livestock Systems Student Ambassador

Each spring students majoring in Grazing Livestock Systems have the opportunity to apply to be the following year's GLS student ambassador. This year it is sophomore Patrick Heerten from Springview, NE.



**Patrick Heerten from Springview, NE, is this year's Grazing Livestock Systems student ambassador.**

A river runs through his family's operation, which consists of a 600-head cow-calf herd and about 4,000 acres of farm ground. Patrick is quick to

point out that he prefers to work on the side of the river that has the grazing cows. "That's my passion," he said. He prefers to let other members of the family handle the farming aspect. He plans to return to the family operation after graduation.

As to why he chose Grazing Livestock Systems as his major, Patrick said he was "impressed that it's more than just animal science and adds a strong sense of business into the curriculum. With today's modern agriculture changing every day, it really should help give me a leg up as a rancher in the industry."

In addition to cows, Patrick also has a passion for learning. He takes advantage of opportunities to supplement the education he receives in the classroom. Here are just some examples.

After he applied to UNL, he received information in the mail about the Engler Agribusiness Entrepreneurship Program (see <http://casnr.unl.edu/engler>). After researching it, he decided to apply and has participated in the program since the Spring 2011 semester. That same semester he also started in the Beef Industry Scholars Program (see <http://animalscience.unl.edu/anscnbis>).

As part of the Engler program, students take courses that stress experiential learning with a focus on entrepreneurship. One of the courses Patrick took required the students to do three job shadowings. While most students, especially from a small town like Springview (he was one of nine in his graduating class), would probably fulfill this requirement in or near Lincoln or their hometown, not Patrick! He didn't even stick to Nebraska. He hit the road and visited operations in Iowa, South Dakota and Montana.

"I know what operations around home are like," he said, "so I wanted to see something different."

His desire to learn how other people run their operations is why he especially likes tours that are incorporated into courses. It will also influence his planning process for his GLS internship. "I want to go where they are doing unique things and/or doing things really well. For example, I know what it's like to calve in March, so I'd like to maybe intern where they calve in May or incorporate mob grazing."

As more evidence of Patrick's passion for learning, as a second-semester freshman, he applied for and received "GLS event scholarships" to both the 2011 Nebraska Grazing Conference held in Kearney in August (see related story in this newsletter) and the 2011-2012 Nebraska Ranch Practicum. The Practicum is a series of eight day-long sessions over six months. Participants, most of whom are experienced ranchers and federal agency personnel, receive a great deal of information (and homework). That does not deter Patrick. He likes interacting with and learning from established producers, especially innovators. He gets opportunities to do that in the tours, conferences, seminars, Engler and Beef Scholars programs, and internship that all make up his educational experience as a Grazing Livestock Systems student at UNL.

## Catch 2011 Center Fall Seminars Live or on Video

By the time this newsletter is printed, we will be more than half-way through the 17th annual Center for Grassland Studies Fall Seminar Series. But as the young say today, "no worries!" You can still catch remaining presentations, and you can view DVD copies of any of the talks this year (or past years) by requesting them from the Center. This fall's entire schedule is below. Seminars from past years are listed on the Center's web site.

The seminars are held 3:00-4:00 in the UNL East Campus Union. Refreshments are available prior to each seminar, compliments of the Frank and Margaret Leu Foundation Fund, which also supports the Leu Distinguished Lectureship each year.

### Fall 2011 Seminars

**Aug. 29** - Keenan Amundsen, Plant Breeder-Turfgrass, Dept. of Agronomy and Horticulture, UNL, "Evolution of Buffalograss into a Highly Valued Native Turfgrass and Challenges for Further Improvement"

**Sept. 12** - Gary Hein, Director of the Plant Health Program, UNL, "Doctor of Plant Health: A New Profession for a More Sustainable Future"

**Sept. 19** - Jim Stubbendieck, Professor Emeritus, Dept. of Agronomy and Horticulture, UNL, "Evolution of Vegetation and Ranching on the Great Plains"

**Sept. 26** - John Guretzky, Assistant Professor, Dept. of Agronomy and Horticulture, UNL, "Effects of Nitrogen Input on Litter Accumulation and Decomposition in Pastures"

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## Fall Seminars *(continued from page 7)*

**Oct. 3** - Alan Baquet, Professor and Director of the PGA Golf Management Program, UNL, "Current Status of the PGA Golf Management Major at UNL"

**Oct. 10** - Glenn Pollock, Naturalist, Omaha, Nebraska, "A Guide to Prairie Management Using Historical Data"

**Oct. 24\*** - Jack Morgan, Research Scientist-Plant Physiology and Nobel Laureate, Agricultural Research Service, USDA, Fort Collins, Colorado, "Effect of Global Climate Change on Grasslands of the Great Plains"

**Oct. 31** - Tom Bragg, Professor, Department of Biology, UNO, "Fire Ecology of Shrub Savannas of Western Australia"

**Nov. 7** - Anne Vidaver, Professor and Department Head Emeritus, Department of Plant Pathology, UNL, "Fatal Omission: The TransCanada Pipeline and the Sandhills"

**Nov. 14** - Ron Phillips, Regents Professor of Plant Genetics Emeritus and Member of National Academy of Sciences, Department of Agronomy and Plant Genetics, University of Minnesota, "Norman Borlaug and the Future of the Green Revolution"

**Nov. 21** - Kent Aden, Assistant Real Estate Administrator, Central Nebraska Public Power, "Impacts of Multi-Species Grazing"

**Nov. 28** - Guatam Sarath, Research Scientist-Molecular Biology, Agricultural Research Service, USDA, Lincoln, Nebraska, "Switchgrass Molecular Biology 101"

**Dec. 5** - Kathy Roccaforte, Graduate Student, School of Biological Sciences, UNL, "Hybridization and Species Boundaries between Two Midwestern Lilies"

\*2011 Leu Distinguished Lecturer

