Summer 2011

Center for Grassland Studies, Summer 2011, Volume 17, No. 2

Center for Grassland Studies

E-mail: grassland@unl.edu
www.grassland.unl.edu

Phone: (402) 472-4101
Fax: (402) 472-4104

Volume 17, No. 2
Summer 2011

University of Nebraska Lincoln

Litter Accumulation and Decomposition In Pastures

by John Guretzky, Department of Agronomy and Horticulture, UNL

Development of ethanol industries to supplement U.S. demand for petroleum in recent years has affected agricultural land use and the beef cattle industry. Beef cattle producers are paying more for feedstuffs as a result of higher crop commodity prices, and expansion of corn acreage to meet grain demands has pushed agricultural land values to all-time highs (Malcolm et al., 2009). To cope with increased grain prices and decreased pasture availability, co-products generated from ethanol production are being fed in managed grassland and feedlot production systems (Erickson et al., 2007; Waterbury et al., 2009). Recently, an ongoing project at the University of Nebraska Agricultural Research and Development Center (ARDC) at Mead found that feeding of ethanol co-products to beef cattle on unfertilized smooth bromegrass pastures improves average daily gains and total body weight gains per ha relative to unsupplemented beef cattle grazing nitrogen-fertilized pastures (Greenquist et al., 2009). An ongoing concern with these systems, however, is nutrient losses to the environment.

Yearling cattle grazing smooth bromegrass pasture at Mead, NE

In 2010, we began to address these concerns through initiation of a study on litter accumulation and decomposition in pastures. The overall goal was to improve understanding of how nitrogen inputs to pasture through fertilization and supplementation of cattle with ethanol co-products affect soil carbon dynamics. Existing research shows that most temperate North American grasslands experience short periods of high carbon uptake during two to three months of the growing season followed by long periods of carbon balance and smaller periods of carbon losses (Svejcar et al., 2008). In managed grasslands, adoption of practices intended to increase forage production such as fertilization, irrigation, sowing of legumes or improved grass cultivars, and better grazing management generally increase soil carbon (Conant et al., 2001). Thus, we hypothesized that the more nitrogen supplied in fertilizer or with supplements, the greater the potential for improved pasture productivity and build-up of soil carbon through litter and root production. Carbon inputs from litter and root production, however, also may be offset by greater decomposition rates as soil microbes readily consume organic matter as nitrogen availability increases.

Procedures

We established the research within the ongoing (since 2005) ARDC pasture experiment at Mead. The experiment contained the following treatments: (1) smooth bromegrass pasture stocked with yearling cattle at the recommended rate (about 9.9 AUM/ha) and fertilized with 90 kg of N ha^{-1} (FERT); (2) non-fertilized smooth bromegrass pasture (control) stocked at 70% of the fertilized pasture (CONT); and (3) non-fertilized smooth bromegrass pasture stocked at the same rate as the fertilized pasture and the cattle supplemented with dry distillers grains (DDGS). All treatments are rotationally stocked annually from late April through September. From a mass balance perspective, total nitrogen inputs to pasture through fertilization, atmospheric deposition, and ethanol co-products were calculated at 96.5, 55.4, and 6.6 kg ha^{-1} yr^{-1} for FERT, DDGS, and CONT pastures, respectively (Greenquist et al., 2011).

In 2010, we measured litter mass, litter accumulation, and litter decomposition rates among these pasture treatments.

(continued on page 4)

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

One of the primary purposes of a University is to educate and train young people to assist them in becoming productive employees and leaders of society. There are many different professional and career opportunities available now, and there will be even more in the future as discovery of new knowledge becomes available. In addition to obtaining a good general education as background, many students today begin specializing early in their education. Also, more students are interested in multi-disciplinary and dual majors.

The Center for Grassland Studies offers two specialized multi-disciplinary undergraduate majors. One is Grazing Livestock Systems (GLS) which integrates animal science, forage agronomy and agricultural economics into a single major that provides a diverse and well-rounded background. It is one of very few multi-disciplinary majors in this subject matter area within the United States.

The other major offered through the Center is PGA Golf Management (PGAM). This major is one of only 20 such programs accredited by the Professional Golfers' Association of America. Students receive a basic education plus courses in business, hospitality and restaurant management, human resource management, turfgrass science, and other courses directly related to the golf industry. Students who meet the requirements of the PGA as well as those of the University of Nebraska–Lincoln not only receive a bachelor's degree in PGA Golf Management, but are also eligible for membership in the PGA of America. There will be several opportunities for these individuals to have satisfying and productive careers within the golf industry such as clubhouse and/or pro shop managers, teachers, business associates in private industry, etc.

All students in both majors are required to have internship experiences as part of their degree program. We believe this is an important component of their training and experience. Faculty and staff advise and mentor our students in order to provide the best preparation for their future careers. In addition to their classroom, laboratory and internship experiences, our students are able to speak before groups, become teaching assistants, ambassadors, meet and interact with industry personnel, and participate in numerous other activities as part of their educational program. Our alumni and others often speak about how important effective communication and human relations skills are for a successful career.

Our graduates have been fortunate to obtain employment during these challenging economic times. On a recent tour with our Citizens Advisory Council, we were able to interact and observe some of our recent graduates in their work environments. We were proud and pleased with their performance. Additionally, we have received much positive feedback on our graduates from their employers.

We appreciate receiving your comments about our effectiveness in preparation of students and their level of performance in their positions. Your suggestions and support are always welcome.

M. A. Massengale

The Arthropod Community Associated with Switchgrass In Nebraska

by Sandra Schaeffer, Frederick Baxendale, Tiffany Heng-Moss, Ransom Sitz, Gautam Sarath, Robert B. Mitchell, and Robert Shearman[1]

Switchgrass (*Panicum virgatum* L.) is a native, C_4 perennial grass component of the North American tallgrass prairie. Historically, switchgrass has been used in grass mixtures for pastures, grassed waterways, CRP, and prairie restoration efforts. Recently, biomass energy production has provided a new use for switchgrass and represents a shift in switchgrass production, from warm-season grass mixtures to intensive monoculture cultivation. With switchgrass acreage shifting to monoculture-based biomass production systems, the incidence of arthropod pests is likely to increase.

Unfortunately, few studies have examined the arthropod community associated with switchgrass. For switchgrass to reach its full potential as a biomass energy crop, it is essential that potential arthropod pests and their natural enemies be identified in both native and managed settings.

A two-year survey of arthropods associated with switchgrass was carried out in southeastern Nebraska. Two managed switchgrass stands were located at the University of Nebraska Agricultural Research and Development Center (ARDC) near Mead, NE. Both fields were managed for biomass production, with harvest occurring either at switchgrass anthesis (approximately 1 August) or after a killing frost. A third switchgrass site was located at Nine Mile Prairie, a native tallgrass prairie in Lancaster Co., NE. Naturally occurring patches of switchgrass were sampled for arthropods and their natural enemies.

Twelve sampling locations were selected within each of the three switchgrass sites. Arthropod samples were collected every two weeks throughout the growing season during both years. Four sampling techniques (soil plugs, vacuum samples, pitfall traps, and sticky traps) were employed at each sampling site. These methods served to collect arthropods from multiple levels of the switchgrass canopy.

Over the two sampling seasons, 84 families of arthropods were collected spanning twelve insect orders and non-insect groups including arachnids (Table 1). Over 80% of the total arthropods collected were from the insect orders Thysanoptera, Hymenoptera, and Coleoptera. Another 10% came from Hemiptera and Orthoptera, and the final 10% were from Araneae (spiders), Diptera, Lepidoptera, and Neuroptera. The most abundant arthropod families were Acrididae, Brachonidae, Carabidae, Chloropidae, Chrysomelidae, Cicadellidae, Coccinellidae, Curculionidae, Elateridae (larvae), Formicidae, Gryllidae, Ichneumonidae, Pentatomidae, Scarabaeidae, Staphylinidae, Tephritidae, Tettigoniidae, Thripidae, and Araneae.

Sticky traps collected the greatest total number of arthropods, primarily thrips (Thripidae) and hymenopteran parasitoids. Pitfall traps were most effective at collecting mobile, surface-dwelling arthropods. Vacuum samples were as effective as sticky traps at collecting mobile plant-dwelling arthropods such as leafhoppers and spiders. Soil plugs collected the fewest specimens and no arthropods were unique to this sampling method.

Potential pests were characterized as those arthropods capable of causing injury to switchgrass. This category included grasshoppers, chloropid flies, leaf beetles, leafhoppers, weevils, wireworms, scarab beetles, thrips, and stink bugs. Four groups of potential pests were abundant in this study: grasshoppers which have the potential to remove large amounts of biomass in outbreak situations; chloropid fly larvae which feed within stems, impacting biomass production and potentially decreasing seed production; and thrips and leafhoppers which remove photosyn-

(continued on page 4)

Table 1. Arthropods associated with switchgrass.

Order	*Families*	*Order*	*Families*
Coleoptera	Cantharidae	Diptera	Agromyzidae
			Bibionidae
	Cerambycidae		Bombyliidae
	Chrysomelidae		Cecidomyiidae
	Coccinellidae		Chloropidae
	Colydiidae		Dolichopodidae
	Curculionidae		Empididae
	Elateridae		Lonchopteridae
	Lampyridae		Sphaeroceridae
	Meloidae		Syrphidae
	Mordellidae		Tephritidae
	Nitidulidae	Hemiptera	Anthocoridae
	Silphidae		Aphididae
	Staphylinidae		Blissidae
	Scarabaeidae		Cercopidae
	Silvanidae		Cicadellidae
	Tenebrionidae		Cicadidae
	Trogidae		Coreidae
Collembola	Isotomidae		Cydnidae
	Sminthuriidae		Delphacidae
Hemiptera (cont.)	Geocoridae	Lepidoptera	Nymphalidae
	Lygaeidae		Pyralidae
	Membracidae	Neuroptera	Chrysopidae
	Miridae		Hemerobiidae
	Nabidae	Orthoptera	Acrididae
	Pentatomidae		Gryllidae
	Reduviidae		Tetrigidae
	Rhopalidae		Tettigoniidae
	Rhyparochromidae	Protura	unidentified
	Scutelleridae	Psocoptera	unidentified
Hymenoptera	Apidae	Thysanoptera	Thripidae
	Braconidae	Araneae	Araneidae
	Eucoilidae		Gnaphosidae
	Figitidae		Linyphiidae
	Formicidae		Lycosidae
	Ichneumonidae		Oxyopidae
	Mymaridae		Pholicidae
	Platygastridae		Salticidae
	Scoliidae		Tetragnathidae
	Seclionidae		Theridiidae

thate thereby decreasing biomass production. Leafhoppers also have the potential to transmit a variety of plant pathogens.

A number of beneficial arthropods were collected in this study. Predators including ground beetles, rove beetles, and spiders feed on a variety of arthropods. These predators were often found in relatively large numbers and were likely feeding on a wide range of arthropods. Hymenopteran parasitoids, which can have from broad to very specific host ranges, were also collected.

Ants were also abundant at all three sites. These ubiquitous arthropods perform a variety of valuable functions in switchgrass stands. They aerate the soil which promotes healthy plant root growth, and in prairie settings, move seed underground thereby reseeding plants. In addition, certain ant species are important predators that help limit pest outbreaks.

This study provides essential baseline information on the arthropods associated with switchgrass. Ultimately, this information will facilitate development of proactive and sustainable pest management strategies for the arthropod pests affecting switchgrass in Nebraska.

[1]Sandra Schaeffer (graduate student), Frederick Baxendale, Tiffany Heng-Moss, Ransom Sitz (undergraduate student), Department of Entomology, UNL; Gautam Sarath, Robert B. Mitchell, USDA Agricultural Research Service; Robert Shearman (professor emeritus), Department of Agronomy and Horticulture, UNL.

Litter Accumulation and Decomposition In Pastures *(continued from page 1)*

Measurement of forage mass accompanied the litter variables. Additional measurements to be collected in the next few years will include root production, root decomposition, total soil carbon and nitrogen, and particulate organic matter carbon and nitrogen. Additionally, litter and root samples will be analyzed for concentrations of carbon, nitrogen, and lignin to improve understanding of how management affects decomposition.

Preliminary Results and Discussion

Nitrogen inputs affected forage mass in 2010. In spring, forage mass averaged 4734, 3685, and 2699 kg ha^{-1} in FERT, DDGS, and CONT pastures, respectively. Contrary to the hypothesis, however, nitrogen addition to the pastures had limited effects on litter mass and litter accumulation rates. Pastures accumulated litter at a rate of 10 kg ha^{-1} d^{-1} and contained on average 2000 to 3000 kg ha^{-1} of litter on the soil surface across the growing season. As was hypothesized, forage mass was greater in nitrogen-fertilized pastures and in pastures where cattle were supplemented with distillers grains during spring, the time at which smooth bromegrass produced most of its growth. By late summer, however, forage mass was similar across treatments, averaging 1907 kg ha^{-1}. Similar end-of-summer forage mass, and consequently litter mass and litter accumulation rates, across treatments resulted from the greater stocking rates within the FERT and DDGS treatments and therefore forage utilization, as summer progressed.

Acknowledging that nitrogen, fiber, and lignin concentrations differ among leaf and stem fractions of forage grasses, we measured decomposition of leaf and stem material separately. As was hypothesized, pastures with a history of nitrogen inputs had greater leaf litter decomposition rates. Across a 251-day decomposition period from 29 July 2010 to 6 April 2011, leaf litter mass loss relative to initial leaf litter mass (100%) was 22.7, 25.2, and 31.7% for CONT, DDGS, and FERT pastures, respectively ($p < 0.02$; SE = 2.8). Stem litter decomposed at similar rates as leaf litter within the same treatment but was unaffected by nitrogen inputs. Across the 251-day period, stem litter decomposition relative to initial stem litter mass was 28.6, 26.0, and 30.2% for CONT, DDGS, and FERT pastures ($p = 0.33$; SE = 1.5).

Conclusions

The first year data showed that the greater stocking rates used to increase total cattle gains per ha within the FERT and DDGS pastures resulted in similar forage mass as CONT pastures by end of summer. Consequently, litter mass and litter accumulation rates showed little effect from nitrogen inputs and pasture management. Therefore, these results suggest that as long as similar grazing pressures are used in evaluation of management effects on pastures, a change in inputs such as nitrogen fertilization rates or supplementation of cattle are unlikely to modify soil carbon in pasture through changes in litter accumulation. Also, any slight but undetectable gains in litter mass achieved by greater forage mass in spring within FERT and DDGS pastures were balanced by greater leaf decomposition rates relative to CONT pastures. Efforts to increase soil carbon in managed grasslands may require inclusion of pasture species with greater root production or reduced root decomposition rates.

Literature Cited

Conant R.T., Paustian K., Elliott E.T. (2001) Grassland management and conversion into grassland: effects on soil carbon. Ecological Applications 11:343-355.

Erickson G.E., Bremer V.R., Klopfenstein T.J., Stalker A., and R. Rasby (2007) Utilization of corn co-products in the beef industry. 2nd Ed. Nebraska Corn Board and University of Nebraska–Lincoln Institute of Agriculture and Natural Resources.

Greenquist M.A., Klopfenstein T.J., Schacht W.H., Erickson G.E., Vander Pol K.J., Luebbe M.K., Brink K.R., Schwarz A.K., Baleseng L.B. (2009) Effects of nitrogen fertilization and dried distillers grains supplementation: forage use and performance of yearling steers. J. Anim. Sci. 87:3639-3646.

Greenquist M.A., Schwarz A.K., Klopfenstein T.J., Schacht W.H., Erickson G.E., Vander Pol K.J., Luebbe M.K., Brink K.R., Schwarz A.K., Baleseng L.B. (2011) Effects of nitrogen fertilization and dried distillers grains supplementation: nitrogen use efficiency. J. Anim. Sci. 89:1146-1152.

Malcolm S.A., Aillery M., Weinberg M. (2009) Ethanol and a changing agricultural landscape, Economic Research Report 86 U.S. Dept. of Agriculture, Economic Research Service. Nov. 2009.

Nelson C.J., Moser L.E. (1994) Plant factors affecting forage quality, in: G.C. Fahey Jr. (Ed.), Forage Quality, Evaluation, and Utilization, ASA-CSSA-SSSA, Madison, WI.

Svejcar T., Angell R., Bradford J.A., Dugas W., Emmerich W., Frank A.B., Gilmanov T., Haferkamp M., Johnson D.A., Mayeux H., Mielnick P., Morgan J., Saliendra N.Z., Schuman G.E., Sims P.L., Snyder K. (2008) Carbon fluxes on North American rangelands. Rangeland Ecol Manage 61:465-474.

Waterbury, J.A., Mark D.R., Thoms S.M., Erickson G.E., Klopfenstein T.J. (2009) An economic overview of ethanol co-product utilization in Nebraska. Univ. of Nebraska–Lincoln Extension. EC858.

2011 Earth Day Ushered In with Celebration of Grassland Conservation

Earth Day was Friday, April 22. On Thursday, April 21, the UNL Center for Grassland Studies teamed with the Sand County Foundation and others to host a reception and brief talks on grassland conservation.

The event, which was held at Hardin Hall on East Campus, began with a reception for the book, *Generations on the Land: Conservation Legacy*. Veteran author and journalist Joe Nick Patoski visited eight families in different states who are past recipients of the Leopold Conservation Award (LCA). The book, new this spring, presents warm, heartfelt conversations with these families, their beloved land and a vision for a healthier world. The Wilson Ranch, 2006 Nebraska LCA recipient, is one of the featured ranches in the book. Jaclyn Wilson was present for the reception and commented on their experience and how important it is to "tell your story" so others know what farmers and ranchers are doing to practice good stewardship while making a living on the land. For more information on the book and how to order, see www.sandcounty.net.

After the reception, the audience heard from several speakers, beginning with a member of the Sand County Foundation Board of Directors, the primary sponsor of the Leopold Conservation Awards. The organization gets its name from *A Sand County Almanac*, Aldo Leopold's influential book that called for an ethical relationship between people and the land they own and manage. In Nebraska, the Foundation presents the LCA in partnership with Nebraska Cattlemen and Cargill, with sponsorship from agricultural and conservation organizations and businesses. The winning family receives an Aldo Leopold crystal and a check for $10,000. The 2011 Nebraska LCA recipient, the identity of which was announced at a press conference by Governor Heineman earlier that day, was the three-generation Mathewson family from Potter. Randy Mathewson and son Beau made brief comments.

Winners of the 2011 Nebraska Leopold Conservation Award were recognized at the Celebration for Grassland Conservation hosted by the Center for Grassland Studies and others on April 21. Beau Mathewson talked about the family's operational philosophies while dad Randy, wife Kahla and mom Gina (not pictured) look on from the front row.

Representing the family that received the 2006 Nebraska Leopold Conservation Award was Sandhills rancher Jaclyn Wilson. The family is one of eight that are profiled in the new book, *Generations on the Land: Conservation Legacy,* published by the Sand County Foundation.

Mace Hack, Nebraska State Director of The Nature Conservancy, described work his organization is doing during the Celebration for Grassland Conservation.

The Mathewsons use several innovative techniques to effectively manage the land, water and wildlife on their ranch. Among them are: use of rotational grazing for more than 30 years; managing sites through a combination of photography, GPS receiver and laptop in the field; modernizing watering systems; aggressive noxious and invasive weed control effort that entails riding every acre of land and monitoring progress via GPS; using government cost-share programs to install cross fending that increased production by 40%. The family has increased wildlife habitat by planting more than 6,000 trees (with 2,700 shrubs planned in 2011) and adding wildlife watering facilities. Educating others is also a goal, which includes hosting field tours on their ranch and serving on various boards that help promote land stewardship and leadership.

Nebraska leaders in The Nature Conservancy (Mace Hack), Audubon Society (Marian Langan), and USDA Natural Resources Conservation Service (Craig Derickson) were also on hand to inform us about the grassland conservation work with which their organizations are involved. Center for Grassland Studies Director Martin Massengale acted as master of ceremonies for the Celebration of Grassland Conservation.

With more than 95% of land in Nebraska privately owned, and approximately half of that in grassland, celebrating grassland conservation while recognizing great stewards of the land was a wonderful way to usher in Earth Day!

Advisory Council Tour In Southeast Nebraska

Every other year the CGS hosts a tour somewhere in the state for its Citizens Advisory Council and Associates that features turf management and land management for both grazing operations and wildlife habitat. The event was held on June 22 this year, beginning at ArborLinks in Nebraska City, where we heard about the conservation-minded management of the Arnold Palmer Signature Design golf course and the service orientation of the entire operation. We even got to hear from "one of our own," as PGA Golf Management graduate Gil Russell talked about how the major prepared him for his Assistant Professional position at ArborLinks.

After lunch we headed to fields in Johnson County to see how Natural Resources Conservation Service personnel are working with agricultural producers on development of their grazing systems. The Johnson County Extension Office is another resource for area producers, and we heard from two of them who described the sustainable methods they use in their farming operations. At the last stop near Burchard Lake, we learned about some patch-burn grazing studies being conducted in that area in cooperation with the Wildlife Division of the Nebraska Game and Parks Commission.

Citizens Advisory Council member Ray Ward, founder of Ward Laboratories in Kearney, grabbed the shovel out of his truck so he and Craig Derickson, NRCS state conservationist, could check the soil at one of the tour stops. They determined it was good for carbon sequestration.

Rod Christen (fourth from left), former winner of a Leopold Conservation Award, and Paul Rohrbaugh (not in picture) shared their philosophies and management practices with the tour group.

Advisory Council member Bill Bieck, superintendent of Heritage Hills Golf Course in McCook, shared these comments about the tour in an e-mail to us.

"I do enjoy this group and its diversity of members and topics. I probably learn more from those outside my own area of expertise, and then try to apply those principles to my profession. I especially enjoyed the topic on patch burning. I also appreciated the comments of the two small private ranchers near Steinauer. That is what I enjoy so much about these tours… we usually visit with a 'grassroots' producer on their 'turf' – not a PowerPoint presentation! It was interesting to hear the passion in their voices for what they do, comments about their involvement in a local range management group, and the need to change management practices, when appropriate, rather than using the same practices just because it is what has been done for the last 30 years. I can say the same thing about my profession... everything evolves through time and we must be willing to change as well!"

NRCS personnel (third from left) Craig Derickson, Roger Reichmuth, Anna Ferguson and Justin Linder, discussed their work with a local producer to develop land management and grazing system regimes.

ArborLinks superintendent Ryan Krings talked about how they manage first the greens, then a nearby area on which they use prescribed fire for the lusher yet natural look.

NRCS resource conservationist and UNL Grazing Livestock Systems graduate Justin Linder added his comments about the cooperative work with a producer.

Stephen Winter, Senior Research Specialist with the Department of Natural Resource Ecology and Management at Oklahoma State University, explained the patch-burn studies he and others are conducting near the Nebraska-Kansas border.

2011 Center Fall Seminar Series to Feature National Academy of Sciences Member and Nobel Laureate

Highlighting the 17th annual Center for Grassland Studies Fall Seminar Series will be Nobel Laureate Jack Morgan and National Academy of Sciences member Ronald Phillips. Dr. Morgan will present "Effects of Global Climate Change on Grasslands of the Great Plains" on October 24. Dr. Phillips' talk on November 14 is titled "Norman Borlaug and the Future of the Green Revolution." The entire schedule will be posted on the Center's Web site in August.

The seminars are held most Mondays during the fall semester, 3 to 4 p.m., at the University of Nebraska–Lincoln's East Campus Union. Refreshments will be available prior to each seminar, compliments of the Frank and Margaret Leu Foundation Fund, which also supports the Leu Distinguished Lectureship each year.

While students can take the seminar class for undergraduate or graduate credit, the seminars are also open to the public. Video of these seminars and selected seminars from past series will be available for checkout from the Center for Grassland Studies, 203 Keim Hall.

August 1 Is Pre-registration Deadline for Nebraska Grazing Conference

The deadline is fast approaching to pre-register for 11th annual Nebraska Grazing Conference to be held in Kearney August 9-10. To receive the pre-registration rate of $80 for the two days (including lunches and banquet), the form and check (payable to 2011 Nebraska Grazing Conference) must be postmarked by August 1. Otherwise, the walk-in fee of $95 applies. One-day registrations and student rates are available; see http://nebraskagrazingconference.unl.edu for registration and program details, or contact the Center for Grassland Studies office.

CGS Associates

The Nebraska Agri-Business Association presented the Education and Researcher of the Year Award to **Bruce Anderson** at its exposition in February.

Stephen Baenziger was selected among the 2011 winners of the University of Nebraska's most prestigious awards for research, teaching and engagement. At a spring banquet he was honored with the Outstanding Research and Creative Activity award, which recognizes individual faculty members for outstanding research or creative activity of national or international significance.

Chris Calkins is the recipient of the 2011 Distinguished Research Award from the American Meat Science Association. The award recognizes his contributions to advancement of the understanding of how meat composition and biochemistry impact the quality of fresh meat for retail and for value-added processing... especially his work in the area of beef muscle profiling.

Terry Klopfenstein was one of two 2011 Nebraska Hall of Agricultural Achievement honorees. At an April banquet, the ruminant nutritionist was hailed for his research and teaching contributions to the cattle industry. He has advised more than 160 graduate students, and, according to the banquet program, his pioneering research on the use of corn byproducts has "saved Nebraska cattle producers and feeders over $100 million annually in added benefits."

Jim Stubbendieck was presented the 2011 Frederic G. Renner Award at the Annual Society for Range Management Meeting's Honor Awards Ceremony in February. The premier Society award recognizes sustained accomplishments or contributions to range management during the last ten years.

University of Nebraska Lincoln | CENTER FOR GRASSLAND STUDIES
203 Keim Hall
P.O. Box 830953
Lincoln, NE 68583-0953

Address Service Requested

NCR-SARE Publication Touts Benefits of Prairies

NCR-SARE Graduate Student grant recipient Meghann Jarchow and other Iowa State University (ISU) researchers say tallgrass prairies offer many other benefits to landowners in addition to fertile soil.

In 2009, the team submitted a proposal to the NCR-SARE Graduate Student Grant program and were awareded $9,965 to study how to incorporate native prairies into working farm landscapes.

"Before European settlement, more than 85% of IA was tallgrass prairie," said Jarchow. "By 2007, 64% of IA was cropped in either corn or soybean, and less than 0.1% of the land was tallgrass prairie. Increasing the amount of prairie in IA will improve environmental quality and the natural resource base on which IA agriculture depends and may also improve farmer profitability if the prairies provide a market-valued product."

Many of the benefits of tallgrass prairies are outlined in a new publication, Incorporating Prairies into Multifunctional Landscapes, written by Jarchow, a Ph.D. candidate in the ISU Department of Agronomy, and her advisor, Matt Liebman, ISU's Henry A. Wallace Endowed Chair of Sustainable Agriculture. Jarchow provided many of the full-color photographs in the publication.

The research team is developing multiyear cropping systems for IA that integrate annuals and perennials. Their work will include establishment of prairies on IA farms, increased knowledge of prairies grown as biomass feedstocks, scientific and extension publications and presentations, and field days. They hope that increased farmer familiarity with the establishment, utility, and environmental benefits of native tallgrass prairies will encourage planting of prairies in agriculturally-dominated landscapes.

The publication looks at ways that prairies can be incorporated into farms, how they affect nearby crops, and resources to establish prairies. The publication was sponsored by NCR-SARE, the Leopold Center, and ISU Agriculture and Natural Resource Extension. The publication can be downloaded, or printed copies requested at no charge from the ISU University Extension Online Store at: https://www.extension.iastate.edu/store/.

Read more about the ISU's tallgrass prairie project online on the SARE project reporting website. Simply search by the project number, GNC09-107, at http://www.sare. org/projects/ or contact the NCR-SARE office for more information at ncrsare@umn.edu.

Editor's Note: The above is reprinted from the Summer/Fall 2010 issue of *Field Notes*, a newsletter published by the North Central Region Sustainable Agriculture Research & Education program.