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Can Distillers Grains Replace Forage?

by Sarah Morris, Jim MacDonald, Don Adams and Terry Klopfenstein, Department of Animal Science, UNL

The price of grazing forages has been and is continuing to increase. This may be economically challenging for producers. Traditional supplementation of cattle in grazing situations utilized cereal grains. However, the starch in cereal grains can be problematic in high forage diets. Starch can negatively impact forage digestibility and utilization, and therefore can have negative effects on the animal. The ethanol industry, both in Nebraska and in the U.S., is continuing to grow. The process of producing ethanol utilizes starch from cereal grains through fermentation of starch to ethanol. This process results in byproducts such as distillers grains or distillers grains plus solubles (DGS), which can be sold as a feed in either a wet or dry (DDGS) form. The increased production of ethanol increases the supply of distillers grains available to producers. Due to the increase in supply of DGS, the price of DGS is decreasing. In addition to being economically attractive, DGS are a good supplement source due to the high energy and protein content.

In two recent studies, supplementing DDGS in high forage diets is evaluated to determine effects on animal performance, forage intake, and economical viability. In the first study, 30 heifers grazed smooth brome grass pasture and were individually supplemented, using the Calan gate system, with one of five levels of DDGS, 0, 1.0, 2.1, 3.1, or 4.2 lb on a dry matter basis. Forage intake was estimated using the 1996 National Research Council model.

Supplementation of DDGS resulted in an increase in average daily gain and a decrease in predicted forage intake as level of DDGS increased, demonstrating an increase in animal performance and replacement of forage

by DDGS. The value of supplementing DDGS is twofold: increasing gain and reducing forage intake. When calculating the value of supplementing DDGS, both gain and reduced intake were accounted for. Prices for forage were based on AUM value. Table 1 shows the value of DDGS as a result of increased animal performance and reduced forage intake.

Ninety heifer calves were used in the second study. Heifers consumed either a high quality forage — an alfalfa and sorghum silage mix used to simulate a growing spring and summer grazing situation, or a low quality forage — a smooth brome grass hay used to simulate a dormant winter grazing situation. Heifers on both forage diets were individually supplemented, using the Calan gate system, with one of five levels of DDGS, 0, 1.5, 3.0, 4.5, and 6 lbs on a dry matter basis. Supplementing DDGS increased average daily gain as level of DDGS increased. From the 0 lb level of supplementation to the first level of DDGS supplementation, a deficiency in metabolizable protein was observed. After the metabolizable protein requirement was met at the first level of supplementation, the increase in average daily gain was due to a response from increased energy supplied by

(continued on page 4)



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

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

Martin A. Massengale CGS Director
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FROM THE DIRECTOR

The world's grasslands are the least protected biome and the most in need of such protection than any other. The same can be said for North American grasslands. There is a great need for more education and visibility to be given to farming systems using grasses, and many people believe that grasses should play a much larger role in our agricultural systems.

Since approximately 51% of the world's land surface area is covered by rangelands and grasslands, their conservation and sustainability are important to our nation overall. Data indicate that these lands have been decreasing by about 1.5 million acres per year, and they are being challenged today by a number of factors, such as land fragmentation, invasive species, drought, fire and population changes. With the importance and vastness of these land areas, it seems imperative that we continue improving their management for long-term sustainability.

Research and development are key components to further development and maintenance of successful enterprises. With the importance of the agricultural, and specifically the livestock, industries in Nebraska, which are so dependent on grasslands, we certainly need to enhance and maintain the research and educational programs that support these industries.

Recently, I represented the American Society of Agronomy at the Grazing Lands Conservation Initiative National Steering Committee meeting in Arlington, Virginia. The Grazing Lands Conservation Initiative (GLCI) is a voluntary partnership with private landowners, and is sponsored by the Natural Resources Conservation Service (NRCS). The GLCI has two primary objectives. The first is to ensure that technical, educational and related assistance is available for use by those who own and manage private grazing lands. The second is to support research, extension and educational programs that provide the information needed for the technical assistance.

Through the technical assistance programs of the NRCS, farmers and ranchers are able to: practice better grazing management, thus providing for better livestock production; reduce the invasion of weedy species; lessen drought impact; protect the soil from wind and water erosion; conserve and store more water; improve water quality; and provide better habitat for wildlife. Good management practices also help to keep our natural resources productive and renewable.

Many states, including Nebraska, have chapters of the GLCI. Roger Chesley from Callaway is the coordinator for this state's chapter, called the Nebraska Grazing Lands Coalition. He is also a member of the Center for Grassland Studies Citizens Advisory Council. Roger has done an excellent job of working with us on several cooperative efforts including the annual Nebraska Grazing Conference. Financial support from the Coalition has allowed us to award scholarships to UNL students majoring in Grazing Livestock Systems, which our Center coordinates (see related article in this issue). To learn more about the Nebraska Grazing Lands Coalition, see www.ne.nrcs.usda.gov/partnerships/NGLC_home.html, or contact our office.

M. A. Massengale

Nebraska Wildlife Federation Looking for Tallgrass Prairies

by Penny Perkins and Duane Hovorka, Nebraska Wildlife Federation

The Nebraska Wildlife Federation is looking for native prairie remnants in eastern Nebraska, and needs your help!

The Federation is compiling the Tallgrass Prairie Database to document the native tallgrass prairie remnants in the eastern 40 counties of Nebraska. This database will help tell us where and how much native prairie is left, and what condition the remaining prairie parcels are in.

Estimates are that just 2% of Nebraska's historic tallgrass prairie remains intact — roughly 300,000 acres of prairie, scattered in small parcels across 15 million acres of eastern Nebraska. Many species of wildlife that historically depended on tallgrass prairie are in sharp decline, including many grassland bird species.

The largest areas of unbroken tallgrass prairie are in the southeast and northeast corners of the state, and along key river valleys. The vast majority of those prairie remnants have been grazed or hayed for decades. Some of these areas have suffered from overstocking and poor grazing practices, which have depleted diversity among the native grasses and forbs. Others have been invaded by aggressive introduced grasses like brome.

Unfortunately, land near urban areas with native prairie is often targeted first for development, because grassland generally sells for less than cultivated cropland. In more rural areas, native prairie is still being converted to cropland, driven by Farm Program payments and changes in farming technology.

While many of the biggest and best prairie remnants are documented in the Game and Parks Commission's Heritage Database, that database only captures a fraction of all the remnant tallgrass prairie in Nebraska. Other organizations and individual volunteers are needed to help the Federation track down and document native prairie remnants in their areas. By combining information in the Heritage Database with information from other agencies, organizations and individuals, the Tallgrass Prairie Database will provide a more comprehensive catalog of remnant prairies, big and small. That will allow better planning and analysis at the state level and the community level, and better conservation.

Organizations that share information on remnant prairies will obtain confidential access to information in the database, which should be useful for planning and carrying out conservation programs. Individuals who provide information for the database can receive invitations to farm tours, updates on new grassland conservation programs, and information on prairie management conferences and seminars of potential interest.

The Tallgrass Prairie Database project, which is funded in part by a State Wildlife Grant from the U.S. Fish and Wildlife Service, through the Nebraska Game and Parks Commission, is one part of a broader effort to conserve



Rosemary Thornton

Students wander through a restored tallgrass prairie at Fredstrom Elementary School in Lincoln.

Nebraska's few remaining tallgrass prairies. The Tallgrass Prairie Partnership is a collection of non-profit organizations, nature centers, government agencies, and individuals who value our historic tallgrass prairie legacy and are working together to conserve remaining prairies. The Federation, a member of the partnership, is a non-profit state affiliate of the National Wildlife Federation

The Tallgrass Prairie Partnership was recently awarded a \$225,000 grant from the Nebraska Environmental Trust to carry out tallgrass prairie conservation on private lands and to undertake public outreach in eastern Nebraska. That will provide funding to help landowners remove invading cedar trees, carry out planned burns, implement better grazing strategies, and conserve remaining native tallgrass prairies for the long term.

In addition to the above work with tallgrass prairies, the Nebraska Wildlife Federation is involved in other efforts to conserve Nebraska's native grasslands. Federation personnel helped design and promote the Grassland Reserve Program that became part of the 2002 Farm Bill, serve on the Center for Grassland Studies Citizens Advisory Council and the USDA State Technical Committee, and promote native prairie conservation through education, conservation and public policy programs. The Federation is also an active supporter of sustainable farming and ranching practices, and of public policies designed to promote those practices.

Greater grassland diversity provides a longer season of nutritious forages as well as a buffer during drought and other climate extremes. Simple sustainable practices such as rotational grazing and occasional burning allow more species to flourish, promoting both warm- and cool-season species.

Although research shows that cattle — unlike bison — generally need winter supplements when grazing a native

(continued on page 6)

Can Distillers Grains Replace Forage? (continued from page 1)

Table 1. Value of DDGS due to improved animal performance and reduced forage intake on smooth bromegrass pasture.

Supplemental DDGS, lb per d (dry matter):	0	1.0	2.1	3.1	4.2
Beginning wt, lb	650	650	650	650	650
End wt, lb	776	782	787	793	798
Sale price, \$ per 100 lb	74.30	74.14	73.98	73.82	73.66
Revenue, \$	576.52	579.42	582.32	585.23	588.15
DDGS value from increased animal performance (IAP), \$ per ton ^a	—	65.97	66.04	66.12	66.20
DDGS value from reduced forage intake (RFI), \$ per ton ^b	—	109.68	109.68	109.68	109.68
Total DDGS value, \$ per ton ^c	—	175.65	175.73	175.80	175.88

^aDDGS value (dry matter) due to improved animal performance.

^bDDGS value (dry matter) due to reduced forage intake assuming a forage cost of \$21.65 per animal unit month.

^cTotal DDGS value (dry matter) from IAP +RFI.

DDGS. Forage dry matter intake decreased as level of DDGS increased, demonstrating replacement of forage by DDGS. The economical viability of DDGS (Table 2 for the high quality forage, and Table 3 for the low quality forage) was calculated similar to the first study; the cost of forage was based on cost of the alfalfa and sorghum silage (\$75/ton) or smooth bromegrass (\$50/ton) instead of AUM cost. Current price of DDGS is \$70 to 80/ton.

Supplementation of DDGS to animals on high forage diets increases animal performance through increasing average daily gain and replaces forage through decreasing forage dry matter intake. The added value of supplementing DDGS suggests that supplementing DDGS to animals on high forage diets is economical, with the highest value observed with low quality forages. Future research is being designed to evaluate systems where DDGS can be used as a substitute for forage in practical grazing systems.

Editor's Note: Sarah Morris and Jim MacDonald are graduate students, and Don Adams and Terry Klopfenstein are professors in the Department of Animal Science.

Table 2. Value of DDGS due to improved animal performance and reduced forage intake with the high quality forage, alfalfa and sorghum silage.

Supplemental DDGS, lb per d (dry matter):	0	1.0	2.1	3.1	4.2
Beginning wt, lb	631	631	631	631	631
End wt, lb	740	777	805	824	833
Sale price, \$ per 100 lb	75.44	74.26	73.47	73.00	72.79
Revenue, \$	557.98	577.26	591.78	601.42	606.05
DDGS value from increased animal performance (IAP), \$ per ton ^a	—	306.00	268.20	229.81	190.74
DDGS value from reduced forage intake (RFI), \$ per ton ^b	—	62.99	48.81	46.52	40.23
Total DDGS value, \$ per ton ^c	—	368.99	317.01	276.33	230.97

^aDDGS value (dry matter) due to improved animal performance.

^bDDGS value (dry matter) due to reduced forage intake assuming a forage cost of \$75 per ton dry matter.

^cTotal DDGS value (dry matter) from IAP +RFI.

Table 3. Value of DDGS due to improved animal performance and reduced forage intake with the low quality forage, smooth bromegrass hay.

Supplemental DDGS, lb per d (dry matter):	0	1.0	2.1	3.1	4.2
Beginning wt, lb	631	631	631	631	631
End wt, lb	649	706	748	773	783
Sale price, \$ per 100 lb	78.84	76.60	75.18	74.38	74.09
Revenue, \$	511.96	541.02	562.00	575.10	580.22
DDGS value from increased animal performance (IAP), \$ per ton ^a	—	461.24	397.19	334.10	270.90
DDGS value from reduced forage intake (RFI), \$ per ton ^b	—	-10.33	6.15	8.72	15.89
Total DDGS value, \$ per ton ^c	—	450.91	403.34	342.82	286.78

^aDDGS value (dry matter) due to improved animal performance.

^bDDGS value (dry matter) due to reduced forage intake assuming a forage cost of \$50 per ton of dry matter.

^cTotal DDGS value (dry matter) from IAP +RFI.

Nebraska Wildlife Federation Looking for Tallgrass Prairies (continued from page 3)

prairie, research also shows that cattle do not suffer under grazing of native prairies. There is research, however, showing that high grassland diversity does support wildlife species that can coexist with cattle and maintain a healthy ecosystem.

The Nebraska Wildlife Federation is leading three farm tours in 2005 to show the benefits of well managed grass-based operations. These tours will highlight federal and state programs that offer financial support to implement practices and habitat improvement, and will include

discussions on how farmers can maintain profitable livestock operations on native prairie, and how landowners can manage for selected game and non-game species. The first farm tour is scheduled for the afternoon of June 12 near Steinauer in southeast Nebraska.

To become part of the Tallgrass Prairie Database project, or for information on the Federation's upcoming farm tours or other activities, please contact the Nebraska Wildlife Federation at 402-477-1008, or PO Box 81437, Lincoln, NE, 68501.

Program Set for 2005 Nebraska Grazing Conference



The fifth annual Nebraska Grazing Conference will be held at the Kearney Holiday Inn on August 8 and 9. While speakers were still submitting their presentation titles as this newsletter went to press, the following program does provide information on their topics and when they will speak. As you can see, it promises to be another great conference that offers top-notch speakers discussing hot topics!

Monday, August 8

- 9:00 Registration (browse exhibit area)
- 10:00 Welcome, Governor Dave Heineman (invited)
- 10:15 Animal behavior as it relates to grazing, Temple Grandin, Colorado State University, Fort Collins, CO
- 12:15 Lunch
- 1:15 Management of eastern redcedar, Stevan Knezevic, University of Nebraska-Lincoln (UNL), Concord, NE
- 2:00 Move to concurrent sessions
- 2:15 **Concurrent sessions**
Cedar tree control: Gordon Gosnell, Maxwell, NE; T.J. Walker, Nebraska Game and Parks Commission, North Platte, NE
Irrigated pastures: Jim Choquette, Upland, NE; Josh Wendell, Dickens, NE
- 3:15 Break (browse exhibit area)
- 3:45 Economic considerations in buying a ranch, Burke Teichert, Deseret Ranches, Ashby, NE
- 4:25 Monitoring cattle markets and input costs, Jim Carr, Burwell, NE
- 5:05 Adjourn
- 5:15 Social (cash bar, browse exhibit area)
- 5:45 Banquet
- 6:45 Evening session on Conservation Security Program and other cost-share programs
- 9:00 Adjourn

Tuesday, August 9

- 8:30 Dung beetles and microorganisms of the soil, Pat and Dick Richardson, University of Texas, Austin, TX
- 9:20 Bird response to grazing livestock and fire, Terrence Bidwell, Oklahoma State University, Stillwater, OK
- 10:10 Break (browse exhibit area)
- 10:40 **Concurrent sessions**
Wildlife and grazing: Orvin Bontrager, Servi-Tech, Inc., Aurora, NE; William Vodehnal, Nebraska Game and Parks Commission, Bassett, NE; Russ Hirschman, Verdigre, NE; Martin Batterman, Bridgeport, NE
Pasture-finished/grass-fed beef: Walter Bohaty, Bellwood, NE; Paul Rohrbaugh, Steinauer, NE; Kevin Fulton, Litchfield, NE
- 12:15 Lunch
- 1:15 Grassland monitoring: Terry Gompert, UNL, Center, NE; Greg Carlson, Verdigre, NE; Clem Wagner, Center, NE
- 2:30 Wrap-up, evaluations and adjourn

The two-day pre-registration fee of \$70 is due to the Center for Grassland Studies by August 1. The fee covers lunch both days, the evening meal, break refreshments, and materials (including proceedings). One-day registrations are also available. Late fees apply to registrations postmarked after August 1. Checks are to be made out to **2005 Nebraska Grazing Conference** (sorry, credit cards are not accepted). Note the refund policy: cancellations received by August 1, 2005, will receive a copy of the proceedings and a refund of registration fee less \$10. Cancellations after August 1 will not receive a refund but will be sent a copy of the proceedings.

Participants of any of the previous Nebraska Grazing Conferences as well as all Nebraska extension educators will receive a brochure in the mail. Others may contact the CGS office to be put on the mailing list. Information and registration form are also on the CGS Web site (www.grassland.unl.edu).

The conference is a collaborative effort with many co-sponsors in the public and private sectors. The underwriting sponsors (\$1,000 or more) of last year's conference were the Center for Grassland Studies, Nebraska Grazing Lands Coalition, and Nebraska Game and Parks Commission (this year's sponsorship list is not yet finalized).

CGS Associates

John Watkins was recently named the 2005 recipient of the Nebraska Crop Improvement Association Distinguished Service Award for his work in developing disease management programs for wheat, alfalfa and turfgrass.

Dennis Brink, Patricia Freeman, Tiffany Heng-Moss, Gerald Horst, Bryan Reiling, James Stubbendieck, and Kim Todd are recent recipients of the UNL Parents Association Recognition for Contributions to Students awards.

Steve Rodie recently received the Educator of the Year Award from the Nebraska Arborists Association.

For his life's work, which includes 49 books (with personal illustrations) about Nebraska's ecosystems and wildlife, **Paul Johnsgard**, Foundation Professor Emeritus of Biological Sciences, received the National Conservation Achievement Award in Science from the National Wildlife Federation, which he accepted in a ceremony in Washington, D.C. March 31.

Bryan Reiling was promoted to Associate Professor and awarded tenure.

CGS Associate Leaves Legacy of Native Plantings Along Nebraska Highways

Dick Gray, agronomist with the Nebraska Department of Roads since 1962 and an Associate of the Center for Grassland Studies since its inception, recently retired. Never heard of him, you say? Well, if you have driven along Nebraska highways, you've seen the results of his work. Gray is responsible for the once-uninteresting ditches being



Thanks to Dick Gray's work, this truck driver could enjoy viewing the Coreopsis while driving along I-80 between Seward and Grand Island.

turned into linear prairies full of native flowers and grasses. He pioneered the use of warm-season native grasses and plants, promoting use of these materials whenever a new road or reconstruction project allowed for new or re-plantings. In 1974, he piloted a program to plant native grasses and flowers along Nebraska's roughly 10,000 miles of highways. The program won awards from the Nebraska Game and Parks Commission as well as the Audubon Society for its benefits to wildlife and for its beautification of the roadways.

The use of native species in roadside ditches was a somewhat radical idea when Gray first promoted it, explaining that deep-rooted native grasses with their thick, deep root systems would better withstand the state's winters and drought periods, require less mowing (saving tax dollars), reduce soil erosion, and even provide emergency hay banks, which have been used several times over the past three decades in periods of drought.

So thanks, Dick, for being the "radical agronomist." We will think of you as we head down Nebraska's highways and enjoy the view!

Grazing Livestock Systems Update

The Grazing Livestock Systems (GLS) undergraduate major, which is coordinated by the Center for Grassland Studies, is finishing its sixth year. The program integrates study in ruminant livestock production, grazing land ecology and management, and business management.

GLS graduates have gone on to positions in ranch management, government agencies such as the USDA Natural Resources Conservation Service and Natural Resources Districts, and the livestock feed industry. Some pursued further education in graduate programs.

Aaron Fehringer, a dual Grazing Livestock Systems/Animal Science major, graduated in December 2004 and is working for a cattle feeding operation in Seward. In February 2005 he attended the National Cattlemen's Beef Association Trade Show in Fort Worth where he joined others in representing the UNL College of Agricultural Sciences and Natural Resources and the Nebraska Department of Agriculture.



Student Aaron Fehringer working on a ranch near Brewster for his Grazing Livestock Systems internship.

We say hello and good-bye to some GLS faculty. Lowell Moser, who has been serving as Interim Head of the Department of Agronomy and Horticulture this year, and George Pfeiffer in the Agricultural Economics Department and former Assistant Dean of the college, are both retiring from UNL this year. They were members of the original group that developed the GLS major. Joining the GLS faculty team is Darrell Mark in the Agricultural Economics Department. Continuing faculty are original team members Walter Schacht (Agronomy and Horticulture) and Dennis Brink (Animal Science), and Bryan Reiling (Animal Science). We thank Drs. Moser and Pfeiffer for their years of dedicated service to the GLS program, the Center for Grassland Studies, and the University of Nebraska-Lincoln, and we welcome Dr. Mark as the newest GLS member.

One final note: In April a totally revised GLS Web site was launched. Check it out at gls.unl.edu.



Alum Aaron Fehringer (4th from left) standing next to U.S. Secretary of Agriculture, Mike Johanns, at the 2005 National Cattlemen's Beef Association Trade Show.

Sean Garbacz

Urbanized Buffalograss in Demand

Sophisticated descendants of a tough native prairie grass are making a name for themselves in lawns, golf courses and public spaces around the nation.

Turf-type buffalograsses developed through two decades of University of Nebraska research are coming of age. They're providing water-thrifty, sustainable turf options while accruing economic benefits for the state and the university.

"We have great demand from western states due to drought, and there's growing interest in eastern states and overseas," said Wayne Thorson of Todd Valley Farms near Mead. Among the buffalograsses his company grows and sells are Legacy and Prestige, two Institute of Agriculture and Natural Resources-developed turf-type buffalograsses that exemplify how research is transferred to producers and benefits Nebraska's economy.

IANR's modern turf buffalograsses are as tough as their prairie ancestors but, thanks to careful breeding and selection, their looks are better suited for lawns. Improved types generally are denser, darker green and keep their color longer than traditional buffalograss.

Buffalograss requires up to 50 percent less water than Kentucky bluegrass, needs far less mowing and fertilization, and grows in poor soils, said turf scientist Terry Riordan, who headed IANR's turf buffalograss research for 18 years.

The search for environmentally friendlier turf began in 1984 with a grant from the United States Golf Association, which has provided more than \$1 million for IANR's research.

"Their interest in reducing water, fertilizer and pesticide showed a lot of foresight," Riordan said.

Collecting thousands of samples — mostly remnant Dust Bowl era plantings — from Nebraska pastures, yards, cemeteries and old golf courses, scientists started test plots that included southern specimens.

The team's first improved cultivar was a Texas strain, 609, which caught Texas sod producer David Doguet's eye during a 1987 visit.

"It really stood out from the others, which had already gone dormant," Riordan said. "The next year we took a vanload of 609 plugs to Austin, and within a year they were ready to market it."

It was a significant early success. IANR licensed 609 sales to a company owned by Doguet and golf great Ben Crenshaw. Although 609 wasn't suited to Nebraska, royalties from its release helped support continued research.

Earlier improved buffalograsses came only as sod or plugs. In 1995, Cody became the first Nebraska-developed turf-type buffalograss available as seed from the Native



Brett Hampton

IANR's improved turf-type buffalograsses are used in lawns, public spaces and golf courses around the country, such as this residential development in Lincoln. The water-thrifty grasses are especially popular in watershort areas.

Turfgrass Group, which now is composed of Stock Seed Farms of Murdock and Arrow Seed of Broken Bow. The companies have since commercialized other IANR-seeded buffalograss cultivars.

Legacy, a 2000 release, is a great-looking buffalograss suited to Nebraska's climate. It's available as a plug and as sod, and it has spread far and wide thanks to harvesting and packaging innovations resulting from collaborations between Thorson and university scientists.

Todd Valley originally used plug harvesters developed at IANR. These plugs were heavy to ship, so Thorson developed a lightweight soil mix and moved his plug operation into a 55,000-square-foot greenhouse.

"We get Web and catalog orders for plugs from everywhere," said Thorson.

Buffalograss has nationwide potential for golf courses, parks and roadways as well as home lawns, especially in water-short areas, said turf scientist Bob Shearman, who was part of the original turf buffalograss team and assumed the lead role from Riordan in 2002.

Riordan won't guess how widespread turf buffalograss will become, but in many areas where water is in short supply there may be few alternatives.

"From an environmental standpoint, it often will be the best choice," he said.

Future research will expand turf buffalograss availability by developing more seeded types, said Shearman.

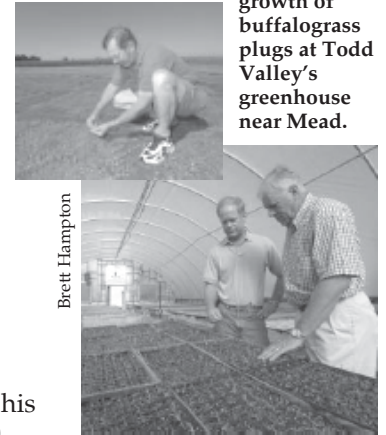
"For buffalograss to be widely accepted, we need to improve types that perform like Legacy but can also be seeded," he said.

New molecular tools will speed the search for favorable buffalograss characteristics.

"What took 20 years before can now be done in five," Shearman said.

— David Ochsner

IANR scientists are the nation's leaders in turf buffalograss research. Left: Turf Scientist Bob Shearman examines a buffalograss line that researchers selected because of its enhanced performance, tolerance to low mowing height and drought resistance. Interest is growing in water-thrifty turf and scientists continue to develop new buffalograsses that provide sustainable turf options. Below: Wayne Thorson (left) of Todd Valley Farms and IANR turf scientist Terry Riordan check



growth of buffalograss plugs at Todd Valley's greenhouse near Mead.

Brett Hampton

Editor's Notes: This article is reprinted from the Spring/Summer 2005 issue of *Research Nebraska*, published by University of Nebraska-Lincoln. Terry Riordan is the Director of the Professional Golf Management program, which the Center for Grassland Studies coordinates. Bob Shearman served several years on the Center's Policy Advisory Committee and helps with the PGM program. Wayne Thorson, as well as representatives of Stock Seed Farms and Arrow Seed, both of which are mentioned in this article, are members of the Center's Citizens Advisory Council.



Resources

Livestock and Poultry Environmental Stewardship Small Farms Fact Sheets. This new series of fact sheets provides practical, science-based information about good environmental stewardship practices. It was developed by a national team of experts with considerable experience in targeted environmental education for small farms. The initial fact sheets are: Small-Scale Farmers and the Environment: How to be a Good Steward; The ABCs of Pasture Grazing; Manure on Your Farm: Asset or Liability? Managing Animal Deaths: Your Options; Got Barnyard Runoff? Protecting the Water on Your Small Farm; Good Stewardship Practices for Horse Owners. Available online at www.cals.ncsu.edu/waste_mgt/smallfarms/factsheet.htm.

The Social Implications of Management Intensive Rotational Grazing: an Annotated Bibliography. This 51-page report, published by the Center for Integrated Agricultural Systems of the University of Wisconsin-Madison, presents a comprehensive literature review of social issues of managed grazing, including a summary and analysis of future research needs. It also includes abstracts covering the agronomic, environmental, human nutrition, and grazing "how-to" literature. Available online at www.cias.wisc.edu/bibliog2.php.

Nebraska Partnership for All-Bird Conservation Web site, www.nebraskabirds.org. The partnership's mission is to "promote a coordinated, science-based, landscape approach to voluntary land stewardship that will conserve, improve, and expand habitat for all bird species."

Speaking of birds, a new Web site (www.nebraskabirdingtrails.com) promotes economic development (eco-tourism) through bird watching opportunities in Nebraska. Wildlife-watching activities nationwide generate annual economic output of \$85 billion, including \$32 billion in retail sales. This Web site puts Nebraska's 400+ bird species, many fairly unique and

attractive to birders, on alert at over 350 public birding locations with information on birds and facilities and links to Nebraska's tourism Web site and local community services such as motels and other attractions. Next plans are to add additional maps and user benefits, including a process for interested private landowners to participate.

Interested in invasive species? Check out the federal government's Web site dedicated to this topic, www.invasivespecies.gov. On this site you can learn about the impacts of invasive species and the government's response, as well as read select species profiles and find links to agencies and organizations dealing with invasive species issues. In the site's Resources section you will find access to many online educational resources – from K-12 to scientific conference proceedings.

Calendar

Contact CGS for more information on these upcoming events:

2005

- June 26 - July 1** XX International Grassland Congress, Dublin, Ireland, www.igc2005.com
- July 11-15** American Forage and Grassland Council 2005 Conference, Bloomington, IL, www.afgc.org
- July 29 - Aug. 4** Soil and Water Conservation Society Annual Meeting and Conference, Rochester, NY
- Aug. 8-9** 2005 Nebraska Grazing Conference, Kearney, NE, www.grassland.unl.edu/grazeconf.htm
- Sep. 21-24** Center for Great Plains Studies 29th Annual Symposium, Changing Natural Landscapes: Ecological and Human Dimensions, Lincoln, NE, www.unl.edu/plains/events/2005/overview.htm
- Nov. 6-10** ASA-CSSA-SSSA International Annual Meetings, Salt Lake City, UT, www.asa-cssa-sssa.org/anmeet

2006

- Dec. 9-13** 3rd National Conference on Grazing Lands, St Louis, MO

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