In this issue of Extended Visions, we take a closer look at how UNL research and extension make a difference globally. It’s nearly impossible to stay segregated from a world that shares so much — and sometimes instantaneously, due to technologies such as the World Wide Web. We live in a time where global connectivity is the norm. So how does worldwide interaction benefit Nebraska?

Susan Fritz, IANR associate vice chancellor and Agricultural Research Division interim dean and director, explains, “Working with other countries is an acknowledgement that Nebraska has been successful as a state. And being players in a global community will help other countries obtain a better understanding of what Nebraska can offer. For instance, they learn that we are careful in how we produce our products using sound methods. And the outcome is a safe, quality product.”

This edition provides examples of how the Southeast Research and Extension District and ARDC are reaching across borders to make a difference. International cooperation helps build an awareness of University of Nebraska-Lincoln research and knowledge of Nebraska while developing important partnerships. It’s an opportunity to learn more about worldwide issues and advances that could or do impact Nebraskans. Armed with that knowledge, we have a better understanding of how to position ourselves, prepare for the future, and meet the needs of our audiences, locally and globally.

International collaboration provides a means for us to look for solutions and develop strategies as we provide useful outreach. This issue provides examples of how the University is doing just that.

Switchgrass: A Grass with Energy Potential in Eastern Nebraska

Contrary to popular belief, switchgrass is not a new or novel crop. Switchgrass is native to the grasslands of the U.S. prairies, including Nebraska and is the leading candidate for grass-based bioenergy in the U.S. USDA-ARS and the University of Nebraska-Lincoln have conducted research on switchgrass continuously since 1936. Since the early 1970s, most of this research has been conducted at UNL Agricultural Research and Development Center (ARDC). Research on developing switchgrass as a biomass energy crop has been conducted since 1990. Most of the basic genetic, breeding, and production research for switchgrass has been developed by this collaborative project. Results of the research have demonstrated that switchgrass can be a productive and sustainable bioenergy crop in the eastern half of Nebraska. Currently, available cultivars and production practices reliably produce 3 tons per acre at the field scale in eastern Nebraska. New experimental strains and management practices have produced 10 tons per acre at the research scale.

ARDC Feature Unit — Agronomy
- Agronomy Staff Keep Things Growing
- Economic Potential of Producing Biofuels from Sweet Sorghum
- Long-term Cropping Systems Study
- New Sorghum is Ideal for Both Fuel and Feed
- Soybean Drought Tolerance
- Switchgrass: A Grass with Energy Potential in Eastern Nebraska

Crops, Livestock & Research
- How Fast Could You React?
- Reminder to Play It Safe During Harvest
- Precision Ag Practicum Launched

Global Perspective
- EARTH University — Costa Rica
- Hemispheric Forum for Young Leaders in Agriculture
- IANR Faculty Teach Crop Production in China
- International Visitors at the ARDC
- Soybean Management Field Days
- The Guatemala Connection

People, Programs & Tours
- IANR Vice Chancellor Visits Southeast District
- Youth
- Introducing FAIRPORT

Calendar Of Events

September
29 Ag Awareness Festival
30 Wahoo High School ASSET Test

October
1 Ag Awareness Festival
4-5 Ag Awareness Festival
8 Science Festival for 7th & 8th Grades
13 Wahoo High School PSAT Test
18-19 Livestock Nutrition Seminar Series for 4-H Members, Livestock Producers and Animal Enthusiasts

In mid July, Dr. Ronnie Green became the Vice President and Harlan Vice Chancellor for the Institute of Agriculture and Natural Resources (IANR) at the University of Nebraska-Lincoln.

The first week on the job, Green and his wife, Jane went on a five-day whistle-stop tour of the state. The tour included meeting community stakeholders and constituents, as well as faculty working in research and extension. They also met many state and local government leaders.

Steps included: Omaha, Mead, West Point, Concord, Norfolk, Columbus, Grand Island, Lexington, Gothenburg, North Platte, Brule, Curtis, and Scottsbluff. He visited four research and extension centers, ARDC and NCTA. This provided insight into the diversity of IANR programs, both rural and urban.

Susan Fritz, IANR associate vice chancellor and Agricultural Research Division interim dean and director; Alan Moeller, IANR assistant vice chancellor; and Ebert Dickey, UNL Extension dean and director, accompanied Green on his tour. Susan Williams, Southeast Research and Extension Center (SRREC) director, coordinated and hosted the southeast district tour which included a visit to Omaha that featured a breakfast meeting with key stakeholders focusing on youth and nutrition programming followed by a visit on a water and sustainable landscape programming at Walnut Creek Lake and Village Pointe Gardens. At the ARDC near Mead, Dr. Green met with stakeholders, had an opportunity to tour the Crop Management and Diagnostic Clinic, see the beef feedlot program and the carbon sequestration research project.

At his session with stakeholders at the ARDC, Dr. Green said IANR was critical to the future of all aspects of agriculture, natural resource stewardship and sustainability, and equipping of youth, families, and communities for a brighter future for all in our state. He emphasized that the land grant mission of quality education for all, the effective balance of fundamental and applied research focused on high priority problems, and the translation of research into knowledge that can be used daily by people through extension has never been more needed.

This is a great time for the University and IANR as issues of food, fuel and water are extremely important to the state, nation and world. The University’s programs are climbing to new levels of excellence — especially with planning and implementation around the global Water for Food Institute, the Nebraska Innovation Campus, the Life Sciences Initiative, the Gut Function Initiative, the Nebraska Gateway for Nutrigenomics and the Engler Entrepreneurship Program.

Green is a Sutton resident and beef geneticist. Most recently, he served as senior director, animal genetics global technical services for Pfizer Animal Health. From 2003-2008, he was national program leader in Food Animal Production at the U.S. Department of Agriculture’s Agricultural Research Service after serving as vice president of cattle operations and assistant vice president and director of genetic operations for Future Beef Operations. From 1994-2000 he was professor of animal science at Colorado State University and assistant professor of animal science at Texas Tech University (1988-94). He is also the incoming 2010-11 president of the American Society of Animal Science. - Susan Williams, Southeast Research and Extension Center director
Switchgrass for bioenergy is good for the environment. Switchgrass-based bioenergy production systems can reduce greenhouse gas (GHG) emissions from switchgrass-based ethanol by 94%. A recent economic study on switchgrass production in Nebraska indicated that switchgrass for bioenergy can provide a significant economic benefit.

Long-term Cropping Systems Study

A long-term cropping systems study has been conducted on the agronomy research area at ARDC since the early 1970's. In the beginning, the objectives were mainly related to crop production as affected by different cropping systems. The cropping systems included in the study are: Continuous Corn, Soybean, and Sorghum; 2-year Corn-Soybean and Sorghum-Soybean rotations; and 4-year Oat+Clover-Sorghum-Soybean-Corn and Sorghum-Sorghum-Oat+Clover-Corn rotations. In 1983, three nitrogen fertilizer levels were included for each of the crops. Yield results from the past 25 years have shown a slight benefit from rotation for corn and soybean, but grain sorghum has yielded just as well in monoculture as in rotation when sufficient fertilizer was applied.

In later years, questions have emerged about the long-term effects of these cropping systems on soil quality, nitrogen fertilizer and precipitation use efficiency, and greenhouse gas emissions. A major factor in soil quality and carbon sequestration (organic matter) has been measured at several points in time over the past 25+ years. Soil carbon levels have generally been maintained at levels measured in 1984 in continuous corn and sorghum with sufficient N fertilizer for optimum yields and in the 4-year cropping systems at all N fertilizer levels. Soil carbon levels have declined in the continuous soybean, corn-soybean, and sorghum-soybean cropping systems regardless of N fertilizer application level. In 2007, the study was converted to no-till. Grain yield, carbon sequestration, greenhouse gas emissions, and other related factors will continue to be evaluated.

New Sorghum is Ideal for Both Fuel and Feed

New, low-lignin sorghum germplasm lines developed by U.S. Department of Agriculture's Agricultural Research Service (ARS) and collaborating university scientists are now available for bolstering the grain crop's value as both a livestock feed and ethanol resource. Lignin is a "cellular glue" of sorts that imparts rigidity and strength to plant tissues. It also helps plants fend off attacking insects and pathogens. However, studies by ARS Grain, Forage and Bioenergy Research Unit scientists Dr. Deanne Funnell (UNL Department of Plant Pathology adjunct professor), Jeff Pedersen and Dr. Scott Sattler (UNL Department of Agronomy and Horticulture adjunct professors) and John Toy, USDA-ARS support scientist, show that reducing sorghum's lignin content can also be beneficial.

Take, for example, Atlas bmr-12, one of 20 low-lignin lines the ARS team developed and tested in collaboration with University of Nebraska-Lincoln dairy researchers. In the laboratory, the line scored higher on fiber digestibility than standard sorghum, which should result in higher milk production and higher beef gains when Atlas bmr-12 is fed to cattle. On the fuel front, the line's high fiber digestibility could also mean improved sorghum-to-ethanol conversion at processing plants. Interestingly, reducing the sorghum line's lignin didn't leave it more vulnerable to fungal attack in laboratory trials. This was determined by inoculating Atlas bmr-12 and another line, bmr-6, with Fusarium moniliforme fungi and examining the length of red-pigmented lesions that formed on the pathogen spread.

Economic Potential of Producing Biofuels from Sweet Sorghum

Cold tolerant germplasm could serve both to expand the geographical range of sorghum cultivation and minimize the inherent risks involved in early season planting of sorghum within production areas. An earlier sowing date also offers growers the option of capitalizing on higher levels of available soil moisture and lower evapo-transpirative demands in the early spring, potentially serving as a drought avoidance strategy. This sorghum study seeks to: conduct quantitative trait loci analysis and marker identification for early seed germination and cold tolerance in both sweet and grain sorghum mapping populations; develop management practices that achieve high water and nitrogen use efficiency; and identify and map genetic components that are associated with high sugar and maximum biomass in sweet sorghum.

NOTE: ARS is the USDA’s chief scientific research agency. Some ARS scientists also are adjunct faculty with the University of Nebraska-Lincoln. USDA-ARS ARS team developed and tested in collaboration with University of Nebraska-Lincoln dairy researchers.

Soybean Drought Tolerance

UNL scientists are developing a new approach that delays soybean irrigation until post-embryo formation to delay the soybean's drought resistance and the best methods of irrigation. Typically, producers plant soybeans in early May and begin irrigating in June. In years with average or above-average early-season rainfall, irrigation can result in too much water being applied to plants. Too much moisture can result in taller and leafy soybean plants that can lodge and are more susceptible to disease. Research shows that avoiding early irrigation encourages soybean plants to develop stronger, healthier root systems that grow deeper in the soil and make better use of moisture. Delayed soybean irrigation has produced yields equal to or higher than those achieved by starting irrigation earlier in the season.

The 2010 Great Plains Sorghum Conference and 27th Biennial Sorghum Research and Utilization Conference convened at the ARDC in August. Over five courses of two days participants learned from experts from UNL and across the country about the latest advances in sorghum production, genetics, nutrition, marketing and other related topics.
Programs, tours and visits are some of the ways that UNL and extension educate and relay research findings to people. The ARDC and UNL Extension play an important role in getting unbiased, research-based information to local, state, national and global audiences. The articles that follow touch upon some of the ways research is being shared on a global basis.

Hemispheric Forum for Young Leaders in Agriculture

The Gordon and Jean Ohnoutka farm near Valparaiso was a busy place when a bus carrying passengers from 34 nations in North and South America pulled into their yard. The visit was part of the Hemispheric Forum for Young Leaders in Agriculture which brought together outstanding young professionals from the Americas to talk about a global vision of agriculture and to enhance entrepreneurial skills. The goal of the forum was to help participants be better able to promote innovative growth in agriculture and rural development in the hemisphere, and to inspire others to do the same.

The forum was sponsored by UNL’s Institute of Agriculture and Natural Resources (IANR) in partnership with the Inter-American Institute for Cooperation on Agriculture’s Center for Leadership in Agriculture (IIAC), headquartered in Costa Rica. During their 5-day visit to Nebraska, the group interacted with University of Nebraska representatives and ag leaders from Nebraska and across the hemisphere to gain leadership skills and technical expertise in current issues related to agriculture.

The stop at the Ohnoutka farm helped the participants understand how a family farm functions in Nebraska. Many of the participants were amazed at the longevity of the farm staying in one family’s possession with Gordon Ohnoutka being a 4th generation farmer and Kurt Ohnoutka as 5th generation farmers. Several forum participants commented on how this was unheard of in their countries.

Kurt Ohnoutka discussed how their family is very conscious about producing a safe and wholesome product. He emphasized the importance of participating in beef, pork, and transport quality assurance training. He mentioned that they attend many training sessions offered by UNL Extension which helps them keep up to date on important management and production practices.

Many in the group were not familiar with no-till production. UNL extension educator Keith Glewen explained that no-till is a system of crop production in which the soil is disturbed as little as possible. The Ohnoutkas implemented no-till practices in 1989 and credited UNL Extension training for their success in moving forward with no-till.

A stop at Mark Gustafson’s farm near Mead provided the group with another perspective of the family farm. Gustafson not only farms, but is also the founding director of the Engler AgBusiness Entrepreneurship Program and the Paul Engler Chair of Agribusiness Entrepreneurship within IANR.

At the Gustafson farm, they learned about no-till, dryland production. The group looked at crop production equipment and Gustafson discussed corn and soybean rotation. He also noted that he has attended many training sessions offered by UNL Extension over the years. He told the group that he follows UNL recommendations to apply less nitrogen than he might have in the past.

Research and Extension — A Global Perspective

International Visitors at the ARDC

The ARDC and UNL Extension host various international visitors throughout the year. Some of the most recent visitors have included the Hemispheric Forum for Young Leaders in Agriculture representing 34 nations in North and South America. A Vietnamese trade/education delegation sponsored by the Nebraska Department of Agriculture included members of the Vietnam Agriculture Ministry, as well as Vietnam’s largest swine producers and processors.

The ARDC and UNL Extension work with commodity boards, such as the Nebraska Wheat Board, coordinating visits that have specific interests. Such was the case with a recent visit from Australian producers whose primary interest was wheat production. International tours are an opportunity to share UNL research and to learn more about the countries that our guests represent.

Soybean Management Field Days

The 135 participants at the Soybean Management Day held at the ARDC were ready to hear about the latest in soybean production and marketing. But they probably weren’t expecting to see photos of children in Guatemala as part of a presentation.

The field days are sponsored by the Nebraska Soybean Board in partnership with UNL Extension and were held at 4 sites across Nebraska, attracting 340 attendees.

During the lunch presentation at each site, UNL Extension educator, Keith Glewen helped bring home the message of why producing quality soybeans is important. He explained that they are an important source of protein in people’s diets in many developing countries, such as Guatemala.

The Saunders County Soybean Growers Association contributed towards the purchase of a soymilk processing machine to be placed in a Guatemalan orphanage and Glewen was part of a delegation that visited the orphanage this year.

EARTH University - Costa Rica

Most work trips don’t involve digging your own vegetables for lunch. But when you visit EARTH University in Guácimo, Limón, Costa Rica, you can expect to have that type of “earthy” hands-on experience. Located in the humid subtropics of Costa Rica, EARTH University is a private, international, non-profit university dedicated to education in the field of agricultural sciences and the rational use of natural resources. The school has approximately 400 students from 26 countries in Latin America, Asia and Africa.

In July, a team of UNL Southeast District Extension educators and a Northeast district specialist visited the school and several farms in Costa Rica. The trip was organized and led by Dr. Amy Boren, IANR international programs liaison. The UNL team met with faculty and students who are working on sustainable agricultural projects. They visited an integrated model farm, “Finca Don Juan”, where they observed a farmer/educator teach 7th-grade students about sustainability, residue management and nutrient cycling.

Each farm visit was unique. Farm visits often highlighted several small enterprises that combined to make the farm more profitable and included tours where visitors are involved in planting, cultivating and harvesting specialty crops. The group saw intense and diverse activities.

IANR Faculty Teach Crop Production in China

When talking about the landscape in China, most people conjure up visions of rice paddies, mountains, densely populated cities, and high-rise buildings. So making a like comparison to Nebraska may seem a little out of kites. But one commonality is that soybeans and corn are the main crops of the Heilongjiang Province in northeastern China. This region is the largest commodity-grain production base in China.

And that’s why the Foreign Economic Cooperation Division of Heilongjiang Agricultural Committee, Heilongjiang Province turned to UNL Extension for advice on corn and soybean production. Many producers in Nebraska learn about University of Nebraska crop production research through Extension programs, such as the Crop Management Diagnostic Clinics (CMDC) held at the ARDC. So how do you relay that same type of information to people on the other side of the globe?

UNL Extension agronomy specialist, Charles Wortmann and UNL Southeast Research and Extension educator Gary Zoubek, presented information on high yield corn and soybean production at the 135th Soybean Management Field Day held at the ARDC.

- Continued on Page 4

- Continued on Page 4

Charles Wortmann (left standing) and Gary Zoubek (left kneeling) presented UNL information on high yield corn and soybean production at conference in China.
Precision Ag Practicum Launched

University of Nebraska–Lincoln Extension kicked off the Precision Ag Practicum on August 31 at the ARDC. Precision ag systems can perform multiple tasks, but knowing how to navigate the system, extract information and utilize it correctly can be complex.

UNL Extension’s Precision Ag Practicum is the first of its kind — allowing participants to use their own field data in hands-on exercises via 3 multi-day sessions. (August/September-December-February) with weekly intervisits via web conferencing. The practicum provides growers the opportunity to apply this information directly to their professional livelihood.

For more information, contact UNL Extension educator, Keith Gleen at (402)624-8030 or kglewen1@unl.edu.

Agronomy Staff Keep Things Growing

The staff at the agronomy research area at the ARDC has much to keep track of with the variety of crops, plots and trials taking place. TJ McAndrew is the research/assistant facilities coordinator and manages agronomy research projects at both the ARDC and the Havelock farm near Lincoln. He manages the day-to-day operations of the agronomy research projects at the ARDC, as well as on East Campus and at UNL’s research farm located at 84th and Havelock streets and supervises the agronomy/horticulture greenhouses and the Stewart Seed Lab on East Campus. McAndrew coordinates use of land and equipment for the research that is performed at these areas and oversees the production farming operation that is for rotational purposes. McAndrew has a bachelor’s degree in ag education and a master’s in agribusiness from UNL.

Rich Gooding has been an ag research technician at the agronomy research area since 1995. He coordinates research project land use and is responsible for tillage operations from spring seedbed preparation, planting, cultivation, irrigation management, and harvest.

Todd Kudlacek is an ag technician at the agronomy research area. He has been with the University since 1997 and worked at the ARDC since 2004. He has an associate degree in agriculture from Southeast Community College. Kudlacek works with the spring tillage and spraying operations, assists with planting and irrigation management, supervises summer help, and does repairs on both research and production equipment as required.

Marnie Gihal provides business support for the agronomy research unit on a part-time basis. She also is an office associate at the ARDC and provides support for Extension field days and other programs. She has worked at the ARDC since 1998.

Introducing FAIRPORT

Cyber Fair moved to its new location (Grand Island) for the 2010 Nebraska State Fair — a perfect time to launch a new look, new name, and new approach. Along with a new name, 4-H FAIRPORT, a new theme and website, many new activities, and displays were featured at FAIRPORT.

Saunders County was amongst the Southeast Research and Extension District counties that hosted a new county FAIRPORT display and activities at their respective fairs. Other SREC counties included: Butler, Gage, Hall, Hamilton, Jefferson, Merrick, Pawnee, Polk, and Surry. Numerous hands-on activities and 4-H curriculum items were featured at the county fair cybers.

4-H curriculum areas including: Animal Science; Consumer and Family Science; Citizenship and Leadership; Communications and Expressive Arts; Nutrition and Healthy Lifestyles; Science, Engineering and Technology and Lifelong Learning and Adult Education were featured each day with creative hand-on learning activities. Many of the activities were led by extension staff and 4-H volunteers from the Southeast Research and Extension District.

Parents and teachers can get a taste of FAIRPORT to find educational activities at: http://fairport.unl.edu/cyberfair. - Bob Madura, UNL Extension educator

How Fast Could You React?

Reminder to Play It Safe During Harvest

It only takes a second to make a rash or wrong decision that could cause lifelong injuries or death when it comes to dealing with farm equipment. Harvest is just around the corner. - Large equipment, hurried schedules and long hours are often the norm this time of the year. The ARDC and UNL Extension remind you to play it safe and always have a “safety first” attitude. When a shortcut meant to save a few minutes goes wrong, it could cost you or others life or cause serious injuries. And for those sharing the roads with producers during this time, please be aware of increased traffic carrying heavy loads. Make safety a priority!

UNL Extension educator, Karna Dam uses a reaction time timer with a UNMC Family Medicine group to demonstrate how quickly a power take-off shaft (PTO) could cause entanglement.