

Growing

A HEALTHY FUTURE

Gut Reaction

5

**Seeding
Afghanistan**

10

**Land-Grant
Celebration**

12

**Prairie
Chickens**

22

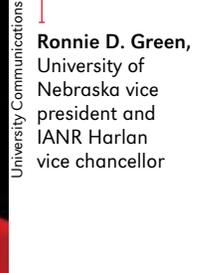


FOOD • FUEL • WATER • LANDSCAPES • PEOPLE



Archie Clutter,
Agricultural Research
Division dean

Ron Yoder,
IANR associate
vice chancellor



Ronnie D. Green,
University of
Nebraska vice
president and
IANR Harlan
vice chancellor



Alan Moeller,
IANR assistant
vice chancellor



Steve Waller, College of Agricultural
Sciences and Natural Resources dean



Marjorie Kostelnik, College of Education
and Human Sciences dean



Chuck Hibberd,
UNL Extension dean



Reflecting on the Morrill Act

“This is Nebraska’s land-grant university – the people’s university,” Institute of Agriculture and Natural Resources Harlan Vice Chancellor Ronnie Green often notes. “We are engaged with our constituents, and engaged in meeting current and future challenges for our state, country and world. And it all began with the Morrill Act.” (*related stories, pages 12-17*)

“The Morrill Act established colleges of agriculture and engineering,” said Steve Waller, dean of the College of Agricultural Sciences and Natural Resources. “Combined with the Homestead Act and the start of USDA, all in 1862, the three were transformational, opening doors to national growth and improved livelihoods.”

Before the Morrill Act, higher education was available almost exclusively to the upper class, said Marjorie Kostelnik, dean of the College of Education and Human Sciences, adding, “The Morrill Act helped build an educated middle class that learned how to put academic knowledge to practical use.”

Ron Yoder, IANR associate vice chancellor, noted George Washington advanced the concept of a board to encourage agricultural experimentation in 1796. Sixty-six years later Congress passed the Morrill Act to further practical engineering and agricultural education.

“Now, 150 years later, with a burgeoning world population to feed, increasing competition for water and other resources, and recognition of the importance

of maintaining balance in biological systems, land-grant universities are even more relevant than when the Morrill Act first passed,” Yoder said.

Archie Clutter, dean of IANR’s Agricultural Research Division (ARD), noted the tremendous return on investment in land-grant university agricultural research.

“One study found that between 1949-1991, ARD provided a 36 percent annual rate of return,” Clutter said. “ARD research is critical to Nebraska’s bio-based economy, its people and environment, and to feeding the world.”

“We often say the land-grant mission is like a three-legged stool,” said Alan Moeller, IANR assistant vice chancellor. “Each leg – teaching, research, extension – must be equally strong as IANR continually evolves to meet Nebraskans’ and the world’s complex present and future needs.”

Chuck Hibberd, UNL Extension dean and director, also noted the complexity of today’s challenges.

“Extension’s mission is to engage stakeholders in developing innovative solutions using a wider array of knowledge and expertise than ever,” Hibberd said. “This mission challenges extension professionals to engage more deeply and collaborate more effectively than ever before.”

“It is exciting to celebrate the tremendous engagement of 150 years – students graduated, discoveries made, knowledge shared,” Green ended. “Even more exciting – and important – is contemplating the accomplishments that must occur in the next 150 years as we work to feed, fuel and grow a healthy Nebraska, nation and world.”

Growing A Healthy Future

Fall 2012

Volume 1, Number 2

Gut Reaction	5
Seeding Afghanistan	10
Land-Grant Celebration	12
Gene Silence	18
Drought Aid	20
Purpose and Passion	24
Feedlot Expansion	28
Faces to Watch	30
Alumni Spotlight	33
By the Numbers	35



© 2012, The Board of Regents of the University of Nebraska on behalf of the University of Nebraska–Lincoln.

Growing A Healthy Future is published twice a year by the Educational Media unit at the University of Nebraska–Lincoln under the auspices of the University of Nebraska Vice President and Harlan Vice Chancellor of the Institute of Agriculture and Natural Resources.

Written material may be reprinted, provided no endorsement of a commercial product is stated or implied.

Please credit *IANR Growing A Healthy Future*, University of Nebraska–Lincoln. To simplify technical terminology, trade names sometimes may be used. No endorsement of products is intended nor is criticism implied of products not mentioned.

There is no charge for this magazine. Each issue describes IANR programs that benefit Nebraska and beyond. If you happen to receive more than one copy, please share with a friend.

Upon request, this publication can be made available in an alternative format for people with disabilities. For assistance call 402-472-9707.

Cover: Former USDA secretaries of agriculture, photo by Tom Slocum

Chancellor, University of Nebraska–Lincoln
Harvey Perlman

NU Vice President and Harlan Vice Chancellor, Institute of Agriculture and Natural Resources
Ronnie Green

Editorial
Cheryl Alberts
Sandi Alswager Karstens
Jill Brown
Daniel R. Moser
Judy Nelson

Designer
Gary Goodding

Photography
Sandi Alswager Karstens
Craig Chandler
Gary Goodding
James A. Kalisch
Nick Manes
Jessica Milby
NEBRASKAland Magazine/NGPC

Eric Reed
Panhandle Research and Extension Center
Purdue University
Tom Slocum
University Communications
UNL Libraries



Would you like to contact the editor? Here's how:

- growing@unl.edu
 - 402-472-9707
 - 104 Agricultural Communications Building, P.O. Box 830918
- University of Nebraska–Lincoln, Lincoln, NE 68583-0918

It is the policy of the University of Nebraska–Lincoln not to discriminate based upon age, race, ethnicity, color, national origin, gender, sex, pregnancy, disability, sexual orientation, genetic information, veteran's status, marital status, religion or political affiliation.

Opportunities in China

China's growing economy, improved standard of living and better diets are providing opportunities for Nebraska. IANR's unprecedented opening of a new office in the State Administration of Grain in Beijing June 11 provides a Nebraska connection to China's commodity industry. Potential collaborative research opportunities in engineering, and food and water sciences come with the opening of the new IANR office. Working with the Nebraska Department of Agriculture, the IANR office also will provide access to other business and commercial ventures in the world's most populous nation.

marketjournal.unl.edu/july27



Living with diabetes

Every 20 seconds nationwide someone is diagnosed with diabetes; in Nebraska, 9 percent have the disease. UNL Extension's "Control Diabetes for Life," in conjunction with Franciscan Care Services of West Point, teaches participants techniques to manage diabetes with appropriate food and exercise, and how to delay eye, kidney and heart complications. Since 1989, approximately 5,800 Nebraskans have taken the course via distance education, satellite or DVD. State health officials estimate the value of the program at \$900/person/year in saving medical costs and work-related losses. Annual savings due to the program are estimated at more than \$500,000. The program is offered three times per year on different topics, and is televised.

 food.unl.edu/controldiabetesforlife



Plant doctor professionals

Agriculture is getting more complex, agricultural decisions more expensive.

The Doctor of Plant Health program for plant health care professionals is IANR's response to agricultural industry requests. Students are holistically educated across plant-related disciplines, and internships hone their skills to diagnose, problem-solve and develop sustainable plant management systems. Graduates can anticipate careers in plant health and management industries and agencies, crop consulting, extension and international development. The program started in 2010 and has 14 students enrolled; the first graduate is expected in spring 2013. Nebraska's program is the first in the Midwest, and only the second of its kind nationally.

dph.unl.edu



Healthy Families

The number of overweight children in Omaha has tripled over the last 20 years; an estimated 75 percent of metro children are at unhealthy weights due to poor eating and inactivity. Overweight children nationally cost the health industry about \$14 billion annually; plus they risk becoming overweight adults with high blood pressure, diabetes, or getting strokes and even cancer. UNL Extension, in partnership with Alegent Health and others, teaches a 12-week, evidence-based community intervention program. Now in its third year, Healthy Families promotes nutrition, fitness, and ways to reduce emotional and mindless eating for Omaha-area children ages 7-14 and their families. Positive changes are occurring.

Gut Reaction

Think of your gut as a new, unoccupied neighborhood. If, let's say, meth manufacturers move in first, does that preclude others — hipsters, families, college students — from taking up residence there? And what does that mean for the long-term property values?

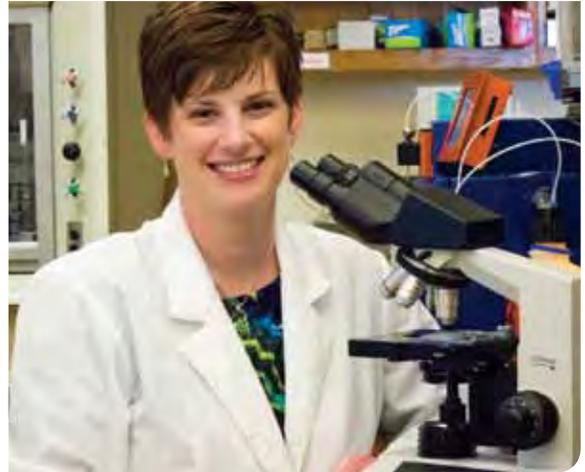
Metaphorically, that's a question University of Nebraska–Lincoln scientists are exploring: Do microbiota that colonize the human gut first have an advantage over those that come along later, and what health implications does that have?

“If colonization history is important, it's essential that you get the right bacteria early in life, because if you don't, you may never acquire them,” said Jens Walter, a gastrointestinal microbiologist and principal investigator for the four-year \$1.4 million National Institutes of Health grant supporting this research.

This research is part of the **Gut Function Initiative (GFI)**, which aims to unlock the mysteries of the gastrointestinal tract and devise practices and products — including foods and medicine — to address obesity, disease and other health concerns.

The initiative involves multi-disciplined scientists in the Institute of Agriculture and Natural Resources and elsewhere in the University of Nebraska. Animal scientist Daniel Ciobanu, for example, is mapping the relationship among host genetics, gut microbiota and metabolic traits in mice.

Earlier research found when overweight humans moved to a low-fat diet, the microbiota shifted to a composition that resembled that of healthy non-obese matched controls. Conversely, introducing microbiota from overweight animals



Amanda Ramer-Tait

into the gut of otherwise matched animals produced statistically significant weight gains.

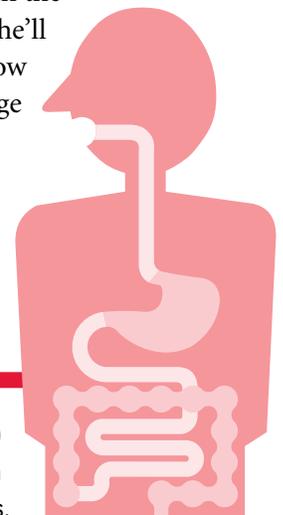
Ciobanu's research aims to uncover natural genetic variations in the host that explain variations in mouse gut microbiota and also explore how those variations impact obesity and other health issues.

On another front, immunologist Amanda Ramer-Tait, who arrived at UNL in August, will co-manage IANR's new germ-free mice facility, to be one of the world's leading such facilities when completed in 2014.

Until then, she'll run the current facility, using unique lab mice all colonized with the same eight microbes — nothing else. She'll introduce new bacteria and monitor how different “bacterial provocateurs” change the mice's GI systems.

Ramer-Tait's research, funded by the Crohn's and Colitis Foundation of America, aims to find interventions to prevent inflammatory bowel disease

continued on page 6



Fast Facts

The human gut contains more than 10 billion organisms per gram of contents, representing over 400 bacterial species.

IANR's gnotobiotic (germ-free) mice facility is one of about 10 in the U.S.

GFI (Gut Function Initiative) has received \$7.5 million in grants in the last four years.



Pass the Chips

Fast Facts

What is gluten?

It's a protein found in wheat, barley, rye and other related grains.

Who needs to worry?

About 0.1 percent of Americans have overt celiac disease and must avoid these grains and foods made from these grains entirely. Another 11 percent of Americans test positive for celiac disease but some don't know it and don't have symptoms. Between .01 and .03 percent have a wheat allergy. About 6 percent are perhaps "gluten sensitive" but without either wheat allergy or celiac disease.

A couple of years ago, Frito-Lay wanted to market its products to an emerging niche for gluten-free foods. Although it already knew many of its products were gluten free, the food company wanted proof of that fact to label products as such.

So, Frito-Lay, a division of PepsiCo, turned to the internationally known Food Allergy Research and Resource Program in the Institute of Agriculture and Natural Resources for independent, unbiased testing. About 2,500 samples later, it got what it needed: validation that most of its products, manufactured in about 20 processing plants, have fewer than 20 parts per million of gluten, the generally recognized level under which foods can be labeled "gluten-free." Now, it labels those snack foods with a "GF" icon and statement.

This testing is all in a day's work for the University of Nebraska–Lincoln program, known as FARRP, which is part of the food science and technology department.

"Gluten-free has become quite a surprising market niche," said IANR food scientist Steve Taylor. Some people have celiac disease or gluten sensitivities and so must avoid foods with gluten. Other consumers choose to limit consumption, based on claims a gluten-free diet has health benefits.

The result: Gluten-free products are the No. 1 category in the United States for new food product development, Taylor said.

Although many products are inherently gluten-free, food producers need to guard against cross-contamination between products in their manufacturing plants, said Joe Baumert, another IANR food scientist. "Frito-Lay wanted a very robust system to determine where those risks are occurring and work to minimize that cross-contact," Baumert added.

The credibility of that system rests on reliable product testing, the scientists said. Although Frito-Lay likely could have developed the expertise to do that testing itself, there are advantages to having it done independently, outside the company, Baumert said.

"There's more confidence that the company has gone through a thorough risk assessment" if it has testing done externally, he added.

While companies are eager to certify their foods as gluten-free so they can tap into a profitable market, consumers with gluten sensitivities are winners, too, Taylor said. As gluten-free goes mainstream, more diverse products are available, they taste better and they're less expensive.

Steve Taylor, 402-472-2833, staylor2@unl.edu

— Daniel R. Moser

Gut continued from page 5

(IBD), which afflicts about 1 in 300 people in America.

"We don't know what causes it," she said, but scientists suspect both genetic and environmental factors contribute.

Ultimately, she hopes the findings "will help predict who is susceptible to IBD, will warn about the onset of IBD, and will help us test and identify new treatments," Ramer-Tait added.

"We've begun by asking really simple, basic questions about this ecosystem," said microbiologist Andy Benson, GFI leader. "At the end of the day, we would like to be able to manipulate this system" to make people healthier.

"But first we have to understand how it functions."

Andy Benson, 402-472-5637, abenson1@unl.edu

— Daniel R. Moser

Coming Home

Chuck Hibberd returns to UNL as dean and director of extension



Chuck Hibberd knows a little something about Nebraska. He grew up in Dawson County, got his bachelor's degree at the University of Nebraska–Lincoln and later spent 12 years directing the Panhandle Research and Extension Center.

Still, he was happy in his job as director of Purdue Extension and initially didn't even apply when the Nebraska job opened up.

Several things got him interested, including UNL Extension's national reputation, and plans for the Rural Futures Institute, for which the Institute of Agriculture and Natural Resources has a lead role.

Hibberd, who took over as UNL dean and director Oct. 1, said his dozen years in the Panhandle serve him well for facing rural Nebraska issues.

"You find out in the Panhandle what rural challenges are like," he said. "The Rural Futures Institute is incredibly exciting and has great promise for extension to be a key player." (see page 16)

Extension continues to change and adapt with the times.

"Some people think extension is still going to tell you how much nitrogen to put on your corn. Well, we're probably not going to do exactly that. What we will do is discuss your yield goal, the relationship between nitrogen cost and profitability and the potential environmental effects of different rates of nitrogen fertilization (all determined by IANR research). Then, we will encourage our clients to make the decision that best fits their priorities," Hibberd said.

Modern extension's role is to help clients deal with complex, interrelated issues, whether on the farm, in communities or at home.

That requires tough decisions.

"We need to make investments that make a difference. If we're investing in a program or project that is not fulfilling its promise, we need to redirect to programs and projects that make a difference," Hibberd said.

"You have to be clear about your purpose and you have to be willing to explain that purpose; you have to be prepared that not everyone's going to agree, and that's OK," Hibberd said.

Social media is an important way to engage new audiences.

"We can build groups using Facebook or other social media to bring new audiences into the fold. It challenges us to think differently about how we work with audiences," Hibberd said.

The single extension workshop to deal with an issue is a thing of the past, replaced by "a continuum of engaging opportunities that truly helps clients build capacity and confidence," Hibberd said.

4-H continues to be a core program for extension, and Hibberd said Nebraska has one of the nation's best. The group's evolution to focus on STEM — science, technology, engineering and math — is a recognition of the world 4-H participants must live and work in.

Hibberd promises to be seen early and often across the state. He said he enjoys interacting with clients, stakeholders and decision makers.

Chuck Hibberd, 402-472-2966,
hibberd@unl.edu

"We need to make investments that make a difference."

Hibberd's journey

Hometown

Lexington

1977

Graduated UNL

1994 - 2007

Director – Panhandle Research and Extension Center

2007 - 2012

Director – Purdue Extension

Oct. 1, 2012

Dean and Director of UNL Extension.

For more about Hibberd on [youtube](#)

— Daniel R. Moser

Going global

Internships from Nebraska to Africa

No secret here: internships are a strong component of completing a degree program in the College of Agricultural Sciences and Natural Resources.

Whether across the globe or at home in the Cornhusker state, students learn valuable skills to take back to the classroom and after graduation, to their jobs.



Bryce Vaughn

Internship: ICM and Orphans Unlimited in the southeast African country of Mozambique

Bryce Vaughn, an agricultural economics/public policy senior from Alliance, interned with ICM and Orphans Unlimited in the southeast African country of Mozambique.

Working with the organization's agriculture program from May to mid-July, Vaughn helped buy beans, corn and rice from farmers for the 1,700 people in the village of Balama.

He also helped build dorms for orphans and a church, and conducted children's programs.

"Even though they don't have much, the kids were so happy," he recalled.

Vaughn is the first recipient of the Keith R. Olsen Agricultural Policy Internship Award, named for the former Nebraska Farm Bureau president, and this fall is interning for U.S. Sen. Mike Johanns.



Nick Mannes

Zach Cook

Internship: Oceans Research in George, South Africa

Zach Cook also interned in the southern hemisphere last summer. The food technology for companion animals sophomore who grew up in Pensacola, Fla., interned at Oceans Research in George, South Africa. He conducted surveys, did tracking, and identified great white sharks and orcas.

"Every day we'd go out on a boat, chum the waters, then would have someone spotting at the top of the boat for the sharks," he said.

Cook helped take pictures of the sharks, marking on a sheet what he saw.

Oceans Research also had an aquarium in which Cook helped collect marine species. The most exciting activity, he said, was scuba diving and free diving for pyjama jacket sharks.

There is a chance Cook could be on the Discovery Channel's *Shark Week* series next year, as the show *Shark Men* was filmed at Oceans Research while Cook was an intern.

After graduation, he hopes to work for an organization such as Discovery or National Geographic.





Nick Manes

Melisa Konecky

Internship: Nebraska Corn Board

Closer to home, **Melisa Konecky**, an animal science and ag leadership senior from Wahoo, is the communications and marketing intern at the Nebraska Corn Board.

“Growing up on a farm with corn, soybeans, alfalfa and dairy, I thought I knew a lot about corn, but then realized I didn’t know that much,” she said.

Konecky said she had no idea about some of the technology and conservation activities occurring in the corn industry.

“I never realized all the things that corn had a hand in, from livestock feed, ethanol, exports to other countries or producing corn plastic. All these areas have a very delicate balance, and it has been interesting watching them in a year of drought and how they have really affected each other.”

Konecky works with the corn board’s social media, posting on Facebook and Twitter and blogging, as well as taking pictures and job shadowing. Her yearlong internship ends in May.



Nick Manes

Brie Myre

Internship: Karen Beasley Sea Turtle Rescue and Rehabilitation Center in Topsail Beach, N.C.

Another Husker who spent the summer by the sea is **Brie Myre**, a fisheries and wildlife senior from Council Bluffs, Iowa. Myre interned at the Karen Beasley Sea Turtle Rescue and Rehabilitation Center in Topsail Beach, N.C.

Working with sea turtle rehabilitation, Myre helped turtles recover from injuries caused by nature, humans or predators such as sharks. She also got to help out with nesting.

“I got a snapshot of rehabilitation and sea turtle conservation in general,” Myre said. “I thought I knew a lot about sea turtles before, but you can only learn so much from a textbook. Getting this hands-on experience really tells you what it takes to be involved in a program like this.”

Myre said a job such as this would be ideal, though she first plans to attend graduate school for marine-related research.

— Sandi Alswager Karstens





Vaughn Hammond, left, shows the size of hybrid cucumber seeds and explains the benefits of planting in rows to residents in eastern Paktya Province, Afghanistan.

Seeding Afghanistan

When Vaughn Hammond traveled more than 7,000 miles and 10 time zones to help farmers in Afghanistan become more self-sustaining, the University of Nebraska–Lincoln Extension educator said nothing could have prepared him for the experience of going back a century in time.

“It was completely what I expected on one hand, and completely what I didn’t expect on the other,” said Hammond. He said he knew there would be a need for education and assistance, but that he had no idea what else to expect.

Hammond works with fruit and vegetable producers across Nebraska and is located at the university’s Kimmel Education and Research Center at Nebraska City.

From July 2011 until mid-April 2012, Hammond was stationed in eastern Paktya Province with the Nebraska National Guard’s second Agribusiness Development Team (ADT2). Prior to departure extension taught ADT members farming techniques suitable for Afghanistan, such as how to plant corn and other crops in rows, rather than hand sowing as Afghans were doing, which brought unpredictable growth and yield.

Beset by more than two decades of war that destroyed generations of farming knowledge, Afghanistan is the third

poorest country in the world, Hammond said. Paktya Province farms of one or two jeribs (one-half to one acre) grow wheat, livestock, fruits, vegetables and bees. Income for a farm family of seven is about \$700/year, a third of what is needed to survive.

Until recently government provisions made up the deficit. Now, there’s an emergency response program run by the U.S. military. Hammond helped village elders and the DAIL (Director of Agriculture, Irrigation and Livestock), the province’s highest agricultural official, learn to apply for funding. He helped identify local needs and taught ways to present funding requests using flipcharts, generator-powered computers and writing on walls.

Projects funded include poultry and livestock training, modern planting methods, beekeeping and more, which helped increase farmer incomes and provide nutrition.

Hours of preparation went into planning Hammond’s and ADT2’s full military missions out of the Forward Operating Base Gardez where he lived. Outside, he and other ADT members had only 60-90 minutes in any location, on business such as follow-up visits, to reduce potential contact with insurgents.

“We were very good relations builders,” Hammond said, adding that his beard gained him credibility, as beards are a familiar part of the Afghan culture. “We tried to teach and build capacity to help the farmers fend for themselves.”

Extension now is training ADT4 for its Afghanistan mission.

Hammond’s mission was funded by the U.S. Department of Defense’s agriculture development program in Iraq and Afghanistan, which is led by Howard Buffett. See Hammond’s blog at vaughninafghanistan.blogspot.com.

Vaughn Hammond, 402-873-3166,
vhammond2@unl.edu

“Absolutely we — the University of Nebraska — have made a difference. The majority of Afghan people see the value of having us there ... The smallest changes were a part of making a huge difference in Afghan lives.” — Vaughn Hammond, UNL Extension educator

Soldiering on

Children of deployed military personnel sacrifice, too – often silently, often with little fanfare as holidays, birthdays and everyday life go on without their parent or parents.

Operation Military Kids (OMK), a nationwide, military-funded effort, supports children of families affected by all phases of the deployment cycle.

In Nebraska, University of Nebraska–Lincoln Extension also provides OMK support.

“Youth experiencing deployment of a parent are incredibly strong and resilient, but need support and understanding of others,” said Mark Simmons, extension program director.

OMK supports youth through community education, care packages, pen pal programs, mobile technology labs to help children stay in contact with their parents, speakers’ bureau, youth camps and more.

In addition, in Nebraska and nationally a “Purple Up” event in April encourages people to wear purple, symbolizing all branches of the military and visibly thanking military children for their strength and sacrifices.

 nebraskaomk.org



As part of a vendor assessment, ADT3’s Alex Peyton (with clipboard) documents the origin of produce as well as who shops in a marketplace in Afghanistan.

Far and away internship

Alex Peyton is going beyond the regular collegiate internship in agronomy. True, he helps farmers decide what to plant and how crops can grow better. And he does market assessments of harvested products.

However, the College of Agricultural Sciences and Natural Resources sophomore is doing so in Afghanistan as a member of the Nebraska National Guard third Agribusiness Development Team (ADT3). Deployed in April, he hopes to return to Nebraska in March.

Peyton’s first love was animals. Prior to graduating from Gothenburg High School in 2008, he worked for a local veterinarian. After basic training he enrolled in CASNR, a part of the Institute of Agriculture and Natural Resources, to study animal science. Deployment to Iraq interrupted his studies as a freshman. After that deployment, Peyton returned home to work for a crop consultant and at the Monsanto Water Utilization Learning Center.

“That’s what sparked my interest in agronomy,” he said.

In Iraq he “caught wind of ADT3.” He applied and was selected.

“Nebraska handpicked individuals based on their experience, accomplishments and knowledge,” he explained.

As an agricultural specialist in Afghanistan, Peyton works with people in roles similar to University of Nebraska–Lincoln Extension educators in delivering research-based knowledge.

“Facts I learned at UNL about how plants grow or what plants need to grow are really what have helped the most for me here in Afghanistan,” Peyton said. For especially challenging situations, he said he relies on guidance from Chief Warrant Officer 2 Waylon Petsche, a 2002 CASNR agronomy graduate from Petersburg.

Peyton is keeping a journal of his day-to-day work. Upon returning home, he plans a presentation to complete his internship requirements, and getting back into CASNR.

“This deployment won’t necessarily put me in front of the curve on terminology or classwork,” Peyton said, “but it will give me experience dealing with farmers who don’t have a good grasp on farming as well as how to get a project started and help the farmer along.”

— stories by Cheryl Alberts

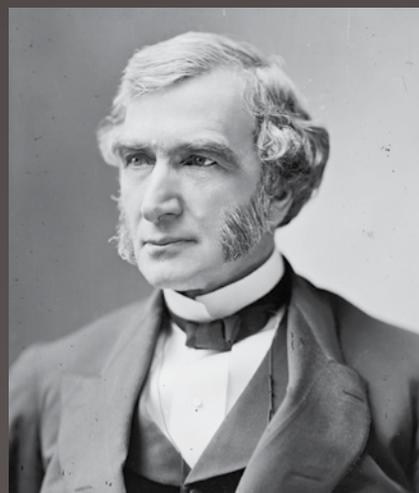


UNL Celebrates 150th Anniversary

September 23-28, 2012

Celebrating 150 years – Growing A Healthy Future

Passed in 1862, the Morrill Act created land-grant universities across the nation, making education more affordable to all people. The Institute of Agriculture and Natural Resources hosted a weeklong celebration to raise awareness of the significance of this legislation and how it has advanced Nebraska in food, fuel, water, landscapes and people. Highlighting the week was a panel discussion by four former U.S. secretaries of agriculture.



Justin Smith Morrill

University of Nebraska-Lincoln Libraries



In 1874 the University of Nebraska purchased a 320-acre farm and shortly after built a frame house (left) for the superintendent and students who worked on the farm – today's East Campus.

University of Nebraska-Lincoln Libraries

Anniversary of the Morrill Act

9.23



ARDC Celebrates Past, Looks to Future

Half a century ago, the University of Nebraska-Lincoln embarked on a journey to enhance agricultural research and education by forming the Agricultural Research and Development Center near Mead.

As a major research and education facility, ARDC (ardc.unl.edu) encompasses 9,663 acres and is the primary site for field-based research involving 90 faculty and 150 graduate students within IANR.

ARDC's size allows for unique, interdisciplinary work such as research on carbon sequestration, beef nutrition in feedlots and E. coli management.

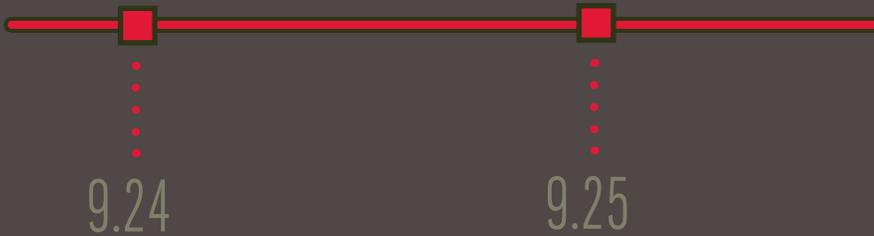
A Sept. 23 Open House highlighted these projects and others, including research on honeybees, corn rootworms, agroforestry, organic farm systems, biofuels, beef production, swine, turfgrass, soybean drought tolerance and much more.



 ardc.unl.edu

Photos by Sandi Karstens, Daniel R. Moser, Nick Manes





9.24

9.25

Entrepreneurship and Youth Day

During Entrepreneurship and Youth Day, 30 students from Nebraska high schools and UNL competed in IANR's first Quick Pitch competition. The aspiring entrepreneurs had two minutes to pitch their idea for a new business venture to a panel of judges, and answer questions.



Life Sciences Day

The Life Sciences Symposium featured Sonny Ramaswamy, new director of USDA's National Institute of Food and Agriculture. The symposium also focused on the discipline and new life sciences curriculum slated to debut at UNL in fall 2013. The curriculum is a three-way partnership between the colleges of Agricultural Sciences and Natural Resources, Arts and Sciences, and Education and Human Sciences.



Landscape Systems Day

Trees were planted as part of ReTree Week. The day also included Wildlife Encounters where participants explored insects and small animals.



9.26

International Day

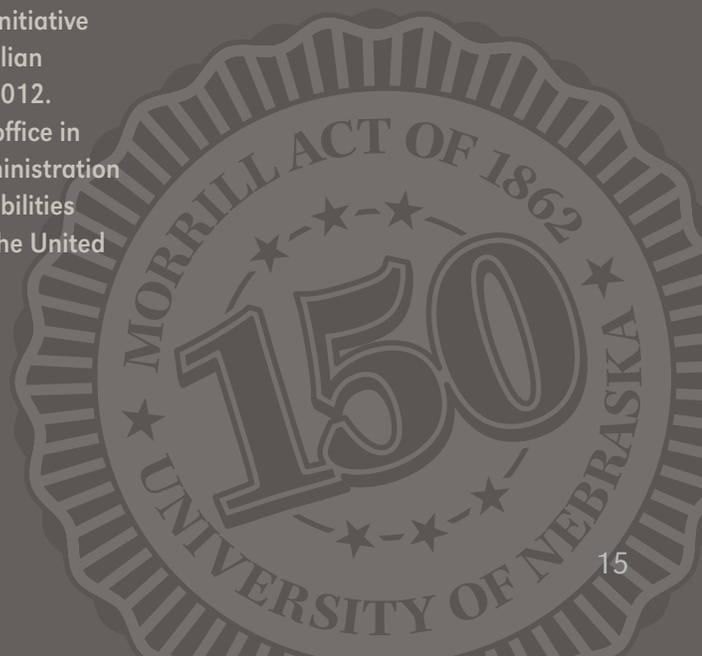
International Day featured a showcase of education abroad tours, international sabbaticals, Fulbright scholars and food.

From an education study abroad trip to Namibia or Puerto Rico to new partnerships in Brazil and China, IANR's international study, outreach and research efforts continue to grow.

Studying internationally gives students global perspective, while international arrangements help foster research.

The partnership between UNL and the University of Sao Paulo's ESALQ campus in Piracicaba, roughly equivalent to IANR at UNL, brings together research on issues surrounding food, fuel and water. This is in addition to Brazil's "Science Without Borders" initiative that brought about 30 Brazilian undergraduates to UNL in 2012.

IANR also opened a new office in Beijing in China's State Administration of Grain, creating new possibilities for joint research between the United States and China.



9.27



Rural Futures Institute: its time has come

Partnering with rural communities to help them meet their economic and social challenges is a natural mission for land-grant universities in the 21st century, the president of the University of Nebraska says.

In Columbus Sept. 27, James B. Milliken helped launch the Rural Futures Institute, an NU-wide institute that will tap faculty expertise across all four NU campuses for research, education and engagement involving partner organizations and rural communities across the Great Plains.

Milliken said it wasn't by accident that the announcement was made during the University of Nebraska-Lincoln's weeklong celebration of the 150th anniversary of the Morrill Act, which created land-grant universities.

The land-grant tradition of establishing research and extension in agriculture is "what gives us our grounding today," Milliken said.

"What does it mean to be a land-grant university in the 21st century?" Milliken asked. In Nebraska, he said, it will be a focus "on a range of issues in the rural economy and the rural life."

What separates the Rural Futures Institute (ruralfutures.nebraska.edu) from previous university-based rural-development efforts will be a commitment from the university's uppermost leadership, inclusion of all four of NU's campuses and collaborations with communities across the state, he added.

Nebraska's efforts already have gained national, even international, attention, Milliken said. A Rural Futures Conference in Lincoln in May drew participants from around the world.

Ronnie Green, NU vice president and Harlan vice chancellor of the university's Institute of Agriculture and Natural Resources, said he, Milliken and other university administrators knew it was time to "elevate the effort."

Green said the institute will begin with a \$1.75 million budget its first year, growing to \$3.5 million in a couple of years. Green added that \$750,000 has been set aside for a first round of research-engagement and teaching-engagement grants to be awarded early in 2013.

Doug O'Brien, U.S. Department of Agriculture undersecretary for

rural development, said, "We are in a time that presents more opportunities for rural communities and for people who live in them than we've seen in generations."

But the challenges are significant, too, he said. Partnerships and innovative ways of doing business will be more important than ever at a time when federal, state and local governments have less money to spend on development.

Chuck Hassebrook, NU regent and executive director of the Center for Rural Affairs, said, "This has the potential, if we do it right, to be the premier program in the nation ... I'm excited about this; it's a big deal."

In an interview this summer, Green said Nebraska is the perfect place to lead such an effort.

"No one else is doing this ... I think we're better positioned than anyone else" to lead it, Green said. "We have the best living laboratory for it in the country."

— Daniel R. Moser

 ruralfutures.nebraska.edu
 [Rural Futures youtube](#)

9.28



“Backyard Farmer” Still Growing Strong After 60 Years

“Backyard Farmer” celebrated its 60th season this year.

Still Growing Strong was the theme for the lawn and gardening series, a co-production of UNL Extension and NET Television. It first aired June 1, 1953.

While the show has stuck to its roots of providing solid creative, science-based and entertaining advice, it also has kept up with technology using YouTube, podcasts and the Web (byf.unl.edu).



 byf.unl.edu

150 years ... still going, still needed

Four former U.S. secretaries of agriculture this fall lauded the 150-year-old land-grant university tradition and said institutions such as the University of Nebraska–Lincoln still have much important work to do.

The four — John Block, Clayton Yeutter, Dan Glickman and Mike Johanns — spoke Sept. 28 at the first of the 2012-13 Heuermann Lectures (heuermannlectures.unl.edu). The former ag secretaries said the Morrill Act succeeded in creating a system of agricultural research, extension and teaching that helped transform American agriculture into the most technologically advanced, profitable, efficient and productive system in the world.

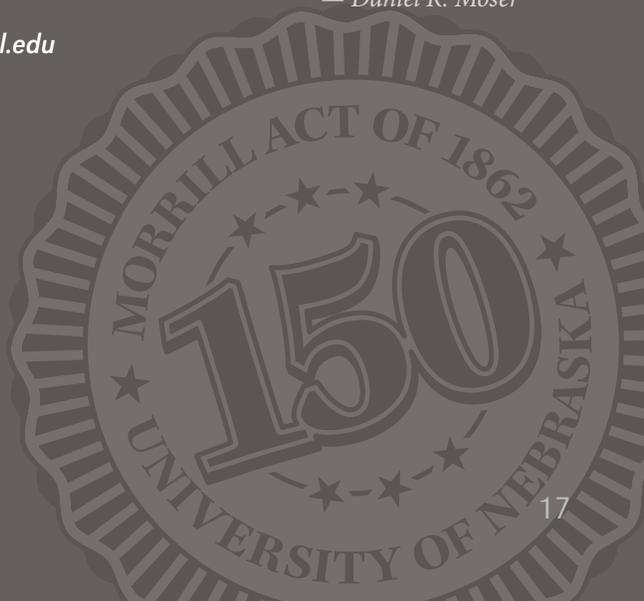
The discussion’s title, “The Land-Grant Mission of 2012: Transforming Agriculture for the 2050 World,” reflects land-grant universities’ challenges today: Helping feed a world whose population is expected to increase from 7 billion to 9 billion by 2050.

“If you’re going to feed the world ... you’re going to need science and you’re going to need technology and you’re going to need the best of land-grant universities,” said Johanns.

The challenges, they said, include increasing public-private partnerships; helping farmers adjust to changes in the environment; pursuing biofuels options; and helping farmers in the developing countries increase their productivity and efficiency.

— Daniel R. Moser

 heuermannlectures.unl.edu



With this gene, 'silence' is golden

Plant scientists long have known they can alter crops genetically to improve performance; they've been doing it for thousands of years. But what if they could dramatically improve crops by leaving the genes themselves unchanged but instead change how they're expressed in a way that would be passed down to future generations?

That question is at the heart of research at the University of Nebraska–Lincoln's Center for Plant Science Innovation, and the results so far are encouraging. The findings, expected to be commercialized in the next couple of years, could play a role in

helping meet the world's dramatically increasing need for food, said Sally Mackenzie, Institute of Agriculture and Natural Resources plant scientist.

Specifically, scientists focused on a gene called MSH1, short for MUTS Homolog1, which is present in every

plant. They discovered that if they "silenced" that gene in some plants, their growth patterns changed dramatically — dwarfed, highly branched and behaving as if they have seen high levels of stress, including cold, heat, salt, drought and high light. Then, after they reintroduced the gene and crossbred it with a plant that wasn't altered, the crossbred plant showed signs of enhanced growth, vigor, lodge resistance, high biomass production and higher yield.

Those changes in some cases were huge: up to a 100 percent increase in above-ground biomass, up to a 70 percent increase in yield in sorghum, for example.

"We changed the way the plant is expressing its genes, even though we didn't change the genes

themselves," Mackenzie said. The process is called epigenetics.

Mackenzie stresses these key points about her lab's work:

- It's not transgene-mediated modification, which is controversial in some parts of the world and heavily regulated, thus slow to reach the market.
- It has worked in several crops so far — not so-called model crops, but actual agronomically useful crops, most importantly soybean, sorghum and millet, and also tobacco and tomatoes.
- These changes can occur in just two generations of plants, rather than the 10 or more it can take for genetic modification to take hold. That's appealing given the sense of urgency in figuring out how to feed a world whose population is expected to reach 9 billion by 2050.

The potential of epigenetics to improve other crops is unknown. It's possible that most of the potential already has been reached in corn, for example, because it has been heavily hybridized. Until now, scientists couldn't know what percentage of improvements in corn was due to genetic changes and what percentage was due, unwittingly, to epigenetics.

Besides soybean and sorghum, it seems likely there's great potential for epigenetics to improve crops such as cotton and dry beans.

"And if you could do this in rice and wheat, you could perhaps change the world," Mackenzie said.

"It's promising, but I don't want to overhype this," Mackenzie said. Yet to be determined is whether these effects will be stable and able to be scaled up as the techniques are commercialized and expanded to more fields and more crops.

"It's important we explore this for every potential it offers for addressing some of the challenges in agriculture," she added.

The research is funded by the Department of Energy and National Science Foundation.

Sally Mackenzie, 402-472-6997,
smackenzie2@unl.edu

— Daniel R Moser



Nick Moines

Sally Mackenzie



Rx: New Vet Diagnostic Center Needed

A challenge and a tremendous opportunity. Nebraska’s Legislature and governor approved \$50 million this year for a new Veterinary Diagnostic Center at the University of Nebraska–Lincoln. Along with their support came a challenge — the university must raise \$5 million in matching funds to claim the appropriation.

“It’s a big task, but one we know we can accomplish with support of our stakeholders,” said Ronnie Green, Harlan vice chancellor of the Institute of Agriculture and Natural Resources at UNL.

The current diagnostic center, built in the 1970s, doesn’t meet today’s needs and challenges. That’s critical since, among other things, it serves the state’s important livestock industry, said Alan Moeller, assistant vice chancellor of IANR.

More than that, about 30 percent of the specimens it tests each year come from companion animals; the center also plays an essential role in teaching, extension outreach and consulting.

With the state-of-the-art veterinary diagnostic center that’s planned, UNL can continue to attract excellent faculty and provide students with hands-on experience in their first two years in the Professional Program in Veterinary Medicine with Iowa State University.

“It’s the basic foundation upon which our veterinary medical program is built,” Moeller said.

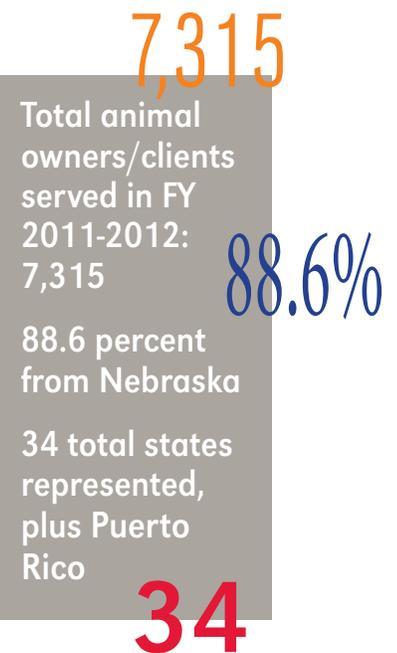
The center’s outreach role is essential too, Moeller said. While private labs can test specimens and identify livestock diseases, the center works with producers to prevent recurrences.

Dr. David Hardin, director of the School of Veterinary Medicine and Biomedical Sciences at UNL, said, “a big part of our mission is looking forward anticipating what’s coming. We’re likely to be among the first to see emerging diseases.”

Completion of the center is anticipated in 2016 or 2017, but the \$5 million must be raised before planning can continue, he added.

nufoundation.org/veterinary

— Daniel R. Moser





Even as Nebraskans struggled this summer with the worst drought in decades, University of Nebraska–Lincoln Extension already was looking ahead to the next steps that will help producers and families make decisions related to tax implications, spring planting and home/landscape plans.

Nebraska weather may not change every 10 minutes, as the old saying claims, but it certainly does from year to year, and extension is prepared to respond to clients' needs as they arise.

Rick Koelsch, associate dean of extension, said extension was active on a number of fronts to help Nebraskans deal with the 2012 drought. So far this year, extension in Nebraska:

- launched *droughtresources.unl.edu* in early July, targeting issues of interest to ranchers and farmers, communities, families and homeowners;
- responded to 250 questions per week during the growing season;

- authored or prepared 220 articles for newspapers, newsletters or other print media; 14 peer-reviewed publications; 327 radio or television presentations; 78 Web pages viewed on average 1,400 times per day; and 138 video or audio recordings for posting on social media or the Web;
- taught 130 workshops attended by 6,700 participants; and
- conducted 87 research projects in university facilities and an additional 61 on-farm research or demonstration projects.

While all of this was happening, by mid-August as the drought's devastation still was unfolding, extension already was looking ahead.

"We recognize the many implications associated with the 2012 drought and the possibility of it extending into 2013. Our faculty are planning their winter educational programs to address planning and best practices to help farmers and ranchers prepare for 2013. And what kinds of information will Nebraskans need next spring and summer," Koelsch said.

Extension is considering a variety of issues, including implications of this year's drought and weather patterns on 2013 farming decisions; recovery and renovation of range and pasture; winter forage options; evaluation of drought-tolerant corn hybrids; demonstration of water-conserving technologies on more than 500 irrigated crop farms through the Nebraska Agricultural Water Management Network (*see story page 21*); sickness in ranch calves during drought and high heat; and range management and response to drought.

UNL is uniquely positioned to deal with drought and water management issues, Koelsch said. In addition to extension, it is home to the *National Drought Mitigation Center* and the new *Robert B. Daugherty Water for Food Institute*, whose founding director, Roberto Lenton, came on board last winter.

Rick Koelsch, 402-472-3935, rkoelsch1@unl.edu

— Daniel R. Moser

Reducing Water Withdrawal

Suat Irmak's leadership of the Nebraska Agricultural Water Management Network (NAWMN) has been demonstrating/teaching farmers and crop consultants how to use soil moisture and crop water use equipment to better manage irrigation.

Among the network's many long-term goals is to reduce water withdrawal for irrigation by 1.5-2 inches per season, said Irmak, a University of Nebraska-Lincoln Extension soil and water resources engineer.

Another goal of the network is to enable the transfer of high-quality, research-based information to Nebraskans through a series of demonstration projects established in farmer fields, and implement newer tools and technologies to address and enhance plant water productivity.

Watermark sensors can measure the amount of energy plants must use to draw moisture out of the soil. Atmometers or ET gauges estimate how much water plants are using. When used together, the sensors and gauges help producers determine the amount of moisture the crop needs — if irrigation is even needed at all.

Since its establishment in 2004-2005 with only 15 farmer collaborators, the NAWMN has also enabled excellent collaborations and partnerships between various state and federal agencies, extension, and over 700 farmers and crop consultants across Nebraska.

NAWMN is the largest agricultural water management program in the United States, Irmak said.

For more, visit water.unl.edu/web/cropwater/nawmdn.

— Sandi Alswager Karstens



Craig Chandler

Suat Irmak checks sensing equipment in a soybean field near Geneva. By measuring the moisture leaving a field of crops, Irmak provides farmers with information that can help conserve energy and water, save money and ultimately grow better crops.

 [More on Irmak's evapotranspiration research](#)

Doyle to direct global engagement

IANR's new director for global engagement will lead, grow and coordinate international activities and programs within IANR, and coordinate IANR's efforts with international engagement activities at the university and system levels.

In his new position beginning Nov. 1, Mark Doyle also will provide leadership to assist faculty to internationalize curricula and enhance global academic opportunities for students, and to seek new partnerships with government agencies, foundations and the private sector.

Most recently Doyle was science and technology adviser with the U.S. Agency for International Development in Jakarta, Indonesia. Earlier he worked at a National Science Foundation office that handled programs to stimulate new international research collaborations.

Doyle earned his undergraduate degree in biology from Wabash College in Crawfordsville, Ind., and his doctorate in cellular and molecular biology from the University of Wisconsin-Madison.

IANR officials say the position is critically important because of rapidly developing collaborative efforts in Brazil, China, India and Africa during the last two years.



Mark Doyle

Prairie Chicken Management

Nebraska has one of the largest populations of greater prairie chickens in the United States; now more is known about their habitat.

Sandhills ranchers, landowners and public grassland managers soon will have more knowledge to better manage prairie chicken habitat, thanks to Institute of Agriculture and Natural Resources research.

“We have this population in the Sandhills and decided to do something to keep it that way,” said Larkin Powell, professor in the School of Natural Resources at the University of Nebraska–Lincoln.

Previously the only prairie chicken research nationwide was conducted on tallgrass prairies in Illinois, Kansas, Wisconsin and Minnesota. Tallgrass prairies are taller and denser than Sandhills grasslands.

Powell and Walt Schacht, range ecology professor, along with several students, studied how much grass Nebraska prairie chickens need for good habitat and their nesting preferences.

“Sandhills grasslands are not only shorter and less dense (than tallgrass prairies) but cattle grazing further opens grassland habitat,” Schacht said. “People who want to manage for prairie chickens must understand grazing-habitat relations.”

The study, which began in 2009, looked at locations called lek sites, where male prairie chickens dance in hopes of attracting females. The males inflate air sacs located on the side of their neck and snap their tails.

Scientists caught the female birds and placed a gently hanging, necklace-type radio transmitter around their necks.

“We wanted to follow them around,” Powell said. “We also wanted to see where they nest and where they take their brood after hatching.”

They determined female prairie chickens usually nest 1.5 to 2 miles from the lek site, often choosing the more dense swales between the rolling Sandhills.

Knowing this, ranchers can better manage cattle grazing to create lek nest habitat.

Housed and centered at the university’s Barta Brothers Ranch, the project was conducted on private land belonging to 10 to 15 area ranchers.

A UNL Extension Circular is being developed on managing prairie chicken habitat.

This IANR Agricultural Research Division project is done in collaboration with, and receives support from, the Nebraska Game and Parks Commission.

Larkin Powell, 402-472-6825, lpowell3@unl.edu

— Sandi Alswager Karstens





NEBRASKAland Magazine/Nebraska Game and Parks Commission



Jessica Milby



NEBRASKAland Magazine/NGPC



Jessica Milby

Badger flushes hen from nest

Hen defends nest from snake

Hen and snake fight

Purpose and Passion

Weldon Sleight, dean of the Nebraska College of Technical Agriculture in Curtis, retires in December.

His passion and commitment for the college and rural Nebraska do not.

During 6 ½ years at NCTA Sleight has worked diligently to foster campus improvements and innovative programs for students and the state.

“If Utah State had had a 100 cow program when I was a student,” Sleight said, referring to an NCTA program to help graduates gain equity to eventually own ranches, “I wouldn’t be here. I would be a rancher. We’ve worked hard at NCTA to provide such opportunities for our great students, who want to lead a rural life. We want to help them.”

For too long, Sleight said, rural Nebraska’s greatest export has been its children. Speaking often in communities across Nebraska worried about their towns’ decreasing populations, he urges them to work to bring their community’s youth home after college, noting it is young families that populate the schools around which much community is built.

“Schools are a gathering place,” Sleight said, “a place of community identity and continuity.” Without them, he added, towns disappear.

People in communities must talk to each other, he said, and be willing to share information, such as who plans to retire when, leaving positions in business, teaching, medicine, farms, ranches and more needing replacements.



Weldon Sleight

Eric Reed

“Put your arm around your community’s youth and tell them you hope they’ll come home after college to fill such positions and grow,” he said, then make that possible through family and community planning and cooperation.

“Believe you can make a difference,” Sleight said, “because you can.”

If not for a seriously ill daughter in Idaho, he wouldn’t be leaving, Sleight said. There is more he’d hoped to do — create an agricultural library at NCTA to hold the stories of Nebraska’s rural heritage. Work more with rural communities seeking sustainability.

NU’s new Rural Futures Institute gives him great hope, Sleight said, as do Nebraskans.

“I love Nebraska and its people,” Sleight said. “Nebraskans tell it like it is. They’re smart people. They can find answers for rural Nebraska.”

— Judy Nelson

Fast Facts

During Sleight’s tenure, NCTA has:

built a new Education Center, new residence hall, new addition to the Veterinary Teaching Hospital;

built entrepreneurship into NCTA’s entire curriculum;

begun the 100 Cow Advantage, 100 Acre Farm Advantage, Business Builder programs and more;

begun a biomass project using red cedar chips rather than natural gas to heat the college.

Ready, Set, Career!

High school students interested in working in the fashion industry or with animals or even those who aren't quite sure what they want to do after graduation need look no further than the Big Red Summer Academic Camps (bigredcamps.unl.edu).

The University of Nebraska–Lincoln Extension 4-H camps led by faculty provide students entering grades 10-12 the opportunity to explore UNL's campuses, meet people from across the country, investigate interests or potential careers, and most importantly – have fun, said Shane Potter, 4-H youth development assistant extension educator.

Campers spend several fun-filled days exploring specific topics such as filmmaking or the environment. Other career topics might include crop sciences, culinary arts and food science, education, entrepreneurship, fiber arts, Nebraska's Unicameral and veterinary science.

Camps are small, allowing much one-on-one interaction between students and UNL faculty.

Diane Vigna, associate professor and extension specialist in the Department of Textiles, Merchandising & Fashion Design, said a 2013 fashion design camp will give students the opportunity to explore the world of fashion design. Potential careers in the field include fashion designer, merchandiser, product developer and textile scientist.

Registration deadline for summer 2013 camps is May 1.

— *Sandi Alswager Karstens*

Nick Manes



Students have fun while exploring interests and careers.



Birnstihl in new position

Former UNL Extension administrator Beth Birnstihl is now the director of the National 4-H Council's Mission to Market program.

In her new role that began July 15, Birnstihl is leading mission-mandate education programs to help ensure they are implemented throughout 4-H nationwide. She works with National 4-H headquarters, the National 4-H Council, and 4-H staff and land-grant universities nationwide from her office in Mussehl Hall.

Prior to her June 31 retirement as extension associate dean, associate director and state 4-H administrator, Birnstihl had a 41-year career with UNL Extension. She also formerly co-chaired the National Science, Engineering and Technology Mission Mandate Task Force.

PROUDLY SUPPORTING Nebraska's LARGEST youth organization

You may benefit from the Nebraska 4-H Foundation's special capabilities:

- Personalized services tailored to specific charitable goals and circumstances.
- Tax benefits for gifts and bequests, plus tax-exempt investment earnings.
- Permanent legacy opportunities that provide ongoing impact forever.
- Experience in the administration of virtually all kinds of charitable funds.
- Flexibility to accept nearly any kind of gift including stock or real estate.

We invite you to learn more.



Stuart Shepherd, Executive Director
(402) 472-1178 • www.ne4hfoundation.org





James A. Kalisch

Painted Ladies All Around

The magic of metamorphosis provides enjoyment for young and old. UNL Extension's Caterpillar to Butterfly program, using the Project Butterfly Wings curricula, tracks caterpillars as they molt and grow, change into chrysalides and hatch into butterflies. At the Kimmel Education and Research Center at Nebraska City, butterfly pavilions were open to the public, as well as webcast. At Norfolk and

Madison, butterflies as a school enrichment program taught children how to care for and observe the life cycle of a butterfly. The butterflies were fed fruit and flowers before being released in spring.

GrowEatLearn

Promoting food science literacy at all levels of education and society through creative means is the goal of GrowEatLearn.unl.edu.

Even with agriculture as the state's largest industry, many Nebraskans may be unfamiliar with food production, and how commodities get from the "farm gate to dinner plate."

Enter the website's first project: a friendly video competition open to Nebraskans, to educate people on food they eat, while showcasing the creativity of students, staff and stakeholders. All videos, including the three winning entries, are available for viewing.

Other resources outlined on the website include classroom activities, UNL science literacy courses, the *GrowItKnowIt* app and informational events.

The Lone Star Tick

Ticks are tough. They have few predators and can live up to two years. The lone star tick, a recent newcomer to Nebraska, can transmit microorganisms that cause diseases such as human monocytic ehrlichiosis, tularemia and feline cytauxzoonosis, as well as a new Lyme-like disease. IANR is home to one of a dozen national tick experts; he

is researching where and how the tough, tank-like tick survives and how land use impacts ticks and tick-borne diseases. This knowledge can help health officials develop risk assessments to help keep people, pets and livestock safer.



James A. Kalisch



Getting the Lead Out

Lead poisoning poses a significant health risk to children age 6 and under. UNL Extension and collaborators have led efforts to educate families, contractors and real estate professionals on how to keep children safer from lead in soils and peeling house paint. The focus of Living Safely With Lead: Reducing the Risk is on people living in an EPA Superfund site in east Omaha. There, older homes were built before 1978, when lead was banned from paint. Children consuming even small amounts of lead may acquire learning and behavior problems.



Broadly Connected

From better access to health care information to connecting with suppliers, vendors or business partners regionally or even globally, broadband Internet access is key to economic growth and job creation. However, its adoption and use still remain low in some areas of Nebraska and among certain populations. The Nebraska Broadband Initiative, with the help of UNL Extension, is working to increase high-speed broadband Internet adoption and use to all Nebraskans. Since the initiative's start in January 2010 several projects, including statewide surveys, mapping, planning and technical assistance, are making broadband a reality across the entire state. To learn what's being done, visit broadband.nebraska.gov.

GET THE DRIFT?

Two new wind tunnels at the West Central Research and Extension Center at North Platte are expected to better reveal how droplet size and wind affect pesticide drift in farmer fields. Located in a former hog barn, a large fan is set up at the front end of plastic glass and stainless steel tunnels that force wind through a “honeycomb,” making air travel in a straight line between 1 and 200 mph. Single-nozzle sprayers emit various solutions. A laser measures droplet size and records data on a computer. Collected data will help quantify particle movement to help reduce pesticide drift to adjacent crops in fields and other unintended targets.



 [More on the wind tunnel](#)

Fuel from Pest

When life hands you red cedar trees, make fuel. That’s what the Nebraska College of Technical Agriculture at Curtis is doing with its wood-fired boiler, designed to burn woodchips from the pest tree — spreading at the rate of 103,000 tons of new growth a year in Nebraska — and generate heat for the campus. The program includes a “sweat equity” angle:

An NCTA student in the 100 Cow Advantage program would negotiate an agreement with an operation to remove red cedars, then sell the woody biomass to the college for \$35 to \$40 per ton. And as red cedar is eliminated, grassland will be reclaimed for cattle grazing. Everybody wins — except the red cedars, of course.



Latino Youth Study

A study involving UNL Extension is being conducted to better understand Latino youth experiences, strengths and challenges, as well as family and community support.

Under the Latino Youth Care Project (psychology.unl.edu/lycp), funded by the National Science Foundation, Nebraska families are being interviewed to help researchers learn what helps reduce youth challenges and strengthen resources to improve Latino youth successes.

Researchers hope results not only will contribute to current theory about Latino youth development, but also help practitioners and program developers better address Midwest Latino youth needs.

Interviews with parents and youth are being conducted in Grand Island and Lincoln.



Energy Independence

UNL researchers are in the midst of a two-year project to help Nebraskans determine how to maintain alternative energy equipment and just how much energy might be produced from small wind and solar installations.

Researchers have installed a small wind turbine and solar panel evaluation facility at the Haskell Agricultural Laboratory near Concord. Energy production by solar panels from four different manufacturers is available at go.unl.edu/ivp and soon wind energy production will be available at go.unl.edu/yip.

The Sustainable Energy Options for Rural Nebraska project is funded by a federal grant received with support from Nebraska Rep. Jeff Fortenberry.



Feedlot expansion, feedlot school

Feeding cattle in the High Plains carries different challenges than elsewhere in Nebraska, and the Institute of Agriculture and Natural Resources continues to expand research, extension and teaching in the region to address those issues.

Several years ago, the Panhandle Research and Extension Center expanded its feedlot capacity by 61 pens, to 105 total, an improvement funded largely by private industry. Now the center is pursuing plans to construct a new building and a new handling facility.

“Our feed resources and climate are different enough from eastern Nebraska’s that the producers in this area wanted to see some data generated in the Panhandle,” said Matt Luebbe, IANR feedlot research and management scientist based at the Panhandle center.

“We’re analyzing feedstuffs unique to western Nebraska — beet pulp and field peas, for example,” Luebbe said. Corn is used too, as elsewhere, though it’s processed more finely.

“We’re looking at different combinations” of feedstuffs, he said. “We’re really testing for interactions of ingredients.”

An advisory group of about a dozen people in the cattle business helps the center focus its work.

Beef industry outreach efforts in the Panhandle include a Feedlot Roundtable aimed at owners and managers, and a Feedlot School for employees. Many employees speak Spanish, so a translator is used. “The feedlot school reaches an audience we weren’t reaching before.”

Linda Boeckner, Panhandle center director, said industry’s funding support for the expansion “speaks to the value of this work to the industry in this part of the state.”

“The interest was great from every phase of the planning, and there continues to be a lot of support for what’s going on here,” Boeckner added.

Gary Darnell of Harrisburg, who has a ranch cow-calf yearling feedlot, echoes that comment.

“The (University of Nebraska–Lincoln) is so good about including the industry and getting information from us as to what are the needs, what are the desires, and use that to base their research on,” said Darnell, an advisory board member.

In addition to the increased number of pens, many other feedlot improvements were incorporated, including a state-of-the-art water system to help address concerns about water intake. Each of the 61 new pens features individual water tanks with separate water lines, each line fitted with a water meter to measure water usage from each pen.

The feedlot uses electronic individual identification on all research cattle, and has several electronic identification (EID) technologies available. New animals coming into the research yard are given an EID tag that is tamperproof and stays with the animal all the way through the processing plant.

Each time an animal is weighed, vaccinated, implanted, sorted or treated, the EID tag is scanned into the computer. The computer program brings up the animal’s entire history as the new information is entered; thus feedlot performance can be monitored with relative ease.

Matt Luebbe, 308-632-1397, mluebbe2@unl.edu

— Daniel R. Moser

“Our feed resources and climate are different enough from eastern Nebraska’s that the producers in this area wanted to see some data generated in the Panhandle.”
— Matt Luebbe



Panhandle Research and Extension Center

Entomology Art

A series of educational murals painted on the walls of Entomology Hall in 2012 helped celebrate the Department of Entomology's four-year, \$4.5 million renovation and its 125th anniversary. The species shown are all representative of Nebraska.



WE ARE COMMITTED TO GROWING A HEALTHY FUTURE.



IANR is committed to growing a healthy future through innovations ensuring food, fuel, and water security; sustainable landscapes and community vitality.

Through excellence in teaching, internationally recognized research, and innovative extension education, IANR provides knowledge for a growing world.

If you would like to help us grow, contact Ann Bruntz at abruntz@nufoundation.org, or give online at nufoundation.org/ianr.





Andrew Ambriz

Johnny Ference

Maci Lienemann

Brooke Jindra

Doug Larsen

Amber Burenheide

Alix Mashino

In 2012-2013, all seven Nebraska FFA officers are students in the College of Agricultural Sciences and Natural Resources.

This rarity and honor is celebrated here with an introduction of each officer, all of whom were asked to answer these two questions:

- What would you like people to know about agriculture?
- What are your plans for the future?

Nebraska FFA president

Alix Mashino, ag education freshman from Spencer (West Boyd FFA)

Would like people to know:

Agriculture affects every aspect of our lives – food, clothing, housing, fuel. This growing industry faces new challenges daily, and I’m proud to advocate for agriculture. Will you do the same?

Plans: Communicating about and educating others on the truths about agriculture, and later returning to production agriculture.

Nebraska FFA secretary

Johnny Ference, agribusiness/agronomy/ag education freshman from Ord (Ord FFA)

Would like people to know:

Agriculture is a great field; people in agriculture have the goal of feeding the world, and the heart and desire to achieve it.

Plans: After graduation return to Ord to start a seed corn and agronomy business during summer, and perhaps be an FFA adviser during the school year.

Nebraska FFA vice president

Andrew Ambriz, animal science freshman from West Point (West Point FFA)

Would like people to know:

Agriculture is vital to everyone in the United States and around the world. Being a native of Los Angeles, I know what it feels like to be uninformed about agriculture. Now it’s hard to contain myself when asked about it.

Plans: Evolving – for now, earn my degree and explore opportunities.

Nebraska FFA vice president

Amber Burenheide, agribusiness freshman from Howells (Howells/Clarkson FFA)

Would like people to know:

When agriculture prospers, Nebraska prospers. We need to support agriculture because without it we will be unable to feed the U.S. or the world. Farmers and ranchers do their best to raise quality crops and livestock.

Plans: To merchandise agricultural products or grain in rural Nebraska.

Nebraska FFA vice president

Maci Lienemann, animal science freshman from Princeton (Norris FFA)

Would like people to know:

From raw materials, agriculturalists apply best practices to produce almost all basic human needs of food, fuel and fiber. For example, beef producers have found a way to convert the lowest grade raw materials/natural resources into a premium protein source.

Plans: Earn an advanced degree in animal science genetics, conduct research in this career field, and hold a leadership position in a leading industry organization.

— Cheryl Alberts

Nebraska FFA vice president

Brooke Jindra, agribusiness sophomore from Leigh (Leigh FFA)

Would like people to know:

I’ve been around agriculture my whole life. Farmers and ranchers are involved because they want to be. They care about the animals they raise, the land they work on – not because they’re told to do so but because it’s the right thing to do.

Plans: After graduation, pursue a career in agribusiness, eventually returning home to the family farm.

Nebraska FFA vice president

Doug Larsen, ag journalism freshman from Stuart (Stuart FFA)

Would like people to know:

There are very diverse careers in agriculture; everyone needs to know that not every job is directly linked to the traditional thought of sows, cows and plows.

Plans: Earn my degree then become involved with broadcasting. And maintain a ranch.

National FFA officer named

Brennan Costello, agribusiness sophomore from Gothenburg and 2011-2012 Nebraska FFA president, was chosen Central Region vice president at the 2012 National FFA Convention Oct. 24-27 in Indianapolis.



Six individuals nationwide were named to the officer slate of candidates; the national nominating committee interviewed them for national FFA president, secretary and regional vice president. The committee named candidates to their respective offices at the end of the convention. See ffa.org.

Nebraska's beef industry thrives by its stewardship.

IANR research focused on animal welfare & resource management.

Calf sickness virtually eliminated.

Sandhills Calving System addresses scourge of calf scours.

- Focusing on the disease cycle led to innovative solution
- Segregation of calves by age prevents transfer of pathogens
- Multiple pastures, each with calves within one week of age of each other
- Calves commingled after youngest is four weeks of age
- Results in less labor, fewer drugs and more calves to sell



Clean calving areas: Keeping newborn calves away from pathogen-shedding older calves is the key to success of the Sandhills Calving System.

Fly control is important during heat stress: 3 female stable flies feeding 5 minutes per day will decrease daily gain by 5%!

Helping cattle keep their cool.

As temperatures rise, performance suffers.

"Shirtsleeve" temperature for cattle is 55 degrees

Rumen acts as an internal furnace

At 82 degrees, metabolism changes

Gain efficiency decreases as cattle devote energy to "maintenance"

Temperature heat index of 85 kills—even at night!



Making sure manure doesn't go to waste.

Utilizing manure as a resource for crop production.

- Cost-effective in combination with commercial fertilizer
- Tools available to develop effective long-term manure utilization plans
- Recycling nutrients conserves natural resources
- Great source of N, P, micronutrients & organic matter
- Land application training provided by UNL extension



Beef is Biggest



Beef is big business in Nebraska – the biggest – and this year's Institute of Agriculture and Natural Resources' presence at Husker Harvest Days certainly reflected that.

"Strengthening the State of Beef" was the theme for exhibits at the September event near Grand Island.

"One out of every five steaks produced in the U.S. is from Nebraska, so Nebraska has a well-deserved reputation as 'The Beef State,'" said Ronnie Green, NU vice president and IANR Harlan vice chancellor.

Among the priorities of IANR are stewardship and animal care.

Green noted that Nebraska producers have an excellent reputation in these areas, and it's in their interest – and the world's interest – for them to continue quality care for their livestock. The world's population is expected to reach 9 billion by 2050, and animal protein will play a key role in feeding those people.

Green said the need for animal protein is being met all over the world, but "only in America is there great capacity for animal agriculture combined with such strong commitment to animal care and well-being."

IANR has helped to develop, and Nebraska livestock producers have adopted, production practices resulting in healthier animals having greater protection representing a holistic approach of preventative health care, complete nutrition, protection from predators and thoughtful animal husbandry, Green added.

He pointed to longstanding programs such as Beef Quality Assurance, established in the 1980s, and new initiatives such as the We Care Program from the pork industry, as examples of commitment to animal care and well-being.

"Nebraska producers are leaders in these efforts and hold themselves, as a community, to the highest standards for animal care in the production of safe, nutritious and affordable food," Green said.

— Daniel R. Moser

Numbers that count

2,009 \$40,000
1,116 \$20

Hello! My name is Travis Edeal, president of the College of Agricultural Sciences and Natural Resources Alumni Association board of directors. I am honored to be part of an entity devoted to developing learners of all ages and leaders in Nebraska agriculture. Serving on the alumni board and being an alumni member are great opportunities to stay involved with the many happenings CASNR offers students and alumni, as well as to give back to the college that continues to grow tomorrow's leaders!



Travis Edeal

Check out the following numbers and see how you can help the association grow even more!

2,009 – Undergraduate students currently enrolled in CASNR; this is the college's eighth straight year of enrollment growth and the highest ever! We appreciate all that alumni do to help spread the word about CASNR's 28 programs of study to potential undergraduate students. With your help, we'll continue to grow and educate tomorrow's future leaders.

\$20 – Cost of CASNR Alumni Association annual dues. Membership is open to all alumni and friends of the college. Your \$20 dues make all of the numbers above possible. Go to casnr.unl.edu/alumni to learn more.

\$40,000 – Scholarship dollars the association has raised for incoming freshmen since 2005. Each fall the association hosts a football reunion and silent auction to generate scholarship funds. Thanks to generous donations of items and supportive alumni in attendance, the scholarship program grows each year. Also at this year's auction we thanked Paul Horton, outgoing CASNR alumni development director. We are extremely grateful for his eight years of service and wish him well in retirement. Jill Brown, director of external relations for IANR, will assume these responsibilities within her position.

1,116 – Students participating in CASNR's Salute to Graduates ceremony since it began in 2005. Held on the Friday before UNL's fall and spring commencements, this has grown into a wonderful event for graduates and their families to reflect on college achievements and celebrate successes. If travels bring you to Lincoln around commencement time, please stop by and attend the ceremony in the Nebraska East Union. When you do, you will become the 5,791st audience member to attend!

Career Services–East

College of Agricultural Sciences and Natural Resources

Explore the
Science of
LIFE

- FREE career consultations for CASNR students and alumni •

Searching for a new job?
Need help with a resume?
Want assistance preparing for an interview?

Contact:

Julie Obermeyer
Career Development &
Corporate Relations Coordinator
303 Nebraska East Union
(402) 472-8273 • jobermeyer@unl.edu



University of Nebraska–Lincoln
The University of Nebraska–Lincoln is an equal opportunity educator and employer.



Sales job



Nick Manes

Nic Grams

It's an old saying, but it can't help but come to mind in conversation with Nic Grams: When you're in sales, it's as much about selling yourself as your product.

And rest assured, Nic Grams has a product to sell.

The Upland native, who graduated with an agricultural business degree in May, is a financial representative with Northwestern Mutual's Lincoln group. His employment there followed a very successful internship in which he finished seventh of about 3,600 interns nationwide in a selling competition.

As a College of Agricultural Sciences and Natural Resources freshman, Grams figured he'd seek a couple of internships during his junior and senior year. He interviewed with an Aurora Co-op representative, who offered him an internship right away that lasted a couple of summers. Later, he interned with AGP Inc. and Archer Daniels Midland.

It was the Northwestern internship where he found his niche – helping clients with financial planning.

Grams enjoys the independence, the variety and, mostly, the chance to help people, especially farmers and agribusiness people. He's a farm boy himself.

His message to clients in the ag sector: "Times are good right now, but what can you do when times are good to have things in place for when times are bad?"

The University of Nebraska–Lincoln graduate said he was a "social butterfly" in college. "I worked hard and I played hard."

The internship contest certainly was hard work. Interns competed for points awarded by policies and annual premiums brought in. Grams got a later start than others and by about midyear, he had sold only about 10 policies, with \$5,000 in premiums.

"In February and March I really busted my butt and reaped the benefits the next two months," he said. "I had a lot of things go my way and had a lot of supportive people surrounding me."

Grams now works straight commission, no salary. Motivation is critical. "It's my business. It's on my shoulders whether it succeeds or fails," Grams said.

"It's about relationships, not selling," he added.

He encourages students to seek out opportunities for internships and to challenge themselves.

Internships are great for "finding out what's for you and what's not," Grams said. "You've got to find the passion."

– Daniel R. Moser

"It's about relationships, not selling."

Recruit
Mentor

CONNECT

Network
Reminisce
Give back

CASNR Alumni Association annual membership dues are \$20 and open to all alumni and friends of the College.

Your membership supports:

- Activities for the 2,009 CASNR undergraduates
- \$40,000 in scholarship dollars raised since 2005
- 1,116 students who have participated in our Salute to Graduates ceremony

Join today!

Visit: casnr.unl.edu/alumni
 Jill Brown
jbrown14@unl.edu
 402-472-2871

CASNR Students Win National Science Awards

Two College of Agricultural Sciences and Natural Resources students won highly competitive, national Goldwater Scholarships, while a recent CASNR graduate was awarded a pre-doctoral fellowship from the National Science Foundation.

Rachel Coburn of Omaha and Jared Ostdiek of Columbus are winners of the Goldwater scholarships, awarded annually for up to \$7,500 per year, to future scientists, mathematicians and engineers.

Abbey Berkebile, a May CASNR graduate from Lincoln, was awarded a \$30,000 pre-doctoral fellowship, plus a three-year tuition waiver.

Coburn said she was excited and honored when she heard the news about winning the scholarship.

“It really made me realize how much progress I have made during my time at UNL,” Coburn said.

The University of Nebraska–Lincoln biochemistry senior plans on graduate school and an academic career in biological sciences.

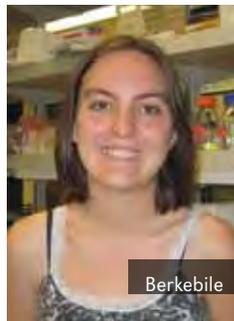
Ostdiek, a biological systems engineering senior, said he had always viewed the Goldwater with esteem, and, he, too, was excited and honored

to be selected. Ostdiek plans to enroll in the biomedical engineering graduate program, then pursue research and development with a company that designs medical devices.

Berkebile is pursuing her doctoral degree in biosciences at the University of Iowa. She graduated in May with degrees in biochemistry and Spanish. She said she was shocked to receive the NSF email about the fellowship.

“After it sunk in, I was really excited and relieved because of the freedom it gives me in choosing my lab for graduate school research.”

– Sandi Alswager Karstens



Berkebile



Coburn

Nick Manes



Ostdiek

Nick Manes



Schnepf HRTM Director

Marilynn Schnepf is now director of the hospitality, restaurant and tourism management (HRTM) degree program.

Previously department chair for the Department of Nutrition and Health Sciences at the University of Nebraska–Lincoln, Schnepf will keep the fast-growing program moving forward to meet student and industry needs.

Schnepf said her position will bring faculty and staff together and streamline the dual-college, first-ever Bachelor of Arts degree in the College of Agricultural Sciences and Natural Resources, and the College of Education and Human Sciences. The degree is housed in the departments of agricultural leadership, education and communication, and in nutrition and health sciences.

UNL was one of only four universities in the country to have received four Goldwater scholarships. Two of these recipients are in CASNR.

CASNR Royalty

Five College of Agricultural Sciences and Natural Resources students were among those voted to the 2012 University of Nebraska–Lincoln Homecoming Court, with king and queen crowned during the Sept. 29 Nebraska–Wisconsin game. CASNR king and queen candidates were, front, Brooke Grossenbacher, food science and technology senior from Overland Park, Kan. Middle, Ross Jensen, agribusiness senior from Wisner; and Alexi Brown, natural resource and environmental economics senior from Prairie Village, Kan. Back left, Ty Schurr, agribusiness senior from Farnam; and ASUN President Eric Kamler, agriculture economics junior from Shickley. Schurr was crowned Homecoming king. Last year, then-CASNR senior Skip Hecox of Gothenburg was named 2011 Homecoming king.



Nick Manes

IANR's impact

reaches across the state and around the world. Here is just a sample of IANR's impact by the numbers.

11,000 and 4,000

Number of 4-H exhibits and exhibitors, respectively, 2012 Nebraska State Fair.

Fall 2012 enrollment in CASNR: 2,009

an all-time high. Enrollment over the last 10 years has increased 58.7 percent, No. 1 at UNL.

35 Number of states, other than Nebraska, represented in CASNR students.



Number of turkeys sold by students in Thanksgiving 2011 Loeffel Meat Lab sale.

38 Number of international students in CASNR in fall 2012. They represent 14 countries, led by China, Brazil and Malaysia.



Cheese

5,130 – Average number of cheese boxes sold by the UNL Dairy Store during the holidays.

5,130



Vet

IANR's Veterinary Diagnostic Center processed 12,034 individual client cases from farm animals to companion animals in the fiscal year ending June 30.

12,034



Containers

74,928 pounds collected for UNL Extension's Pesticide Container Recycling in 2011. That's about 37.5 tons that would have otherwise gone into landfills. The 20-year total for the program: more than 2 million pounds. That's 1,000 tons!

1,000



Scholarships

\$1,027,051: all-time high for scholarships collectively awarded to CASNR students, reached during the 2011-2012 academic year.

\$1,027,051



Ranch

Practicum

Since 1999, 389 people have graduated from UNL Extension's Nebraska Ranch Practicum, reportedly saving an average of \$21.15 per head.

\$21.15

N EXPLORE THE SCIENCE OF **LIFE**

University of Nebraska-Lincoln **College of Agricultural Sciences and Natural Resources**

- Preparing students for careers in everything from animals to plants, soil to climate, golf to business, mechanization to leadership, food to forensic science
- Scholarship and loan opportunities
- One-on-one faculty mentoring and research opportunities
- Study abroad experiences
- Internships and career opportunities with major companies and organizations

casnr.unl.edu
facebook.com/unlcasnr

The University of Nebraska-Lincoln is an equal opportunity educator and employer.



UNIVERSITY OF
Nebraska
Lincoln

103 Agricultural Hall
P.O. Box 830702
Lincoln, NE 68583-0702
(800) 742-8800 Ext. 2541