

Growing

A HEALTHY FUTURE

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FOOD • FUEL • WATER • LANDSCAPES • PEOPLE



Nick Manes

Congratulating Alan Moeller, second from left, on his retirement are the current and former IANR vice chancellors with whom he worked – Martin Massengale, Ronnie Green and Irv Omtvedt.

An Exceptional Servant Leader

When Alan Moeller told me he planned to retire as IANR's assistant vice chancellor for finance and personnel effective June 30, 2013, I didn't mention it to anyone for a month, hoping that truth would go away.

Within a day of traveling with Alan my first week in IANR, I knew he is someone you always want on your team.

Those who've assumed Alan's responsibilities are doing well. It's just that when you have an exceptional servant leader like Alan Moeller, who spent 36 years in IANR and has more institutional memory than anyone, plus the trust and respect of so many, it's hard to see him go.

Alan once said the university has been a large part of his life ever since he began coming to campus for high school FFA conventions. He earned two degrees in agricultural economics here, and remembers standing on the steps of Ag Hall – just a short distance from the space that later became his office – when his roommate told him JFK was shot.

Alan worked for all but the first of IANR's vice chancellors, and he worked with the first when serving as a budget analyst for the Nebraska Legislature. How fortunate we've been.

Alan – who always says nothing he did was ever accomplished alone – was a leader on so many projects that have been good for Nebraska, Nebraska agriculture, IANR and the university.

He played a key role in developing and implementing the IANR Finance and Personnel Office and Business Centers, and was instrumental in obtaining funding for many capital construction projects, such as the Beadle Center, several greater Nebraska projects, the Food Industry Building, the Great Plains Veterinary Education Center, our greenhouse renovation, and, most recently, the education center, student housing and expanded teaching hospital at the Nebraska College of Technical Agriculture, and the Nebraska Veterinary Diagnostic Center.

He played a large part in developing the agreement with Iowa State for our successful joint Professional Program in Veterinary Medicine, effectively advocated for a forerunner to our new university-wide Rural Futures Institute, and more.

At Alan's retirement reception people spoke glowingly of his integrity, intelligence, reliability, credibility, dedication, service and accomplishments. Alan said with typical Moeller modesty that he "was just doing my job."

We wish Alan the best in his retirement. We are glad he and his wife, Lana, will have more time to travel, to be with their two sons, Cameron and Todd and their families, and to pursue their genealogy interests.

Before retiring, Alan was asked what he most enjoyed about his time in IANR.

He said it was the job itself, its variety, and the great people with whom he interacted.

"I really felt like I was working for an organization that made a difference for Nebraska and beyond," he said, "and I hope that during my tenure I contributed something of value to that cause."

There is no doubt that he did.

Alan, we thank you for 36 dedicated, highly productive years.

Ronnie D. Green
NU Vice President and
Harlan Vice Chancellor, IANR

Cover photo Craig Chandler. Jordyn Lechtenberg of Ainsworth and Anders Olson of Tekamah are the 2013 UNL Homecoming king and queen. Both are agribusiness seniors in the College of Agricultural Sciences and Natural Resources. (See brief, page 17.)

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A new grocery store

When the only grocery store in Elwood closed in January, 2012, community leaders, with assistance from the UNL Nebraska Cooperative Development Center (NCDC), organized a community meeting to consider opening a cooperatively owned grocery store.

Over the next 12 months, the steering committee and NCDC worked through the extensive business plan and conducted a successful membership drive to accumulate the capital needed to open the new store.

After top to bottom remodeling, the Elwood Hometown Cooperative Market opened in February, 2013, creating two full-time jobs and five part-time jobs. The store is expected to garner \$500,000 of economic activity during the first year of business.



Courtesy

CrOpportunity

CrOpportunity, a team of doctoral and undergraduate students at the University of Nebraska–Lincoln, took its idea for helping solve global food insecurity to an international competition in Germany in September.

The team called its idea “Five Loaves,” a nonprofit that would address nutrition for those with too much food as well as those with too little.



Five Loaves would work with restaurants to identify correctly portioned and highly nutritious meals in this country.

Fifty cents of the cost of each healthy meal would be donated to local and global nonprofits that combat world hunger. Consumers would be able to go to a website to pick the organization they want to support.



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Eat healthy, be healthy

A healthy diet can help prevent hypertension, heart disease, diabetes, food allergies and weight gain.

Many consumers want to improve their health but varied – and sometimes conflicting – information can make it difficult to know what and how much to eat. Faculty in the Department of Nutrition and Health Sciences do research and provide science-based, unbiased information about the relationship between diet and health.

This is important work because more than half of the U.S. population is considered obese, and obesity and its related diseases are considered by many to be the leading health problems in this country.



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Partnering with India

The University of Nebraska and the Indian Council of Agricultural Research, the leading organization in India for coordinating, guiding and managing research and education in agriculture, have signed an agreement to collaborate on water and food security research and education.

The agreement is the result of more than two years of careful planning between NU and the council that included meetings in both countries, jointly arranged workshops and symposia, and high-level engagement focused on developing the most important priorities and strategies for collaboration.

The initial work plan focuses on drought monitoring and mitigation; crop modeling; development of heat- and drought-resistant wheat, corn and soybean varieties; and development of more productive, sustainable irrigation systems.

What's new at IANR

A decade ago, the Institute of Agriculture and Natural Resources, along with the rest of the University of Nebraska system, was mired in budget cuts and retrenchment. Now, thanks in large part to a chugging state economy led by its No. 1 sector, agriculture, and nine straight years of rising enrollment in IANR's College of Agricultural Sciences and Natural Resources, the Institute has set an ambitious course through its *IANR to 2025* initiative.

Three dozen new faculty members were hired in 2013 as IANR invests in several key facets of its food, fuel and water mission, strengthening its research, teaching and extension roles.

A few examples follow on how IANR is setting the stage for this future.



Tom Field leads Leadership and Entrepreneurship Learning Community freshmen into finding real solutions to real problems.

Nick Mames

Teaching

- The **Justin Smith Morrill Scholars program** is revamped this year, with a two-semester freshman seminar course, taught by Deepak Keshwani, assistant professor in biological systems engineering, and others. It's designed to get students thinking about and engaged in key issues related to food, agriculture, natural resources and human health. Scholars also will interact with Heuermann lecturers as part of the seminar. [More on Justin Smith Morrill Scholars](#)

- The **Leadership and Entrepreneurship Learning Community's** approximately 20 freshmen are encouraged to find real solutions to real problems as part of a team. "Let's quit teaching freshmen like they don't know anything," said Tom Field, who teaches the Burr Hall group with Lindsay Hastings. "Let's treat them like they know what they want to invest their interests and passions in." This team experience early in their college career will make them "better students, better interns, better graduate students, better professionals, better citizens," he added.

- The **C.Y. Thompson Library** is to be redesigned for a broader, more modern mission, to be "viewed as a go-to place not only to access information but for meetings, for interfacing with business and industry, and for community gatherings," said Mark Balschweid, head of the Department of Agricultural Leadership, Education and Communication and chair of a committee that devised a plan for the building. Plans are in development and awaiting private funding.



Carrick Detweiler

Aquatics research in the School of Natural Resources uses drones to take water samples.

Research

- **IANR scientists, funded by the Department of Defense**, are cataloging the most common foodborne illnesses and pathogens in several countries. “They are specifically interested in the causes of foodborne illnesses and pathogens, and the response capabilities of host countries as well as the intrinsic abilities of the U.S. military units to avoid and/or mitigate the consequences of foodborne illnesses,” said Jeyam Subbiah, IANR food scientist.

- **IANR scientist Shi-hua Xiang**, also part of the Virology Center, is exploring the possibility that genetically modified lactobacillus – found in yogurt – could prevent HIV infection. The lactobacillus, one of the “good bacteria,” could act as a decoy, tricking the HIV virus into attacking, and then trapping and neutralizing it. The bacteria then would naturally pass from the body, taking the virus with it. Many questions remain, which may be answered with further testing and trials.

More on Shi-hua Xiang

- How many scientists and grad students does it take to collect water samples from lakes or streams? Perhaps fewer in the future, thanks to unmanned aerial vehicles (UAVs or drones) being developed by UNL computer scientists Carrick Detweiler and Sebastian Elbaum for aquatics research in the School of Natural Resources. Like remote-control helicopters, UAVs can maneuver or operate in difficult places or weather conditions by lowering a tube into the water and drawing samples into tiny reservoirs. Despite lots of technical challenges, “this sounded very intriguing ... and a lot of fun,” said Amy Burgin, SNR aquatics scientist. A three-year, \$956,000 USDA grant supports the research.

More on UAVs



Nick Mones



iStock



IANR is growing.

Growing its faculty.

Growing its student body.

Growing.

In 2013 IANR experienced a **significant faculty growth**, hiring **36 new faculty members** with joint appointments: **27 have teaching** appointments; **32 research**; and **13 extension**.

Total undergraduate enrollment in the College of Agricultural Sciences and Natural Resources increased for the ninth consecutive year in fall 2013, growing to 2,114 students. This fall CASNR **undergraduate enrollment increased 5.2 percent**, or **105 students**.

Statewide and on campus, IANR physical plant building and expansion for more than a dozen projects is leading the university into one of its greatest periods of growth in its 144-year history, said Ronnie Green, NU vice president and IANR Harlan vice chancellor.

All part of growing a healthy future. For Nebraska, and the world.

Extension

• **4-H uses 8-foot high-altitude balloons** to help teach youth about science and engineering. The project, a collaboration with the Strategic Air and Space Museum and others, featured a launch at a Husker game last year and at this year's Nebraska State Fair. Balloons carry cameras to follow progress, as much as 20 miles above the Earth, and trackers that enable youth to know where the balloons land. It's all part of the IANR and 4-H emphasis on science literacy, said Kathleen Lodl, associate dean of UNL Extension. [More on balloons](#)

• **Moodle** can now help 4-H'ers meet their livestock quality assurance requirement. Divided into three age levels, the online course is more cost-effective and the message more consistent than before. Accessible through iPads and smart phones, Moodle is reaching youth in 80 percent of Nebraska counties, said extension educator Lindsay Chichester.

• **Today UNL Extension uses social media** to get information into citizens' hands as quickly as possible, and wherever they are. Take extension educator Jenny Rees, for example. Her Twitter feed, [@jenreesources](#), is one of extension's most engaging and newsy, with frequent updates about crop conditions and pertinent news developments. "We are challenged in extension to reach a broad audience with so many tools," Rees said. "It's a very exciting time."

— Daniel R. Moser

Who's new at IANR

The Institute of Agriculture and Natural Resources focuses on food, fuel, water, landscapes and people in helping Nebraska and the world grow a healthy future.

Since July 1, six new administrators have become part of paving the way for exciting research and education to further build on the momentum occurring throughout IANR and the University of Nebraska. Meet them here.



Craig Eiting

Christopher M.U. Neale,
director of research, Daugherty Water for Food Institute

Previous experience:

- Professor of Irrigation Engineering Division in the Department of Civil and Environmental Engineering, Utah State University
- Leader in remote sensing and water management, agricultural water resources
- Water research and management technical transfer experience in the western U.S., South America, Africa, the Caribbean

Doctorate in agricultural engineering, Colorado State University

Started on Oct. 1.

"I am looking forward to meeting and working with new colleagues in the University of Nebraska system," he said, "and taking on the challenges of my position."



Nick Mornes

Ronald Rosati,
dean, Nebraska College of Technical Agriculture

Previous experience:

- Provost, Southeast Missouri State University
- Provost, Alfred State College
- Dean, College of Agriculture, Natural Resources and Human Sciences, Texas A&M University-Kingsville
- Faculty member, Illinois State University; The Ohio State University; Iowa State University; Alfred State College

Doctorate in agricultural education, Iowa State University

Started on July 1.

"NCTA is on the move! It is escalating programming and enrollment, enhancing collaborative relationships with UNL and expanding the role it plays in supporting Nebraska agricultural communities," Rosati said. "I am very impressed by the supportive campus environment and the faculty focus on helping students succeed."



Nick Manes

John P. Carroll,
director, School of Natural Resources

Previous experience:

- Professor, Warnell School of Forestry and Natural Resources, University of Georgia
- Senior research scientist, Game Conservancy Trust

Doctorate in biology, University of North Dakota, specializing in wildlife ecology and management

Started on Aug. 1.

"I very much look forward to working with the outstanding faculty, staff and students in the School of Natural Resources as our mission to serve the university and people of Nebraska becomes increasingly important into the future," Carroll said.

Bertrand Clarke,
chair, Department of Statistics

Previous experience:

- Professor, Department of Medicine, University of Miami, with appointments in the Department of Epidemiology and Public Health, and the Center for Computational Sciences
- Faculty appointments at Purdue University and the University of British Columbia

Doctorate in statistics, University of Illinois

Started on Aug. 1.

"I look forward to continuing to build up the programs and research of IANR," Clarke said. "My focus is on statistics, which have a major role in scientific inquiry."

Chittaranjan Ray,
director, Nebraska Water Center

Previous experience:

- Interim director, Water Resources Research Center, University of Hawaii
- Professor, civil engineering, University of Hawaii at Manoa
- Worked in industry, and at the Illinois State Water Survey

Doctorate in civil engineering, University of Illinois

Started on Aug. 1.

"I look forward to acquainting myself with stakeholders here and on other campuses and statewide," Ray said, "as well as educating myself on the history of Nebraska irrigation and understanding legislative mandates and citizen views on water use and protection."



Steve Johnson

Dale Grotelueschen,
director, Great Plains Veterinary Educational Center, Clay Center

Previous experience:

- Pfizer/Zoetis managing veterinarian for beef cattle veterinary operations
- Director, UNL Panhandle Veterinary Diagnostic Laboratory
- 11 years private veterinary practice

Doctor of Veterinary Medicine, University of Missouri

Started on July 1.

"I am honored to have the opportunity to serve agriculture, and particularly the livestock industry, through the center, where the veterinarians and staff are an outstanding, accomplished group," Grotelueschen said. "I look forward to working with them in many educational, research and outreach endeavors, as well as collaborations and partnerships across the industry."



Globe-trotting bean

Nebraska is a national leader in dry edible bean production — No. 1 in great northern and No. 2 in pinto.

That's why since arriving at the university's Panhandle Research and Extension Center in 2005, Carlos Urrea has been breeding new dry edible bean cultivars that are more drought tolerant and disease resistant.

He's also looking at how drought affects the nutritional component of beans.

In 2013, Urrea tested 13 new bean lines, including six lines for great northern and seven for pinto in growers' fields. Having tested them the last three years, he plans to release a new great northern and a new pinto line for growing in Nebraska in 2015-16.

The new beans have resistance to multiple diseases, and have the potential to be direct harvested with one pass. Conventional harvest involves cutting, windrowing and threshing.

The Institute of Agriculture and Natural Resources scientist also has developed new bean classes, such as small reds, small black, light red kidneys, and more recently, yellow beans and cranberry beans.

All give "several opportunities for the region and the growers in the region," Urrea said.

Urrea continues to work on the "shuttle breeding project" between Nebraska and Puerto Rico, cooperating with the USDA Agricultural Research Service Tropical Agricultural Research Station and USDA's Tim Porch.

So far this project has resulted in the release of two black bean lines of germplasm with drought and heat tolerance, and resistance to root rot and common bacterial blight.

Urrea also is working with three drought mapping populations from Nebraska, the USDA in Washington and North Dakota State University. In addition, he is working with a National Institute of Food and Agriculture project regarding root rots in Zambia and Mozambique, and will be looking at Andean beans and Mesoamerican beans.

He will start collaborating with USAID on projects in Ecuador, Uganda and Zambia to study drought, biological nitrogen fixation, cooking time and disease resistance. Closer to home he has trials in Washington, Idaho, Colorado, Michigan and North Dakota, and continues to test the 2008 great northern bean cultivar, Coyne.

The Coyne variety is named after the late IANR dry bean breeding scientist Dermot Coyne. In 2012 and 2013, 30 percent of the great northern area of the Panhandle has been planted to this variety.

— *Sandi Alswager Karstens*



ns



David Ostriedik

Carlos Urrea tested 13 new dry edible bean lines in Nebraska in 2013.

Super food power

Dry edible beans are a food with many valuable nutritional properties. Beans have characteristics that overlap grains, fruits and vegetables, such as being high in vitamins and nutrients, yet are dense in calories and contain a lot of good carbohydrates and protein that grains, fruits and vegetables don't.

Beans could be called a "super food," but what if there was a way to make beans an even better "super food"? Or even a food that could fight disease?

Vicki Schlegel, a food chemist in the Department of Food Science and Technology in the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln, works on creating these super foods using Nebraska commodities such as dry edible beans.

For several years, Schlegel and IANR bean breeder Carlos Urrea have collaborated on the best disease-fighting properties of dry edible beans.

"One thing we are working on is how to find exactly how phenol compounds are present in the bean's micronutrients and how they work together to prevent diseases, such as anti-inflammatory diseases," she said.

Dry edible beans have high ratios of phenolic compounds. Phenols act as antioxidants and also work as anti-inflammatory agents, which could suppress anti-inflammatory diseases such as bowel diseases, arthritis, chronic inflammation, and even cancers and Alzheimer's disease.

Urrea and Schlegel have discovered that phenolic compounds can be affected by the environment, including drought. Urrea also is working to develop and cross different varieties of beans that combine the best compounds of each to make an even better bean.

— Sandi Alswager Karstens



Nick Manes

Vicki Schlegel, left, studies the health benefits of dry edible beans, also called a "super food."

Nebraska is a national leader in dry edible bean production.

Science in the know



New science literacy faculty

Joe Dauer,
assistant professor,
life sciences education



Cory Forbes,
science literacy coordinator



Jennifer Melander,
science literacy specialist



An important part of science literacy is being knowledgeable about agriculture. That ranges from children knowing milk comes from a cow, not the grocery store, to scientists researching the complex interrelatedness of agriculture and natural resources worldwide.

In the Institute of Agriculture and Natural Resources, agricultural literacy, sometimes defined as “possessing knowledge and understanding of food and fiber systems,” is part of the Science Literacy Initiative. The initiative focuses on food, fuel, water, landscapes and people, and the integrated stewardship of agriculture and natural resources, said Chuck Hibberd, dean of University of Nebraska–Lincoln Extension.

Added Steve Waller, dean of the College of Agricultural Sciences and Natural Resources, “Unique to this Science Literacy Initiative is its focus on discipline-based educational research, a concept that integrates an understanding of teaching and learning with an intimate knowledge of specific discipline content. The concept offers a deeper, more enriched learning environment for students, and is nationally recognized as critical to better educating students in science, technology, engineering and math.”

To achieve this, IANR has hired three new faculty members who will focus on empowering people to identify and analyze real-world problems and to make informed decisions about agriculture and the natural world, said Marjorie Kostelnik, dean of the College of Education and Human Sciences.

In addition to UNL students, target audiences include students in prekindergarten through 12th grade and their teachers; and IANR partners such as commodity groups, government, businesses, other educational entities and the public.

— Linda Ulrich

New courses

CASNR faculty members are developing a series of new courses that focus on food, energy and water literacy. These include:

Food in Society

Karen Cannon, Mary Garbacz; Agricultural Leadership, Education and Communication

Land, Food and People

Cory Epler, Matt Kreifels, Roger Terry; Agricultural Leadership, Education and Communication

Children, Families, Communities and the Natural Environment

Julia Torquati; Child, Youth and Family, College of Education and Human Sciences

Invasive Plant Science: Impacts on Ecosystems

Steve Young, Agronomy and Horticulture

Resource Conservation in Society

Dennis Ferraro, School of Natural Resources

say their goals are to:

“Better understand how our students learn about the relationships between biological components and the dynamic nature of natural systems. I will teach many of the CASNR freshmen and will help them develop a life sciences foundation that they can build upon throughout their careers.”

“Work with a host of partners and stakeholders to advance science literacy in Nebraska and beyond. I’m excited to have the opportunity to collaborate with PK-12 educators in the state to help students develop an understanding of science through curriculum and instruction that emphasizes agriculture and natural resources.”

“Motivate youth to be excited about science and interested in exploring science-related careers. In addition, I hope to empower both youth and adults to make better decisions in their daily lives by helping them understand our world through the lens of science.”

Possessing knowledge and understanding of food and fiber systems is part of the Science Literacy Initiative.



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Genetics detect guilt



Research by Institute of Agriculture and Natural Resources scientists has shown that age of puberty is a key predictor of a sow's reproductive longevity, but to measure it manually is cost-prohibitive outside a research setting. So, scientists are trying to find genetic markers that can predict onset of puberty in gilts, or young female pigs.

Reproductive inefficiency is a significant cost for swine producers, said Daniel Ciobanu, animal scientist leading this research. Improved management, effective selection for litter size and use of cross-breeding systems have significantly increased reproductive efficiency over the years. However, about half of sows are unable to produce three or more litters, which is required to cover development and maintenance costs of breeding females.

Years of IANR research have proved that female pigs reaching puberty early are more fertile, have greater lifetime productivity and lower culling rates. Unfortunately, the only way to determine age of puberty is by exposing females to a boar every day and carefully monitoring the animals.

The industry typically waits until gilts are 170-180 days old before exposing them to boars. Some, though, may be ready as early as 150 days, said Ciobanu, a molecular geneticist.

However, it's too expensive and labor intensive for producers to begin exposing gilts to boars that much earlier without any guarantee of conception. Ciobanu and colleagues are trying to find a way to predict early puberty using DNA markers.

Preliminary data indicate a clear relationship between genetic variations that influence age of puberty and reproductive longevity. If those genetic markers can be isolated, sows with early age of puberty and superior reproductive longevity can be identified earlier. That would reduce culling rates and the cost associated with developing replacements.

Initial work recently published in *Animal Genetics* (Tart et al., 2013) uncovered common genomic regions and DNA markers that influence early expression of sow puberty and reproductive longevity. These preliminary results were used to secure an integrated grant of more



Years of IANR research have proved that female pigs reaching puberty early are more fertile, have greater lifetime productivity and lower culling rates.

puberty



Nick Manes

IANR molecular geneticist Daniel Ciobanu uses DNA markers to predict early puberty in pigs, an indicator of superior reproductive longevity.

than \$1.6 million from USDA's National Institute of Food and Agriculture. That grant will fund application of genomics technologies to predict and improve early puberty onset and reproductive potential of commercial swine populations through DNA Marker Assisted Selection.

"If we identify some functional DNA markers that affect reproductive longevity, all the sow-breeding industry will use it," Ciobanu said.

Early age of puberty is a moderately hereditary trait, so once a sow is found to have it, some of her female offspring can be expected to, as well.

Scientists are using the well-known swine line established more than 30 years ago by Rodger Johnson, now a professor emeritus in the animal science department. The line is well known for the early expression of puberty, prolificacy and reproductive longevity.

The technologies generated by the research component of the grant will be evaluated in demonstration projects tailored to major state and national producers, such as Danbred North America, the Maschhoffs and Smithfield.

Daniel Ciobanu, 402-472-8066, dciobanu@unl.edu
— Daniel R. Moser

*Research have proved that female
g puberty early are more fertile, have
e productivity and lower culling rates.*



Nick Manes

Rodger Johnson spent much of his career building the ground-breaking Nebraska Index Line, which continues to pay important dividends for the swine industry.

Swine research evolution

Persistence and patience are the guiding principles of good scientific research, says Rodger Johnson.

Johnson's 33-year career at the University of Nebraska-Lincoln exemplified those principles. The North Dakota native, who arrived at UNL in 1978 and retired in 2011, spent much of his career building the ground-breaking Nebraska Index Line, which continues to pay important dividends for the swine industry.

Johnson was drawn to swine genetics initially not because of a passion for the field but rather the influence of his mentor at Oklahoma State University, Irv Omtvedt, who later brought Johnson to UNL when Omtvedt was hired as head of animal science.

At the time Johnson arrived at UNL and began working with then-UNL swine scientist Dwane Zimmerman, selection programs focused on growth rates and meat quality, with most scientists dismissing reproductive science. Zimmerman and Johnson changed that, focusing on ovulation rate and embryonic survival past 50 days, as they created the new line.

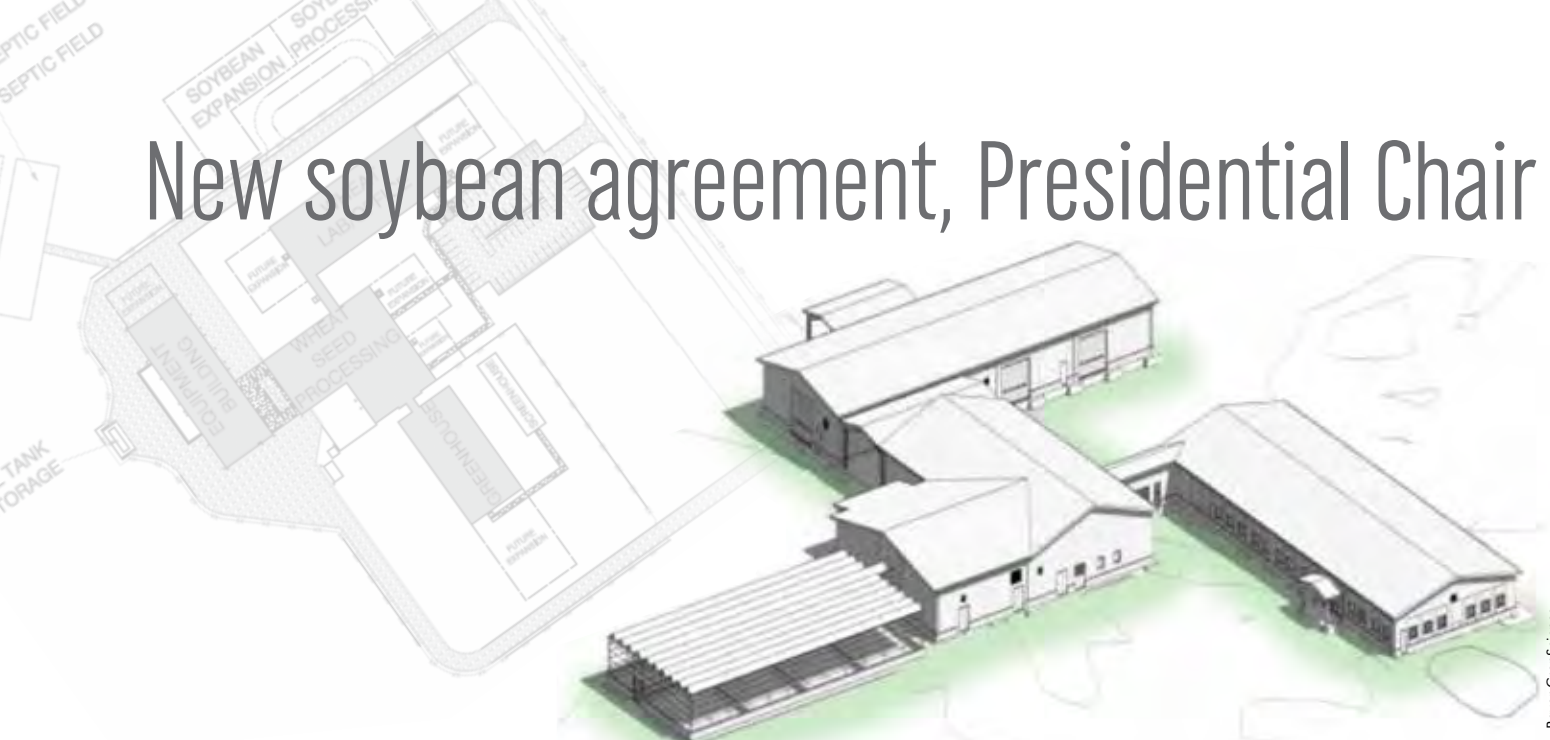
Later, selection for the line shifted to uterine capacity. After more than 20 generations, pigs had a very high ovulation rate and were producing large litters. In the last decade, selection has shifted yet again to improving growth and fat quality. Now, the line is being used to find genetic markers for early puberty.

In addition to his research, Johnson, who continues to consult with UNL colleagues, is proudest of the success of his 35 or so graduate students, to whom he has passed along the same counsel Zimmerman gave him as a young scientist:

"Pay attention. Do it right. Take your time. Train your technicians well."

— Daniel R. Moser

New soybean agreement, Presidential Chair



Bayer CropScience

Even as construction got under way this summer on a new wheat breeding station funded by Bayer CropScience, the company announced a similar agreement with the University of Nebraska–Lincoln, this one to fund development of new soybean varieties.

The new non-exclusive agreement is through NUTech Ventures, the technology commercialization arm of UNL. It focuses on soybean germplasm, the university’s genetic material used to develop new soybean varieties.

The key goal of this collaboration between Bayer CropScience and UNL is to improve yield and develop new soybean traits for growers in Nebraska and around the world. The deal also provides research experience and training for graduate and undergraduate students.

George Graef, longtime soybean breeder with the Institute of Agriculture and Natural Resources, said the agreement with Bayer builds on a research program generously funded for years by the Nebraska Soybean Board.

“It is with support from the soybean growers through the Nebraska Soybean Board that we have been able to develop the high-quality soybean breeding program that we have today,” Graef said.

The agreement also provides funds to endow a Presidential Chair in soybean breeding to ensure long-term sustainability of soybean research at UNL. Graef is the first to hold that chair.

Meantime, Bayer CropScience broke ground in August in Goehner on a new 50,000-square-foot

headquarters for its North American Wheat Breeding Station. That facility is a result of an earlier, similar agreement with UNL for wheat breeding.

Bayer will have access to UNL’s wheat germplasm in developing new varieties, which is expected to bring up to 25 scientists and support staff to the state.

Bayer CropScience also provided funding for the Nebraska Wheat Growers Presidential Chair, held by Stephen Baenziger.

Baenziger said a number of graduate students are conducting research in several UNL labs, thanks to funding from the agreement. He also expects to hire a new graduate student for his lab early next year, funded by money leveraged through the Bayer CropScience deal.

He’s thrilled with the collaboration.

“Everything that Bayer has said they wanted to do, they’ve done. We’ve been very pleased. They’ve really gone the extra mile,” Baenziger said.

— Daniel R. Moser

Presidential Chairs



George Graef



Stephen Baenziger

More on wheat partnership

Schroeder to direct RFI

The incoming executive director of the University of Nebraska's Rural Futures Institute (RFI) is a native of rural Nebraska – and a big believer in its potential.

Charles P. “Chuck” Schroeder, who assumes the job Dec. 1, has his roots in Palisade, in southwest Nebraska. He most recently served as president and executive director of the National Cowboy & Western Heritage Museum in Oklahoma City, Okla., and also was chief executive officer of the National Cattlemen's Beef Association, executive vice president and director of development at the University of Nebraska Foundation, and director of the Nebraska Department of Agriculture.

The Rural Futures Institute will engage and draw on the talents and resources of all four NU campuses – UNL, the University of Nebraska at Omaha, University of Nebraska at Kearney and University of Nebraska Medical Center. It will help address unique challenges and opportunities facing rural communities and individuals, including those related to entrepreneurship and innovation, talent attraction and development, technology, rural health, workforce development and community planning, rural education and others.

In addition, Schroeder noted, the NU campuses will work with other educational institutions, government agencies, non-governmental organizations and community, civic and business leaders and citizens across the state and beyond that are dedicated to improving rural life.

“We are going to be drawing together the best minds in the business wherever they might be located to address these issues,” he said.

The institute's work already is well under way, with conferences in 2012 and 2013 that drew participants from all over the country. Also, a first round of research, teaching and extension projects funded by a total of \$750,000 RFI grants is in progress across the state.

— Daniel R. Moser



Chuck Schroeder

*More on RFI conference
Impacts of RFI grants*



Anders Olson, Jordyn Lechtenberg

Craig Chandler

Homecoming

It may be a first: UNL's 2013 Homecoming king and queen both are in the College of Agricultural Sciences and Natural Resources, and in the same degree program.

Agribusiness seniors Jordyn Lechtenberg of Ainsworth and Anders Olson of Tekamah were crowned queen and king at halftime during the Oct. 5 Nebraska vs. Illinois football game.

Four other seniors in CASNR programs were among the 20 royal candidates.

They are:

- Melisa McDonald, Lincoln, animal science;
- Alex Wach, Wauneta, agricultural journalism;
- John Bader, Gresham, biological systems engineering
- Patricia Malinowski, Ballwin, Mo., biochemistry

A student body vote Oct. 3 selected the king and queen.





Dorrene K. BrownButterfield

Home on the range

When a group of Nebraska ranchers envisioned a means of passing their traditions and knowledge to future generations, that vision became the Nebraska Youth Range Camp. In June the camp celebrated 50 years, and about 2,200 participants. At the end of this year's weeklong camp, held at the Nebraska State 4-H Camp near Halsey, about 40 campers could identify 40 different range land plants, as well as judge a site for plant production and range condition. Student participants also are eligible to make range presentations each fall at the Nebraska Society for Range Management annual meeting.



Dipak Santra

Proso for health

With one-third to one-fourth of the nation's proso millet acreage, Nebraska nets up to 170,000 acres of the small grain annually. In China, where the grain originated about 10,000 years ago, the gluten-free grain is an important ingredient for breads and other foods. International research shows millet consumption can fight Type 2 diabetes and high blood pressure, as well as help celiac patients. Nebraska's millet research focuses on increasing yield with less lodging and shattering, as well as expanding the market and food, beverage, fuel or industrial uses.



How irrigation grew

Nebraska is No. 1 nationally in irrigated acres. Visitors to the Lake McConaughy Visitor and Interpretive Center near Ogallala can learn how irrigated farming developed from the 1930s to today through a timeline and interactive display there. The display, made available in part by IANR, also shows how farmers are stewards of Nebraska's water resources, and how they balance water use with supply. Partners include the Games and Parks Commission and the Nebraska Water Center Foundation — Education committee.



Nebraska's Panhandle receives only 17 inches of rain annually, so ways to save water are important, and the objective of a program called Water Wise.

Participating communities of Gering, Scottsbluff and Terrytown are collaborating with the Nebraska Forest Service and the university's Panhandle Research and Extension Center to learn how to save water. Scottsbluff residents, for example, learned they can save about \$12 on their bi-monthly water bill by reducing water use by 20 percent, or about 7,600 gallons.



Steven Knezevic

Weed 'torch-er'

Organic farming weed control options are limited or expensive. Unable to use conventional herbicides, organic producers are turning more and more to flame weeding. The propane-fueled process also is gaining interest among conventional producers due to increased weed resistance and costs of GMO crop seeds. As specially designed hoods protect the crop, carefully directed propane torches throw a 2,000F flame on top of plant tissue, boiling water in its cells. The plant bursts its cell walls and dies. In the last four years, 120 organic producers have participated in weed-flaming workshops hosted by IANR's Haskell Ag Lab near Concord. Extension experts have also described the process at about 40 field days in eight Midwestern states.



David Ostried

Continuous corn plot

The century-old Knorr-Holden Continuous Corn Plot near Mitchell holds valuable information about the ecology, environmental impact and production principles of long-term, continuous irrigated corn. Listed on the Nebraska Register of Historic Places, the half-acre is the third-oldest corn research plot in North America — and possibly the world. Now part of the university's Panhandle Research and Extension Center, Knorr-Holden proves that continuous corn can be successfully grown in western Nebraska, and that manure is valuable to maintaining soil productivity.



Here's the beef

BeefWatch is a new electronic newsletter that's one of UNL Extension's many beef resources. The newsletter covers multiple topics such as drought, heat stress, range and feed efficiency, safely feeding crop residues, grasshoppers and other pests, animal health, nutrition, mineral supplements, educational opportunities and more. More than 700 subscribers have access to articles written by extension educators and specialists. The newsletter can be found on a round-up page of beef resources at beef.unl.edu.



iStock

Horse master manager

Certification as a Master Equine Manager now is possible through an educational partnership between Iowa State University and UNL Extension. Horse enthusiasts learn areas of horse behavior, nutrition, health care, housing, hoof care and more. Online and hands-on sessions also cover forage selection, special handling

procedures and vaccinations. Master Equine Managers may conduct clinics and workshops, as well as assist with horse shows, trail rides and judging. Of the 20 first-time participants to be certified in 2013, eight were Nebraskans. The course is to be offered again in spring 2014.



About three dozen Nebraska growers are contributing first-hand knowledge to corn research into irrigation management, nitrogen management and plant populations in the ongoing, statewide Nebraska On-Farm Research Network. Growers work with IANR faculty to replicate university research by planting and harvesting in grower fields using their own equipment. The on-farm research helps find answers to critical questions affecting production, profitability and natural resources. The project is in partnership with the Nebraska Corn Growers Association and the Nebraska Corn Board.

Animal Care Wednesdays

Animal Care Wednesdays is a virtual collaboration about timely animal care topics. Since 2012 UNL Extension personnel and extension personnel in Iowa, Missouri, Wyoming and South Dakota hold the 45-minute webinars, usually the first Wednesdays of each month, at 4h.unl.edu/resourceanimalcare. They've had more than 125 viewers, including participating extension personnel, producers, consumers and industry specialists, at one session. Topics include care and safety of beef, dairy, hogs and poultry; communicating science to consumers; and sharing resources and teaching materials.

Firing down wildfires

Wildfires are becoming increasingly severe in Nebraska.

More than 500,000 acres burned in 2012, costing the state \$12 million in fire-fighting costs. Not to mention the estimated \$124 million total economic impact in losses to agriculture, timber, structures and recreation.

Higher temperatures and intense drought are to blame, but equally so is the increase in forest fuels, including the spread of the eastern red cedar tree. Nearly 40,000 new acres of forest dominated by this aggressive native grow each year, said Scott Josiah, state forester and director of the Nebraska Forest Service.

“We have a growing problem on our hands,” said Josiah. “With forest fuels increasing dramatically, something needed to be done. Many communities — such as Valentine and Long Pine — are at a very high risk of a catastrophic wildfire.”

Wildfires aren't just burning in remote areas, Josiah said. They are burning right up to and across community borders. In addition, many wildfires are high-intensity crown fires, which burn everything — all the trees, all the seeds — and leave the soil completely sterile.

Enter LB 634, Nebraska's Wildfire Control Act of 2013, which Josiah was instrumental in making a reality.

One of the main pieces of the legislation was obtaining one Single Engine Air Tanker (SEAT) that now is on call for 90 days during fire season. SEAT bases are being located in Valentine, Chadron and Alliance.

Other actions include thinning forests to reduce fuel loads, increasing the number of volunteer firefighters trained in fire suppression, providing volunteer fire districts with improved fire suppression equipment, rehabilitating areas devastated by fire and developing markets for wood and biomass generated by fuels reduction operations.

More on Nebraska Forest Service



Nick Manes

Scott Josiah



Susan Helmink



Andy Taylor



Mont Hourt



Jessica Keilling

ReTreeing Nebraska

One decade, 1 million trees. That's the goal of ReTree Nebraska, the 10-year initiative started in 2007 to raise public awareness about the value of trees.

ReTree Nebraska strives to reverse the decline of Nebraska's community tree resources, and improve diversity and sustainability of trees in communities statewide for generations to come.

As of Aug. 1, the effort has resulted in the planting of nearly 100,000 new trees across Nebraska. Eric Berg, program leader for the Nebraska Forest Service, said momentum clearly is increasing for this initiative, but more importantly people are learning to properly care for and manage their existing and newly planted trees for long-term generation benefits.

In addition to planting more trees, good species diversity is key for community forest health and sustainability. No single tree species should make up more than 10 percent of an entire community forest resource, Berg said.

A list of 13 trees recommended for planting in 2013 included maple, sugar maple, black maple and bigtooth maple. A list of Good Trees for the Good Life can be found at the ReTree Nebraska's retreenebraska.unl.edu. *More on ReTree Nebraska*

— *Stories by Sandi Alswager Karstens*



Let's work together to grow IANR.

If you would like to give us a hand and help IANR grow, contact Ann Bruntz, abruntz@nufoundation.org, 402-458-1176; or Josh Egley, jegley@nufoundation.org, 402-458-1201

CAMPAIGN for NEBRASKA
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Energy interest shines worldwide

In grade school, Casey Heier didn't build miniature wind turbines from plastic construction bricks.

His high school science fair project wasn't about electricity.

And after graduation from Columbus High School and beginning his freshman year at the University of Nebraska–Lincoln, he had no career plans.

However, in CASNR assistant professor Adam Liska's Energy Science class, Heier found his passion.

"That class gave me the clearest overview of energy and how profound and far-reaching it is," Heier said.

Heier, who graduated in May with his bachelor's in biological systems engineering and a minor in energy sciences, doesn't just study sustainable

energy. He lives it.

Perhaps most impressive is that in 2011, Heier cofounded a nonprofit, The World Energy Project, devoted to increasing alternative energy use and whose members include college students and others across the United States.

Earlier, Heier founded and was president of Pi Kappa Phi Fraternity. "I wanted to join a fraternity, and I had an idea of what a fraternity could be," he said.

Heier said the organizational and fundraising skills he learned while forming a fraternity inspired him to start The World Energy Project.

"I now know how to start an organization and I know how to organize students to get behind an idea," he said.

As part of his work as operations director of The World Energy Project, Heier and other volunteers visited Mali



IANR file photo

Casey Heier found his passion in energy studies as an undergraduate when he took Adam Liska's Energy Science class.

Casey Heier's undergraduate accomplishments:

- Worked on research projects, was a teaching assistant, and with Adam Liska coauthored a publication on bioenergy
- Attended the 2013 Clinton Global Initiative University
- Learned about Costa Rica's renewable energy on a trip sponsored by GREEN (Global Renewable Energy Education Network); he was the only Nebraskan among the 20 students selected for the trip.

in 2011 and replaced some solar panels that were damaged by lightning and installed a drip irrigation system at a school. Last summer he helped install solar panels at a girls school in Kenya.

"Traveling to a country where there are cultural and language barriers and you are disconnected from everything you've ever known, to do something as big as powering a school, was very challenging," he said.

His rewards include building relationships with grateful Africans.

"You can't forget about the people you meet. When you live in their world, it's almost impossible not to do something."

Solar panels save the Kenyan school \$2,800 a year, enough to hire four more teachers and offer scholarships for students who otherwise couldn't afford to attend school, he said.

"It was really great to study and construct a system of 100 percent renewable energy," he said. "I don't think of this as work. It's what I do."

Shortly before leaving Kenya, Heier and other volunteers took a night walk to the top of a hill. "As we were walking down, the whole area was in a blackout except for one light, which came from the school," he said. "Seeing that justified all these years of working for this."

More on energy science



Casey Heier founded The World Energy Project, and installed solar panels in buildings in Mali and Kenya.

Heier, who some call “Mr. Alternative Energy,” continues to be involved with The World Energy Project, but has a more limited role since he began graduate studies at Stanford University in September.

“I hope to take what I learned there (in Africa) and apply it to my studies at Stanford. It was pretty instrumental in my education,” he said. “But I want to focus more on what I can do in the U.S.”

After he and two friends complete their master’s degrees, they want to start their own sustainable energy design firm in California.

“We want to explore how clean energy technology can be better integrated into the design of urban infrastructure,” Heier said.

– Linda Ulrich

ag tunes

Agriculture and music met in a new way when singer/songwriter Susan Werner performed Sept. 6 at the Lied Center for Performing Arts in Lincoln.

IANR and the Lied Center commissioned *Hayseed*, Werner’s fourth themed album, its songs relating to such topics as crops, rain, chores and farmers markets.

Werner has said the album was inspired by the culture where she grew up in eastern Iowa near Manchester, and pays tribute to American agriculture. She plays piano and guitar; her songs are said to slide between folk, jazz and pop.

Ronnie Green, NU vice president and IANR Harlan vice chancellor, said the collaboration with the Lied Center to commission the songs on *Hayseed* is exciting.

“The amazing people who grow our food and renewable energy, while being stewards of our water and natural resources, are the backbone of our country’s success; this album recognizes their history, challenges and accomplishments,” Green said.

– Cheryl Alberts



Nick Manes

Susan Werner

Undergraduate research advances knowledge

Research is a key component of any student’s undergraduate education, especially for those wanting to be competitive in graduate school, said Adam Liska, College of Agricultural Science and Natural Resources assistant professor and George Dempster Smith chair of Industrial Ecology in the Departments of Biological Systems Engineering, and Agronomy and Horticulture.

“I have known for a long time how important undergraduate research is for advancing students’ understanding of how science is applied in real-world settings, and how this research allows them to explore increasingly complex problems, said Liska, also the energy science minor program coordinator.

“Part of my success as a scientific researcher began with four years of undergraduate research.”

Adam Liska, 402-472-8744, aliska2@unl.edu

– Linda Ulrich

The vet is in

Knowing what she wanted to be when she grew up was a given for Dr. Jennafer Glaesemann, owner/sole practitioner of the mixed practice Blue Valley Veterinary Clinic (BVVC) in Beatrice and Pickrell Veterinary Clinic in Pickrell.

The Fairbury native is a 2007 graduate of the College of Agricultural Sciences and Natural Resources, as well as a 2011 graduate of the inaugural Professional Program in Veterinary Medicine (PPVM), a cooperative partnership between Iowa State University and the University of Nebraska–Lincoln.

The steel Staff of Aesculapius that still hangs on the wall at BVVC is how Glaesemann identifies the “iconic veterinary clinic” of her childhood. She credits her dairy-producer dad, Chuck, now office manager of the Pickrell clinic, as her first inspiration to become a veterinarian. After graduation and an extensive search for a practice to own, Glaesemann saw BVVC as an opportunity to stay in Nebraska.

It was “the jewel of my eye after I had scoured the country for clinics. It really has been a dream come true,” Glaesemann said.

Highlighting her career has been the opportunity to watch daily human-animal bonding, though her passion and dedication go much further. She thrives on challenges and operates under the basic premise that what she does makes a difference for others. That, she said, motivates her each and every day.

As a student and practitioner, Glaesemann presents at national meetings such as the American Veterinary Medical Association, for which she currently blogs and serves on the welfare committee.

Glaesemann, like many CASNR students, enjoyed the atmosphere and home-like feel that East Campus and CASNR provided and continue to provide. She double majored in veterinary science and animal science. The latter provided applicable, hands-on and practical experiences, while CASNR’s School of Veterinary Medicine and Biomedical Sciences undergraduate curriculum proved to be a sturdy foundation for veterinary school. Being a part of the inaugural class was, she said, the best “real world” experience she could have ever asked for.

“It taught me a lot about patience with creating a new system; when there isn’t a path, make one.”

Her advice for students pursuing a career in veterinary medicine is “sticktoitiveness — and buckle your seat belts!”

— Valerie Kesterson
junior, Agricultural Journalism and English



Gary Starlin

Dr. Jennafer Glaesemann is a member of the 2011 inaugural Professional Program in Veterinary Medicine, and a 2007 CASNR graduate.

CASNR’s undergraduate curriculum proved to be a sturdy foundation for veterinary school.



Team rides ahead

UNL's Equestrian Team is stepping up in the world of horse competition.

The 50-member, self-supporting team is made up of Western and Hunt Seat teams. Members of all skill levels compete through the Intercollegiate Horse Show Association.

In 2012-2013 the Western team took first place for the second consecutive year at semi-finals in Syracuse, N.Y. At nationals in Harrisburg, Pa., the team tied for fourth.

In addition, last year two members of the Hunt Seat team competed in Zone 8 Finals at Parker, Colo.

— Courtney Spilker
senior, Agronomy and Agricultural Education



Emma T. Link

Alumni support CASNR

What an exciting time to be involved in agriculture! The challenge of feeding the world's growing population will no doubt require innovation — innovation that in some part will come from current and future students enrolled in the College of Agricultural Sciences and Natural Resources.

The University of Nebraska—Lincoln's enrollment grew 1 percent this year, driven largely by a 12 percent increase in first-time freshmen. The good news is CASNR is leading the way with a 5.2 percent increase — an all-time record enrollment for the third straight year! Our college will play a large role in the future by stimulating our students to think creatively to solve the challenges of agriculture.

Your CASNR Alumni Association is doing its part by providing support to CASNR by informing students and parents about academic programs, and careers in agriculture and natural resources; and by providing scholarships to incoming freshmen. During September, members of the alumni association were active at the Nebraska State Fair and at the CASNR Career Fair. The CASNR Alumni Association also sponsored a Football Reunion and Silent Auction just prior to the South Dakota State game on Sept. 21. It was good to reconnect with old friends, and at the same time, raise more than \$5,000 for student scholarships. The support and generosity of our alumni are

greatly appreciated. With your help we are fulfilling one of the more important missions of the alumni association.



Nick Mames

If you want to become more involved in CASNR, consider joining the CASNR Alumni Association. Being a member is an excellent way to participate in the activities that CASNR offers students and alumni. Contact the CASNR Alumni office at 402-472-3224 for more information.

Brent L. Plugge

Brent Plugge
CASNR Alumni Association President

More on CASNR Alumni Association

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

These three individuals are off to a strong start in life,

after earning their bachelor's degrees in May from the College of Agricultural Sciences and Natural Resources.

Their energy, interests and enthusiasm speak for themselves. Watch them go!



Lisa Jaso

Matraca Meyer, assistant coordinator for U.S. Agriculture for the Howard G. Buffett Foundation, Decatur, Ill.
Degree: agricultural economics/agribusiness
Hometown: Edgar

"The past four years at UNL really helped prepare me for my first job at the Howard G. Buffet Foundation," Meyer said. "The classes and professors gave me the knowledge I needed to enter the agriculture industry; the extracurricular activities allowed me to create useful networks; and the overall experience helped me grow as an individual."

Being involved in clubs and organizations both on and off campus helped Meyer prepare for her career by helping her develop time management skills, responsibility and professionalism.

"I'm just beginning my career and I can't wait to see what my future holds," she said. "I hope to keep creating opportunities for myself and continue gaining experience."

In addition to advancing professionally, Meyer wants to become involved in organizations related to agriculture and serve as a sponsor or leader for 4-H and FFA.



Nick Mames

Ross Jensen, Stifel Financial Corp., Lincoln
Degree: agricultural economics/agribusiness
Hometown: Wisner

"Through summer internships and extracurricular opportunities, CASNR has prepared me for my professional career. Industry and alumni interest in the college's students helped shape my career aspirations and put me in a position to successfully pursue them," Jensen said.

The Nebraska Human Resources Institute, based in the Department of Agricultural Leadership, Education and Communication, was instrumental in shaping Jensen's life skills and collegiate relationships. The program uses strengths-based mentoring to develop leadership

abilities in its university counselors and junior counselors in the Lincoln Public Schools.

"I learned how to be more intentional in using and developing my talents. This focus on continuous deliberateness has crossed over into personal and professional settings," he said.

He said his university experiences also helped him realize the importance of giving back in professional and civic capacities.



Katie Arndt

Courtney Anthony, National Rifle Association Air Pistol All-American
Degree: fisheries and wildlife
Hometown: Lexington

Anthony's first gun was a BB gun that her father taught her to shoot.

Fast forward to this year. As a senior, Anthony placed second in air pistol and women's

sport pistol at the National Rifle Association Intercollegiate Pistol Championships at Ft. Benning, Ga., and placed ninth in air pistol at the World University Games in Kazan, Russia — a competition sometimes described as "the college version of the Olympics."

Anthony also has been selected for the National Development Team USA, which identifies shooters with potential for international competition and the Olympics.

"Shooting kind of started as a curiosity but I found my niche," she said. "My goal is to continue to improve and win more national and international competitions, and long-term, the Olympics."

Balancing her shooting with her goal of becoming a wildlife damage specialist will be a challenge, but, Anthony said, "As a Christian athlete, I think this is where God wants me to be."

— Linda Ulrich

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IANR's impact

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

More than 240 P3 (Partners in Pollution Prevention) interns in 1997-2013 provided businesses in 89 Nebraska communities more than 670 assessments and recommendations, saving potentially \$20.5 million and diverting more than 221 million pounds of solid waste from landfills. *More on P3*

89 communities • 670 assessments • \$20.5 million • 221 million pounds



The Doctor of Plant Health's first graduate in May became coordinator of Sub-Saharan African programs with the Borlaug Institute at Texas A&M University.

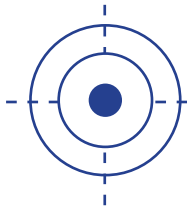
More on Doctor of Plant Health

The Lester Larsen Tractor Test and Power Museum's

95-year-old building is being renovated, and its new \$35,000 Bill Splinter Memorial Art Gallery is to display agriculture-related work by UNL students and Nebraska artists. Last year the museum had 2,740 visitors, 906 from out-of-state.



More on tractor museum



540 youth
35 states
27 events

UNL Extension hosted the June 2013 National 4-H Shooting Sports Invitational Match in Grand Island. More than 540 youth from 35 states competed in 27 different events.

The **19th annual 4-H/FFA Golf Classic** and raffle at Nebraska City's Arbor Links Golf Club in June raised \$46,255, to be divided between 4-H and FFA.



The **PGA Golf Management** program last spring presented its second golf clinic for 33 Special Olympics athletes, plus coaches, parents and guardians.

Estimated total value of knowledge gained from UNL Extension's 2012 **Soybean Management Field Days**, and its **Crop Management Diagnostic Clinics:**

\$30.2 million, and \$53.3 million, respectively.



2,000 pounds of honey and 25 pounds of candles –

estimated amounts sold annually by the UNL undergraduate Insect Science Club; the graduate Bruner Club sells an additional 500 pounds of honey each year.

May 8

is the centennial of the Smith-Lever Act of 1914, which created the national Cooperative Extension system.

\$40 million – amount of total research dollars awarded to IANR researchers for fiscal 2013.



Backyard Farmer is closing on 2 million YouTube views in 2013, with the peak months drawing an average of 18,000 views per week.

More on Backyard Farmer

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