



**Institute of Agriculture and Natural Resources
University of Nebraska – Lincoln**

**Year in Review
2021**

Distributed January 12, 2022

College of Agricultural Sciences and Natural Resources (CASNR) 2021-22 Highlights

- If we've learned anything over the past year, it's that students, faculty and staff in the College of Agricultural Sciences and Natural Resources (CASNR) are willing to face challenges head-on.
- Over the past 20 months, we've gone from in-person teaching and learning to remote and back again, with a dose of uncertainty and a few unexpected challenges along the way.
- Through it all, our students have shown incredible resilience, dedication and flexibility, and their curiosity and desire to learn has remained unwavering.
- Meanwhile, our amazing faculty and staff have done everything they can to make sure students have received a multidimensional, enriching, world-class education, even during trying times.
- 2022 will be an exciting year as we celebrate the College's 150th anniversary on June 25, 2022.



Highlights for 2021-22

Teaching and Learning Portfolio:

- A record number of new undergraduate and graduate degree programs, micro credentials and certificates, specializations, minors, and courses were developed to expand our teaching and learning portfolio.
- CASNR and Nebraska Extension partnered together to create a portfolio of non-credit and professional development offerings for the continuum of learners – youth, current students, alumni, and lifelong learners.

#ThisIsCASNR

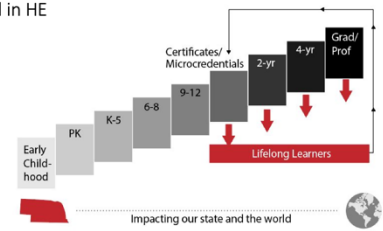
Curriculum Innovation

- Degree Programs
 - Agricultural, Leadership, Education and Communication BS degree
 - Grassland Systems BS degree
 - Plant and Landscape Systems BS degree
 - Plant Pathology MS and PhD
 - Statistics and Data Analytics BS degree
- Certificates
 - Animal Science Management certificate
 - Personal Leadership certificate
- In progress
 - Data Science BS degree
 - Accelerated MS degree
 - Revisions to BS degrees
 - Digital Ag minor
 - Certificates – UG and GD

#ThisIsCASNR

Non-credit and Professional Development Portfolio

- Exciting and innovative trend in HE
- Partnership driven
- Continuum of learners:
 - Youth
 - Current students
 - Alumni
 - Lifelong learners

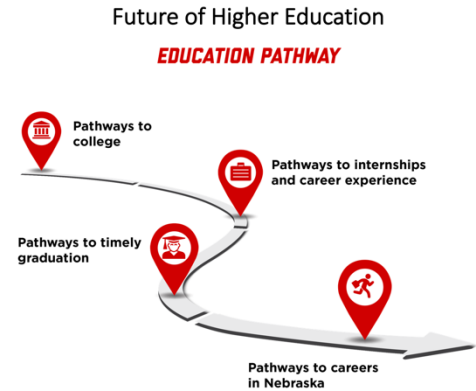


- Opportunities:
 - Exposure to CASNR
 - Professional development
 - Intellectual growth

Impacting our state and the world
The Right Education Pathway
at the Right Time of Life

Education and Career Pathways:

- The future of higher education will be about pathways—pathways to college, to relevant internships, experiential learning and academic experiences, to timely graduation, and finally, to great careers here in Nebraska.
- Examples of pathways CASNR is leading to ensure a talented workforce to support the agricultural sector in Nebraska and beyond include:



Expanding UNL's Statewide Ag Education Platform

- Exciting and strategic opportunity to support in-service ag educators, Nebraska school districts, and Nebraska FFA through creating the New Ag Educator Network and expanding our ag educator professional development portfolio to an in-person statewide model through forward deploying two ag education faculty members in the Panhandle and Northeast Nebraska.
- Impact of expanding UNL's statewide ag education platform:
 - Enhance student engagement through in-person advising and mentoring for students enrolled in the articulation pathways with Chadron State, Wayne State, Northeast Community College, Nebraska Indian Community College, and Little Priest Tribal College.
 - Leverage the diverse living learning laboratories in the panhandle and northeast Nebraska to provide experiential learning and professional development for in-service teachers within the context/culture of the region they live and teach in; extend opportunities to pre-service ag and STEM educators as well as CASNR and NCTA students to learn first-hand about the diverse agricultural systems in Nebraska.
 - Co-create with K-12 educators/administrators and ESUs pre-pathways supporting ag education programs across the state, increasing career awareness among youth, and expanding CASNR's early college credit portfolio.
 - Increase access, support the state and national priority to increase retention of teachers, and strengthen our commitment to ag educators and the over 200 ag education programs in Nebraska.

Food, Energy, Water and Societal Systems (FEWS²) Education and Career Pathway

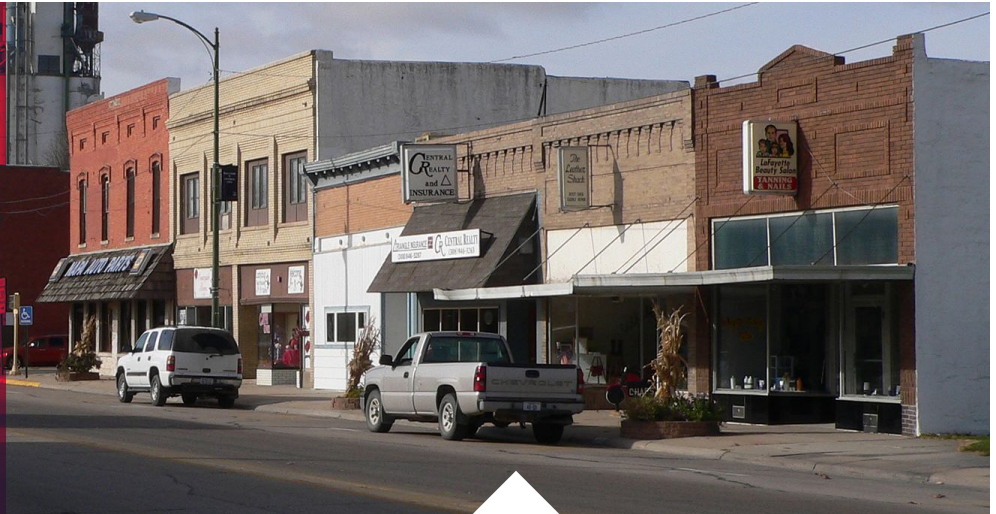
- Partnership with Lincoln Public Schools:
 - The program is designed to provide pathways for the continuum of learners.
 - Over 700 students experiencing agriculture and natural resources as part of their required curriculum through integration of FEWS²— science, math, social studies, visual arts, world language, communication.
 - Starting Fall 2022, 11th- and 12th-graders will begin to enroll in early college credit classes offered by CASNR, engage with IANR faculty on experiential learning, and connect with career and academic program coaches and mentors to further their interest in agriculture.

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EXTENSION

2021

Impact Summary



Engaging with Nebraskans wherever they are, connecting them with the resources, research and innovation of the University of Nebraska.

In 2021, many Nebraska communities faced uncertainty in providing basic infrastructure necessities to residents due to impacts of the COVID-19 pandemic. While the federal government provided relief, many Nebraska communities were unaware that funds connected to the American Rescue Plan Act (ARPA) were available to help with infrastructure projects—and time was running out to complete applications. Extension—**with a reach across Nebraska like no other organization**—stepped up to help. Collaborating with the Nebraska Department of Administrative Services, Extension educators contacted **more than 90 communities that had not applied for ARPA funds**. Educators rolled up their sleeves, and one-by-one, found the village clerks, treasurers or mayors needed to ensure applications were completed. In the end, **all but 18 of Nebraska's 531 communities** claimed the available funds. The Nebraska Extension effort added over \$1,628,641 for community improvements within the state.

The Extension team is a vital part of the new Center for Ag Profitability (CAP), launched in 2021 and based in the University of Nebraska-Lincoln Department of Agricultural Economics. CAP facilitates faculty research, conducts Extension outreach related to agricultural profitability and farm and ranch management, and trains undergraduate and graduate students — all to support informed decision-making in agriculture. **Extension and CAP are already making an impact.** Guy Mills, a fifth-generation farmer in Ansley, is passionate about the well-being of agriculture and encourages young people to pursue careers in ag. He was part of a video series produced by the Center for Ag Profitability to teach grain marketing in high schools. Mills advocates for more business knowledge in operations and has praised the Center for its **management resources and programming for beginning farmers**. “I would like to commend the Ag Econ department for expanding their efforts to increase the profitability of production agriculture, which will help the rural economy,” he said.



Across 8 program areas and 93 counties, Nebraska Extension continues to build on sound accomplishments and innovate for the future.

From youth, to communities, to agriculture and food, Nebraska Extension looks forward; facing the grand challenges and improving the lives of Nebraskans.

The impacts here give a glimpse into the accomplishments of 2021 that have made a difference for lives of Nebraskans. To learn more, visit: extension.unl.edu/impact



2,650

Nebraska high-schoolers statewide who took part in Next Chapter Nebraska, a college-readiness program delivered through Nebraska 4-H to help students prepare for and succeed in college.



19,000

Nebraska children across the state reached through 4,000 childcare providers who took part in professional development offered by Nebraska Extension.

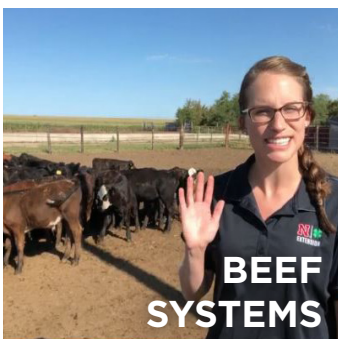
112,000

Page views at cap.unl.edu, for resources related to crops, livestock, finance, succession, ag policy and more.



350+

Nebraskans who completed a food safety course in response to the new Nebraska Cottage Food Law.



\$26K

Average amount participants said Beefwatch webinars were worth per year to their operation.



400+

Elected and appointed county officials in Nebraska who have grown in their leadership capacities through participation in the NACO Institute of Excellence.

156

Certified pollinator habitats established in 22 counties statewide, with 77 percent increasing their plant abundance and biodiversity.



\$12.7M

Total value of Soybean Management Field Days to those who attended in 2021.



UNIVERSITY of NEBRASKA-LINCOLN

**Agricultural Research Division <https://ard.unl.edu>
Supporting the Science to Ensure Resilient Food Systems and a Healthy Global Future**

2021: Another Record Year for IANR Research - The Agricultural Research Division (ARD) faculty and their teams continued their upward trajectory in securing research funding and creating impacts for the state of Nebraska and beyond despite the pandemic. IANR teams were awarded \$64 million in externally-sponsored research grants and contracts for the 2021 fiscal year. This is the highest amount in research awards that IANR has received in a single year, topping the institute's previous high of \$59.9 million in 2020. Dollars awarded for sponsored research have increased in IANR at an annual rate of 4.8% since fiscal year 2012 and the number of active externally-sponsored awards increased to over 470 during the 2021 fiscal year. About 80% of the funding came from federal agencies, including the USDA, National Science Foundation (NSF), Department of Energy (DoE) and US Department of Health and Human Services (DHHS). Industry partners, state agencies and commodity boards contributed to 20% of the total funding. Some key of the key sponsored projects included:



- \$6 million from NSF to lead a four-institution team to study how changing waterways impact ecosystems on regional and national scales.
- \$3 million from DoE for the development of novel commercial farm-field networks to quantify and understand greenhouse gas emissions from agricultural bioenergy feedstock production.
- \$3 million from USDA to support development of high intensity sites for collection of new measurements of plant characteristics (phenomes) through imaging and UAV technologies, and enhance understanding of the connections of genomes to phenomes with focus on maize and wheat.
- \$1.2 million from DHHS for development of automated computational tools for studies of carbohydrate metabolism in the gut microbiome aimed at improved human health through personalized nutrition.
- \$1 million from USDA to establish a scalable framework for next-generation variable-rate applications of water and nutrients in agriculture to enable real-time accurate decision-making, efficient water use, reduced environmental impacts and sustained food and energy production in the corn belt.
- \$1 million annually to Nebraska through the USDA/ARS budget as part of a 3-state study of rangeland precision livestock management. Led by IANR faculty and based at the Gudmundsen Sandhills Laboratory in collaboration with scientists at the US Meat Animal Research Center.

Development of the Nebraska Integrated Beef Systems (NIBS) Hub – Significant progress continued in 2021 in development of the Nebraska Integrated Beef Systems (NIBS) Hub. The NIBS Hub serves as a platform for convening faculty from across the UNL



community and the tripartite mission of IANR to address opportunities and issues important for the future of beef production. An important aspect of development over the last few years has been the collaboration that has formed between John Pollak, as Coordination Lead, with the directors of the Center for Grassland Studies (Walt Schacht) and the Center for Resilient Agricultural Working Landscapes (Craig Allen). Under the shared leadership of John and Walt as co-chairs, innovative approaches were used to form a Faculty Committee (FC) and an External Advisory Committee (EAC) with representation across the broad scope of a Beef System from natural resources and landscapes to the product, the consumer and the general public. Members of the FC and Hub leadership engaged with ABN leadership early

in 2021 and participated in a series of virtual roundtables hosted by ABN. Those discussions led to identification of environmental footprint and carbon cycles/sequestration as issue areas of emerging importance to our stakeholders. The NIBS Hub platform was used as a way to convene faculty broadly into a working group to determine what relevant research has been completed and is underway, and what IANR is uniquely positioned to contribute going forward. A NIBS Hub Workshop was held in October at which a 22-member EAC was introduced (with a standing Co-chair spot for ABN) and an initial report from the carbon working group was presented.

Protecting and Securing our Food Systems – IANR faculty are not only uniquely capable of taking integrated, holistic approaches to the science and solutions necessary for resilient food systems, but have the potential to also develop integrated, science-based approaches to protect and secure those same food systems through surveillance and early detection of plant and animal diseases, or of breaches to food processing platforms and agricultural databases. The partnership of the National Strategic Research Institute (NSRI) and IANR gained significant momentum in 2021 aimed at biosecurity of agriculture and food systems. NSRI established a university system-wide faculty fellows program and there were 10 IANR faculty in the inaugural class of 74, including directors of the Food Processing Center, Center for Plant Science Innovation, National Drought Mitigation Center, Nebraska One Health, Biotechnology Center, Center for Advanced Land Management Information Technologies, and Center for Resilient Agricultural Working Landscapes. In September, a new Collaborative Biosecurity Laboratory was opened by IANR and NSRI in the Ken Morrison Life Sciences Research Center on East Campus. Also this year, Dr. Josh Santarpia (NSRI Research Director responsible for the new Collaborative Biosecurity Lab) and Dr. Neal Woollen (NSRI Research Director responsible for the new Fellows program) became adjunct faculty members in the Department of Biological Systems Engineering and the School of Veterinary Medicine and Biomedical Sciences, respectively.



Nebraska College of Technical Agriculture

“NCTA – Small Campus. BIG IMPACT”



NCTA focuses on workforce development for the agricultural industry. Even during a global pandemic, NCTA is able to safely provide experiential learning with on-campus classes, travel teams and public events. Unique, work-based experiences in 2- or 3-year programs launch our Aggies to successful careers or further academic degrees. ~ Dean Larry Gossen

Highlights

- NCTA received \$3 million for deferred maintenance from 2021 Legislative appropriation to the NU system. Upgrades include updating the Library Resource Center, improve the greenhouse entrance and cooling system, expand welding area into the current facility maintenance shop in the agricultural mechanics building (1935), pave all campus streets and repairing sidewalks, and new lighting in the Livestock Teaching Center and indoor arena.
- Plans are underway for renovating our current student union to create an upgraded Student Activities and Success Center. This addition will allow us to move our dining facility, fitness center, and some offices into a modernized building with ADA accessibility.
- Continuing deferred maintenance meetings have identified over 50 additional projects including updating all lighting on campus, remodeling the Frontier County Extension office, new roofs on all residence halls, addressing heating issues in the Education Center, updating many farm facilities, and a new garage at the Dean’s residence.
- Upgrades done in 2020-21 included a \$2.1 million replacement of steam tunnels across the campus, painting and windows replaced at Dean’s Residence, replaced windows in the West Traditional residence hall (built in 1942), and added drainage and sidewalk north of the Student Activities Building.
- The generous gift from David and (the late) Sande Scholz of 2147 acres of ranch land in Hayes County have been put to use as a new learning laboratory. The Ralph and Mabel Leu Memorial Ranch has an updated corral, some new fences, and houses our herd of both fall and spring calving cows. We continue to work on plans for expanding our educational offerings for our students.

Aggie News

- NCTA began the Fall semester on August 23 with an estimated 232 full time and 30 part time students.
- Competitive teams which travel on the collegiate level are popular at NCTA. These include Livestock Judging, Crop Judging, Ranch Horse, Aggie Rodeo and Shotgun Sports. NCTA has the only collegiate Stock Dog Team in the nation which competes in public trials, including nationals in Wyoming, and National Western at Denver.
- NCTA is a regional site for district FFA events several times a year, hosting nearly 400 FFA members and ag advisors per activity for chapters from Districts 9 and 11.
- The Agribusiness club is operating the Aggie Store located on the first floor of Ag Hall. The new location is accessible to the public and campus tours regularly end up purchasing some “Aggie Swag”.
- “Discovery Days” are popular campus open house opportunities. Even during the pandemic, these days have drawn between 60 and 100 potential students and their family members. Upcoming Discovery Days are March 1 and April 11.



Nationally recognized

- Wallet Hub named NCTA a Top 2-year College for career outcomes, based on 10-year post-graduate earnings for the second year in a row.
- Dan Stehlik, agricultural mechanics lecturer, was recognized as one of six regional winners of the Outstanding Postsecondary Agriculture Program Award from the National Association of Agricultural Educators in December in New Orleans.