



IANR

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

**Year in Review
2018**

Distributed January 16, 2019

College of Agricultural Sciences and Natural Resources (CASNR)

It is Definitely our Time:

The College is in a remarkable position to leverage our positive momentum to be the leader in defining the future of agriculture and natural resources education for our global society; while being Nebraska's 21st Century College of Agricultural Sciences and Natural Resources where everyone challenges themselves, is inclusive, asks bold questions, co-creates and is optimistic about the future.

Continued Enrollment Growth Aligned with Career Opportunities:

We kicked off the 2018-2019 academic year by welcoming our largest incoming class of first-time freshmen and transfer students. The combined enrollment for the College's undergraduate, graduate and professional programs increased again this year with a total enrollment of 3,199, which is a 3.4% increase from the previous academic year and the largest enrollment in the history of the College.

- Total undergraduate enrollment of 2,422 represents a 3.8% increase from last year with 445 incoming first-time freshmen and 187 transfer students.
- CASNR had the highest first-year to second-year retention rate among the colleges at UNL for the 2017-18 academic year. Over 90% of Spring 2018 eligible undergraduate students enrolled for the fall semester, which reaffirms the success and importance of our retention programming.
- Welcomed over 100 international students. As part of our incoming class, 50 students from Rwanda joined the CUSP program and 50 transfer students from Northwest Agriculture and Forestry University (NWFU, China) started their fourth year of the 3+1 dual degree program in Food Science and Technology.
- 724 (+3.4%) CASNR graduate students working side-by-side with faculty recognized worldwide for innovation and creativity and 53 (+8.2%) students in the joint University of Nebraska-Lincoln and Iowa State University Professional Program in Veterinary Medicine.

Creating Transformative Educational Experiences:

- **Students as Co-Creators of their Learning:** Through this initiative, CASNR students partnered with a team of faculty representing six disciplinary areas to develop a new interdisciplinary capstone model. This effort represents a new model in course creation, student innovation, teamwork and investigative learning.
- **Collaborative Learning:** Partnered with the Daugherty Water for Food Institute to offer one of the first upper-class learning communities; one of the unique features of the SEEDS Learning Community is bringing together learners from across disciplines and Colleges to explore the grand challenge of global food security through transdisciplinary and experiential learning.
- **Leading the Way in Graduate Education:** In response to a national priority to rethink graduate education, we collectively developed a vision and aligned a strategic framework to transform IANR graduate education.
- **Global Connections and Partnerships:** We are a global community of learners with students, staff and faculty from all over the world, we offer education pathways to extend learning beyond Nebraska, and have a global network of over 20,000 living alumni that are doing amazing things. The new 3+1 dual degree program with NWFU is the first of its kind in the world and provides an excellent opportunity for students to learn and engage with world leaders in Food Science from both institutions.
- **Power of our College Community:** We believe in the power of every person and have a commitment to giving back to Nebraska. An example of this is the Nebraska Human Resource Institute (NHRI), which is a one of a kind program as the only strengths-based leadership mentoring program in the country, and the Department of Agricultural Leadership, Education and Communication is home for this university-wide program. Through this program, 180 students at UNL serve as mentors to 180 Lincoln Public Schools students that have demonstrated leadership potential for a total of 360 students and 180 investment relationships annually. Our university community is also having an impact through service learning. Students enrolled in ALEC 102 - Interpersonal Skills annually contribute over 14,000 hours of service learning to our Nebraska communities.



CEHS Year in Review

CEHS by the Numbers

2779 Undergraduate Students

1,236 Graduate Students

Over 50,000 Alumni

1057 Degrees Awarded

More than 500 Scholarships Awarded

New opportunities for Nebraska students

The Teacher Scholars Academy is now recruiting its first cohort of 40 incoming freshmen in teacher education; funded with a generous donation from the Scott Foundation, successful applicants will qualify for a four-year full-tuition scholarship plus an additional stipend each year towards room and board. You can find more information at cehs.unl.edu/cehs/teacher-scholars-academy

The NebraskaSTEM leadership development program (funding from National Science Foundation) is paying tuition and fees for 15 rural Nebraska elementary teachers to complete a Masters Degree specializing in teaching science, technology, engineering and mathematics. The teachers will complete their four semester program in August 2019.

Twenty-four students from the Hospitality Restaurant and Tourism Management program were invited as hospitality interns with the Masters Tournament at the Augusta National Golf Club. Under the supervision of Shannon Rowen, we've already learned that a Nebraska contingent will be invited again this year.

A few examples of Research and Extension that matters for Nebraska

Researchers from the Nebraska Center for Research on Children Youth Families and Schools partnered with school districts in Auburn, Beatrice, Boone Central, Centura and Grand Island to create and evaluate after school programs.

The Nebraska Center for the Prevention of Obesity Disorders won a Grand Challenges Exploration grant from the Bill and Melinda Gates Foundation.

Surin Kim from Textiles Merchandising and Fashion Design and her colleagues were awarded an entrepreneurship grant from the USDA for a program that partners high school students with rural business owners.

Yiqi Yang is leading research on converting poultry feathers into marketable textiles.

Examples of other honors

Dipti Dev was recognized with an Early Career Award from the National Institute for Food and Agriculture for her research and extension on nutrition in young children

Dipra Jha was invited to deliver the Guru Series Lecture in Shoonlini University, India

The Family Financial Planning program in Child Youth and Family Studies was ranked #1 in the nation by Top Accounting

Yan Xia of Child Youth and Family Studies was awarded a Fulbright Chair in China for 2018-2019, and Andrew Zimbhoff of Textiles Merchandising and Fashion Design was also awarded a Fulbright for study in Brazil.

Agricultural Research Division

Supporting the Science to Ensure Resilient Food Systems and a Healthy Global Future

The Agricultural Research Division is dedicated to the support of Teams and Centers executing the innovative science that propels the University of Nebraska to a global leadership position in food security, and partnerships with the private-sector to create translational value and meet workforce needs, thereby fueling the economy of Nebraska. Towards those aims, ARD Faculty Teams continue to leverage the critical state and institutional support that they receive to achieve success in an extremely competitive external funding environment. Expenditures from externally-funded IANR research have increased by >20% from FY14 to FY18 to a new high of \$54.5M. Externally-sponsored research expenditure per faculty FTE has again reached an all-time high of >\$181,000.

The Nebraska Integrated Beef Systems Initiative (NIBSI) –

This Initiative leverages expertise and resource capacity across the state, and creates new collaborations and partnerships, to firmly establish Nebraska and the University of Nebraska as the epicenter of integrated Beef Systems programming. The NIBSI team continues to execute a 5-yr plan developed with \$1.5M in IANR support, and a \$1M grant from the federally-funded Foundation for Food and Agriculture Research, to study improved land use efficiency through integrated beef systems. Dr. John Pollak, former Director of US MARC, was brought onboard in August to lead coordination of NIBSI towards even broader collaborations and stakeholder partnerships.

The National Institute for Antimicrobial Resistance Research and Education (NIAMRRE) –

In July of 2018 UNL was named a founding partner in establishing the NIAMRRE along with Iowa State University, UNMC and the University of Iowa College of Medicine. Momentum of current collaborations of UNL and US MARC will be leveraged to



Nebraska Today
@NebToday

Following

"A big deal": #Nebraska U. is partnering with @IowaStateU, @unmc and @uiowa on a new national institute addressing antimicrobial resistance. bit.ly/2JYfYWq #UNL



Nebraska partners to fight antimicrobial resistance

The university will help lead a new national institute addressing antimicrobial resistance, an increasingly urgent global public health concern, the As news.unl.edu

understand the dynamics of antimicrobial resistance in agricultural systems and surrounding landscapes, and to develop methods to reduce the need for antimicrobials in livestock systems through early diagnosis and precision management. Collaborations of UNL, US MARC and clinicians/scientists at UNMC will create unique teams to take One Health approaches to ensure improved animal, human and environmental health. The support of Nebraska stakeholders was critical to the establishment of the NIAMRRE and stakeholder partnerships will be essential in achieving future goals.

Translational Plant Sciences –

ARD faculty working in the plant sciences have a unique drive for not only understanding fundamental mechanisms through discovery research, but how

technologies to maximize the production of nutritious discovery of two new plant-Acid for its Institutional origins, for translation into new bio-continue to compete success is our part of a \$104M increase the oil content of sorghum.

Introducing...
Nebraskanic Acid
AMA (17R,15Z,18R)-7,18-dihydroxytetraacosai-15-monoenoic acid

Molecular structure

1 OF 2 major fatty acids discovered in vegetable oil for the first time in decades

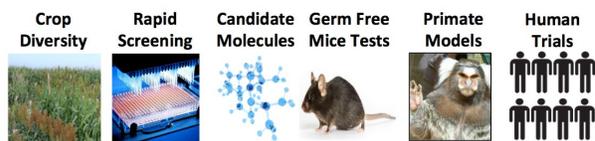
Named for the state of Nebraska by Husker biochemist & co-discoverer Ed Cahoon

A fatty acid found in the seeds of the Chinese violet cress
AMA Orychophragmus violaceus

those discoveries can be translated into new breeding strategies, smart efficiencies in water and fertilizer use, and food, new biofuels and bioproducts. The based fatty acids, one named Nebraskanic is the first in decades and has the potential lubricants. These translational approaches effectively for federal funding, a recent DOE grant led by the University of Illinois to

The Nebraska Food for Health Research Platform

Identifying food molecules with clinically proven effects.



A Research Pipeline Aimed at Target Disease and Health Outcomes

Nebraska Food for Health Center



The Nebraska Food for Health Center (NFHC)

The NFHC, located in the Food Innovation Center at NIC, has implemented a high-throughput, robotic screening system to identify unique plant-based components that can be used to promote human health through dietary modulation of the gut microbiome, and inform new-age breeding programs to add value to Nebraska crops. The first crops in the pipeline include corn, wheat, sorghum and edible beans. Five new faculty positions for the Center have now been filled, including a Gastrointestinal Microbiologist, a Structural Glycobiologist, a Protein Chemist, and two Computational Biologists.

AG BUILDERS HIGHLIGHTS - 2018

INNOVATIVELY EMPOWERING NEBRASKANS TO BE SUCCESSFUL TODAY AND TOMORROW

Through innovative programming, Nebraska Extension strives to empower Nebraskans to achieve their goals for their lives, businesses and communities. These programs demonstrate the meaningful impact Nebraska Extension is having in local communities and statewide. To learn more, visit: extension.unl.edu/impact.



TESTING AG PERFORMANCE SOLUTIONS (TAPS)

Nebraska Extension is taking a new spin on crops programming by turning it into a competition. Through the **Testing Ag Performance Solutions** program, growers compete for the most profitable, highest water and nitrogen -use efficiency, and the greatest grain yield. Working with more than 20 growers, this crop modeling program allows farmers and industry professionals to join researchers in finding the most effective ways to grow corn and sorghum. Throughout the competition, data is collected to identify practices that increase efficiency without sacrificing profitability. Nebraska farmers benefit by seeing real changes to their operations without the risk to their own operation.

NEXT CHAPTER

As part of the Nebraska Extension mission, we continuously look for new ways to help youth succeed. Starting in the 8th grade, **Next Chapter** scholars engage in events, where they participate in career exploration, develop research skills, and experience curriculum that will help them transition to and succeed in college. This unique program meshes college and career readiness programming with traditional 4-H programs and activities to help students make a successful transition to college. Because of the program, over 2,000 youth have been pre-admitted to the University of Nebraska, helping solidify their future success as Nebraskans.



SENSI-PLATE

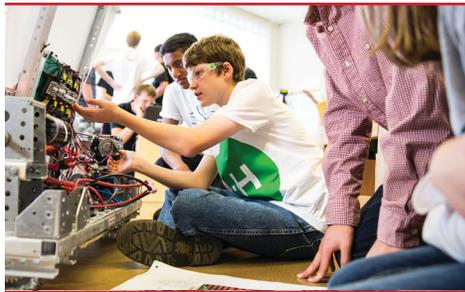
Nebraska ranks 5th nationally in childhood obesity; this is one statistic that Nebraska Extension is helping to change. **Sensi-Plate** is a new program measuring a child's food consumption electronically. Developed in collaboration with the College of Engineering and the Raikes School of Computer Science, the plate serves as an objective method to evaluate the impact of childhood obesity prevention programs. Working via WiFi and Bluetooth technology the plate interacts with smartphones to automatically monitor, measure and store food intake allowing researchers to better understand how and what youth eat. This helps create better programs aimed at fighting obesity with our state's youngest audience, setting them up for a lifetime of healthy habits.

PROSPERITY COMMUNITIES

Unlike many rural communities, Valentine, Nebraska is growing and thriving, thanks in part to **Prosperity Communities**, created by Nebraska Extension and supported through funding from the Rural Futures Initiative. The program focuses on long-term success including main street renewal, community placemaking, affordable housing, economic diversification, high quality and affordable child care, and workforce development. Since 2016, Nebraska Extension has been working with Valentine and other communities to improve their future. Notably, University architecture students have helped Valentine vision a more livable community resulting in Valentine bringing leading placemaking experts to work with Valentine's main street redevelopment.



4-H YOUTH DEVELOPMENT



The **Connect the Dots** program reached 4,700 youth connecting career interested to college readiness to workplace opportunities.

BEEF SYSTEMS



Through the **Silage for Beef Cattle** conference, over 180 producers and industry professionals learned new strategies for silage production, leading to a \$10 per head increase in profitability.

COMMUNITY ENVIRONMENT



Food pantry participants brought home over 31,000 pounds of fresh produce grown with **Extension Master Gardeners**, providing over 10,300 servings of fruits and vegetables.

COMMUNITY VITALITY



Over the past three years, 123 new businesses started, with the help of the **Latino Small Business Program** and financial assistance from the Rural Enterprise Assistance Project.

CROPS AND WATER



Cover crop tour and workshops led to 100% of participants increasing their knowledge of the benefits of modifying cropping systems to improve soil health with a total estimated benefit of \$2 Million.

FOOD, NUTRITION & HEALTH



The **Eating Smart, Moving More** program significantly improved the lives of 1,500 participants through better eating habits and increased physical activity.

THE LEARNING CHILD



More than 6,500 adults, caring for over 78,000 children participated in Nebraska Extension programs focused on increasing their skills.

Across 7 program areas and 18 issue teams, 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 better.

The impacts here give a glimpse into the accomplishments of 2018 that will compound into the achievements of tomorrow.

To learn more, visit:
extension.unl.edu/impact

Nebraska College of Technical Agriculture (NCTA)

NCTA continues to excel at its unique mission within the University of Nebraska as an open access, two-year institution committed to providing career readiness and workforce development for Nebraska's agricultural industries. NCTA is in the process of developing a new five-year plan. While doing so, the college has conducted assessment of its progress during the past five years. Analysis of five-year trends show that NCTA has emerged as a national leader at accomplishing its well-defined mission:

1. **Enrollment** - Enrollment of full-time on-campus students increased every year since 2013. The cumulative full-time enrollment increase has been 28.5% during that time period. During the fall 2018 semester, NCTA experienced its highest enrollment in 23 years. In addition to increased on-campus enrollment, the college received authorization in 2017 to offer all courses and programs online. The college graduated its first online students in May 2017. The college also secured authorization in 2017 from the federal government to enroll international students. NCTA enrolled its first international students, in partnership with CASNR, for a short-term training program in 2018.
2. **Budget** - NCTA financial health strengthened every year during the past five years, improving from an annual deficit of \$664,000 in FY14 to an annual surplus of \$302,000 in FY18. To improve its financial strength, NCTA developed and implemented a transparent, mature and inclusive budgeting process.
3. **Student success** - NCTA faculty and staff have been highly effective at creating successful students. The following external, national assessments from 2017 and 2018 provide some evidence of the effectiveness of NCTA programs, policies and procedures:
 - a. In 2018, Forbes Magazine ranked NCTA as the #16 two-year trade school in the United States based on graduate success, affordability, completion success, and student experience.
 - b. Using 10 years of U.S. government data such as tax records, as reported in IPEDS and College Scorecard, Zippia ranked NCTA as the top two-year college in Nebraska for graduate earnings (2018 and 2017) and the #11 two-year college in the U.S. for graduate earnings (2017).
 - c. Zippia ranked NCTA as the top two-year college in Nebraska for graduate employment rate (2018 and 2017) and the #7 two-year college in the U.S. for graduate employment rate (2017).
 - d. In 2017, WalletHub.com ranked NCTA as #17 among U.S. community colleges as a result of assessment in three categories: career outcomes, education outcomes, and cost and financing.
 - e. NCTA student technical competence was rated as exceptional when compared to students at other two-year colleges. NCTA placed as the #2 two-year college at comprehensive national academic competitions (NACTA) in 2018 and 2017.
 - f. NCTA was named as a Top 50 College by *Community College Week* based on number of graduates from two-year programs in Agriculture, Agricultural Operations and Related Sciences.
4. **Academic programming** - NCTA has been charged by the Nebraska Legislature with responsibility for expediently responding to emerging workforce development needs in Nebraska's agricultural industries. In response, the college has implemented significant new academic programming during the previous five years including: center pivot irrigation technology, agricultural welding, poultry management, horse industry management, agricultural chemical applications, and dairy management.
5. **CASNR Partnership** - NCTA and CASNR have been strengthening collaborative partnership initiatives which have resulted in a significant increase in students graduating from NCTA and then transferring to CASNR to complete a bachelor's degree. Strategies employed to successfully increase the completion of a baccalaureate degree included: the implementation of a detailed articulation agreement including multiple degree plans for baccalaureate completion in four years; granting CASNR faculty status to selected NCTA faculty thereby allowing NCTA faculty to teach courses for CASNR credit on the NCTA campus; modifying NCTA general education courses to include the same course name and student learning outcomes as the analogous UNL course; implementing a "Link to Lincoln" agreement facilitating joint advising, visiting student status prior to transfer, and a multi-semester series of "transfer track" activities; and developing a reverse transfer agreement between the institutions.

These are just a few of the items on a very long list of recent accomplishments achieved by our faculty, staff and students, thanks to the direction, advice and support from Nebraska's agricultural industries. We appreciate your input!