

# University of Nebraska Lincoln Combined Research and Extension Plan of Work 2022-2026

**Status: Final**  
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## I. Plan Overview

### 1. Executive Summary

In the University of Nebraska-Lincoln (UNL) Institute of Agriculture and Natural Resources (IANR) we are all about people and the food, water and natural resources that sustain them. IANR innovation in research, teaching, and extension education places Nebraska on the leading edge of food production, environmental stewardship, human nutrition, business development, and youth engagement. Composed of the College of Agricultural Sciences and Natural Resources (CASNR), the Agricultural Research Division (ARD), Nebraska Extension, and the ARD and Extension components of three departments in the College of Education and Human Sciences; IANR is committed to growing a diverse and inclusive future of Nebraska's people, businesses, and communities. Strategic planning is integral to IANR's function as a land-grant institution, and it prides itself on working as an integrated system across the three mission areas. IANR strives to combine research, teaching and extension in a multidisciplinary, collaborative, and inclusive environment that encourages the best thinking and expertise from across the University and private enterprise to ensure Nebraska's competitiveness in a world of change and challenge.

Six communities of practice were formed in 2011. Faculty from across IANR departments and academic centers came together and focused on areas of strength that they felt the institution as a whole could build upon. In 2020 further integration of mission areas and disciplines launched in the form of IANR Hubs. Hubs facilitated an informal connection among people and units within IANR that further leverage Institute capacity to deliver on our mission. That type of bold collaboration and thinking is what was needed to propel Nebraska forward. We are striving to excel in these areas and invite collaborators and learners to become a part of the conversation. We welcome feedback, ideas, engagement, and support in our ongoing endeavor to make IANR a global leader in these key areas.

IANR Communities of Practice:

Computational Sciences

Drivers of Economic Vitality for Nebraska Healthy Humans

Healthy Systems for Agricultural Production and Natural Resources Science Literacy

Stress Biology

IANR Hubs:

Nebraska Integrated Beef Systems

Rural Prosperity Nebraska

Water and Integrated Cropping Systems

To ensure that IANR's priorities reflect the needs of the state's residents there is ongoing, two-way dialogue between IANR and the people of the state. In 2018 strategic two-way dialogue moved to a new, higher plane as Vision for 2025 was implemented to ensure Nebraska's competitiveness in a world of change and challenge. This visioning process was created to determine how IANR will contribute to the critical need of doubling the world's food supply in order to feed over 9 billion people; address the shifting climate and environmental conditions; respond to the increasing need for energy sources; and consider how to help increase economic income opportunities for communities and thus the long-term economic growth for Nebraska. In Nebraska, one in four jobs is directly tied to agriculture or agribusiness, and the state strives to increase job opportunities in this field of expertise. IANR informs and engages partners and clientele in our focus areas of IANR are food, fuel, water, landscapes, and people.

These five focus areas are representative of the societal challenge areas of the National Institute of Food and Agriculture (NIFA). For example, in the Nebraska planning process "food" represents the continuum of food to fork, which includes production, food security and hunger, childhood obesity, nutrition and food safety, and science/food literacy. Resilient Food Production and Ecological Systems represents the productivity and sustainability of all of our natural resources. Water is highlighted because of the importance of water to our agricultural and natural resource systems in Nebraska. Fostering Healthy and Productive People represents the well-being of children, youth, and families as they interact with their environment.

The Future of Rural Communities is a crosscutting thread in each of these five focus areas. In 2019, the IANR Vice Chancellor challenged all the Institute's rural community resources to explore how we could deepen our commitment, better articulate with how we work with rural communities and expand our impact. The importance was highlighted in 2020 by the launch of the Rural Prosperity Nebraska (RPN), an IANR led initiative that combines the strength of campus-based theory with community-based practice. Furthermore, RPN will engage people, organizations, businesses, agencies and communities statewide to facilitate a holistic and engaged approach to rural prosperity. RPN focus areas include food systems, people attraction and retention, place making, entrepreneurial businesses, leadership and community engagement.

Agricultural producers and other stakeholders have faced significant environmental and economic challenges in recent years including flooding, extreme weather events, and an economic downturn have taken their toll on Nebraskans and their communities. Research-based information from across multiple disciplines is helping producers mitigate weather extremes, reduce input costs, increase efficiencies, improve productivity, resiliency and sustainability of farm operations. Agricultural System Economist educators are serving to enhance our capacity to complete this work.

Through the dedicated and innovative research of our ARD community across IANR, we continue to build on our strengths to support new technologies and discoveries, translate basic to applied science, and use transdisciplinary systems approach to address complex problems related to the grand challenges of global food security, resilience and healthy humans under changing climate and declining natural resources. Across the broadly diverse expertise of our Faculty, and through their strong collaborative spirit and the support of our Stakeholders, we are effectively applying Team Science 'from Healthy Fields and Landscapes to Healthy Communities'. We understand that Big Data is key for solving many of these complex problems and for moving IANR to the next frontier in research, discovery, innovation, and impact. ARD is being instrumental in contributing to IANR and UNL's efforts in developing the foundation for "Big Data" architecture in agriculture. IANR is also committed to creating a diverse, equitable and inclusive environment and has created an IANR task force to address this issue and participates in a campus wide efforts to address this at the UNL and community levels.

Engagement with Nebraska government leaders, stakeholders, representatives of organizations, faculty and students/youth continue. Listening sessions, surveys, departmental reviews, and input from advisory groups maintain public involvement which is critical to this vision's success. IANR identified eleven engagement zones in 2019 and hired engagement zone coordinators in 2020 to elevate engagement internally and externally. Engagement zone coordinators will foster employee success in Extension programming, build strong stakeholder engagement and connect local people to the University of Nebraska-Lincoln.

In addition to focusing on priority areas, IANR strives to meet the needs of its Nebraska citizens through engagement in internationally recognized science and education. This mission is being met by: advancing knowledge along a continuum from fundamental research to application; engaging learners in education that addresses the current and emerging needs of the state's residents; and teaching tomorrow's professionals through formal and nonformal learning settings. The ongoing cultivation of public-public and public-private partnerships helps make our mission achievable.

The importance of integrated missions is evident in the continued upward trajectory of grant/contract dollars received, the rigor/impact of educational programs delivered in both formal and nonformal settings, and in the placement of graduates in careers.

## 2. FTE Estimates

Year	1862 Extension	1862 Research
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2022	235.0	163.0
2023	237.0	165.0
2024	239.0	166.0
2025	240.0	167.0
2026	240.0	167.0

## II. Merit / Peer Review Process

Faculty driven Interest groups (beef systems; 4-H youth development; the learning child; rural prosperity; water and integrated cropping systems; food, nutrition and health; community environment, reaching one, reaching all; and disaster education), update their team plans annually using stakeholder input and evaluation results from delivered programs. Also, every faculty member with a research appointment in the Agricultural Research Division (ARD) has a current approved peer-reviewed project that defines his or her area of research investigation. The peer review process for research projects includes the Unit and (if applicable) Research, Extension and Education Center director, at least two faculty members with relevant expertise, and an Associate Dean of ARD. Following review and acceptable revision (if necessary), the project outline is forwarded to USDA-NIFA for inclusion in the REEport database.

Another review process, which combines merit and peer review, is the annual review of research and extension proposals by state commodity check-off boards. Proposals selected for funding address the most significant problems facing the producer members and clearly communicate the research's relevance to user needs.

Academic units (subject matter departments and research, extension and education centers) complete a comprehensive six-year review to ensure program quality and relevance. Teams of three to six external panel members and two or three faculty panel members from other academic units conduct these reviews. The review team assesses the work of the academic unit to ensure that programmatic efforts and research focus on Nebraska's most critical needs. The review team completes its assessment by the development of a report that helps the administrative unit focus its work for the next six years. It is the responsibility of the IANR Deans to assist the unit administrator and faculty to accomplish the goals identified by the unit, as a follow-up to the review process.

Stakeholder input remains key to IANR success throughout the process mentioned above.

## III. Stakeholder Input

### 1. Actions to Seek

Ongoing input from stakeholder groups, e.g. advocacy, advisory, and commodity groups, keeps extension team plans current and relevant. Ongoing relationships with stakeholder groups such as the Agriculture Builders of Nebraska (ABN) and Family, Youth and Community Partners (FYCP), Nebraska Association of County Extension Boards (NACEB), along with listening sessions led by IANR personnel and extension board reviews of local and regional programs, ensure that critical needs are addressed. Continuous listening processes ensure that the plan of work is reviewed and updated regularly. The accuracy of team plans is verified using the following methods:

- Extension interest groups meet regularly to assess their goals and progress made toward achieving them. These interdisciplinary teams include both faculty of academic departments who understand long-term trends and faculty located in extension offices who see, on a daily basis, the needs of Nebraska residents. Many of these faculty members of academic departments have joint research and extension appointments and can represent fundamental as well as applied research and extension education plans.

Interest Groups:

- Use monthly phone and/or video conferencing to coordinate programming.

- Consult with subject-matter department administrators annually to ensure that the issue team's goals are congruent with university department research and extension goals.
- Engage with their stakeholders to garner input to determine future plans.
- Refine programs to ensure that content goals support needs identified by stakeholders and demographic trends.
- Are coached by members of the Extension Leadership Team to enhance sharing and collaboration efforts.
- Additionally, extension-developed 'Impact at a Glance' reports are used by stakeholders to tell others of the impact/public value of extension and then seek input for programmatic direction. (Go to: <https://extension.unl.edu/impact/> to see "Impacting All of Nebraska" impact summaries). Annual "Impact at a Glance" reports are developed and are available online for each interest group. These reports are given to stakeholders, decision-makers and extension board members to help guide their advocacy efforts on behalf of IANR at the local, regional, and national levels.
- Agricultural Research Division faculty currently participating in multistate projects receive research funding through the multi-state research component of the federal formula funds. These projects are selected and approved by regional director associations because they are high priority needs identified for multistate activity.

## **2. Methods to Identify**

Nebraskans are engaged with their University. Research and extension's strategic relationships with local, state, and federal decision-makers is valued. Advocacy groups for subject matter, departments, research and extension centers, and extension boards are utilized to gather input. Following are examples of how research and extension address the needs of underserved and underrepresented populations.

- Agricultural Research Division programs related to human nutrition and healthy lifestyles were highlighted under the federal goals and key themes. The research results feed science-based information directly into Nebraska Extension programs that target underserved and underrepresented populations.
- Nebraska Extension has built a strong partnership with Little Priest Tribal College and Nebraska Indian Community College and recently hired an extension educator to focus on this population. Through this partnership, Native American teens have become more involved in outside activities and interact with youth and adults outside their schools. The University of Nebraska–Lincoln Native American Coalition (NAC) (<https://nativecoalition.unl.edu/>) builds relationships and partnerships between Nebraska Extension and Native American communities and organizations. The work of NAC helps Nebraska Extension staff work more effectively with Native American communities, builds bridges between tribal and non-tribal communities, facilitates community development and leadership in Native communities and brings Native American traditional worldviews, languages, cultures and histories to the University of Nebraska and non-tribal communities.
- The Expanded Food and Nutrition Program (EFNEP) and the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) supports Nebraska Extension's efforts to address health equity. Low-income families and youth (many are from the underrepresented populations) are engaged in direct education, virtual on-line experiences and community-based efforts to improve their diets and nutrition practices, stretch their food dollars further, handle food more safely, and increase their physical activity level.
- The College of Education and Human Sciences, Extension and the Nebraska Department of Education have undertaken a programmatic effort with targeted school districts to address needs of first-generation families. Programs focused on early childhood development, social-emotional health and rural wellness are a result of continued collaborations between the college and extension.
- A Scotts Bluff County extension educator addresses the needs of Hispanic and Native American youth by engaging middle and high school youth in after-school and community-based programs. In northeast Nebraska an Extension educator is connecting Nebraska Extension youth development programs with Hispanic and Native American families.
- Ongoing efforts to recruit and retain a more diverse pool of faculty that can serve as a gateway into underserved and underrepresented populations continue.
- Nebraska Extension is committed to ensuring access and opportunity for all Nebraskans to receive, and benefit from, our programming. Nebraska Extension offers "Navigating Difference (ND) Multicultural and Diversity Training and Intercultural Development Inventory (IDI)" professional development to faculty, staff and community members.

## **3. Methods to Collect**

In 2018, Nebraska Extension launched the Extension 2025 Strategic Priorities Planning Process. Nebraska Extension partnered with the University's Bureau of Sociological Research to conduct a statewide random survey of 10,000

Nebraskan's to determine how Nebraska Extension could most effectively meet their needs. These survey data are being used to determine program areas, staffing patterns, and programmatic outcomes. These data were supplemented by statewide stakeholder listening sessions designed to help identify extension strategic priorities for the next five years.

The Nebraska Association of County Extension Boards (NACEB) is comprised of 550+ members who serve as local stakeholders, connected with neighbors and community leaders, that provide continuous feedback to faculty and staff.

Extension is a partner with the 1994 land-grant institutions in our state. Extension and the Nebraska Indian Community College (NICC) have had a continuous partnership to support the implementation and management of tribal college extension programs in three different NICC communities. IANR extension faculty who work routinely with the tribal colleges serve as a conduit to move content and planning information between these entities. Research opportunities are also being explored with these colleges.

The Nebraska Panhandle has both recent and longtime Hispanic residents. An extension educator in the Scottsbluff area works with audiences and local planning groups to ensure a cross-cultural understanding. The program is in three parts: history of Mexican people in the Panhandle, cross-cultural communications, and formal education for audiences working with English language learners. This workshop is presented for public school educators, health professionals, students in education, health and human services employees, community leaders, chambers of commerce members, and companies. This is just one example of extension's engagement as a teacher for other organizations that seek increased understanding and involvement with all of our state's residents. In addition, Nebraska is working to increase the number of extension educators who can target diverse youth audiences. For example, a Spanish-speaking 4-H educator works specifically with underserved audiences in northeast Nebraska.

#### **4. How Considered**

Input from stakeholders is used to identify emerging issues for both research and extension, and to help set priorities. Stakeholders are also invited to provide input during the selection of administrators; for example, stakeholders serve as members of search committees for unit administrators, deans, vice chancellors, etc. Local stakeholders are invited to interview extension educators for positions located in their geographic regions.

Stakeholders expect IANR and its divisions of research, extension, and teaching to remain focused on critical issues facing Nebraska. They expect the land-grant institution to do cutting-edge work that is well regarded by the academy, has global impact, and is of value to Nebraska's residents and economy. Stakeholders recognize that programming priorities must be established. In 2020 two such large-scale listening session opportunities were facilitated for statewide input that was integral to framing the emerging Rural Prosperity Nebraska program area Hub.

## **IV. Critical Issues**

### **1 Resilient Food Production and Ecological Systems**

#### **Description:**

This program focuses on using basic and applied research in the life/agricultural sciences to generate knowledge critical to productivity in animal/plant agriculture, engineering, natural resources, climate, and sustainable energy. Research efforts span the basic/fundamental to the applied, relating to crop/animal systems, bioenergy feedstocks, and the natural landscapes in which these systems exist. Extension programs continue to transfer new knowledge to producers, helping them optimize productivity while ensuring financial and environmental sustainability of Nebraska's farms/ranches. Undergraduate/graduate education programs support research and extension efforts, ensuring a highly educated workforce essential to modern agriculture.

**Term:** Long

#### **Science Emphasis Areas**

Agroclimate Science  
Bioeconomy, Bioenergy, and Bioproducts  
Environmental Systems  
Food Safety  
Sustainable Agricultural Production Systems

## **2 Fostering Healthy and Productive People**

### **Description:**

This program focuses on using basic and applied research in the life/agricultural sciences to generate knowledge critical to maximizing productivity in food sciences; business/community vitality; entrepreneurship; healthy living; and development and success of young children, youth, and families. Research efforts span the basic/fundamental to the applied/translational, relating to nutrition/health, food safety, early childhood, youth development, family strengthening, and community capacity building. Extension programs will engage clientele by translating existing and new research to Nebraskans that optimize productivity and likelihood of success. These efforts will be supported by undergraduate/graduate education designed to contribute the state's long-term economic growth.

**Term:** Long

### **Science Emphasis Areas**

Education and Multicultural Alliances

Family & Consumer Sciences

Food Safety

Human Nutrition

Youth Development