

Strategic Plan for the Institute of Agriculture and Natural Resources

The University of Nebraska Institute of Agriculture and Natural Resources: Meeting the Challenges of a Changing World

Agriculture continues to be Nebraska's dominant industry, contributing more than \$14 billion to the economy annually and accounting for 25% of all employment in the state. Yet serious challenges lie ahead for our state, challenges that the University of Nebraska Institute of Agriculture and Natural Resources (IANR) is uniquely positioned to help our citizens meet.

- Court settlements, an ongoing drought and an increase in competing uses have all contributed to demands for water exceeding sustainable supplies.
- International trade challenges, increased global production potential, federal and state environmental regulations, increasing energy costs, higher labor costs and lower availability of workers and increasing consumer demand for abundant, safe and nutritious food supplies all contribute to the challenges faced by Nebraska's crop and livestock producers and agribusinesses.
- Nebraska's population has steadily shifted. Rural areas see declining populations relative to regional trade centers and metropolitan areas. These changes are leading to a decline in the number of young people in rural Nebraska. The impacts of these shifts on main street businesses and communities are dramatic in many cases.
- Over the next 30 years, Nebraska's 65-and-older population is expected to nearly double. In addition to the aging population, other demographic changes include the increase in minority populations in Nebraska. Nutrition, health and wellness, including obesity, are critically important to Nebraskans.
- Through a series of statewide listening sessions conducted from 2002 through 2004, citizens identified concerns about 1) the continued vitality of rural communities, 2) the availability of water for municipal, agricultural and recreational uses and 3) water quality.
- Public funding for institutions of higher education will continue to be challenging as competing demands for public monies will increase over the next several years. Competition among colleges and universities for a declining number of high school graduates in Nebraska has the potential to create additional budget challenges for the University.

For all these reasons, IANR must strategically evaluate its teaching, research and extension education programs to ensure that students and stakeholders are prepared to meet the 21st century's challenges successfully.

One component of our success will be our continued commitment to the core values identified by Chancellor Harvey Perlman in his September 2004 State of the University address:

The uncompromising pursuit of excellence—Excellence manifests itself in IANR's three mission areas: teaching, research and extension education. Faculty members in all three areas are recognized nationally and internationally for their work.

Stimulate research and creative work that fosters discovery, pushes frontiers and advances society—Scientific discovery and creative work are the foundations upon which we build. IANR's broad and deep research portfolio ranges from the most fundamental science in biotechnology and nutritional genomics to the applied research conducted at our research and extension centers and in cooperation with agricultural producers on fields across Nebraska.

Establish research and creative work as the foundation for teaching and engagement—The three missions of teaching, research and extension education intertwine in IANR. Research discoveries have long formed the foundation for extension education programs and are critical to classroom success.

Prepare students for life through learner-centered education—Faculty prepare students for life by placing responsibility for learning with the student. This relationship begins with faculty having an appreciation for students' learning contexts, emphasizing acquisition of basic learning skills and designing and facilitating instructional delivery. It culminates in assessing student progress based on learning objectives.

Engage with academic, business and civic communities throughout the state and the world—IANR has a long tradition of citizen engagement. IANR's Cooperative Extension Division has offices in 83 counties and delivers educational programs in all 93 Nebraska counties, many delivered in partnership with local agencies, organizations and businesses. The four research and extension centers located across Nebraska have resident faculty that engage with local constituents in research and education. Many IANR faculty engage with the international community through delivery of distance courses, the presentation of research results at national and international conferences and by hosting international scientists.

Create a University culture that values diversity of ideas and people—IANR recognizes that only by creating an environment in which employees may reach their full potential can we achieve excellence and create a culture that attracts and retains the best people.

**Institute of Agriculture and Natural Resources
Priority Goals 2005-2008**

Priority Goal 1: Redefine the College of Agricultural Sciences and Natural Resources to capture its breadth and diversity of academic programs and to ensure student success in the 21st century.

Relation to Core Values: This priority supports the UNL core values of preparing students for life through learner-centered education, commitment to an uncompromising pursuit of excellence and creating a University culture that values diversity of ideas and people.

Internal Actions:

- Based on results of market research in progress, determine whether or not to change the CASNR name and, if so, implement an integrated repositioning strategy
- Change the curriculum, develop new degrees and new programs:
 - Develop a Hospitality, Restaurant and Tourism Management program
 - Develop five year B.S. to M.S. degree programs
 - Pursue a joint educational program for Veterinary Medicine with Iowa State University
 - Expand the 2+2 degree programs with the Nebraska College of Technical Agriculture and community colleges
 - Extend educational opportunities through concurrent credit offerings to high schools
 - Enhance four-state collaborative programs in food safety, grassland studies, precision agriculture and community development with University of Missouri, Iowa State University and Kansas State University
- Increase the number of undergraduate and graduate students enrolled in CASNR degree programs
 - Reinvigorating recruitment and retention programs
 - Identifying and clearly articulating the unique programmatic aspects associated with CASNR programs
 - Promoting CASNR's unique small-college feel within a large university
 - Enhancing classrooms, teaching labs, equipment and campus aesthetics

- Elevating the roles of research and extension centers and NCTA in student recruitment
- Instilling a single campus philosophy by ensuring that East Campus is a part of every campus visit/tour for all prospective students
- Expanding Career Service interactions with academic partners and potential employers
- Increase the number of student scholarships and internship opportunities through
 - Engaging alumni
 - Interacting with stakeholders
 - Expanding philanthropic contributions

Timeline: 2005-2008

Development and implementation of successful new programs like the professional golf management program is ongoing. Discussions of the College name change have begun. Good faith negotiations for a cooperative contract to enact a joint educational program with Iowa State are commencing in 2005. A new development officer with the NU Foundation is starting in 2005.

Partners: CASNR alumni, NU Foundation, College of Education and Human Sciences, College of Business Administration, College of Arts and Sciences, Nebraska College of Technical Agriculture, Nebraska community colleges, high school counselors and administrators, Cooperative Extension Division, Agricultural Research Division, Kansas State University, Iowa State University, University of Missouri

Measures of Success: Increased enrollments in most majors. Stabilized enrollments in some majors. Increased scholarships and internship opportunities. New programs and specializations.

Priority Goal 2: Develop an integrated multi-disciplinary, multi-functional water resources program addressing Nebraska's needs that provides statewide, national and international leadership in water quality and quantity management in the next decade.

Relation to Core Values: This priority relates to a commitment to an uncompromising pursuit of excellence, stimulates research and creative work that fosters discovery, pushes frontiers and advances society, establishes research and creative work as the foundation for teaching and engagement, and engages with academic, business and civic communities throughout the state and the world.

Internal Actions:

- Conduct research and deliver extension education programs that will enable Nebraska agricultural water users to use water in ways that maximize water use efficiency and profitability, protect water quality, and meet regulatory requirements. Key elements of this effort include:

- Development of an improved understanding of basic plant, water, soil, and climate relationships.
 - Evaluation of alternative water delivery systems including sprinkler irrigation technologies and sub-surface drip irrigation systems.
 - Evaluation of alternative irrigation water management strategies for all irrigation system types and particularly for situations where deficit irrigation is necessary.
 - Development of adapted crop varieties, using either conventional breeding programs or genetic modification, that are more drought tolerant, perform well in deficit irrigation situations, or require less evapotranspiration for profitable production.
- Evaluate alternative crops that require less applied irrigation water or are adapted to non-irrigated production, that will fit into Nebraska cropping systems, and for which a market exists.
- Evaluate opportunities for shifting from irrigated to non-irrigated production or other enterprises that will maintain economic viability and sustainability for producers and communities.
- Develop decision-making support systems that enable producers, policy makers, financial institutions, and others to make critical decisions regarding crop production and water resources use.
- Enhance research and extension education programs that will increase the scientific knowledge base and public understanding of the occurrence, movement, and quality of groundwater; factors that impact the quantity and quality of surface water, the interrelationships between groundwater and surface water; and the ecology of Nebraska's groundwater and surface water systems.
- Develop research and extension education programs that analyze the water resource and economic impacts of existing or proposed public policies .
- Enhance research and extension education programs that enable Nebraskans to protect groundwater and surface water quality and respond to regulatory requirements.
- Enhance research and extension education programs that will enable communities and individuals to better understand and use appropriate technologies to protect the quality of drinking water supplies and to remove contaminants when drinking water standards are exceeded.
- Research-based information from IANR programs will be provided for individuals, groups, and decision makers that will enable informed decisions relative to use of limited water supplies and protection of water quality.

Timeline: 2005-2008

Water related research and education programs are ongoing. An integrated plan to develop a comprehensive water management program will be developed in 2005.

Partners: Natural Resource Districts, Nebraska Department of Environmental Quality, Irrigation Districts, public power entities, municipalities, U.S. Corps of Engineers, U.S. Bureau of Land Management, U.S. Environmental Protection Agency, Ground Water Foundation, College of Engineering and Technology, UNL Water Initiative, College of Arts and Sciences, College of Education and Human Sciences, College of Law

Measures of Success: Number of agricultural producers who change irrigation practices. Reductions in the average amount of irrigation water applied to crops. Reduced levels of contaminants in ground water. Better public policy decisions.

Priority Goal 3: Enhance rural economic opportunity and community revitalization efforts to create more opportunities for future generations, improve the quality of life and to attract talented and educated people to build their lives in Nebraska.

Relation to Core Values: This priority supports a commitment to uncompromising pursuit of excellence, stimulates research and creative work that fosters discovery, pushes frontiers and advances society, establishes research and creative work as the foundation for teaching and engagement, prepares students for life through learner-centered education, engages with academic, business and civic communities throughout the state and the world, and creates a University culture that values diversity of ideas and people.

Internal Actions:

- Provide a perspective for communities to prosper in a regional environment
 - Develop and deliver educational programs targeted to helping community leaders identify their roles within a regional economic system
 - Assist regions in identifying assets and how to best build upon those assets to build a stronger regional economy
 - Identify processes that will encourage regional networking opportunities
 - Assist communities in the application of technology to grow regional economies
 - Work with communities to identify and develop niche opportunities using assets from the communities in the area
 - Fully implement the community development minor in CASNR
 - Assist transitioning community businesses through the usage of Bizfind and other appropriate mechanisms
 - Assist communities who must network to maintain an infrastructure to support an aging population

- Enhance entrepreneurship in Rural Nebraska
 - Develop and fully implement the 4-H youth entrepreneurship curriculum
 - Expand student internship opportunities with new and emerging enterprises in rural Nebraska
 - Enhance entrepreneurial programs associated with the Food Processing Center and the Industrial Ag Products Center
 - Integrate entrepreneurial focus in the CASNR undergraduate curriculum
 - Encourage faculty entrepreneurship by supporting faculty spin-off businesses
 - Deliver educational opportunities through distance-delivered programs
 - Provide technical expertise for businesses through joint participation in Small Business Innovative Research grant programs
 - Teach entrepreneurs to explore global markets

- Develop the leadership potential of Nebraskans
 - Provide educational programs for community leaders through programs like the Leadership Plenty curriculum
 - Deliver educational programs for elected and appointed officials through the Nebraska Association of County Officials, the Nebraska Association of County Extension Boards and for Natural Resource District personnel

- Encourage value-added and new enterprise development
 - Develop research-based educational programs on agro-tourism and eco-tourism
 - Facilitate development and education to enable economic opportunities for niche markets in community-based food systems, specialty foods, new generation cooperatives, alternative livestock production methods and viticulture/winery production and marketing
 - Increase research and education on bio-based energy production through ethanol, bio-diesel, biomass and other uses of renewable energy sources
 - Enhance research and development of textiles and other products from renewable and recyclable resources

- Build human capital and enhance economic well-being of Nebraskans
 - Provide skills through the 4-H youth development program to make youth successful in the 21st century work force
 - Expand research and education programs to help make families successful in the work place and in the community

- Conduct research and deliver educational programs on obesity issues in Nebraska
- Provide educational programs for youth and adults on financial literacy
- Expand educational programs on life skills development for limited resource families across Nebraska
- Enhance wellness for all Nebraskans through research-based educational programs
- Research and educational programs focused on the impact of an aging population base in rural Nebraska and ways of managing the impact

Timeline: 2005-2008

Enhancing rural economic opportunities will be an ongoing programming thrust from 2005-2008. Youth development curriculum 2006, entrepreneurship development will be an ongoing program, leadership development programs have been initiated in 2005, value-added and new enterprise development programs will be expanded in 2006-2008

Partners: Nebraska Department of Economic Development, Nebraska Department of Agriculture, RC & D's, Nebraska Department of Labor, Nebraska Department of Insurance, Nebraska Health and Human Services System, Nebraska Business Development Center at UNO, University of Nebraska Rural Initiative, local economic planners, Lied Main Street Program, USDA Rural Development, Nebraska Association of County Officials, College of Education and Human Sciences, College of Business Administration, College of Architecture, Hixson-Lied College of Fine and Performing Arts

Measures of Success: Communities with capacity to grow will do so, elected officials will report they have better information and skills for decision making, Youth will be more employable and make informed career choices, reduced medical costs, community leaders will work together within a concept of regional cooperation

Priority Goal 4: Enhance research and scholarship to create new knowledge that addresses priority needs of Nebraskans and all people.

Relation to Core Values: This priority supports a commitment to uncompromising pursuit of excellence, stimulates research and creative work that fosters discovery, pushes frontiers and advances society, establishes research and creative work as the foundation for teaching and engagement and creates a University that values diversity of ideas and people.

Internal Actions:

- Faculty will become more grant competitive at the national level through focus on skill development
- New knowledge from research and creative work will be integrated in teaching and extension education programs for the benefit of Nebraskans
- All IANR faculty will be engaged in scholarly or creative activities
- New faculty hires will be focused in areas that address Nebraska's needs; either applied research that benefits Nebraska or basic research that is grant-competitive at the national level
- Faculty will be encouraged to develop and protect intellectual property
- A renewed emphasis will be placed on multi-state, multi-disciplinary and multi-functional programs that are team driven
- Increased emphasis will be placed on accomplishment reporting to enhance UNL's image at the local, regional and national level

Timeline: 2005-2008

Research and creative work is an ongoing expectation within IANR, thus it will encompass the entire timeline.

Partners: National Science Foundation, National Institutes of Health, U.S. Department of Agriculture, College of Arts and Sciences, College of Education and Human Sciences, College of Engineering and Technology, private and public funding organizations

Measures of Success: Nebraskans will report that research and creative activities are highly valued, increase in the quality and number of publications, increase in grant numbers and dollar amounts awarded, increase number of patents.

Priority Goal 5: Strengthen food security, food safety and nutrition programs to ensure that all Nebraskans have a secure and nutritious food supply that enhances wellness.

Relation to Core Values: This priority supports a commitment to uncompromising pursuit of excellence, stimulates research and creative work that fosters discovery, pushes frontiers and advances society, establishes research and creative work as the foundation for teaching and engagement and creates a University that values diversity of ideas and people.

Internal Actions:

- Add new programs on bioterrorism and biosecurity issues to ensure the health of the livestock and crop production sectors
 - Develop techniques to protect crops and livestock from production through processing and distribution systems
 - Deliver educational programs to all potential stakeholders
 - Enhance the diagnostic networks for crops and livestock diseases
 - Investigate creation of a Doctor of Plant Health degree

- Pursue collaborative programs with Iowa State University and joint program in veterinary medicine education
- Enhance food safety research and education programs
 - Expand research on pre-harvest measures to protect against pathogens in plants and animals
 - Build research and education programs with processors of agricultural products
 - Deliver educational programs for food service providers and purveyors
 - Increase basic research on the biology of pathogens
- Increase nutritional quality of foods
 - Support development of a nutritional genomics center and conduct basic research on bioactive compounds that enhance well being
 - Expand basic breeding programs to alter constituents in plants and animal products that make them more desirable and healthy
 - Increase research on lipid of metabolism in humans to lower LDL and overall cholesterol through dietary changes and nutraceuticals
 - Enhance research and education for individuals to move them from theory to practice in making healthy and culturally relevant food choices
 - Conduct basic research on food components as they relate to the incidence of cancer, heart disease, diabetes, obesity and allergies

Timeline: 2005-2008

Much of this work will span the 2005-2008 time horizon. Educational programs will begin in 2005; the Doctor of Plant Health decision will be made in 2005-2006.

Partners: University of Nebraska Medical Center, Kansas State University, Iowa State University, Nebraska Department of Agriculture, Nebraska Department of Health and Human Services, National Science Foundation, National Institutes of Health, U.S. Department of Agriculture, College of Arts and Sciences, College of Education and Human Sciences, youth-serving organizations, non-profit organizations, schools, Nebraska Restaurant Association, hospitals and other health care providers

Measures of Success: Reduction of food pathogen-induced illness, contributions to a reduction in obesity and cholesterol rates in Nebraska citizens, new products developed, business spin-offs, patents, and amount of grant-funding

SUMMARY:

As we focus on these goals and move the Institute of Agriculture and Natural Resources forward, partnerships will continue to be important. The inherently integrated nature of the teaching, research and extension education programs in IANR along with important collaborations across the university and state will serve all of us well.