Strategic Plan Summary

Ensuring Nebraska’s competitiveness in a world of change and challenge.

The Institute of Agriculture and Natural Resources (IANR)

How IANR is transforming Nebraska’s strengths into a successful, sustainable future.
The University of Nebraska Institute of Agriculture and Natural Resources (IANR) at UNL was created by the Nebraska Legislature in 1973 through the enactment of LB149. This legislation culminated more than ten years of discussion by state leaders, University officials and agriculture interests in Nebraska who were concerned that agriculture was not being given proper financial support, administrative access and prominence within the University — especially considering the unquestioned importance and contributions of agriculture and natural resources to the state’s economy and success.

By serving as a catalyst for collaboration and pivot point for progress, IANR will continue its leadership role for the University of Nebraska — providing the innovation, insight and inspiration needed to assure Nebraska’s competitiveness in a rapidly changing world.
Some key features that make IANR unique in the University of Nebraska system:

**Serving Nebraskans from border to border** Forty percent of IANR faculty and staff are located beyond the flagship campus—at four research and extension centers and at 83 UNL extension offices that serve all 93 Nebraska counties.

**Leading the state’s largest academic enterprise** IANR directs 4-H in Nebraska, the largest single academic enterprise in the state, with 135,000 youth being prepared for careers relating to science, engineering, technology and more. One in three age-eligible Nebraska youth participate in 4-H.

**Supporting Nebraska’s largest industry** The newly-approved School of Veterinary Medicine and Biomedical Sciences means IANR is committed to the next level of science and medicine needed to help Nebraska’s livestock sector thrive.

**Creating a “brain gain” for Nebraska** Historically, some 70 percent of College of Agricultural Sciences and Natural Resources (CASNR) graduates take their first post-graduation job in Nebraska.

**Attracting revenue to the University** The Agricultural Research Division is the leader among all entities at the University of Nebraska-Lincoln in garnering grants and contracts. Those earned by all of IANR account for nearly 38 percent of all grants and contracts earned at UNL.

**Building an international reputation for excellence** IANR scientists are some of the most cited agricultural researchers in the world over the past decade—ranking ninth among U.S. universities.

**Providing an impressive return on investment** IANR’s return on state tax dollars invested in it is 15 to 1—conservatively—according to an independent study.

**Protecting and sustaining natural resources** The interdisciplinary School of Natural Resources is devoted to effective, appropriate and sustainable use of natural resources through cutting-edge research, teaching and outreach.

**Helping Nebraskans make better choices** IANR research and education helps Nebraskans prepare safe, nutritious meals, become even better parents, live healthier lifestyles and contribute to the long-term success of their hometowns.
ACCOUNTABLE TO NEBRASKANS.

Our Vision: To serve Nebraska by providing internationally recognized science and education to assure Nebraska’s competitiveness in a changing world.

Our Goal: To lead initiatives that position the University as the premier source of the research (basic and applied) and talent required in meeting the needs of Nebraska in food, water, renewable energy and health — and doing so in a sustainable manner.

Our Objectives: To fulfill this vision and achieve this goal, UNL/IANR has identified the following objectives:

Achieve world-class excellence while focusing on Nebraska’s success At IANR, our eye is always keenly focused on serving the best interests of the people of this state. And since leadership in crop production, livestock production and abundant natural resources are key strengths of Nebraska’s economy — and thus, the foundation for future success — IANR is the logical pivot point for the research, discovery, innovation and application that will enable Nebraska to continue to realize its unique potential and capitalize on the significant opportunities that stand before us.

The strengths and opportunities of Nebraska itself are reflected in the priorities of IANR:

- The life sciences, from molecular to global systems
- Sustainable food, fiber and natural resource systems that support a bio-based economy
- Economics and environments for a sustainable future
- Human capital development of children, youth and families

While our primary emphasis will always be on Nebraska, world-class excellence will also position IANR for global leadership in enhancing worldwide food security, particularly in developing countries.

Transforming research into results for Nebraska Research conducted at IANR is not about simply wanting to find an answer. It’s about finding answers that deliver a result — knowledge, outcomes and strategies that make Nebraska and its people smarter, stronger and more successful. That is why IANR was established in the first place. And it drives every investment and every decision we make.
At IANR, we expect to be accountable. We intend that investments made in IANR research, discovery and innovation quickly find their way into communities, businesses, agricultural operations and families across the state. What happens in the laboratory is quickly transformed, through extension, into real-life application where it matters— in a cornfield, in a feedlot, in a watershed, in a family, in a community.

Collaboration, integration and expansion within research No other segment of the University is more integrated with the University’s goals and objectives as IANR. The impact of our work extends far beyond the perimeter of IANR itself — because IANR deals with the fundamentals of food, water, energy, natural resources, human nutrition and health, and the success of individuals, families and communities.

As such, IANR is integrally involved across entire disciplines — from chemistry to biology, from engineering to education, from business management to policy, from rural development to medicine. We expect the level of collaboration and interdisciplinary research to increase and continue to extend into new scientific partnerships outside “traditional” agriculture — and in some cases, outside education itself through partnerships with private entities. For example, understanding the interrelationships between food systems and human health is not only about food production. It involves biology, chemistry, medicine, nutrition, food processing and even psychology. Emerging fields such as genomics, bioinformatics and computational biology will provide quantum-leap advancements that have a powerful impact on agriculture, environment and human health.

In other words, while the traditional agricultural disciplines will remain the principal players, new expertise from other disciplines and private enterprise will be integral to the continued advancement, development and improvement of agriculture in Nebraska.

Taking interdisciplinary research to the next level A number of current IANR faculty combine traditional agriculture disciplines with molecular approaches. But there is an immediate need to take research to the next level by hiring new faculty with expertise in emerging disciplines such as genomics, bioinformatics and computational biology. Many positions will have joint appointments within and outside IANR, encouraging even more collaboration and interdisciplinary initiatives across the entire University system including the new Innovation Campus and the University of Nebraska Medical Center.
The life sciences, ranging from molecular...

The link between food, water and health has never been more critical. At this point, we’ve obtained much of the low hanging fruit from the tree of knowledge. Now we’re learning just how much more there is to learn—and the implications are profound.

The largest advancements are going to stem from managing the smallest increments—genes, chromosomes, and molecules. We need to understand more about crops and plants on a molecular level—and we need to know more about how animals and humans process nutrients in order to address issues of food safety, sustainability, animal care and human health.

IANR outcomes for this priority include:

Innovative solutions to human problems Exciting and meaningful discoveries will be the result of integrated, critical thinking at every level—from individual molecules to entire organisms. An interdisciplinary approach to research will lead to advancements that have a powerful and positive effect on people’s lives.

Strategic alliances for greater synergy Collaboration within the University and with private enterprise is programmed into IANR’s DNA. It’s simply the way we operate. As we continue this effort, we will have an even larger number of innovative thinkers generating relevant and groundbreaking products and services based on life science advancements.
More educated scientists to secure Nebraska’s future Just as our work is becoming more focused in specific life science areas, so too must our faculty evolve to innovate in these tightly targeted disciplines. New faculty with life sciences expertise and the capacity to lead, collaborate and contribute will continually generate new discoveries and advances in our quality of life.
“Sustainability” is the watchword in agriculture and food production—and while the nuances of the definition of the word are subject to debate, there is no question that we must continually discover ways to get more out of less.

The world is inexorably moving away from an economy based on carbon—and toward an economy based on carbohydrates. And what amazing opportunity that creates for Nebraska, where we have already established a track record for crop production, grain processing and biofuels production.

IANR outcomes for this priority include:

An even stronger agriculture sector Through innovative production, smart marketing and “what if” thinking, Nebraska crop and animal producers will improve profitability while managing their operations in ways that further minimize environmental impact, sustain natural resources and ensure food safety and nutritional value.

A growing bio-based economy for Nebraska Using our strengths in crop production and natural resources as a foundation, Nebraska will become a national leader in bioenergy, biofuels and bioproducts. Special emphasis will be placed on self-sufficient energy, climate change and stimulating business growth by transforming traditional agricultural products into new solutions.
Agriculture is an integral part of Nebraska’s economic development strategy. Too often, agriculture and economic development are seen as distinct and separate. In Nebraska, they are — and should be — one and the same. Communities, entrepreneurs, agricultural producers and young people will find ways to incorporate environmentally responsible value-added agriculture in an overall economic development strategy to improve prospects and sustainability for their hometowns.
Economics and environments for a sustainable future

Resources can be defined in a number of ways—financial, natural, human, limited, abundant. IANR research and education provides Nebraskans with the confidence and capability to make sound choices that can lead to success at every level—over the long term.

As a result of IANR efforts, Nebraskans will have the advantage of:

Better information for better decision-making Nebraskans will have the tools necessary to gather and analyze important management information—and make sound policy, management and personal decisions in a world of ever changing regulatory, economic and environmental conditions.

Crops that meet growing challenges Growers will have access to varieties that perform well with limited water and other stress conditions, including specific-use crops for food, energy and industry. They will also have the information and tools to manage their crops in ways that conserve water, limit nutrient loss, lower input costs and sequester carbon.

Natural landscapes that provide a high quality environment It is well established that natural resources are a fundamental strength of our state. Through IANR, Nebraskans will have the tools and strategies they need to intelligently manage their natural resources—and maintain the diverse ecosystems necessary for a full, healthful life and sustainable future.
Natural resources are a fundamental strength of Nebraska. IANR is creating the management tools and science-based information required to ensure intelligent stewardship while increasing production and efficiency. Policy leadership related to agriculture and water is also an IANR strength that is recognized around the world.

**A wider range of choices for greater economic opportunity** New knowledge and discovery — coupled with applied research and education — will offer significant, viable alternatives for entrepreneurs, businesses and entire communities to compete, grow and prosper, thus building Nebraska’s economic base from border to border.

**Vital and vibrant communities** Nebraska communities of all sizes and locations will understand how to assess their strengths, protect what they have, and build on it in order to provide their citizens with career and cultural opportunities and a high quality of life. By doing so, they will improve the prospects of retaining their young people, fostering entrepreneurship and ensuring their future.
The organism we call “Nebraska” is comprised of individuals, families and communities. Thriving businesses and agriculture provide economic nourishment. IANR research, programming and extension education have a dramatic and positive effect at the “molecular” level in the state — helping people make informed choices, change behavior in positive ways and simply enjoy a better quality of life.

The ultimate objective: Healthy children growing up in healthy families that live in healthy Nebraska communities. Talk about sustainability.

IANR research, discovery and education will be targeted toward these outcomes:

**Nebraskans will make better nutritional choices**
Better nutritional habits lead to improved physical health and well being, which ultimately can lead to lower costs for education, healthcare and social programs. IANR research, combined with extension education, will provide Nebraskans with the information they need to make good choices for themselves and their families.

**Healthy and successful children** With IANR’s specific focus on “The Learning Child”, Nebraska children will have access to high-quality, affordable early education — and will be able to learn and develop from birth in safe, healthy and supportive surroundings. Avenues for learning beyond schools will also be provided — all with the intent of nurturing productive citizens and reducing social costs.
IANR innovation and education are helping Nebraskans make intelligent choices for their children, their families and their communities. As a result, our citizens have the information, resources and confidence needed to raise successful children, live healthier lives and capitalize on entrepreneurial opportunities—leading to economic sustainability across the state that is rooted in the strength of its people.

**Positive and encouraging environments for living and learning** Every individual and every family in Nebraska will feel welcome in their communities and will have the opportunity to learn, grow and achieve their potential—regardless of age, ethnicity or income level.

**More of Nebraska’s young people will stay here** IANR will fuel the energy, drive and potential of the state’s youth by developing their talent, instilling leadership and character, and igniting their entrepreneurial spirit so they will remain in Nebraska and contribute to the state’s success.
The Institute of Agriculture and Natural Resources: Even our very name defines the primary strengths of the state we serve. And within those strengths lie potential, opportunity and sustainability for Nebraska and its people.

The speed of change is mind-numbing. We’re learning more at an ever faster pace. And global change and challenge are creating opportunities that are a perfect match for what Nebraska does best.

This isn’t just about growing more. It’s about growing it better. With less water and less environmental impact. With more nutritional value. More market options. More profitability.

This is about managing the smallest increments for the greatest benefit possible. And that means new science, new scientists, new collaborations and new thinking that result in new practices and products for Nebraska’s agricultural producers.

This is about positioning Nebraska at the vanguard of the new bio-based economy — creating the next generation of value-added agricultural products, innovative new businesses and new opportunities for Nebraska’s young people.

This is about anticipating change and having the right information to make the right choices for our families, our land and water, our communities, our state and our nation.
This is about improving the quality of life for all Nebraskans by preserving and building on what we have. By helping children learn. By helping families succeed. By helping entrepreneurs grow. By helping communities thrive.

But most of all, this is about Nebraska.

At IANR, it always has been. And always will be.