

History of the Beef Innovation Hub at the University of Nebraska

In 2016, the University's Institute of Agriculture and Natural Resources launched the **Nebraska Integrated Beef Systems Initiative (NIBSI)**. It is designed to leverage the many systems-based efforts underway at Nebraska to advance science-driven innovation in development of resilient systems for food animal production, health and well-being, and to train the diverse workforce required. With broad capacity across research, teaching and outreach, this initiative will take advantage of the state and university's potential to lead the development of resilient, integrated systems for the production and delivery of nutritious, high-quality beef. The NIBSI webpage is linked from the Center for Grassland Studies website (<https://grassland.unl.edu/integrated-beef-systems>).

NIBSI Vision

To create knowledge of alternative systems for efficient, profitable and sustainable beef production through integrated and interdisciplinary research efforts and to deliver information and tools based on that knowledge through formal student training and extension activities enabling more informed decisions.

These systems will cut across all segments of the industry acknowledging the interacting effects of genetic potential of cattle with varying production environments and management practices and recognizing consumer desire for healthy, nutritious, and safe animal protein products and their attitude toward animal health and well-being.

The Beef Systems Initiative (BSI) serves as the founding 5-year project to inform the direction and needs of the visionary, holistic NIBSI. The BSI also provides a model for developing and supporting transdisciplinary, inclusive team science as well as assessing current resources (land, animals, people, and facilities) and infrastructure needs to support future integrated systems level beef research from gate to plate.

BSI Overview (by Dr. Walt Schacht)

IANR and ARS scientists have a long history of working collaboratively in the broad area of forage-based beef production systems. Programs and accomplishments were driven by groups of scientists mostly in Animal Science, Agricultural Economics, and Range and Forage Sciences and included:

- Creation of an interdisciplinary course: AGRO 445/ASCI 451 Livestock Management on Range and Pasture in the 1960s.
- Creation of the Grazing Livestock Systems major in 1999.
- North Central Region research and extension projects, including NC1181 Sustaining Forage-Based Beef Cattle Production.
- Recognition of faculty members in Animal Science, Agricultural Economics, and Range and Forage Management with the IANR Team Award in 2003.
- Beef Systems Cluster: creation of three new faculty positions in 2014 in beef systems, biosystems economics, and crop residue and annual forages.
- Coordinated the Beef Production Systems Workshops through the Center for Grassland Studies in January 2015, 2016, and 2017.

- Development of a forage-based beef systems white paper on proposed research and extension programs in 2016.
- Creation of the Beef Systems Initiative (BSI) in 2017 with \$1.5 million funding from IANR for a 5-year project focused on beef systems research and extension.

The Center for Grassland Studies is the administrative home for the BSI. It is a concerted statewide research and extension effort engaging many faculty from University of Nebraska-Lincoln academic units (campus and Centers), as well as ARS and other partners. The Initiative seeks to improve the utilization of rangeland, pastures, crop residues, annual forages, ethanol co-products, and cover crops to optimize Nebraska beef production in an economically and environmentally sustainable manner. A mid-term report was given by the team in a workshop on January 6, 2021.

The BSI project faculty members leveraged the IANR funding to secure a Foundation for Food and Agricultural Research grant, “Enhancing Animal Protein Through Crops and Cattle” (2017-2022). For details on the impacts of this project visit, <https://beef.unl.edu/ffar>.

In August 2018, the Nebraska Integrated Beef Systems Initiative established a faculty committee of four scholars led by Dr. John Pollak, to build an innovative beef systems program to complement and extend the successful BSI project. Guiding Principles of NIBSI:

- GEMS in experiments: Genetic x Environment x Management x Societal Interactions
 - Genome to Phenome
 - Sustainable Beef Production
- Precision Management Tools developed & used
- Facilitate and capitalize on the resulting information flow across the industry
- Industry Partnerships support translational research projects

NIBSI achievements:

- UNL Beef Genomics Platform
 - NIBSI Genomics Project Investment
 - \$250K/year for 3 years: 2019-2021
 - UNL Beef Genomics Collaborations
 - Funding of 4th year of NIBSI Genomics Project, 2022
 - Collaboration between UNL, US-Meat Animal Research Center and Neogen
 - UNL-BRD Collaborative Project
 - Collaboration between UNL, Neogen and Nichols Farms/Legal entity
 - BRD economic impact >\$692 million annually (2006 data)
 - Bovine Respiratory Disease genetic, environmental and management causes
- Feedyard Innovation Center
 - Fundraising is nearing completion. Summer of 2023 expected completion date.

- Ranching Innovation Center
 - Located at the Gudmundsen Sandhills Laboratory ranch
 - USDA funding for a Rangeland Precision Livestock Management Project is supporting development. This is a joint project between UNL, Oregon State University, and Montana State University, and their ARS affiliates.

The Nebraska Integrated Beef Systems (NIBS) Hub was established in April 2021 to continue to build on the vision of BSI and the NIBSI faculty committee. The NIBS Hub is where issue-based Beef Systems-related conversations occur to address key regional, statewide, and broader opportunities and issues that will support sustainable and robust beef production. The process will include the University's tripartite mission, a holistic approach with external advisors' input, and connecting and leveraging institutional resources into integrated teams to identify and implement potential solutions.

NIBS Hub initial activities:

- Convene Faculty Committee of 14 faculty, interim co-chairs Drs. John Pollak and Walt Schacht and directors of 8 IANR-wide Centers and Initiatives to develop strategic relationships and activities
 - Engagement Plan for the US Roundtable for Sustainable Beef
 - Establishment of the NIBS Hub External Advisory Committee (October 2021)
 - NIBS Hub Think Tank and Workshop (October 2021)
- Inventory and align expertise, resources and opportunities to enable formation of new integrated (RTE) teams, new proposals & grants, new technologies and new partnerships
 - Inventory (October 2021)
- Convene Carbon Core Team to address emerging need for a new approach to the national conservation policy

In January 2022, following the retirement of both Drs. Schacht and Pollak, Dr. Galen Erickson, Cattle Industry Beef Nutrition Specialist, was appointed as Lead for the NIBS Hub. Drs. Craig Allen and Jerry Volesky were appointed as facilitators for the Hub.

Discussions leading to strategic planning for the Hub led to the conclusion that a more broadly understood name would benefit the Hub. The Vision and Mission of the Hub were also revisited to inform the new name. Through a process of internal and external stakeholder collaboration, the new Vision, Mission, and Name were announced in June 2022.



Beef Innovation, A Hub for Beef Excellence

Our Vision

- Environmentally sound, resilient, socially responsible, and economically viable beef for Nebraska and beyond.

Our Mission

- To advance, support, and communicate continuous improvement of beef production, economic vitality, and natural resources through innovative research, education, and extension.

Strategic planning sessions will be held in August 2022 to determine short- and long-term goals for the Beef Innovation Hub.