



BEEF CATTLE

A TEXAS A&M UNIVERSITY AREA OF EXCELLENCE

Department of Animal Science

animalscience.tamu.edu

Join our pursuit to become the world leader in teaching, research, and education associated with beef cattle adapted to subtropical and tropical climates.

Texas is all about beef, and beef is all about Texas.

Texas leads the nation in beef cattle population and production.

- Texas contains the largest population of beef cows and cattle on feed in the United States!
- Texas has more cattle than 43 U.S. states have people.
- Texas has more cattle than 156 countries have people.

Texas leads the nation in number of agricultural operations.

- There are 248,800 farms and ranches in Texas, covering 130.2 million acres (77% of the state's total area).
- 98.6% of Texas farms and ranches are family farms, partnerships, or family-held corporations.

Agriculture is the second-largest economic generator in Texas, after oil and gas.

- Texas agricultural cash receipts, including timber, average \$20 billion annually, and cattle production contributes 50% of those receipts.
- Cotton ranks second behind cattle, contributing 10%.

Texas is home to all aspects of the beef industry supply chain.

- Texas contains all phases of beef production, from cow-calf operations to packers.
- Texas has more cattle on feed than Australia and Canada combined.



Texas consumers spend nearly \$9 billion a year on beef.



G. Cliff Lamb, Ph.D.
Professor and Department Head
Animal Science, Texas A&M University

Texas A&M should be an international leader in a few specific areas of excellence.

Beef cattle must be one of these.

HOWDY!

As the largest and most diverse academic department of its kind, the Department of Animal Science at Texas A&M University takes pride in providing superior facilities, animals, and resources to retain and attract the best and brightest faculty and students from around the globe.

As part of our overall mission, we aspire to be the international leader in specific areas of excellence — particularly beef cattle. Cattle and calves are the number one cash agricultural commodity in Texas, with a value exceeding \$10 billion annually — more than five times greater than cotton, the state’s second most valuable commodity. In order to sustain this vital component of the economy and continued growth of agriculture in Texas, beef cattle production systems must be a primary “flagship” focus area of the department. To support our efforts, we propose the International Area of Excellence for Cattle Adapted to Subtropical/Tropical Environments (both *Bos taurus*- and *Bos indicus*-based breeds). This initiative aligns well with the department’s current Beef Production Systems Strategic Plan and will ensure a more unified direction for our work in beef cattle production systems. Our goal is to be the world leader in beef production genetics, management, and products. Our vision is to be regarded as the premier center for high-quality beef cattle research and education programs.

To enhance our scope in beef cattle and develop this area of excellence, we must significantly improve our infrastructure for cattle research and education. We also will collaborate with our stakeholders to ensure that we have access to the best beef cattle genetics available. Development of the following new research and education programs will be priority:

- a comprehensive distance-learning certificate program in beef cattle production,
- increased opportunities for experiential learning for our students, and
- enhanced learning opportunities for our industry partners.

The continued success and contributions of the Department of Animal Science at Texas A&M are vital to the sustainability of the Texas, U.S., and international beef industries. We have received initial support from the university to hire two faculty members to lead this initiative, and we welcome you to join us as we become the world leader in beef cattle production systems.

Sincerely,
G. Cliff Lamb, Ph.D.

Rich History in Beef Cattle Research



Created in 1903, the Department of Animal Husbandry at Texas A&M emphasized the feeding, breeding, and evaluation of livestock. In 1911, the Department of Dairy Husbandry was formed to train students in the manufacturing and handling of dairy products. From 1911 to 1947, both departments focused on teaching, while the Texas Agricultural Experiment Station conducted research and the Texas Agricultural Extension Service provided outreach. After 1947, research, teaching, and outreach were combined in the departments, and in 1965 the two departments merged as the Department of Animal Science. With over a century of growth, the department has become the largest and most diverse university-based animal science department in the world.

Beef cattle have always been a key component of research, teaching, and Extension at Texas A&M. The revolutionary research conducted by the department's scientists has defined the way cattle are raised today in Texas and around the globe. Research accomplishments include the following:

- Studying the biological cycle of the cattle tick, *Boophilus annulatus*, resulting in the control of the fever tick
- Pioneering crossbreeding experiments (*Bos indicus* × *B. taurus* breeds) in the 1920s, leading to first estimate of hybrid vigor in crossbred cattle

- Determining heritability of weight gain, with an emphasis on weaning weight
- Developing phosphorus supplementation programs for grazing cattle
- Developing and refining sorghum grain as cattle feed
- Establishing nutrient requirements for beef cattle through the National Academy of Sciences
- Discovering chemical communication between embryo and dams for successful pregnancy
- Understanding the fundamental reproductive biology of Brahman cattle
- Completing the first successful embryo transfer in a livestock species
- Using electrical stimulation of beef carcasses to improve beef tenderness, quality, and shelf-life
- Studying the factors regulating marbling and tenderness in beef products

As we work to meet the current and future challenges associated with a growing population, the Department of Animal Science will lead the world toward food security through efficient and sustainable beef production.



Future Excellence in Beef Production

World food production must increase 70% by 2050 to feed an additional 2.3 billion people. Beef consumption will also double by 2050, from 60 million to 130 million tons. However, as the planet becomes more populated and urban areas expand, resources for beef production will become more limited. Therefore, production efficiency will have to increase during the coming decades to address the global beef demand while maintaining ecological stewardship and proper use of limited natural resources. Much of this increase in beef production is expected to come from subtropical and/or tropical regions, which contain nearly 70% of the world's cattle population. These regions include Texas and the southeastern United States, Mexico, Central and South America, Africa, Asia, and Oceania.

The Texas beef industry encompasses all phases of beef production, from cow-calf ranches to processing facilities, throughout a variety of environments and climates, from West Texas to the Gulf Coast. Such diversity allows the Department of Animal Science to conduct research that is relevant throughout Texas, the United States, and in most subtropical/tropical regions of the world. To successfully take on the local, national, and international challenges related to beef production and food security, we propose the development of the International Area of Excellence for Cattle Adapted to Subtropical/Tropical Environments in the Department of Animal Science.

Our vision is to provide unparalleled leadership, best practices, research, support, and training to beef industries worldwide, particularly those based in subtropical/tropical environments. This specialty will help us enhance beef production through excellence in developing and disseminating genetics, management, and product-related technologies to producers, students, industry professionals, and the public.

Through our vision of excellence and strategic engagements, along with commitment and support from the Aggie community and stakeholders, the Department of Animal Science will establish itself as a global leader in beef production research and education and will play a seminal role in feeding the world.



**“Excellence is doing ordinary
things extraordinarily well.”**

**—John W. Gardner (1912–2002)
Author and former U.S. Secretary of
Health, Education, and Welfare**

Your gift will help us achieve excellence through capital improvements, marketing, and emphasis on education.

Capital Improvements (\$5 million)

Preserve and enhance current beef cattle facilities for responsible growth and development of the Excellence in Beef Cattle Initiative.

Graduate Fellowships (\$1.5 million)

Provide financial assistance to graduate students, allowing Texas A&M to recruit exceptional graduate students from across the United States and around the world.

Endowed Professorships (\$3 million)

Through three professorships at \$1 million each, we will increase our faculty talent, which in turn enriches the academic environment and attracts the brightest students. Professorships help to recruit, reward, and provide resources for building premier beef cattle teaching, research, and Extension programs.



High-Impact Learning Experiences (\$500,000)

Texas A&M classrooms should know no borders. Our high-impact learning experiences, such as field trips and industry conferences, expand the classroom through national and international perspectives. Funding in this area provides students with these unique learning opportunities.

International Beef Cattle Academy (\$500,000)

A major component of our Excellence in Beef Cattle Initiative is to create an international educational program that engages industry leaders, professionals, and beef producers worldwide to come and learn from Texas A&M. Our faculty will provide digital learning, conferences, and hands-on training for students, sharing cutting-edge knowledge about beef production.

Marketing and Development (\$500,000)

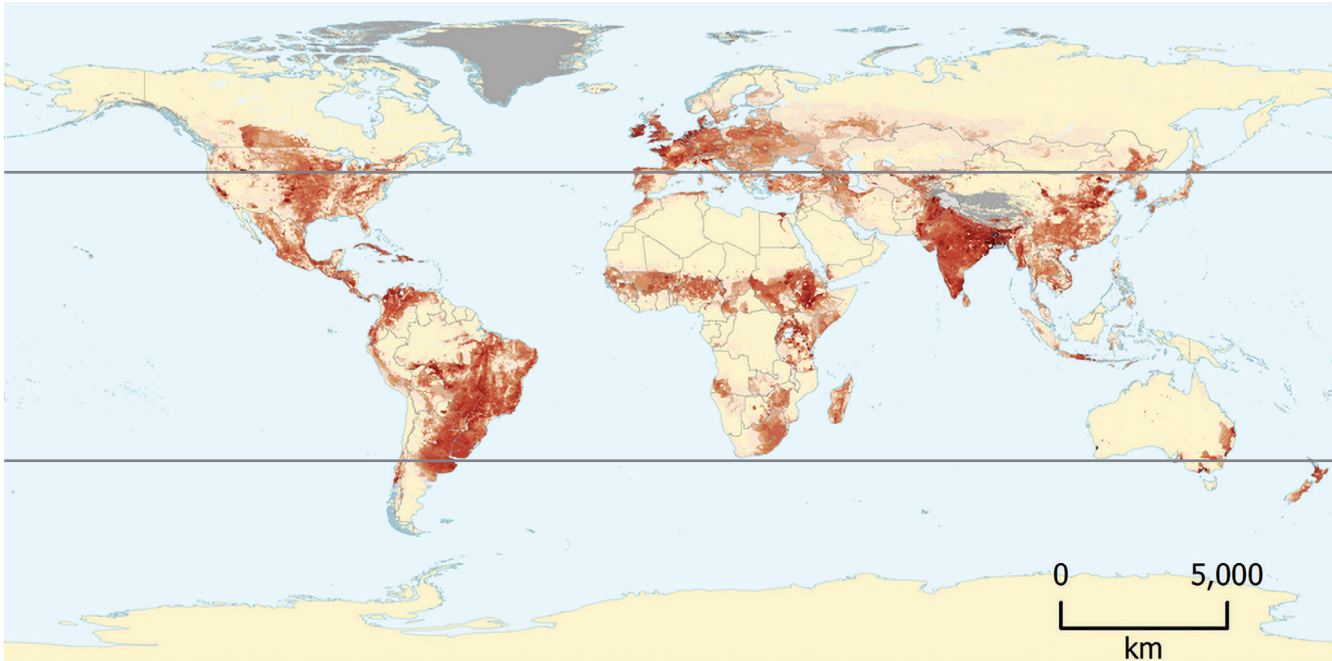
Funds will be used to elevate the visibility of the Texas A&M Excellence in Beef Cattle Initiative on a national and international spectrum.



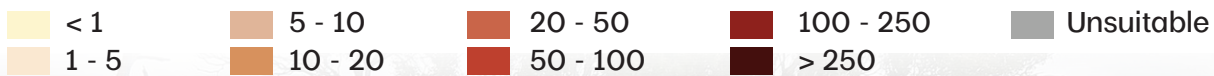
Our vision for excellence goes beyond Texas.

Texas beef producers serve a global clientele, and Texas A&M University's vision for beef cattle excellence transcends all borders. Our vision is to make Texas A&M the world

leader in beef cattle teaching, research, and Extension in the area of beef cattle adapted to subtropical and tropical climates.



Head per km²



Source for map, used with permission: Robinson T. P., G. R. W. Wint, G. Conchedda, T. Van Boeckel, V. Ercoli, E. Palamara, G. Ciunardi, L. D'Aiotti, S. I. Hay, and M. Gilbert. 2014. Mapping the global distribution of livestock. *PLoS ONE* 9(5): E96084. p. 1. doi:10.1371/journal.pone.0096084.

Nearly 70% of the world's cattle population is located in the subtropical and tropical regions of the world.

(Shown between the gray lines)





Beef cattle is the number one agricultural commodity in Texas.
Texas is number one in beef cattle in the United States.
The United States is number one in beef cattle in the world.

Together, we can make Texas A&M number one in beef cattle worldwide.

With your help, we can achieve our goal of making Texas A&M University the recognized world leader in beef cattle teaching, research, and outreach. Please join us in being a part of the Texas A&M Beef Cattle Area of Excellence.

For more information, please contact:

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by EXAMPLE



ANIMAL SCIENCE
TEXAS A&M UNIVERSITY