



TEXAS A&M AGRI LIFE RESEARCH





Texas A&M AgriLife Research, established under the Hatch Act in 1888, is the state's premier research agency in agriculture, natural resources, and the life sciences. A member of The Texas A&M University System, AgriLife Research collaborates with the Texas A&M University College of Agriculture and Life Sciences, the Texas A&M AgriLife Extension Service, and many other partners to help fulfill the A&M System's land-grant mission of teaching, research, extension, and service.



Headquartered at Texas A&M University in College Station, AgriLife Research serves the entire state through its on-campus units and regional Research and Extension Centers and Stations. It conducts hundreds of projects spanning many scientific disciplines to deliver life-sustaining and industry-changing solutions to citizens here and around the world.



While maintaining a traditional connection to farming and ranching, AgriLife Research is paving the way for the future of agriculture by developing new varieties of fruits and vegetables, designing practices for maximum crop production, conducting research for renewable energy sources, working with the U.S. military to restore and sustain training lands, and implementing new methods to improve air and water quality.



AgriLife researchers are encouraged to explore intellectual property rights and patents through the Texas A&M System Office of Technology Commercialization. By seeking out corporate partnerships compatible with their research projects, AgriLife scientists can bring new discoveries to industry and consumers more quickly than ever before. To meet the latest challenges in agriculture and the life sciences, AgriLife Research also cultivates educational, governmental, and community partnerships, which play a critical role in research and technology development.

The economic returns on investment in agricultural research are substantial. One study found that annual economic gains from investments in Texas's public agricultural research have reached more than \$1 billion over the past four decades.

AgriLife Research is proud to lead the way in improving lives and providing economic value through scientific advancements.

Sustain Healthy Ecosystems and Conserve Natural Resources

- Through irrigation-efficiency measures developed by AgriLife researchers, farmers in the Edwards Aquifer region have saved 500,000 acre-feet of water, valued at \$3.4 million.
- AgriLife researchers are protecting our water supply by enhancing technologies for recycling water used in cities, industries, and intensive animal agriculture. They also help to reduce the impacts of flooding and drought and are identifying sources of salinity or excessive nutrients in Texas watersheds.
- Researchers have developed cost-effective ways to prevent the overgrowth of golden algae in Texas lakes, improving fish survival. The increase in recreational activities could bring between \$10 million and \$20 million in economic gains.
- By developing effective application schedules to control harmful insects while reducing the use of pesticides, AgriLife Research has helped vegetable growers save millions of dollars — and protect the environment.
- AgriLife researchers have developed chemical treatments that reduce ammonia emissions from feedyards by 80 percent.



Enhance Competition and Prosperity in Agriculture

- AgriLife Research has contributed to the expansion of the horticultural industries in East Texas, with an estimated economic impact in excess of \$1.2 billion. Our programs have helped growers to double watermelon production, increase nursery and greenhouse production, create a blueberry industry, increase and improve ornamental plant production, and have greater success with home and community landscapes and gardens.
- Researchers have developed protocols for incorporating distillers grains, a by-product of ethanol production, into feedlot finishing diets, potentially decreasing feedlot grain costs by \$15 per head. This translates into nearly \$1 million in savings for a 35,000-head feedlot.
- AgriLife Research scientists have discovered the only known process to make citrus trees resistant to greening disease and citrus canker, both of which have devastated the \$9 billion Florida citrus industry and now threaten Texas citrus.
- New wheat varieties developed by AgriLife Research — TAM 111, TAM 112, and TAM 113 — have increased annual farm gate income by more than \$6 million.



- AgriLife Research corn varieties less prone to aflatoxin contamination could significantly reduce the cost to Texas farmers and the threat to animal health.

- AgriLife researchers have demonstrated that adding limestone to soils increases soil fertility and forage production, resulting in annual cost savings of \$1 million for East Texas farmers and ranchers.

- Using a novel method for applying antibiotics, our equine scientists have developed a strategy for reducing the most common and severe form of bacterial pneumonia, a leading cause of death in foals, by 75 percent.



- Our new method for controlling insect carriers has reduced the spread of Pierce's disease in vineyards throughout Texas. The economic impact of the Texas wine and grape industry is approaching \$2 billion.

Improve Public Health and Well-Being

- Researchers have documented that dietary omega-3 fatty acids, such as those found in fish oil, regulate transmission of information that alters the body's responses at the cellular level. This finding has enhanced the ability to determine colon cancer risks.
- To help improve the safety of the world's food supply, AgriLife Research developed materials for Hazard Analysis and Critical Control Point (HACCP)

training for more than 1,700 food industry personnel in 26 states and eight countries.

- Researchers have developed a technology that virtually eliminates the toxin gossypol from cottonseed, allowing for a new form of human food source that will improve protein supply around the world.
- Researchers have discovered a gene associated with resistance to tuberculosis among people infected with HIV. This discovery will lead to a new understanding of how the tuberculosis bacterium causes disease and will create new avenues for screening for and controlling tuberculosis, especially among high-risk groups.
- State-of-the-art genomics technology and marker-assisted breeding expedite the development of new varieties of vegetables and fruit with improved yield, enhanced water-use efficiency, increased disease tolerance, and improved harvestability.

- AgriLife researchers have discovered a compound from sheep that is used in clinical trials for treatment of multiple sclerosis, rheumatoid arthritis, and hepatitis.



Manage Negative Effects of Global Climate Change

- Researchers have created models, theory, and educational programs that enable both agricultural producers and consumers to adapt to the effects of climate change and more efficiently use energy.
- AgriLife Research and partners are improving and evaluating feedstocks ranging from microalgae to high-biomass grasses for their potential in producing biofuels. They also are developing environmentally sustainable processes to manufacture and transport biofuels, and they are studying co-products of production for use in cattle feed or fertilizers.
- AgriLife researchers have assessed the impact of agricultural production on carbon cycling and sequestration and studied the effects of traditional and alternative crops and farming systems on yield, biomass production, soil carbon, soil nutrient cycling, and greenhouse gas emissions. They are providing mitigation practices while maintaining economically viable systems.
- AgriLife scientists are determining how factors such as nutrition, water use, soil type, and harvest frequency affect biomass production, seasonal availability, and sustainability for high-biomass crops such as sorghum. They also are analyzing economic, market, and policy factors influencing the development of alternative energy systems.



- Crop breeders are using advanced genomic tools and marker-assisted breeding to develop plants that are more drought resistant and can survive on lower rainfall or reduced irrigation.

Optimize Plant and Animal Production and Human Health

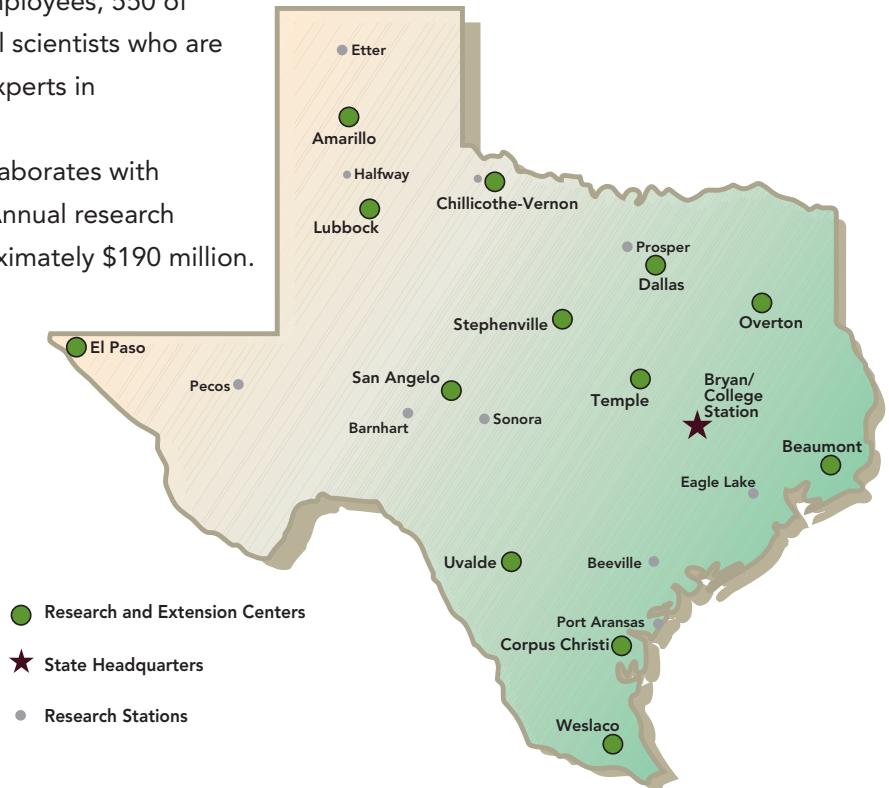
- AgriLife researchers are investigating principles of molecular biology to complement and enhance research in breeding, production, and processing of agricultural products.
- AgriLife geneticists use marker-assisted selection in plant and animal breeding. DNA “roadmaps” within a sequenced genome help them to quickly determine which genes make a plant or animal more productive and less susceptible to disease and adverse environmental conditions. This method can produce desired hybrids in far less time than traditional breeding trials. It could spark a second Green Revolution in agriculture and is launching breakthroughs in the health sciences and veterinary medicine.
- Researchers are modeling the dynamic relationships between behavioral and economic factors that influence the development and sustainable adoption of new technologies benefiting consumers, producers, and society. They provide scientifically rigorous studies and unbiased data to inform policy makers and the public about these issues.



Serving the State of Texas

Texas A&M AgriLife Research comprises its College Station headquarters, 13 research centers reaching from El Paso to Beaumont and Amarillo to Weslaco, and associated research stations. A member of The Texas A&M University System, AgriLife Research has more than 1,600 employees, 550 of whom are doctoral-level scientists who are nationally recognized experts in their fields.

AgriLife Research collaborates with more than 30 nations. Annual research expenditures are approximately \$190 million.



Texas A&M AgriLife Research
600 John Kimbrough Blvd., Suite 512
2142 TAMU
College Station, Texas
77843-2142

Phone: (979) 845-8486

Fax: (979) 458-4765

AgriLifeResearch.tamu.edu