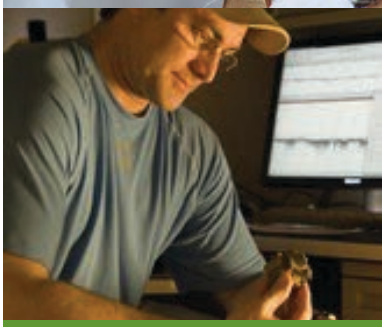
TEXAS A&M AGRILIFE RESEARCH

Texas A&M AgriLife Research and Extension Center at Temple (Blackland Center)



The Blackland Center was established in 1909 to conduct research on varied soil and crop issues, with special attention to the control of cotton root rot. The station was moved in 1927 to its present site of 542 acres on the southeastern edge of Temple in the south-central Blackland Prairie region. Hybrid corn breeding was an important function in 1927. Soil and water research began in 1931 in cooperation with the USDA Soil Conservation Service, followed by beef cattle grazing and feeding research in 1937.

Today, programs at the Blackland Center are closely allied with those of the USDA Agricultural Research Service (ARS) Grassland, Soil and Water Research Laboratory, the USDA Natural Resources Conservation Service (NRCS), and the U.S. Environmental Protection Agency (EPA) — all with offices in the same complex in Temple. Other major partners are the U.S. Agency for International Development and the U.S. Department of Defense. The common denominators in this federal, state, and AgriLife Research and Extension alliance are Fort Hood and the residents of the growing suburban region.

Located on some 270,000 acres, Fort Hood is one of the largest military installations in the world. Armored military training contributes to soil and vegetation loss, severe soil erosion, and the sedimentation of area streams and lakes. The Blackland Center focuses on ecosystem research and modeling, agricultural systems and hydrologic modeling, and water quality assessment and investigations. Specific conservation activities include a range revegetation and natural resource sustainability project for Fort Hood training lands, watershed protection planning, and an urban stormwater control program.

Current Research

Blackland Center and USDA scientists are leading the development and use of computer simulation models to assess the impacts of changes in agricultural and urban land use and to help manage natural resources. The state-of-the-art models address soil, nutrient, and pesticide losses that affect water quality. They also help researchers to identify best management practices for enhancing agricultural productivity and profitability and for managing water supplies during extreme weather events such as drought and flooding. These models are the primary tools used by the USDA and other researchers worldwide for planning conservation programs, for identifying limitations to agricultural productivity, and for finding sources of non-point pollutants affecting water quality.

Agriculture, natural resources, and environmental assessment and modeling activities include the following:

- Developing and applying the Agricultural Policy Environmental eXtender (APEX) model and the Soil and Water Assessment Tool (SWAT) to address soil erosion, water quality, and agricultural productivity.
- Developing a web version of the APEX model to help NRCS field staff identify and design the best combination of conservation practices for USDA Conservation Programs.

- Expanding the capabilities of APEX, SWAT, and PHYGROW models to address agricultural management and ecosystem changes influenced by climate, flooding, stream-bank erosion, animal grazing, and drought for natural grasslands, forestlands, and urban areas.

Research Impacts

- Completed the Assessment of Cropland Conservation Practice Impacts for the Upper Mississippi River Basin for the USDA NRCS. Results showed that the use of conservation practices reduced surface water flow by 14%, increased subsurface flows by 22%, reduced sediment loss by 62%, reduced total nitrogen loss by 21%, reduced total phosphorus loss by 36%, and increased acres maintaining or enhancing soil organic carbon. Today, only 17% of acres are losing carbon at rates greater than 100 pounds per acre per year. Without conservation practices, 34% would be losing carbon at or above this level.
- Conservation practices in streams of the Upper Mississippi River Basin were found to reduce sediment loads by 31%, atrazine loads by 29%, total nitrogen loads by 28%, and total phosphorus loads by 21%.
- Hosted two international SWAT conferences (in Ho Chi Minh City, Vietnam, and Toledo, Spain) for users of the tool to estimate the impacts of land use and climate change on water supply, water quality, and productivity of croplands, forestlands, and grazing lands. Approximately 400 scientists representing model developers and users from around the world attended each conference.
- Completed delivery of the Livestock Early Warning System (LEWS) to ministries of agriculture in Mongolia, Tanzania, Ethiopia, and Kenya. LEWS estimates the amount of forage in the countries' grazing areas and provides government officials and herders with critical information on where forage is available and where they can move livestock to sustain animal production during drought.
- Developed the Livestock Market Information System and continue to work with Afghanistan, Ethiopia, and Mali to implement the system.
- Developed a water-monitoring system that enables herders to locate sources of water for livestock in nomadic grazing areas of East Africa.

Blackland Center Facilities

AgriLife Research facilities at the Blackland Center include a 12,000-square-foot office building and shared resources (offices, laboratories, greenhouses, shop facilities, and land) in the USDA ARS Grassland, Soil and Water Research Laboratory, where AgriLife and ARS scientists have worked cooperatively for more than 70 years. Researchers also work with scientists from the USDA NRCS who are located at the lab.

About Texas A&M AgriLife Research

A member of The Texas A&M University System

Established in 1888, Texas A&M AgriLife Research is the state's premier research and technology development agency in agriculture, natural resources, and the life sciences. Headquartered in College Station, AgriLife Research has a statewide presence, with scientists and research staff on other Texas A&M University System campuses and at the 13 regional Texas A&M AgriLife Research and Extension Centers. The agency conducts basic and applied research to improve the productivity, efficiency, and profitability of agriculture, with a parallel focus on conserving natural resources and protecting the environment. AgriLife Research has 550 doctoral-level scientists, many of whom are internationally recognized for their work. They conduct hundreds of projects spanning many scientific disciplines, from genetics and genomics to air and water quality. The annual economic gains from investments in Texas's public agricultural research are estimated at more than $1 billion. Through collaborations with other institutions and agencies, commodity groups, and private industry, AgriLife Research is helping to strengthen the state's position in the global marketplace by meeting modern challenges through innovative solutions.

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