The Uvalde Center, established in 1972, serves the Texas Winter Garden region, known for irrigated agriculture, with crops such as spinach, potato, cabbage, onion, carrot, melon, watermelon, cucumber, pepper, green bean, lettuce, pecan, and more recently, artichoke. Farmers also cultivate cotton, corn, sorghum, wheat, and forages. Open range beef cattle and goat production are supplemented by wildlife and outdoor recreation enterprises. The center conducts fundamental and applied research and develops technology that results in efficient, sustainable, and profitable agricultural, urban, and ecological management systems while conserving regional underground water resources. These programs are designed to add product market value and create a sustained prosperity for citizens of Southwest Texas and beyond.

Research programs focus on stand establishment of crops under stress conditions; irrigation technologies for agricultural, horticultural, ornamental, and urban landscape systems; deficit irrigation strategies and tillage practices for greater water conservation; physiology and drought tolerance of crops and native plants; development of integrated strategies for conventional and specialty vegetable crops; wildlife habitat management; and conservation of natural biodiversity. The Uvalde Center has special cooperative programs with the following agencies: Texas Center for Applied Technology, Water Conservation Technology Center, Texas Department of Agriculture Specialty Crop Block Program, South Texas Natives–Texas A&M University-Kingsville, Wintergarden Groundwater Conservation District, and the Texas A&M University College of Veterinary Medicine and Biomedical Sciences.

Current Research

**Developing better cropping and irrigation strategies for vegetables and fruits**

Conserving water during irrigation is an important strategy for sustaining onion and specialty melon productivity in water-limited regions of Texas. Uvalde Center researchers have demonstrated a 36% water savings in Tuscan and cantaloupe melon through deficit irrigation applied with subsurface drip systems. They have also demonstrated the benefits of adopting water-conserving practices (75% crop evapotranspiration) with growth-stage crop coefficients for short-day onion.

Researchers developed integrated crop strategies — from transplanting to harvest — for artichoke, a new specialty crop for Texas. Those strategies are being evaluated in various Texas eco-regions. The AgriLife Research program at the Uvalde Center is the only current public research program addressing artichoke in the United States.

The goal of Uvalde strategies for integrating irrigation and low-tillage practices for field, forage, and horticultural crops is to increase the efficiency of cropping systems by reducing crop water use and irrigation demands by more than 20%.

**Improving stand establishment and crop performance**

Methods of applications of the plant hormone abscisic acid (ABA) are being developed in nursery conditions to enhance drought tolerance and condition vegetable transplants to better withstand post-transplanting field stresses.

**Improving water-use efficiency in the Texas green industry**

Texas land occupied in green industry activities such as plant nurseries and greenhouses, landscaping, and urban forestry is estimated at 1.5 million acres.
These activities could use up to 5 million acre-feet of water annually, which is rapidly approaching usage by irrigated agriculture in the state. A new initiative at the Uvalde Center is focused on identifying native and adapted plant species with low water requirements that have distinctive traits for commercial use in sustainable urban landscapes as well as other potential uses for rangeland restoration and reclamation, forage production, and improved food and shelter for wildlife. This includes research into the potential use of cold-tolerant spineless cactus as a drought-reserve forage for the livestock industry in more northern areas of Texas.

**Managing wildlife and natural resources**
Researchers work with landowners to develop new paradigms in wildlife management and to optimize habitat management for production of trophy white-tailed deer and abundant bobwhite quail while conserving endangered species and maintaining biodiversity of other wildlife species. Collaboration on animal health issues with the Texas A&M College of Veterinary Medicine aids agriculture by revealing that deer cannot transmit tick fever to cattle and identifying strategies to reduce disease transfer from feral hogs to valuable wildlife and livestock. At the interface with plant production and water-saving strategies, wildlife researchers also examine rainwater harvesting for wildlife food plots and maintenance of native plant gardens to support attractive urban wildlife.

**Research Impacts**
- Improving the genetics and water conservation strategies for vegetable crops (melon, watermelon, artichoke, hot and sweet pepper, onion, cabbage, leafy greens) in Southwest Texas will increase profitability and provide more attractive products with better flavor, taste, and antioxidant potential.
- Integrating deficit-irrigation strategies with specific crop coefficients and improved cultural strategies can improve water-use efficiency (up to 25%) in cool season leafy vegetables.
- The ornamental horticulture program at the center is helping green industries to improve water-use efficiency through emergent research on native and adapted plants using graywater and other alternative irrigation sources.
- A new method for aging deer is helping to make Texas a leader in the valuable trophy deer production industry.
- The finding that deer cannot transmit tick fever to cattle saved $2 billion per year by eliminating the requirement to impose quarantine restrictions and fund a costly wildlife control program.

**Uvalde Center Facilities**
- Two main buildings containing offices, laboratories and an auditorium, two greenhouses, a mechanics’ shop, a research animal facility, and student housing; 50 acres of irrigated land; a permanent drip and LEPA irrigation system with seven in-ground weighing lysimeters; 142 acres of leased irrigated land with two center pivot irrigation systems.

**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.