The Weslaco Center is located in the Lower Rio Grande Valley, where agriculture has played a major role in the region’s tremendous economic and population growth. With the arrival of rail transportation and the development of a vast irrigation system in the early 1900s, the Lower Rio Grande Valley’s fertile delta soils formed the foundation of a bountiful South Texas agricultural industry. In 1923, the state legislature approved the purchase of 60 acres of land east of Weslaco for an agricultural experiment station. Another 60 acres were bought with local donations, and the center was established. Research began primarily on citrus, but by 1925 it had expanded to local crops, including pecans, grain sorghum, soybeans, cotton, sugarcane, and a wide variety of vegetables.

By 1964, researchers had been joined at the center by USDA Agricultural Research Service (USDA ARS) scientists and by personnel from what is now the Texas A&M AgriLife Extension Service. Among the early achievements of the Weslaco Center were the development of red-fleshed grapefruit; a 1930s muskmelon breeding program that resulted in mildew-resistant melon varieties released in the 1950s and 1960s; virus-resistant peppers, tomatoes, and melons; improved tomato varieties released in the 1960s and still grown worldwide; development of the first commercially successful spinach hybrids; commercial onion releases that resulted in the sweet onion releases of the 1980s; sugarcane studies that helped revive the industry in the early 1970s; water-use efficiency and soil studies that improved per-acre income; and improved harvesting methods for onions, potatoes, sugarcane, and other crops.

**Current Research**

**Making crops more resistant to environmental stresses and diseases**

The Weslaco Center — in partnership with the Texas A&M University-Kingsville Citrus Center, the Rio Grande Valley Sugar Growers, and private companies — continues to expand its focus on cutting-edge research aimed at improving the sustainability and profitability of agriculture by improving the tolerance of economically important crops to environmental stresses, including drought, temperature extremes, salinity, and diseases. Researchers use micropropagation technology to facilitate the dissemination of genetically pure, disease-free materials to producers.

- Using cutting-edge technologies in molecular biology and plant genetics to develop sugarcane and energy cane cultivars with improved sugar yield and biomass for bioenergy, biofuels, and bioproducts production.
- Conducting applied research using transgenic plant technologies to incorporate disease-resistance genes into sugarcane, potatoes, and citrus, including developing varieties that are resistant to citrus greening, a growing threat to the citrus industry.
- Using biotechnology and plant sciences technologies to convert such crops as sugarcane into “bio-factories” that produce high-value compounds for medical, therapeutic, and industrial uses.

**Efficiently using land and water resources through better crop management**

The Weslaco Center is making scientific and technological advancements in land and water use to protect water quality and increase the amount of water available for urban and rural use. Researchers are analyzing and developing water- and nitrogen-
management options for maximum sustainable production of bioenergy crops. They are also integrating insect pest control techniques and strategies with measures of economic injury to reduce control costs, increase yields, and increase economic returns for crop producers in the Lower Rio Grande Valley.

- Researching crop insect pest biology, ecology, and management; plant disease epidemiology; spatial and temporal population modeling; and plant resistance as they relate to crop pest-management practices.
- Developing new irrigation methods for improving water-use efficiency; using alternative sources of energy (wind, solar, gravity flow) for irrigating crops; researching the movement of fertilizer and pollutants on aquifers and rivers to maintain water quality; and improving water quality with proper fertilizer and chemical management.
- Conducting basic and translational research to improve productivity, quality, safety, resource-use efficiency, and sustainability by developing innovative cropping systems to mitigate impacts of key biotic and abiotic stresses (including drought, nutrient imbalances, temperature extremes, and climate change impacts) that are economically important to Texas and beyond.

Research Impacts

- Next-generation sugarcane and bioenergy crops will expand the production frontiers for Texas growers, increase profits, and help provide new sources of energy.
- Molecular biology and transgenic plant technologies used to develop citrus cultivars resistant to citrus greening will protect the multibillion-dollar U.S. citrus industry.
- Pest-management programs for crop insect pests and vectors of plant pathogens will reduce management costs by optimizing insecticide use and minimizing losses to injury and diseases.
- Innovative reduced-input production systems and technologies have improved water- and nutrient-use efficiencies, productivity, retail and nutritional quality, and health-promoting properties of fruits and vegetables, as well as other crops for food, fiber, fuel, and high-value products.
- New irrigation strategies will increase net returns per unit of water applied for the main crops of South Texas without affecting the environment. Using efficient irrigation systems will improve water quantity and quality.

Weslaco Center Facilities

- 55,000 square feet (AgriLife Research) and 18,400 square feet (Texas A&M-Kingsville) in offices, laboratories, classrooms, auditorium, and other facilities
- 74,000 square feet (AgriLife Research) and 39,000 square feet (Texas A&M-Kingsville) in greenhouses, workshops, storerooms, sheds, and other outbuildings
- 360 acres (AgriLife Research) and 340 acres (Texas A&M-Kingsville) in croplands

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.