More than 80% of Texas’s residents live in urban environments. The Dallas Center, located in the heart of the Dallas–Fort Worth Metroplex, is dedicated to increasing the sustainability of urban living through its internationally recognized research and outreach initiatives. The center’s programs address the preservation and wise use of critical resources through the development of water-efficient turfgrasses, technologies for low-impact development, stormwater management, water conservation, and urban food production. The center collaborates with national, state, and local governmental bodies, schools, international corporations, regional businesses, non-profit organizations, and private citizens to deliver world-class research and outreach that advance sustainable living in urban Texas and across the nation.

CURRENT RESEARCH

DEVELOPING WATER-EFFICIENT TURFGRASS

About half of the drinking water in Texas cities is used to irrigate turfgrass in home lawns, corporate landscapes, golf courses, sports fields, parks, and along highways. The Dallas Center’s turfgrass program seeks to understand how resource efficiency works in plants. The program uses its knowledge to breed new, multi-use turf varieties that need less water and are more tolerant of drought, cold, and poor soil conditions. In-house expertise drives the Dallas Center as the lead institution in a multimillion-dollar, multi-state research initiative of the U.S. Department of Agriculture to develop new resource-efficient turfgrasses for the southern United States. Major objectives of the work include breeding varieties that are both drought tolerant and salt tolerant, as well as understanding the molecular and genetic characteristics that produce those traits.

INVESTIGATING ALTERNATIVE RESOURCES FOR URBAN WATER CONSERVATION

The Dallas Center’s award-winning water conservation programs investigate the engineering, application, and economic feasibility of efficient water-use technologies to offset a growing lack of freshwater due to high population growth in urban Texas. Alternative water resources such as graywater, air conditioning condensate, and rainwater require relatively little energy to capture and can reduce demand on potable public water supplies. Researchers in Dallas collect and analyze data from a variety of alternative water resources in Texas and in the arid country of Qatar. They use their findings to recommend interventions in design, sizing, distribution, and reuse. The center’s researchers also test low-pressure irrigation technologies and demonstrate their effectiveness.
DESIGNING GREEN INFRASTRUCTURE FOR STORMWATER MANAGEMENT

The Dallas Center’s urban stormwater management program works to offset flooding, pollution, and water distribution inequality caused by capping off water-permeable soils with impervious structures like roads, parking lots, and buildings in urban areas. Stormwater runoff caused by urbanization is the nation’s leading source of water quality impairment. The Dallas Center’s stormwater management program employs sophisticated monitoring equipment, watershed-scale decision-making processes, and hydrologic modeling to study runoff effects and ultimately design and evaluate low-impact strategies for mitigation. Low-impact development, or green infrastructure, includes practices like bio-retention areas, permeable pavements, green roofs, and rainwater harvesting initiatives. The center’s program also investigates natural stream restoration design to reduce pollution from streambank erosion.

PRODUCING FRESH FOODS IN URBAN FOOD DESERTS

A key new initiative at the Dallas Center is the development of new ways to produce fresh foods in urban food deserts — areas with limited availability of fresh produce. Fresh fruits and vegetables are an essential component of a healthy diet, and supplying these to urban areas typically requires transportation over large distances. That time and distance often result in lower nutritional content, high spoilage, and waste. Urban food deserts ultimately contribute to nutritionally related chronic diseases, such as obesity and diabetes. The Dallas Center’s food production initiatives are designed to explain the fundamental genetic and biochemical mechanisms controlling efficient use of resources by plants. The programs aim to develop new plant varieties designed to grow best in controlled environments, including greenhouses and vertical farms.

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.

RESEARCH IMPACTS

- The Dallas Center’s turf development program has released 17 turfgrass varieties to date and is recognized as the premier program for the development of new varieties of Zoysiagrass, the most environmentally friendly turfgrass variety. In 2015 the center released the drought-tolerant St. Augustine variety ‘TamStar’, which is licensed to multiple companies for commercial sale.
- Specialists in the center’s Water University public outreach program have constructed and distributed more than 12,000 rain barrels to date, saving an estimated 27 million gallons of municipal water and preventing millions of pounds of pollutants from entering Texas waterways.
- Researchers and regional partners, through Water University, have developed and implemented watershed protection plans for three major water supply reservoirs in north central Texas.
- With federal and state funding, the center is constructing one of the nation’s largest low-impact development research facilities. It will provide long-term performance and impact data using full-scale installations of technologies such as permeable pavement and bio-retention streams.
- The center is leading stormwater management efforts that could help to reduce total suspended solids, phosphorous, and nitrogen pollution in surface water by 90%, 72%, and 66%, respectively.