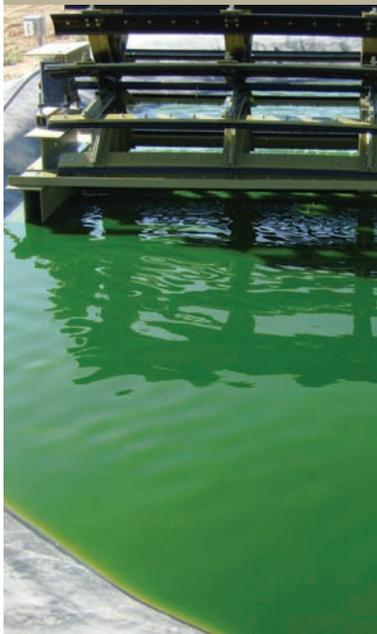


## Texas A&M AgriLife Research and Extension Center at Lubbock



Established in 1909, the Lubbock Center, in the Texas Southern Great Plains, serves a semi-arid agricultural region with over six million acres of dryland and irrigated crops. Additional research farms associated with the center, at Halfway, Helms, Lamesa, and Pecos, play a vital role in improving regional crops (including cotton, corn, grain sorghum, peanuts, and potatoes) and in technology and management systems to enhance irrigation efficiency and reduce water use. Special initiatives include cotton germplasm screening, cropping systems, algae biofuels research, irrigation efficiency, and water conservation for the Ogallala Aquifer.

The center's researchers work with their counterparts at Texas Tech University (14 joint appointments) and the U.S. Department of Agriculture's Agricultural Research Service to meet the needs of the region and its people. Since 1947, the center has collaborated with the USDA, the Texas Department of Agriculture, and Plains Cotton Growers to eradicate the boll weevil. Their success, along with integrated pest management and pest-resistant cotton varieties, has lowered the use of insecticides in High Plains cotton by more than 70%. Other collaborators include Texas A&M AgriLife Extension Service District 2 offices, Agricultural Complex for Advanced Research and Extension Systems (AG-CARES), Lamesa Cotton Growers and other commodity associations, and corporate partners.

### Current Research

#### *Improving crops through long-established research*

Crop-breeding and genetics programs at the Lubbock Center are focused on cotton, corn, oil seed, potatoes, peanuts, and sorghum. The programs are internationally recognized for their development of hybrids, stay-green characteristics and greenbug resistance in sorghum, multi-trait cotton germplasm screening and quality improvement in cotton, and high-yielding potato varieties. Center researchers have also developed corn germplasm that is resistant to mites and earworms as well as hybrids requiring less water than commercial hybrids. Lubbock Center scientists have conducted sorghum research for nearly a century, including studies on the genetics of height, maturity, lodging resistance, drought and insect resistance, and other important qualities.

One of the center's major contributions was the development of stormproof cotton and the mechanical cotton stripper in the 1930s. These improvements changed the Southern High Plains from a ranching to a farming region, contributing to a population increase and influencing cotton production worldwide. Researchers continue to develop new cotton germplasm with improved qualities, including resistance to diseases and pests. More than 3.5 million acres of cotton are grown on the Southern High Plains, and the textile industry values this cotton for its superior fiber quality.

Current crop research at the Lubbock Center includes cotton entomology, cotton and peanut pathology, cropping systems, horticulture, viticulture, and weed science. Other studies are being conducted in silage performance testing, seed cotton handling and storage, urban vegetable gardening on the High Plains, spindle and stripper cotton harvesting, soil fertility testing, wheat varieties, and alternative crops (such as growing guayule for rubber).



### ***Studying algae as a potential feedstock for biofuels***

Scientists at the Pecos Algae Research and Development Facility at the Texas A&M AgriLife Research Station at Pecos, in partnership with General Atomics, are working to develop and demonstrate algae growth and harvesting techniques and bio-oil extraction processes that can be commercially scaled and economically replicated in the Desert Southwest for industrial production of biofuels. Revolutionary changes in algae growth efficiency and separation technology could create an algae biofuels industry that is economically competitive with current fuel prices. If a successful system can be demonstrated, 2,000-acre production systems may be a reality for the Permian Basin of Texas and the southwestern United States.

### ***Developing water-saving irrigation systems***

Center researchers at Halfway developed the low energy precision application (LEPA) center pivot irrigation system, which makes the most of limited water supplies by applying water directly to plants. With more than 5,000 systems in use by 2011, this irrigation method has revolutionized crop production in water-scarce regions. Current work on subsurface drip irrigation (SDI), LEPA systems, and low energy spray application (LESA) center pivot technologies, have significantly improved both water and energy efficiency in agricultural irrigation across the Southern High Plains.

### **Research Impacts**

- For each 2,000-acre unit of algae biofuels production, Texas A&M economists predict about \$190 million per year in local economic impact.
- Center pivot irrigation systems have improved water-use efficiency by 40%–50% in the Southern High Plains.
- Water and energy efficiency increased 1.36% per year over the past seven years when combining low energy precision application and subsurface drip irrigation technologies.
- Crop-breeding programs have developed drought- and disease-resistant cotton and corn germplasm, superior-yielding potato varieties, stress-resistant peanuts, and greenbug-resistant sorghum.

### **Lubbock Center Facilities**

- Lubbock — 356 acres, with facilities including offices, laboratories, greenhouses, and shops
- Pecos — 508 acres
- Halfway/Helms — 296 and 307 acres, respectively
- Lamesa (AG-CARES) — 253 leased acres

### **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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