WHEAT PROGRAM

Wheat Improvement Programs

The small grains improvement effort at Texas AgriLife Research takes place in two centers of excellence, with each housing numerous scientists, in a multidisciplinary approach to cultivar development utilizing a combination of conventional and molecular breeding techniques. The College Station center focuses on wheat and oats for the South Texas and Blacklands regions of Texas, while the Amarillo center develops wheat and triticale lines for the Texas High Plains and Rolling Plains.

Statewide emphasis is on cultivar development of traits that affect grain yield, end-use quality, forage production, and rust and greenbug resistance. In addition to these research goals, the Central and South Texas regions are developing varieties that contain high-temperature tolerance, low/intermediate vernalization requirements, and hessian fly resistance. The Blacklands region’s improvement goals are resistance to hessian fly, septoria diseases, and powdery mildew. The High Plains and Rolling Plains research is on tolerance to drought, high temperatures, and wheat stripe mosaic virus, as well as water-use efficiency, and hessian fly resistance.

Other studies include development of wheat cultivars that can be utilized under an identity preserved program for the production of tortillas and other flat breads.

Because Texas is a primary incubator for rust spores that move through the wheat production areas of the Great Plains, AgriLife Research’s small grains program maintains a 20-acre rust screening nursery at Castroville, Texas, that is available to seven public and private wheat development programs as well as to AgriLife scientists.

Molecular efforts are directed at identifying markers for a marker-assisted selection program. Markers have been identified for resistance to greenbug, leaf rust, stripe rust, Ug99 stem rust, and hessian fly resistance, in addition to wheat streak mosaic virus.

Most commercially available hard red winter wheat varieties in the United States are resistant to prevalent races of stem rust. However, in 1998 a particularly virulent race of stem rust was identified in Uganda as Ug99. Since 1998, Ug99 has traveled through Africa and the Middle East. Eventually, it will arrive in the U.S., with most commercially available varieties being very susceptible. AgriLife Research scientists are working with a federal rust initiative to develop Ug99-resistant cultivars. A widely used new AgriLife Research release is Ug99 resistant, and efforts have been made to rapidly introgress this trait into the newest experimental lines developed for future release.

http://AgriLifeResearch.tamu.edu
Over the past eight years, great progress has been made in AgriLife Research’s small grains programs. Commercially available releases continue to increase in market share, not only in Texas but also throughout the Great Plains. Milling and baking quality has improved significantly, with AgriLife researchers winning national awards for end-use quality of Texas A&M varieties. Royalty revenues, which assist funding of programs and attracting/retaining top scientists, have increased 18 fold during the same period.

AgriLife Research is continuing to improve small grains by using traditional funding methods of state, federal, and commodity group grants/initiatives. Additionally, AgriLife Research has engaged many corporate partners to achieve goals of mutual interest.