

Researchers finding ways to add value to cotton

Not much can be done to control the price of lint harvested from cotton, but research can develop ways to add value to cotton by exploring alternative uses for its byproducts such as the seed and waste materials. Higher-yielding, better-quality lint is another way to increase the value of the crop.

The Cotton Breeding Program at New Mexico State University, in collaboration with the USDA-ARS Southwest Cotton Ginning Research Laboratory, has developed a new Acala cotton cultivar, Acala 1517-08 (*Gossypium hirsutum* L.), that possesses superior Acala cotton type fiber quality and high yield potential.

Acala 1517-08 was tested in 16 replicated field tests in New Mexico from 2003 to 2009, four locations in east Arizona and the High Plains of Texas in 2004, 2006 and 2008, and 14 locations/tests in the Southeast, the middle southern part of the U.S. and southern Texas in 2006 and 2008.

Acala 1517-08 had similar or significantly higher lint yield than the standard "Acala 1517-99" across all the environments tested (averaged 15.2 percent higher in New Mexico and 16.2 percent higher in the Southeast and Mid-south). Its yield was also consistently and significantly higher (28.9 percent) than Acala 1517-99 in east Arizona and the Texas High Plains. Its lint yield was comparable to or significantly higher than that of "PHY 72 Acala."

On average, Acala 1517-08 displayed higher lint percentage and fiber elongation, and longer and stronger fibers than Acala 1517-99, but with smaller seed size, similar boll size and higher micronaire. Acala 1517-08 is best adapted to the southwest arid region of the Cotton Belt where Acala 1517 have been grown, representing a new con-

ventional Acala 1517 cotton cultivar with higher yield potential, and longer and stronger fibers.

Cotton Incorporated is currently funding the project "Yield Potential, Fiber Quality and Adaptability of Glandless Cotton in New Mexico."

A glandless cotton cultivar (Acala GLS) is being evaluated in New Mexico.

Field trials are currently ongoing at the Leyendecker Plant Science Center, in Las Cruces and the Artesia Agricultural Science Center to evaluate this Acala cultivar. Additionally, we will be working with four growers in Mesilla Valley and Artesia to try out Acala GLS on their farms.

At the end of this project, we hope to disseminate information on how Acala GLS cotton performs at the various trial sites.

Glandless cotton contains no gossypol, a chemical substance that makes cotton seeds inedible for human consumption. With the absence of gossypol, the cotton seed of the glandless Acala variety is a rich source of protein. The cottonseed of the glandless variety can also be used to make ice cream, butter, energy snack bars, salad toppings, and confectionaries.

The market for the glandless cotton is yet to emerge fully, and will depend on the demand by the food industries. There is also a large market for the use of GLS seed as a protein in the shrimp feed industry.

Potentially the seed could be worth as

much as \$1,500 per ton, based on feed stock currently used for the shrimp industry.

Oregon State University food technology group is currently exploring numerous ways to turn the GLS seed into tasty food products such as cotton seed butter which is similar to peanut butter but does not contain allergens like those found in peanuts. Cotton seed is very comparable in nutrition to soybeans. Sunland peanuts in Portales is looking at the possibility of using GLS cotton seed to fill a niche market especially since cotton is a good rotational crop for peanuts.

Lastly, another possible way to add value to cotton is to utilize the gin trash to create alternative products. Greg Holt from U.S. Department of Agriculture-Agricultural Research Service Cotton Research Laboratory in Lubbock has been conducting research on the conversion of gin trash to various useful products. Such products developed from gin trash include roughage for ruminant livestock; packaging and insulation materials; fuel source for residential and industrial purposes; building materials; and erosion control products for grass seed establishment. The gin trash undergoes processes such as sizing, sorting, grinding, densifying and fiberizing to make it useful as a raw material for these various products.

Cotton production seems to be picking up in New Mexico, especially with the rising lint prices and more acreages of farmland are likely to be put into cotton during the next growing season.

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