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November 5, 2016

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King Mesa Gin is one of six gins, in the U.S., using DNA tagging technology

Oct 17, 2016 Ron Smith- Southwest Farm Press

King Mesa Gin, Inc. at Lamesa, Texas, is one of six cotton gins across the U.S. to install cutting edge technology that enables manufacturers, retailers, and consumers to trace products back to the specific farm where cotton was produced.

Applied DNA Sciences at Stony Brook, N.Y., installed the SigNature T DNA tagging and Transfer System, linked to their HomeGrown Lonestar-Cotton Proudly Grown in the USA program, in the West Texas gin. MeiLin Wan, vice president for textiles for Applied DNA Sciences, says King Mesa is a natural fit for the technology, and praised CEO Jerry Harris for his commitment to “adopting innovative processes and technologies.”

King Mesa is the first gin in Texas to use the technology and joins four gins in California and one in Arkansas. The Texas and Arkansas operations are the first Upland cotton gins to add DNA tagging. King Mesa expects to tag 50 million pounds of Upland cotton this harvest season.

“We are proud to be a part of the HomeGrown family,” Harris says. “It’s an opportunity to promote U.S. cotton and meet a real need for cotton that is pure and high quality. DNA-tagged cotton means that the people here in the U.S. can keep on growing, harvesting, and ginning cotton. Cotton is the fiber of our lives.”

DNA ADVANTAGES

Cotton with the DNA tag may warrant a premium from the market. Several factors support the advantage of DNA tagging, Wan says.

The program began in 2014 with Pima cotton in California. The DNA tag guaranteed that cotton was 100 percent Pima, a claim that could be tested anywhere along the manufacturing process, including the final product. She cites a recent issue involving cotton labeled 100 percent Egyptian that turned out to be contaminated with other types of cotton, and says it emphasizes the need to guarantee quality and purity. DNA tagging offers that assurance.

Efforts to promote U.S. cotton in recent years as high quality, and produced with attention to environmental and labor concerns, benefits U.S. cotton in international markets, Wan says. Retailers also are interested in where cotton is produced. “Traceability has been the missing piece,” she says. She agrees that farmers and retailers may see premiums for DNA-tagged cotton fiber and end products, but says, “The real benefit is in knowing where cotton came from and where it is going.”

CONFLICT COTTON

Another issue — and one to which retailers are committed — is avoiding “conflict cotton,” produced where human rights are ignored and may involve child and/or slave labor. Cotton from Uzbekistan, as well as some from India and China, may be considered conflict cotton, Wan says. “The U.S. has high standards for labor and quality. DNA tagging gives retailers confidence that the fiber they use comes from U.S. cotton. The U.S. cotton industry can benefit from this technology.”

Applied DNA Sciences is tagging only U.S. cotton. “We may do other countries later,” she says, “but now we are concentrating on U.S. cotton.”

She sees opportunities for more gins across the cotton belt to adopt the technology, but says the amount of DNA-tagged cotton will depend on retailer demand. “Growth is incumbent on retailers stepping up and indicating they want it. If they do, more gins will add DNA tagging.”

Upgrading a gin with the DNA technology is not particularly difficult, and can be accomplished in about a week. “We have a turnkey operation, providing the equipment and installation,” she says. “We also do a test run before the ginning season begins.”

IN THE GIN

Jerry Harris says the process will change the way he gins cotton, but not significantly. “We have to handle moisture differently throughout the ginning process, so we are changing the way we do some operations.”

Wan says the process doesn’t affect cotton hydration, the final step before baling. “It fits into the usual processes of the gin.”

DNA tagging includes equipment that sprays a DNA molecule on the cotton. That DNA tag stays with the cotton throughout the manufacturing chain and into the final product, which means, she says, a farmer could buy a shirt from a retailer and determine if that cotton was grown on his farm. The DNA molecule includes the type of cotton, the date it’s ginned, and the location where it was grown.

Harris believes the technology will be a boost to the Texas and the U.S. cotton industry. “Texas produces more cotton than any other state in the country. With eight production regions around the state, it is the leading cash crop. Texas produces approximately 25 percent of the country’s cotton on more than 6 million acres, the equivalent of over 9,000 square miles of cotton fields.”

His main priority, he says, is to improve potential for cotton farmers to make a living from their land, and is pleased with the new opportunity to promote Texas and U.S.-grown cotton.

“Cotton growers face many challenges, with much uncertainty about their future,” Harris says. “The HomeGrown program provides a real opportunity to provide some certainty that cotton grown in the U.S. will end up in a product the consumer will enjoy and buy again. King Mesa is the first in Texas to explore this new program, and we look forward to seeing it expand to more gins in the future.”

The DNA tagging program began in California’s San Joaquin Valley in 2014 for Pima cotton, Wan says. The first year they tagged 5 million pounds; in 2015, other gins were added, and the total increased to 30 million pounds.

UPLAND COTTON

“This is the first year we’ve worked with Upland cotton,” she says. “With Upland varieties, the purity issue is not as big a concern, but being able to guarantee U.S.-grown cotton with its reputation for quality and sustainability is important.”

Wan says she is excited about working with specific products for each cotton type. “We have certain products for Pima, and we will have others for Upland. We will have an opportunity to work with denim, too.”

Applied DNA Sciences says sustainability is a crucial factor in the marketplace. “Sustainability and responsibility begin at home,” says Dr. James A. Hayward, company CEO. “The best way to exclude ethically-challenged cottons from countries such as Uzbekistan is to tag at the source and follow the SigNature T tagged fiber to yarn and on through fabric and finished goods.

“We are excited to see how HomeGrown can help to promote the use of U.S. cotton globally, specifically in providing a solution for traceability from dirt to shirt. Retailers and brands have a great story to tell the end-user about why U.S. cotton is king.”

COMPLETE TRACEABILITY

First launched in 2015, “HomeGrown-Cotton Proudly Grown in the USA,” uses the Applied DNA Sciences’ botanical-based SigNature T DNA molecular system to tag and test the long staple fibers in Upland cotton, the most widely planted species in the U.S., accounting for at least 97 percent of all production, or roughly 7 billion pounds per year.

The Homegrown Lonestar program tags Upland cottons, including Acala and Delta. The three DNA-tagged types of HomeGrown Upland cotton provide the full spectrum of variety required by cotton manufacturers. Adoption has already begun with merchants, ginners, manufacturers, and retailers in India, Pakistan, Bangladesh, China, Turkey, and the U.S., according to Applied DNA Sciences sources. The combination of HomeGrown Lonestar and SigNature T DNA tags provide end-to-end traceability from the U.S. farmer to the retail shelf, Hayward says. “Secure supply chain custody protocols, storage, sampling, and testing procedures are required as part of the HomeGrown programs, enabling retailers and brands to be confident in the label claims on the products they sell to consumers.”