PROGRESS DEVELOPING IMPROVED TEXAS UPLAND COTTON GERMPLASM FOR IMPROVED YARN QUALITY.

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Abstract

Ring and rotor spinning predominate the cotton spinning market with ring dominating globally while U.S. spinners prefer rotor because of its production speed and high automation level. New emerging spinning technology is “air jet” spinning with the Murata Vortex Spinning (MVS) version predominating. Rotor spinning produces yarn 5 times faster than ring, and the MVS produces 100 % cotton yarn over 20 times faster than ring. Fiber quality improvements will be necessary for upland cotton to be competitive with other fibers on MVS. Texas A&M Agrilife Research has released improved fiber quality germplasm lines and cultivars that equal or exceed the fiber quality parameters associated with the New Mexico Acala germplasm pool, which is considered the elite quality among upland breeding pools. Two improved quality Texas A&M germplasm lines were compared with Acala 1517-08 for High Volume Instrument and Advanced Fiber Information System fiber quality parameters plus yarn strength and appearance parameters. These genotypes were grown in 2017 and 2019 at Weslaco, Texas under irrigated culture. The three genotypes were similar in all fiber quality measurements except length and fiber bundle strength. TAM 06WE-621 and TAM KJ-Q14 produced stronger yarns with improved yarn appearance when spun on either spinning technology compared with Acala 1517-08. Data suggest that the Texas A&M quality germplasm pool can be used to develop upland cotton cultivars that will produce fibers competitive for the emerging MVS technology.