

## **FIBER QUALITY OF ROLLER GINNED UPLAND COTTON**

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### **Abstract**

A roller gin stand was modified to increase the ginning rate of upland cotton. The speed of both the ginning roller and rotary knife was tripled, and the pressure between the ginning roller and the stationary knife was increased by about a third. The feeder/extractor was modified by enlarging the opening at the exit point of the top row of cleaning cylinders, and by adding a kicker cylinder at the exit point on the bottom row of cylinders. To keep roller temperature at an acceptable level, a water spray system was added to the duct that blows air onto the ginning roller. And finally, the lint flue transition was redesigned to avoid choke-ups that may occur with the higher ginning rates.

An experiment was run to determine the fiber and cottonseed properties of roller-ginned upland cotton ginned at standard and elevated rates. In addition to roller-ginned upland cotton, the experiment included treatments of roller-ginned Pima cotton, and treatments of saw-ginned upland and saw-ginned Pima cotton. The only results available at this time are HVI fiber properties on treatments that used upland cotton. When ginning upland cotton, the roller gin stand averaged 1.3 and 4.4 bales per hour at the standard and elevated rate, respectively. Fiber property results indicate that there is no significant difference between roller ginned upland cotton ginned at the standard and elevated rate. Averages of the HVI Classing Office results are as follows: color grade was 21, leaf grade was 3.0, micronaire was 3.4, staple length was 38.7, fiber length was 1.210 inches, uniformity was 82.0%, strength was 28.4 g/tex, reflectance was 79.7, and yellowness was 8.9. Lint turnout was not significantly different due to ginning rate and averaged 36.4%. Other fiber and cottonseed properties on samples taken during the formal ginning test have not been received at this time. These properties will include nep, short fiber, and trash content in the fiber, cottonseed linters, and a profile of fiber length. All of the fiber and cottonseed results, along with detailed information about the roller gin stand and formal ginning test, will be included in a future publication.

This research may make it economically feasible to roller gin upland cotton, and therefore provide the cotton producer with a fiber that has superior properties. New markets may develop, creating a demand, and higher price, for a fiber that distinguishes itself from others.