

COMPARISON OF FIBER PROPERTIES OF SAW AND ROLLER GINNED LINT SAMPLES

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Abstract

A better understanding of cotton fiber quality and factors that affect it has become critical to sustain the U.S. cotton industry. New traits, particularly, short fiber content, need to be characterized, as they are likely a major component of the efficiency of spinning cotton fiber. In this study, hand harvested 50 boll samples from 10 genotypes grown at Keiser, AR and Stoneville, MS were split and ginned on a standard laboratory saw gin and on a laboratory roller gin, respectively. The samples were then analyzed for HVI and AFIS properties. While it is well known that genetic variation exists for standard HVI properties, genetic variation of AFIS properties is not well characterized. PROC MIXED analysis indicated typical genotypic variation among HVI properties, and also showed significant variation for short fiber content, fineness, length by weight, maturity, neps and seed coat fragments. Significant interactions were also found between ginning method and genotypes for short fiber content, fineness, length by weight, maturity, immature fiber content, and seed coat fragments, as well as the HVI measurements for length and uniformity. The most striking variation between ginning methods was found in the AFIS measurement of short fiber content, with saw gin mean of 4.8 % and a roller gin mean of 15.1 %. While the objective of this study is not to suggest changes to ginning methods, it does suggest the manner in which cotton fiber is handled and processed may affect fiber quality and that different genotypes respond differently to processing methods.