EFFECT OF SEED COTTON CLEANER SPEEDS ON MACHINE PERFORMANCE: 2ND YEAR

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Abstract

Previous research demonstrated that increasing cylinder cleaner speeds and stick machine saw speeds can improve cleaning efficiency. However, the effects of increasing machine speeds on fiber loss and quality are unknown. The objectives of this study were to determine the effects of cylinder cleaner speed and stick machine saw speed on foreign matter removal, fiber loss and turnout, and fiber quality. Seed cotton was processed through the minimum recommended sequence of ginning machinery. Four cultivars were processed at five cylinder cleaner speeds and five stick machine speeds. The first year of the study used cultivars grown in 2011; four different cultivars grown in 2014 were used in the second year of the experiment. Samples were collected from the seed cotton for determining moisture and foreign matter content. The material removed by the seed cotton cleaners was also sampled to determine fiber loss. HVI and AFIS samples were collected before and after the lint cleaner to evaluate fiber quality. Weights of all process streams were recorded to determine the proportion of material removed by each cleaner and lint turnout. In the first year of this study, both foreign matter removal and fiber loss were increased at higher cleaner speeds, although all speeds produced desirable leaf grades. Other than measurements of foreign matter content, HVI and AFIS fiber quality parameters were not significantly affected by cleaner speeds. In the second year of this study, higher cylinder cleaner speeds resulted in greater foreign matter removal and fiber loss. Stick machine saw speeds did not have a significant effect on foreign matter removal or fiber loss. While this effect was statistically significant in the first year of the study, the differences between different speeds were small. Fiber quality data has not been analyzed for the second year of the study.