

**FOREIGN MATTER AND LINT QUALITY AS AFFECTED BY  
DEFOLIATION LEVELS IN STRIPPER HARVESTED COTTON**

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**Abstract**

Studies were conducted to determine the effects of harvest aid chemicals on cotton produced in the stripper harvested areas of Texas and Oklahoma. Previous studies conducted on small plots indicated that harvest aid treatments did not have a detrimental effect on fiber quality. Harvest aid treatments that were not as effective in terms of defoliating leaves but were less expensive had HVI grades comparable to those harvest aids that were more expensive and had high defoliation ratings. Additional large-scale harvest aid studies that compared high cost materials which were effective in defoliating leaves from the plant and low cost harvest aids that resulted in high leaf ratings at time of harvest found no difference in fiber quality. In 1999 studies were conducted to determine the effect of harvest aids that were less expensive but resulted in much higher residual desiccated (or stuck) leaf levels at time of harvest, and what effect this would have on seed cotton foreign matter and fiber quality. Studies were conducted in Texas at Thrall, Waxahachie, Vernon, Crosbyton, Claytonville, and Cayonosa and Altus, Oklahoma. The objective of this study was to compare cotton harvested from plants treated with a harvest aid that had a high degree of defoliation (low leaf) with plants which had a high number of leaves (high leaf) remaining on the plant at time of harvest. The high leaf harvest aid treatment was obtained by a single application of paraquat (32oz/a of 2 lb/gal material). This harvest aid treatment had been consistent in desiccating the cotton plant with a minimum of leaf defoliation prior to harvest. The low leaf treatment selection was dependent on the location of test and previous history. The harvest aid treatment that had given the highest defoliation for that location was used for the low leaf treatment. Cotton at all locations was harvested with a brush-roll cotton stripper and stored in modules until ginned at a commercial gin in the local area. Two modules were harvested from of each harvest aid treatment. One module was ginned within 1 to 4 days of harvest and the second module was stored 3 to 4 weeks before ginning. Samples were collected at the module, module feeder and feeder apron to determine moisture and foreign matter of the seed cotton. Lint samples were collected at the lint slide for USDA-AMS HVI analysis to evaluate fiber quality. Moisture content of seed cotton samples collected at the module tended to be higher for the low leaf treatment. The greatest variation in moisture was due to project locations which ranged from 6% to 8%. Fractionation of seed cotton samples from the module indicated that differences in fine trash for harvest aid treatments were obtained at 4 of the 6 locations. At 2 of the 6 locations, there was no

difference in fine trash, which could be expected due to inconsistency of harvest aid as affected by environmental and application factors. Pre-cleaning and lint cleaning in the ginning process were sufficient to remove the leaf trash from the seed cotton such that no discounts were encountered due to leaf grades. Leaf grades for 6 of the 7 locations were 3 or less. One location had leaf grades that averaged 40. A correlation between fine trash content of field cleaned seed cotton versus leaf grades was noted. However, an increase in fine trash from 1.5% to 7.5% resulted in an increase of only one leaf grade (from 1 to 2). Similar results were observed for a correlation between fine trash in seed cotton at the module and HVI trash. Results from this study indicate that properly desiccated cotton (although with considerable residual stuck leaves) can be stripper harvested without penalties for high leaf grades. Rainfall following harvest aid treatment was a factor that was not encountered in this study. It is possible that higher leaf grades and discounts might be observed under high moisture conditions at harvest.