

IMPACT OF EARLY DEFOLIATION ON YIELD AND FIBER QUALITY IN FIELDS EXPERIENCING VARIOUS LEVELS OF BOLL ROT

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Abstract

Timing of harvest aids continues to be a difficult decision for producers. Producers and crop advisors often are tempted to wait as long as possible on young immature bolls in the top of the plant before making the decision to defoliate. This decision can also be complicated by the occurrence of boll rot. The presence of significant levels of boll rot will often encourage the early timing of harvest aids in hopes to slow the progress of the disease. The objective of this study was to evaluate the heat unit based concept of defoliation timing to traditional methods in the presence of boll rot. Three defoliation studies were conducted in Arkansas during the 2001-growing season. The studies were conducted in producer fields located in Northeast, Central, and Southeast Arkansas. Percent open bolls is perhaps the most common method used to time defoliation. Percent open was relatively consistent across all three locations. Open bolls ranged from 29%, 48%, and 58% at 750, 850, and 950 heat units (HU) beyond cutout (NAWF=5), respectively. Boll rot ranged from 0%, 25%, and 54% boll rot at the timing of the grower standard harvest aid treatment at the Northeast (915 HU), Central (1040 HU), and Southeast (1014 HU) Arkansas locations, respectively. Plots were harvested with the producers' picker as close to the time of harvest ready time as possible. Samples were ginned and processed through one lint cleaner. Loan values were calculated based on HVI classing results. An interesting finding in this study revealed that the value of lint as determined by comparing loan values of the various timings reached numerically greatest levels at the 850 HU timing in each of the three studies. The timing interval between 850 HU and the grower standard was 5, 11, and 13 days in Northeast, Central, and Southeast Arkansas, respectively. Lint yields and value per acre were numerically greatest at the 850 HU timing at the Northeast and Southeast locations. Lint yields however only differed statistically at the Central Arkansas location. The grower standard (1040 HU – 65% open) at the Central Arkansas location resulted in significant greater lint yields than the 750 treatment. No other treatment differed statistically. However, value per acre at the grower standard timing only exceeded the 850 HU timing by \$2.25 per acre. It can be argued that timing a harvest aid application earlier by 11 days is well worth \$2.25. Increase in micronaire when calculated on a daily gain from 850 HU to the grower standard timing increased an average of 0.05 units per day and was consistent across the three locations. Defoliation prior to 850 HU beyond cutout even in the presence of significant levels of boll rot is not advised based on this study. Additional research is needed to establish lint yield and fiber quality relationships to defoliation timings when using heat unit based methods in the absence of boll rot in Central and Southeast Arkansas.