

HARVEST TIMING, BUR EXTRACTING AND WEATHERING EFFECTS ON COTTON FIBER AND YARN QUALITY

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Abstract

The objectives of this project were to document the effects of harvest timing (with harvest-aid crop termination) on field-weathering losses, cotton fiber and seed quality, and yield in the Texas High Plains. A field near Lubbock planted to a storm-proof variety (Paymaster 2326RR) was used. Treatment structure included harvest-aid (CottonQuik and Ginstar followed by Cyclone) termination versus freeze termination, along with varied harvest dates (ranging from October 4 through January 8 in 2001-02). Field plot layout was a split-plot design with harvest dates as main plots and with field cleaning vs. no field cleaning as subplots. Three replications of treatments were used in a randomized complete block design. This allowed the determination of main effects (factors) of weathering (harvest date) and field cleaning (no field cleaner vs. field cleaner) and the possible interactions. Main plot size was 8 40-inch rows, with 4-row subplots. Plot lengths were variable due to circular LEPA center-pivot rows (0.4 to 0.7 acres/sub plot).

Harvest timing had the following effects on fiber quality:

- Rain that occurred after the third harvest date washed the aphid honeydew from the lint, as well as most of the physiological sugars and part of the waxes.
- Harvest timing had no effect on micronaire as measured with HVI but delayed harvest had a slight negative effect on both maturity and fineness measurements with AFIS.
- Delayed harvesting had a negative impact on both Upper Half Mean Length and Uniformity Index% as measured with HVI, as well on the Mean Length, Upper Quartile Length and Short Fiber Content as measured with AFIS.
- Delayed harvesting had a negative impact on HVI fiber strength.
- Rain that occurred after the third harvest impacted negatively HVI color and increased the AFIS Visible Foreign Matter Content.

Harvest timing had the following effects on yarn quality (ring- and rotor-spun yarns):

- Delayed harvesting resulted in an increased yarn CV% for the ring yarns but not for the rotor yarns. It came with an increase in the number of thin places, thick places and neps for the ring yarn but not for the rotor yarns.
- For the finer ring yarns, delayed harvest increased yarn hairiness. This is probably related to the higher short fiber content.
- Weathering had also a negative impact on yarn tenacity and CSP for both types of yarns. Yarn elongation had also tended to be lower after weathering.

Harvest timing had the following effects on fabric quality (knit fabric):

- Delayed harvest had an impact on dye uptake (the dyed fabric was of lighter shade).
- Weathering resulted in an increase in the number of white specks.

With the exception of the white specks count, these results are very similar to the results obtained last year under totally different growing and weathering conditions.

The third year of testing is ongoing. A synthesis of the 3 years will be published in 2003.

Acknowledgments

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