HARVEST AID EFFECTS ON DEFOLIATION, DESICCATION AND LINT QUALITY OF PICKER AND STRIPPER HARVESTED COTTON

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Abstract

In 1992 the Cotton Defoliation Work Group began the Uniform Harvest Aid Performance and Fiber Quality Evaluation. This abstract summarizes some of the data collected from 1992 through 1995 at two locations in Texas that were included in this project. The location in Central Texas was stripper harvested and the other located in the Coastal Bend was spindle picked. Harvest aid chemicals were initially applied at about 60% open boll to plots arranged in an RCB design with 4 replications. Harvest aid treatments that were common among these two locations were: Untreated, Folex® 1.5 pt, Dropp® 0.2 lb, Harvade® 8 oz + crop oil concentrate (COC) 1 pt, Harvade 6.5 oz + Prep® 1.33 pt + COC 1 pt, Folex 0.75 pt + Prep 1.33 pt, Dropp 0.1 lb + Prep 1.33 pt, Dropp 0.1 lb + Folex 0.75 pt, and Folex 1.5 pt + Roundup® 1 pt. The Dropp + Folex, and Folex + Roundup treatments were initiated in 1993. At the stripper-harvested location all treatments, including untreated plots, were desiccated 5 to 7 days after initial treatment with Cyclone® (2 pt/acre). Other treatments were also included in these field trials, however, for this summary only those that were common to both locations, having 3 or 4 years of consistent use, were included in the analyses. Standardized evaluation data was collected at 7 and 14 days after treatment (DAT). Only the percent defoliation and percent desiccation at 14 DAT are used in this summary. Seed cotton samples were stored in small bags prior to ginning at the Texas A&M Research and Extension Center in Lubbock, TX. This is an inclined cleaner, extractor feeder, 10 saw gin equipped with a single stage lint cleaner. Lint from ginned samples were subjected to HVI analysis that included micronaire, length, length uniformity index, strength, % trash, Rd (gray content), and +b (yellow content). The ANOVA was computed for the above parameters over years for each location, or harvest method, assuming that years were random and treatment effects were fixed.

Results from the ANOVA show that for defoliation and desiccation 14 DAT, there was a significant year×treatment interaction, while for the lint quality parameters, only the year main effect was significant. The exceptions to this were for desiccation 14 DAT at the picker site, where only the treatment main effect was significant, and for Rd, at the stripper-harvested site, where there was a significant year×treatment interaction. The year×treatment interaction for defoliation and desiccation is not surprising given the marked effect that environment and crop condition can have on the response of the crop to harvest aids. The fact that there was, in general, no treatment effect on lint quality is important. First, this indicates that harvest aids do not adversely affect fiber quality. Second, these results do not indicate that harvest aids are unimportant. They are important for timely harvest through enhanced defoliation, desiccation, boll opening, and, in turn, reducing the plant and seed cotton moisture in the field. They may also reduce the risk of damage to seed cotton stored in modules, and lower ginning costs by reducing trash in the seed cotton. Though differences in defoliation and desiccation were observed, ginning and lint cleaning apparently normalize these differences in trash content where you would expect them to appear (% trash, Rd, and +b). The fact that these samples were stored under different conditions than would exist in a module would also tend to reduce the impact of trash on lint quality.

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