

**HARVEST-AID COMBINATION AND
APPLICATION TIMING EFFECTS ON LINT YIELD
AND QUALITY OF FIBER AND SEED**

Mark Kelley and Randy Boman

Extension Assistant-Cotton and

Extension Agronomist-Cotton

Texas Agricultural Extension Service

Lubbock, TX

Norm Hopper

Professor, Texas Tech University and

Texas Agricultural Experiment Station

Lubbock, TX

Abstract

With the recent expansion of harvest aid usage from less than 30% of the acres treated in 1992 to more than 80% in recent years, harvest aid chemicals are now very important management tools for cotton growers in the High Plains. Weathering losses can often be reduced when harvest aids are utilized. The objective of this research was to evaluate the effects of harvest-aid treatments applied at various stages of boll opening on lint yield, fiber properties and seed quality. Harvest aid chemical formulations included: Prep 6 EC (6 lb ethephon/gal) boll opener, Folex 6 EC (6 lb tribufos/gal) defoliant, Ginstar EC (1 lb thidiazuron and 0.5 lb diuron/gal) defoliant, and Cyclone 2 EC (2 lb paraquat/gal) desiccant. Harvest aid treatment structure included the following three chemicals and combinations: 1) Prep (1.3 pt/acre) + Folex (1.0 pt/acre), 2) Ginstar (10 oz/acre), and 3) Prep (1.3 pt/acre) + Ginstar (5 oz/acre). The three chemical treatments were each applied at 5, 30, and 60% open bolls, and were followed by termination with Cyclone at 16 oz/acre applied 7-14 days after the 60% open boll applications. An untreated control (taken to frost), and a control which received Cyclone termination at 16 oz/acre 7 to 14 days after 60% open boll applications were also included. Experimental design was a randomized complete block with 4 replications, with a factorial arrangement of treatments. Thus, a total of 11 harvest aid chemical, timing and control treatments were used. Plots were four 40-inch rows wide by 50 ft in length. A Lee Company "Spider" self-propelled plot sprayer was used. XR Teejet XR11002VS (50 mesh) flat fan spray tips were calibrated to deliver 15 gpa at 24 psi. Ground speed was 3 mph, and a 20-inch nozzle spacing was configured. Two center rows 50 ft in length were harvested for yield with a modified John Deere 482 plot stripper at the 1998 Olton (Lamb County) and 1999 Halfway (Hale County) locations. The 1999 Petersburg (Floyd County) location was harvested by hand pulling bolls from 13 row-ft. Samples from each plot were ginned on a laboratory gin and HVI fiber properties were determined at the Texas Tech International Textile

Center. Fifty bolls were hand picked from the upper, middle, and lower strata of plants and the resulting seed samples were evaluated for quality (density air separation). Defoliant-only application (Ginstar) and boll opener plus defoliant applications (Prep tank mixed with Ginstar or Folex) generally resulted in similar plant responses with respect to lint yield and micronaire (chemical main effect). No differences in lint yield were noted among various harvest aid materials. However, the Ginstar treatment resulted in higher micronaire than tank mixes of Prep and Ginstar or Folex on late-planted cotton at the 1999 Halfway site. Significant differences for application timing main effect were observed. Applications of all harvest aids at 5% open bolls significantly reduced both yield and micronaire at all sites, compared to the 60% open boll treatment. No significant differences between 30% and 60% open boll applications were noted for lint yield or micronaire at any of the sites. Pooled data indicate that applications made at 5% open bolls reduced both lint yield (-12%) and micronaire (-8%) compared to control treatments. A nonsignificant trend for early applications (at 5% and 30% open bolls) was noted for increased seed clean out percentage in uppermost strata when compared to the standard application timing (60% open bolls).