

**EFFECTS OF PREP AND FINISH  
ON AGRONOMIC CHARACTERISTICS  
OF COTTON IN THE TEXAS HIGH PLAINS**

**Randy Boman and Mark Kelley**  
**Texas Agricultural Extension Service**  
**Lubbock, TX**  
**Tommy Doederlein**  
**Extension Agent-IPM**  
**Texas Agricultural Extension Service**  
**Lamesa, TX**

**Abstract**

Harvest aids are becoming more important to High Plains cotton producers. Use of crop termination chemicals has expanded from less than 30 percent of the acres treated in 1992 to up to 80 percent treated in recent years. Harvest aid chemicals are now a very important management tool for High Plains cotton growers. As new products become available, it is important to investigate their effects on crop characteristics. The objective of this research was to compare the effects of a standard harvest-aid treatment, Prep (ethephon only) + Folex (tribufos) to a new product, Finish (ethephon plus cyclanilide synergist) applied with and without Folex defoliant at two crop stages (7 nodes above cracked boll or NACB, and 4 NACB) on boll opening, lint yields, and micronaire. Nodes above cracked boll was defined as the number of mainstem nodes above the uppermost first-position cracked boll to the uppermost first-position harvestable boll.

The trial was established on a uniform block of 'AFD Explorer' cotton in Lynn County in 1997 to investigate the effects of Prep and Finish on boll opening and other agronomic properties of cotton. Treatments were applied at 26.5 gpa, with three hollowcone nozzles per row using a Lee "Spider" self-propelled sprayer. Plot size was four 40-inch rows by 75 ft in length. A randomized complete block design with four replications was used. Treatments included an untreated check, Finish at 1 qt/acre, Finish at 1.5 qt/acre, Finish at 1 qt/acre + Folex 8 oz/acre, and Prep at 1.33 pt/acre + Folex 1 pt/acre. The Prep formulation was 6 lb/gal ethephon, Folex was 6 lb/gal, and Finish was 4 lb/gal ethephon plus 0.5 lb/gal cyclanilide. The 7 NACB and 4 NACB stages corresponded to about 30 percent open bolls, and 50 percent open bolls, respectively. Open bolls in all treated plots were harvested at application, and then approximately every 4-5 days after application. A total of six sequential harvest events per application timing were performed. The center two rows, 13 ft long were hand harvested on each date. Harvest numbers five and six from each individual plot were combined due to the small amount of bolls, and were reported as harvest number five. HVI fiber properties on composite samples were determined

at the Texas Tech International Textile Center. A total of 120 DD60 based heat units were obtained after the 7 NACB application and before the final harvest at 21 days after treatment (DAT), whereas only 40 heat units were obtained at 20 days after the 4 NACB treatment.

The 7 NACB treatments were applied under warm conditions, and was an extremely early application. The addition of Folex at 8 oz/acre to Finish at 1 qt/acre resulted in significantly higher defoliation than with Finish at 1 qt/acre alone at 8 and 18 DAT. The higher Finish rate of 1.5 qt/acre did not enhance defoliation compared to Finish only applied at 1 qt/acre. Boll opening was significantly affected by harvest aid treatment, and an ethephon rate effect was observed with Finish at 1.5 qt/acre, compared to lower ethephon rates which exhibited no significant differences among equal active ingredient rates at 8 and 13 DAT.

The 4 NACB treatments were applied to fully mature cotton, under much cooler conditions. At 8 DAT, Finish at 1 qt + Folex 8 oz/acre resulted in better defoliation than Finish at 1 qt/acre alone, however it was not significantly greater than Prep 1.3 pt + Folex 1 pt/acre. For boll opening, Finish at 1.5 qt/acre was superior to lower ethephon rates at 4, 8, and 12 DAT. Finish at 1 qt/acre was significantly greater than Prep at 1.3 pt + Folex 1 pt/acre at 8 DAT, and was numerically higher in boll opening at 12 DAT. Addition of Folex at 8 oz/acre to Finish at 1 qt/acre significantly reduced boll opening at 8 DAT compared to Finish at 1 qt/acre alone.

When compared to the untreated check, lint yield reduction averaged 121 lb/acre (or 12% of the untreated check yield of 955 lb/acre) from 7 NACB application of all ethephon treatments. Lint yield was not significantly reduced by the 4 NACB ethephon applications. Micronaire was reduced an average of 0.32 units (or 7% of the untreated check micronaire of 4.20) from 7 NACB application of ethephon treatments, and no reduction at 4 NACB application was observed.

Results from this work indicate that treatment with Finish alone at 1 qt/acre did not result in similar defoliation compared to the region standard (Prep at 1.3 pt/acre + Folex at 1 pt/acre). However, on fully mature cotton, under cooler environmental conditions, Finish did produce a higher boll opening rate than was obtained with the standard treatment.