LARGE-SCALE HARVEST-AID PERFORMANCE TRIALS IN THE TEXAS HIGH PLAINS Randy Boman and Mark Kelley Extension Agronomist-Cotton and Extension Assistant-Cotton Texas Agricultural Extension Service Lubbock, TX Johnna Patterson EA-IPM Texas Agricultural Extension Service Dimmitt, TX

Abstract

Cotton harvest-aid treatment regimes vary by location and crop status. The goal of effective crop termination includes the preservation of quality of both lint and seed, however, economic benefits must also be derived. In stripper-harvested cotton, harvest-aid treatments generally require two applications of chemicals to sufficiently condition the crop. These expensive treatments generally result in outstanding levels of boll opening and defoliation, and excellent leaf grades are consistently obtained. Due to the costs of such treatment regimes and the economic pressures producers face, less expensive alternatives are sought. When less expensive Cyclone (paraquat) harvest-aid products are utilized at relatively high rates in a single application, the effects of remaining desiccated or stuck leaves on lint quality and subsequent value are a major concern. The objectives of these large-plot trials were to evaluate the effects of varying degrees of defoliation and desiccation on foreign material and cotton lint quality on a commercial basis. In 1999, locations near Petersburg and Claytonville planted to Paymaster 2200 Roundup Ready cultivar were utilized to study the effects of defoliation and desiccation levels on crop yield, quality and lint value. Harvest-aid treatments were applied using commercial equipment at 10 gpa. The Petersburg site treatments included 1) Lintplus (a reformulation of dimethipin) applied at 20 oz product/acre at 10% open bolls followed by Cyclone at 24 oz/acre when plots reached 70% open bolls; 2) LintPlus at 20 oz/acre at 30% open bolls followed by Cyclone at 24 oz/acre when plots reached 70% open bolls; 3) Cyclone at 32 oz/acre at 70% open bolls; and 4) a High Plains standard harvest aid treatment consisting of Prep (ethephon) at 1.3 pt/acre plus Def 1 pt/acre at 60% open bolls followed by Cyclone at 24 oz/acre. The Claytonville site treatments included 1) Finish 6 (ethephon and cyclanilide) at 16 oz/acre plus Ginstar (thidiazuron and diuron) at 3 oz/acre applied at 50% open bolls followed by Cyclone at 12 oz/acre; and 2) Cyclone only applied at 32 oz/acre at 70% open bolls. Three replications of treatments arranged in a randomized complete block design were used at each site. Ethephon and defoliant treatments and Lintplus applied at 30% open bolls followed by Cyclone termination resulted in nearly complete defoliation. At Petersburg, Lintplus applied at 10% open bolls followed by Cyclone resulted in some desiccated and stuck leaves (12% visually estimated). The Cyclone only treatments at both sites resulted in a high level of stuck leaves (12% and 60% visually estimated for Petersburg and Claytonville, respectively). At both sites, bur cotton yields were determined by plot using a boll buggy with integral digital scales. All replications were composited into a single module for each treatment, which was commercially harvested, ginned, and classed. At Petersburg, LintPlus applied at 10% open bolls followed by Cyclone significantly reduced yields by 6% compared to Prep plus Def applied at 60% open bolls followed by Cyclone. LintPlus applied at 30% open bolls followed by Cyclone termination and the Cyclone only treatment produced similar lint yields when compared to the High Plains standard regime. Fiber quality (micronaire, color, and leaf) was not reduced by applications of LintPlus or by the Cyclone only treatment. Color grades were 11 or 21 and leaf grades at the Petersburg site were 2 or less for 6 bales per treatment. At Claytonville, sticks, stems and fine trash were significantly

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higher in the stripped cotton for the Cyclone only treatment. However, the ginning process resulted in sufficient removal of these trash components to result in similar color grades of 11 and 21, and leaf grades of 1 and 2 for 8 bales per treatment. At both sites, no discounts were encountered in lint loan value. These projects were both conducted using a smooth leaf variety under dry harvesting conditions and did not receive any rainfall from the time of harvest-aid application through harvest. The high desiccation treatments when used under higher moisture conditions during the harvest period are likely to adversely impact lint quality, especially for pubescent cultivars, therefore future trials are planned.