



Result Demonstration/Applied Research Report

**2005 Jones County
Cotton Harvest Aid Demonstration
Cooperator: Brent Hargrove**

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Summary

Twelve treatments were applied over the top of cotton on October 5 to prepare for harvest. The plot was established on Brent Hargrove's Farm located 2 miles north and 2.5 miles west of Anson, Texas. The chemicals were applied to Paymaster 2379 RR that had 20 percent of its bolls open. Leaf shed was less than one percent when the plot was established. When these plots were evaluated on October 19, 2005 (14 days after the treatments were applied) most of the treatments had increased boll opening, leaf defoliation and leaf desiccation. Initiating the test before the cotton was mature reduced the performance of the plant to the harvest aids applied.

Objective

In the Southern Rolling Plains of Texas, cotton is usually planted starting in mid-May. Because of this planting date, many producers do not use harvest aids to terminate the cotton. When growing conditions are favorable, most of the cotton in this area is ready for harvest thirty days before the first killing freeze. The delay in harvest reduces the income of farmers due to the loss of lint yield and fiber quality. Even though the cost of several of the harvest aid treatments are expensive, there is usually a product that is economically justified that can be used effectively for crop termination. The intent of this field test is to:

- 1) determine the effectiveness of harvest aids at defoliating, desiccating, and opening bolls on cotton
- 2) provide producers the opportunity of observing how effectively the harvest aid materials work, and
- 3) determine the economic feasibility of using the harvest aid material.

Materials and Methods

Cooperating County Producer: Brent Hargrove
Location: 2 miles north and 2.5 miles west of Anson, Texas

Crop Production Information:

Variety Planted: Paymaster 2379 RR
Planting Pattern: 2 X 1
Irrigation: Dryland Production
Number of Irrigations: None

Harvest Aid Application Information:

Date Applied: October 5, 2005
Wind Speed: 7.0 to 9.0 miles per hour
Wind Direction: Southeast
Air Temperature: 88 to 89⁰ Fahrenheit
Relative Humidity: 37 to 40%
Carrier: 15.0 gallons of water per acre
Pressure: 34 pounds per square inch
Nozzle Size: 11002 extended range flat fan over the top of each row and one 8002 Extended Range nozzle on each side of the row.
Boom Height: 40 inches
Cotton Height: 32 inches
Ground Speed: 4.0 miles per hour
Application Device: Self propelled rig with 13.33 foot boom
Plot Size: 6.7 feet X 60 feet
Test Design: randomized block design replicated four times

Plant Information

At the time of application, the upper most cotton bolls were cross-sectioned and over half of the bolls were not mature. Cotton height ranged from 30 to 34 inches. Plants showed no sign of stress and leaf defoliation was less than one percent.

Results and Discussion

Prior to making any application the cotton plant was examined closely to determine if regrowth was occurring. Since most harvest aids are contact materials, nozzle type, nozzle configuration, volume of water applied and pressure are important considerations. One of the better nozzle arrangements was used in this plot. It consisted of one nozzle over the top of the row and drops in the furrows with one nozzle spraying each side of the plant. The volume of water and application pressure should be high enough to get good coverage on the top and bottom portion of the leaf and penetrate the canopy enough to properly cover the axillary and terminal buds, as well as the bolls.

Before the plot was evaluated on October 19, it looked as if the plot had been oversprayed. The producer was not aware of this but the check plots were almost defoliated and the top regrowth in most plots had been desiccated. Since we are not sure what was sprayed then it can not be documented. Most of the plot was ready to be harvested on October 13.

At the time the harvest aids were applied, 20 percent of the bolls were open and over half of the bolls on the plant were immature. The application of the harvest aids did impact boll opening, percent defoliation and percent desiccation. Several factors contributed to the poor response of the cotton to the harvest aids applied, these include: 1) The cotton was immature; 2) Rainfall occurred 7 hours after the plot was established on October 5; and 3) Daytime air temperature was low for four days after the plot was established.

Boll opening, leaf defoliation and leaf desiccation was different than expected due to the plot being initiated before the cotton was mature. However, there still was some differences in boll opening, leaf defoliation and leaf desiccation between the check and the treatments. In this plot, no regrowth existed in the top or bottom portion of the cotton plant. The data collected on October 19 is reported in Table 1.

If regrowth becomes a concern by harvest time, some of the materials used in the test are known to be better at desiccating or removing juvenile growth. These include Aim, Blizzard, ET, Ginstar, and Resource. Please note that a crop oil concentrate was used in tank mixes that contained Aim, Blizzard, ET, and Resource. For maximum performance with these products, that is an important part of the tank mix.

Increased boll opening was noted in the plots where ethephon was applied, either as Prep or in CottonQuik. Also, boll opening was increased in plots where eight ounces or more of Gramoxone Max was applied.

On October 19 most of this plot was not ready for harvest. The percent green and desiccated leaves remaining on the plant was too high. In the plots where Gramoxone was applied 75 percent of the leaves were desiccated and would have resulted in a high leaf discount. Having more than 13 percent of the desiccated leaves remaining on the plant may still result in a higher amount of leaf in the ginned sample. Most years the gins in our area do a good job of removing the leaves, with the ginned samples ranging between 2 and 4.

Economic Analysis

This test can be used to document the results obtained from the use of harvest aids. If the same treatments are consistently at the top of the list for several years, then producers may want to incorporate those treatments into their cotton production program. It is important to remember that a higher lint yield is not the only way of increasing profit from the use of a harvest aid. Other factors include: timely harvest, improved fiber quality, improved harvesting efficiency, and higher percent lint turnout at the gin.

Table 1. Brent Hargrove's Cotton Harvest Aid Test (Jones County, 2005)
October 19, 2005 (14 days after treatments were applied)

Harvest Aid Chemicals Applied (2 rows of each)	Rate Applied Per Acre	Cost of Harvest Aid Per Acre	% Open Bolls	% Defoliation	% Desiccation
ET + CottonQuik + Herbimax (C.O.C.)	1.5 oz. + 48 oz. + 1% v/v	\$3.75 + \$9.02 + \$1.38	65.00 a	62.50 a	17.50 cd
Blizzard + CottonQuik + Herbimax (C.O.C.)	0.5 oz. + 48 oz. + 1% v/v	\$3.50 + \$9.02 + \$1.38	65.00 a	51.25 ab	15.00 cde
Blizzard + Prep + Herbimax (C.O.C.)	0.5 oz. + 21 oz. + 1% v/v	\$3.50 + \$5.42 + \$1.38	58.75 ab	65.00 a	16.25 cd
Aim + Prep + Herbimax (C.O.C.)	0.75 oz. + 21 oz. + 1% v/v	\$4.10 + \$5.42 + \$1.38	65.00 a	58.75 ab	8.75 defg
ET + Prep + Herbimax (C.O.C.)	1.5 oz. + 21 oz. + 1% v/v	\$3.75 + \$5.42 + \$1.38	65.00 a	52.50 ab	15.00 cde
Resource + Prep + Herbimax (C.O.C.)	8.0 oz. + 21 oz. + 1% v/v	\$6.00 + \$5.42 + \$1.38	62.50 a	46.25 b	12.50 cdef
Ginstar + Prep	5 oz. + 16 oz. +	\$7.40 + \$4.13	57.50 ab	51.25 ab	5.25 efg
ET + Gramoxone Max + Herbimax (C.O.C.)	1.5 oz. + 8 oz. + 1% v/v	\$3.75 + \$2.19 + \$1.38	55.00 abc	51.25 ab	31.25 b
ET + Herbimax (C.O.C.)	2.75 oz. + 1% v/v	\$6.88 + \$1.38	50.00 bcd	56.25 ab	21.50 c
Ginstar	7 oz.	\$10.36	38.75 d	65.00 a	3.75 fg
Check	-	\$0.00	43.75 cd	15.00 c	0.00 g
Gramoxone Max + Activator 90	16 oz. + 0.5% v/v	\$4.38 + \$1.68	55.00 abc	25.00 c	75.00 a
Gramoxone Inteon + Activator 90	24 oz. + 0.5% v/v	\$4.38 + \$1.68	50.00 bcd	25.00 c	75.00 a

NOTE: In Table 1 the individual or combination of letter a, b, c, d, e, f, or g shown beside the number are to indicate statistical significance. There is no statistical difference between numbers that have the same letter (even when there appears to be a large difference in results between the materials applied).

Acknowledgments

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I would also like to thank the companies that provided the chemicals for this harvest aid test. These include:

- Bayer CropScience who provided the Ginstar and Prep
- Chemtra who provided the Blizzard
- DuPont who provided the CottonQuik
- FMC Corporation who provided the Aim
- Nichino America who provided the ET
- Syngenta Crop Protection, Inc. who provided the Gramoxone Max and Gramoxone Inteon
- Tri-State Chemical DBA United Agra Products (UAP) who provided the C.O.C. (Herbimax), Activator 90, and LI 700
- Valent Corporation who provided the Resource

Trade names of commercial products used in this report are included only for better understanding and clarity. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas A&M University System is implied. Readers should realize that results from one experiment do not represent conclusive evidence that the same response would occur where conditions vary.