Result Demonstration/Applied Research Report

2005 Tom Green County
Cotton Harvest Aid Demonstration
Cooperators: Doug and John Wilde

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Summary

Twelve treatments were applied over the top of cotton on September 16 to prepare for harvest. The plot was established on Doug Wilde's Farm located 0.5 miles south and 0.5 miles east of the intersection of Farm Road 388 and Loop 306 east of San Angelo, Texas. The chemicals were applied to FiberMax 989 BG2/RR cotton that had 60 to 70 percent of its bolls open. Leaf shed was less than one percent when the plot was established. When these plots were evaluated on September 28, 2005 (12 days after the treatments were applied), most of the treatments resulted in an increase in open bolls, leaf defoliation and leaf desiccation.

Objective

In the Concho Valley Area 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:	Doug and John Wilde
Location:	0.5 miles south and 0.5 miles east of the intersection of Farm Road 388 and Loop 306, east of San Angelo, Texas

Crop Production Information:

Variety Planted:	FiberMax 989 BG2/RR
Planting Pattern:	Planted solid on 40 inch rows
Irrigation:	Drip Irrigated
Number of Irrigations:	Throughout the season

Harvest Aid Application Information:

Date Applied:	September 16, 2005
Wind Speed:	5.0 to 6.0 miles per hour
Wind Direction:	East by Northeast
Air Temperature:	79 to 83^0 Fahrenheit
Relative Humidity:	66 to 75%
Carrier:	16.0 gallons of water per acre
Pressure:	32 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:	38 inches
Cotton Height:	30 inches
Ground Speed:	4.0 miles per hour
Application Device:	Self propelled rig with 13.33 foot boom
Plot Size:	13.33 feet X 60 feet
Test Design:	randomized block design replicated three times

Plant Information

At the time of application, the upper most cotton bolls were cross-sectioned and the seed coats were dark and the cotyledons well developed. Cotton height ranged from 28 to 32 inches. Plants showed no sign of stress and leaf defoliation was less than one percent.

Results and Discussion

The cotton at the time of application was 60 to 70 percent open with most of the remaining bolls being mature. The application of the harvest aids did impact boll opening, percent defoliation and percent desiccation. Several factors contributed to the success of the harvest aids applied, these include: 1) The cotton was mature; 2) Chemical coverage was excellent due to gallonage, pressure used, and wind; 3) Air temperatures for the 12 days after application were warm enough to allow for good cotton plant response. Leaf defoliation was higher than the check in all treatments and the increase ranged from 68 to 85 percent on September 28, 2005 (12 days after the treatments were applied). None of the desiccation was high enough to be a concern. The data collected on September 28 is reported in Table 1.

Table 1. Tom Green County Cotton Harvest Aid Test, Doug and John Wilde, September 28, 2005 (12 days after treatments were applied)

Harvest Aid Chemicals Applied (4 rows of each)	Rate Applied Per Acre	Cost of Harvest Aid Per Acre	% Open Bolls	% Defoliation	% Desiccation
Finish 6 Pro + Ginstar	21 oz. + 4 oz.	$10.98 + $5.92	96.67 ab	95.00 a	1.33 de
Ginstar + Prep	5 oz. + 16 oz.	$7.40 + $4.13	96.67 ab	95.00 a	1.667 de
ET + Prep + Herbimax (C.O.C.)	1.5 oz. + 21 oz. + 1% v/v	$3.75 + 5.42 + 1.47	97.00 a	90.67 a	4.67 cde
Def + Prep	16 oz. + 16 oz.	$5.50 + $4.13	94.67 ab	89.00 ab	2.67 de
ET + Gramoxone Max + Herbimax (C.O.C.)	2 oz. + 5 oz. + 1% v/v	$5.00 + 1.37 + 1.47	97.67 a	87.67 abc	9.33 bc
Prep + Gramoxone Max + Herbimax (C.O.C.)	16 oz. + 5 oz. + 1% v/v	$4.13 + $1.37 + $1.47	95.33 ab	83.00 bcd	10.67 bc
Aim + Gramoxone Max + Herbimax (C.O.C.)	1 oz. + 5 oz. + 1% v/v	$5.47 + 1.37 + 1.47	98.33 a	80.67 cd	14.33 ab
Gramoxone Max + CottonQuik + Herbimax (C.O.C.)	5 oz. + 32 oz. + 1% v/v	$1.37 + $6.02 + $1.47	97.33 a	79.00 d	17.33 a
Resource + Prep + Herbimax (C.O.C.)	8 oz. + 21 oz. + 1% v/v	$6.00 + $5.42 + $1.47	96.33 ab	78.00 d	6.67 cd
Ginstar	7 oz.	$10.36	88.33 de	95.00 a	1.67 de
Aim + CottonQuik Herbimax (C.O.C.)	1 oz. + 32 oz. + 1% v/v	$5.47 + $6.02 + $1.47	92.67 bc	82.33 bcd	5.33 cde
ET + CottonQuik Herbimax (C.O.C.)	2 oz. + 32 oz. + 1% v/v	$5.00 + $6.02 + $1.47	90.00 cd	80.67 cd	5.67 cde
Check	-	-	85.00 e	10.00 e	0.00 e

NOTE: In Table 1 the individual or combination of letter a, b, c, d, or e 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).

When these plots were evaluated on September 28, 2005 (12 days after the treatments were applied), most of the treatments applied had a significant difference in boll opening, leaf defoliation and leaf desiccation.

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 axilary and terminal buds, as well as the bolls.

No regrowth had developed enough to be a concern at harvest time. However, some of the materials applied are known to be better at desiccating or removing juvenile growth. These include Aim, ET, Ginstar, and Resource.

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 five ounces of Gramoxone Max was applied.

Please note that a crop oil concentrate was used in tank mixes that contained Aim, ET and Resource. For maximum performance with these products that is an important part of the tank mix.

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. Several of the treatments were in the 6 to 10 dollar per acre range and the use of these treatments should result in increased profits for producers. 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.

Acknowledgments

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- FMC Corporation who provided the Aim
- Syngenta Crop Protection, Inc. who provided the Gramoxone Max and Gramoxone Inteon
- Nichino America who provided the ET
- Tri-State Chemical DBA United Agra Products (UAP) who provided the C.O.C. (Herbimax)
- Valent USA Corporation who provided the Resource