



Result Demonstration/Applied Research Report

2006 Glasscock, Reagan, Upton Counties Cotton Harvest Aid Demonstration Cooperators: Chris Hirt

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Summary

Fifteen treatments were applied over the top of cotton on September 1 to prepare for harvest. The plot was established on Chris Hirt's Farm located 14 miles south of Garden City, Texas. The chemicals were applied to Deltapine 543 BG2/RR cotton that had 60 percent of its bolls open. Leaf shed was less than one percent when the plot was established. When these plots were evaluated on September 12, 2006 (11 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 Trans-Pecos 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: Chris Hirt
Location: 14 miles south of Garden City, Texas on Highway 33

Crop Production Information:

Variety Planted: Deltapine 543 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 1, 2006
Wind Speed: 4.0 to 9.0 miles per hour
Wind Direction: South
Air Temperature: 77 to 82⁰ Fahrenheit
Relative Humidity: 56 to 69%
Carrier: 15.0 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: 28 inches
Ground Speed: 4.0 miles per hour
Application Device: Self propelled rig with 13.33 foot boom
Plot Size: 13.33 feet X 50 feet
Test Design: randomized block design replicated three times

Plant Information

At the time of application, the upper most cotton bolls were cross-sectioned, the seed coats were dark, and the cotyledons well developed. Cotton height averaged 28 inches. Plants showed some leaf burn possibly due to a cold rain on the hot stressed cotton in late-August. Leaf defoliation was less than one percent.

Results and Discussion

The cotton at the time of application was 60 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 11 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 14 to 67 percent on September 12, 2006 (11 days after the treatments were applied). Gramoxone Inteon when used at rates above 8 ounces resulted in desiccation of 50 percent or more. The remaining leaves on the plant may result in a leaf discount if the gin does not successfully remove the leaf material. The data collected on September 12 is reported in Table 1.

Table 1. Glasscock, Reagan, Upton Counties Cotton Harvest Aid Test (Chris Hirt Farm, 2006)
September 12, 2006 (11 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
MFX + Aim + Pennatrator Plus (C.O.C.)	24.0 oz. + 0.25 oz. + 8.0 oz.	\$5.72 + 1.06 + 1.03	91.67 ab	81.67 a	15.00 def
Aim + Prep + Pennatrator Plus (C.O.C.)	0.75 oz. + 32 oz. + 9.6 oz.	\$3.17 + \$9.50 + \$1.23	92.67 a	70.67 abc	21.33 cdef
Resource + Prep + Pennatrator Plus (C.O.C.)	8.0 oz. + 32 oz. + 9.6 oz.	\$9.50 + \$9.50 + \$1.23	92.67 a	70.67 abc	23.33 cdef
MFX + Aim + Gramoxone Inteon + Pennatrator Plus (C.O.C.)	24.0 oz. + 0.25 oz. + 4.0 oz. + 8.0 oz.	\$5.72 + 1.06 + 0.89 + 1.03	90.00 ab	58.00 bcde	38.33 bcde
ET + Prep + Pennatrator Plus (C.O.C.)	1.5 oz. + 32 oz. + 9.6 oz.	\$3.75 + \$9.50 + \$1.23	93.33 a	57.00 bcde	41.67 bcd
Blizzard + Prep + Pennatrator Plus (C.O.C.)	0.6 oz. + 32 oz. + 9.6 oz.	\$6.00 + \$9.50 + \$1.23	86.67 abc	66.67 abcd	22.00 cdef
MFX + Aim + Pennatrator Plus (C.O.C.)	32.0 oz. + 0.3 oz. + 8.0 oz.	\$7.63 + 1.27 + 1.03	90.00 ab	65.33 abcd	31.67 cde
MFX + Aim + Pennatrator Plus (C.O.C.)	16.0 oz. + 0.3 oz. + 8.0 oz.	\$3.81 + 1.27 + 1.03	85.33 abc	74.33 ab	16.67 def
Gramoxone Inteon + Prep + Pennatrator Plus (C.O.C.)	2.5 oz. + 21 oz. + 9.6 oz.	\$0.55 + \$6.23 + + 1.03	89.00 ab	59.33 bcde	10.67 ef
Ginstar	5 oz.	\$7.40	88.33 ab	64.00 abcd	30.00 cde
Gramoxone Inteon + Induce	8.0 oz. + 9.6 oz.	\$1.78 + \$1.50	85.67 abc	47.33 def	50.00 abc
Def + Prep + Induce	16.0 oz. + 16.0 oz. + 9.6 oz.	\$6.25 + 4.75 + 1.50	84.00 bc	61.67 abcd	35.00 bcde
Firestorm + Induce	10.6 oz. + 9.6 oz.	\$2.87 + \$1.50	91.67 ab	38.00 ef	61.67 ab
Gramoxone Inteon + Induce	16 oz. + 9.6 oz.	\$3.56 + \$1.50	90.00 ab	29.67 fg	70.00 a
Gramoxone Inteon + Induce	4.0 oz. + 9.6 oz.	\$0.89 + \$1.50	80.00 c	50.00 cdef	18.33 def
Check	-	-	80.00 c	15.00 g	0.00 f

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). Also, to account for 100 percent of the leaves you would add the percent defoliation plus the percent dessication and subtract from 100. The difference represents the number of original green leaves still remaining on the plant.

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, 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 all plots except where a low rate of Gramoxone Inteon was applied. In the Aim, Blizzard, ET, Ginstar, and Resource plots an abscission layer between the petiole and the main stem had formed but the leaves were still loosely attached.

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 11 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

I want to take this opportunity to thank Chris Hirt for their help in plot establishment and management.

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

- Bayer CropScience who provided the Def, Ginstar, and Prep
- Chemtura who provided the Blizzard and Firestorm
- FMC Corporation who provided the Aim
- Glasscock County Co-op who provided the Pennatrator Plus and the MFX
- Helena Chemical Company who provided the Induce
- Microflow Company who provided the MFX
- Nichino America who provided the ET
- Syngenta Crop Protection, Inc. who provided the Gramoxone Inteon
- Valent USA Corporation who provided the Resource

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