



Result Demonstration/Applied Research Report

**2005 Nolan County
Cotton Harvest Aid Demonstration
Cooperator: Kim Alexander**

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Summary

Twelve treatments were applied over the top of cotton on September 26 to prepare for harvest. The plot was established on Kim Alexander's Farm located 0.5 mile south of Roscoe, Texas. The chemicals were applied to FiberMax 991 BG2/RR cotton that had 50 percent of its bolls open. Leaf shed was less than one percent when the plot was established. When these plots were evaluated on October 13, 2005 (17 days after the treatments were applied) some of the treatments had increased boll opening, 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: Kim Alexander
Location: 0.5 mile south of Roscoe, Texas

Crop Production Information:

Variety Planted: FiberMax 991 BG2/RR
Planting Pattern: Planted solid
Number of Irrigations: None - Dryland Production

Harvest Aid Application Information:

Date Applied: September 26, 2005
Wind Speed: 7.0 to 9.0 miles per hour
Wind Direction: Southwest
Air Temperature: 80 to 90⁰ Fahrenheit
Relative Humidity: 24 to 36%
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: 36 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 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, the seed coats were dark, and the cotyledons well developed. Cotton height ranged from 26 to 30 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 13, 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.

Fifty percent of the bolls were open at the time harvest aids were applied, most of the remaining bolls were 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 first 9 days after application were warm enough to allow for good cotton plant response.

Leaf defoliation and desiccation was different than expected due to the plot being oversprayed. However, there still was some differences in boll opening, leaf defoliation and leaf desiccation. In this plot, regrowth only existed in the bottom portion of the plant and none of it was developed enough to be a harvest concern. The data collected on October 13 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 and Ginstar. Please note that a crop oil concentrate was used in tank mixes that contained Aim, Blizzard, or ET. 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 13 the amount of leaf defoliation combined with leaf desiccation resulted in over half of these plots being ready to harvest. The biggest concern in the test plot was the amount of leaves remaining on the plant. 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. 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.

Table 1. Kim Alexander's Cotton Harvest Aid Test (Nolan County, 2005)
September 29, 2005 (17 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
Blizzard + Gramoxone Max + Herbimax (C.O.C.)	0.5 oz. + 8 oz. + 1% v/v	\$3.50 + \$2.19 + \$1.38	88.75 ab	86.50 bc	12.75 ef
Gramoxone Max + Activator 90	12 oz. + 0.5% v/v	\$3.29 + \$1.68	86.75 abc	84.75 bcd	15.00 cdef
Gramoxone Inteon + Activator 90	24 oz. + 0.5% v/v	\$4.38 + \$1.68	86.25 abc	76.25 de	23.75 abcd
Gramoxone Max + Activator 90	16 oz. + 0.5% v/v	\$4.38 + \$1.68	85.00 bc	75.00 de	25.00 abc
Gramoxone Max + Induce	16 oz. + 0.5% v/v	\$4.38 + \$1.50	83.75 bc	73.75 e	26.25 ab
Gramoxone Max + LI 700	16 oz. + 0.5% v/v	\$4.38 + \$1.87	85.00 bc	71.25 e	28.75 a
Gramoxone Max + Activator 90	8 oz. + 0.5% v/v	\$2.19 + \$1.68	83.75 bc	77.00 cde	21.75 abcde
Aim + Gramoxone Max + Herbimax (C.O.C.)	0.75 oz. + 8 oz. + 1% v/v	\$4.10 + 2.19 + 1.38	85.00 bc	76.25 de	21.50 abcde
ET + Gramoxone Max + Herbimax (C.O.C.)	1.25 oz. + 8 oz. + 1% v/v	\$3.13 + \$2.19 + \$1.38	83.75 bc	80.75 cde	16.25 bcde
Aim + Prep Herbimax (C.O.C.)	0.75 oz. + 16 oz. + 1% v/v	\$4.10 + \$4.13 + \$1.38	93.25 a	91.50 ab	2.00 g
Ginstar	5 oz.	\$7.40	80.00 c	97.25 a	0.25 g
Aim + CottonQuik + Herbimax (C.O.C.)	0.75 oz. + 32 oz. + 1% v/v	\$4.10 + \$6.02 + \$1.38	83.75 bc	86.25 bc	5.25 fg
Check	-	-	80.00 c	75.00 de	13.75 def

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

I want to take this opportunity to thank Kim Alexander for his 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 Ginstar and Prep
- Chemtra who provided the Blizzard
- DuPont who provided the CottonQuik
- 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), Activator 90, and LI 700
- Helena Chemical Company who provided the Induce

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.