



## **Result Demonstration/Applied Research Report**

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**2003 Tom Green County  
Cotton Harvest Aid Demonstration  
Cooperator: Andrew Wilde**

Rick Minzenmayer and Billy Warrick \*

### **Summary**

Fifteen treatments were applied over the top cotton on September 10 to prepare cotton for harvest. The plot was established on Andre Wilde's Farm located 1 mile west of Van Court. The chemicals were applied to FiberMax 832 cotton that had 85 percent of its bolls open. Leaf shed was less than two percent. When these plots were evaluated on September 18, 2003 (8 days after the treatments were applied) most of the treatments resulted in an increase in 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.

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## Materials and Methods

Cooperating County Producer: Andrew Wilde  
Location: 1 mile west of Vancourt

### Crop Production Information:

Variety Planted: FiberMax 832  
Planting Pattern: Two-in-1-out on 40 inch rows  
Irrigation: Dryland Production  
Number of Irrigations: None

### Harvest Aid Application Information:

Date Applied: September 10, 2003  
Wind Speed: 6.0 to 8.0 miles per hour  
Wind Direction: South by Southeast  
Air Temperature: 80 to 85<sup>0</sup> Fahrenheit  
Relative Humidity: 57 to 75%  
Carrier: 10.8 gallons of water per acre  
Pressure: 32 pounds per square inch  
Nozzle Size: 11002 extended range flat fan over the top; 20 inch centers  
Boom Height: 36 inches  
Cotton Height: 28 to 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 200 feet  
Test Design: randomized strip design

## 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 25 to 35 inches. Plants showed some signs of stress and leaf defoliation was less than two percent.

## Results and Discussion

The application of the harvest aids did not impact boll opening significantly. The primary reason for the minimal impact was due to 85 percent of the cotton being open at the time harvest aids were applied. Leaf defoliation was higher than the check in all treatments and the increase ranged from 5 to 90 percent by the time of the evaluation conducted on September 18, 2003 (8 days after the treatments were applied). Leaf desiccation was high in most of the plots where Gramoxone Max rates above 10 ounces were used. The data collected on September 18 is reported in Table 1.

Table 1. Tom Green County Cotton Harvest Aid Test, 2003  
September 18, 2003 (8 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	% Defolia- tion	% Desicca- tion	Regrowth Rating Top, Bottom
Gramoxone® Max + Miller Plex + Induce	10 oz. + 2 oz. + 3.52 oz.	\$2.69 + 1.10 + \$0.51	100	70	15	Top= 2 Bottom=2
Gramoxone® Max @ + Miller Plex + Induce	16 oz. + 2 oz. + 3.52 oz.	\$4.30 + \$1.10 + \$0.51	100	70	25	Top= 2 Bottom= 2
ET™ + Induce	2.0 oz. + 3.52 oz.	\$5.62 + \$0.51	100	70	5	Top= 2 Bottom= 2
ET™ + Gramoxone® Max + Induce	1.0 oz. + 10.0 oz. + 3.52 oz.	\$2.81 + \$2.69 + \$0.51	95	75	20	Top= 2 Bottom= 2
Aim™ + C.O.C.	1.0 oz. + 16 oz.	\$5.63 + \$1.16	100	15	35	Top= 1 Bottom= 2
Aim™ + Gramoxone® Max + C.O.C.	0.5 oz. + 10 oz. + 16.0 oz.	\$2.82 + \$2.69 + \$1.16	100	75	15	Top= 2 Bottom=2
Check	--	\$0.00	95	5	0	Top= 1 Bottom=1
Aim™ + Gramoxone® Max + Induce	0.5 oz. + 10.0 oz. + 3.52 oz.	\$2.82 + \$2.69 + \$0.51	95	80	5	Top= 2 Bottom=2
Ginstar	4.0 oz.	\$5.88	90	60	0	Top= 0.5 Bottom= 1
Gramoxone® Max + C.O.C.	16.0 oz. + 16.0 oz.	\$4.30 + \$1.16	100	80	10	Top= 2 Bottom=2
Gramoxone® Max + Induce	16.0 oz. + 3.52 oz.	\$4.30 + \$0.51	100	80	20	Top= 2 Bottom=2
Gramoxone® Max + L.I.700	16.0 oz. + 6.4 oz.	\$4.30 + \$1.27	100	90	10	Top= 2 Bottom=2
Gramoxone® Max + Induce	10 oz. + 3.52 oz.	\$2.69 + \$0.51	100	70	10	Top= 2 Bottom=2
Gramoxone® Max + Induce	4.0 oz. + 3.52 oz.	\$1.08 + \$0.51	100	60	2	Top= 2 Bottom=2
Aim™ + C.O.C.	1.5 oz. + 16 oz.	\$8.45 + \$1.16	100	65	20	Top= 1 Bottom=1
Aim™ + Gramoxone® Max + Induce	1.0 oz. + 10.0 oz. + 3.52 oz.	\$5.63 + \$2.69 + \$0.51	100	75	10	Top= 2 Bottom=2

## Results and Discussion (continued)

When these plots were evaluated on September 18, 2003 (8 days after the treatments were applied) most of the treatments applied had a significant difference in leaf defoliation and leaf desiccation. The amount of regrowth in the top and bottom portion of the plants was high enough to be a concern in several of the treatments.

Several discussion items are seen in this plot. The first item that catches your attention as you view the plot is the amount of regrowth. In the treatment where Aim was applied at 1.5 ounces per acre the regrowth in the top of the plant was desiccated. Producers will have to examine their cotton closely and if regrowth is already occurring they need to change nozzle configuration, increase the amount of water being applied and increase the application pressure. One of the better nozzle arrangements is one nozzle over the top of the row and drops in the furrows with one nozzle spraying each side of the plant. Coverage is critical! The volume of water and pressure should be high enough to get good coverage on the top and bottom portion of the leaf and penetrate the canopy enough to burn the axillary and terminal buds.

According to Nichino America, the company that sells ET, a crop oil concentrate should be used instead of a surfactant. A high level of defoliation was achieved in the treatments that contained ET. The level of regrowth suppression was lower than expected and this is probably due to coverage achieved by the original application.

Aim used at 0.5 to 1.0 ounce per acre in a tank mix provided a minimum of 75 percent defoliation and 5 to 15 percent desiccation. When Aim was used at 1.0 ounce plus Crop Oil Concentrate the level of defoliation was 15 percent and the desiccation was 35 percent. None of the treatments suppressed regrowth and this is probably due to coverage achieved by the original application.

Ginstar at 4 ounces alone resulted in 60 percent of the leaves being aborted with no desiccation in the remaining leaves. A higher rate of Ginstar should have provided a higher level of defoliation. At the current cost of Ginstar, the addition of two to four ounces of product would have exceeded the budget range for this test.

Gramoxone Max is a harvest aid used by most dryland producers to terminate their crop. The effect of rate and type of tank additive were the focus of most of the treatments in the test. How these combinations compared to other harvest aids were also studied in this test. The 4 and 10 ounce rate per acre provided a high level of defoliation. At 16 ounces, the plots would have been ready for harvest if regrowth had not become a problem. The 16 ounce rate of Gramoxone Max performed well whether it was combined with the surfactant Induce, the crop oil concentrate Herbimax, or a buffering surfactant L.I.-700. When Miller Plex was combined with Gramoxone Max it did increase the level of desiccation when compared to most of the treatments in this test.

### 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. Most of the treatments were in the 6 to 8 dollar per acre range and the use of several 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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- Syngenta Crop Protection, Inc. who provided the Gramoxone Max
- Nichino America who provided the ET
- Tri-State Chemical DBA United Agra Products (UAP) who provided the L.I. 700 and C.O.C. (Herbimax)
- 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.