



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

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**2003 Runnels County  
Cotton Harvest Aid Demonstration  
Cooperator: Wesley Schraer**

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and Dr. Billy Warrick, Extension Agronomist (San Angelo, Texas).

### **Summary**

Fifteen treatments were applied over the top cotton on September 5 to prepare cotton for harvest. The plot was established on Wesley Schraer's Farm located 1 mile west and 3 miles north of Lowake. The chemicals were applied to cotton that had 30 percent of its bolls open. Leaf shed was less than five percent. When these plots were evaluated on September 16, 2003 (11 days after the treatments were applied) most of the treatments resulted in an increase in 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: Wesley Schraer  
Location: 1 mile west and 3 miles north of Lowake

### Crop Production Information:

Variety Planted: Deltapine 5415  
Planting Pattern: Two-in-1-out on 40 inch rows  
Irrigation: Dryland Production  
Number of Irrigations: None

### Harvest Aid Application Information:

Date Applied: September 5, 2003  
Wind Speed: 2.0 to 4.0 miles per hour  
Wind Direction: South by Southeast  
Air Temperature: 80 to 85<sup>0</sup> Fahrenheit  
Relative Humidity: 75 to 95%  
Carrier: 10.0 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 18 to 27 inches. Plants showed some signs of stress and leaf defoliation was less than five percent.

## Results and Discussion

The application of the harvest aids did not impact boll opening significantly. The increase in leaf defoliation and leaf desiccation was obvious to anyone that viewed the plot. Regrowth was not impacted by three of the treatments used in this test. Leaf defoliation was higher than the check in all treatments and the increase ranged from 10 to 95 percent by the time of the evaluation conducted on September 16, 2003 (11 days after the treatments were applied). Leaf desiccation was high in most of the plots where Gramoxone Max rates above nine ounces were used. 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. The data collected on September 16 is reported in Table 1.

Table 1. Runnels County Cotton Harvest Aid Test, 2003  
 September 16, 2003 (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	Regrowth Rating Top, Bottom
Gramoxone® Max @ + Miller Plex	16 oz. + 2 oz.	\$4.30 + \$1.10	40	60	30	Top= 2 Bottom= 1
Gramoxone® Max @ + Miller Plex + Induce	16 oz. + 2 oz. + 3.52 oz.	\$4.30 + \$1.10 + \$0.51	40	60	30	Top= 2 Bottom= 1
Resource + Gramoxone® Max + Induce	4.6 oz. + 10.0 oz. + 3.52 oz.	\$5.46 + \$2.69 + \$0.51	75	80	15	Top= 2 Bottom= 1
Gramoxone® Max + Prep + Induce	3.5 oz. + 16.0 oz. + 3.52 oz.	\$0.94 + \$6.52 + \$0.51	90	80	0	Top= 2 Bottom= 2
ET™ + Induce	2.0 oz. + 3.52 oz.	\$5.62 + \$0.51	50	10	10	Top= 1 Bottom= 1
Check	--	\$0.00	50	2	0	Top= 0 Bottom= 0
ET™ + Gramoxone® Max + Induce	1.0 oz. + 10.0 oz. + 3.52 oz.	\$2.81 + \$2.69 + \$0.51	80	70	24	Top= 1 Bottom= 1
Aim™ + C.O.C.	1.0 oz. + 16 oz.	\$5.63 + \$1.16	50	20	5	Top= 0 Bottom= 0
Aim™ + Gramoxone® Max + C.O.C.	0.5 oz. + 10 oz. + 16.0 oz.	\$2.82 + \$2.69 + \$1.16	70	90	10	Top= 1 Bottom= 1
Aim™ + Gramoxone® Max + Induce	0.5 oz. + 10.0 oz. + 3.52 oz.	\$2.82 + \$2.69 + \$0.51	70	75	20	Top= 1 Bottom= 1
Ginstar	4.0 oz.	\$5.88	60	90	0	Top= 0 Bottom= 0
Gramoxone® Max + C.O.C.	16.0 oz. + 16.0 oz.	\$4.30 + \$1.16	90	75	24	Top= 1 Bottom= 1
Gramoxone® Max + Induce	16.0 oz. + 3.52 oz.	\$4.30 + \$0.51	85	75	24	Top= 1 Bottom= 1
Gramoxone® Max + L.I.700	16.0 oz. + 6.4 oz.	\$4.30 + \$1.27	95	85	15	Top= 0 Bottom= 0
Gramoxone® Max + Induce	10 oz. + 3.52 oz.	\$2.69 + \$0.51	80	95	0	Top= 1 Bottom= 1
Gramoxone® Max + Induce	4.0 oz. + 3.52 oz.	\$1.08 + \$0.51	35	60	0	Top= 1 Bottom= 1
South Side Of Field						

## Results and Discussion (continued)

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.

In the treatments where Aim was applied at the 0.5 ounce rate per acre the regrowth was not suppressed or controlled. When the rate was increased to 1.0 ounce per acre the regrowth was suppressed but Gramoxone Max was needed in the tank mix to increase the level of defoliation. Aim combined with Gramoxone Max was a good tank mix partner and will probably be used by producers as they terminate this cotton crop. The amount of Aim in the tank mix needed to be increased to at least 1 ounce per acre to suppress or control regrowth.

A couple of new products were applied this year that work similar to Aim. Resource and ET were tank mixed with Gramoxone Max and provided an acceptable level of defoliation and desiccation. The application rates of Resource and ET were not high enough to suppress or control regrowth. ET was applied at a 2.0 ounce rate in combination with a surfactant and the level of defoliation and desiccation was low. According to Nichino America, the company that sells ET, a crop oil concentrate should be used instead of a surfactant. The cost of these harvest aids will impact their adoption by producers. Since Resource cost more per acre to use, most producers will select between Aim and ET harvest aids for regrowth suppression or control.

Ginstar at 4 ounces alone provided a high level of defoliation. The remaining leaves were green and still attached firmly to the plant and will require another application of a harvest aid to desiccate them before the cotton can be harvested. This additional trip may have been avoided by increasing the use rate of Ginstar by two to four ounces per acre, however, this increased cost will exceed the budget range set by most dryland producers.

The rainfall received in September and October has increased the difficulty of terminating this cotton crop. 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.

### 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 range per acre 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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I would also like to thank the companies that provided the chemicals for this harvest aid test, these included:

- Bayer Corporation provided the Def, Finish, Ginstar, and Prep
- FMC Corporation who provided the Aim
- Nichino America who provided the ET
- Syngenta Crop Protection, Inc. who provided the Gramoxone Max
- Valent U.S.A. Corporation who provided the Resource
- 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.