



Result Demonstration/Applied Research Report

**2007 Runnels County
Cotton Harvest Aid Demonstration
Cooperator: Paul Minzenmayer**

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Summary

Twelve treatments were applied over the top of cotton on September 27 to prepare for harvest. The plot was established on Paul Minzenmayer's Farm located 6 miles north of Ballinger, Texas. The chemicals were applied to Deltapine 143 B2F cotton that had 70 percent of its bolls open. Leaf shed was less than one percent when the plot was established. When these plots were evaluated on October 10, 2007 (13 days after the treatments were applied), most of the treatments resulted in an increase in open bolls, leaf defoliation, and leaf desiccation. Regrowth was not a problem in most of the plots and none of the regrown to the point where it would interfere with harvest.

Objective

In the Southern Rolling Plains, 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: Paul Minzenmayer
Location: 5 miles south of Ballinger, Texas

Crop Production Information:

Variety Planted: Deltapine 143 B2F
Planting Date: May 23, 2007
Planting Rate: 33,000 seeds/acre
Planting Pattern: Planted solid on 40 inch rows
Irrigation: No irrigation available

Harvest Aid Application Information:

Date Applied: September 27, 2007
Wind Speed: 1.0 to 4.0 miles per hour
Wind Direction: Southwest
Air Temperature: 75 to 87⁰ Fahrenheit
Relative Humidity: 53 to 80%
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: 36 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 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 averaged 30 inches and 70 percent of the bolls were open. Plants had regrowth in the top and bottom portion of the plants. Leaf defoliation was less than one percent.

Results and Discussion

The cotton at the time of application was 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) Day and night air temperatures for the 13 days after application were warm. Leaf defoliation was higher than the check in all treatments and the increase ranged from 6 to 11 percent on October 10, 2007 (13 days after the treatments were applied). The removal of leaves usually results in rapid development of the juvenile leaves, however, several of the harvest aids used in this plot desiccate or remove regrowth. In this test, Ginstar when used above four ounces per acre removed regrowth and Aim, Blizzard, and ET desiccated regrowth. The data collected on October 10 is reported in Table 1.

Table 1. Runnels County Cotton Harvest Aid Test (Paul Minzenmayer Farm, 2007)
October 10, 2007 (13 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
Aim + Prep + Herbimax (C.O.C.)	0.75 oz. + 32 oz. + 20.5 oz.	\$3.16 + \$6.25 + \$1.43	98.0 bc	91.5 b	0.8 d
ET + Prep + Herbimax (C.O.C.)	1.50 oz. + 32 oz. + 20.5 oz.	\$3.40 + \$6.25 + \$1.43	98.0 bc	94.0 ab	0.8 d
Blizzard + Prep + Herbimax (C.O.C.)	0.5 oz. + 32 oz. + 20.5 oz.	\$3.61 + \$6.25 + \$1.43	98.0 bc	91.5 b	0.8 d
ET + FirstPick + Herbimax (C.O.C.)	1.50 oz. + 48 oz. + 20.5 oz.	\$3.40 + \$9.36 + \$1.43	97.8 bc	94.3 ab	1.3 d
Firestorm + Induce	16 oz. + 10.25 oz.	\$4.38 + \$1.68	98.0 bc	55.3 de	42.3 b
Def + Prep + Induce	16 oz. + 16 oz. + 10.25 oz.	\$5.38 + \$3.12 + \$1.68	97.5 c	93.5 ab	0.0 d
Check	-	-	90.0 d	48.8 f	0.0 d
Gramoxone Inteon + Aim + Induce	24 oz. + 0.75 oz. + 10.25 oz.	\$5.06 + \$3.16 + \$1.68	97.8 bc	57.5 d	40.0 b
Gramoxone Inteon + Induce	24 oz. + 10.25 oz.	\$5.06 + \$1.68	98.3 b	52.5 ef	46.0 a
Gramoxone Inteon + ET + Induce	12 oz. + 1.50 oz. + 10.25 oz.	\$2.53 + \$3.40 + \$1.68	97.5 c	69.0 c	26.8 c
Ginstar + Prep	4 oz. + 16 oz.	\$6.40 + \$3.12	97.8 bc	97.0 a	0.0 d
Ginstar + Prep	6 oz. + 16 oz.	\$9.60 + \$3.12	97.8 bc	95.5 ab	0.3 d
Ginstar + Finish 6 Pro	6 oz. + 24 oz.	\$9.60 + 11.62	99.0 a	96.5 a	0.5 d

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

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

Increased boll opening was noted in all plots where harvest aids were applied with boll opening ranging from 97 to 99 percent. All plots had more leaf defoliation than the check. The plots where paraquat was applied as Gramoxone Inteon or Firestorm had leaf desiccation level high enough to be a concern. The leaf desiccation levels in the paraquat plots ranged from 26 to 46 percent and could result in leaf grades above 3 when ginned.

Eight of the treatments had less than 5 percent green leaves and would be harvestable if it could be ginned within 24 hours of harvest. To dessicate the remaining leaves in the test a followup application of paraquat was applied.

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

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.