Texas Cooperative EXTENSION
The Texas A&M University System

Result Demonstration/Applied Research Report

2001 Glasscock, Regan, and Upton Counties
Cotton Harvest Aid Demonstration
Cooperator: Floyd Schwartz

Warren Multer, Steve Sturtz, Robert Scott, Raymond Quigg and Billy Warrick *

Summary

Eighteen treatments were applied over the top cotton on August 29 to prepare cotton for harvest. The plot was established on Floyd Schwartz's Farm located 20 miles south and 8 miles west of Garden City. The chemicals were applied to cotton that had 40 percent of its bolls open. Leaf shed was less than one percent. When these plots were evaluated on September 11, 2001 (13 days after the treatments were applied) most of the treatments resulted in a significant increase in boll opening, leaf defoliation, leaf desiccation and amount of regrowth in the top and bottom portion of the plants.

Objective

In the Trans-Pecos Area of Texas, cotton is usually planted starting in early 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.

* Warren Multer, Extension Agent - IPM; Steve Sturtz, Glasscock County Extension Agent; Robert Scott, Reagan County Extension Agent; Raymond Quigg, Upton County Extension Agent; and Dr. Billy Warrick, Extension Agronomist (San Angelo, Texas).

Materials and Methods

Cooperating County Producers: Floyd Schwartz

Location: 20 miles south and 8 miles west of Garden City

Crop Production Information:

Variety Planted:	Deltapine 458 B/RR
Planting Pattern:	Solid on 40 inch spacing
Irrigation:	Drip
Number of Irrigations:	Throughout the season

Harvest Aid Application Information:

Date Applied:	August 29, 2001
Wind Speed:	3.0 to 6.0 miles per hour
Wind Direction:	South by Southeast
Air Temperature:	74 to 85^0 Fahrenheit
Relative Humidity:	65 to 98%
Carrier:	10 gallons of water per acre
Pressure:	40 pounds per square inch
Nozzle Size:	one TX 6 hollowcone in the furrow and a 80015 extended range flat fan over the top
Boom Height:	40 inches
Cotton Height:	24 to 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 70 feet
Test Design:	randomized complete block design replicated 3 times

Plant Information

Date information was collected: August 29, 2001
Average Height: 24 inches
Average number of bolls above top cracked boll: 4
Percent open bolls: 40

At the time of application, the upper most cotton bolls were cross-sectioned and the seed coats were dark and the cotyledons well developed. The percent of open bolls increased by 40 to 56 percent by the time of the evaluation conducted on September 11, 2001 (13 days after the treatments were applied). The information collected on September 11th is reported in Table 1.

Table 1. Reagan County Cotton Harvest Aid Test, 2001 (Rating 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	Regrowth Rating Top, Bottom
Acetic Acid @ 5% v/v	64 oz.	$$.$$	80.00 d	5.00 e	0.00 c	T=0 b ; B=0 b
Acetic Acid @ 10% v/v	128 oz.	$$.$$	80.00 d	6.67 e	1.67 c	T=0 b ; B=0 b
Prep + Def/Folex	16 oz. + 16 oz.	$6.74 + 5.98	86.67 bc	53.33 a	0.00 c	T=1 a ; B=1 a
Ginstar	4 oz.	$6.08	81.67 cd	53.33 a	1.67 c	T=0 b ; B=1 a
Ginstar + Cyclone Max	4 oz. + 4 oz.	$6.08 + $1.20	81.67 cd	50.00 a	18.33 c	T=0 b ; B=1 a
Accelerate + Cyclone + LI-700	3.2 oz. + 16 oz. + 6.4 oz.	$0.52 + $4.80 + $1.25	91.00 ab	15.00 de	59.33 ab	T=1 a ; B=1 a
Cyclone Max + LI-700	2.6 oz. + 6.4 oz.	$0.78 + $1.25	85.00 cd	35.00 abcd	32.67 bc	T=1 a ; B=1 a
Cyclone Max + LI-700	4 oz. + 6.4 oz.	$1.20 + $1.25	80.00 d	38.33 abc	31.67 bc	T=1 a ; B=1 a
Cyclone Max + LI-700	16 oz. + 6.4 oz.	$4.80 + $1.25	94.00 a	15.00 de	85.00 a	T=0 b ; B=1 a
Cyclone Max + LI-700	21 oz. + 6.4 oz.	$6.30 + $1.25	96.00 a	13.33 de	86.67 a	T=0 b ; B=0 b
Cyclone Max + Induce	16 oz. + 12.8 oz.	$4.80 + $1.86	91.67 ab	16.67 cde	83.33 a	T=0 b ; B=1 a
Cyclone Max + Synergizer	16 oz. + 6.4 oz.	$4.80 + $0.34	95.00 a	35.00 abcd	60.00 ab	T=0 b ; B=1 a
Cyclone Max + Prime Ag Oil	16 oz. + 12.8 oz.	$4.80 + $0.55	93.33 a	15.00 de	85.00 a	T=0 b ; B=1 a
Cyclone Max + Activator 90	16 oz. + 12.8 oz.	$4.80 + $2.27	95.00 a	16.67 cde	83.33 a	T=0 b ; B=1 a
Aim	0.6 oz.	$4.66	80.00 d	40.00 ab	3.33 c	T=1 a ; B=1 a
Aim + Cyclone Max	0.3 oz. + 10.5 oz.	$2.33 + $3.15	93.33 a	13.33 de	86.67 a	T=0 b ; B=0 b
Aim + Prep	0.6 oz. + 4 oz.	$4.66 + $1.68	80.00 d	18.33 bcde	15.00 c	T=1 a ; B=1 a
Cyclone Max + Prep	3.5 oz. + 16 oz.	$1.05 + $6.73	85.00 cd	53.33 a	21.67 bc	T=1 a ; B=1 a
Check	--	$0.00	80.00 d	2.00 e	0.00 c	T=0 b ; B=0 b

NOTE: In Tables 1, 2 and 3 the individual or combination of letter a, b, c, d or e shown beside the number are to indicate statistical significance. There is no statistical difference between numbers that have the same letter to the side (even when there appears to be a large difference in results between the materials applied).

Results and Discussion

When these plots were evaluated on September 11, 2001 (13 days after the treatments were applied) most of the treatments applied had a significant difference in boll opening, leaf defoliation, leaf desiccation and amount of regrowth in the top and bottom portion of the plants. Most of the chemicals applied were effective in reducing the number of leaves on the plant. The treatments with Cyclone Max applied at 16 ounces or more and the Aim at 0.3 ounce plus Cyclone Max at 10.5 ounces per acre treatment had the most open bolls. The Ginstar, Prep plus Folex/Def, Cyclone Max at less than 5 ounces, and Aim alone treatments had significantly more leaf defoliation. Desiccation

was significantly higher in plots where Cyclone Max was applied at more than 10 ounces per acre. Regrowth did occur in the top and bottom of some of the treatments. The regrowth was between a dime and quarter in size and should not interfere with harvest or quality of the lint. Note: This plot was established on a cloudy day and the level of desiccation in the Cyclone Max plots was high.

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

I want to take this opportunity to thank Floyd Schwartz 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 included:

- Aventis who provided the Folex, Ginstar, and Prep
- Bayer Corporation who provided the Def
- Elf Atochem North America who provided the Accelerate
- FMC Corporation who provided the Aim
- Syngenta Crop Protection, Inc. who provided the Cyclone Max
- Tri-State Chemical DBA United Agra Products (UAP) who provided the Activator 90 and LI700