



Dryland Cotton Harvest Aid Demonstration

Dewyan Weise Farm, 2013

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Summary:

Sixteen treatments were applied over the top of cotton on September 18 to prepare for harvest. The plot was established on Dewyan Weise's farm located on the Southeast side of San Angelo, TX. The chemicals were applied to Deltapine 1044 B2RF cotton that had 75 to 90 percent of its bolls open. Plant height ranged from 30 to 32 inches tall. Leaf shed was somewhat high due to severe drought conditions when the plot was established. These plots were evaluated on September 25 (seven days after treatments were applied) and October 2, 2013 (14 days after the treatments were applied). All of the treatments resulted in an increase in open bolls, leaf defoliation, and leaf desiccation.

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 is 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: Dewyan Weise
Location: Corner of FM 765 and Debus Rd.

Crop Production Information:

Variety Planted: Deltapine 1044 B2RF
Planting Date: May 22, 2013
Planting Rate: 33,000 seeds/acre
Planting Pattern: Solid on 40 inch rows
Irrigation: Dryland

Harvest Aid Application Information for September 18, 2013

Wind Speed: 10.0 miles per hour
Wind Direction: South to Southeast
Time: 12:20-12:40 pm
Air Temperature: 85⁰ Fahrenheit
Relative Humidity: 48 %
Carrier: 11.0 gallons of water per acre
Pressure: 32 pounds per square inch @ 4 mph
Nozzle Size: Turbo Teejet 11002 placed on 20 inch centers
Boom Height: Approximately 8 to 10 inches above canopy
Cotton Height: 30 to 32 inches
Ground Speed: Approximately 4.0 miles per hour
Application Device: Self propelled sprayer with 13.3 foot boom
Plot Size: 13.33 feet X 125 feet
Test Design: Non-replicated

Results and Discussion:

The cotton at the time of application was 80 percent open and all of the remaining bolls were mature. The application of the harvest aids did impact boll opening, percent leaf defoliation and percent leaf 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. Leaf shed was approximately 15 percent when the plot was established. This premature leaf shed was due to extreme drought conditions late in the growing season. This could have had a significant impact on the plant response to harvest-aid application. These plots were evaluated on September 25 (seven days after treatments were applied) and October 2, 2013 (14 days after the treatments were applied). All data collected on is reported in Table 1.

The first seven days (September 18 to September 25, 2013)

Maximum air temperatures ranged from 71 to 92 degrees Fahrenheit for the seven days after harvest aids were applied. The nighttime air temperatures ranged from 52 to 71 degrees Fahrenheit. With these temperatures the harvest aids worked slower than expected. Leaf desiccation ranged from zero to 85 percent higher than the check plot. Leaf defoliation was higher than the check in all treatments on September 25, 2013 (seven days after the treatments were applied). The data collected on September 25 is reported in Table 1.

Fourteen days after application of harvest aids (October 2, 2013)

Maximum air temperatures ranged from 78 to 92 degrees Fahrenheit for the seven days following the first evaluation. The nighttime air temperatures ranged from 52 to 68 degrees Fahrenheit. Leaf desiccation ranged from five to 95 percent higher than the check plot. Leaf defoliation was higher than the check in all treatments on October 2, 2013 (14 days after the test). The data collected on October 2 is reported in Table 1.

The combination of numbers shown in the defoliation and desiccation columns in the Table allows you the opportunity of determining the green leaves remaining by subtracting that total from 100. No remaining green leaves are preferred on cotton to be harvested. The green leaves when harvested and placed into a module or trailer, are a source of unwanted moisture which can result in a high temperature inside the module or trailer. With a lint yield in the 500 to 600 pound range you would prefer to keep leaf desiccation at 20 percent or less, which should result in a leaf grade of 1 to 3.

Some of the materials applied are known to be better at desiccating or removing juvenile growth. These include Aim, Sharpen, ETX, and Display. Please note that a crop oil concentrate was used in tank mixes that contained Aim, Display, and ETX. For maximum performance with these products, crop oil concentrate (C.O.C.) is an important part of the tank mix. A methylated seed oil (MSO) in combination with UAN was mixed with Sharpen application.

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. 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. Tom Green County Cotton Harvest Aid Test (Weise Farm, 2013)
September 25, 2013 and October 2 (7 and 14 days after treatments were applied)**

Trt	Treatment	Rate	Rate	Total Product Price per acre	7 DAT			14 DAT			
No.	Name		Unit		% Def	% DES	% GL	% Def	% DES	% GL	% Regrowth
1	Ginstar	4	fl oz/a	\$8.37	15	0	85	40	5	55	80
1	Ethephon	21	fl oz/a								
1	Non-Ionic Surfactant	0.25	% v/v								
2	Ginstar	5	fl oz/a	\$9.57	25	5	70	45	5	50	70
2	Ethephon	21	fl oz/a								
2	Non-Ionic Surfactant	0.25	% v/v								
3	Ginstar	6	fl oz/a	\$10.77	20	0	80	40	15	45	80
3	Ethephon	21	fl oz/a								
3	Non-Ionic Surfactant	0.25	% v/v								
4	Ginstar	6	fl oz/a	\$18.27	30	15	55	50	5	45	80
4	Finish 6 Pro	21	fl oz/a								
4	Non-Ionic Surfactant	0.25	% v/v								
5	Redi-Pik	4	fl oz/a	\$9.45	10	5	85	15	15	70	70
5	Ethephon	21	fl oz/a								
5	Non-Ionic Surfactant	0.25	% v/v								
6	Adios	4	fl oz/a	\$7.57	5	0	95	10	10	80	80
6	Ethephon	21	fl oz/a								
6	Non-Ionic Surfactant	0.25	% v/v								
7	Display	1	fl oz/a	\$15.60	20	35	45	25	35	40	100
7	Ethephon	21	fl oz/a								
7	Crop Oil Concentrate	1	% v/v								
8	Display	2	fl oz/a	\$27.63	5	40	55	35	35	30	100
8	Ethephon	21	fl oz/a								
8	Crop Oil Concentrate	1	% v/v								

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These include:

-Bayer CropScience who provided the Folex, Finish 6 Pro, Ginstar and Prep. They also provided the spyder sprayer for the applications.

- DuPont who provided the Sharpen
- FMC Corporation who provided the Aim and Display
- Nichino America who provided the ETX
- Syngenta Crop Protection, Inc who provided the Gramoxone Inteon
- MANA who provided the RediPik
- Arysta LifeScience North America, LLC who provided the Adios

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