Irrigated Cotton Harvest Aid Demonstration

John and Doug Wilde Farm, 2013
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Summary:

Eighteen treatments were applied over the top of cotton on October 1, 2013 to prepare for harvest. The plot was established on John and Doug Wilde's farm located on the southeast side of San Angelo, TX. The chemical was supplied to FM- 2484 B2F cotton that had 75-80 percent of its bolls open. Plot height ranged from 32 to 38 inches tall. Leaf shed was less than one percent when the plot was established. These plots were evaluated on October 7 (7 DAT) and October 14 (14 DAT). 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 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. A 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:

Crop Production Information:

Variety planted:	Fiber Max 2484 B2F
Planting Date:	May 18, 2013
Seeding Rate:	49,500 seeds/acre
Planting Pattern:	Solid on 40 inch centers
Irrigation:	SSI (Drip Irrigated)

Harvest Aid Application Information for October, 1 2013:

GPS Coordinates:	31° 24' 45" N, 100° 21' 28" W
Variety:	FM 2484 B2F
Time:	2:30-4:00 pm
Temperature (°F):	92 F
% Relative Humidity:	37%
Wind Speed (mph) and Direction:	5-8 mph/187°S
Row Spacing:	40"
Plot Width (rows):	04
Plot Length:	Strips 150 feet
% Open Bolls:	75-80%
Plant Height (mean inches):	32-38 inches
Sprayer Information:	Spider Sprayer
Carrier:	11.0 gallons of water
Pressure:	32 psi
Nozzle Size:	11002 Turbo Teejet placed on 20" centers
Boom Height:	Approximately 8-10 Inches above company
Ground Speed:	4mph
Test Design:	Non-replicated

Results and Discussion:

The cotton at the time of application was 75-80 percent open and most 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 less than one percent when the plot was established. These plots were evaluated on October 7 (Seven days after treatments were applied) and October 14, 2013 (14 days after treatments were applied). The data collected on October 7 and October 14 is reported in Table 1.

The first seven days (October 1 to October 7, 2013)

Maximum air temperatures ranged from 74 to 91 degrees Fahrenheit for the seven days after harvest aids were applied. The nighttime air temperatures ranged from 43 to 72 degrees Fahrenheit. With these temperatures the harvest aids worked slower than expected. Leaf desiccation ranged from five to 45 percent higher than the check plot. Leaf defoliation was higher than the check in all treatments on October 7, 2013 (7 days after the treatments were applied). The data collected on October 7 is reported in Table 1.

Fourteen days after application of harvest aids (October 14, 2013)

Maximum air temperatures ranged from 78 to 89 degrees Fahrenheit for the six days following the first evaluation. The nighttime air temperatures ranged from 42 to 70 degrees Fahrenheit. With these temperatures, all of the harvest aids worked well. Leaf desiccation ranged from ten to 40 percent higher than the check plot. Leaf defoliation was higher than the check in all treatments on October 14, 2013 (14 days after the applications). The data collected on October 14 is also 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, Display, ETX, and Sharpen. 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. With Sharpen ®, a mentholated seed oil (MSO) was used in combination with UAN.

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 (Wilde Farm, 2013)
October 2, 2013 and October 16, 2013 (7 and 14 days after treatments were applied)

Trt	Treatment	Rate	Rate	Total Product Price/acre	7 DAT-10-7-2013			14 DAT-10-16-13			
No.	Name		Unit		% Def	% DES	% GL	% Def	% DES	% GL	% Regrowth
1	Ginstar	4	fl oz/a	$8.88	60	25	15	65	25	10	60
1	Ethephon	24	fl oz/a								
1	Non-Ionic Surfactant	0.25	% v/v								
2	Ginstar	5	fl oz/a	$10.08	70	20	10	60	30	10	60
2	Ethephon	24	fl oz/a								
2	Non-Ionic Surfactant	0.25	% v/v								
3	Ginstar	6	fl oz/a	$11.28	50	25	25	45	35	20	60
3	Ethephon	24	fl oz/a								
3	Non-Ionic Surfactant	0.25	% v/v								
4	Ginstar	6	fl oz/a	$19.85	60	20	20	45	20	35	60
4	Finish	24	fl oz/a								
4	Non-Ionic Surfactant	0.25	% v/v								
5	Adios	4	fl oz/a	$8.08	50	15	35	40	20	40	60
5	Ethephon	24	fl oz/a								
5	Non-Ionic Surfactant	0.25	% v/v								
6	Adios	4	fl oz/a	$8.08	50	10	40	35	15	50	60
6	Ethephon	24	fl oz/a								
6	Spray Master (Non-Ionic Surfactant)	4	fl oz/a								
7	Display	0.8	fl oz/a	$13.70	45	40	15	45	35	20	80
7	Ethephon	24	fl oz/a								
7	Crop Oil Concentrate	1	% v/v								
8	Display	0.6	fl oz/a	$11.30	50	30	20	40	35	25	90
8	Ethephon	24	fl oz/a								
8	Crop Oil Concentrate	1	% v/v								
9	ETX	1.25	fl oz/a	$7.59	50	30	20	40	35	25	80
9	Ethephon	24	fl oz/a								
9	Crop Oil Concentrate	0.5	% v/v								
10	ETX	1.7	fl oz/a	$8.86	55	25	20	50	30	20	80
10	Ethephon	24	fl oz/a								
10	Crop Oil Concentrate	0.5	% v/v								
11	Sharpen	1	fl oz/a	$9.16	45	35	20	40	30	30	80
11	Ethephon	24	fl oz/a								
11	MSO	1	% v/v								
11	UAN	32	fl oz/a								
12	Aim	1	fl oz/a	$8.46	40	45	15	50	25	25	90
12	Ethephon	24	fl oz/a								
12	Crop Oil Concentrate	1	% v/v								

Cont'd

Trt	Treatment	Rate	Rate	Total Product Price/acre	7 DAT-10-7-2013			14 DAT-10-16-13			
No.	Name		Unit		% Def	% DES	% GL	% Def	% DES	% GL	% Regrowth
13	Sharpen	1	fl oz/a	$15.71	50	45	5	55	40	5	70
13	Folex	12	fl oz/a								
13	Ethephon	24	fl oz/a								
13	MSO	1	% v/v								
13	UAN	32	fl oz/a								
14	Ethephon	24	fl oz/a	$12.82	60	5	35	60	10	30	90
14	Folex	16	fl oz/a								
14	Non-Ionic Surfactant	0.25	% v/v								
15	Display	1	fl oz/a	$22.66	35	35	30	50	20	30	70
15	Folex	12	fl oz/a								
15	Ethephon	24	fl oz/a								
15	Crop Oil Concentrate	1	% v/v								
16	Gramoxone Inteon (2 lbs/gal)	4	fl oz/a	$9.15	50	20	30	60	15	25	90
16	Folex	8	fl oz/a								
16	Ethephon	24	fl oz/a								
16	Crop Oil Concentrate	1	% v/v								
17	Ginstar	3	fl oz/a	$12.76	10	55	35	35	40	25	60
17	Sharpen	1	fl oz/a								
17	Ethephon	24	fl oz/a								
17	MSO	1	% v/v								
17	UAN	32	fl oz/a								
18	Ginstar	4	fl oz/a	$8.88	30	20	50	40	40	20	40
18	Ethephon	24	fl oz/a								
18	Crop Oil Concentrate	16	fl oz/a								

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-Mana who provided the Redipik

-Arysta LifeScience North America, LLC who provided the Adios

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