



Result Demonstration/Applied Research Report

2005 Jones County
Roundup Flex Test
Cooperator: Steve Blankenship

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Summary

Two applications of RoundupWeatherMax (glyphosate) were applied to cotton that was planted on June 28. The spectrum of weeds in the plot included annual and perennial weeds. Applications of glyphosate were made on July 18 and August 22 to actively growing, unstressed, weeds that ranged in size from two inches to eight inches. Each application of glyphosate eliminated over 98 percent of the existing weeds and provided a window of opportunity for the cotton to develop with no weed competition. Each rainfall event resulted in more weed seed germination and reinfestation of the plots. The glyphosate did control all of the weeds in the plots except for Ground cherry. All weeds were actively growing in an unstressed condition at the time the applications were made. The Roundup Flex program provided over 98 percent weed control for the season.

Problem

In the Rolling Plains of Texas, the control of weeds is critical to reach the yield potential of the cotton crop. One herbicide program that is gaining use by producers is using glyphosate on Roundup Ready cotton to control both annual and perennial weeds. The main weakness of the program is multiple flushes of weeds that require the use of hooded sprayers to make herbicide applications after the cotton plant has past the fifth true leaf stage. With the introduction of Roundup Flex cotton a producer can spray over the top of cotton until the 12th node stage without injuring the yield potential of the cotton. Since this is a new technology, producers will need several growing seasons to verify the full value of the improved varieties. If it meets expectations this will be a useful tool in controlling several weed problems in cotton.

Objective

Through the use of a field test: 1) determine the effectiveness of herbicides at controlling the weed, 2) provide producers the opportunity of observing how effectively the new Roundup Flex program worked in controlling weeds, and 3) determine the economic feasibility of applying the herbicides for weed control.

Materials and Methods

Cooperating County Producer: Steve Blankenship
Location: 3 miles west of Fm Rd 707 on Farm Road 2746. Then 2.0 miles south on Fm Rd 3116 then 0.6 mile east on field road

Application Information:

Date Applied:	July 18, 2005	August 22, 2005
Time of Application:	10:00 - 11:30 a.m.	9:30 a.m. - 11:30 a.m.
Wind Speed:	9 to 10 miles per hour	4 to 5 miles per hour
Wind Direction:	South	Southwest
Air Temperature:	80 to 85 ⁰ Fahrenheit	84 to 89 ⁰ Fahrenheit
Relative Humidity:	45 to 60%	50 to 63%
Spray Volume	10.0 gallons per acre	10.0 gallons per acre
Pressure:	32 p.s.i.	32 psi
Application Device:	Self Propelled	Self Propelled
Ground Speed:	4.0 m.p.h.	4.0 miles per hour
Nozzle:	11002 Flat Fan on 20 inch centers	11002 Flat Fan on 20 inch centers
Boom Height:	12 inches	28 inches
Cotton:	3 rd True Leaf Stage	½ grown square stage
All plots: Plot Size: 13.33 feet wide by 50 feet long Test Design: randomized complete block design with four replications Note: All treatments applied July 18 included an insecticide (Centric® 40WG) @ 2 ounces per acre		

Results and Discussion

The purpose of this test was to determine if multiple applications of glyphosate in a Roundup Ready cotton production system was a better approach than fall applied herbicides. Most of the fall applied herbicides have enough soil residual activity to impact or prevent the cottonseed from germinating and developing a plant the following spring. By using glyphosate, with glyphosate resistant cotton, the weeds could be controlled while producing a cotton crop.

On July 18 the first application of Roundup WeatherMax was applied and a high level of weed control was achieved which allowed the cotton to develop with no weed competition. Weed height at the time of the application ranged from two to eight inches and plants were rapidly growing. The information collected on August 22 is summarized in Table 1.

Prior to making the second application an inventory of the weeds in each of the plots was conducted. The purpose of the inventory was to document weeds that might be more difficult to control because of size. Weeds found in the plots included Cocklebur, Devil's Claw, Redroot Pigweed, Johnsongrass, Silverleaf Nightshade, Ground Spurge, Turnip Weed, Russian Thistle, and Ground Cherry.

On August 22 the second application of Roundup was applied to control the weeds that had emerged due to favorable soil moisture conditions. If this had been Roundup Ready cotton then the herbicide would have been applied using a hooded sprayer because of the advanced cotton growth stage. Since this was Roundup Flex cotton then an application of Roundup was made over the top of the cotton. Weed size for most of the plants in the plot was less than two inches at the time of application and the plants were unstressed and rapidly growing. The information collected on September 22 and October 22 is summarized in Table 1.

The plot rating on October 22 was to provide information concerning season long control of the weeds. More than 98 percent of the weeds were controlled in all plots. The only exception was the Ground Cherry which was not impacted by any of the herbicides applied. Weed seed production was greatly reduced on this acreage.

The higher rate of Roundup WeatherMAX or the addition of Staple did not provide additional levels of weed control in this test. Often the residual activity of Staple extends the time period before additional applications of herbicides are needed. That was not the case in this test, primarily due to the hot dry September and October that did not result in additional weed emergence.

Several factors improved the performance of the herbicides in this test. They included: 1) actively growing unstressed weeds, 2) good coverage of the weeds with the herbicide(s) applied, and 3) applying the material under favorable environmental conditions.

Table 1. Data collected from Steve Blankenship's Roundup Flex Test (Jones County, 2005)

Treatment	Cost of Herbicide Per Acre	Weed Control Rating		
		August 22	September 22	October 22
Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon followed by Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon	\$4.90+ \$0.34 \$4.90+ \$0.34	95	99	99
Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon followed by Roundup WeatherMAX @ 32 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon	\$4.90+ \$0.34 \$7.13+ \$0.34	95	99	99
Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon followed by Roundup WeatherMAX @ 22 oz. per acre + Staple @ 1.5 ounces per acre + Ammonium Sulphate @ 0.17 pound per gallon	\$4.90 + \$0.34 \$4.90 + \$27.00 + \$0.34	95	99	99
Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon followed by Roundup WeatherMAX @ 32 oz. per acre + Staple @ 1.5 ounces per acre + Ammonium Sulphate @ 0.17 pound per gallon	\$4.90 + \$0.34 \$7.13+ \$27.00 + \$0.34	95	99	99
Check	-	0	0	0
Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon followed by Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon	\$4.90+ \$0.34 \$4.90+ \$0.34	95	99	99
Roundup WeatherMAX @ 22 oz. per acre + Ammonium Sulphate @ 0.17 pound per gallon followed by Roundup WeatherMAX @ 22 oz. per acre + Staple @ 1.5 ounces per acre + Ammonium Sulphate @ 0.17 pound per gallon	\$4.90 + \$0.34 \$4.90 + \$27.00 + \$0.34	95	99	99

Economics

Weed control from the fall applied herbicides provided a high level of weed control but most of the herbicides applied injured the cotton as it emerged in the spring. With the drop in price on glyphosate and the availability of high quality Roundup tolerant cotton varieties the spring and in-season summer herbicide program for controlling many of the weed problems in cotton makes the most economic sense. If the least expensive glyphosate was used, the three applications of herbicide would cost less than \$25 and provide excellent weed control (if applied correctly).

Acknowledgments

I want to take this opportunity to thank Steve Blankenship for his help in plot establishment and management.

I would also like to thank Monsanto for providing Roundup WeatherMAX for this test.

Also, I would like to thank DuPont for providing the Staple for this test.

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