

Crop Safety Study in Widestrike (Phytogen 755 WRF) Cotton



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Abstract

“Widestrike” controls worm pests in cotton and also has “Roundup Ready Flex” characteristics allowing growers to apply glyphosate throughout most of the season. There has been considerable interest from growers to have the ability to apply glyphosate and glufosinate to control a wider spectrum of weeds. The objective of this study was to evaluate the potential of using *Glufosinate-ammonium* (Ignite 280) in “Widestrike” Cotton by comparing applications at 4 different cotton plant timings and at 3 different glufosinate rates. Staple at 1 ounce (oz) + Agri-Dex (COC) at 1% volume per volume (v/v) was only applied during the cotyledon stage. Roundup Weathermax at 32 oz, Ignite 280 (Rely 280) at 29, 43, and 86 oz were all applied during the cotyledon stage, 2 true leaf stages, the 5 to 6 node stage, and the 18 to 19 node stage. Applications were applied over the top at the cotyledon and 2 true leaf stages. The 5 to 6 node stage and 18 to 19 node stage was applied as a directed spray. These studies were conducted during the 2008 and 2009 cotton production season.

Ignite at 29 oz rate demonstrated minimal crop injury at the 4 different application timings and spray methods used in these studies. All rates at all 4 timings, even though initial injury for approximately 3-4 weeks was observed did not have a significant impact on lint yield and fiber quality.

Material and Methods

Studies were conducted at the Westside Research and Extension Field Station in Five Points, California on PHY 755 WRF cotton for two consecutive seasons, 2008 and 2009. The studies had 4 application timings for both seasons; an over to top applications at the cotyledon stage and at the 2 true leaf stage. Directed spray applications were applied at the 5 to 6 node stage, and the late lay-by stage (18 to 19 nodes). The plot size for both years was 40 inch rows by 65 feet. In 2008 there were 4 replications per treatment except in the cotyledon stage that had 3 replications, as an uneven crop stand occurred in one of the applications. In 2009 all the treatments were replicated 4 times at all stages. A high clearance sprayer was used with 8002 flat fan nozzles at a speed of 4 mph with spray pressure of 40 psi and a volume of 15 gpa. In 2008, the field had extreme lygus bug pressure throughout the season (10-30 per 50 sweeps). Pix treatments were applied two times at maximum rates and the field was deficit irrigated to manage growth (5 weeks between irrigations).

Table 2. Application over the top at the two true leaf stage cotton injury ratings

May 15, 2008 (2 LF Application)										
		22-May	3-Jun	9-Jun	12-Jun	18-Jun	27-Jun	3-Jul	14-Jul	
Treatments	Rate/A	7 DAT	19 DAT	25 DAT	28 DAT	34 DAT	43 DAT	49 DAT	60 DAT	
Roundup Weathermax	32 oz	0	0	0	0	1	0	0	0	
Ignite 280	29 oz	11	6	4	4	3	1	0	0	
Ignite 280	43 oz	28	13	10	8	7	4	2	0	
Ignite 280	86 oz	41	28	21	19	13	5	5	0	
Untreated	---	0	0	0	0	0	0	0	0	

May 12, 2009 (2 LF Application)										
		19-May	27-May	2-Jun	17-Jun	22-Jun	30-Jun			
Treatments	Rate/A	7 DAT	14 DAT	21 DAT	36 DAT	40 DAT	48 DAT			
Roundup Weathermax	32 oz	0	0	0	0	0	0			
Ignite 280	29 oz	21	15	5	0	0	0			
Ignite 280	43 oz	45	35	21	1	1	0			
Ignite 280	86 oz	58	48	36	4	2	0			
Untreated	---	0	0	0	0	0	0			

Table 3. Application directed spray at the 5-6 node stage cotton injury rating

June 2, 2008 (5-6 Node Stage Application)										
		9-Jun	12-Jun	18-Jun	27-Jun	3-Jul	14-Jul	23-Jul	6-Aug	
Treatments	Rate/A	7 DAT	10 DAT	16 DAT	25 DAT	31 DAT	42 DAT	51 DAT	65 DAT	
Roundup Weathermax	32 oz	0	0	1	0	0	0	0	0	
Ignite 280	29 oz	8	4	3	1	0	0	0	0	
Ignite 280	43 oz	23	18	15	5	5	0	0	0	
Ignite 280	86 oz	36	28	20	6	6	3	1	0	
Untreated	---	0	0	0	0	0	0	0	0	

June 2, 2009 (5-6 Node Stage Application)										
		17-Jun	22-Jun	30-Jun	8-Jul	14-Jul	27-Jul	11-Aug		
Treatments	Rate/A	15 DAT	20 DAT	28 DAT	44 DAT	50 DAT	62 DAT	77 DAT		
Roundup Weathermax	32 oz	0	0	0	0	0	0	0		
Ignite 280	29 oz	18	10	3	1	0	0	0		
Ignite 280	43 oz	23	16	8	4	2	0	0		
Ignite 280	86 oz	38	24	16	9	6	4	0		
Untreated	---	0	0	0	0	0	0	0		

Fig. 1: Cotyledon stage application



Fig. 2: 2009 crop injury comparison of cotyledon app. at 11 DAT

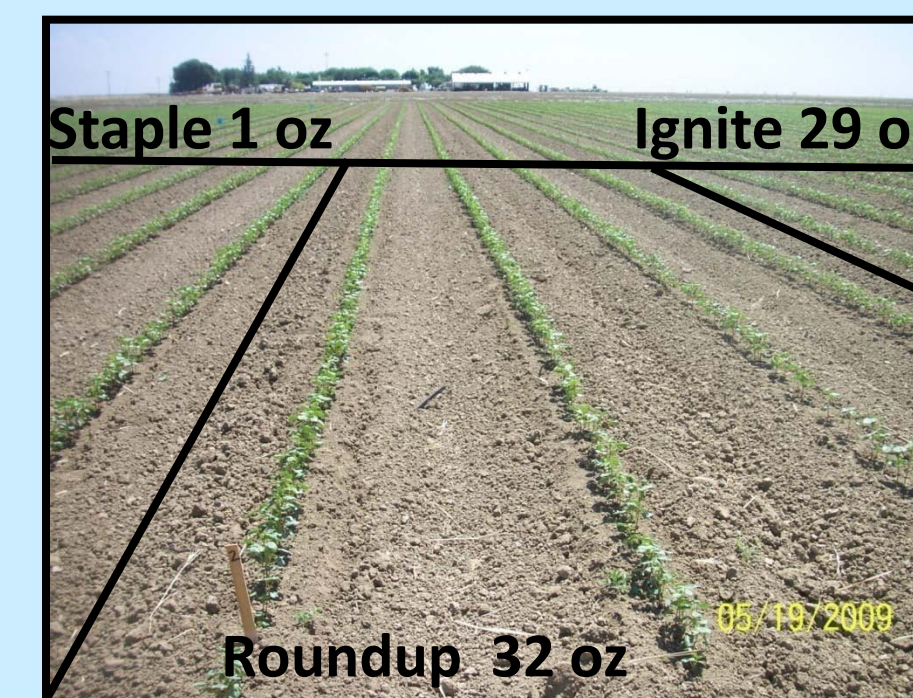


Fig. 3: 2009 site after variable rates/timings of Ignite



Table 1. Application over the top at of the cotyledon stage cotton injury ratings

May 8 th 2008 (Cotyledon Application)										
		15-May	22-May	3-Jun	9-Jun	12-Jun	18-Jun	27-Jun	3-Jul	
Treatments	Rate /A	7 DAT	14 DAT	26 DAT	32 DAT	35 DAT	41 DAT	50 DAT	56 DAT	
Staple + COC	1 oz + 1% v/v	7	3	0	0	0	0	0	0	
Roundup Weathermax	32 oz	0	0	0	0	0	0	0	0	
Ignite 280	29 oz	13	10	2	0	0	0	0	0	
Ignite 280	43 oz	25	17	5	5	2	1	1	0	
Ignite 280	86 oz	33	25	13	5	4	3	2	0	
Untreated	---	0	0	0	0	0	0	0	0	

April 28 th 2009 (Cotyledon Application)										
		7-May	12-May	19-May	27-May	2-Jun	17-Jun			
Treatments	Rate/A	7 DAT	14 DAT	21 DAT	28 DAT	35 DAT	50 DAT			
Staple + COC	1 oz + 1% v/v	4	3	0	0	0	0			
Roundup Weathermax	32 oz	0	0	0	0	0	0			
Ignite 280	29 oz	7	6	2	0	0	0			
Ignite 280	43 oz	24	16	10	5	1	0			
Ignite 280	86 oz	58	54	21	10	3	0			
Untreated	---	0	0	0	0	0	0			

Table 4. Application directed spray at the 18-19 node stage cotton injury

July 16, 2008 (18-19 Node Stage Application)					
		23-Jul	6-Aug		
Treatments	Rate/A	7 DAT	21 DAT		
Roundup Weathermax	32 oz	2	0		
Ignite 280	29 oz	4	0		
Ignite 280	43 oz	8	0		
Ignite 280	86 oz	16	0		
Untreated	---	0	0		

June 30, 2009 (18-19 Node Stage Application)					
		8-Jul	14-Jul	27-Jul	11-Aug
Treatments	Rate/A	16 DAT	22 DAT	34 DAT	49 DAT
Roundup Weathermax	32 oz	0	0	0	0
Ignite 280	29 oz	2	1	1	0
Ignite 280	43 oz	8	5	5	0
Ignite 280	86 oz	16	13	11	0
Untreated	---	0	0	0	0

Table 5. Effect of application timing a ratio on gin turnout and lint yield

Lint Yield 2008-2009				
Treatments	Rate/A	Stage	2008	2009
Staple + COC	1 oz + 1% v/v	Cot.	1163	1790
Roundup Weathermax	32 oz	Cot.	1159	1787
Ignite 280	29 oz	Cot.	1131	1778
Ignite 280	43 oz	Cot.	1082	1804
Ignite 280	86 oz	Cot.	1208	1661
Roundup Weathermax	32 oz	2LF	1216	1861
Ignite 280	29 oz	2LF	1087	1766
Ignite 280	43 oz	2LF	1040	1769
Ignite 280	86 oz	2LF	1158	1778
Roundup Weathermax	32 oz	5-6 nodes	1288	1856
Ignite 280	29 oz	5-6 nodes	1087	1849
Ignite 280	43 oz	5-6 nodes	1098	1787
Ignite 280	86 oz	5-6 nodes	1035	1833
Roundup Weathermax	32 oz	18-19 nodes	1133	1731
Ignite 280	29 oz	18-19 nodes	1292	1735
Ignite 280	43 oz	18-19 nodes	1194	1777
Ignite 280	86 oz	18-19 nodes	1252	1766
Untreated	---	---	1018	1747
		LSD .05	159.01	NS
		% CV	8.5	2.53

2008/2009 Summary

- Ignite at 29 oz rate demonstrated minimal crop injury at the four different application timings and spray methods used in these studies. All rates at all four timings, even though initial injury for approximately 3-4 weeks was observed did not have a significant impact on lint yield and fiber quality.
- Yield results in 2008 are inconclusive due to low yields. The field had extreme lygus bug pressure throughout the season (10-30 per 50 sweeps). Pix treatments were applied two times at maximum rates and the field was deficiently irrigated to manage growth (5 weeks between irrigations). There were no significance difference between treatments for yield in 2009.