

**RESPONSE OF THREE STACKED GENE
VARIETIES TO TIMED ROUNDUP
ULTRA® APPLICATIONS**

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Abstract

New technology is continually making its mark in the cotton industry. Roundup Ready™ cotton is an exceptional value to those farmers wishing to reduce their input costs or control weeds resistant to conventional herbicide programs. As with any new advancement or technology, growers have questions about performance in field type situations. This trial compares the performance of three different varieties to timed Roundup Ultra applications ranging from in label applications at the 4 leaf stage to a past label application at the 10 leaf stage. Field conditions that growers experience vary from year to year and field to field. Growth stages in any given field may not (and most likely will not) be the same. Timing roundup applications according to label directions is a must, but in any field, there are plants that may not meet the growth stage criteria specified.

Roundup Ultra applications may be made over the top prior to the five leaf stage of growth. Up to two applications can be made prior to the five leaf stage with a minimum of two nodes of growth and ten days between applications.

The purpose of this trial was to look at the effects of late, out of label over the top applications of Roundup Ultra and its effect on yield performance.

Materials and Methods

A field trial was conducted in 1998 on Sudderth Farms in southwest, Georgia. The trial was randomized and replicated four times. Row spacing was 36 inches and row length was 229 feet. All plots received an application of Prowl (.5#a.i./A) and Treflan (.75# a.i./A). Roundup treatments consisted of over the top applications of Roundup Ultra at one of three specified times: 4 - 5 leaf, 6 - 7 leaf, or 9 - 10 leaf. All applications were made at the rate of 1 quart of Roundup Ultra per acre. Plots were mapped early bloom and prior to harvest. The trial was planted May 18 and harvested November 11. Varieties planted were DPX 9834 B/RR, DP 458 B/RR, and DP 688 B/RR, representing three different maturity groups. It needs to be noted that seed of DPX 9834 B/RR came from winter nursery and had lower seed quality.

Results and Discussion

Though the trial was conducted under irrigation, drought and heat conditions in southwest Georgia were very severe and impacted yields. When comparing treatments within varieties, there was no significant difference among the treatments. However, there were significant differences between varieties (Table 1). Spray timing had no significant effect on yield, but there were lower yields on the two indeterminate varieties, DP 458 B/RR and DP 688 B/RR, when treated at the 9 - 10 leaf stage. When looking at yield results between varieties, DP 458 B/RR exhibited significantly higher yields than the other two varieties (Figure 1). Comparisons of fiber qualities made within varieties showed no significant differences in these fiber traits (Table 2). When viewing final plant map data, there were significant differences between varieties, but not within varieties with different treatments. It was noted that the 95 % zone, number of vegetative bolls, bolls on positions greater than position 2, and retention on mainstem nodes 6 - 10 were significantly different across varieties at the same treatment level (Table 3).

Conclusions

Varieties did not significantly respond to different spray timings. Varieties responded similar for each of the three timings. It has to be noted, however, that the information gathered is based on one test from one year's data. Label directions for the application of Roundup Ultra must be followed. Though results from this test showed no significant reduction in yield from late over the top applications of Roundup Ultra, it has to be noted that different environmental conditions could be expected to effect crop response to applications. When observing differences between varieties, DP 458 B/RR had significantly higher lint yields than either of the other two varieties. Final plant map data indicates differences between varieties but not within varieties. Though yield was not significantly impacted by late applications of Roundup Ultra, early retention was lower and more fruit was set on vegetative branches and positions greater than position 2. With adverse environmental conditions late, these late, out of label applications could negatively influence yields.

Table 1. Lint Yield across varieties and treatments with Roundup Ultra

Variety	Treatment (growth stage)	Lint Yield (LB/A)
DP 458 B/RR	4 - 5 leaf	1076
	6 - 7 leaf	1122
	9 - 10 leaf	1009
Average		1069
LSD(.05)		NS
DP 688 B/RR	4 - 5 leaf	948
	6 - 7 leaf	967
	9 - 10 leaf	902
Average		939
LSD(.05)		NS
DPX 9834 B/RR	4 - 5 leaf	903
	6 - 7 leaf	933
	9 - 10 leaf	981
Average		939
LSD(.05)		NS
Average		982
LSD(.05)		50
CV		8.6

Table 2. Fiber quality across varieties and treatments

Variety	Treatment (growth stage)	Strength		
		Staple	(g/tex)	Mic
DP 458	4 - 5 leaf	34.3	26.3	4.7
	6 - 7 leaf	34.0	26.7	4.9
	9 - 10 leaf	34.0	4.7	4.7
DP 688	4 - 5 leaf	34.3	29.4	4.3
	6 - 7 leaf	34.3	28.3	4.2
	9 - 10 leaf	33.8	28.1	4.3
DPX 9834	4 - 5 leaf	34.3	25.2	4.6
	6 - 7 leaf	34.3	25.3	4.6
	9 - 10 leaf	34.5	25.4	4.3
Average		34.2	24.4	4.5

Table 3. Final plant map data across varieties, grouped by treatment

Treatment Level	95% Zone (Nodes)	Veg. Bolls (Number)	Bolls>FP2 (%)	R 6-10 (%)
4 - 5 leaf	7.4	18.1	6.6	40
6 - 7 leaf	8.7	33.7	8.4	24.7
9 - 10 leaf	8.3	22.1	10.8	25.8
LSD	0.67	7.1	1.6	5.8

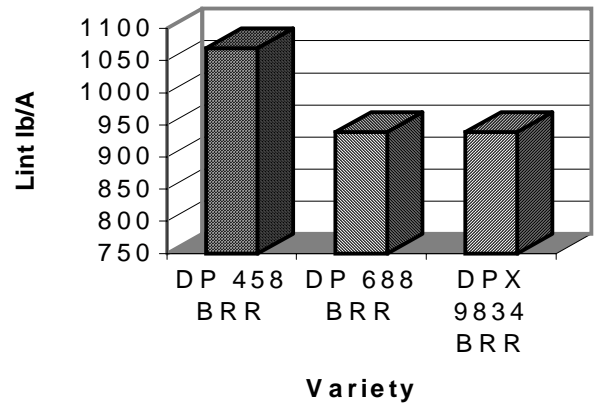


Figure 1. Yield comparison of 3 stacked gene varieties - all treatments included.