

WHEAT RESPONSE TO POWERFLEX AND OSPREY WHEN NITROGEN FERTILIZER WAS TOPDRESSED AT DIFFERENT TIMES.

(UKREC 2009-2010)

James R. Martin, Charles R. Tutt, and Dorothy L. Call
Department of Plant and Soil Sciences
University of Kentucky, Princeton, KY 42445-0469.
PH: (270) 365-7541 ext 203; Email: jmartin@uky.edu

Osprey (mesosulfuron methyl) and PowerFlex (pyroxsulam) are foliar-applied herbicides used to manage weedy grasses after wheat emergence. Both products are an Acetolactate Synthase (ALS) inhibitor that can injure wheat; consequently, they are formulated with a safener. There have been isolated cases where these herbicides have injured wheat, particularly when they were applied near the time of topdressing nitrogen fertilizer. The PowerFlex label cautions against making applications within seven days of topdressing ammonium nitrogen fertilizer, while the Osprey label suggests waiting 14 days between application and topdressing.

This research is an ongoing project to evaluate wheat response to PowerFlex or Osprey when nitrogen fertilizer was topdressed at different times relative to spring application of these herbicides. Similar timing studies have been done with Osprey since 2006 and with PowerFlex since 2008.

METHODS

Both herbicides were applied March 10, 2010 in water at spray volume of 20 GPA with 8003 flat fan tips. The commercial formulation of Osprey with the safener was applied at a rate of 4.75 oz/A plus Activator 90 at 0.5% (v/v), plus dry Ammonium

Sulfate at 1.52 lb/A. PowerFlex was applied at a rate of 3.5 oz/A + Activator 90 at 0.5% v/v + dry Ammonium Sulfate at 1.52 lb/A.

Liquid nitrogen (28%) was applied with TeeJet stream tips at 40 gal/A (120 units of N/A). The timing for topdressing nitrogen occurred over a period of five weeks at weekly intervals designated as -14, -7, 0, +7, and +14 days relative to timing of the herbicides.

RESULTS

The data reported in table 1 represent the differences in height of wheat plants treated with herbicide, relative to the non-treated check for each timing of nitrogen. Measurements were taken during the first six weeks after the herbicides were applied and at maturity. In most instances wheat plants in the herbicide treated plots were numerically shorter (i.e. a negative value) relative to those in the check plots up to maturity. However, based on statistical analysis, approximately one-third of the measurements made during the first six weeks indicated statistically significant reduction in plant heights. The only treatment that did not cause statistically significant reduction in plant height was when nitrogen was topdressed 14 days following PowerFlex. Stunting was observed up to six weeks where PowerFlex

was applied and nitrogen was topdressed 7 days later and when Osprey was applied and nitrogen was topdressed 7 or 14 days later.

Chlorosis was observed in all herbicide treated plots at one week after application (data not shown). Only nine percent chlorosis occurred when PowerFlex and Osprey were applied the same day as topdressing nitrogen fertilizer. Chlorosis disappeared by four weeks after the herbicides were applied.

Although statistical analysis indicated PowerFlex and Osprey did not limit wheat yield, yet the yields for both herbicides at the 0 day timing were numerically less compared with the non-treated check. (Figure 1).

SUMMARY

This research supports previous results which indicate that injury from PowerFlex or Osprey can occur when topdressed near the time of topdressing nitrogen fertilizer. The level of injury observed in this study

appeared to be less compared with results in previous studies, particularly at the 0 day timing. None of the yield differences in this study were statistically significant; however, when both herbicides were applied the same day as topdressing nitrogen, wheat yields tended to be less than those of the checks. Results of earlier research have shown similar trends in reduction of wheat yield, particularly when the herbicides were applied the same day as topdressing nitrogen.

The likelihood of PowerFlex or Osprey causing a significant reduction in yield is minimal when following the herbicide label in regards to application timing relative to topdressing nitrogen fertilizer.

Acknowledgments and Disclaimer: Appreciation is expressed to Dow AgroSciences for helping support this research. These specific results are based on one growing season at a single location and may not reflect what will occur in other environments.

Table 1. Wheat Height Reduction When Topdressed with N at Different Times Relative to PowerFlex or Osprey. (UKREC 2009-2010)

	TIMING FOR TOPDRESSING	1 WAT	2 WAT	3 WAT	4 WAT	5 WAT	6 WAT	MARTUITY
		Wheat height reduction in inches beginning 1 week after herbicide & ending at maturity						
PowerFlex	- 14 Days	- 0.68	- 1.55	- 1.95	- 1.50	- 2.25	- 0.93	- 0.33
	- 7 Days	- 1.18	- 0.50	- 0.80	0	- 0.58	- 0.35	- 0.85
	0 Day	- 0.55	- 1.28	- 0.70	- 0.50	- 0.68	- 0.1	- 0.13
	+ 7 Days	- 1.05	- 1.45	- 1.93	- 2.08	- 2.45	- 2.40	- 1.25
	+ 14 Days	0.35	- 0.55	- 0.55	- 0.63	- 0.23	- 0.50	- 0.78
Osprey	- 14 Days	- 0.75	- 1.48	- 1.68	- 0.93	- 1.68	- 0.53	- 0.68
	- 7 Days	- 0.60	0.18	0.30	0.38	0.35	0.65	0.20
	0 Day	- 0.60	- 1.53	- 1.35	- 1.50	- 1.33	- 1.40	- 0.60
	+ 7 Days	- 0.53	- 1.25	- 1.30	- 1.23	- 1.45	- 1.88	- 1.10
	+ 14 Days	- 0.35	- 0.83	- 1.38	- 2.08	- 1.70	- 1.93	- 1.15

Heights measured weeks at 1 through 6 weeks after herbicide treatments and at maturity
 Shaded cells indicate statistical significant height reduction from PowerFlex or Osprey relative to non-treated check. (LSD 0.10).

Figure 1. Wheat Yield When Topdressed with N Fertilizer at Different Times Relative to PowerFlex or Osprey (UKREC 2009-2010)

