

Italian ryegrass control in winter wheat using Anthem® Flex

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A field study was conducted on the WSU Cook Agronomy Farm near Pullman, WA to generate weed control and crop response data for winter wheat treated with Anthem Flex herbicide at various application times. The active ingredient in Anthem Flex that is effective on Italian ryegrass is pyroxasulfone, an inhibitor of very-long-chain fatty acid synthesis (Group 15). This is a newly labeled product that may be very useful for the control of Italian ryegrass, especially as resistance to Group 1 and 2 herbicides in Italian ryegrass populations continues to develop.



The soil at this site is a Palouse silt loam with 4.7% organic matter and a pH of 5.1. Pre-plant herbicide applications were made on October 24, 2014 using a CO₂ backpack sprayer set to deliver 10 gpa at 2.3 mph and 40 psi. Conditions were an air temperature of 53°F, relative humidity of 66% and the wind out of the SE at 8.5 mph. ‘ARS-Amber’ winter wheat was seeded on October 27th at a rate of 62 lb/acre using a Monosem precision air seed drill with 10-inch row spacing at a depth of 1.5 inches. Soils were dry and hard at planting which resulted in a range of seeding depth from 0.5 to 1.5 inches. Starter fertilizer was applied at a rate of 100 lb N/acre from urea. Post-plant, pre-emerge herbicide applications were applied on October 28th. Conditions were an air temperature of 45°F, relative humidity of 78% and the wind out of the SE at 2.5 mph. Early post-emerge herbicides were applied on March 20, 2015 with a SE wind at 5 mph, relative humidity at 52%, and air temperature at 60°F. Wheat was at the 2- to 4-tiller stage and was 6 inches tall. Italian ryegrass was 3 inches tall at the time of application. Plots were harvested on July 24th with a Kincaid 8XP combine.

The extremely cold temperatures the week of November 9th affected seedling development of Italian ryegrass as well as further fall germination. The majority of the Italian ryegrass germinated from late-winter to early spring, as we experienced a very mild winter, average precipitation with minimal snow cover. The best Italian ryegrass control was achieved with a split application of Anthem Flex, applied pre-plant and in the spring, in combination with PowerFlex® HL in the spring. Although a pre-plant application of Anthem Flex at the rate of 3.75 or 4.5 fl oz/acre provided similar control of Italian ryegrass, it is wise to plan on a spring application of a Group 2 herbicide with activity on Italian ryegrass, like Everest® 2.0, Osprey® or PowerFlex HL, to control later emerging plants and provide a second mechanism of action to reduce the risk of developing Italian ryegrass populations resistant to pyroxasulfone. No

significant yield differences were observed amongst the various herbicide treatments (data not shown). The average test weight and yield were 47 lb/bu and 68 bu/a, respectively.

Treatment	Rate fl oz/A	Application Date	Application Description	May 1		June 10
				Crop	Italian Ryegrass	Italian Ryegrass
				Injury (0 to 100)	Control (0 to 100)	Control (0 to 100)
Nontreated Check				--	--	--
Anthem Flex	2.5	10/24/14	Pre-plant	4 a ¹	67 cd	61 b
Anthem Flex	3.25	10/24/14	Pre-plant	2 a	79 bc	75 ab
Anthem Flex	3.75	10/24/14	Pre-plant	4 a	90 ab	86 a
Anthem Flex	3.75	10/28/14	Post-plant Pre-emerge	0 a	85 ab	75 ab
Anthem Flex	4.5	10/28/14	Post-plant Pre-emerge	5 a	84 a-c	76 ab
Anthem Flex	4.5	10/24/14	Pre-plant	11 a	91 ab	75 ab
Anthem Flex	3.25	10/24/14	Pre-plant	6 a	91 ab	85 a
PowerFlex HL	2.0 oz	3/20/15	Wheat 2-tillers detected			
NIS	0.25 % v/v	3/20/15	Wheat 2-tillers detected			
Anthem Flex	3.25	10/24/14	Pre-plant	11 a	89 ab	76 ab
Everest 2.0	1.0	3/20/15	Wheat 2-tillers detected			
NIS	0.25 % v/v	3/20/15	Wheat 2-tillers detected			
PowerFlex HL	2.0 oz	3/20/15	Wheat 2-tillers detected	6 a	51 d	32 c
NIS	0.25 % v/v	3/20/15	Wheat 2-tillers detected			
Everest 2.0	1.0	3/20/15	Wheat 2-tillers detected	1 a	22 e	25 c
NIS	0.25 % v/v	3/20/15	Wheat 2-tillers detected			
Anthem Flex	2.5	10/24/14	Pre-plant	11 a	96 a	91 a
Anthem Flex	2.0	3/20/15	Wheat 2-tillers detected			
PowerFlex HL	1.4 oz	3/20/15	Wheat 2-tillers detected			
NIS	0.25 % v/v	3/20/15	Wheat 2-tillers detected			

¹ Means, based on four replicates, within a column, followed by the same letter are not significantly different at P = 0.05 as determined by Fisher's protected LSD test, which means that we are not confident that the difference is the result of treatment rather than experimental error or random variation associated with the experiment.

Some of the pesticides discussed in this presentation were tested under an experimental use permit granted by WSDA. Application of a pesticide to a crop or site that is not on the label is a violation of pesticide law and may subject the applicator to civil penalties up to \$7,500. In addition, such an application may also result in illegal residues that could subject the crop to seizure or embargo action by WSDA and/or the U.S. Food and Drug Administration. It is your responsibility to check the label before using the product to ensure lawful use and obtain all necessary permits in advance.