Barley tolerance to preemergence herbicides

Some green foxtail populations across North Dakota are known to be resistant to Group 1 herbicides like Puma, Discover, and Axial XL. The objective of the study was to evaluate barley tolerance to soil-applied preemergence herbicides for foxtail control. This study was conducted in 2012 and 2014. All treatments were applied preemergence (after barley was planted). In 2012, Dual, Pre-Pare, and Valor caused early moderate crop injury; however, the crop generally recovered by mid-July. Zidua, Warrant, and Prowl caused minimal crop injury in 2012. In contrast, Zidua and Warrant caused slight to moderate crop injury in 2014. Pre-Pare and Prowl caused only slight crop injury in 2014. Valor caused moderate crop injury both years. Dual and Outlook caused severe injury in 2014. Despite crop injury in 2012, there was minimal effect on crop yield. In 2014, only Dual and Outlook reduced barley yield.

Table 1. Barley tolerance to preemergence herbicides in 2012. (1208)							
		Barley					
		Injury				Yield	Test wt.
Treatment[a]	Rate	5-Jun	25-Jun	11-Jul	21-Jul	6-Aug	6-Aug
		------------------%------------------				bu/A	lb/bu
Untreated		0	0	0	0	76.3	42.4
Zidua	3 oz	0	0	0	0	70.7	43.3
Warrant	1.5 qt	2	1	1	0	77.6	43.3
Dual II Magnum	1.67 pt	15	13	6	5	74.2	43.1
Pre-Pare	0.3 oz	25	17	5	3	72.9	42.6
Prowl H2O	3 pt	2	1	0	0	72.4	43.5
Valor	3 oz	30	20	5	2	73.8	42.9
LSD (0.05)		6	5	NS	NS	NS	NS
CV		29	40	139	257	10	3
[a] All treatments applied PRE							

Table 2. Barley tolerance to preemergence herbicides in 2014. (1408)							
		Barley					
		Injury				Yield	Test wt.
Treatment[a]	Rate	Jun-09	Jun-18	Jul-03	Jul-15	Aug-20	Aug-20
		------------------%------------------				bu/A	lb/bu
Untreated		0	0	0	0	66.4	42.9
Zidua	3 oz	13	14	15	12	70.3	43.7
Warrant	1.5 qt	10	12	12	9	70.2	44.3
Dual II Magnum	1.67 pt	26	49	54	55	64.6	44.2
Pre-Pare	0.3 oz	5	6	7	3	76.3	43.1
Prowl H2O	3 pt	9	7	5	1	71.3	44.5
Valor	2 oz	18	17	17	14	76.4	45.2
Outlook	18 oz	23	42	45	45	60.1	42.4
LSD (0.05)		3.7	14.4	16.4	18.6	9.8	1.3
CV		16.3	44.7	48.1	60.8	8.1	1.7
[a] All treatments applied PRE							