

Perennial Grass Tolerance to Indaziflam & Propoxycarbazone Applied for Annual Grass Control: Year 1

Beuschlein, J.A., R.J. Zuger, & I.C. Burke

The study was established on a conservation reserve program (CRP) site near Pullman, WA. The objective is to evaluate Esplanade (indaziflam), Lambient (propoxycarbazone), Rezilon (rimsulfuron), Plateau 2XL (imazapic), and Accord XRT II (glyphosate) for control of annual grasses [ventenata, *Ventenata dubia* (Leers) Coss.] and tolerance of desirable perennial grasses in Palouse prairie over several years. Treatments were applied preemergence (PRE) in late September of 2018. The study was conducted in a randomized complete block design with 4 replications of 10 ft by 30 ft long plots.

Biomass for all species was collected July 19, 2019 for assessment 10 months after treatment (MAT) (Table 2). Desirable perennial grass cover was visually assessed on September 16, 2019, 12 months after treatment (MAT). Biomass was taken using 2 tenth meter squared quadrats randomly thrown in the plot. Cover data was collected using a 4 meter transect separated into 12 points. At each point, plant species were looked at a foot off either side and assessed on a presence/absence basis. All data were subjected to an analysis of variance using the statistical package built into the Agricultural Research Manager software system (ARM 8.5.0, Gylling Data Management).

Table 1. Treatment application details for ICB0219

Study Application	A
Date	September 25, 2018
Application volume (GPA)	20
Air Temperature (°F)	63.4
Soil Temperature (°F)	58
Wind velocity (mph, direction)	2 S
Cloud Cover	5%

Results

Most of the desirable perennial grasses were not affected by any of the treatments. Prairie junegrass (KOLMA) biomass did not differ for any treatment when compared to the nontreated (42 g m^{-2}) 10 MAT. However, Esplanade + Rezilon caused 0 g m^{-2} for KOLMA. The best treatment for KOLMA was Lambient alone resulting in 170 g m^{-2} biomass (Table 2). Combined perennial grass biomass had no differences for any treatment compared to the nontreated.

Western salsify (TRODM) biomass was not significant different from the nontreated control, although when annual grasses were controlled a release of TRODM occurred. The nontreated control had 0 g m^{-2} TRODM compared to greater than 5 g m^{-2} for all the herbicide treatments (Table 2). There were no differences in panicle willowweed (EIPIC) and prickly lettuce (LACSE) biomass (Table 2).

Treatments did not have any effect on perennial grass cover (Table 3). The most common grasses, sheep's fescue (FESOV) and KOLMA were both not effected by treatments, indicating tolerance. Although not significant, intermediate wheat grass (AGRIT) cover was only found in the nontreated control, indicating AGRIT may be sensitive to the herbicide treatments applied.

Table 2. Biomass of desirable perennial grasses [*Idaho fescue (FESID)*, *bluebunch wheatgrass (AGRSP)*, *sheep's fescue (FESOV)*, *prairie junegrass (KOLMA)*, *intermediate wheatgrass (AGRIT)*, *slender wheatgrass (AGRTR)*], all the desirable perennial grasses combined, broadleaf weeds [*Western salsify (TRODM)*, *panicle willowweed (EIPC)*, *prickly lettuce (LACSE)*] on July 19, 2019 (10 MAT) following application of indaziflam with different tank partners. Pullman, WA, 2019. MAT = months after treatment. Means followed by the same letter are not statistically significantly different ($\alpha=0.05$).

Treatment	Rate field rate lb ai A ⁻¹	YEAR 1: Biomass									
		July 19, 2019 (10 MAT)									
		Desirable Perennial Grasses					Broadleaf Weeds				
FESID	AGRSP	FESOV	KOLMA	AGRIT	AGRTR	COMBINED	TRODM	EIPC	LACSE		
Nontreated	-	19	0	42 ab	5	32	129	0	0	0	
Esplanade	7 fl oz/A 0.091	60	0	23 b	6	0	182	22	0	0	
NIS	0.25% v/v										
Lambiant	1.2 oz/A 0.0525	9	0	170 a	0	0	187	5	0	0	
NIS	0.25% v/v										
Rezilon	4 oz/A 0.0625	4	0	100 ab	0	0	113	17	3	0	
NIS	0.25% v/v										
Plateau 2L	7 fl oz/A 0.109	17	23	22 b	0	0	82	14	0	1	
NIS	0.25% v/v										
Accord XRT II	12 fl oz/A 0.475	0	51	47 ab	0	0	77	28	2	0	
NIS	0.25% v/v										
Esplanade	7 fl oz/A 0.091	5	0	95 ab	4	0	98	53	1	0	
Lambiant	1.2 oz/A 0.053										
NIS	0.25% v/v										
Esplanade	7 fl oz/A 0.091	5	35	0 b	1	0	115	16	1	0	
Rezilon	4 oz/A 0.063										
NIS	0.25% v/v										
Esplanade	7 fl oz/A 0.091	17	12	62 ab	2	0	96	32	0	0	
Plateau 2L	7 fl oz/A 0.109										
NIS	0.25% v/v										
Esplanade	7 fl oz/A 0.091	17	10	78 ab	0	0	147	14	0	0	
Accord XRT II	12 fl oz/A 0.475										
NIS	0.25% v/v										
LSD (P-value=0.05)											
		NS	NS	NS	85	NS	NS	NS	NS	NS	

