

Tolerance of Established Perennials to Esplanade Applied at Different Timings: 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 of the study was to evaluate Esplanade (indaziflam), indaziflam + rimsulfuron, and Plateau 2XL (imazapic) for ventenata, [*Ventenata dubia* (Leers) Coss.] and tolerance of desirable perennial grasses in Palouse prairie over several years. Treatments were applied preemergence or early postemergence for annual grasses seen in Tables 1 and 2. Application A was applied in August, application B in September 1 month after A, and lastly application C in October 2 months after A. The study was conducted in a randomized complete block design with 4 replications with 8 ft by 20 ft long plots.

Biomass for all species was collected July 11, 2019 for assessment 9 months after the last treatment timing (MAT) (Table 2). Weed cover and perennial grass stands were visually assessed 9 MAT (Table 3). 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 ICB0119.

Study Application	A	B	C
Date	August 25, 2018	September 25, 2018	October 17, 2018
Application volume (GPA)	20	20	20
Air temperature (°F)	73.8	63.4	57.5
Soil temperature (°C)	19.5	14.4	9
Wind velocity (mph, direction)	4.6 E	2 S	1 N
Cloud cover	25%	5%	0%

Results

Application timing did not have an effect on the perennial grass species with no reduction in biomass compared to the nontreated (Table 2). Prairie junegrass (KOLMA) was the dominant species across the study site. Treatments of indaziflam and rimsulfuron at 3 oz A⁻¹ (208 g m⁻²) and 4.5 oz A⁻¹ (135 g m⁻²) applied in mid-October, as well as all timings of Plateau 2XL, had KOLMA biomass comparable to the nontreated which had 208 g m⁻². Also, biomass for total desirable perennial grasses combined did not differ for any treatment or application timing.

Treatment and application timing did not have any effect on cover of the different perennial grass species. However, intermediate wheatgrass (AGRIT) cover had a higher percentage for Esplanade at 7 fl oz A⁻¹ (42%) compared to the nontreated (25%) (Table 3).

Table 2. Biomass of Idaho fescue (FESID), bluebunch wheatgrass (AGRSP), sheep's fescue (FESOV), prairie junegrass (KOLMA), intermediate wheatgrass (AGRIT), slender wheatgrass (AGRTR), and all the desirable perennial grasses combined on July 11, 2019 following application of indaziflam, rimsulfuron, and imazapic. Means followed by the same letter are not significantly different ($\alpha=0.05$).

YEAR 1: BIOMASS										
Treatment	Appl. Code	Rate		July 11, 2019 (11, 10, or 9 MAT)						
		Field rate	lb ai A ⁻¹	Desirable Perennial Grasses						
				FESID	AGRSP	FESOV	KOLMA	AGRIT	AGRTR	COMBINED
				g m ⁻²						
Nontreated	-	-	-	0	24	10	208	0	33	275
Esplanade NIS	A	5 fl oz/A 0.25% v/v	0.065	1	0	0	124	0	29	153
Esplanade NIS	A	7 fl oz/A 0.25% v/v	0.091	2	73	0	51	31	0	160
indaziflam + rimsulfuron NIS	A	4.5 oz/A 0.25% v/v	0.047 0.0626	0	29	39	71	0	45	184
Plateau 2XL NIS	A	7 fl oz/A 0.25% v/v	0.109	0	0	8	161	0	42	212
Esplanade NIS	B	5 fl oz/A 0.25% v/v	0.065	0	11	40	54	46	27	176
Esplanade NIS	B	7 fl oz/A 0.25% v/v	0.091	4	0	61	40	76	42	235
indaziflam + rimsulfuron NIS	B	4.5 oz/A 0.25% v/v	0.047 .0626	4	0	0	128	57	0	199
Plateau 2XL NIS	B	7 fl oz/A 0.25% v/v	0.109	0	0	31	208	0	0	239
indaziflam + rimsulfuron NIS	C	3 oz/A 0.25% v/v	0.0313 0.0626	0	0	0	208	0	0	208
indaziflam + rimsulfuron NIS	C	4.5 oz/A 0.25% v/v	0.047 0.0626	3	40	97	135	0	0	283
indaziflam + rimsulfuron NIS	C	6 oz/A 0.25% v/v	0.063 0.0626	2	51	90	48	0	0	193
Plateau 2XL NIS	C	7 fl oz/A 0.25% v/v	0.109	0	0	55	221	0	0	276
LSD (P -value=0.05)				NS	NS	NS	NS	NS	NS	NS

Table 3. Percent cover of Idaho fescue (FESID), bluebunch wheatgrass (AGRSP), sheep's fescue (FESOV), prairie junegrass (KOLMA), intermediate wheatgrass (AGRIT), and slender wheatgrass (AGRTR) on September 16, 2019. Means followed by the same letter are not significantly different ($\alpha=.05$).

YEAR 1: COVER								
September 16, 2019 (11, 10, or 9 MAT)								
Desirable Perennial Grasses								
Treatment	Application Code	Field Rate	FESID	AGRSP	FESOV	KOLMA	AGRIT	AGRTR
			%					
Nontreated	-	-	0	10	100	100	25 b	25
Esplanade NIS	A	5 fl oz/A 0.25% v/v	4	0	100	100	25 b	25
Esplanade NIS	A	7 fl oz/A 0.25% v/v	6	21	100	100	42 a	25
indaziflam + rimsulfuron NIS	A	4.5 oz/A 0.25% v/v	0	15	100	100	25 b	25
Plateau 2XL NIS	A	7 fl oz/A 0.25% v/v	0	0	100	100	25 b	25
Esplanade NIS	B	5 fl oz/A 0.25% v/v	0	6	100	100	25 b	25
Esplanade NIS	B	7 fl oz/A 0.25% v/v	8	0	100	100	25 b	25
IAF+RIS NIS	B	4.5 oz/A 0.25% v/v	6	0	100	100	25 b	24
Plateau 2XL NIS	B	7 fl oz/A 0.25% v/v	0	0	100	100	25 b	25
indaziflam + rimsulfuron NIS	C	3 oz/A 0.25% v/v	0	0	100	100	25 b	25
indaziflam + rimsulfuron NIS	C	4.5 oz/A 0.25% v/v	4	8	100	100	31 ab	25
indaziflam + rimsulfuron NIS	C	6 oz/A 0.25% v/v	6	10	100	100	25 b	25
Plateau 2XL NIS	C	7 fl oz/A 0.25% v/v	0	0	100	100	25 b	25
LSD (P-value=0.05)			NS	NS	NS	NS	13.7	0