

Invasive Annual Grass Control with Esplanade and Method 240SL

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The study was established on a conservation reserve program (CRP) site near Albion, WA. The objective of the study was to evaluate Esplanade (indaziflam) and Method 240SL (aminocyclopyrachlor) for control of annual grasses (ventenata (VETDU), downy brome (BROTE), and medusa-head rye (ELYCM) in Palouse prairie. Treatments were applied in the fall and spring when perennial grasses were dormant as a broadcast foliar application, detailed in Table 1 and Table 2. The study was conducted in a randomized complete block with 4 replications with 10' by 30' long plots. Climate was much wetter than normal, with normal temperatures (Figure 1).

Weed cover and perennial grass (crop) stand was visually assessed 205 and 233 days after the first treatment timing (DAT) or 42 and 70 days after the second treatment timing (DAT) (Table 2 & 3). 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).

Results

Ventenata (VETDU) cover at 205 DAAT and 42 DABT was the least for the fall applications of Esplanade with Method at 2 fl oz A⁻¹ and Esplanade with Accord XRT II and the spring applications of esplanade with Methods at either 4 or 8 fl oz A⁻¹ (Table 2). By 233 DAAT and 70 DABT, all combinations of esplanade with methods at either timing (fall or spring) reduced the percent ventenata cover (less than 16%) compared to other treatments (greater than 36% VETDU cover). Treatments had no effect on weed cover of downy brome (BROTE) and prickly lettuce (LACSE); however, low and uneven populations throughout the trial created non-assessable populations of those weeds. Percent medusa-head rye (ELYCM) cover was reduced by all treatments 233 DAAT and 70 DABT compared to the nontreated control (Table 2).

There was no difference in perennial grass coverage for any treatment 205 DAAT and 42 DABT (Table 3). However, towards the end on June, 233 DAAT and 70 DABT, more smooth brome (BROIN) was present for treatments of Esplanade with Method 240SL at other timing as while as esplanade with Accord XRT II applied in the fall (A) and Method alone at 8 fl oz A⁻¹ applied in the spring (B) compared to the nontreated control (Table 3). Bluebunch wheatgrass (AGRSP) and intermediate wheatgrass (AGRIT) had low and uneven populations throughout the trial and were not assessable.

Table 1. Treatment application details.

Study Application	A	B
Date	November 9, 2016	April 21, 2017
Application volume (GPA)	15	15
Application timing	Fall	Spring
Air temperature (°F)	54	48
Soil temperature (°F)	49	50
Wind velocity (mph, direction)	7, E	4, SW
Cloud cover	35%	50%
Next rain occurred on	November 13, 2016	April 23, 2017

Table 2. Percent cover of ventenata (VETDU), downy brome (BROTE), medusa-head rye (ELYCM), and prickly lettuce (LACSE) following application of Esplanade and Method 240SL at different application timings and combinations. Albion, WA, 2017. DAAT = days after treatment A & DABT = days after treatment B. Means followed by the same letter are not statistically significantly different ($\alpha=0.05$). A (-) indicates a non-assessable population.

Trt	Application Code	Rate		June 2, 2017 205 DAAT, 42 DABT				June 30, 2017 233 DAAT, 70 DABT			
				VETDU Cover	BROTE Cover	ELYCM Cover	LACSE Cover	VETDU Cover	BROTE Cover	ELYCM Cover	LACSE Cover
				field rate	lb ai/A	%	%	%	%	%	%
Nontreated	-	-	-	19 ab	3	12	13	40 abc	3	80 a	41
Esplanade	A	7 fl oz/A	0.091	11 ab	35	1	12	18 bc	35	1 b	18
NIS	A	0.25% v/v									
Method 240SL	A	2 fl oz/A	0.031	22 ab	-	10	6	38 abc	-	3 b	12
NIS	A	0.25% v/v									
Method 240SL	A	4 fl oz/A	0.063	34 ab	3	0	1	57 ab	-	0 b	1
NIS	A	0.25% v/v									
Method 240SL	A	8 fl oz/A	0.125	50 a	53	0	1	67 a	3	18 b	5
NIS	A	0.25% v/v									
Esplanade	A	7 fl oz/A	0.091	1 b	1	0	5	2 c	-	0 b	-
Method 240SL	A	2 fl oz/A	0.031								
NIS	A	0.25% v/v									
Esplanade	A	7 fl oz/A	0.091	18 ab	23	3	0	0 c	-	-	-
Method 240SL	A	4 fl oz/A	0.063								
NIS	A	0.25% v/v									
Esplanade	A	7 fl oz/A	0.091	13 ab	50	5	0	0 c	-	0 b	-
Method 240SL	A	8 fl oz/A	0.125								
NIS	A	0.25% v/v									
Esplanade	A	7 fl oz/A	0.091	3 b	9	15	2	0 c	3	0 b	20
Accord XRT II	A	12 fl oz/A	0.475								
NIS	A	0.25% v/v									
Esplanade	B	7 fl oz/A	0.091	18 ab	10	13	1	23 bc	13	28 b	3
NIS	B	0.25% v/v									
Method 240SL	B	2 fl oz/A	0.031	18 ab	1	8	4	36 abc	15	23 b	38
NIS	B	0.25% v/v									
Method 240SL	B	4 fl oz/A	0.063	34 ab	14	10	5	57 ab	13	24 b	16
NIS	B	0.25% v/v									
Method 240SL	B	8 fl oz/A	0.125	14 ab	4	0	0	20 bc	0	0 b	-
NIS	B	0.25% v/v									
Esplanade	B	7 fl oz/A	0.091	13 ab	3	0	4	16 c	13	13 b	11
Method 240SL	B	2 fl oz/A	0.031								
NIS	B	0.25% v/v									
Esplanade	B	7 fl oz/A	0.091	8 b	1	7	0	8 c	49	34 b	0
Method 240SL	B	4 fl oz/A	0.063								
NIS	B	0.25% v/v									
Esplanade	B	7 fl oz/A	0.091	5 b	3	3	0	12 c	-	18 b	-
Method 240SL	B	8 fl oz/A	0.125								
NIS	B	0.25% v/v									
Esplanade	B	7 fl oz/A	0.091	19 ab	8	1	0	14 c	-	2 b	8
Accord XRT II	B	12 fl oz/A	0.475								
NIS	B	0.25% v/v									
			LSD	24	NS	NS	NS	25	-	23	NS

Table 3. Percent cover of perennial grasses, bluebunch wheatgrass (AGRSP), intermediate wheatgrass (AGRIT) and smooth brome (BROIN) following application of Esplanade and Method 240SL at different application timings and combinations. Albion, WA, 2017. DAAT = days after treatment A & DABT = days after treatment B. Means followed by the same letter are not statistically significantly different ($\alpha=0.05$). A (-) indicates a non-assessable population

Trt	Application Code	Rate		June 2, 2017			June 30, 2017		
				205 DAAT, 42 DABT			233 DAAT, 70 DABT		
				AGRSP Cover	AGRIT Cover	BROIN Cover	AGRSP Cover	AGRIT Cover	BROIN Cover
Nontreated	-	field rate	lb ai/A	%	%	%	%	%	%
Esplanade	A	7 fl oz/A	0.091	-	18	11	-	3	28 abc
NIS	A	0.25% v/v		-	11	19	50	45	28 abc
Method 240SL	A	2 fl oz/A	0.031	-	14	14	-	-	43 abc
NIS	A	0.25% v/v		-	14	14	-	-	43 abc
Method 240SL	A	4 fl oz/A	0.063	-	34	1	-	25	34 abc
NIS	A	0.25% v/v		-	34	1	-	25	34 abc
Method 240SL	A	8 fl oz/A	0.125	-	17	3	5	-	23 bc
NIS	A	0.25% v/v		-	17	3	5	-	23 bc
Esplanade	A	7 fl oz/A	0.091	-	21	43	38	-	59 abc
Method 240SL	A	2 fl oz/A	0.031	-	21	43	38	-	59 abc
NIS	A	0.25% v/v		-	21	43	38	-	59 abc
Esplanade	A	7 fl oz/A	0.091	-	26	15	25	-	79 a
Method 240SL	A	4 fl oz/A	0.063	-	26	15	25	-	79 a
NIS	A	0.25% v/v		-	26	15	25	-	79 a
Esplanade	A	7 fl oz/A	0.091	1	24	16	38	-	74 ab
Method 240SL	A	8 fl oz/A	0.125	1	24	16	38	-	74 ab
NIS	A	0.25% v/v		1	24	16	38	-	74 ab
Esplanade	A	7 fl oz/A	0.091	-	11	6	-	-	74 ab
Accord XRT II	A	12 fl oz/A	0.475	-	11	6	-	-	74 ab
NIS	A	0.25% v/v		-	11	6	-	-	74 ab
Esplanade	B	7 fl oz/A	0.091	13	22	4	13	-	25 abc
NIS	B	0.25% v/v		13	22	4	13	-	25 abc
Method 240SL	B	2 fl oz/A	0.031	25	7	29	-	-	28 abc
NIS	B	0.25% v/v		25	7	29	-	-	28 abc
Method 240SL	B	4 fl oz/A	0.063	13	6	6	-	-	14 c
NIS	B	0.25% v/v		13	6	6	-	-	14 c
Method 240SL	B	8 fl oz/A	0.125	43	18	25	25	-	76 ab
NIS	B	0.25% v/v		43	18	25	25	-	76 ab
Esplanade	B	7 fl oz/A	0.091	-	23	28	-	-	66 ab
Method 240SL	B	2 fl oz/A	0.031	-	23	28	-	-	66 ab
NIS	B	0.25% v/v		-	23	28	-	-	66 ab
Esplanade	B	7 fl oz/A	0.091	25	29	16	-	45	49 abc
Method 240SL	B	4 fl oz/A	0.063	25	29	16	-	45	49 abc
NIS	B	0.25% v/v		25	29	16	-	45	49 abc
Esplanade	B	7 fl oz/A	0.091	-	18	23	-	-	71 ab
Method 240SL	B	8 fl oz/A	0.125	-	18	23	-	-	71 ab
NIS	B	0.25% v/v		-	18	23	-	-	71 ab
Esplanade	B	7 fl oz/A	0.091	-	30	12	-	-	64 abc
Accord XRT II	B	12 fl oz/A	0.475	-	30	12	-	-	64 abc
NIS	B	0.25% v/v		-	30	12	-	-	64 abc
			LSD	NS	NS	NS	-	-	31

Figure 1. Climate for nearest weather station located ~4 miles east of trial site.

