

EFFECT OF SEVERAL POST-EMERGENCE HERBICIDES ON  
BIG BLUEGRASS, BLUEBUNCH WHEATGRASS, INDIAN RICEGRASS,  
SQUIRRELTAIL, GREAT BASIN WILDRYE, JUNEGRASS, STREAMBANK  
WHEATGRASS, AND IDAHO FESCUE

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Introduction

Seed of native grasses for reseeding burned or otherwise disturbed rangelands are in chronic short supply. There is a paucity of information on herbicide use in seed production stands of native grasses. As one step towards addressing this lack of information, this trial was conducted to observe the effects of several postemergence herbicides registered for seed production of other grasses in the Pacific Northwest (Gingrich and Mellbye 1998), along with an herbicide registered for use on native grasses (Plateau). This study follows up on a preliminary study conducted in 1999 on postemergence application of five different herbicides on five native grasses (Sexton and Bafus 2000). The preliminary study found that Idaho fescue was quite tolerant to Fusilade, and that Plateau is not appropriate for use in seed production fields because it stunts growth severely. In the second year of the study reported here, the numbers of herbicides and grasses included have been expanded (eight each). The objective remains the same, to identify herbicides, that may be effective for weed control in seed production fields of native grasses.

Materials and Methods

On April 20, 2000, seed of big bluegrass, bluebunch wheatgrass, squirreltail, Great Basin wildrye, streambank wheatgrass, and Idaho fescue were sown at a rate of 45 seeds/ft. of row. Indian ricegrass was sown at a rate of 90 seeds/ft. of row, and junegrass was sown at a rate of 135 seeds/ft. of row. Planting depth was 0.25 inches and the planter used was a four-row small-plot cone planter (Almaco Inc., Nevada, IA). Each plot consisted of a single row 80 ft long; row width was 2 ft. Plots were irrigated as needed to keep the seed zone moist for two weeks following planting. Weeds were controlled by hoeing and cultivation. No herbicides were applied for weed control.

On July 14, 2000 the following herbicides were applied with a CO<sub>2</sub>-pressurized boom sprayer.

Trade Name	Common name	per acre rate
Banvel	Dicamba	4 oz
Ally	metsulfuron methyl	0.2 oz
Express*	tribenuron methyl	0.25 oz
2,4-D amine	2,4-D amine	0.5 lb
Plateau		4 oz
Fusilade	thi7ifop	0.25 lb
Norton	ethofumesate	3 pt
Horizon	fenoxaprop	1.2 pt

\*/ 2,4-D was applied with Express at a rate of 0.5 pt/acre.

Herbicides were applied in 9-ft bands perpendicular to the grass rows. Plots were evaluated by visually rating the plots for percent stunting, percent chlorosis, and percent mortality relative to controls. Two people rated the plots (one on July 27, and the other on August 8). Their ratings were averaged for statistical analysis. Plant height (average of five plants) and samples for plant dry weight (3 ft of row clipped at ground level and dried at 15 °F) were taken between July 31 and August 2. All percent data were arc-sine square-root transformed before statistical analysis. Herbicide effects for each grass were tested using the PROC GLM procedure of SAS statistical software (SAS Institute, Cary, NC). Data were analyzed as a randomized complete block design and no comparisons were made between grasses.

## Results

Results are presented in Table 1, only a brief synopsis is given here. The reader is referred to the table for specific data, a few salient points are outlined below. As in last year's study, Plateau proved itself to be a poor herbicide for use in seed production fields. Idaho fescue again showed tolerance to Fusilade. This could be very useful for controlling cheatgrass. None of the other grasses showed tolerance to Fusilade. With the possible exception of Indian ricegrass, Banvel did not appear to hurt these grasses much. Ally appeared to be stunt bluebunch wheatgrass and Great Basin wildrye more than it did other grasses. Ally actually appeared to promote growth of squirreltail.

## Literature Cited

G. Gingrich and M. Mellbye. 1998. Grass seed crops. p. 84-95. *In* Pacific Northwest 1998 Weed Control Handbook. Joint publication of Oregon State University, Washington State University, and the University of Idaho.

P. J. Sexton and R.R. Bafus 2000. Effects of several post emergence Herbicides on Indian ricegrass, squirreltail, Great Basin wildrye junegrass, and Idaho fescue. Oregon State University, Central Oregon Agricultural Research Center, Special Report 1013. Pp 134-137.

Table 1. Percent stunting, chlorosis, and mortality relative to untreated controls, and dry weight and height data for several native grasses treated with eight different postemergence herbicides approximately two months after planting.

Grass	Herbicide	Stunting (%)	Chlorosis (%)	Mortality (%)	Dry Wt. (g)	Height (cm)	Stand (%)
Big bluegrass	Control	0	0	0	35.5	33.4	89
	Banvel	1	0	0	48.3	37.0	98
	Horizon	4	0	0	44.1	41.3	85
	2,4-D	8	0	0	43.1	38.0	75
	Ally	13	1	0	34.9	34.9	92
	Express	16	0	0	38.0	33.0	94
	Nortron	21	0	0	38.4	35.8	97
	Plateau	43	0	0	23.0	25.1	92
	Fusilade	79	10	0	<u>15.0</u>	<u>21.1</u>	86
MEAN		20	1	0	36	33	90
LSD (0.05)		45	2	-	182	10	NS
CV		54	44	-	35	17	16

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Bluebunch wheatgrass	Control	0	0	0	40.0	26.7	83
	2,4-D	9	0	0	47.9	24.5	63
	Banvel	14	4	0	37.2	35.4	48
	Horizon	19	4	0	48.3	22.5	72
	Express	24	1	0	43.5	28.1	100
	Nortron	25	3	0	38.4	23.1	71
	Ally	36	0	0	27.9	22.6	70
	Plateau	56	8	0	26.6	16.1	91
	Fusilade	75	54	0	23.8	22.6	37
MEAN		29	8	0	37	25	71
LSD (0.05)		34	6	-	NS	NS	NS
<u>CV</u>		<u>37</u>	<u>44</u>	-	25	<u>39</u>	<u>39</u>

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Great Basin wildrye	Control	0	0	0	99.9	55.1	99
	2,4-D	11	0	0	56.2	48.5	97
	Express	13	0	0	62.7	49.0	100
	Horizon	16	0	0	77.9	53.9	97
	Banvel	18	0	0	78.8	49.5	98
	Ally	20	0	0	42.4	38.8	89
	Nortron	24	0	0	57.4	50.3	77
	Plateau	53	5	0	34.9	35.5	97
	Fusilade	67	33	0	<u>34.8</u>	<u>36.8</u>	98
MEAN		25	4	0	61	46	95
LSD (0.05)		21	4	-	40	11	NS
CV		31	49	-	14	38	14

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Table 1. Cont'd.

Idaho fescue	Control	0	0	0	8.3	9.7	64
	Fusilade	3	0	0	15.8	9.3	48
	2,4-D	6	0	0	5.8	9.0	58
	Banvel	13	0	0	5.8	8.7	43
	Horizon	13	0	0	6.4	8.1	57
	Express	16	0	0	7.7	8.3	59
Grass	Herbicide	Stunting	Chlorosis	Mortality	Dry Wt.	Height	Stand
	Nortron	29	0	0	4.2	6.2	51
	Ally	36	0	0	3.4	7.0	33
	Plateau	63	8	0	2.4	5.2	49
MEAN		20	1	0	7	8	51
LSD (0.05)		37	NS	-	NS	2	4
CV		48	132	-	30	16	32
		(%)	(%)	(%)	(g)	(cm)	(%)
Indian ricegrass	Control	0	0	0	39.0	47.6	78
	Horizon	1	0	0	53.8	48.7	57
	2,4-D	1	0	0	34.2	40.0	72
	Express	11	0	0	45.7	43.3	76
	Nortron	12	1	0	42.1	48.9	49
	Ally	12	0	0	41.2	40.7	81
	Banvel	23	1	0	33.0	46.9	50
	Fusilade	62	23	0	20.8	30.6	73
	Plateau	78	69	12	11.1	28.7	59
MEAN		22	11	1	36	42	66
LSD (0.05)		18	3	1	NS	8	NS
<u>C</u> <u>V</u>		35	25	42	36	11	57
Junegrass	Control	0	0	0	5.6	5.4	50
	2,4-D	3	0	0	7.1	5.6	51
	Banvel	10	0	0	9.2	6.0	85
	Express	11	0	0	4.3	4.5	45
	Horizon	17	3	0	4.0	5.1	63
	Nortron	19	0	0	2.8	3.9	47
	Ally	20	0	0	2.7	3.1	61
	Plateau	60	23	0	1.6	3.0	48
	Fusilade	78	34	0	1.7	2.6	70
MEAN		24	7	0	4	4	58
LSD (0.05)		56	6	-	4	2	NS
CV		66	52	-	65	29	56
Squirreltail	Ally	-17	0	0	19.1	15.8	55
	Control	0	0	0	14.3	14.4	60
	Horizon	1	0	0	30.0	22.1	61
	2,4-D	1	0	0	15.2	16.5	85
	Banvel	8	0	0	22.4	19.0	84
	Express	13	0	0	10.6	16.3	48
	Nortron	21	0	0	14.9	16.6	62
	Plateau	38	6	0	8.1	12.6	56
	Fusilade	53	43	0	12.6	12.8	70
MEAN		13	5	0	16	16	65
LSD (0.05)		23	4	-	NS	6	NS
CV		61	45	-	62	25	46

Table 1. Cont'd.

Streambank wheatgrass	Control	0	0	0	79.0	27.1	79
	Express	4	0	0	71.6	25.8	75
	2,4-D	5	0	0	78.7	25.8	87
	Horizon	6	0	0	92.7	27.2	75
	Banvel	8	0	0	71.0	26.3	97
	Ally	11	0	0	77.8	25.6	74
	Nortron	23	0	0	66.0	21.3	97
	Plateau	43	9	0	62.7	20.3	75
	Fusilade	68	58	0	50.8	20.1	74
MEAN		18	7	0	72	24	81
LSD (0.05)		13	2	—	NS	4	NS
CV		33	24	—	28	11	17

<sup>1</sup>Stunting, chlorosis, and mortality based on percent departure from control.

<sup>2</sup>Significant at  $p < 0.10$