

HandS on Research

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Journey® Established Grass Tolerance Trial

Objective: To determine the tolerance of numerous, typical, established western rangeland grasses to a dormant fall application of JOURNEY herbicide.

Progress Report 1: Spring ratings and early summer pictures

Materials and Methods

Journey (16 oz/A) was applied with methylated seed oil (1% v/v) and AMS Plus¹ (1.5 gal/a) to established stands of 59 grass varieties representing 29 grass species at Aberdeen, ID on November 17, 2004. The grasses were established in June, 2002 as a display nursery by the USDA/NRCS Aberdeen Plant Materials Center in cooperation with the South Bingham County Soil Conservation District. The herbicide application was made with a CO₂ pressurized backpack sprayer in 15 GPA water. Time of application was between 6:00 and 7:30 pm MST. The grass variety trial area was 100 ft long by 427 ft wide and each grass variety plot was 7 ft by 100 ft. A 9 ft wide swath was sprayed at the rear of the plots the total length of the trail area.

Dormancy ratings were not taken before application, however, most grasses were assumed to be dormant at that time. Temperatures had approached 20° F on several days in early November before and after application (Figure 1). Many grasses still could have been growing or only somewhat dormant at that time (personal communication, Loren St. John, NRCS).

On April 15, 2005, the effect of fall-applied Journey on the 59 grass varieties was assessed by a visual rating of % green/live grass on a scale of 0 to 100, with 0 representing no green/live grass present and 100 representing all grass present in the treated area was green and living. On May 31, 2005, the treated and non-treated grass areas of each variety were rated for % groundcover using 0 to 100% scale, with 0 representing no green vegetative ground cover and 100 representing complete green vegetative ground cover. Pictures were taken on May 2 and again on May 31, 2005 (PowerPoint file). Tolerance ratings will be performed again late summer 2005. If injury is present at this late summer rating, then another rating will be taken spring 2006 as per protocol.

¹ AMS Plus, ammonium sulfate (2.6 lb/gal) and NIS. Agrilience LLC. 1.5 gal/acre provides 4 lbs/acre AMS.

Results and Discussion

Early spring assessment on April 15, 2005 indicated that almost all grasses were adversely affected by the fall-applied Journey (Table 1). All varieties with the exception of Sherman big bluegrass (50%), Trailhead basin wildrye (80%), and Prairieland alai wildrye (70%) were 30% or less green and thought to be dead. The three sheep fescue varieties were not rated due to overall poor stand. Although some chlorosis, stunting, and seedhead emergence delay was evident, almost all of the grass varieties appeared to have recovered by May 31, 2005 with % ground cover ranging from 75 to 100 for 45 of the 56 rated varieties (Table 1). However, both tall fescue varieties and the BG-23 perennial rye seemed to have been effectively killed as of the May observation. While all the crested wheatgrass varieties were 10% or less green on April 15, these varieties had ground cover ratings of 80% or greater by May 31. All these crested wheatgrass varieties also were slightly chlorotic and slight to moderately stunted on May 31, except for Fairway crested wheatgrass which was severely stunted. The two slender wheatgrass varieties were more affected than the crested wheatgrasses as observed by the relatively low the ground cover ratings of only 50-60% and by the severe chlorosis observed and stunting. The bluegunch wheatgrasses were at 50 to 85% green ground cover by May 31 and chlorosis and stunting was observed on these wheatgrasses with P-7, P-238, and Goldar being most affected. The intermediate, tall, and pubescent wheatgrasses, as well as the Magnar basin wildrye were at 95 to 100% ground cover on May 31 recovered from the 5 to 20% green live grass seen on April 15. The mountain bromes, Regar, and Paddock meadow brome and the two tall fescue varieties were severely affected by the fall applied Journey application. The Garnet mountain brome had severe chlorosis despite 90% ground cover rating on May 31. Other varieties most affected were the Shoshone beardless wildrye and the Secar Snake River wheatgrass.

As stated previously, the fine fescue stands were highly contaminated with other grasses making observations difficult. Several surviving clumps of fine fescues have been observed in each of the sprayed areas, however, identification of specific variety and species is unclear. Poor stands in the Sand Hollow squirreltail and High Plains sandberg bluegrass also made observations difficult.

Overall, all but 3 out of 56 treated varieties appeared brown and dead/still dormant on April 15, 149 DAT, while only 6 appeared 95 to 100% dead, seven were 20 to 65% green, and 44 varieties were 70 to 100% green by May 31, 195 DAT. Seedhead emergence was delayed on

the two orchardgrasses, and the only big bluegrass and creeping foxtail varieties tested. Almost all wheatgrass varieties were slightly to moderately stunted and had somewhat reduced green ground cover. Unexpectedly, since many bromes are not tolerant of imazapic, 1 of 1 smooth brome and 1 of 3 meadow brome varieties tested were fairly tolerant (85% ground cover on May 31).

Figure 1. Maximum, minimum and mean daily temperatures at Aberdeen, ID from September 1, through November 30, 2004. Source: Agrimet.

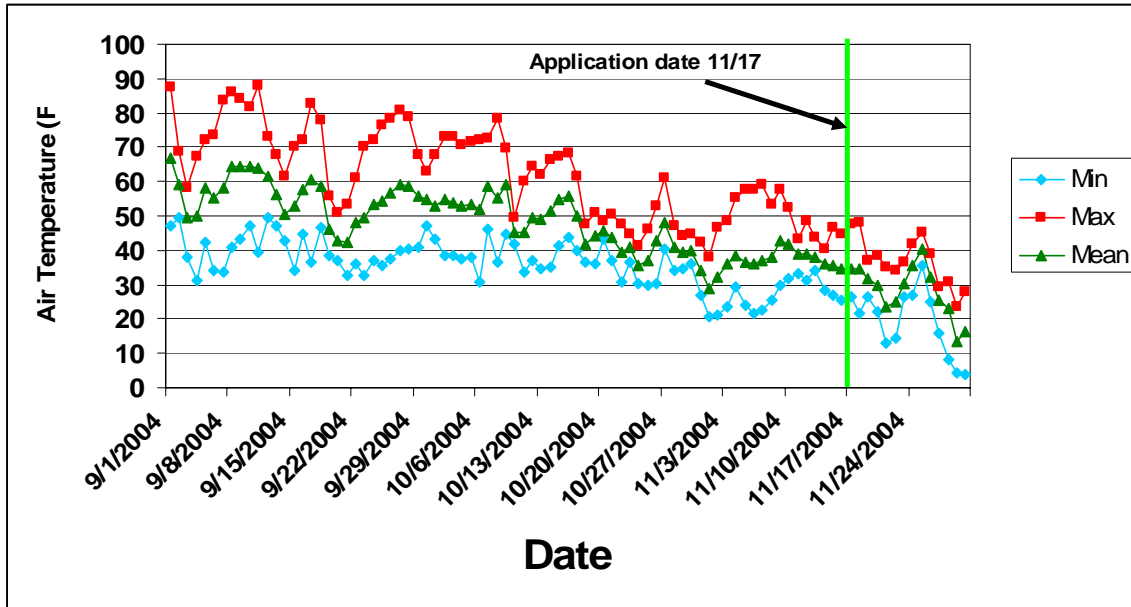


Table 1. Early and late spring 2005 tolerance ratings on established grass varieties treated Fall 2004 with Journey (16 oz/A) at the USDA, NRCS Plant Materials Center in Aberdeen, Idaho.

Grass Species	% Green/Living	5/31/2005 (195 DAT)			
	4/15/2005 (149 DAT)	% Green/Living		Chlorosis ⁱ	Stunting ⁱ
	Treated	Treated	Non-treated		
Sand Hollow squirreltail	Unclear delineation	0	60	-	-
High Plains sandberg bluegrass	Unclear delineation	0	80	-	-
Canbar canby bluegrass	Unclear delineation	0	100	-	-
Sodar streambank wheatgrass	3	90	100	S	N
Schwendimar thickspike wheatgrass	3	85	100	S	M
Bannock thickspike wheatgrass	5	85	100	S-M	S
Critana thichspike wheatgrass	10	90	100	S	S
Vavilov Siberian wheatgrass	25	85	100	S	M
P-27 Siberian wheatgrass	15	75	100	S	S
Nordan crested wheatgrass	8	80	100	S	M
Hycrest crested wheatgrass	5	80	100	S	M
CD-II crested wheatgrass	7	85	100	S	M
Roadcrest crested wheatgrass	6	80	95	S	S
Douglas crested wheatgrass	10	90	100	S	S
Fairway crested wheatgrass	3	85	100	S	SV
Ephraim crested wheatgrass	3	80	100	S	M
Whitmar beardless wheatgrass	5	85	100	M-SV	SV
Anatone bluebunch wheatgrass	8	75	100	M-SV	M
P-238 bluebunch wheatgrass	3	85	100	SV	SV
P-7 bluebunch wheatgrass	4	85	100	SV	SV
Goldar bluebunch wheatgrass	5	50	100	SV	SV

Secar Snake River wheatgrass	10	65	100	S-M	M
Tetracan Russian wildrye	4	85	100	N	SV
Mankota Russian wildrye	5	90	100	N	SV
Bozoisky-Select Russian wildrye	6	90	100	N	SV
Rosana western wheatgrass	0	100	100	N	N
Arriba western wheatgrass	3	100	100	S	N
Sherman big bluegrass	50	90	100	N	N
San Luis slender wheatgrass	0	50	95	SV	M
Pryor slender wheatgrass	3	60	100	SV	M
Covar sheep fescue	Poor stand, clumps showing 50% damage	?	?	-	-
Bighorn sheep fescue	Poot stand, unable to see fescue clumps	?	?	-	-
Durar hard fescue	Poor stand, several live bunches	?	?	-	-
Newhy hybrid wheatgrass	30	95	100	M-SV	S
Paiute orchardgrass	0	90	100	S	M
Rush intermediate wheatgrass	10	95	100	S	N
Oahe intermediate wheatgrass	10	95	100	S	N
Luna pubescent wheatgrass	15	100	100	N	N
Reliant intermediate wheatgrass	5	95	100	S	N
Manska pubescent wheatgrass	10	100	100	M	S
Magnar basin wildrye	20	95	100	N	N
Trailhead basin wildrye	80	95	100	M	N
Shoshone beardless wildrye	0	25	100	M-SV	SV
Prairieland altai wildrye	70	95	100	S	N
Alkar tall wheatgrass	7	95	100	S	N
Jose tall wheatgrass	8	95	100	N	N
Largo tall wheatgrass	5	85	95	S	N
Garnet mountain brome	0	90	100	SV	SV

Bromar mountain brome	0	20	100	M-SV	SV
BG-23 Perennial rye	0	5	100	-	-
Garrison creeping foxtail	3	75	100	M	SV
Hi-Mag tall fescue	3	0	100	-	-
Johnstone tall fescue	5	0	100	-	-
Potomac orchardgrass	0	95	100	N	S
Latar orchardgrass	2	100	100	S	N
Manchar smooth brome	5	85	100	M	M
Regar meadow brome	10	45	100	S	SV
Fleet meadow brome	10	85	100	M	M
Paddock meadow brome	20	70	100	S	SV

ⁱ N = None, S = Slight, M = Moderate, SV = Severe