

Results

Mean separation and brief figure explanations. Figure labels correspond with figures on the Poster. Blue text indicates treatments without Roundup application, black text indicates treatments with Roundup application

Figure 1: All treatments, except Roundup alone, reduced bulbous bluegrass cover at Sheridan.

There was no mean separation at Rozet indicating no effect of treatment relative to the untreated control

Mean Separation by Roundup and treatment for bulbous bluegrass control (%):

	Sheridan	Rozet
N:Check	a	a
Y:Check	ab	a
N:Esp5	bc	a
N:Plateau	c	a
N:Esp7	c	a
Y:Plateau	c	a
Y:Esp7	c	a
N:Landmark	c	a
Y:Esp5	c	a
N:Matrix	c	a
Y:Landmark	c	a
Y:Plat+Esp5	c	a
N:Plat+Esp5	c	a
N:Plat+Esp7	c	a
N:Land+Esp5	c	a
N:Land+Esp7	c	a
N:Matrix+Esp5	c	a
N:Matrix+Esp7	c	a
Y:Land+Esp5	c	a
Y:Land+Esp7	c	a
Y:Matrix	c	a
Y:Matrix+Esp5	c	a
Y:Matrix+Esp7	c	a
Y:Plat+Esp7	c	a

Figure 2. Main-plot treatment (with roundup): The check with roundup was different than the check without.

Sub-plot treatment (without Roundup): Esplanade at 7 and 5oz/ac , plateau, and both control treatments provided less control than other treatments with or without Roundup.

Mean Separation by Roundup and treatment for bulbous bluegrass control (%):

N:Land+Esp5	a
N:Land+Esp7	a
N:Matrix+Esp5	a
N:Matrix+Esp7	a
N:Plat+Esp7	a
Y:Land+Esp5	a
Y:Land+Esp7	a
Y:Landmark	a
Y:Matrix	a
Y:Matrix+Esp5	a
Y:Matrix+Esp7	a
Y:Plat+Esp5	a
Y:Plat+Esp7	a
N:Matrix	a
N:Plat+Esp5	a
N:Landmark	a
Y:Plateau	a
Y:Esp7	a
Y:Esp5	a
N:Esp7	b
Y:Check	bc
N:Plateau	bc
N:Esp5	cd
N:Check	d

Figure 3. Whole plot bulbous bluegrass control (%)

Matrix , Landmark, Landmark alone and in combination with esplanade, and Esplanade at 5oz/ac provided more control than the other treatments.

Mean Separation by treatment for bulbous bluegrass control (%):

Landmark	a
Matrix+Esp5	a
Land+Esp5	a
Plat+Esp7	a
Land+Esp7	a
Matrix+Esp7	a
Matrix	ab
Esp5	ab
Esp7	bc
Plat+Esp5	c
Plateau	c
Check	d

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Figure 4.

All treatments except Esplanade at both rates and Plateau alone damaged perennial grasses regardless of Roundup application

Mean Separation by treatment for bulbous bluegrass control (%):

Y:Landmark	a
Y:Land+Esp7	ab
Y:Land+Esp5	ab
N:Land+Esp5	ab
N:Land+Esp7	ab
N:Landmark	ab
N:Plat+Esp7	abc
Y:Plat+Esp7	abcd
N:Matrix+Esp7	abcde
Y:Plat+Esp5	abcde
Y:Matrix+Esp7	abcde
Y:Matrix+Esp5	abcde
Y:Matrix	abcde
N:Matrix+Esp5	abcde
N:Plat+Esp5	abcde
N:Matrix	bcde
N:Esp7	bcdef
N:Esp5	cdef
N:Plateau	cdef
Y:Esp7	cdef
Y:Esp5	def
Y:Check	ef
Y:Plateau	ef
N:Check	f

Figure 5.

Most treatments, including landmark, damage perennial forbs. Overall, most treatments did not negatively impact perennial forbs relative to the untreated control.

Mean Separation by treatment for bulbous bluegrass control (%):

Y:Land+Esp5	a
N:Land+Esp5	a
Y:Land+Esp7	a
N:Land+Esp7	ab
Y:Matrix+Esp5	bc
N:Landmark	bc
N:Matrix+Esp7	cd
N:Plat+Esp7	cd
Y:Landmark	cd
Y:Plat+Esp7	cd
N:Esp7	cd
N:Matrix+Esp5	cd
Y:Esp7	cd
Y:Matrix+Esp7	cd
N:Plat+Esp5	d
Y:Matrix	d
Y:Plat+Esp5	d
N:Matrix	d
N:Check	d
N:Esp5	d
N:Plateau	d
Y:Check	d
Y:Esp5	d
Y:Plateau	d

Figure 6.

All treatments except Esplanade at both rates and plateau alone damaged perennial grass .

Mean Separation by treatment for bulbous bluegrass control (%):

Land+Esp5	a
Land+Esp7	a
Landmark	a
Matrix+Esp5	b
Plat+Esp7	b
Plat+Esp5	b
Matrix+Esp7	b
Matrix	bc
Esp5	cd
Esp7	cd
Plateau	cd
Check	d

Figure 7.

Matrix , Landmark alone and in combination with esplanade, and Esplanade at 5oz/ac provided more control the other treatments.

Mean Separation by treatment for bulbous bluegrass control (%):

Land+Esp7	a
Landmark	b
Land+Esp5	bc
Esp5	cd
Plat+Esp5	cd
Plat+Esp7	cd
Check	d
Esp7	d
Matrix	d
Matrix+Esp5	d
Matrix+Esp7	d
Plateau	d

Discussion

Bulbous bluegrass can be controlled with all of our herbicides except Esplanade, Plateau and Roundup when applied alone. We can see this pattern from both a reduction in cover and high levels of control relative to our untreated check in Sheridan. In Rozet, we saw no changes in cover, but found that overall control was better with Landmark, Matrix and combinations of herbicides. However this is only part of the picture. Beneficial herbicide application requires the consideration of damage done to the desirable perennial forbs and grasses.

Control of bulbous bluegrass can be difficult in perennial systems as it is a perennial itself. We analyzed perennial grass and forb damage relative to the check. We found that while Landmark, Matrix and the combinations that include them have high percent control of bulbous bluegrass, they also prove more damaging to perennial grasses. Additionally, applications of Landmark and Landmark combinations damaged forbs more than any other treatments.



Conclusions

Bulbous bluegrass is an invasive perennial grass. Invasive plants can negatively impact many aspects of an ecosystem. For this reason control is important and long term control is ideal. By using this data we can choose herbicides to meet our specific management goals while taking into account target species and other species and functional groups.

What's Next?

Further Analysis will focus on 2YAT data, to be collected in the summer of 2020. Additionally, we will be able to parse out species specific responses and diversity changes within the population caused by the different treatments, if any exist.