

# Introducing Big Sagebrush into a Crested Wheatgrass Monoculture

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# Crested Wheatgrass

- Adapted to foothills, sagebrush, ponderosa, mountain brush and pinyon-juniper sites
- Competes with cheatgrass, halogeton, medusahead, Russian thistle
- Used extensively for decades
- Many old stands remain

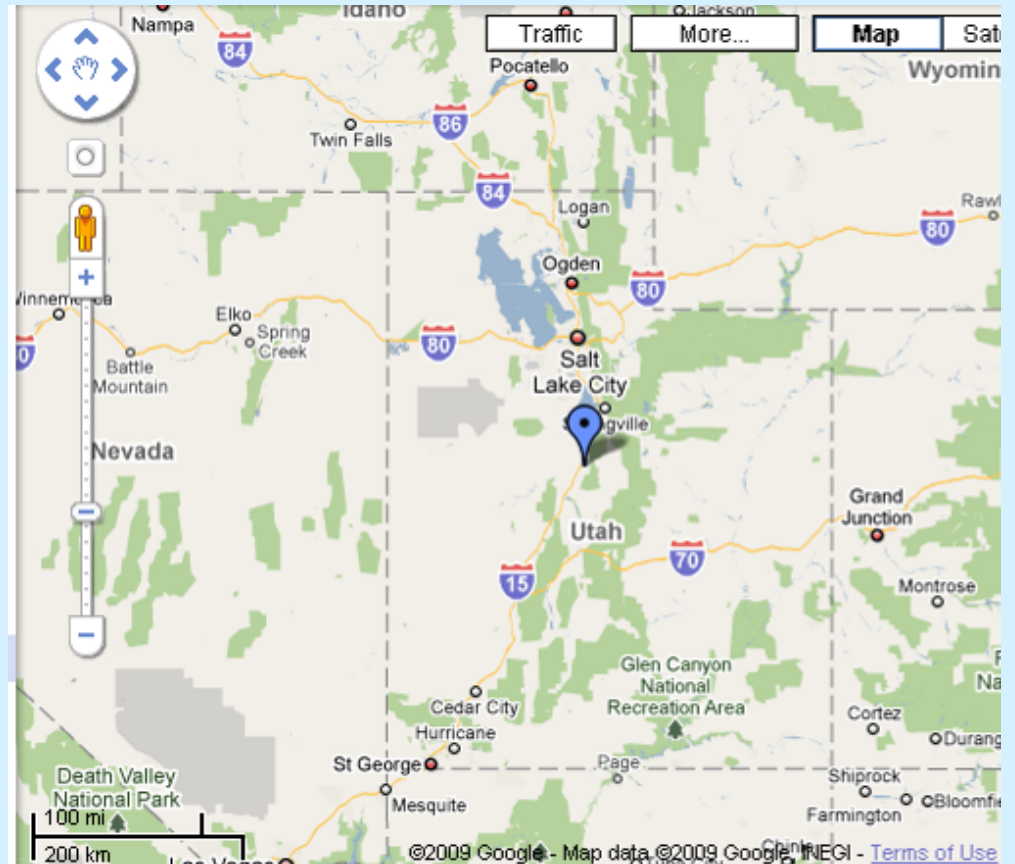
# Planting Natives into Crested Wheatgrass

- Wildlife habitat
- Ecological diversity
- Aesthetics



# Site: USU Nephi Experimental Farm

- Normal precipitation: 15.64 inches
- Elevation 5160 ft
- 60 yr old stand of Nordan Crested Wheatgrass
- Soil: Nephi Silt Loam



# Experimental Design

- Split Plot in Completely Random Design
  - Main plots (5 plots of each)
    - Control
    - 1.5 pints of Round-up Ultra 1 year prior to transplanting (April 2004)
  - Sub plots: containerized transplants of Big sagebrush (April 2005)
    - Basin
    - Mountain
    - Wyoming
  - Years (Nov 2005, 2006, 2007, 2008)



Nov 2005

# ANOVA FOR PLANT HEIGHT

## Statistix Repeated Measures Procedure

Source	df	MS	F	P
Chem	1	62989	861	0.0000
Error (Chem*MP)	8	73		
S-species	2	8381	99	0.0000
Chem*S-species	2	13	0.16	0.857
Error (Chem*MP*S-species)	16	84		
Year	3	6491	213	0.0000
Chem*Year	3	4967	163	0.0000
Error (Chem*MP*Year)	24	30		
S-species*Year	6	60	2.65	0.0265
Chem*S-species*Year	6	145	6.47	0.0000
Error (Chem*MP*S-species*Year)	48	22		

# Google Earth Image of Plots





# Results – Plant Height

<b>Sub-Species</b>	<b>Year</b>	<b>Control</b>	<b>Sprayed</b>
		cm	cm
Basin Big Sagebrush	2005	27.9	45.2
	2006	29.2	82.6
	2007	37.3	98.6
	2008	48.0	103.8
Mountain Big Sagebrush	2005	11.2	18.3
	2006	7.9	44.6
	2007	8.5	73.4
	2008	9.5	79.4
Wyoming Big Sagebrush	2005	18.7	22.9
	2006	10.6	57.3
	2007	12.1	77.2
	2008	17.8	85.3

# Mountain Big Sage - Sprayed



Nov. 2008

# Mountain Big Sage - Control



Nov. 2008

# Basin Big Sage- Sprayed



Nov. 2008

# Basin Big Sage- Control



Nov. 2008

# Conclusion

- Controlling crested wheatgrass prior to transplanting was critical to successful establishment of big sagebrush

