Eastern Idaho crested wheatgrass diversification study update

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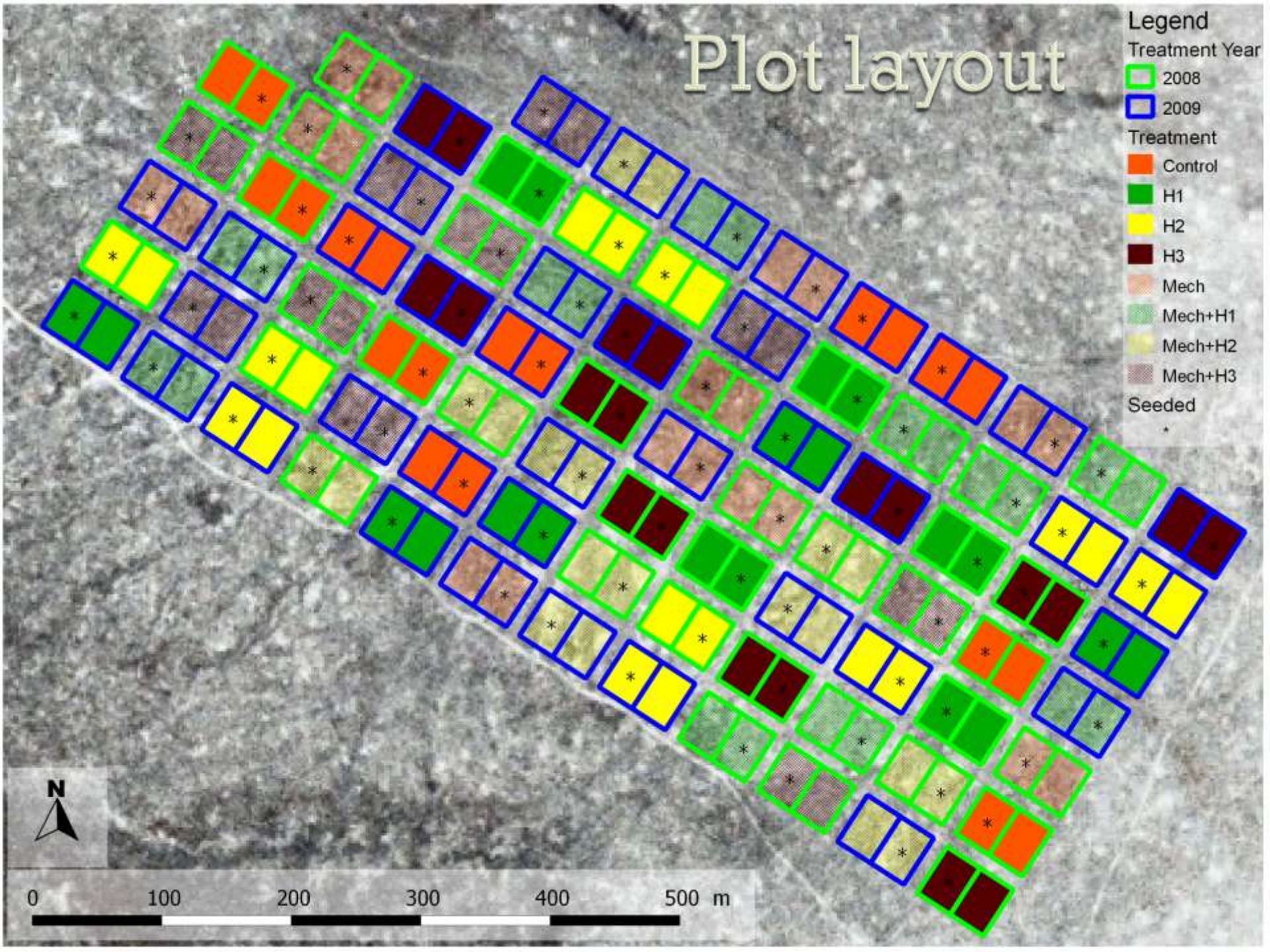
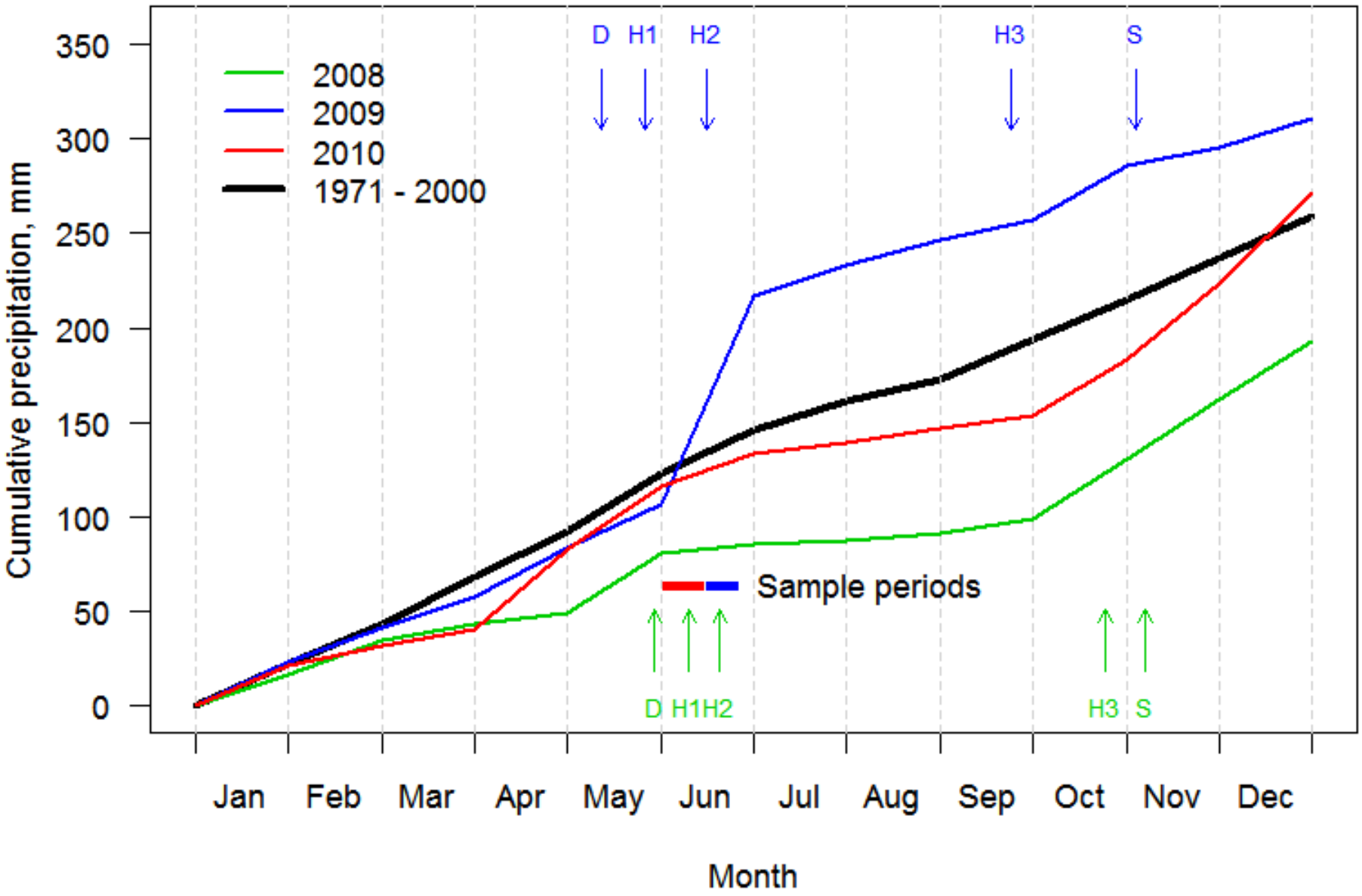
Introduction

- Determine the effect of disking and herbicide application timing on control efficacy and subsequent reseeding success
- Began 2008
  - Large plot study (Aberdeen, ID)
    - Crested wheatgrass control treatments and reseeding success
  - Small plot study (Dubois, ID)
    - Crested wheatgrass TNC trends and phenology
    - Herbicide efficacy


Large plot study


Plot layout
Legend
Treatment Year
2008
2009
Treatment
Control
H1
H2
H3
Mech
Mech+H1
Mech+H2
Mech+H3
Seeded
N
0
100
200
300
400
500 m

Precipitation



Disking

Herbicide Application

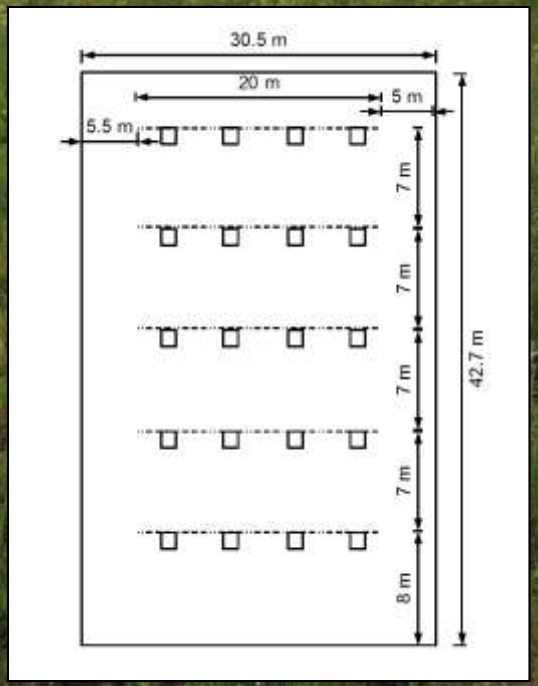
Seeding

Seed mix

Drill mix	%	Full Rate	#PLS/ac	PLS/linear ft.
Anatone bluebunch wheatgrass	40	8	3.20	20
Magnar basin wildrye	10	8	0.80	5
Bannock thickspike wheatgrass	10	6	0.60	4
Thurber's needlegrass	10	6	0.60	5
Broadcast mix				
Maple Grove Lewis flax	5	8*	0.40	5
Mtn. Home Sandberg bluegrass	5	4*	0.20	9
Blue Penstemon	5	8*	0.40	5
Wyoming big sagebrush	10	0.5*	0.05	4
Rubber rabbitbrush	5	3*	0.15	5

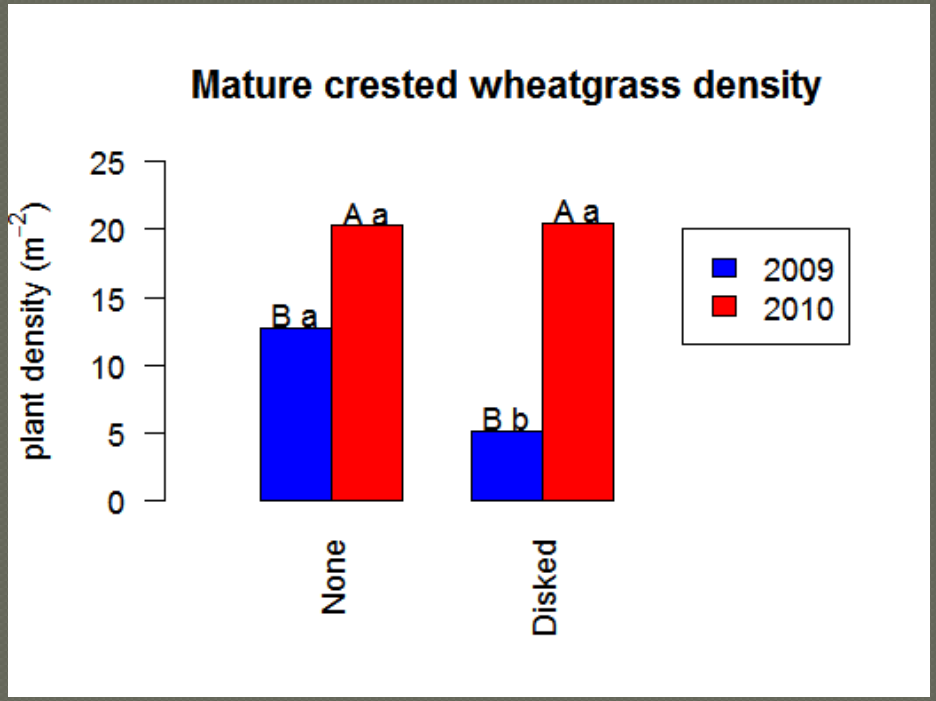
* The broadcast seeding rate for each component is double the standard full seeding rate for drilling

Sampling



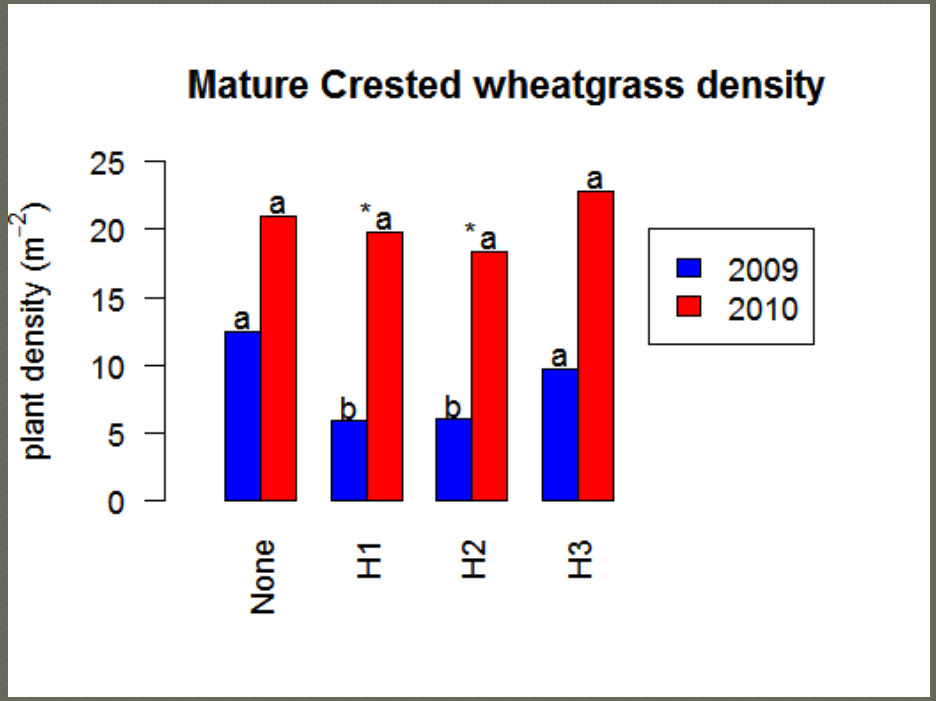
Disking effects on mature crested wheatgrass density

- Depended on year
  - Disking in 2008 reduced CWG density in 2009.
  - Disking in 2009; however, had no effect on CWG density in 2010.



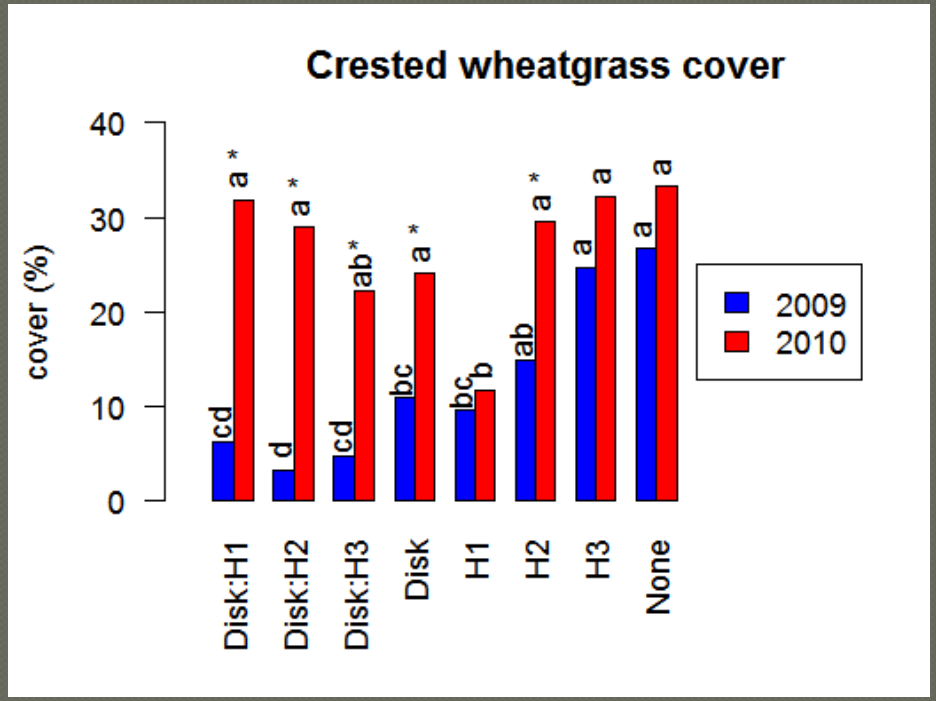
Herbicide effects on crested wheatgrass density

- Depended on year
  - Herbicide applied in 2008 reduced mature CWG density in 2009. Similar application in 2009 had no effect in 2010.
  - The fall herbicide application did not reduce CWG cover in either year.



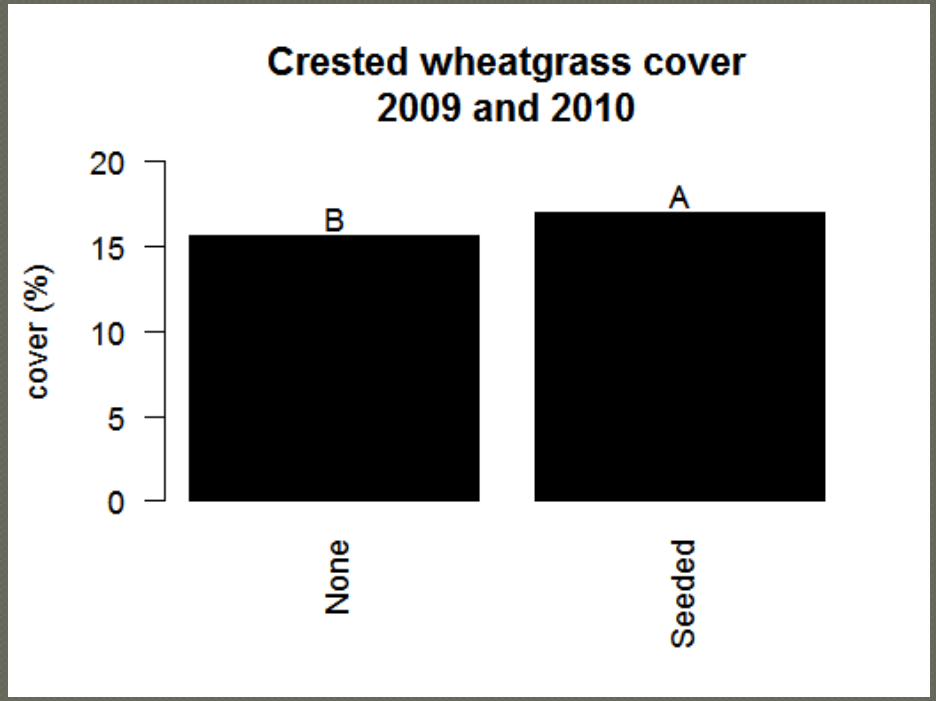
Treatment effects on crested wheatgrass cover

- Effect depends on year
  - Disking and early season herbicide in 2008 effectively reduced CWG cover in 2009.
  - In 2009, only the first herbicide application without disking had any effect on CWG cover in 2010



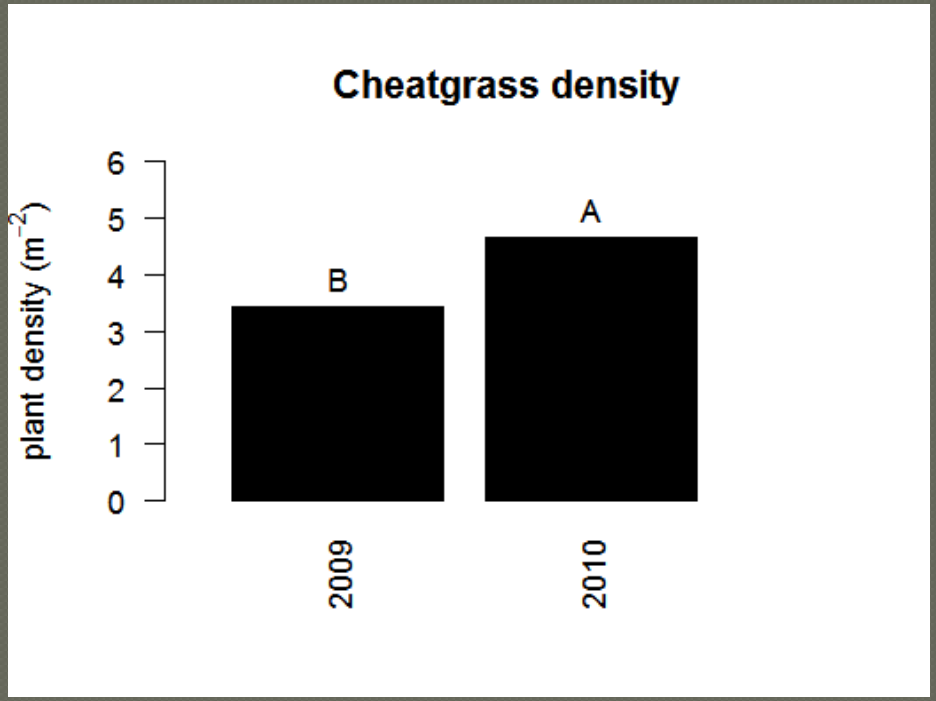
Seeding effects on crested wheatgrass cover

- Seeding in both 2008 and 2009 caused a modest, but statistically significant increase in CWG cover, in 2009 and 2010, respectively.



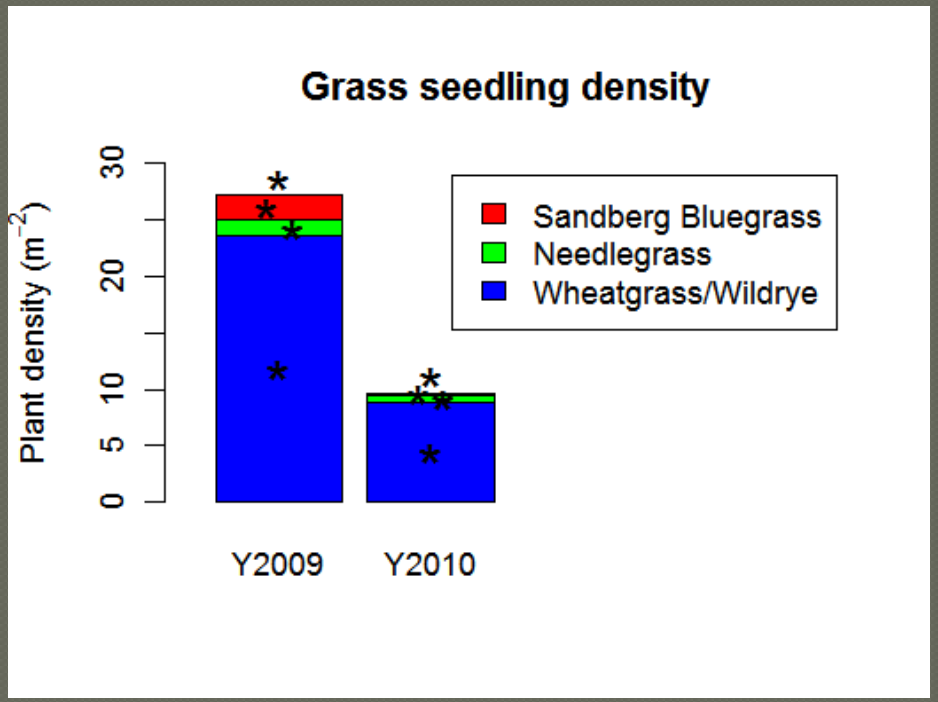
Treatment effects on cheatgrass

- Cheatgrass cover (data not shown) was <1%. Year and treatments had no effect cheatgrass cover.
- Cheatgrass density was also low, but density was greater in 2010 than in 2009.



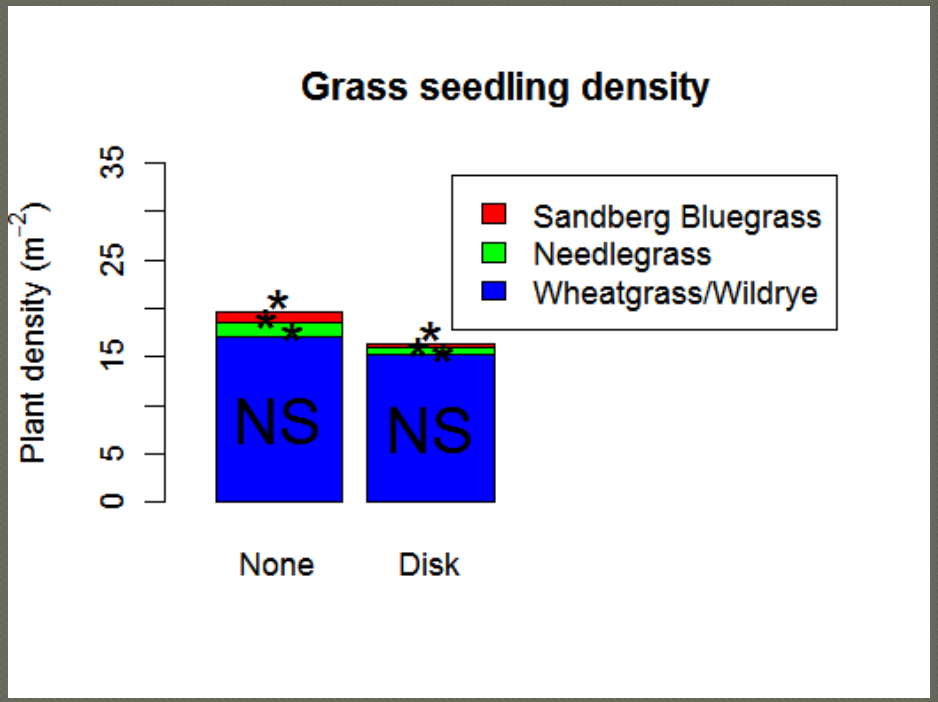
Reseeding Success

- Seeded grasses
  - Grass seedling density was greater in 2009 than in 2010 for each species and cumulative



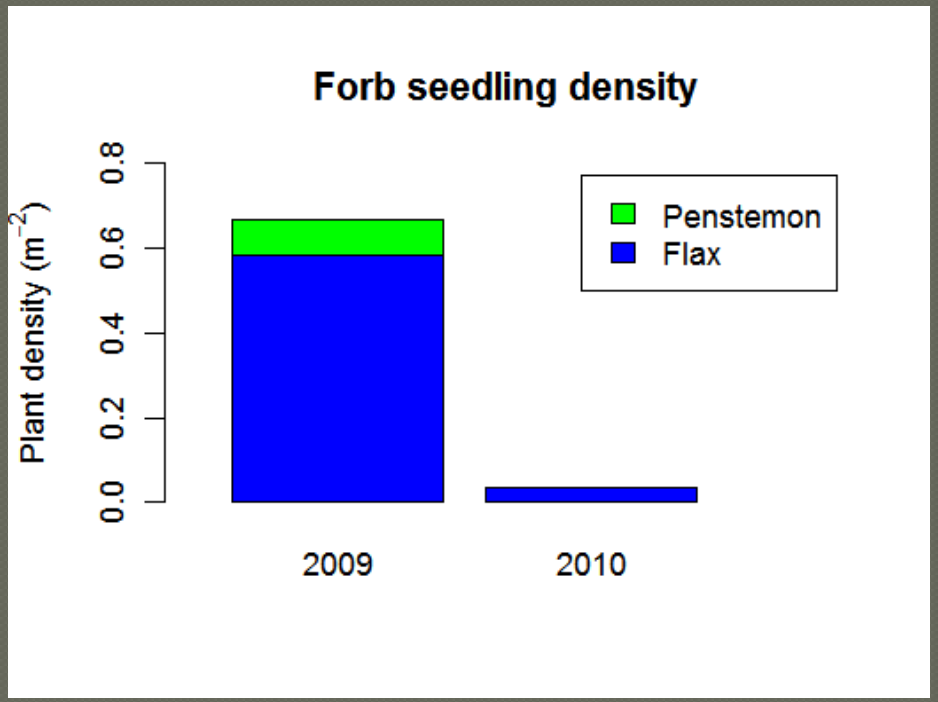
Reseeding Success

- Seeded grasses
  - DIsked treatments had less seeded grass seedling density than the undisked, with the exception of Wheatgrass which was not different.
  - Herbicide treatments had no effect of seedling density.



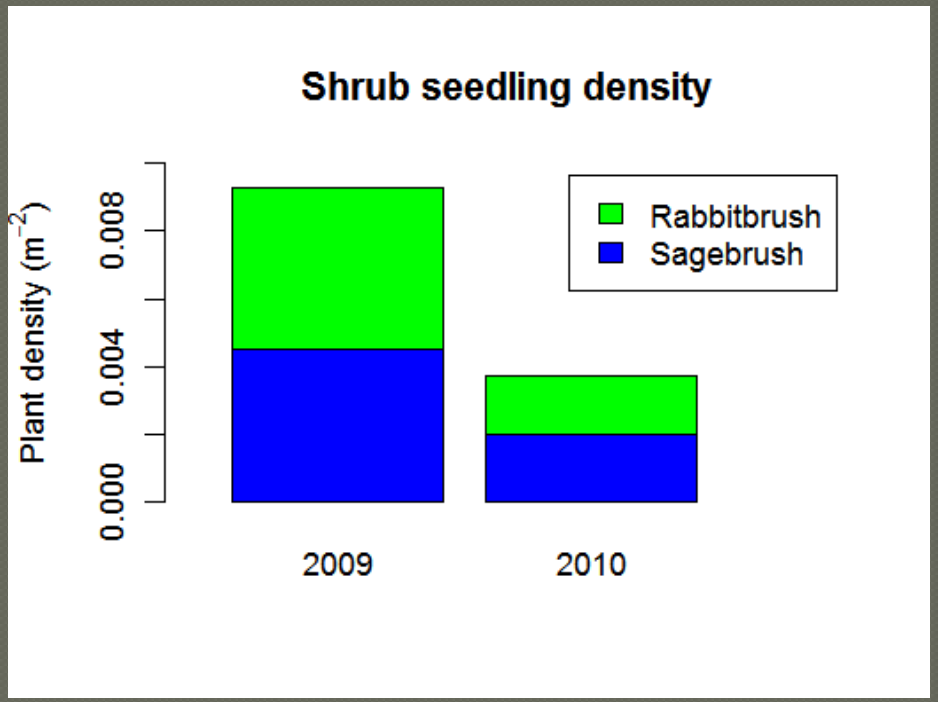
Reseeding Success

- Seeded forbs
  - Seeded forb density was less than 1 plant/m^2 in 2009
  - Control treatments had no effect on forb density.



Reseeding Success

- Seeded shrubs
  - Shrub seedling density is very low with about 1 plant per 100 m^2.
  - There was no effect of any of the control treatments.



Summary

- Year effects explain most of the variability in CWG control and Seedling Success.
- Spring disking and herbicide application may be more efficacious when followed by a dry summer.
- With the exception of grasses in 2009, seedling success is poor. None of the CWG control treatments had an effect on seedling success.