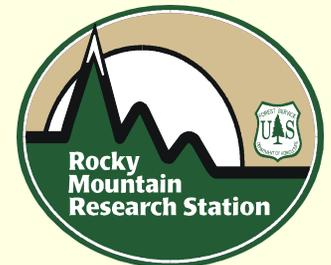


Evaluation of native species for revegetating southwestern ponderosa pine forests

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Interest in using native species in postfire rehabilitation has increased in recent decades

- motivated by shifting emphasis to not only stabilize soil but also to restore diverse native plant communities.
- Federal agencies are required to use native species *when possible*



Interest in using native species in postfire rehabilitation has increased in recent decades

- Non-native species are often used due to lower cost and perceived higher performance



Purpose of study

- Provide baseline data on native plant species in each of four functional groups
- Compare their performance to commonly used non-native species

Methods

- Two studies:
 - 2003-2004: 28 natives and 1 non-native (annual ryegrass)
 - 2006: 27 natives and 2 non-natives (annual ryegrass & common barley)

Methods

- Three trials in each study:
 - Germination chamber
 - 4 to 6 20-seed replicates
 - 10 C nighttime; 23 C daytime
 - 30 day germination

Methods

Greenhouse

- 10 pots; 20 seeds per pot
- 30-day seedling emergence
- Belowground biomass
- aboveground biomass



Methods

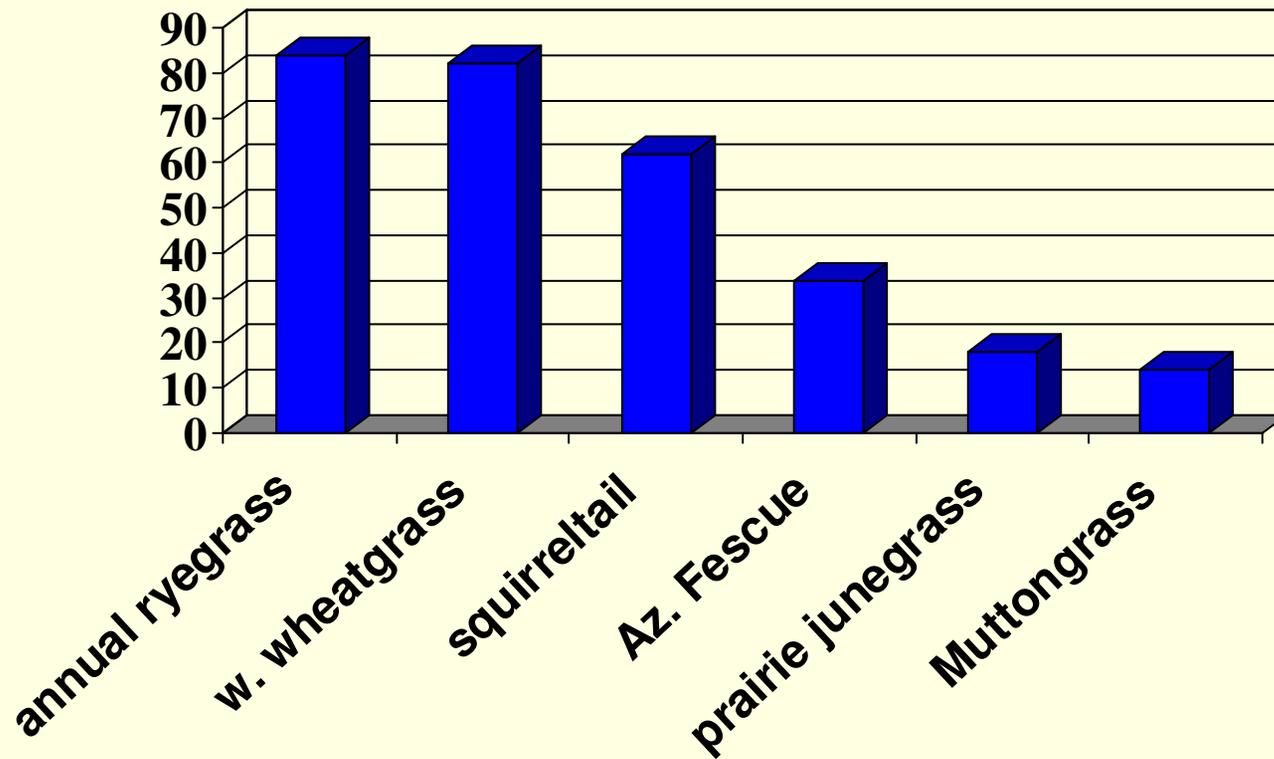
- Outdoor planter at RMRS
 - 10- X 15-m, 76 cm mesh aboveground;
 - 15 cm mesh belowground
 - 100 seeds per species replicated 10 times
 - Survival, above and belowground biomass



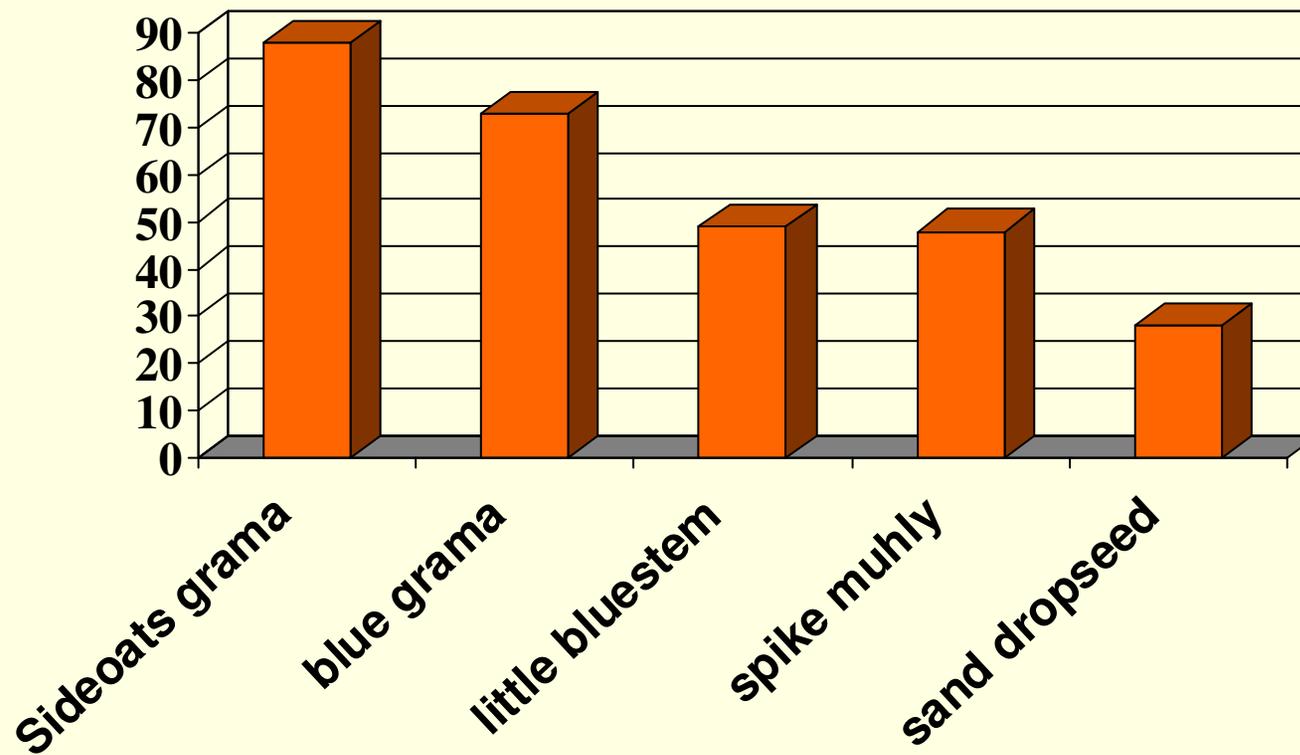
Methods

- Performance rating:
 - Calculated for 20 species tested in both studies
 - Based on:
 - Emergence in the greenhouse
 - Survival in the outdoor planter
 - Aboveground biomass in greenhouse and planter
 - Belowground biomass in greenhouse and planter
 - Score = observed value for a species/ best value for same functional group
 - Average performance = average of all values * 100

Cool season grasses Performance ratings

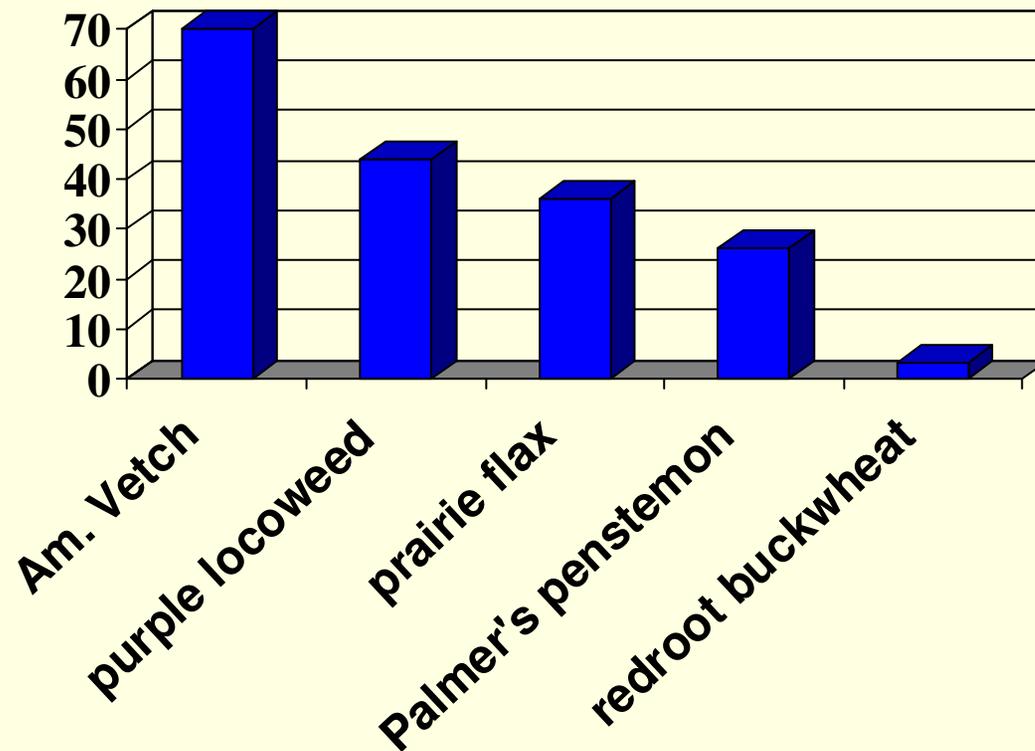


Warm season grasses Performance ratings



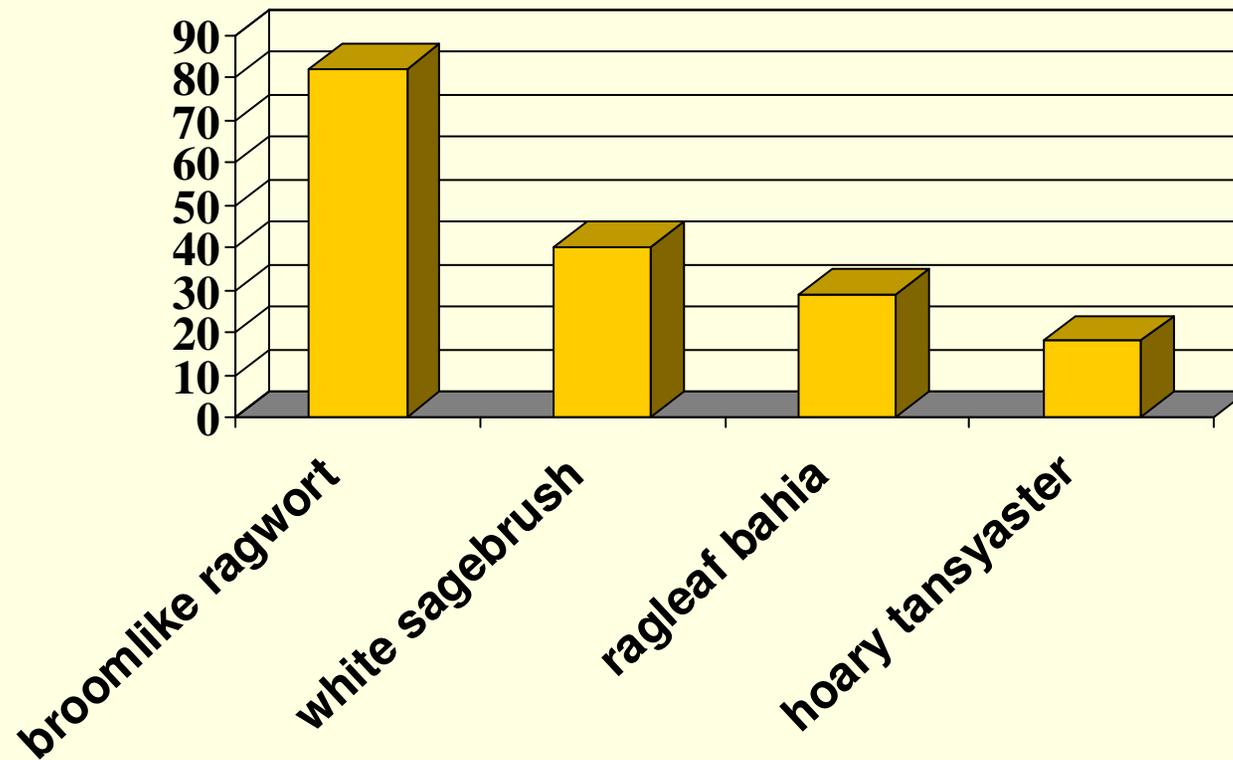
Cool season forbs

Performance ratings



Warm season forbs

Performance ratings



Take home messages

- High cost and low availability were problems in getting seeds
- Two native cool season grasses, western wheatgrass and squirreltail performed as well as or better than the non-native, annual ryegrass in several trials

Take home messages

- We identified species in other functional groups that performed well:
 - Warm season grasses: sideoats grama and blue grama
 - Cool season forbs: American vetch and purple locoweed
 - Warm season forbs: broomlike ragwort and white sagebrush

Take home messages

- Overall, germination in the laboratory was a poor indicator of performance in other areas,
- whereas emergence in the greenhouse tests proved most useful in identifying species likely to perform well in other trials.

Next Steps

- Testing native species on three wildfires
 - 2006 Warm Fire
 - 2006 Potato Fire
 - 2007 Birdie Fire

Three treatments:

- Seeded with natives
- Seeded with non-natives
- unseeded



Next Steps

- Testing native species on three wildfires
 - 7 native species
 - Indian ricegrass
 - Blue grama
 - Squirreltail
 - Mountain muhly
 - Muttongrass
 - Scarlet gilia
 - Purple locoweed
 - 2 non-natives
 - Annual ryegrass
 - Common wheat



Next Steps

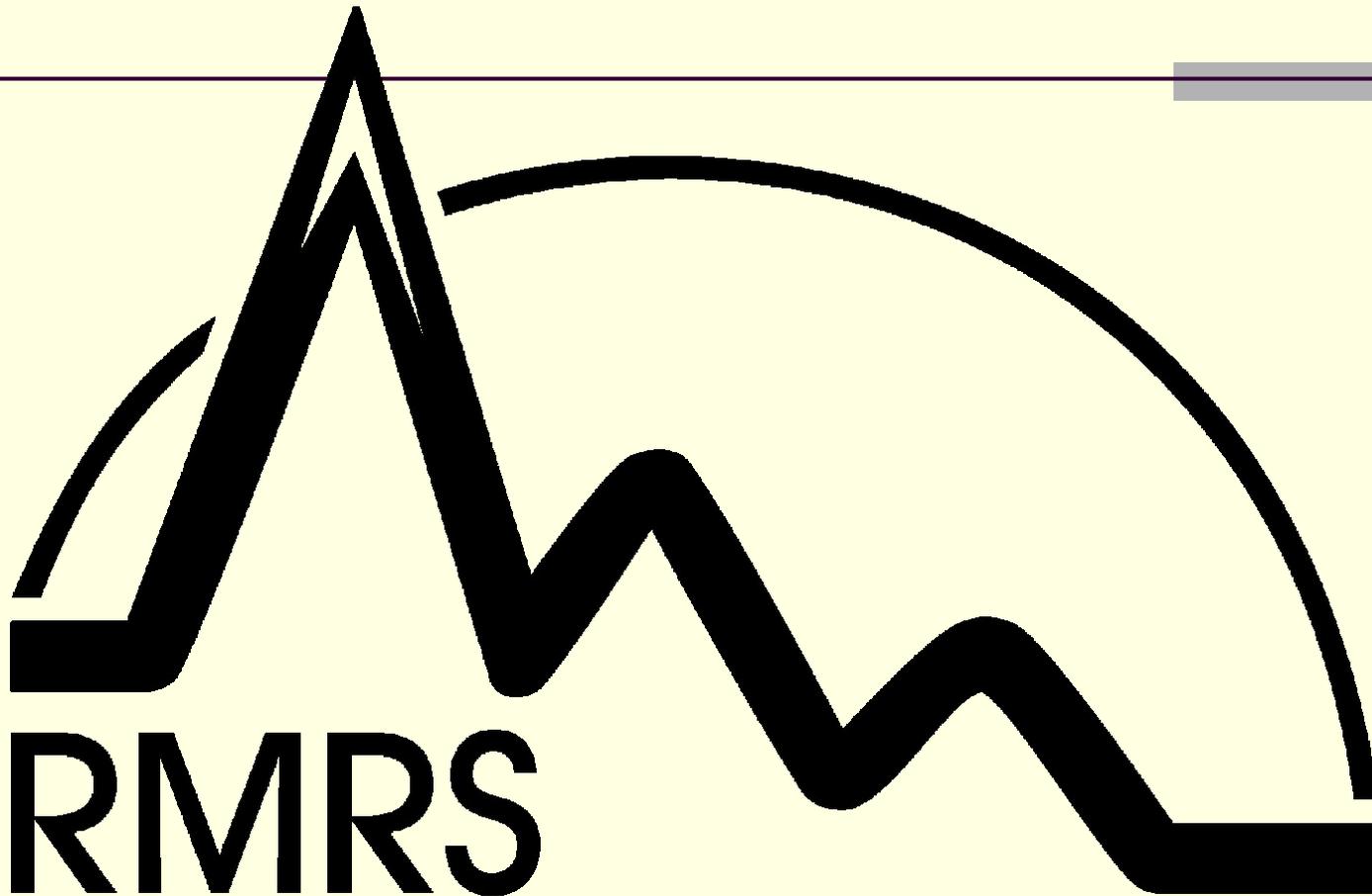
- Testing native species on three wildfires

Preliminary results:

- Grazing by cattle and elk are impacting seeded plots
- No obvious advantages of seeding



Final results will be presented in Ken Stella's M.S. thesis next spring



RMRS

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