

# Post-management AM fungal community composition is associated with selection for spore traits and altered plant-AM fungal interactions



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## Background

- Fire and bison management maintain Tallgrass prairies
- Not clear how management affects soil biota like AM fungi
- Since AM fungi influence plant communities, it is important to understand management effects on plant-AM fungal mutualisms

## Questions

1. Is AM fungal community composition associated with land management and spore traits?
2. Do management effects on AM fungal community composition alter AM fungal mutualisms?

## Methods

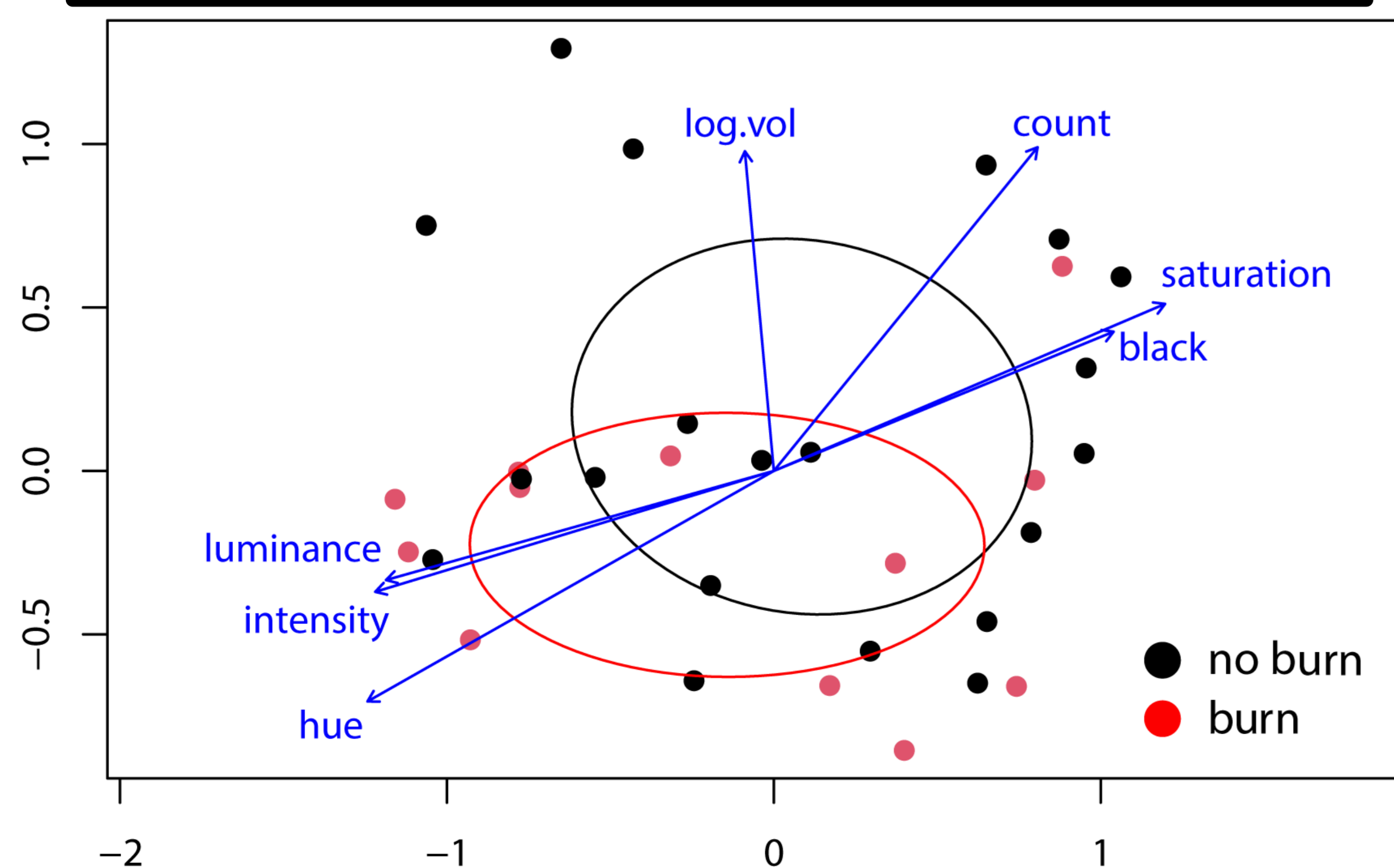
- Soil from exclosure plots (graze +/-) with different fire management in 2021 (fire +/-)
- Soil collected in July and Sept. of 2021
- Spore community composition was quantified based on morphotype
- Spore traits like count, volume, intensity, and saturation were assessed
- Spores collected in July used as inoculum for *S. scoparium* growth assay

## Conclusions/Take Aways

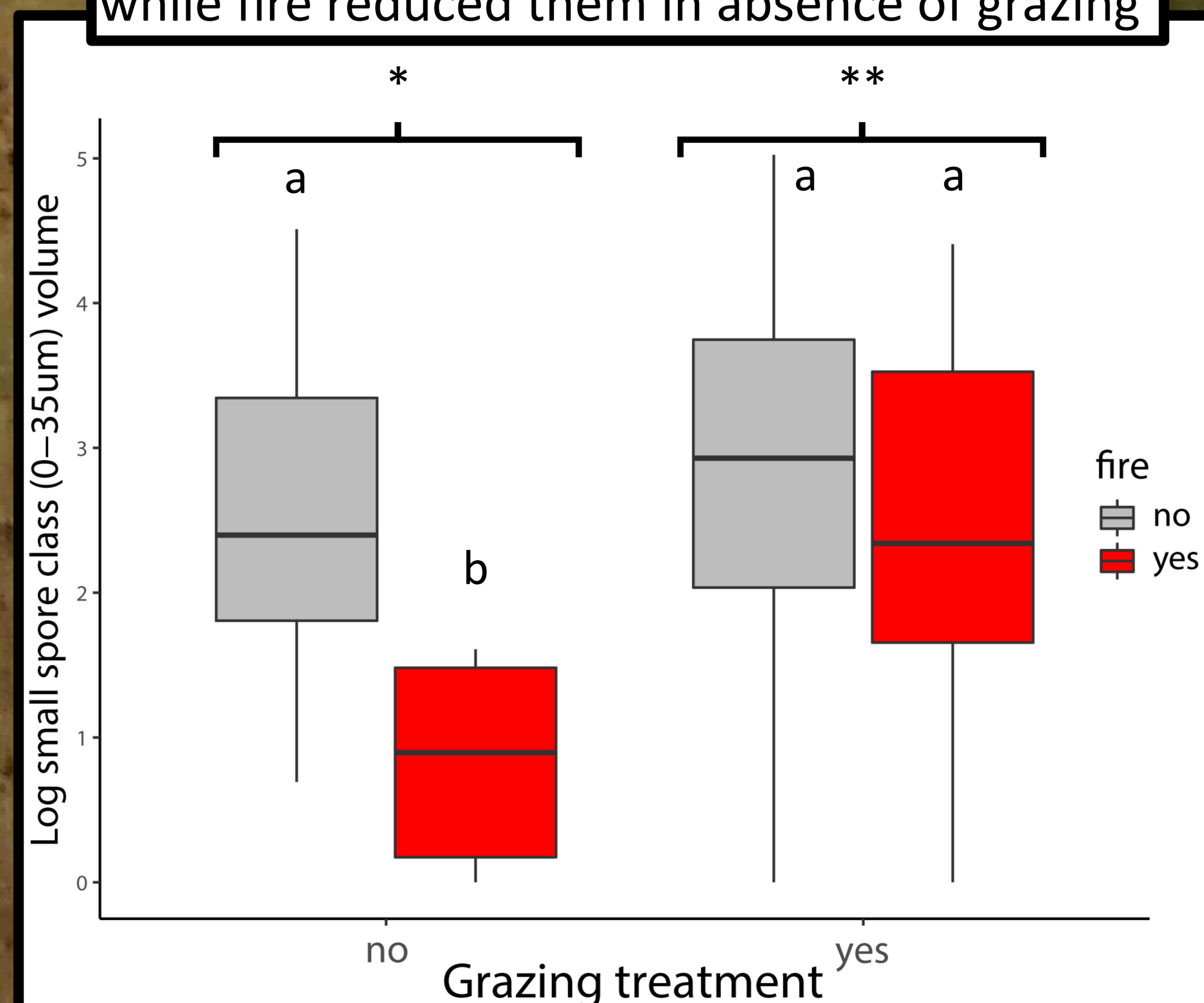
- Management drove differences in AM fungal spore communities
- Shifts in AM fungal communities were associated with spore traits
- Grazing favored small species that produced a lot of spores
- Fire favored darker colored spores
- AM fungi in burned soils reduced plant root:shoot ratios

Fire drives differences in AM fungal spore communities and this correlated with spore traits

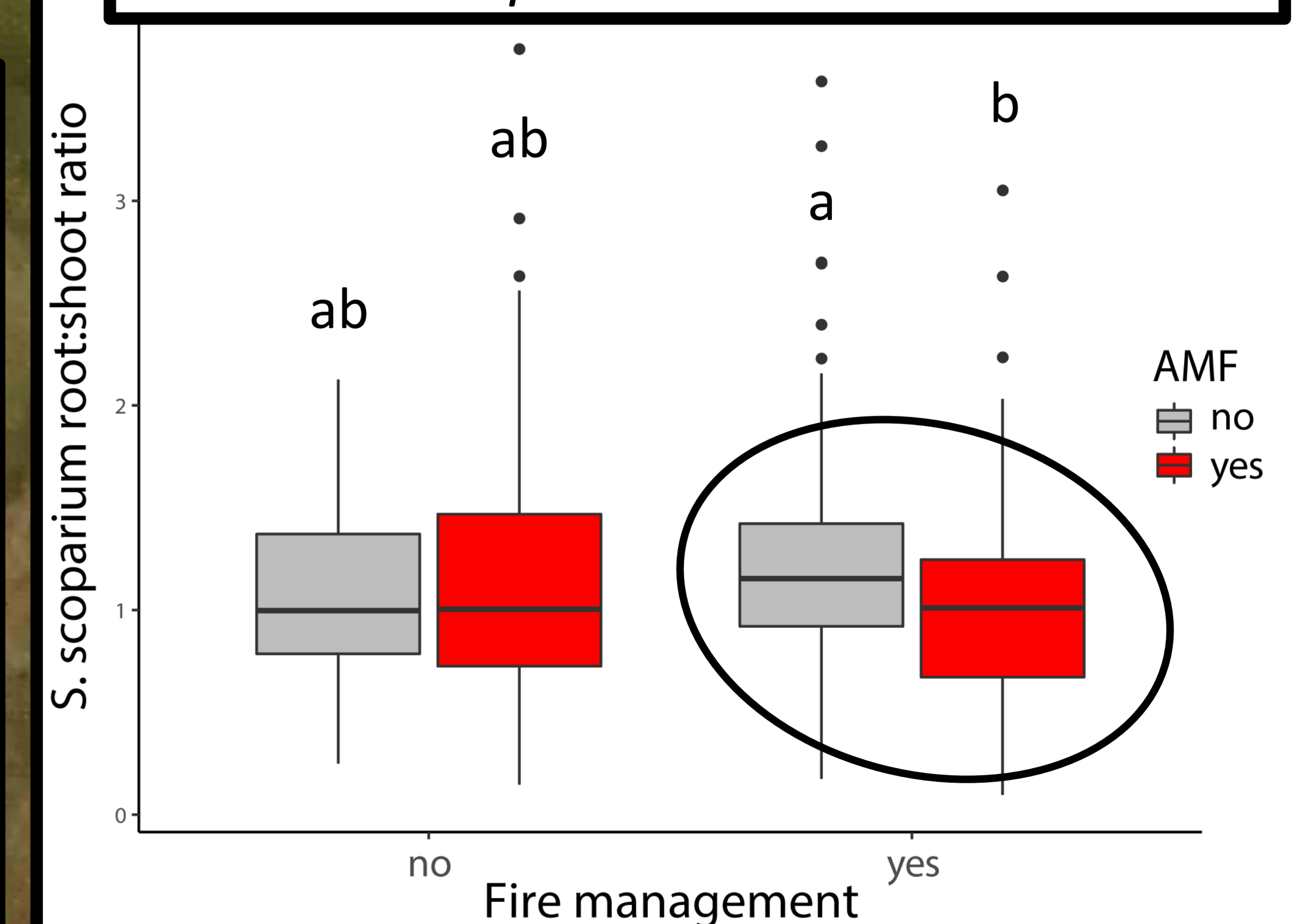
Log. Vol = log spore volume  
 Hue = color  
 Luminance = light reflected  
 Intensity = ratio of main color to black  
 Saturation = ratio of main color to white  
 Count = Spore count per 100mL soil



Grazing favored smaller volumed spores, while fire reduced them in absence of grazing



The presence of AM fungi in burned soils reduced *S. scoparium* root:shoot ratios



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