

Plant-soil feedback experiment reveals encroaching eastern redcedars inhibit native plant growth

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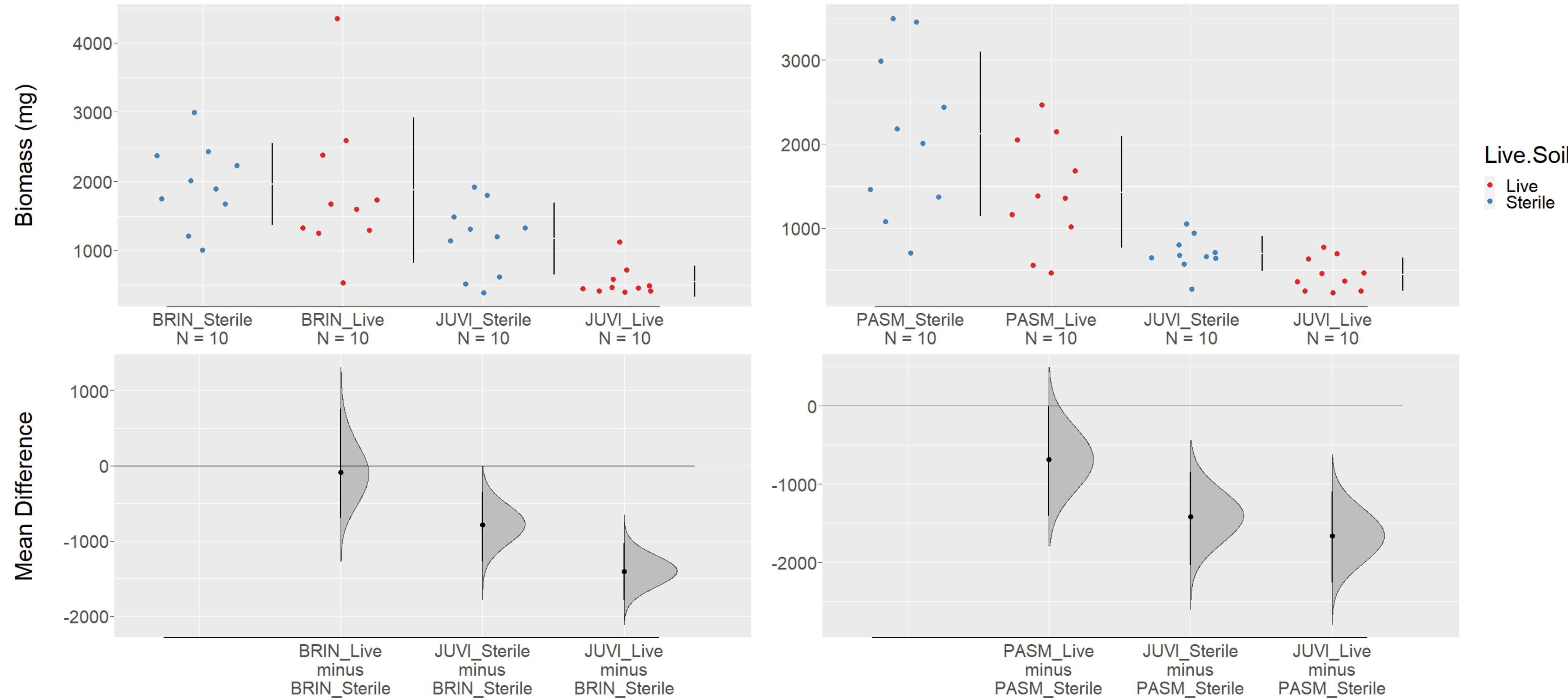
Introduction

- Eastern redcedar (*Juniperus virginiana*) is native tree that is encroaching in prairies in the US.
- We hypothesized that eastern redcedar alters soil in its encroaching range in a way that is unfavorable to native grasses.



Results

- Smooth brome (BRIN) and western wheatgrass (PASM) growth was greatly inhibited when grown in live and sterile eastern redcedar (JUVI) soils



- Suppression of growth occurred in live and sterilized soils, indicating eastern redcedar may secrete allelochemicals into soils.
- Live soils had stronger suppression than sterile soils, indicating the soil microbial community and allelochemicals may both inhibit grass growth.
- Big bluestem (ANGE) and little bluestem (SCSC) growth was not suppressed when grown in eastern redcedar soil.

Materials and methods

- Fully-crossed plant-soil feedback experiment in a greenhouse.
- Phytometer species include:
 - *Andropogon gerardi* (ANGE)
 - *Bromus inermis* (BRIN)
 - *Juniperus virginiana* (JUVI)
 - *Pascopyrum smithii* (PASM)
 - *Schizachyrium scoparium* (SCSC)

Conclusions

- Eastern redcedar negatively impacts the growth of grasses in its encroaching range.
- Future studies should focus on replicating results in field conditions.

Acknowledgments

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