Soil moisture under different grassland cover types

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Background: medusahead (*Elymus caput-medusae*)

- Thatch-producing annual grass
- Invasive to the western US, transformer species
- Thatch inhibits desirable species
- Decreases biodiversity, forage, and habitat value
- Increases landscape flammability



Adapted from EDDMapS. 2024. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health.

Question: How do medusahead stands and medusahead thatch alter the soil and ground level environment?

Repeating and expanding on Evans & Young, 1970 light, humidity, air temperature, soil temperature, and soil moisture measurements

4 treatments: control (medusahead + thatch), thatch-only, bare ground, and native vegetation

Soil Moisture

Previous studies found thatch slows soil water loss and that living medusahead uses moisture late into the growing season

Importance

Help understand success and failure of management and restoration activities, appreciate the impact of medusahead on water availability, and influence future management activities and species choice

Field Sites:

White City, OR Likely, CA





EDDMapS find map strack

Adapted from EDDMapS. 2024. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health.

Plot design:

Randomized block design, 3 replicates/treatment











Soil Moisture Hypotheses:

3.5cm soil moisture spring & summer: bare ground < native vegetation < control < thatch-only

10cm soil moisture spring & summer:

native vegetation = control < bare ground < thatch-only

3.5cm Depth Spring & Summer 2024



Native vegetation

10cm Depth Spring & Summer 2024



Native vegetation

What the data suggests so far...

- Soil moisture under the various cover types are more different during the drier late spring and summer months
- Thatch-only cover slows and lessens soil drying in late spring and summer at all soil depths
- Living medusahead + thatch (control plots) "overwhelms" thatch effect & behaves differently than thatch-only plots
- Plots that had living plants into July (control and native vegetation) have lower 10cm soil moisture than plots without living plants

Next steps

- Continue data collection
- Perform appropriate statistics

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Thank you for your time!

Questions? Contact kebrafford@ucdavis.edu

