

Compost addition and Rangeland Seeding, a Healthy Soils Demonstration Project in Monterey County

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Healthy Soils Program

CDFA OFFICE OF ENVIRONMENTAL FARMING & INNOVATION

Healthy Soils Program (HSP)

CDFA Goals:

1. Improve Soil Health
2. Sequester Carbon and Reduce Greenhouse Gases
3. Showcase Conservation Management Practices that promote goal 1 and 2.



HSP Importance to the Sanctuary and Agriculture

- Reduce atmospheric carbon
- Diminish the rate of ocean acidification
- Improves soil health
 - For example soil water holding capacity, infiltration to groundwater, better drought resilience
- Promotes the importance of land management practices to the Ocean

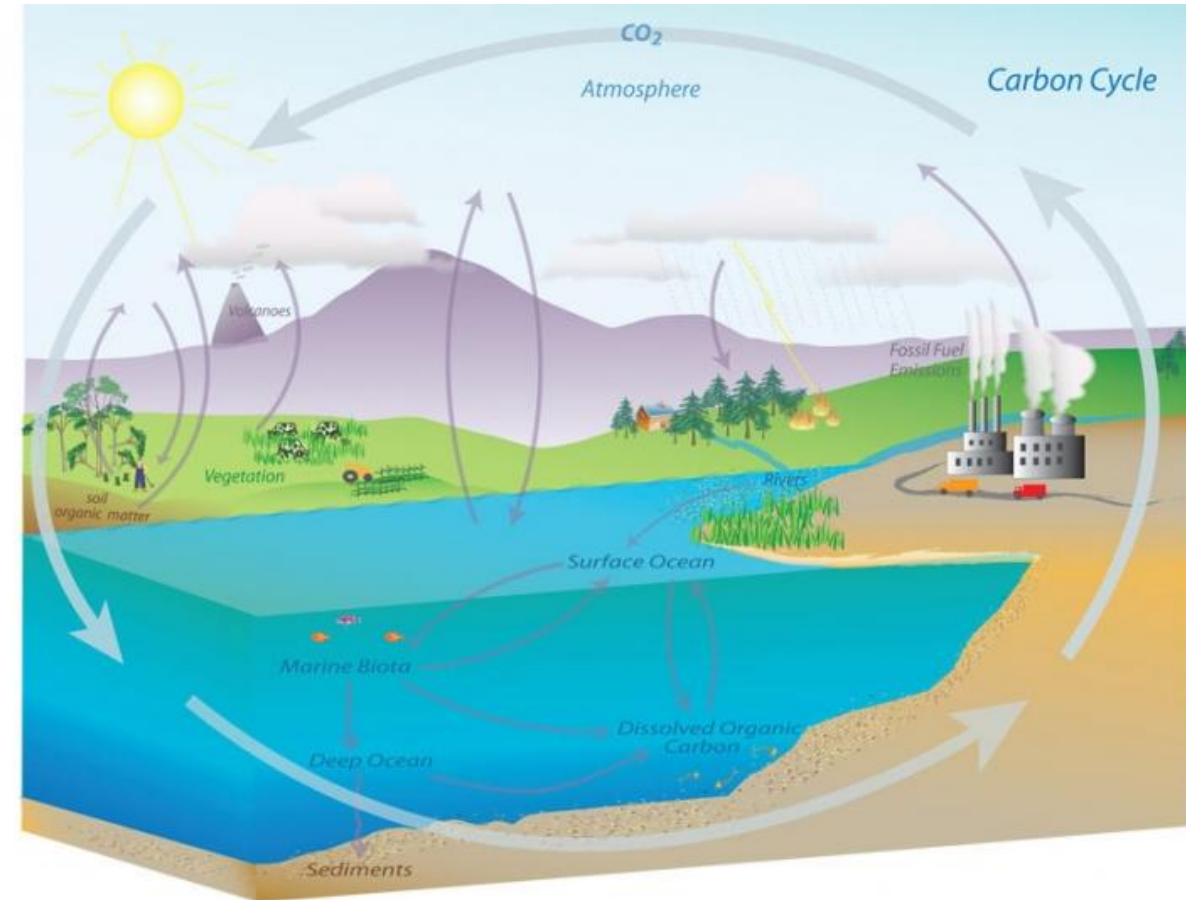


Figure 1. Carbon moves from one storage reservoir to another through different systems. Source: NOAA

Healthy Soil Project at Mark's Ranch



Figure 2. Site was used as a fire equipment staging area



Figure 3. Soil Sampled for Soil Organic Matter, Soil Organic Carbon, Soil Inorganic Carbon, bulk density, water filtration rates, etc



Figure 4. Compost addition 2.3 tons per plot (6 plots total)

HSP Mark's Ranch



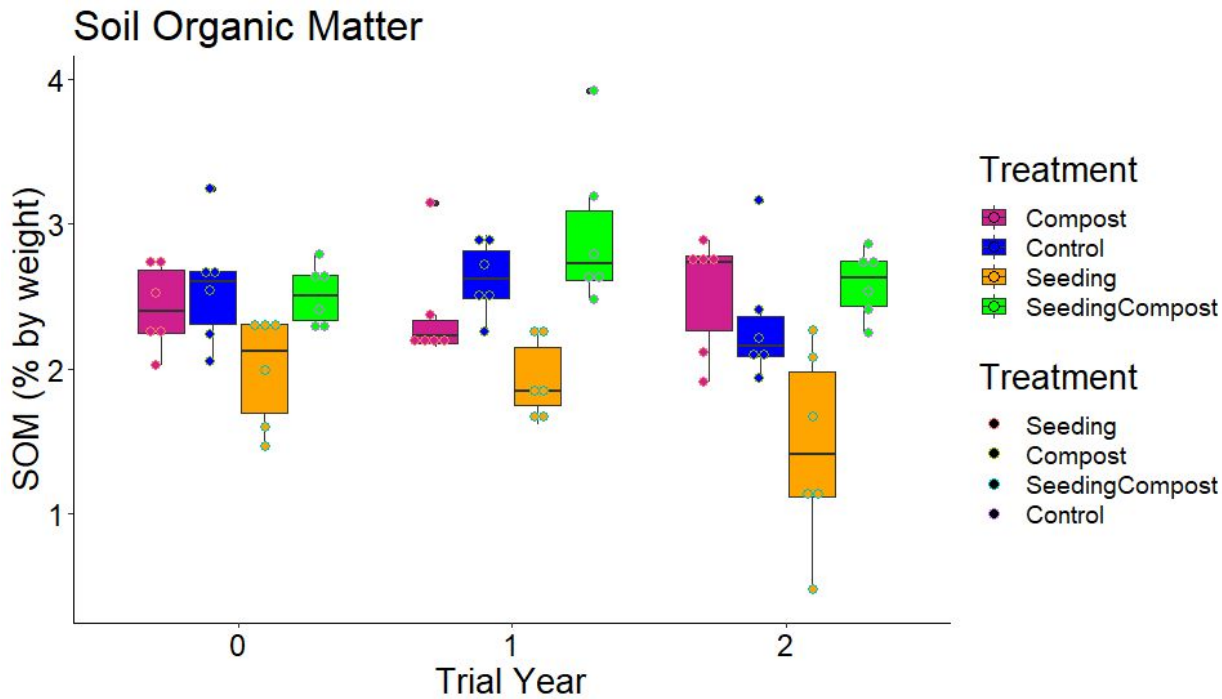
Figure 5. Drilled Seeded native grasses and forbs



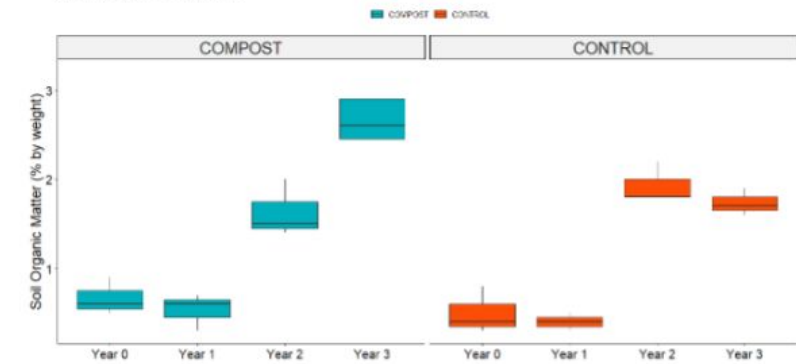
Figure 6. With help from volunteers and collaborators we broadcasted rice straw over seeded areas

Preliminary Soil Sampling Results

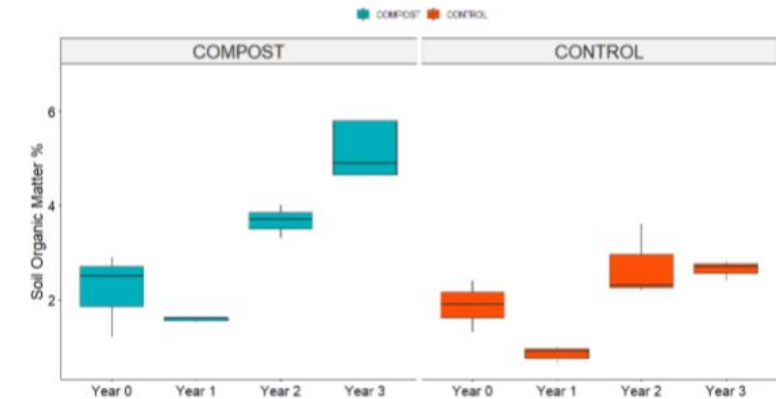
Mark's Ranch



Monkey Flower Ranch

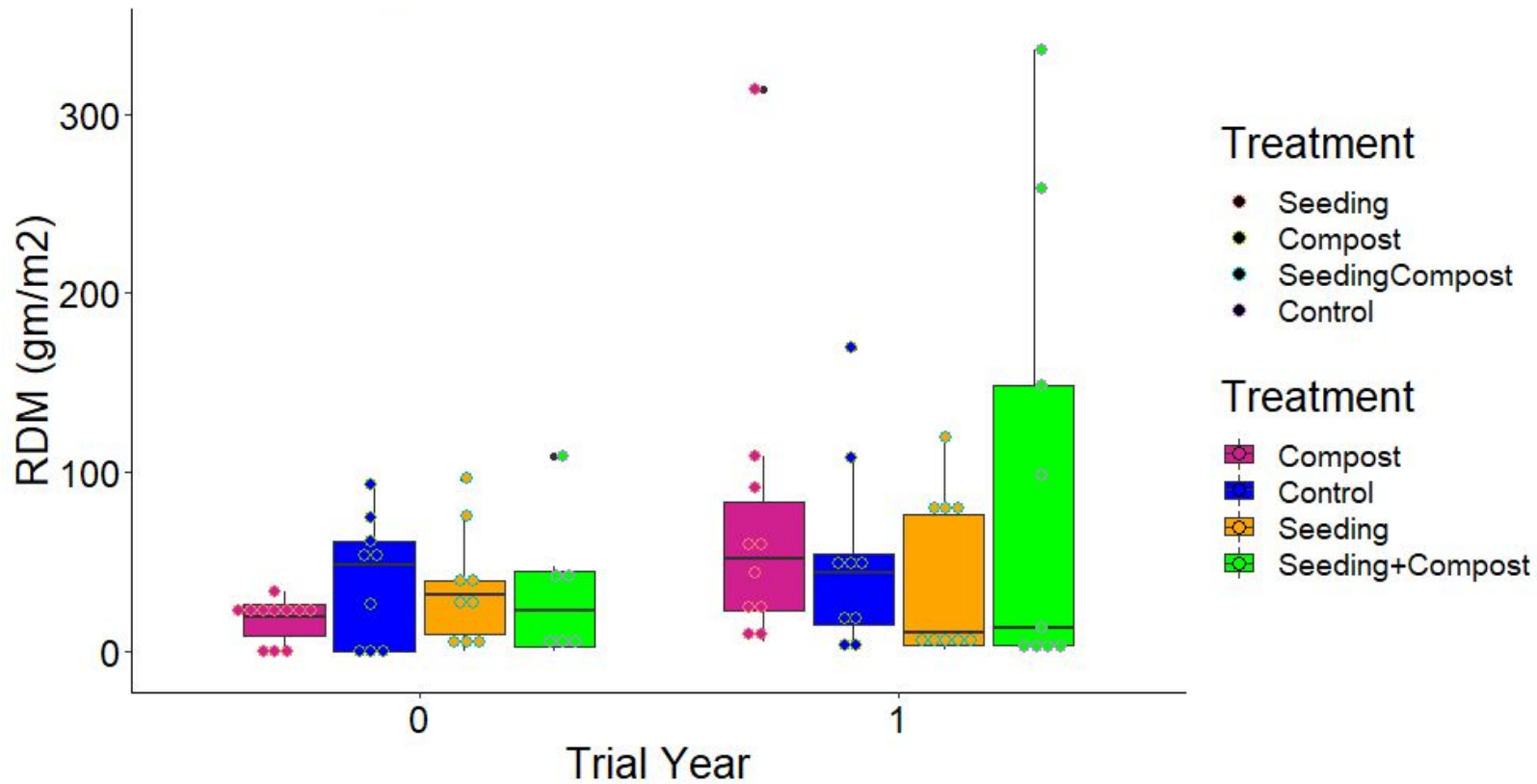


Fiesta Farm Field 1



- Potential of 9.5 MT CO₂ Ec sequestered per year, (COMET-Planner Carbon Sequestration and GHG Estimation Report)

Residual Dry Matter

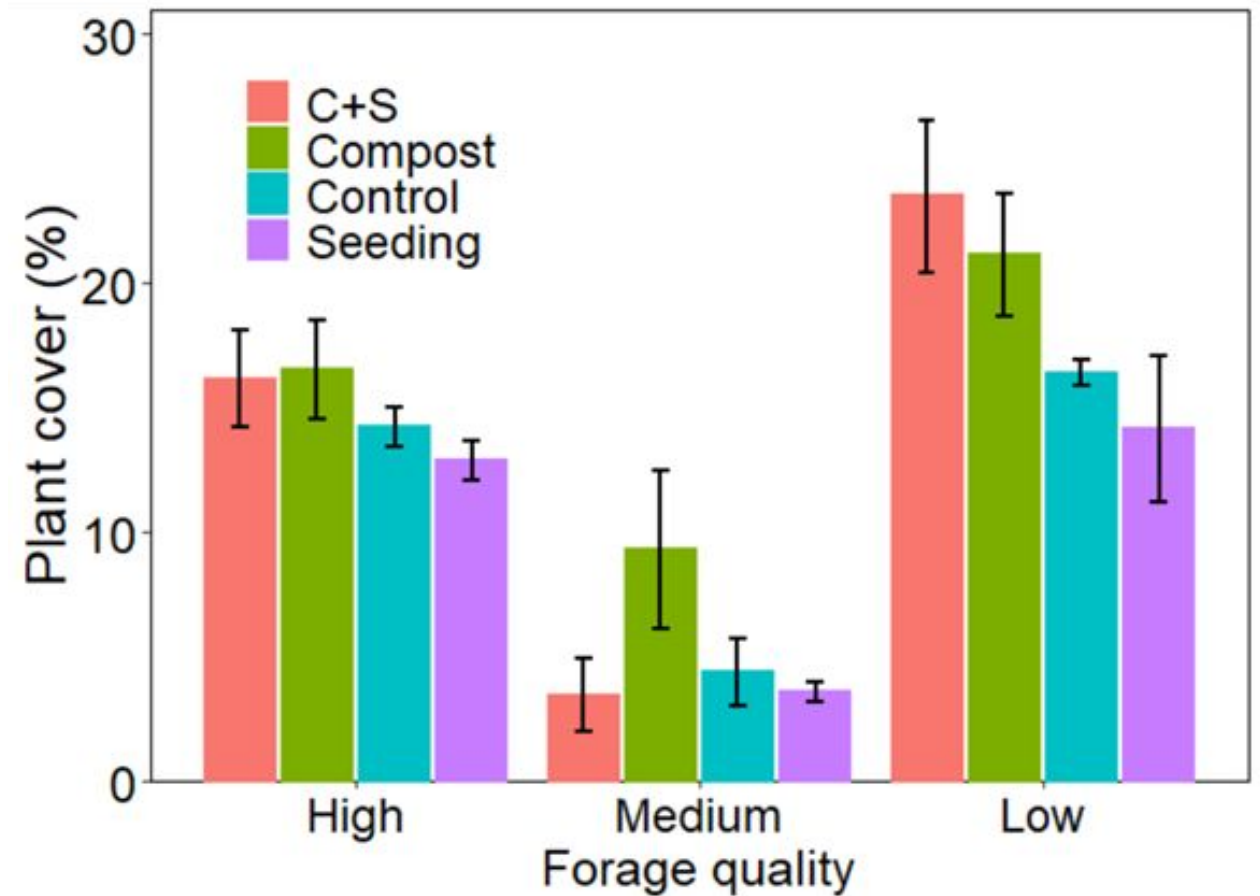


October 2021



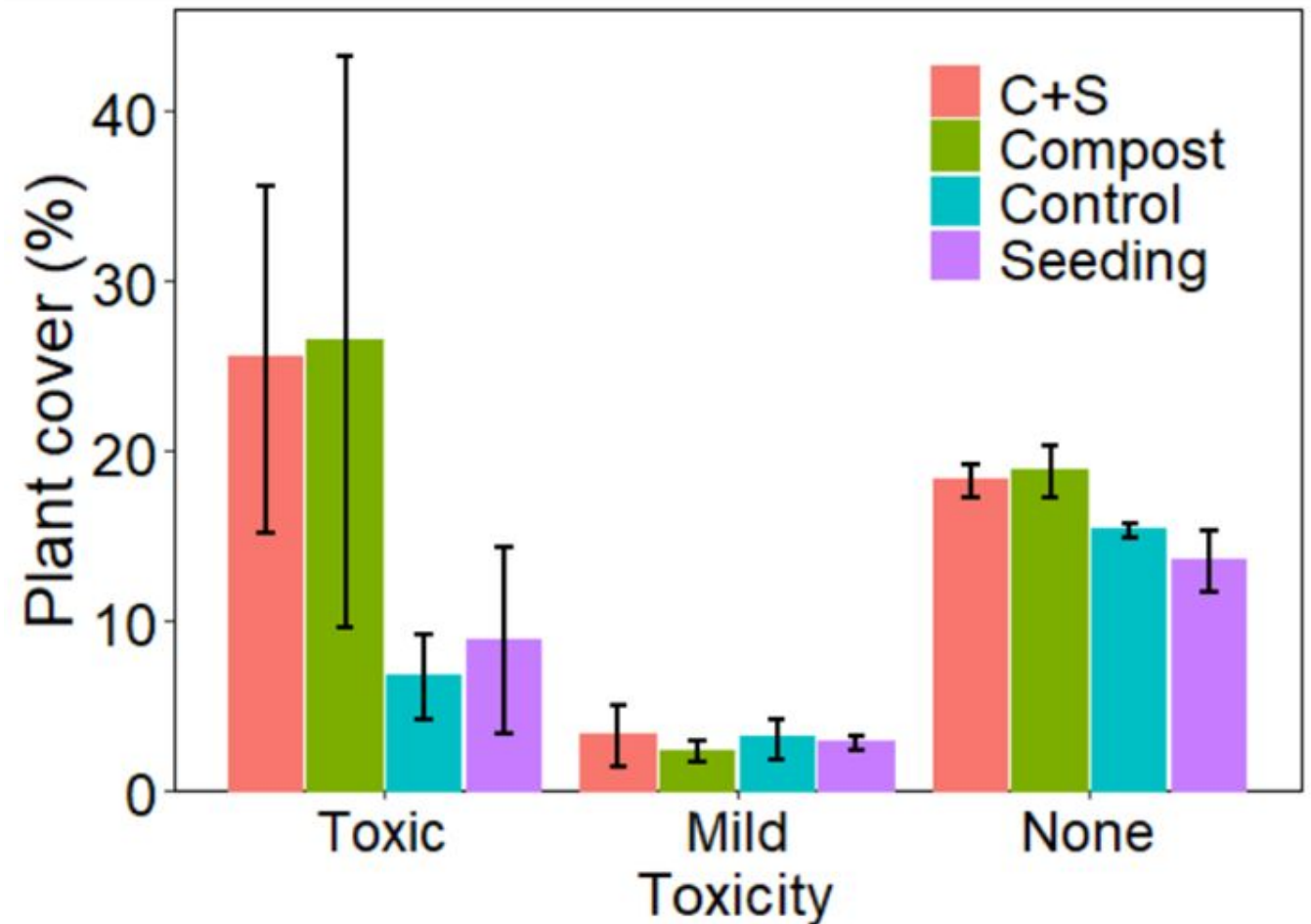
Forage Quality

Compost addition increased plant cover of all forage species seeding native plants did not negatively impact forage quality



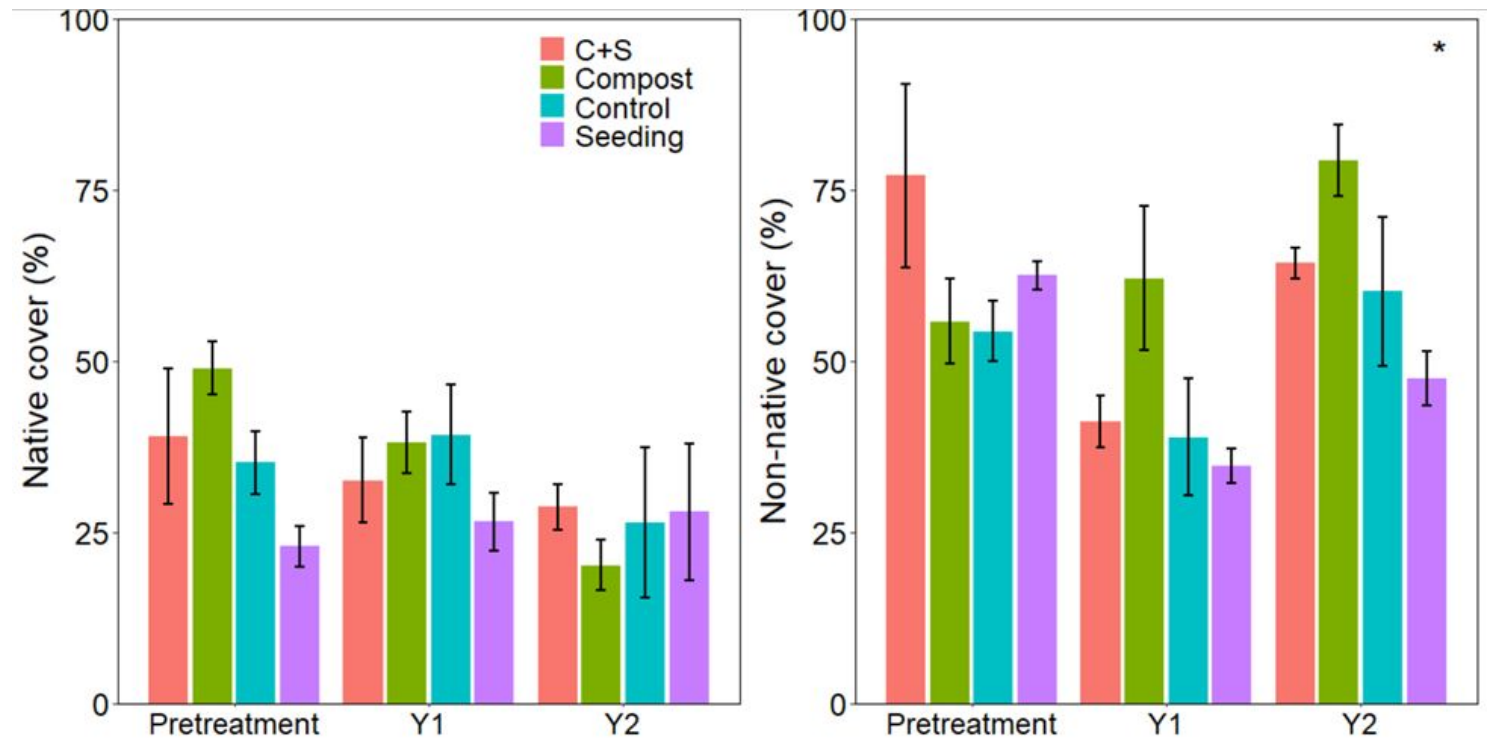
Toxic Plants (as defined by USDA)

Compost addition increased cover of plants that could result in toxicity (oxalates, secondary chemicals, etc.)



Seeding Restoration Outcomes

Seeding did not affect native cover, but resulted in lower non-native plant cover compared to those with compost



Compost Summary

- Compost addition **increased** overall productivity (residual dry matter), forage cover and soil organic matter
- However, compost addition increases cover of all plants, including potentially **toxic** forage
- Compost addition could **increase** non-native species cover

Restoration Summary

- Restoration seeding has the potential to **decrease** non-native species cover
- Seeding native species **did not affect** native cover
- Seeding native species **did not affect** forage quality or the cover of toxic plants

Takeaways

- Compost adds essential plant nutrients which increases all plant growth
- Restoration seeding did not perform well, potentially because of dry years during seeding, but potentially help reduce non-native cover
- Compost addition slightly increased soil organic matter which may help achieve future carbon sequestration

Thank You

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