

# Can you manage your weed seedbank ecologically?

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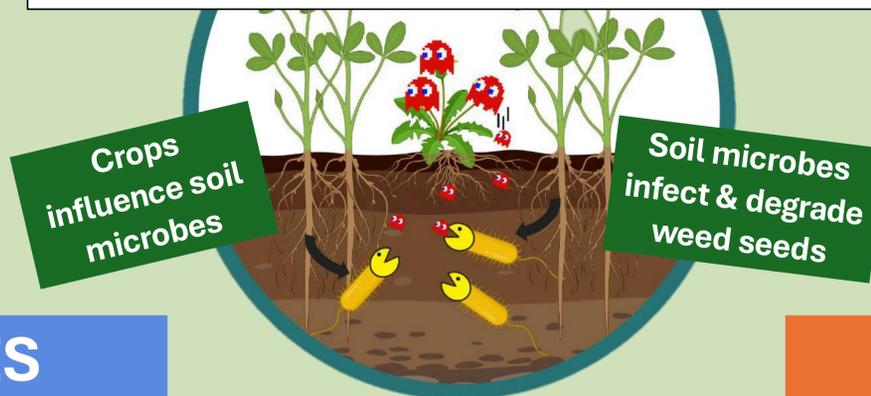


## PROBLEM

“One year’s seeding makes seven years weeding.” The old catch phrase highlights the troublesome nature of the soil seedbank as it is the source of recruitment for most weed seedlings. Even if you control above-ground weed vegetation and prevent new seed rain, **weeds seeds can still germinate after 5+ years** in the ground!

## OUR APPROACH

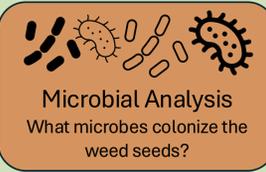
**Does crop diversity affect weed seed viability and seed microbial composition?**



## METHODS

### Weeds

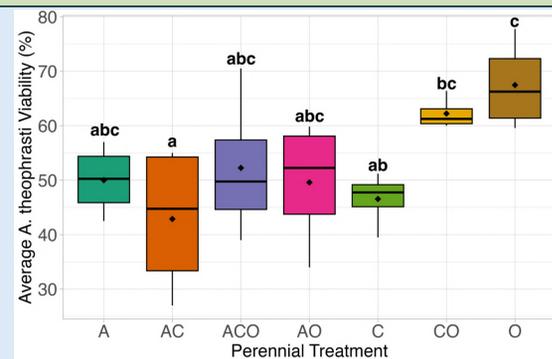
1. Giant Foxtail
2. Pigweed (Powell Amaranth)
3. Velvetleaf



## PERENNIAL FORAGES

### Perennial Treatments (7)

1 A	2 C	3 O	4 AC	5 AO	6 CO	7 ACO

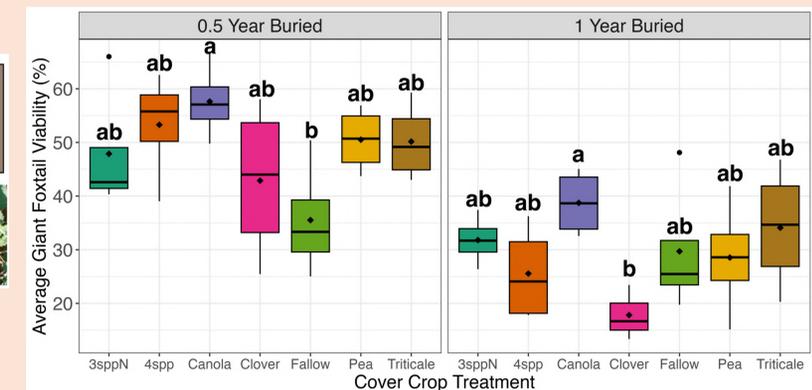


**Figure 1.** After 2.5 years buried, treatment had an effect on Velvetleaf seed viability. **Higher viability in orchardgrass** than most other treatments (ANOVA, df=6, p=0.003).

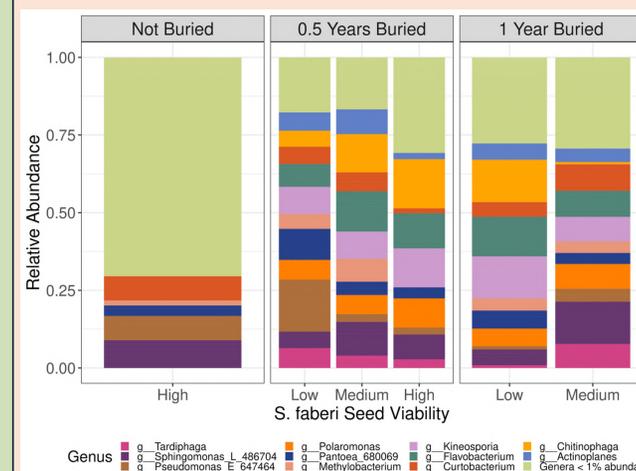
## COVER CROPS

### Cover Crop Treatments (7)

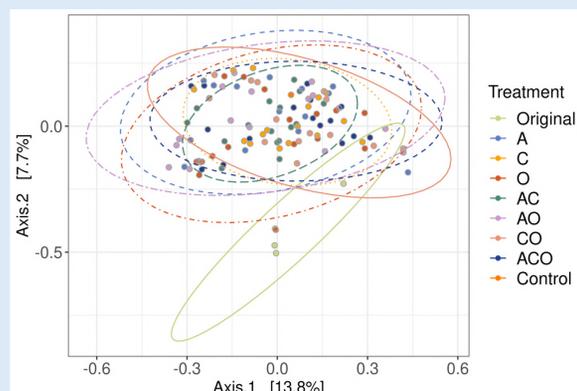
1 Triticale	2 Pea	3 Clover	4 Canola	5 3 Species	6 4 Species	7 Fallow



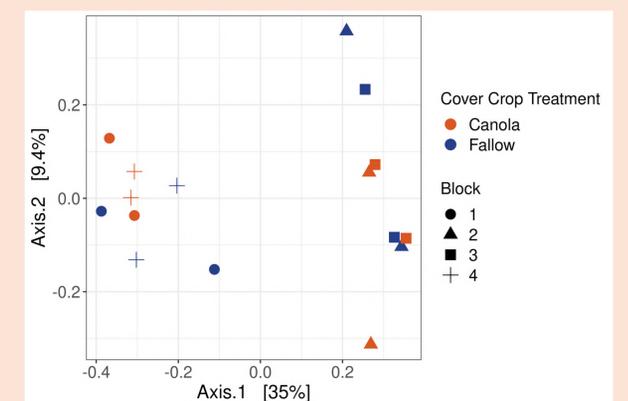
**Figure 1.** Treatment had an effect on Giant Foxtail seed viability. **Higher viability in canola** than in fallow (ANOVA df=6, p = 0.015) or clover (ANOVA df=6, p=0.028).



**Figure 2.** Giant Foxtail seeds were colonized by soil bacteria and the **bacterial composition varied based on seed viability.**



**Figure 3.** Treatment did not have a large influence on **bacterial communities** in Pigweed seeds. Only the original population (not buried) is clustered differently



**Figure 3.** Bacterial communities in Giant Foxtail seeds **associated more with block (location in field)** than with treatment. Likely variation in soil characteristics had an effect.

## TAKEAWAYS

Our work suggests that we **can NOT manage these crop communities for bacterially-mediated weed seed mortality.** However, analysis is ongoing for fungi!

## ACKNOWLEDGEMENTS

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