Pesticide application and its effects on soil decomposition and microbial communities

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Background

- 1. How does application of post-emergent herbicides affect decomposition rate in soil?
- Depending on the chemical composition of the herbicide, some stimulate, inhibit or no effect on soil microorganisms.
 - Inhibition of soil microorganism may slow down decomposition rates.

2. How do different long term pesticide management plans on turfgrass affect bacterial and fungal communities in soil?

- Limited research on the persistence of the different pesticides in soil over long periods of time.
 - Negative effects from accumulation of these chemicals in the environment.





Methods

Research Plots – Experimental Units



Methods

Decomposition experiment

- Teabag Index: Global collaboration
- Soil or pesticide types may affect decomposition
- Project goals
 - To create a global soil map of decay rates.
 - To test relations between environment and decay on a global scale.





Environmental sample workflow



Soil samples



DNA extract



ITS2

Results

Decomposition Rate in Soil Post Application of Pinoxaden



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Conclusions

What do my findings mean?

- Pinoxaden is an post-emergent herbicide that may slow down decomposition rates in soil.
 - The active ingredient in this herbicide affects soil microorganisms and inhibits their normal activities in some way.
- Pinoxaden persists in soil for months after application.
 - Keep this in mind when applying different herbicides.
 - Half life of chemicals.

Anticipated Results

Affects of pre-emergent herbicides and insecticides on bacteria and fungal communities.

• Results should show that if pre-emergent herbicides or insecticides hinder microorganism communities, then both bacterial and fungal community populations will shift in treated experimental areas.



Thank you for listening!

Questions?

Contact me for more information about my project.

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