Improving Soil Conditions for Entomopathogenic Nematodes by Conservation Agriculture

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What are Entomopathogenic nematodes?

Entomo-pathogenic nematode (EPN) (Heterorabditis spp.)



Solution: Improve habitat = Conservation Biological Control



Two Conservation Agriculture Systems No-till + cover crop





Objectives

- Determine if no-till cover-cropping can improve...
 - 1. Soil water properties
 - 2. EPN population densities
 - 3. EPN infectivity
 - 4. Thrips pest control

Oil radish trial

Field Experiment

- RCBD
- 3 treatments
- 4 replications



Soil Water Properties



n=144, repeated measures over 12 dates

Population densities of EPN

Nematode soil extraction



n=36, repeated measures over 3 dates, treatment and date interaction

Infectivity of EPN

50 mesh field cage larvae baits.



n=84, repeated measures over 7

Field cage larvae baits

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Black oat trial

Field Experiment

- RCBD
- 3 treatments
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Soil Water Properties



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Field infectivity of EPN



n=84, repeated measures over 7 dates

Canonical correspondence analysis

- The first two axis account for 78.5% of cumulative variance of CCA
- Negative correlation between thrips and EPN



Summary

- 1. Conservation agriculture maintained **higher soil moistures** regardless of the cover crops
- 2. Oil radish growth **increased population densities** of EPN initially
- 3. Black oat can improve soil conditions for infections of EPN
- 4. Higher EPN infectivity leads to **lower thrips** numbers

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