

## PROJECT

# HARNESSING THE SOIL FOOD WEB FOR THE BIOLOGICAL CONTROL OF ROOT-KNOT NEMATODES



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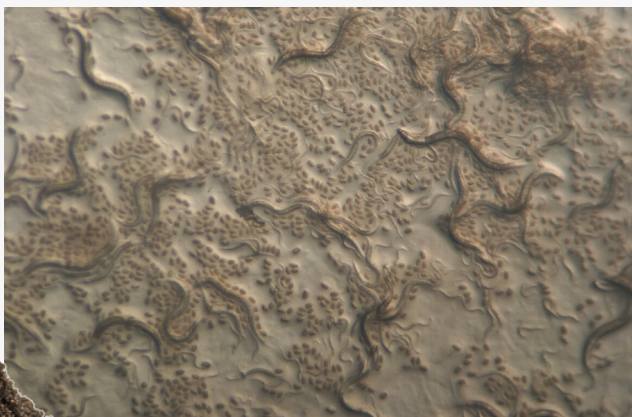
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## INTRODUCTION

Many predatory mites are generalists and feed on a diverse diet, making them excellent candidates for conservation biological control programs. However, while their impact on above ground pests is frequently reported, only few studies have focused on below ground biocontrol by mites.

The proposed project aims to harness the soil food web in agroecosystems, namely the trophic link between microorganisms, free-living nematodes (FLN) and predatory mites, for the biological control of root-knot nematodes (RKN).



## HYPOTHESIS

FLN represent a high-quality diet (e.g., due to nutritional valuable omega 3 fatty acids) for mites, enhancing predator fitness and in turn biocontrol of RKN.

# GENERAL OBJECTIVE

The proposed project aims to harness the indigenous soil food web (specifically microorganisms, FLN and predatory mites) for the biological control of RKN. The major focus of the joint Trilateral Cooperation is:

- To obtain FLN and mites naturally co-occurring, thus likely interacting as RKN biocontrol agents, from arable fields with/without a history of RKN damage (WP1).
- To assign the most promising nematode species for biocontrol, i.e. identify the FLN that best enhances predator fitness (WP2.1), and to assess diet choice of mites in a semi-natural environment with the presence of both FLN and RKN (WP2.2).
- To determine the separate and synergistic effects of microorganisms associated with BSFL compost and their nematode grazers on predatory mite abundance, plant fitness (WP3.1), and on RKN biocontrol by mites (WP3.2).
- To assess the impact of BSFL amendment in the field on biocontrol function of mites as well as on soil health, plant resistance to foliar herbivory, and plant yield (WP4).

# ACTIVITIES

