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Grande salle + visioconférence

TINY TITANS: EXPLORING THE POTENTIAL OF SOIL MITES IN SUSTAINABLE AGRICULTURE

par

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- 👤 Soil mites, often overlooked due to their minute size and lack of experts, play a crucial and underestimated role in sustainable agriculture. This seminar sheds light on these small but mighty heroes that inhabit our soils, as it explores their multiple functions and the essential ecosystem services, they provide in agrosystems. Together with Collembola soil mites comprise one of the most abundant and diverse group within soil mesofauna. In undisturbed ecosystems, their normal abundance varies, ranging from a few hundred individuals in arctic and tropical deserts to up to one million per square meter in temperate mixed forests. Over 50,000 species of soil mites have been described.
- 👤 The dominant groups among soil mites are the Oribatida, primarily saprophytic, and the Mesostigmata, mostly predators. One of the primary functions of Oribatida mites is their role in nutrient cycling. By feeding on plant material and other organic matter, they collaborate in the decomposition of organic materials. This decomposition enhances soil fertility by releasing essential nutrients for plant growth and robust agricultural production. Furthermore, Oribatida mites assist in soil aeration and aggregation, mitigating the risks of soil compaction and erosion and improving its hydrology. In addition to nutrient cycling, soil mites are formidable pest control partner. In the Mesostigmata certain species are voracious predators of agricultural pests, effectively regulating insects, mites and nematodes populations that can harm crops. Their natural predation can reduce the reliance on chemical pesticides, promoting sustainable and environmentally friendly agricultural practices.
- 👤 Along this seminar I'm going to present a general overview on the status of soil mites as biological control agents, including results of my thesis on the potential of the predatory mite *Protogamasellopsis zaheri* (Rhodacaridae) in the control of the plant parasitic nematode *Meloidogyne incognita* (Meloidogynidae) in tomato.
- 👤 Finally, I'll briefly present the exploratory project MONSOIL that I'm going to develop along this year at CBGP, which focus on vineyards and present two main actions. In Action 1, the richness and abundance of all groups of edaphic mites will be evaluated, looking for bioindicators of ecosystem functioning and soil health along an agroecological gradient. In Action 2, a closer look will be applied to experimental plots (SALSA) to evaluate the effect of pesticide use, diversification and soil management on the communities of soil predatory mites and their main potential preys.