COMMUNITY COMPOSITION AND METABOLIC FOOTPRINTS OF SOIL NEMATODES IN FRUIT SYSTEMS IN MEDITERRANEAN AREAS.

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Background

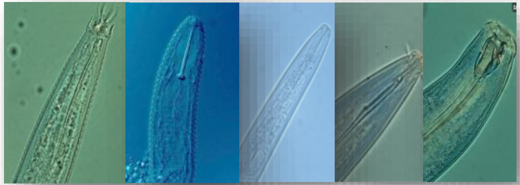

Fig.1. The nematode fauna [1].

Soil nematode communities play an essential role in ecosystem energy flow and provide information on ecosystem services through metabolic footprints. However, there are still no clear patterns of the composition and metabolic footprints of the nematode community in some biomes as occurs in Mediterranean climates. The central zone of Chile presents this type of climate and is where the most significant extension of the country's fruit sector is located, which leads us to consider that the ecosystem services of that area must be affected by the high agricultural activity.

Objective

Evaluate the **composition and metabolic footprints** of the soil nematode community in the most extensive fruit systems in the **Mediterranean region**, such as grape and cherry crops.

Methods

Soil samples were taken at a depth of 30 cm in 5 different geographic areas.

Cherry, grape, and uncultivated areas

The nematode community was analyzed and the nematode metabolic footprints, as indicators of nematode trophic and functional group's functionality, were calculated with NINJA[2], as indicators of the provision of ecosystem services by the soil microfauna.

Literature Cited

[1] Ferris, H., Bongers, T., & De Goede, R. G. M. (2001). A framework for soil food web diagnostics: extension of the nematode faunal analysis concept. Applied soil ecology, 18(1), 13-29.

[2] Sieriebriennikov, B., Ferris, H., & de Goede, R. G. (2014). [2] NINJA: An automated calculation system for nematode-based biological monitoring. European Journal of Soil Biology, 61, 90-93.

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Results

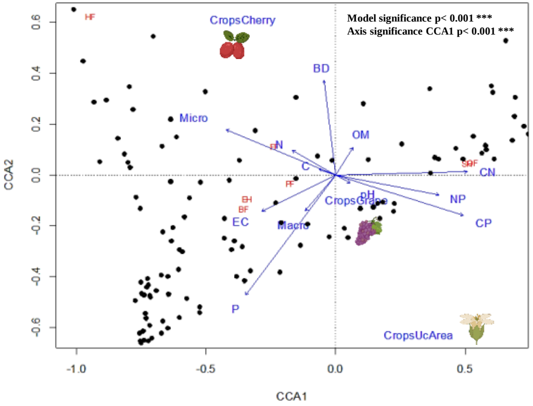

Fig. 2. (CCA) of **Metabolic footprints** (EF=Enrichment, SF=Structure, HF=Herbivore, FF=Fungivore, BF=Bacterivore, PF=Predator, and OF=Omnivore Footprint), and soil properties (environmental variables) of the crop (C) cherry and grape and uncultivated areas (UcArea), showing the association between upper soil food web levels (SF, OF) and the C:N ratio and total soil N the fungivores.

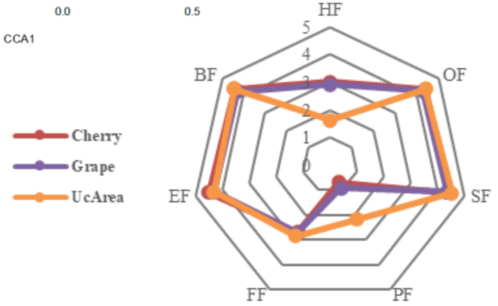

Fig. 3. Radial graph of the metabolic footprint of each trophic group of nematodes in each crop and uncultivated areas (UcArea) used as control. The HF shows a higher pest pressure in crops, while the PF was higher in the uncultivated area.

Conclusions

The agricultural activities associated to fruit crops in the central zone of Chile have affected the composition of the nematode community, increasing pest pressure and reducing microfaunal predators, which probably affect the delivery of ecosystem services in the study area.