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MICROBIOME-BASED SERVICES FOR SUSTAINABLE NEMATODE MANAGEMENT [SERVICIOS BASADOS EN MICROBIOMAS PARA NEMATODO SOSTENIBLE ADMINISTRACIÓN]

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Studies based on -omic approaches highlighted mechanisms involved in regulation of phytonematode by soil and rhizosphere microorganisms. Time series and population modelling may describe a single microcosm, but increasing complexity is needed to account for the soil interactions or functional redundancies. Regulatory functions often rely on a few microbial antagonists through density-dependent mechanisms, but external drivers such as nematicides applications may also affect belowground microorganisms and species composition profiles. The interactions of nematicides and nematodes with soil bacteria showed shifts in biodiversity, i.e. root-knot nematodes and fenamifos showing an enrichment in the soil metabolic capacities. Experimental data showed changes of bacterial diversity that occurred at finest taxonomic levels, involving unclassified OTUs whose clustering mirrored the soil conditions applied. Further studies on the hyphomycete *Pochonia chlamydosporia* highlighted its potential as a growth promoter, through a differential gene expression and root re-programming. Its metabolism as an egg parasite contrasts with the plant defense response it was found to elicit. This function reduces the nematode numbers on roots limiting the fungus food source, indicating a complex rhizosphere role. Specialized biocontrol agents such as *Pasteuria* spp. showed efficient nematode regulation. In field conditions, however, it is questionable whether a single biocontrol agent only may be functionally significant for nematode regulation and management. Biodiversity conservation and farm productivity have been often in conflict in intensive cropping systems or monocultures, and appropriate management assumptions are needed to sustain yields and food production in the long term.