

# Nematodes as indicators of soil biodiversity in Greenresilient

Soil biodiversity is reflected in the composition of its nematode fauna. In Greenresilient, we are analyzing nematode communities (genera, numbers, feeding types), which provides important information about the soil health status.

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Different types of nematodes extracted from a soil sample. Photo: Lieven Waeyenberge, 2018

Many people working in agriculture know about plant-parasitic nematodes, but these are just a small fraction of all nematodes present in a soil sample. Most nematodes are beneficial organisms and play an important role in the soil environment, e.g. nutrient cycling. Nematode community analysis can be a way of visualizing procedures and mechanisms in soil, this way providing information about the soil health status.

We extract nematodes from soil samples obtained from the five Greenresilient experimental sites. The nematodes present in 100 ml of soil are concentrated in about 40 ml of water and counted using a microscope (see picture). One can see a large variety of sizes and shapes, indicating different species and life stadia. After counting, we extract DNA from all nematodes and use it for DNA metabarcoding. This technique provides data on the different types of nematodes in the sample: the genera of bacterial and fungal feeding nematodes, herbivorous, omnivorous, and predator nematodes. These data are later used to calculate indicators of soil health (maturity index, colonizer/persister values, etc.) and compare the different treatments at the experimental sites.

We expect that the different practices (the business as usual and the innovative culturing practices) will cause measurable differences in soil nematode fauna after 3 years.

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