THE WHAT AND WHY

Can organic farming increase biodiversity?

The biodiversity status is often degraded in agricultural fields. As a consequence, ecosystem services such as disease suppressiveness, soil fertility, drougth and soil erosion resistance, water purification etc. are compromised. Investigating the complete soil biodiversity is difficult and time-consuming. Because nematodes are more sensitive to external stimuli of mechanical, chemical or physical nature compared to many other organisms, they are considered as excellent biological indicators of soil health. Recent literature reported that different practices within agricultural management systems, as well as soil characteristics, might play an important role in shaping the biodiversity of nematodes.

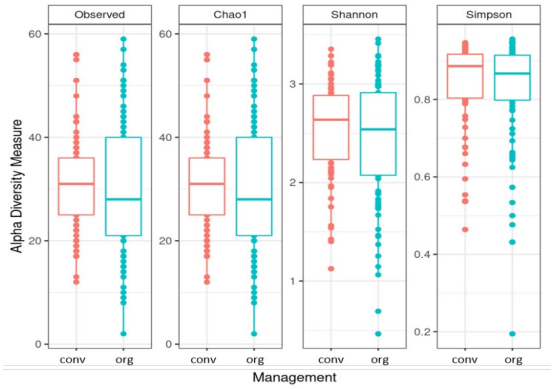
1. A diverse nematode community from a soil sample under the microscope (ILVO).

HOW IS THE CHALLENGE ADDRESSED

Nematode biodiversity in European conventional wheat fields resemble the diversity measured in organic wheat fields

To investigate the potential of organic farming as an alternative to conventional farming to boost biodiversity, nematode communities from 188 soil samples, taken in conventional and organic wheat fields in nine EU-pedoclimatic regions, were analyzed. Results show that the nematode biodiversity is most directed by the regions with their specific conditions concerning climate and soil characteristics, while the farming systems influenced the nematode diversity by less than 1%. With other words, calculations showed no significant differences in nematode biodiversity between the systems. However, the information about the farming systems obtained from the farmers made it clear that it is not always straigthforward to distinguise conventional from organic farming when looking at the mechanical treatments alone. We noticed in many cases conventional farming applying treatments which are more usual for organic farming. So, it can be concluded that implementing few 'organic or ecological treatments' like the use of organic fertilizer, no-tillage or reduced tillage etc., in conventional farming systems are often sufficient to obtain and/or maintain the same level of nematode biodiversity. Additionally, particular nematode taxa showing in all regions together a significant differential abundance in the organic wheat fields compared to the conventional wheat fields could not be found. However, some, like *Panagrolaimus*, *Acrobeloides* and *Aphelenchoides*, showed an increased or reduced abundance in the organic wheat fields of most of the investigated regions and thus have a potential to become a more general bioindicator for organic (wheat) systems.

2. Composite soil samples to investigate the nematode biodiversity (ILVO).



3. Box plots representing the spread in biodiversity status for each agricultural systems of all regions together based on the observed number of genera and some biological diversity indexes (Chao1, Shannon and Simpson). Statistical analysis revealed no significant differences (ILVO).

KEYWORDS

Biodiversity status, conventional farming, nematodes, bioindicators, organic farming.

AUTHORSHIP

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