German Centre for Integrative
Biodiversity Research (iDiv)
Halle-Jena-Leipzig

Linking stress-induced root morphology traits and nematode communities

German Centre for Integrative
Biodiversity Research (iDiv)
Halle-Jena-Leipzig
Puschstrasse 4
04103 Leipzig, Germany

info@idiv.de
www.idiv.de

Background

Abiotic and biotic stress can induce physiological and morphological alterations in plants that allow them to resist such stressors, in particular, herbivory and drought. This applies not only to aboveground traits but also root morphology traits, such as thinner roots and higher specific root surface. In addition, resources can be redirected belowground to compensate for loss of aboveground biomass. More root surfaces likely increase the rates of infection by plant-parasitic nematodes, while the redirection of carbon belowground may promote free-living soil nematodes. However, following stress, opportunists such as plant-parasitic nematodes can cope rapidly with their short generation times compared to other nematode trophic groups and as a result, can dominate the communities.

This study aims to test whether drought stress leads to longer but thinner roots making them more susceptible to nematode attack and if such root traits like specific root length and specific root surface area affect nematode community abundance and composition in the soil and roots, thereby linking stress-induced root morphology traits and their effect on nematode communities.

The thesis will make use of clonal oaks propagated from the PhytOakmeter Research Unit. The practical work will take place at iDiv and the greenhouse and will include nematode extraction, counting and identification. You will learn these skills and statistical approaches and gain insights into the PhytOakmeter experiments.

Contact

Please contact April Lyn Leonar (april_lyn.leonar@idiv.de) if you are interested