Suppression of the northern root-knot nematode *Meloidogyne hapla* by soil bacteria

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Suppression of plant-parasitic nematodes (PPN) is of global importance for the production of human and animal food, since they cause an irreparable damage to plants. Use of nematicides has not only caused environmental disturbances but has often failed to prove its effectiveness on a long term scale. The recent advances in studies on soil suppressiveness have led to the discovery of microbial residents in soil that are able to hamper the performance of PPN on plants to a great extent. The scientists worldwide, ourselves included, aim to fully understand the interactions and existing mechanisms of nematode suppression by defined soil microbial communities. Therefore, we isolated bacteria from soils with a varying degree of soil suppressiveness against the root-knot nematode *Meloidogyne hapla* that attach to the infective stage J2 of the latter, and explored the basic mechanisms behind this attachment. The bacterial isolates that showed the highest degree of attachment to J2 of *M. hapla* belonged to the genera *Microbacterium*, *Brevundimonas*, *Sphingopyxis* and *Acinetobacter*.

These were then used to explore whether they are able to antagonize nematodes in in vitro and in vivo assays. Some of them suppressed J2 and nematode eggs directly or by mediating plant defence responses in plants. We believe that this study helps to better elucidate interactions between PPN and bacteria in soil, and pioneers the consideration of the involvement of nematode-attached microbiome in soil suppressiveness against phytonematodes.