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Plant-parasitic and terrestrial non-parasitic nematode assemblages associated with glyphosate-tolerant vs. conventional soybean and adjacent natural veld areas in South Africa

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The abundance and identity of plant-parasitic and terrestrial non-parasitic nematodes in rhizosphere soil and root samples of commercial Glyphosate-Tolerant (GM) and conventional (CS; non-glyphosate tolerant), soybean cultivars from cultivated fields were obtained for two consecutive growing seasons in South Africa. In addition, the same were done for adjacent natural veld areas. 13 plant-parasitic nematode genera and 31 species associated with both GM and conventional soybean cultivars and with natural veld areas were established. In general, root-knot (*Meloidogyne* spp.) and root-lesion (*Pratylenchus* spp.) nematodes dominated in the roots of both types of soybean cultivars. In rhizosphere soil, either *Helicotylenchus* or *Scutellonema* were the predominant genera. Conventional soybean cultivars hosted the highest nematode diversity (11 genera and 22 species), followed by natural veld (nine genera and 22 species) with those in GM cultivars being the least diverse (10 genera and 17 species). Six species, *viz. Pratylenchus flakkensis, Pratylenchus scribneri, Pratylenchus vulnus, Rotylenchus brevicaudatus, Telotylenchus avaricus* and *Quinisulcius capitatus*, are first reports for soybean in South Africa. 32 non-parasitic nematode genera occurred in rhizosphere soils of the two soybean ecosystems 23 in CS and 21 in GM soybean) with 28 genera occurring in natural veld areas. Bacterivorous were most diverse in soils of the two soybean ecosystems during both seasons, while fungivores tended to be more abundant in GM soybean fields especially during the second season. Novel information has been generated with this study, representing the first for GM soybean crops in South Africa.

Biography

Akhona Mbatyoti has completed his PhD in Environmental Sciences (Nematology) in June 2018 from North-West University (South Africa). He is currently a postdoctoral Fellow at North-West University and Agricultural Research Council – Tropical and sub-Tropical Crops.

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