

Distribution and damage potential of plant parasitic nematodes on medicinal and aromatic plants in Germany

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Yield reductions on medicinal and aromatic plants occur repeatedly in practice. Plant parasitic nematodes are often assumed to be the cause but the concrete data is scarce. As part of the joint project NemaAG, funded by the Federal Ministry of Food and Agriculture and in collaboration with partners from research, consulting and producers, we are investigating the distribution and damage potential of plant parasitic nematodes on medicinal and aromatic plants. The damage potential and host status of economically important nematode species is also being studied on some selected plants such as peppermint, parsley, marjoram and valerian.

After a detailed evaluation of more than 300 soil samples, collected in 2021, it can be noted that plant parasitic nematodes show widespread occurrence on medicinal and aromatic plants in both conventional and organic field practices. *Pratylenchus* and *Tylenchorhynchus* have been recorded in more than 80% of all examined fields, followed by *Helicotylenchus*, *Paratylenchus* and *Trichodorus* / *Paratrachodorus* with 30 - 50% accordingly. The genera *Meloidogyne* and *Heterodera*, which are usually present in high numbers on agricultural crops, have been rarely found (< 10 %). The densities of frequently occurred genera have shown the strong fluctuations depending on cultivated plant and field location, e.g. *Pratylenchus*: 93 - 800 nematodes / 100 ml soil, *Tylenchorhynchus*: 70-3344 nematodes/100 ml soil, *Paratylenchus*: 133-1736 nematodes/100 ml soil, *Meloidogyne*: 33-244 nematodes/100 ml soil.

Host status and damage potential of economically important *Meloidogyne* species have been studied on peppermint. The experiments confirmed that peppermint is non host plant for *M. fallax* and *M. chitwoodi*; host plant for *M. incognita* and *M. hapla*, however the reproduction rates are clearly lower than by tomatoes, especially for *M. incognita*. Studies on parsley and valerian have been conducted with *M. hapla* and confirmed that both are hosts for *this species*. Furthermore, the all described above conducted greenhouse experiments showed that nematode densities up to 2 500 *Meloidogyne* species / plant have no negative impact on plant growth. Also no symptoms were observed on aboveground plant material, which are typical for a nematode damage.