

Occurrence of the plant-parasitic nematode *Pratylenchus sp.* in cereal fields in Germany

Viola Hachtel and Johannes Hallmann

Julius Kühn-Institut, Institute for Epidemiology and Pathogen Diagnostics, Münster

E-mail of corresponding author: viola.hachtel@julius-kuehn.de

The root lesion nematode *Pratylenchus* belongs to the most damaging plant-parasitic nematodes worldwide. Root lesion nematodes are able to infest a wide range of different crops. They penetrate the roots of the host plant and feed of them, thereby destroying the root tissue. The infested plants suffer from a reduced uptake of nutrients and water and also from secondary infections by other pathogens, leading to reduced yields. In the past decade, increasing damage in German crop production has been recorded and this pest is regarded by farmers and advisors as a major threat for cereal production. However, precise data about *Pratylenchus* infestations in the fields are lacking. Reasons for the broad occurrence of *Pratylenchus* are seen in narrow crop rotations, early sowing dates, mild winters and the lack of nematicides. Breeding resistant cereal varieties could be a proper way to reduce the infestation rate of *Pratylenchus* in the field.

Based on promising results achieved with barley, the project NEMARES ("Importance of root lesion nematodes in German crop production and strategies to breed resistant varieties") aims to identify new resistant wheat genotypes. It is funded by the Federal Ministry of Education and Research and is a collaboration between the University of Kiel, Julius Kühn Institute, Federal Plant Variety Office, Leibniz Institute of Plant Genetics and Crop Plant Research and the

breeding company Nordsaat. Within this consortium our part comprises a Germany-wide monitoring, field and greenhouse experiments of susceptible and resistant genotypes for *Pratylenchus* reproduction, host-plant interaction studies and the specific effect of the genotype on the plant microbiome.

Here, the first results of the monitoring are presented. To determine the occurrence of *Pratylenchus* and other plant-parasitic nematodes in German crop production, 122 soil samples from different geographical regions in Germany were investigated. Due to the patchy pattern of the nematode distribution, each sample consisted of 30 cores per hectare from the upper soil layer (0-30 cm), following a zigzag line through the field. The nematodes were extracted by the centrifugal flotation method. All plant-parasitic nematodes were identified to the genus level.

Pratylenchus was found in 99 % of the samples, followed by *Tylenchorhynchus* (96%). *Paratylenchus* was detected in 63% of the samples. The number of *Pratylenchus* ranged from 4 to 936 nematodes/100 ml soil with an average of 164 ± 180 nematodes/100 ml soil. Those results confirm that *Pratylenchus* is widely spread and can reach very high numbers which will damage the cereal crop. Therefore, there is a high interest by the farmers to control *Pratylenchus* such as by resistant varieties.