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Wheat rhizosphere bacterial communities and protection against root rot caused by *Bipolaris sorokiniana* (Comunidades bacterianas da rizosfera do trigo e proteção contra o patógeno de solo *Bipolaris sorokiniana*)

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The rhizosphere microbiome is essential for the health and development of plants, providing protection against pests and diseases. Thus, assuming that plants depend, at least in part, on the rhizosphere microbiome as a product of natural selection, we hypothesized that domestication of plant species may have affected the biodiversity of microbial communities, which may have impacted the plant-microbiome defense mechanism. Thus, we promote the enrichment of the rhizosphere microbiome in contrasting materials for resistance against the soil-borne pathogen *Bipolaris sorokiniana*. The disease evaluation and rhizosphere soil collection were repeated in a total of 5 cycles, in microcosm pot. Rhizosphere community structure was assessed through 16S rRNA amplicon sequencing. In addition, the population dynamics of the pathogen was investigated by DNA quantification through the qPCR technique. The soils of genotype resistant showed a high level of disease over cycles, on the other hand, the soil of susceptible genotypes presented a low level of disease, suggesting an ability to disease suppression over monoculture cycles. In general, those treatments without pathogen showed an increase of disease level over cycles. The results showed a pronounced rhizosphere effect (bulk soil sample clustered separately from rhizosphere sample) and cycle effect revealing a shift in microbial communities over cycles, and more homogenous pattern in cycles 4 and 5. The ordination analysis showed strong genotype effect revealing a clustered separately between genotypes resistant and susceptible. There was an increase in the DNA numbers copies of the pathogen followed by a decreased over cycles. The taxonomic composition showed enrichment mainly for the phylum Acidobacteria, Choloroflexi, and Firmicutes, and reduction for the phylum Proteobacteria and Bacteroidetes over time. In conclusion, our results indicated that where occurred a low level of disease (susceptible genotypes) a number of specifics bacterial families and function were enriched in the rhizosphere to fend off plant infection, selecting over time an antagonistic community with the ability to suppression pathogen.

Palavras-chave: plant - microbe interactions; plant protection; plant domestication
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