

Diversity and composition of the spring and winter wheat (*Triticum aestivum* L.) endophytic mycobiome under different management strategies

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Fungi in the ecosystems are substantial plant biomass decomposers, as well as plant symbionts and troublesome pathogens. Endophytes are microorganisms colonizing the internal part of the plant tissue without detriment to the host. A highly diverse group of endophytic fungi may lead to improve host defence against abiotic and biotic stresses and promote host growth. Wheat remains to be a crucial food source for humans, directly and indirectly as nutrition for livestock animals. Intensification of wheat production is essential for growing human population, despite of climate changes and conditions of the agricultural environment.

Culture-dependent, as well as culture-independent fungal community profiling were applied to examine the effect of crop management strategies (conventional on field, no till on field, controlled conditions in greenhouse), host genotype (5 spring and 5 winter wheat forms) and plant organ (leaves, stems, kernels, roots) on endophytic fungal composition. Altogether, 804 fungal isolates were obtained and identified with use of the Sanger sequencing of DNA regions: ITS1-5.8-ITS2 (internal transcribed spacer), SSU (small subunit), LSU (large subunit) and fragments of genes: *tub2* (β -tubullin), *tef1* (translation elongation factor *EF-1 alpha*), *RPB1* (largest RNA polymerase subunit), *act* (actin) and *CMD* (calmodulin). Utilizing metabarcoding of the fungal ITS2 region, 220 fungal operational taxonomic units (OTUs) were identified. The *Sarocladium sp.* and *Penicillium sp.* were documented in all analysed groups. Observed strains were classified to following fungal types: *Antrahacocystis sp.*, *Phoma sp.*, *Dactylonectria sp.*, *Trichoderma sp.*, *Alternaria sp.*, *Fusarium sp.*, *Michrodochium sp.*, *Cladosporium sp.*, *Chrysosporium sp.*, *Acremonium sp.*, *Periconia sp.*, *Setosphaeria sp.*, *Epicoccum sp.* and others. The wheat endosphere mycobiome structures differ between crop management strategies.

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