



Mycological composition in the rhizosphere of winter wheat in different crop production systems

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Fungi play an important role in the soil ecosystem as decomposers of plant residues, releasing nutrients that sustain and stimulate processes of plant growth. Some fungi possess antagonistic properties towards plant pathogens. The structure of plant and soil communities is influenced by the interactions among its component species and also by anthropogenic pressure. In the study of soil fungi, particular attention is given to the rhizosphere. Knowledge of the structure and diversity of the fungal community in the rhizosphere lead to the better understanding of pathogen-antagonist interactions. The aim of this study was to evaluate the mycological composition of the winter wheat rhizosphere in two different crop production systems.

The study was based on a field experiment established in 1994 year at the Experimental Station in South-East Poland. The experiment was conducted on grey-brown podzolic soil. In this experiment winter wheat were grown in two crop production systems: ecological and conventional – monoculture. The research of fungi composition was conducted in 15th year of experiment. Rhizosphere was collected two times during growing season, in different development stage: shooting phase and full ripeness phase. Martin medium and the dilutions 10^{-3} and 10^{-4} were used to calculate the total number cfu (colony forming units) of fungi occurring in the rhizosphere of winter wheat. The fungi were identified using Czapeka-Doxa medium for *Penicillium*, potato dextrose agar for all fungi and agar Nirenberga (SNA) for *Fusarium*.

High number of antagonistic fungi (*Penicillium* sp., *Trichoderma* sp.) was recorded in the rhizosphere of wheat in ecological system. The presence of these fungi can testify to considerable biological activity, which contributes to the improvement of the phytosanitary condition of the soil. However, the decrease of the antagonistic microorganism number in the crop wheat in monoculture can be responsible for appearance higher number of the potentially phytopathogenic fungi (*Fusarium* sp., *Alternaria* sp.). Further research, using molecular technique, will help better understanding interactions between plant and microorganisms in the wheat rhizosphere under different soil management conditions.