THE WHAT AND WHY

Importance of fungi and their diversity in European wheat fields under organic or conventional farming systems

Fungi are one of the most essential groups of soil organisms. Their main tasks are related to the decomposition of plant residues and other organic matter entering the field, as well as the nutrient and water management of plants. Fungi are also a food source for many fungus-eating organisms, such as nematodes. Symbiotic fungi grow their mycelium inside plants and live in symbiosis with them. The fungus provides the plant with water and nutrients, and in return it receives energy from the plant itself in the form of carbohydrates. Without the fungus, the world would be filled with undecomposed plant waste, and plants would not grow in the absence of water and nutrients. Many fungi also contribute to the maintenance of the soil structure, helping plants to survive in drought or when the pH of the soil changes greatly. Some fungi also protect plants from soil-borne diseases and pests. The SoildiverAgro project has, for the first time, characterized the status of fungal diversity in soils of European wheat fields by sampling 188 wheat fields from nine different pedoclimatic regions. DNA-based tools revealed that farming management system (organic or conventional farming) affected the abundance and diversity of fungi in only a few regions. Based on the results, it seems that factors related to the local climate and soil have a greater impact than farming management system on fungi. On the other hand, fungi linked to soil and plant welfare and pathogenic fungi would seem to react differently to farming management system in different regions.

1. Photo of case study 14A in Uusimaa (Finland).

KEYWORDS

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