

Comparative study of functional activity and microorganism's community in agro ecological and conventional soil of tomato crops

Khawla BOUAMRI^{1*}, Hicham OUKFI¹, Ilham ZOUITANE¹, Said LOUAHLIA², Rachid BOUAMRI³, Khalid Derraz¹, Saad Ibnsouda¹, Emilio guerrieri⁴, Naïma EL GHACHTOULI¹.

¹ Sidi Mohamed Ben Abdellah University, Faculty of science and technology of Fez, Morocco

² Sidi Mohamed Ben Abdellah University, Polydisciplinary Faculty of Taza, Morocco

³ National School of Agriculture Meknes, Department of Plant and Environment Protection, Morocco

⁴ Institute for Sustainable Plant Protection, National Research Council of Italy, Portici (NA), Italia

Khawla BOUAMRI: khawla.bouamri@usmba.ac.ma

Abstract

Land management practices are widely known to influence soil quantity. In this ecosystem, telluric microorganisms participate in the biogeochemical cycles of the soil, in particular the transformation of organic matter essential for plant nutrition. The aim of this study was to assess the differences in the functional diversity and structure of microbial communities of soil from two different cultures of tomato plants in Morocco, one with conventional management and the other with agroecological practices. The soil functional diversity was assessed by evaluating the microbial metabolic capabilities using the Biolog EcoPlate™ microplate method and measuring soil enzyme activities. The microbial biomass of bacteria, actinomycetes and fungi was evaluated by medium-based cultures. The analysis demonstrated that the soil microbial community reacts differently depending on the mode of fertilization. Recording, the biological soil exhibited a significantly upright metabolic activity (AWCD) and diversity compared with the conventional soil. Similarly, the soil activities of ↑-galactosidase, urease and phosphatase and the number of bacteria, actinomycetes and fungi were higher in the agroecological soil.

Key words: Tomato, functional diversity, enzyme activity, soil management.