

Evaluating the effects of *Eisenia foetida* inoculation and different organic wastes application on some soil biological quality indicators under greenhouse conditions

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Abstract

Earthworms are considered as one of the soil quality and health indicators. In order to evaluate the effects of earthworms activity on some soil biological quality indicators, an experiment was carried out in greenhouse conditions with different organic materials including trees' pruning waste compost (PWC), wheat straw (WS), herbal extracts waste (HEW), trees' pruning waste (PW) in a pot experiment, with growing corn plants, for evaluating soil rhizosphere properties. At the end of growing period, some soil biological properties including basal respiration (BR), substrate-induced respiration (SIR), microbial biomass carbon (MBC) and microbial population were measured in rhizosphere and non-rhizospheric soils. Results showed that WS treatment had the most impact on basal respiration and substrate induced respiration content (2 and 2.4 fold) compared to control treatment (without organic matter), respectively. Also, microbial biomass carbon in PWC treatment (in rhizosphere soil) increased 59.2% as compared to non-rhizosphere soil. Microbial population in PWC, HEW, PW and WS treatments was 1.5, 2.6, 2.7 and 1.9 times more than control, respectively. Therefore, application of different organic matter in the presence of earthworms led to improve soil biological properties compared to when no earthworms were added.

Keywords: Earthworm, Organic wastes, Biological properties, Soil quality, Microbial population.

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