The Effects of *Eisenia foetida* Activity and Different Organic Residues on Some Soil Chemical Properties and Corn Growth Indicators

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Abstract

Earthworms are an important component of soil fauna because of their fundamental impact on soil physical, chemical and biological properties. To evaluate the effects of earthworms on some soil chemical properties as well as plant growth indicators, an experiment was carried out in a completely randomized design in greenhouse conditions. The first factor involved the presence or absence of earthworms (*Eisenia foetida*), the second factor was different organic matter including control (no organic materials), pruning waste compost of apple and grape (PWC), wheat straw (WS), Herbal extracts waste (HE), pruning waste (PW) and the third factor was the presence or absence of corn plant for evaluating rhizosphere soil. At the end of growing period, some soil chemical properties including total nitrogen, organic carbon, ammonium, nitrate and plant growth indicators were measured. The results showed that application of organic matter and earthworm inoculation had significant effects on soil chemical properties. The pruning waste compost (PWC) treatment showed the largest impact on ammonium and nitrate content (1.7 and 3.3 times compared to control treatment, respectively). In pruning waste compost (PWC) treatment, organic carbon amount in rhizospheric soil increased from 0.9 at non-rhizosphere to 1.32 %. The presence of earthworm improved plant growth parameters including shoot and root dry weight by 34% and 30%, respectively, compared to earthworm absence condition. Soil ammonium and nitrate contents at earthworm presence increased 32% and 49%, respectively. Therefore, application of organic matter with earthworm inoculation had better results in comparison with no earthworm inoculation.

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