

## Effect of epigeic earthworm casting on soil properties of subsoil from an Andosol

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The burrowing and feeding activity of earthworms have the beneficial effect on the soil properties. It is reported that earthworm cast forms a stable aggregate with large size and it increases the water holding capacity, water permeability. Earthworm casts have higher available nutrients and microbial activity than surrounding soils and have a higher rate of decomposition of organic matter. In addition, it is reported that bacterial composition is different between the intestine of large earthworm and surrounding soils. However, the influence of earthworms on the interactions among organic matter - minerals - microorganisms in soil is still unclear. In this study, we conducted the breeding experiment of earthworm to show the effects of earthworm on; (1) the soil aggregation and soil organic matter content, (2) soil enzyme activity and microbial community.

*Metaphire hilgendorfi* was collected and kept in a rearing container with soil and litter for 2 weeks. After breeding, control soil and earthworm cast were sampled for microscopic observation, measurement of pH, EC, total nitrogen, organic carbon,  $\beta$ -glucosidase and protease activity, and evaluation of microbial diversity using biology eco-plate.

Keywords: earthworm, soil aggregates, microbial activity