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# **ABSTRACT BOOK**

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## Changes in microbial activities during vermicomposting of anaerobically digested sewage sludge with hazelnut husk and cow manure by earthworm *Eisenia foetida*

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The aim of the present study was to investigate the ability of an epigeic earthworm *Eisenia foetida* to transform anaerobically digested sewage sludge (SS) amended with hazelnut husk (HH) and cow manure (CM) in different proportions under laboratory condition (in darkness, 25°C) at 90 day. Two approaches investigated in the study were: (1) to find the best medium for growth and reproduction of *E.foetida* in different feed mixtures, (2) to evaluate the effects of anaerobically digested sewage sludge on microbial activities such as basal respiration (BSR) and microbial biomass C (Cmic) during vermicomposting period. Number and biomass of earthworms, BSR and Cmic in feed mixtures and earthworms were periodically monitored. The results indicated that maximum earthworm biomass was attained in feed mixture of 20%SS + 40%CM + 40%HH while the earthworm number was highest in feed mixture of 30%SS + 35%CM + 35%HH during the vermicomposting period. During the vermicomposting period, it was determined significant ( $P<0.001$ ) differences in microbiological properties in feed mixtures. Significant increase was determined in levels of BSR and Cmic at the 30th day of incubation whereas significant decrease was determined at the rest of the incubation period. Significant ( $P<0.001$ ) differences were determined among all of the incubation periods of feed mixtures in terms of BSR and Cmic and the highest levels were determined in feed mixture of 30%SS+ 35%HM+35%CM. It's suggested that the numbers and biomass production rates of earthworms were significantly affected by the proportion of SS of their feed mixtures. Results indicated that SS mixed with HH and CM could be utilized as an efficient soil conditioner for sustainable land restoration practices, at low-input basis, after processed by *E.foetida*. The study also inferred that the application of SS-based vermicompost in the agricultural fields as a soil conditioner, wouldn't have any adverse effect.

**Keywords:** basal respiration, *Eisenia foetida*, microbial biomass C, organic wastes, sewage sludge, vermicomposting