ABSTRACT

PRODUCTION OF VERMICOMPOST FROM OLIVE MILL WASTEWATER CAKE MIXED WITH DIFFERENT ORGANIC MATERIALS

Ali KAÇAR
M.Sc. Thesis, Department of Soil Science and Plant Nutrition
Supervisor: Assist. Prof. Dr. Selçuk GÖÇMEZ
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The subject of this research is to examine some chemical and microbial activity characteristics of olive mill wastewater cake, to which vermicomposting process with some different organic materials is applied, that has been extracted from olive (*Olea europaea*) plant – which is intensively farmed in Aydın province and around it – in purpose of producing olive oil. In this purpose, a vermicomposting examination is established in laboratory conditions. The olive mill wastewater cake has been mixed with the other organic wastes (cotton gin waste, grape waste and barnyard manure) as dry weight at the ratios of %15, %30, %45, %60 and vermicomposting process has been applied with *Eisenia fetida* kind of compost worms for 90 days. The random test blocks were established in the test order and the number of frequency series was 3. while C and N mineralizations were identified in the samples that had been taken at the days of 30^{th}, 60^{th}, and 90^{th}; humification index, dehydrogenase, alkaline phosphatase, and urease enzyme activities were identified. In the vermicomposts gained on 90^{th} day; organic matter, total organic C, C:N ratio, pH, total salt, N, P, K, B, Ca, and Mg substances were identified in addition to C and N mineralizations and enzyme activities. In addition; after 90 days, the earthworms in each polyethylene cup were extracted, washed with pure water, weighed; and the number of worms and worm eggs was determined.

From the result of the test, the fact that earthworms preserves their activity at %60 olive mill wastewater cake and vermicomposting process can be done at that rate has been determined. The highest enzyme activity has been measured at %45 olive mill wastewater cake in the whole test, but; because of the fact that the main purpose is to use the most of the olive mill wastewater cake, it has been concluded that there is no problem to use %60 olive mill wastewater cake during vermicomposting process.

Keywords: Vermicompost, *Eisenia fetida*, compost earthworm, olive mill wastewater cake, cotton gin waste, grape waste, N-mineralization, C-mineralization, soil enzyme activity, humification