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UTILIZATION OF BIOLOGICAL PARAMETERS AS EARLY INDICATORS OF SOIL RESTORATION IN A LONG-TERM FIELD EXPERIMENT WITH MUNICIPAL WASTE COMPOST

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EXTENDED ABSTRACT

A long-term field experiment with barley crop was conducted in Santa Olalla (Toledo, Spain). The experiment was performed on plots in four blocks, applying different treatments of municipal waste compost at two rates (20 and 80 t ha^{-1}), cow manure with 20 t ha^{-1}, and a control in a single application to determine their effects on soil respiration, metabolic quotient (qCO_2) and microbial biomass at the end of the yield. Residual effects of these treatments were studied to evaluate the potential effect of these organic amendment for restoring soil quality. After nine years, only the highest rate of municipal waste compost maintain greater microbial biomass and higher respiration rate, by 29.7% 103.1%, respectively, with respect to the nonamended soil (control), which confirm the enhancement of the potential microorganisms activities and suggest a greater effect on soil restoration in comparison to lower rate of compost and cow manure. Metabolic quotients (qCO_2) were greater in all organic treatments due to the higher microbial activities in amended soils as a direct consequence of carbon sources from organic residues for soil biota.

Key words: municipal waste compost, soil restoration, soil basal respiration, microbial biomass carbon, metabolic quotient.