

## MICROBIAL ACTIVITY IN AGRICULTURAL ENRICHED WITH ROCKS, AND BIOINOCULANTES

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The recycling and treatment of agricultural waste via composting to the farm level, become indispensable in organic production system, and reduce dependence on imported chemical fertilizers and production costs in any agro-ecosystems. The quality of the produced compounds is dependent on the mixture of raw material used and the monitoring of microbiological processes during the decomposition period. Respiration is directly related to the metabolic activity of a microbial population. The objective of this study was to evaluate quantitatively the microbial activity of the soil through respiration during the composting process of different mix of agricultural waste. The samples were collected in a farm waste composting system, enriched with rocks and micro-biosol (mixture of bacteria and phosphorus solubilizing fungi and potassium) conducted under the coordination of Emater - MG, the White Grass municipality. We evaluated two types of mixtures: Mixture 1: Cana + Dung Beef + Chicken bed; Mix 2: Cana + Dung Beef + Rocks in the presence and absence of inoculant. The microbial respiration was analyzed at predetermined intervals of 15 days in 15 days for 105 days after 7 days of incubation at each evaluation. The 1.5 L container containing 50g of the substrate, were opened and 0.5 N NaOH solution was changed and titrated with 0.5N HCl in the presence of acid / base indicator phenolphthalein. The difference between the amount of acid required to neutralize the sodium hydroxide in the container control and treatments equivalent to the amount of carbon dioxide produced by the samples. Microbial activity had accumulated amounts of soil respiration rates, ranging from 103.8 to 110.05  $\mu\text{g C-CO}_2 / \text{g substrate}$ . Results showed significant differences for time and the interaction between substrate and time, inoculants and time, substrate interaction x time x time inoculants. However, the positive influence of the addition of inoculant on microbial activity was observed only after 105 days of composting, regardless of the substrate. The composting of the mixtures tested it possible to obtain stabilized organic material, regardless of the addition of bioinoculante.

**Keywords:** organic fertilization, by-products, organic fertilizer.

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