

ABSTRACT

EFFECT OF FERTILIZER-ENRICHED LAPINDO BRANTAS AND VERMICOMPOST MUD IN THE CORN, THE ULTISOL SOIL RESPIRATION (ZEA MAYS L.)

By

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Lapindo Brantas mudflow that took place on May 29, 2006 has caused damages to the communities of all the people of Renokenongo (Wikipedia, 2009). Material of mud that flooded the surface of the Earth on one side can damage the agricultural ecosystem, but on the other side of Lapindo mud deposits that can be seen as beneficial. Therefore, the research designed to take advantage of mud Lapindo Brantas in agriculture must be done. This research aims to study the effect of mixing the compost of sludge Lapindo Brantas and Vermicompost in the breath of the Ultisol soil in corn (*Zea mays L.*).

The design used in this research is the design of blocks randomly (RACK). Treatments arranged in a 5 x 3 factorial with three replicates design so that the experiment consists of 45 units. The first factor is the production of compost in the form of a mixture of compost, sewage sludge and Vermicompost is Lapindo Brantas C1 = 1 kg of compost + 0 kg sludge Lapindo + 0 kg of Vermicompost (0% w / w), C2 = 0.90 kg of compost + 0.10 kg of sludge Lapindo + 0.05 kg of Vermicompost (10% w / w), C3 = 0.85 kg of compost + 0.15 kg of sludge Lapindo + 0.10 kg of Vermicompost (15% w / w), C4 = 0.80 kg of compost + 0.20 kg of sludge Lapindo + 0.15 kg of Vermicompost (20% w / w), C5 = 0.75 kg of compost + 0.25 kg sludge Lapindo + 0.20 kg Vermicompost (25% w / w). Vermicompost mixed in various combinations of compost and mud Lapindo Brantas with the percentage of each (0% w/w), (5% w/w), (10% w/w), (15% w/w), and (20% w/w). The second factor is the dosage formulation of compost: D₀ = 0 ton ha⁻¹, D₁ = 20 tons ha⁻¹, D₂ = 40 ton ha⁻¹. Homogeneity of data was tested with Bartlett test aditifitas and the data were tested with Tukey test. Data

were analyzed with analysis of variance and followed by orthogonal contrast test at a significance level of 5% and 1%.

Results showed that (1) Application of formulation enriched with compost or compost and vermicompost mud Lapindo Brantas in synergy to enhance soil respiration as compared with no addition of Lapindo mud and Vermicompost, (2) formulation of treatment with sludge compost and vermicompost proportion of the highest, higher than the increase in respiration with a lower proportion, (3) The formulations of dose of compost of 20 tons ha⁻¹ and the tons of 40 ha⁻¹ soil respiration not significantly increased, (4) were significantly positive correlations between soil respiration in weight dry Ca brankasan and dry weight of root the highly significant negative correlation occurred between the breathing of the available soil P, Cu and Fe, while there is a correlation between the breathing of the soil with the N-total, pH and organic carbon.

Keyword : compost formulations, vermicompost, compost, sludge Lapindo, soil respiration