EFFECTS OF SURFACE RESIDUES UNDER DECOMPOSITION BY *Eisenia fetida* ON SOIL pH, PHOSPHORUS, CALCIUM AND MAGNESIUM

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DECLARATION

This Final Year Project is a partial fulfillment of the requirement for a degree of Bachelor of Science (Hons.) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

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I hereby declare that I have checked this project and in any my opinion, this project is adequate in terms of scope and quality for the award of the degree of a Bachelor of Science (Hons,) Plantation Technology and Management, Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA.

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Position: Lecturer _____ Date: 27/07/16

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ABSTRACT

A six week-study was conducted to evaluate the effects of surface residues under decomposition by *Eisenia fetida* on soil pH, phosphorus (P), calcium (Ca) and magnesium (Mg). This experiment was carried out at mechanization workshop in University Technology MARA Melaka, Campus Jasin. Four parameter were observed which is soil pH value, available P, Ca and Mg in the soil. The decomposition of surface residues which is *Eisenia fetida* as a physical decomposers improve the soil fertility especially in increasing of available nutrient P, Ca, and Mg. Surface residues which is plant litter (PL), oil palm frond (OPF), empty fruit bunch (EFB) and oil palm trunk (OPT) was shredded and chipped into small pieces. Every surface residues was weighted 600 g, mixed with 2 kg mineral soil, and 600 g of *Eisenia fetida.* Mehlich-1 extraction method was used to determine nutrients P, Ca and Mg availability in every treatments. The design used randomized complete block design (RCBD). Soil sample was collected every week until the 6th week. A significant reduction in soil pH was observed in soil mixed with EFB at EFB treatment. The pH value and available nutrient P, Ca and Mg was compared and tested with analysis of variance (ANOVA) and Turkey's test. A significant increasing in nutrient P and Ca at PL treatment and significant increasing to the nutrient Mg is at EFB treatment. PL treatment have a better in P and Ca release and EFB treatment have a better in Mg release in the soil.

Keywords: Decomposition; *Eisenia fetida*; soil pH; Phosphorus (P); Calcium (Ca) and Magnesium (Mg).