

**THE STUDY OF RELATIONSHIP BETWEEN
PHOSPHORUS AND GLYPHOSATE
ON MACRONUTRIENT AVAILABILITY IN MINERAL
SOIL**

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ABSTRACT

A two month study evaluating the relationship between phosphorus and glyphosate on the macronutrients availability in mineral soil had been carried out. This experiment was carried out in the green house at UiTM Malacca, Jasin campus. Three parameters were observed that are K, Ca and Mg availability in mineral soil. The use of phosphorus and glyphosate is essential in improving soil productivity and crop production. CIRP (Christmas Island Rock Phosphate) of 0.9 g, 1.8 g, 3.6 g and 7.2 g was mixed with 2 kg soil treated with 7 ml of glyphosate for each treatment. Shaking method was used to determine the potassium, calcium and magnesium availability. The samples were watered everyday so that phosphorus and glyphosate would react with the macronutrients in the soil. Samples were collected at two week intervals for analysis. The Completely Randomized Design (CRD) was used with five treatments and four replications. A significant increase in potassium, calcium and magnesium availability in soil were observed for all treatments involving phosphorus and glyphosate. The higher rate of phosphate (7.2) resulted in high K, Ca and Mg available in soil.

CHAPTER 1

INTRODUCTION

1.1 Background

Glyphosate [N-(phosphonomethyl) glycine] is a post-emergence, non-selective, broad-spectrum and herbicide commonly used in agricultural sector for vegetation control in non-crop areas. Glyphosate is a most commonly herbicides used in agriculture (Jonge *et al.* 2001). The application of herbicides is a usually practice to control weed growth in plantations. Glyphosate is a most widely chemical used herbicides, recognized for its efficient control of weeds, low mammalian toxicity and inactivation in soil (Busse *et al.* 2001). Glyphosate herbicide is one of the major weed control chemically that are being used in oil palm plantations and other major crop areas in Malaysia. Estimated about 15 million litres of Glyphosate were sold in Malaysia and it's about RM250 million a year (Ismail *et al.* 2010). The appliace of numerous chemicals may lead to spread and expansion of toxic effects unsafe to the ecosystem and humans (Michaelidou *et al.* 2000).

The soil variables influencing herbicide determination fit into three classes, that are physical, chemical and microbial activity. Soil creation is a physical variable that measures the relative measure of sand, residue and the natural substances of the soil. The chemical properties of the soil incorporate pH, cation exchange capacity (CEC) and soil nutrients status. The microbial perspectives of the soil environment incorporate the sort and wealth of soil microorganisms present (Hager & Nordby, 2007). Under states of higher temperature and dampness. The climatic variables