

**THE EFFECT OF DIFFERENT AGRICULTURAL WASTE ON THE
POPULATION OF PHOSPHORUS SOLUBILIZING BACTERIA AND
SUBSEQUENT GROWTH OF AEROBIC RICE**

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ABSTRACT

THE EFFECT DIFFERENT AGRICULTURAL WASTE ON THE POPULATION OF PHOSPHORUS SOLUBILIZING BACTERIA AND SUBSEQUENT GROWTH OF AEROBIC RICE

The location of Jasin area that nearby with plantation industrial area has inspired the use of organic waste from the industry produced as organic fertilizer. Organic fertilizer is source of nutrient to the microorganism especially Phosphorus Solubilizing Bacteria (PSB) which is can improve the available phosphorus in soil. This study conducted to determine the effect of different industrial organic waste to the population phosphorus solubilizing bacteria (PSB) subsequent on aerobic paddy. Observation was done in 6 week in green house UiTM Jasin. Main objective is to distinguish which organic waste is suitable in developing population of PSB. In this study, aerobic paddy was planted and organic waste which decanter cake, empty fruit bunch, paddy husk and rubber wood powder as treatment. There were five replication was made for each treatment. 3 gram of PSB powder was applied on each pail. Plant height was recorded daily, starting from day 10 after transplant then continues until week 6 (day 45). Soil sample was collected every two week which is week 2, 4 and 6. For week 0, the sample was collected on day 10 after transplant. Sample was undergoing soil chemical analysis and microbial analysis in laboratory. Number of colonies varies on different organic waste counted manually. At the end of study shows plant with paddy husk treatment reach the most highest in height. Observation shows paddy plant produce yield at the same period but different in height. Data and result in this experiment has shown in the graph and chart.

Keyword: PSB, Aerobic rice, *Empty fruit bunches*, *Decanter cake*, *Paddy husk*, *Rubber saw husk*. Universiti Teknologi Mara

CHAPTER 1

INTRODUCTION

1.1. Research Background

Phosphorus is the essential macronutrient to plant. It uses in form of energy such Adenosine Triphosphate (ATP) and Adenosine Diphosphate (ADP) in most plant activity such as photosynthesis and respiration. It can be found in human and animal body which is in bone and teeth part. Naturally, phosphorus can be found also in water, soil sediment (in water) but not in air because phosphorus will be in liquid form when exposed to normal room temperature. They also exist in both inorganic (ferric phosphate, calcium phosphate, aluminium phosphate) and organic (Inositol hexaphosphate, β – glycerophosphate) form. Usually phosphorus is function as increasing the growth of plant at early stages, hasten maturity, and promote root growth. If plant receive insufficient amount of P it can delay the maturity period of plant. There is no issue that toxicity of phosphorus occur because the amount phosphorus in soil usually small and always insufficient. Thus it is important to apply phosphorus fertilizer during transplanting seedling. Soil can have phosphorus naturally through weathering process in rock and dissolve in water then absorbed by plant.

However there are limitations occur in both organic and inorganic forms because it occurs mostly in insoluble forms. Phosphorus cannot leach by water, it just unavailable state that cannot absorb by plant. Plant can absorb phosphorus in ionic