

**INOCULATION OF PHOSPHATE SOLUBILIZING BACTERIA (PSB) ON
DIFFERENT LEVEL OF SOIL pH TOWARDS PADDY GROWTH AND
PHOSPHORUS AVAILABILITY**

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**Final Year Project Report Submitted in
Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science (Hons.)
Plantation Management and Technology
in the Faculty of Plantation and Agrotechnology
Universiti Teknologi MARA**

JULY 2016

ACKNOWLEDGEMENTS

Thanks to God Almighty for the endless blessings and strength for me in completing this research successfully. I acknowledged the contribution and support of many parties in completing this research. Firstly, I would like to express my grateful thanks and great appreciation to my supervisor Madam Salwa bt Adam for her precious guidance and advice during the course of my research. My appreciation also goes to all the other soil science lecturers for their knowledge and experiences shared with me during this research. For those who help me, directly or indirectly to complete my work, their names are heartily engraved in my mind. I also wish to express my sincere thanks for the warm welcome and enthusiastic help rendered by the persons with whom I took counsel, contacted and worked in the laboratories, departments, administration officers and others at UiTM (Melaka) Kampus Jasin. Sincere thanks to all of my friends for their continuous support and care in relation to my work. Finally, I especially wish to manifest a deep gratitude to my parents and family, Aziz Ja'afa bin Tuju and Hasnah binti Atan for strengthening me with their advice and love.

AZLINA BINTI AZIZ JA'AFA

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ABSTRACT

Inoculation of Phosphate Solubilizing Bacteria (PSB) On Different Level of Soil pH Towards Paddy Growth And Phosphorus Availability

Plants acquire phosphorus from soil solution as phosphate anion. It is the least mobile element in plant and soil contrary to other macronutrients. It precipitates in soil as orthophosphate or is absorbed by Fe and Al oxides through their exchange. Phosphorus solubilizing bacteria play role in phosphorus nutrition by enhancing its availability to plants through release from inorganic and organic soil P pools by solubilization and mineralization. Thus this study was carried out to identify the effectiveness of phosphate solubilizing bacteria (PSB) on different level of soil pH towards paddy growth and phosphorus availability. Four level of pH used in this study which were control (T0) soil pH is 6-6.5 without PSB application, followed by pH 4-4.5 (T1), pH 5-5.5 (T2) and pH 7-7.5 (T3). This study was conducted for 6 weeks and plant height of paddy was measured by weekly basis. The soil pH and the phosphorus availability also were analysed. From the result obtain, it showed that the pH value on soil was decrease when apply the PSB. Then , it increased the available P in the soil and decrease the total P. Based on the result, the best level of soil pH for apply the PSB is pH that range 5-5.5 (T2) after the 6-6.5 (T0).

CHAPTER 1

INTRODUCTION

1.1 Background of study

Most phosphorus (P) in soils is in inaccessible form for plant uptake. For increase the P availability, the phosphate solubilizing bacteria (PSB) can be applied. This beneficial bacteria PSB has ability for hydrolysing organic and inorganic phosphorus from insoluble compounds. PSB can assume an essential part in dissolving both of manure P and bound P in the soil that is environmentally friendly and practical (Sharma et al., 2013). Phosphate solubilisation impact is mostly through the response between natural acids discharged from natural matters with phosphate fasteners, for example, Al, Fe, and Ca, or Mg to frame stable natural chelates to free the bound phosphate particle. P-solubilization capacity of the microorganisms is thought to be a standout among the most vital qualities connected with plant phosphate nutrition (Yang et al., 2013). PSB mainly *Bacillus*, *Pseudomonas* and *Enterobacter* are very exceptionally viable for expanding the plant accessible P in soil and additionally the development and yield of products. So, biofertilization of PSB has big potential for making use of ever enhancing fixed P in the soil, and natural reserves of phosphate rocks. Commonly the lack of P in acid soil are the most growth limiting factors. In acid soil the P fixation are become low. Soil P encouraged as orthophosphate then the Fe and Al oxides will adsorb (Setiawati et al., 2010). Its likely to become bio-available through their organic acid production and acid phosphatase discharge by bacteria.