

Supaporn Junrungreang 2010: Isolation and Characterization of Phosphate-Solubilizing Bacteria. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Asistant Professor Kannika Sajjaphan, Ph.D. 107 pages.

Twenty four Phosphate solubilizing bacteria were isolated from paddy acid sulfate soils, upland sesquioxide soils and upland calcareous soils which are Rangsit series, Ayutthaya series, Chok Chai series, Pak Chong series, Yasothon series, Takhli series, Lop Buri series and Lam Narai series. They were tested for their efficacy to solubilize tri-calcium phosphate (TCP) in *vitro*. The results showed high solubilizing index in liquid medium. Also, they effectively solubilized TCP in National Botanical Research Institutue' phosphate growth medium (NBRIP) and released amounts of P into medium. The efficiency of strain Rs 01 to solubilize and release the inorganic P was approximately 878.5 mg/kg after three days of incubation. Biolog carbon source analysis indicated that the isolated bacterium was *Burkholderia multivarans*. In pot experiment, the inoculation of strain Rs 01 with nitrogen ( $\text{NH}_4^+$ ) and potassium ( $\text{K}^+$ ) fertilizers showed that the height, circumference, dry weight of sweet corn at silking (54 days) and harvesting stage (75 days) were not different from treatment with nitrogen, phosphorus and potassium chemical fertilizers. However, soil analysis showed that the available P, were significantly increased when compared to the initial soil.

---

Student's signature

---

Thesis Advisor's signature