

Sakiko Inoue 2009: Effects of Arbuscular Mycorrhizal Fungi Colonization on Phosphorus Uptake and Growth of Baby Corn on a Sandy Soil. Master of Science (Tropical Agriculture), Major Field: Tropical Agriculture, Interdisciplinary Graduate Program. Thesis Advisor: Professor Irb Kheoruenromne, Ph.D. 84 pages.

A field experiment was conducted at the Royal Development Study Center in Khao Hin Son from September to November, 2007 to examine the efficiency of AM fungi, *Glomus* species, in promoting growth of baby corn (*Zea mays* L.) on a sandy soil, Chan Thuek series (Cu) at four rates of P fertilizer and two croppings, Crop 1 and Crop 2 were running parallelly at the same period. The experimental design was 4 x 2 factorial treatment combinations with 4 replications in a randomized complete block design. One factor is rates of P fertilizer application, T₁, T₂ T₃ and T₄, which contains 0, 60, 120 and 240 kg P₂O₅ ha⁻¹ respectively. The other is arbuscular mycorrhizal fungal inoculation. I₁ was not inoculated and I₂ was inoculated with *Glomus*. Two factor analyses of variance (ANOVA) and Duncan multiple range test were used to partition the variance into the main effects and the interaction between mycorrhizal colonization and phosphorus fertilizers.

As to fertilization rate, neither Crop 1 nor Crop 2 had a significant impact from the measured soil properties. For Crop 1, inoculation had a highly significant (p<0.01) effect on shoot height and fresh weight. And it also had a significant (p<0.05) effect on dry weight. Fertilizer rate had a highly significant (p<0.01) effect on shoot height, fresh weight and dry weight. On the other hand, there was no significant interaction between AM inoculation and P fertilizer rate. For Crop 2, fertilizer rate had a highly significant (p<0.01) effect on shoot height and it also had a significant (p<0.05) effect on shoot fresh weight, but there was no significant interaction between AM inoculation and P fertilizer rate. For both Crop 1 and Crop 2, there was no significant (p>0.05) interaction between phosphorus fertilizer and AM fungi inoculation on nutrient (nitrogen, phosphorus and potassium) uptake.

For further study, comparing native and inoculated AM fungi should be tested under field experiment. And T₂, T₃ and T₄ rate should be changed from 60, 120 and 240 kg P₂O₅ ha⁻¹ to 30, 60 and 90 kg P₂O₅ ha⁻¹ respectively to examine the effect of P fertilizer under lower fertility status.

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Thesis Advisor's signature

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