

Onchuma Chongchuaklang 2012: Response of Cassava Grown on a Chatturat Soil to Potassium Fertilizer. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Miss Suphicha Thanachit, Ph.D. 73 pages.

A study on the response of cassava KU50 variety that was grown on a Chatturat soil to six rates (0, 4, 8, 16, 24 and 32 kg rai<sup>-1</sup>) of K fertilizer and the comparison between actual and predicted yields for obtaining suitable rate of K fertilizer was carried out in Si Kheu district, Nakhon Ratchasima province. Randomized Complete Block Design (RCBD) with three replications was employed. Applications of N and P<sub>2</sub>O<sub>5</sub> at the rate of 20 and 10 kg rai<sup>-1</sup>, respectively, were implemented to all treatments. All fertilizers were equally applied twice at one and three months after planting. Yield of cassava and its parameters were harvested and measured at nine months old. Nutrient concentration and uptake in above ground biomass and tuber were undertaken after at the end of the experiment.

Result of the study indicated that stem and leave weight of cassava and starch percentage had no relationship with rates of K applied. The application of 16 kg K<sub>2</sub>O rai<sup>-1</sup> tended to produce the highest starch yield of 1.85 ton rai<sup>-1</sup> and the greatest fresh tuber weight of 6.15 ton rai<sup>-1</sup> but this the latter result was indifferent to the application of 4 kg K<sub>2</sub>O rai<sup>-1</sup> (5.34 ton rai<sup>-1</sup>), which cassava had the highest to uptake in tuber.

The soil in experimental site had sandy loam texture. Potassium level in the soil was moderate (83 mg kg<sup>-1</sup>). As a result, the response to K application was at the low rate (4.23 kg K<sub>2</sub>O rai<sup>-1</sup>) and fresh tuber yield was predictably 5.39 ton rai<sup>-1</sup> using Linear Response Plateau Model (LRP). The amount gained from this prediction was the most similar to the actual yield at the application rate of 4 kg K<sub>2</sub>O rai<sup>-1</sup> but predicted yield was higher than those achieved from the experiment when applied at the higher rates. Tuber yield of cassava predicted using Mitscherlich-Bray model was rather the same as the yield obtained from the experiment at all rates of K<sub>2</sub>O application but the yield was seemingly lower. The prediction using Phosphorus Decision Support System (PDSS) program suggested four times higher in K<sub>2</sub>O fertilizer applied than the application used for producing the same amount of tuber yield under the trial.

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Thesis Advisor's signature