

Chalinee Khongsud 2011: Effects of Chemical Fertilizer Application with Gypsum on Growth and Yield of Cassava (*Manihot esculenta* Crantz) Planted in Kamphaeng Saen Soil Series. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Assistant Professor Chaisit Thongjoo, Ph.D. 67 pages.

Investigation was made on the effects of chemical fertilizer applied with gypsum on growth and yield of cassava (*Manihot esculenta* Crantz) planted in Kamphaeng Saen soil series. Randomized Complete Block Design (RCBD) was used as an experimental design consisted of 7 treatments, i.e., a) control/unfertilized treatment ($T_1 = \text{control}$); b) chemical fertilizer based on soil analysis ($T_2 = IF_{100\%} + G_0$); c-d) chemical fertilizer based on soil analysis combining with gypsum 25 and 50 kg/rai ($T_3 = IF_{100\%} + G_{25}$ and $T_4 = IF_{100\%} + G_{50}$); e) chemical fertilizers based on soil analysis only 75% ($T_5 = IF_{75\%} + G_0$); f-g) chemical fertilizers based on soil analysis only 75% combining with gypsum 25 and 50 kg/rai ($T_6 = IF_{75\%} + G_{25}$ and $T_7 = IF_{75\%} + G_{50}$).

The study revealed that applying chemical fertilizer based on soil analysis combining with gypsum 50 kg/rai ($IF_{100\%} + G_{50}$) gave the highest effect on cassava height nearly the same as applying chemical fertilizer based on soil analysis combining with gypsum 25 kg/rai ($IF_{100\%} + G_{25}$) while the control treatment ($T_1 = \text{control}$) effected on the lowest of plant height of all growth stages. Regarding yield of cassava, it was found that applying chemical fertilizer based on soil analysis ($IF_{100\%}$) or applying chemical fertilizer based on soil analysis only 75% ($IF_{75\%}$) both single applying or combining with gypsum 25 and 50 kg/rai ($IF_{100\%} + G_0$, $IF_{100\%} + G_{25}$, $IF_{100\%} + G_{50}$, $IF_{75\%} + G_0$, $IF_{75\%} + G_{25}$ and $IF_{75\%} + G_{50}$) effected on the fresh root yields, average weight per root and starch contents of cassava fresh root yields nearly the same. Further, applying chemical fertilizer based on soil analysis combining with gypsum 50 kg/rai ($IF_{100\%} + G_{50}$) effected on the highest concentration of total N, P and K in fresh root yield nearly the same as applying chemical fertilizer based on soil analysis combining with gypsum 25 kg/rai ($IF_{100\%} + G_{25}$) while the control treatment ($T_1 = \text{control}$) effected on the lowest concentration of total N, P and K in fresh root yield.

Student's signature

Thesis Advisor's signature