

Sirisuda Bootpetch 2010: Chemical Fertilizer Management Following Soil Analysis for Augmenting the Production 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. 94 pages.

This study aimed at chemical fertilizer management base on soil analysis to improve cassava (*Manihot esculenta* Crantz) production planted in Kamphaeng Saen soil series on late and early rainy season. Randomized Completely Block Design was used as an experimental design including 7 treatments, i.e., a) control/unfertilized treatment ($T_1 = 0-0-0^*$); b) chemical fertilizer application based on soil texture as recommended by Department of Agriculture ($T_2 = 16-8-16^*$); c) chemical fertilizers application based on soil chemical analysis as recommended by Department of Agriculture ($T_3 = 16-0-8^*$ [on late rainy season] or $T_3 = 16-0-4^*$ [on early rainy season]); d-f) chemical fertilizers based on estimated uptake of 100, 50, 25% of applied nitrogen; ($T_4 = 10-0-68^*$, $T_5 = 20-0-68^*$ and $T_6 = 40-0-68^*$, respectively [on late rainy season] or $T_4 = 6-0-54^*$, $T_5 = 12-0-54^*$ and $T_6 = 24-0-54^*$, respectively [on early rainy season]) and g) chemical fertilizers derived from mathematical model based on soil chemical analysis ($T_7 = 60-17.5-70^*$) [* kg N, P_2O_5 and K_2O per rai, respectively].

Results revealed that T_7 ($T_7 = 60-17.5-70$) effected on the highest of weight of fresh shoot, average weight per root and width of root of cassava at 12 months for two planting seasons, and it was nearly the same as T_6 ($T_6 = 40-0-68$ or $T_6 = 24-0-54$). While, the control treatment ($T_1 = 0-0-0$) had the lowest effect on weight of fresh shoot, average weight per root and width of root for two planting seasons. Further, T_6 ($T_6 = 40-0-68$) effected on the highest of yield of fresh root in late rainy season, and nearly the same as T_7 ($T_7 = 60-17.5-70$), T_3 ($T_3 = 16-0-8$), and T_2 ($T_2 = 16-8-16$), respectively. Regarding planting cassava during early rainy season, it was found that T_7 ($T_7 = 60-17.5-70$) effected on the highest of yield of fresh root nearly the same as T_6 ($T_6 = 24-0-54$) and T_2 ($T_2 = 16-8-16$), chronologically.

Regarding concentration of plant nutrients in cassava leaves on two planting seasons, it was found that T_6 ($T_6 = 40-0-68$ or $T_6 = 24-0-54$) and T_7 ($T_7 = 60-17.5-70$) effected on concentration of total N, P and K rather high, and its concentration was nearly the same. Regarding the concentration of plant nutrient in fresh root of cassava, it was found that T_7 ($T_7 = 60-17.5-70$) effected on the highest concentration of total N, while the control treatment ($T_1 = 0-0-0$) effected on the lowest concentration of total N, P and K in cassava leaves and fresh root yield. However, T_3 ($T_3 = 16-0-8$) showed the highest response on fertilizer during late rainy season, while T_6 ($T_6 = 24-0-54$) had the highest response on fertilizer during early rainy season.

Student's signature

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