

Fuenglada Tanachote 2009: Management of Calcium and Magnesium Fertilizers for Continuous Lettuce Production in Mae Hae Area, Chiang Mai Province. Master of Science (Soil Science),
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Mr. Somchai Anusontpornperm, Ph.D. 102 pages.

The experiments were carried out in two greenhouses inside the area of Mae Hae Royal Project Development Centre, Chiang Mai province. This study was aimed at investigating suitable rates of Ca and Mg fertilizers for Crisphead lettuce grown on soils with high residual P and K. Randomized Complete Block Design was used, employing 11 treatments with four replications. Fertilization was split into two times. A control (T1) contained 15 g of each 15-15-15 and 13-13-21 per plant for the 1st and 2nd applications, respectively. Treatment 2-11 were applied with the same amount of N as of the control, but without P and K, with additional 1-3 g Ca for T3-T5, 0.5-1.5 g Mg for T6-8, and a combination of 1:0.5-3:1.5 Ca:Mg for T9-T11 at the 1st application. Soil in the 1st greenhouse comprised lower amounts of available P and K than did soil in the 2nd greenhouse with the values of 190.6 and 259.7 mg kg⁻¹ compared to 559.4 and 1,782.9 mg kg⁻¹, respectively.

In the 1st greenhouse, result showed that application of 3 g Ca per plant with N (T5) gave the highest yield of 5,253 kg rai⁻¹ while yield obtained from T2 (N alone) was higher than that from the control with complete fertilizer applied. For the trial from the 2nd greenhouse, it was found that application of Ca and Mg at the rate of 3:1.5 g per plant with N (T11) tended to give the greatest yield of 4,927 kg rai⁻¹, which was higher than that of the control (4,131 kg rai⁻¹). In addition, yield of crisphead lettuce tentatively increased with increasing amounts of Ca when applied with N. This plant showed no response to added Mg. Nonetheless, fresh yields and major nutrient concentrations in plant tissue were indifferent among treatments in both trials. Additionally, there was no relationship between nutrient concentration and obtained yield. Concentrations of N, P and K in plant tissue were at sufficient levels while Ca and Mg concentrations were lower than critical levels having been reported. Considering the potentially highest fresh yield of crisphead lettuce gained from this study, critical level of nutrient concentration in plant tissue at mature stage can be adjusted as followed 26.8-33.9, 3.2-5.3 and 45.7-56.0 g kg⁻¹, respectively, whereas Ca and Mg concentrations in plant tissue need a further study.

Student's signature

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