

B-20 Effect of potassium and magnesium fertilizers on vegetable cultivation in the upcountry intermediate zone

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In the upcountry, potato and vegetable cultivation is dominant among other field crops. Farmers in this region utilize high quantities of chemical and organic fertilizers. The level of fertilizer applied by the farmers to these crops is higher than the quantity recommended by the Dept. of Agriculture. This practice results in accumulation of high levels of plant nutrient in the soil.

A long-term field experiment was conducted at Bandarawela to study the effect of K and Mg for vegetable cultivation. Four levels of potassium (0,50,100 and 150 kg K_2O /ha) and 4 levels of Mg (0,15,30 and 60 kg Mg/ha) were factorially combined and tested in a Randomized Complete Block Design with 3 replicates. Tomato, cabbage, potato and cabbage were grown in a sequence. A constant level of 200 kg N/ha and 150 kg P_2O_5 /ha per crop was applied to all treatment combinations as a basal dose. The plan of randomization was kept unchanged for all crops in the cropping sequence.

Tomato (1st crop) did not respond to the application of potassium up to 150 kg K_2O /ha. However, the cabbage (2nd crop), potato (3rd crop) and cabbage (4th crop) responded well to 100, 50 and 100 kg K_2O /ha, respectively. A yield increase to the application of magnesium became significant only to the 4th season with cabbage up to 60 kg Mg/ha. Soil analysis after each crop indicated a steady depletion of K and Mg with continuous cropping in control plots. It was also revealed that an application of at least 100 kg K_2O /ha and 30 kg Mg/ha per crop is needed to maintain satisfactory levels of K and Mg in this soil for enhanced crop production.

Application of potassium fertilizers has led to the increase of yields in potato and vegetable crops. The experiment suggests the need to include Mg in the fertilizer recommendations for increasing vegetable yield in the upcountry region.