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Abstract

Evaluation of the Effect of Lime and Irrigation on Lettuce Yield in Laos †

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Abstract: Diversification of food sources and agricultural production systems has potential to enhance domestic supplies and provide export market opportunities for Laos. Major constraints to agricultural productivity are related to soil management and include inefficient irrigation, poor soil structural stability, low pH and nutrient availability. An experiment at the National University of Laos (NUOL) in Vientiane assessed the effect of lime and irrigation scheduling on growth and yield of lettuce. The soil was a sandy clay loam with pH 4.89 (H_2O) in the top 15 cm. Lime ($CaCO_3$) was applied at rates of 2 and 4 tonnes per hectare (t/ha). Irrigation scheduling was based on calculated evapotranspiration (ETc) with frequencies of either twice daily, once daily or alternate days. Urea, chicken manure and rice husks were added to soil in all trial plots. The experimental design was split-plot with two treatments (lime and irrigation scheduling) and four replications. The combination of 4 t/ha lime and irrigation every second day had the highest yield (mean > 2 kg/m^2). The combined treatment of irrigation once a day and no added lime showed significantly higher leaf number ($p = 0.01$) and plant height ($p < 0.001$) compared to the other treatment combinations. However, increased biomass of individual plants did not translate into increased marketable yield per square metre. The application of lime raised the pH of soil but the effect on plant growth and yield was not conclusive. Separation of the two treatments into single factor trials is needed to elucidate the effects of individual treatments in future trials.

Keywords: lime; soil pH; irrigation scheduling; evapotranspiration; Laos; lettuce yield

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