

Parichat Dittakit 2007: Effect of Nutrient Solution Concentrations and pH Levels on Growth and Nutrient Uptake of Lettuce (*Lactuca sativa* L. var. *romana*).

Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture.

Thesis Advisor: Assistant Professor Thammasak Thongket, Ph.D. 134 pages.

Two experiments were conducted to study the effect of nutrient solution concentrations (EC) and pH on growth in lettuce (*Lactuca sativa* L. var. *romana*) at the Tropical Vegetable Research Center, Kasetsart University, Kamphaengsaen campus, Nakhonpathom during February 2004 to January 2006. In experiment I, growth of 2 week-old and 4 week-old 'Cos' lettuce grown in modified Resh tropical dry summer nutrient solution with different EC and pH values under warm (28 -38 °C) and cool (21 – 27 °C) weather conditions were studied. It was found that under warm weather condition, growth of 2 week-old 'Cos' lettuce was greatest in nutrient solution with EC 0.75 mS/cm and pH 6.0 while growth and nitrogen (N) uptake of 4 week-old was greatest in nutrient solution with EC 1.00 mS/cm and pH 6.0. Under cool weather condition, growth of 2 week-old 'Cos' lettuce was greatest in nutrient solution with EC 1.50 mS/cm and pH 6.0 while growth and nitrogen (N) uptake of 4 week-old 'Cos' lettuce were highest in nutrient solution with EC 1.75 mS/cm and pH 6.0. The tip burn symptom increased as the EC of nutrient solution increased in both conditions. In the experiment II, the effect of nutrient solution pH change on growth of 'Cos' lettuce was studied by growing lettuce in controlled and uncontrolled pH 5.8 nutrient solution. It was found that pH of uncontrolled nutrient solution increased between 5.8 to 6.38. Growth of 'Cos' lettuce grown in nutrient solution without pH control was not significantly different from control treatment (pH 5.8) at all ages except 16 and 18 days after transplanting.

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