

Effect of replacement interval of nutrients solution and concentration of replenishment solution on growth of lettuce (*Lactuca sativa* L.) under floating culture

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Abstract

Floating culture of lettuce is developing because of the increase in water use efficiency and chemical fertilizers. In order to assess replacement time of nutrient solution and concentration of replenishment solution on growth and yield of Butterhead lettuce, a factorial experiment was conducted through completely randomized design with three replications. Each experimental unit was a 60×40×15 cm (36 L) plastic box, and four plants were grown in a spacing of 20×25 cm apart on polyester sheets. The nutrient solutions were replaced with new solutions once every 3, 4 and 5 weeks. For compensating the removed water and depleted nutrients from the solution, replenishment solutions with and strength were added to the tank once a week. Plants were harvested 35 days after transplanting. Results showed that there was no significant difference in fresh head weight, head periphery, number of leaves per plant, leaf dry weight, root weight, and stem length and diameter among treatments. The interaction effects between replacement time × concentration of replenishment solution was not significant for none of the growth parameters. Fresh head weight and number of leaves per plant were 265-312 g (mean 286 g) and 32-37 leaves, respectively. Chemical analysis of lettuce-head tissue indicated that concentration of macro-and-micronutrients was in optimum range in all the treatments. Head weight per plant was found significantly and positively correlated with number of leaves/plant, root weight, stem diameter and head periphery. Results of the present experiment indicated that lettuce growth and nutrients could be managed well by adding replenishment solution with strength, without replacing the nutrients solution.

Keywords: Butterhead lettuce, Nutrition, Soilless culture, Floating culture.

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