Effects of different nutrients solutions on nutrients concentration and some qualitative traits of lettuce in hydroponics system

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(Received: Dec. 19-2013 ; Accepted: Feb. 21-2014)

Abstract

Lettuce (*Lactuca sativa* L.), as a leafy vegetable, has considerable economic benefits. Although nowadays the tendency is to grow lettuce hydroponically, growers use different nutrients solutions for lettuce production and there is not an optimal nutrients solution for lettuce production in Iran. Therefore, an experiment was carried out to introduce the optimal solution out of current solutions in the market for lettuce production. In this experiment, effects of four nutrients solutions (Hoagland and Arnon, NS_{Hoag}; Knop's, NS_{Knop}, England, NS_{UK}, and University of Tabriz solution, NS_{UT}) on two cultivars of lettuce (Siahoo and Conquistador) were assessed. The experiment was conducted as a completely randomized blocks design with four replications at Faculty of Agriculture, University of Tabriz, Iran, and traits such as total soluble solids (TSS), panel test, percentage of leaf dry matter and leaf nitrogen, potassium, phosphorus, calcium and nitrate contents were assessed. Results showed that different nutrients solutions had significant effect on nutrients concentration and some of the qualitative characteristics of lettuce. The highest percentage of dry mater, leaf nitrogen and potassium content, were observed in Knop's, UT and Hoagland solutions, respectively. Interaction between cultivar and nutrients solution became significant on panel test results. Hoagland and Knop's solutions in Conquistador cultivar and England and Hoagland solutions in Siahoo cultivar showed maximum panel-test results. Nutrients solutions didn't have significant effects on other traits. Therefore, it is concluded that Hoagland nutrients solution was the best solution for qualitative traits in lettuce production. But, it is necessary to analyze these nutrients solutions for lettuce yield and economic aspects.

Keywords: Leafy vegetable, Optimal nutrients solution, Panel test.

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