Effect of three nutrient solutions on quantitative and qualitative traits of plants and minitubers of two potato cultivars in hydroponic system

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Abstract

This research was conducted to study the effect of three nutrient solutions on potato (*Solanum tuberosum*) minituber production in hydroponic system under greenhouse conditions. The basic experimental design was factorial with randomized complete blocks with four replications. The first factor was nutrient solution at three levels (Hoagland and Snyder, Imma and Angel, Novella et al.) and the second factor was potato cultivar at two levels (Agria and Kaiser). The plant seedlings were obtained from tissue culture. Results showed that the main effect of nutrient solutions and interaction between nutrient solutions and potato cultivars were significant on plant height, stem diameter, roots and shoots dry weight, yield and number of minitubers per plant. Plants grown from Agria cultivar in Imma and Angel solution produced the greatest plant height (96.8 cm), shoots dry matter (92.22 g), roots dry matter (20.08 g) and yield (195.66 g per plant). Kaiser cultivar had the highest number of minitubers (9.1 per plant). Maximum minituber weight was obtained from Novella et al. solution (21.93 g) and in Agria cultivar (28.78 g). Results also showed that the greatest starch content (9.57%) and nitrate content (728.72 mg/kg dry weight) were observed in Agria cultivar and Imma and Angel solution and Hoagland and Snyder solution, respectively. Maximum phosphorus content of minituber (0.33%) belonged to Imma and Angel solution and the highest potassium content (2.62%) was measured in Agria cultivar.

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