Comparison of vegetative growth and minituber yield in three potato cultivars in aeroponics and classic hydroponics with three different nutrient solutions

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Abstract

In order to determine the best nutrient solution and potato cultivar for minituber production in aeroponics and comparison with classic hydroponics, a factorial experiment with three factors of culture system (aeroponics and hydroponics), nutrient solution (Chang et al., APCoAB and commercial nutrient solution of Isfahan), and different potato cultivars (Marfona, Santana and Moren) was carried out. The results showed that fresh weight of shoot and roots, and potato plant height was significantly higher in aeroponics compared to classic hydroponics. The highest shoot and root fresh weight in aeroponics was observed in Moren cultivar, nourished with commercial nutrient solution of Isfahan. Plant height was the highest in Moren cultivar, APCoAB nutrient solution and aeroponic system. The lowest shoot and root fresh weight and plant height were observed in Marfona cultivar. Yield and number of minitubers per plant in aeroponics increased 58.08 and 277.2 percent compared to hydroponics, respectively. The highest yield and number of minitubers was obtained in aeroponics system, APCoAB nutrient solution and Marfona cultivar. Therefore, it was concluded that in minituber production, the aeroponics system is superior to classic hydroponics and the best potato cultivar for cultivation in this system is Marfona and the best nutrient solutions are APCoAB and Chang et al. solutions.

Keywords: Soilless culture, Aeroponics, Potato seed.

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