Abstract

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Production of basil (Ocimum basilicum L.) under different soilless cultures

The main aim of this paper was to investigate the possibility of growing basil under three soilless systems (aeroponic, hydroponic and peatmoss slab systems). A model was developed to predict the nutrients consumption by basil plants. Shoot and root height, fresh and dry mass of whole plant, nutrients uptake, and oil content were studied during the growth period (after 4 and 7 weeks from transplanting). The results indicated that the shoot lengths of basil plants were 71.67 ± 2.89, 65.67 ± 1.15 and 62.33 ± 2.31 cm at the end of growth period for aeroponic, hydroponic and peatmoss slabs, respectively. The highest value of root height of basil plants was 37.67 ± 6.66 cm for aeroponic system. The dry mass of shoot of basil plants ranged from 28.48 ± 0.91 to 44.77 ± 0.97 and 72.98 ± 0.83 to 117.93 ± 1.40 g plant⁻¹ after 4 and 7 weeks from transplanting, respectively. The highest values of the N, P, K, Ca and Mg uptakes were 753.99 ± 5.65, 224.88 ± 3.05, 449.75 ± 4.59, 529.12 ± 6.63 and 112.44 ± 1.67 mg plant⁻¹ at the end of experimental period, respectively. The basil oil content ranged from 1.129 (1.11%) to 2.520 (1.80%) and 2.664 (1.42%) to 6.318 (1.44%) g plant⁻¹ after 4 and 7 weeks from transplanting, respectively at the same previous order. The production costs of basil plant were 2.93, 5.27 and 6.24 EGP kg⁻¹ of plant. The model results were in a reasonable agreement with the experimental ones.