

Drainage Management In A Cascade Hydroponic System: Combination Of Cucumber And Melon Crops

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Abstract : Cascade hydroponic systems have the potential to minimize environmental impact and improve resource efficiency by recycling the nutrient solution drained from a hydroponic (primary-donor) crop to irrigate another (secondary-receiver), less sensitive to salinity crop. However, it remains unclear if the drained solution from the primary crop can fully meet the nutritional requirements of a secondary crop and whether the productivity of the secondary crop is affected. To address this question, a prototype cascade hydroponic system was designed and tested using a cucumber crop as the donor crop and a melon as secondary crop. The performance of the system in terms of productivity and water and nutrient use efficiency was evaluated by measuring plant growth, fresh and dry matter production, nutrients content, and photosynthesis rate in the secondary crop. The amount of water and nutrients used for the primary and secondary crops was also recorded. This work was carried out under the ECONUTRI project that has received funding from the European Union's Horizon 2020 research and innovation programme under the Horizon Europe Grant agreement: 101081858.

Keywords : hydroponics, salinity, water use efficiency, nutrients use efficiency

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