

INVESTIGATION ON THE EFFICIENCY OF ORGANICALLY DERIVED NUTRIENT SOLUTION FOR HYDROPONIC CULTIVATION OF LETTUCE

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Abstract

Hydroponic is a soilless culture which has been trended in recent years. Considering the detrimental impacts and higher cost of inorganic fertilizers, locally available materials could be used to produce an organic solution to cultivate leafy vegetables which has more demand among the public. Therefore, an experiment was conducted at the crop farm, faculty of agriculture, university of Jaffna to determine the efficiency of nutrient solutions that are derived from different organic resources for hydroponic cultivation. In this research, fifteen non-circulating hydroponic systems were designed and the experiments were laid out in a completely randomized design. The treatments were T1-Albert solution, T2-Glyricidia solution, T3-Azolla solution, T4-Water hyacinth solution, and T5- Fermented rice water solution. Each treatment with three replicates was studied. Ten-day-old lettuce seedlings from the nursery were transplanted in the hydroponic system and were allowed to grow for 45 days. Crop growth parameters such as length of stem, leaf number, leaf length, and leaf width were measured at 2-week intervals and the recorded data were analysed using SPSS software. According to the results highest stem length (7.18 cm) and leaf number (6) were observed in T4, while the lowest values were recorded in T3 as 3.83 cm and 4.33 respectively. The maximum leaf length of 11.4 cm and widest leaf width of 7.18 cm were found in T1, whereas T5 showed the lowest values of 4.02 cm and 2.67 cm respectively. Based on the study, Albert solution performed well in terms of leaf length and width. However, considering the availability, cost effectiveness and the highest number of leaves and the stem length, it is concluded that the water hyacinth solution is the suitable organic nutrient solution which can improve the growth of lettuce and reduce the cost of hydroponic lettuce cultivation.

Keywords: Albert solution, Cost effectiveness, Hydroponic cultivation, Lettuce, Organic sources

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