ID 43

Effect of different nutrient solutions on the growth and yield of water spinach (*Ipomoea aquatica*) and mint (*Mentha spicata*) under the non-circulating hydroponic system

M. Yathurshini*, and L. Pradheeban
Department of Agronomy, Faculty of Agriculture, University of Jaffna, Sri Lanka.

Abstract:
Leafy vegetables are an essential component of a balanced diet due to their rich nutritional profile. However, producing high-quality leafy vegetables without the use of harmful agrochemicals remains a significant challenge in sustainable agriculture. In hydroponic systems, nutrient solutions like Albert's solution offer controlled growth, but are costly and rely on non-organic inputs, limiting their compatibility with organic cultivation. This study evaluated the effectiveness of different organic nutrient solutions on the growth and yield of leafy vegetables (water spinach and mint) in a non-circulating hydroponic system. The experiment was conducted in a Completely Randomized Design with six treatments: Albert's solution (T_1, control), Fish tonic (T_2), Seaweed nutrient solution (T_3), Jeewamruta (T_4), Vermiwash (T_5), and Vegetable waste nutrient solution (T_6), each with four replicates. Growth parameters (plant height, number of leaves and branches, root length), quality parameter (chlorophyll content), and yield parameter (fresh weight of shoot) were recorded and analyzed using ANOVA in SAS 9.1. Among the treatments, both Albert's solution and Jeewamruta showed statistically similar and superior performance in water spinach for key growth parameters, except root length and overall biomass accumulation. Vermiwash resulted in the longest root length. In case of mint, Albert's solution and Vegetable waste nutrient solution showed similarly high values for key growth parameters except root length and overall biomass accumulation, with no significant differences between them. Again, Vermiwash recorded the longest root length in mint. In water spinach, Jeewamruta showed comparable effectiveness to Albert's solution. Similarly, the Vegetable waste nutrient solution proved equally effective as Albert's solution in enhancing growth performance in mint. These findings indicate that Jeewamruta and Vegetable waste nutrient solution can be suggested as cost-effective, sustainable, and environmentally friendly alternatives to synthetic hydroponic nutrient solutions, particularly for the cultivation of water spinach and mint.

Keywords: Growth; Leafy vegetables; Non-circulating hydroponics; Organic nutrient solutions; Yield parameters

****Corresponding Author:** Yathumanohar1999@gmail.com*