UPDATING HYDROPONIC CULTURE OF TOMATO AND UPSCALING OF HYDROPONIC TECHNOLOGY DEVELOPED DURING THE EARLIER STUDIES WITH SMALL SCALE PUBLIC PRIVATE PARTNERSHIP

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Abstract

Hydroponic culture is one of the important climate smart approaches for vegetable production in Bangladesh. But it needs upscaling and dating for commercial use. Therefore, a series of experiments are conducting from October 2020 to 2023 to update hydroponic culture of tomato funded by 4th Phase Bangladesh Academy of Science-United States Department of Agriculture (BAS-USDA) Endowment Program. One of six experimental results has been discussed here like effect of nutrient solution strength on tomato hydroponic culture. Nutrient solution and its nutritional compositions may have the effect on growth and fruit quality attributes of tomato. To avoid the build-up of toxins, mineral deficiencies, nutrition abnormalities, or the spread of disease, producers should use optimum level of nutrient solution. Therefore, the present experiment was conducted to identify a suitable strength of nutrient solution for cherry tomato in hydroponic system. Treatment considered six levels of nutrient solution [*viz.*, S_1: ½ strength Rahman and Inden (2012), S_2: ¾ strength Rahman and Inden (2012), S_3: Full strength Rahman and Inden (2012), S_4: ½ strength Hoagland and Arnon No. 2(1940), S_5: ¾ strength Hoagland and Arnon No. 2 (1940) and S_6: Full strength Hoagland and Arnon No. 2 (1940)] and two varieties [*viz.*, V_1: Local market cherry tomato (red), V_2: Irelands cherry tomato (yellow)]. Growth and yield contributing characters, quality parameters, physiological traits and biochemical composition were analyzed. The maximum plant height, number of leaves per plant, first flowering, number of flowers per cluster, number of fruit per cluster, number of cluster per plant, average individual fruit weight and average cluster weight per plant were found in S_3. Meanwhile, V_2 performed better in respect of plant height, number of leaves per plant, first flowering, number of flowers per cluster, number of fruit per cluster, number of cluster per plant, average individual fruit weight and average cluster weight per plant. Therefore, cherry tomato cv. V_2 can be cultured in hydroponic system with applying S_3 (Full strength Rahman and Inden nutrient solution).

Keywords: soilless culture, nutrient solution, growth, fruit quality and tomato