

HYDROPONIC LETTUCE CULTURE AS INFLUENCED BY COW DUNG SLUDGE IN NUTRIENT SOLUTION UNDER CHANGING CLIMATE IN BANGLADESH

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Executive Summary

Lettuce production in the hydroponic system is showing an increasing expansion in Bangladesh, but quality and nitrate risk issues are still present. This study was carried out to investigate the effective of cow dung slurry on quality and nutritional in hydroponic lettuce production at Horticulture Farm of Sher-e-Bangla Agricultural University. The treatments considered as four different levels of aerated cow dung extracts ($CD_1 = 50 \text{ g.L}^{-1}$, $CD_2 = 100 \text{ g.L}^{-1}$, $CD_3 = 150 \text{ g.L}^{-1}$ and $CD_4 = 200 \text{ g.L}^{-1}$) and standard nutrient solution ($S_1 = 30\%$, $S_2 = 40\%$, $S_3 = 50\%$ and $S_4 = 60\%$) ratios. The experiment was carried out in a Completely Randomized Design (CRD) with three replications. Various growth and physiological parameters, lettuce nitrate and ascorbic acid content, were measured in this experiment. In case of growth parameters, the tallest plant (21.38 cm), maximum number leaves plant^{-1} (16.52) and the highest fresh weight (116.00 g/plant) were recorded from CD_3 while the lowest in CD_1 . For hydroponic nutrient solution, the tallest plant (23.13 cm), maximum number leaves plant^{-1} (17.01) and the highest fresh weight (112.05 g/plant) were recorded from S_4 while the lowest in S_1 . On the other hand, nitrate content was higher in CD_3 and the lowest in CD_1 . Meanwhile, ascorbic acid content was higher in CD_4 and the lowest in CD_1 . In case of nutrient solution, all physiological parameters and nitrate content were the highest in S_4 and the lowest in S_1 . In case of interaction effect, the highest fresh weight and almost all the parameters were found the best in CD_3S_4 and the lowest in CD_1S_1 . Therefore, the present study showed that lettuce can be cultured in hydroponic system with application of CD_3S_4 for higher yield and minimum content of nitrate.

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