

EFFECT OF CYANOBACTERIA BIOFERTILIZER ON GROWTH AND YIELD OF HYDROPONICS LETTUCE

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Abstract

Hydroponics offers a sustainable alternative solution for land degradation. However, due to the high cost of production and limited availability of Albert solution, farmers are unable to sustain with this soilless medium. This has led to seeking alternate source of nutrients for hydroponics. *Nostoc* is a biofertilizer which is an excellent source of essential plant nutrients, however, it also demands a growing medium. Therefore, this study was conducted to assess the growth of *Nostoc* in dairy effluent medium and to assess the potential of *Nostoc* either alone or in combination with albert solution on growth and yield of hydroponics lettuce (Grand rapid F1 variety). The lettuce seedlings were transplanted after 14 days to the small containers. The nitrogen percentage of biofertilizer adjusted according to the albert solution. The experimental design was CRD with eight treatments and five replicates. Treatments were, T1-100% Albert, T2-75% Albert + 25% Nostoc, T3-50% Albert + 50% Nostoc, T4-25% Albert + 75% Nostoc, T5-100% Nostoc, T6-75% Nostoc + 25% Nostoc foliar, T7-150% Nostoc, T8-200% Nostoc. Vegetative parameters and biochemical properties of lettuce were measured. ANOVA and Duncan Multiple Range Test at P = 0.05 were performed using Statistical Analytical System (University version). The plant height (31.16 cm), fresh weight of root (3.44 g) and shoot (10.89 g), chlorophyll a (1.44 mg/ml), carotene (5.45 mg/ml) and total phosphate content (2.29%) were the highest for T4. The highest FRAP value (4.23 ppm) was recorded in T1. There was a significant different with all other treatments. Highest nitrate content (16.57 ppm) was recorded in T3 and there was a significant difference with other treatments. The highest chlorophyll-b content (7.4017 mg/ml) was recorded in T6. As the marketable quality of lettuce depends on fresh weight, T4 is suggested as an alternative media instead of T1.

Keywords: Hydroponics, *Nostoc*, Plant height, Fresh weight of root and shoot

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