

Optimum Nitrogen Nutrition for stationary culture of Leafy Lettuce (*Lactuca sativa*) under dry zone conditions

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At present in Sri Lanka various nutrient solutions are used in hydroponics without determining the actual nutrient requirements of specific crop/s and their uptake patterns. The study was therefore carried out to determine the optimum nitrogen requirements of lettuce under dry zone condition to improve the quality and productivity of lettuce and also to avoid probable toxicities due to over fertilization. A stationary culture system with 4 plants per trough was considered as a plot and treatments were replicated 5 times. Plants were grown in Albert's solution with 6 levels of N supplied as $\text{Ca}(\text{NO}_3)_2$ at the rates of 750, 1000, 1125, 1250, 1375 and 1500 mg/l (145.8, 194.4, 218.7, 243, 267.3 and 291.6 mg/l N). Recommended dosage of Albert's solution [1000 mg/l $\text{Ca}(\text{NO}_3)_2$], was used as the control. Completely Randomized Block Design (CRD) was used for the experiment and data were analyzed using SAS system software.

Increasing nitrogen content above the standard dosage of Albert's solution appeared to be not desirable, as it did not increase the yield parameters such as fresh weight, dry weight or the nutritional qualities indicated by total nitrogen and phosphorous content of leaves. It was found that lower nitrogen level than the standard can be used for commercial purposes since fresh weight of leaves, stems and roots (mean fresh weight was 216 g/plant), leaf area (per plant), plant height and leaf number were not significantly different between treatments. Although the highest nitrogen levels (1500 mg/l) has improved nitrate: ammonium and calcium:potassium ratios and P availability, it has not significantly increased the yield. Considering safe nitrate content for consumption, even the maximum level of tissue nitrate 4271 $\mu\text{g/g}$ observed was below the toxicity levels.