

## **Evaluation of Growth, Yield and Nitrogen Losses from Leafy Red Onion Cultivation with Different Fertilizer Practices in Kalpitiya Peninsula**

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Intensive agriculture practices together with increased fertilizer use have a greater impact on groundwater quality in Kalpitiya. Water demand in Kalpitiya is 70%, fulfilled by groundwater extractions. The permeable nature of sandy Regosols causes leaching of nutrients and contamination of shallow groundwater. The aim of this study was to evaluate the effects of different fertilizer practices on growth, yield and nutrient leaching in leafy red onion grown in Kalpitiya. The red onion is the major crop grown in large scale. The treatments tested were T1-Farmer Used Rate of fertilizer and T2-Department of Agriculture recommendation. The experiment was arranged in Completely Randomised Block Design with three replicates in six plots (7.2m<sup>2</sup>). The red variety of Jaffna Local was established in a research field where lysimeters were previously installed. The leachate was collected weekly from lysimeters and analysed for leached nitrogen. Growth of plants and yield were recorded. A significant difference in leached nitrogen was observed between treatments. Furthermore, it was observed that there was a statistically significant difference between the final yield of T1 and T2 treatments. The total nitrogen leaching percentage of T2(67.88%) was lower than T1(78.86%), even though the crop yield of T2 (5069.25kg/ac) was lower than T1(7556.95kg/ac). The average concentration of nitrate in the leachate of T1 was 73mg/l, while that of T2 was 72mg/l. The safe limit of nitrate in groundwater is 50mg/l. Recommended amounts of fertilizer should be applied in balanced proportion and at appropriate times with soil amendments, which may help to absorb nutrients efficiently. Therefore, the study concludes that both practices showed leached nitrate concentrations above safe limits recommended by WHO, which urges the need for change in nitrogen fertilizer management for red onion on sandy regosols.

**Keywords:** nitrification, groundwater contamination, sandy regosol