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# Soilless urban gardening as a post covid-19 food security salvage technology: A study on the physiognomic response of lettuce to hydroponics in Uganda

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Abstract

This study was conducted to assess the performance of vegetables using a non-greenhouse hydroponic system as a sustainable urban farming technology to increase food security (in terms of vegetable production and availability). Leafy lettuce (red and green) was grown using non-circulating hydroponics under a complete randomized design. The effect of hydroponics on growth and yield of the vegetables was studied. Six parameters were studied: plant height, length of the root, number of leaves, weight of lettuce, moisture content and dry matter. Data was collected 20 and 40 Days after transplanting and analyzed using T-test at 5% significance level with Origin Pro software (version 9.0). Soil-based cultivation was used as the control experiment. A significant difference ($P < 0.05$) existed at yield for lettuce grown under soil and hydroponics for; dry matter content (0.02, 0.01), fresh weight (0.03, 0.02) and root length (0.01, 0.02) in that order. Based on number of leaves which is the key edible part of the vegetable, hydroponics has the potential to perform as equally well as conventional farming. Further research can be done to study the nutritional composition of the lettuce and performance of the other vegetables using the system.

Keywords

Hydroponics; Food security; Urban farming; Sustainable agriculture; Vegetable production