IRRIGATION SCHEDULING ON THE PRODUCTION OF BASIL (*Ocimum basilicum* L.) MICROGREENS IN A VERTICAL FARMING SYSTEM UNDER CONTROLLED ENVIRONMENT

EMMANUEL T. VILLARUEL

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ABSTRACT

VILLARUEL, EMMANUEL T., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **JUNE 2023. IRRIGATION SCHEDULING ON THE PRODCUTION OF BASIL (*Ocimum basilicum* L.) MICROGREENS IN A VERTICAL FARMING SYSTEM UNDER CONTROLLED ENVIRONMENT.**

Adviser: VITALIANA U. MALAMUG, Ph.D.

Microgreens are immature vegetables and herbs harvested during the seedling stage for their tender cotyledons and underdeveloped pair of leaves but with high nutritional value. Commercialization of microgreens, especially in urban farming set-up becomes an interest to several producers and consumers using different types of structure for efficient farming. The effects of irrigation scheduling in production of basil microgreens were determined in this study. The specific objectives were to design a Nutrient Film Technique (NFT) Hydroponics System design for microgreens, determine the effects of irrigation scheduling on the production of basil microgreens, and to perform a cost analysis.

The study considered the following irrigation schedule as the treatments: irrigation every 10 hours, every 18 hours, every 26 hours, and every 34 hours. The vertical structure for basil microgreens production has a dimension of 0.9 m x 0.4 m x 1.8 m with each layer having an artificial channel of 0.78 m x 0.45 m x 0.05 m containing three (3) perforated trays each having a dimension of 33 cm x 22 cm x 2 cm.

Results showed that basil microgreens showed no significant difference under different irrigation schedules in terms of fresh matter yield, dry matter yield, and shoot

height at harvest which showed that under irrigation every 34 hours will have the same production with microgreens under irrigation of every 10 hours. In terms of water consumption and water productivity, it was evident that irrigation every 34 hours had the lower consumption while having the highest water productivity. In terms of production, the payback period for the vertical farm structure for production of basil microgreens under NFT was 1.55 years or 18.6 months and a break-even point of 35,957.96 g.

Keywords: microgreens; irrigation scheduling; water productivity

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