



EFFICACY TRIAL OF INNOVATIVE LIQUID NUTRIENT FORMULATIONS FOR KALE (*Brassica oleracea* var. *acephala* L.) PRODUCTION UNDER AGGREGATE HYDROPONIC SYSTEM

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ABSTRACT – This study was conducted to investigate the effect of liquid nutrient formulations on the horticultural characteristics, yield, chlorophyll content, total carotenoids, free radical scavenging activity, and oxidation-reduction potential of kale under aggregate hydroponic production system. The efficacy of seven nutrient solutions was evaluated using kale as test plants in a split plot randomized complete block design with the different nutrient solutions as main plot and the two varieties of kale (Kailaan and Toscana) as sub-plot. The seven treatments were composed of T1 = Visayas State University-Liquid Nutrient Formulation (VSU-LNF), T2 = Fermented Acacia (FAC), T3 = Fermented Malunggay (FMY), T4 = (T1 + T2), T5 = (T1 + T3), T6 = T4 + Effective Microorganism (EM), and T7 = (T5 + EM) replicated four times. The aggregates were composed of river sand and coconut coir in a ratio of 3:1 by volume. The pigment composition and free radical scavenging activity were done through an ultraviolet-visible spectrophotometer. Results have indicated that kale grown on VSU-LNF produced the best horticultural characteristics, yield performance, and *chlorophyll a* and *b*. The total carotenoids and free radical scavenging activity of kale were enhanced by the application of FAC and FMY. The combined application of VSU-LNF with FMY significantly influenced the free radical scavenging activity of kale. The incorporation of EM in VSU-LNF with either FAC or FMY has significantly improved oxidation-reduction potential of kale. Nevertheless, Kailaan variety of kale exhibited better horticultural and yield characteristics while Toscana indicated better postharvest qualities in an aggregate hydroponic system under Visca agro-climatic condition. These results indicate the potential of these nutrient solutions for innovative nutrient management strategy for productive and quality kale production under an aggregate hydroponic system which can be helpful in community resilience and preparedness program.

Keywords: aggregate hydroponics, free radical scavenging activity, Kale, liquid nutrient formulations, oxidation-reduction potential, pigment composition, yield



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