# The Effect of Liquid Fertilizer from Fermented Vegetable Waste on the Initial Growth of Water Spinach Plants in A Short Time

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**Abstract.** This research aims to evaluate the quality of Liquid Organic Fertilizer (LOF) produced from Lambocca Market vegetable waste at the AK-Manufaktur Bantaeng Laboratory, as well as testing its effectiveness on the growth of water spinach plants (*Ipomoea aquatica*). LOF quality is assessed by analyzing parameters such *a*s physical traits (odor, color), chemical properties (pH), and biological factors (E.). *coli*), and temperature measurements during the composting process using a Universal pH meter and a 200ºC thermometer. The research results showed that the composting process took place in mesophilic conditions with an average temperature of 27.62°C. The resulting LOF has physical characteristics in the form of a brown color with a non-pungent odor. Chemical analysis shows a pH value of 8.0 which meets the standards of Minister of Agriculture Decree Number 261/KPTS/SR.310/M/4/2019 (pH 4-9). Microbiological testing indicated an E. coli content of <0.3 which is below the regulatory threshold ($<1\times10^2$). Evaluation of the effectiveness of LOF on kale plant growth was carried out by comparing three treatments: daily application (Sample A), interval application (Sample B), and control. The results showed that daily LOF application had a significant effect on plant growth parameters compared to other treatments. This research indicates that vegetable waste can be used as raw material for LOF that meets regulatory standards and is effective in increasing plant growth.

**Keywords**: Liquid Organic Fertilizer, Vegetable Waste, Mesophilic Composting, Ipomoea aquatica, Plant growth