UTILIZATION OF TOFU INDUSTRY LIQUID WASTE WITH DIFFERENT TYPES AND CONCENTRATION AS A PLANTING MEDIA FOR LAND WATER SPINACH (IPOMEA REPTANS POIR)

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ABSTRACT

The tofu industry produces liquid waste in every production process, which if discharged directly into the environment can cause pollution. Tofu industry liquid waste contains organic compounds that can be used as a plant growth medium, one of which is the dry-land water spinach (*Ipomea reptans* Poir). The purpose of this study was to determine the chemical and microbiological characteristics of tofu industry liquid waste as a growing medium for dry-land water spinach and the influence of the plant growth on reducing BOD and COD tofu liquid waste. The method used in this study was a one-factor Completely Randomized Design (CRD) in the form of a combination of waste types and concentrations. Each combination was treated as one treatment unit. The types of tofu waste were fresh waste and fermentation waste. The concentration of tofu liquid waste included 0% (negative control), 25%, 50%, 75%, 100%. Each treatment was repeated three times to obtain 27 treatment units. Plants were cultivated hydroponically. Planting was carried out for 21 days. The research parameters analyzed were pH; available N, P, and K concentrations; BOD, COD; organic compound levels; The total number of bacteria and lactic acid. The observed agronomic parameters were plant height, root length, number of leaves, fresh weight, and dry weight. The data obtained were analyzed using ANOVA (Analysis of Variance) at the 5% level to determine significant differences. If there were significant differences, then continued with analysis using LSD (Least Significant Difference) at the 5% level. The results showed that the fermentation process of tofu liquid waste decreased pH; increased the levels of available N, P, and K; BOD, COD values, and levels of organic compounds, total bacteria, and lactic acid bacteria. The fermentation process of tofu liquid waste supported the growth of dry-land water spinach. The growth of dry-land water spinach reduces BOD values by 91.98% to 96.55% and COD by 79.24% to 91.05%.

Keywords: fermentation, chemical properties, total bacteria, lactic acid bacteria, BOD, COD