EFFECT OF MODIFIED MOLASSES-BASED DISTILLERY WASTEWATER ON PLANT GROWTH AND DEVELOPMENT BY FOLIAR APPLICATION

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ABSTRACT

A pot experiment in a greenhouse was conducted to determine the effect of modified molasses-based distillery wastewater (MDW) on plant growth and development of pak choy (*Brassica rapa L. subsp. chinensis*) by foliar application. MDW treatments were prepared at five different concentrations; 1:0, 1:10, 1:20, 1:30 and 1:40. Each treatment was compared with commercial fertilizer (N-P-K 15: 15: 15). The plant growth (plant height, number of leaves, length and width of leaves, and chlorophyll content) has been observed. The characterization of modified MDW and soil after MDW application were studied. The result of mean plant height, mean number of leaves, mean length and width of leaves, and chlorophyll content showed that T2 (1:10), T4 (1:30), and T5 (1:40) produced insignificantly different plant growth. This study recommends using T3 (1:20) as foliar fertilizer for plants as it provides the best nutrient requirements for plant growth. MDW was proven to contain high amounts of nutrients such as phosphorus and potassium that are crucial for plant growth. Furthermore, heavy metal concentrations in long-term MDW application and short-term MDW application were at appropriate amounts and non-toxic to plants. After the application of MDW, soil becomes fertile. Therefore, foliar application is an ideal way to enhance plant growth and physiochemical characteristics.