IMPROVEMENT OF N, P, AND K LEVELS OF LIQUID FERTILIZER MADE USING WASTE MILK & WASTE MILK PRODUCT USING WOOD ASH

By

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Research Project Dissertation is Submitted in Partial Fulfilment of the Requirements for the

Bachelor of Biosystems Technology Honors in Agricultural Technology and Entrepreneurship

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2024

ABSTRACT

The utilization of biogas slurry, a by-product of anaerobic digestion, has gained significant attention for its potential in sustainable agriculture. This study focuses on evaluating the chemical composition, particularly the nitrogen (N), phosphorus (P_2O_5), and potassium (K_2O) levels, of biogas slurry produced from a mixture of cattle waste manure and dairy by-products, including waste milk and yogurt. Additionally, the study investigates the impact of incorporating mango wood ash into the slurry at various ratios.

The study employs a weighted average approach to calculate the resultant chemical composition of the slurry-wood ash mixtures. At a 2:1 ratio, the pH increased to 8.07, with N, P_2O_5, and K_2O levels reaching 0.040033%, 0.95%, and 0.412%, respectively. The 4:1 ratio yielded a pH of 7.68, N at 0.39%, P_2O_5 at 0.21%, and K_2O at 0.28%. The 1:0.15 ratio resulted in a pH of 7.478, N at 0.24%, P_2O_5 at 0.018%, and K_2O at 0.19%.

This study contributes to the body of knowledge on the use of biogas slurry as an organic fertilizer by demonstrating how the addition of wood ash can significantly alter its chemical properties. The findings highlight the potential of biogas slurry enriched with dairy by-products and wood ash to enhance soil fertility and support sustainable agricultural practices. Moreover, this research underscores the importance of optimizing the ratios of slurry to wood ash to achieve desired nutrient levels, which can vary based on specific agricultural needs.

In conclusion, the integration of waste milk, yogurt, and wood ash into biogas slurry offers a promising approach to recycling organic waste and improving the nutrient profile of organic fertilizers. Future research should focus on long-term field studies to assess the agronomic benefits and environmental impacts of using such enriched biogas slurry in various cropping systems.

TABLE OF CONTENTS