DEVELOPMENT OF A 24-HOUR ACCELERATED FOOD WASTE COMPOSTING MACHINE

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX TABLES

LIST OF APPENDIX FIGURES

ABSTRACT

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This study aimed to develop a food waste composting machine that can efficiently and effectively convert kitchen waste. The Philippines alone produces approximately 1700 tons of food waste per day, which can contribute to greenhouse gas emissions and negatively impact the environment. The proposed composting machine uses microorganisms, heat, aeration, and agitation to transform food waste into nutrient-rich soil that can be used as organic fertilizer for agricultural production

The objectives of the study were to design and fabricate the composting machine, evaluate its grinding rate, composting performance, and volume reduction. It further aimed to assess the composted product's quality in reference to the Philippine National Standard (PNS) for soil amendments, and present a simple cost analysis using the machine. The significance of this study lies in reducing methane production caused by rotting food waste in landfills, promoting cleanliness in commercial establishments and homes, and creating new business opportunities and jobs.

The machine was fabricated in Barangay Magtanggol, Science City of Munoz, Nueva Ecija. The machine was tested and evaluated at Ramon Magsaysay Center for

Agricultural Resources and Environmental Studies (RM-Cares), CLSU compound. Three different additives ran using 2 replications each was evaluated as to their effects in the output material. These include the cocopeat, baking soda, and trichoderma. The compost samples were evaluated by Ophir GenPrime Laboratories in Porac, Pampanga. The findings and analysis of this study can serve as an effective tool for improving food waste management and provides environmental friendly solution to waste accumulation. The composting machine's development and fabrication, grinding, composting capacity evaluation, compost quality assessment, and cost analysis were discussed in detail in the study.

Keywords: composting machines; food waste; methane; microorganisms; nutrient-rich soil; organic fertilizer.

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