

**DEVELOPMENT OF BIOCOMPOSTER FOR COMPOST PRODUCTION**

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## ABSTRACT

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A possible solution to address the long duration of composting is to develop composting machine capable of providing appropriately regulated composting conditions to speed up the process. This study aimed to develop a biocomposter for compost production. Specifically, it aimed to design and fabricate a 200-liter prototype biocomposter equipped with aeration and temperature regulation, evaluate the quality of the produced product, and perform a simple cost analysis.

The machine was evaluated in terms of processing capacity, moisture reduction, and characteristics of the compost. The following treatments were (1) biocomposter with temperature, aeration, and mixing regulation; (2) biocomposter without mixing regulation; and (3) biocomposter with aeration and mixing regulation. The processing capacity showed that the biocomposter with temperature, aeration, and mixing regulation has the highest capacity of 25.1 kg/day. Results showed that moisture and temperature exhibited a significant correlation. With the increase in temperature, there is a corresponding decrease in the moisture content. The biocomposter with temperature, aeration, and mixing regulation has the highest moisture reduction of 5.99%.

In terms of characteristics of the compost, the use of aeration and mixing resulted to the highest nitrogen content of 0.1% and moisture content of 7.9%. The highest

potassium content of 0.66% was attained by the use of the biocomposter without mixing regulation, while the phosphorus had equal content of around 0.3%. The investment cost of the machine was Php 20,879. Cost analysis showed that a projected annual cost of Php 87,192.31

Keywords: biocomposter; temperature; aeration; mixing

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