



BANAPPLE: Banana and Pineapple Peel Waste Liquid Fertilizer

Aida Fathiyya Izzatuddien^{1*}, Aina Syalwa Choirunnisa², Anisi Aifa Najuba³, Dewi Arif Hidayati⁴

SMA Ar-Rohmah Putri “Boarding School”, Malang, Indonesia

*Corresponding author: Dewiarifhidayati659@gmail.com

ABSTRACT

Pineapple and banana are two types of fruits which pulp is used as processed food. Meanwhile, the peels of the fruits may pollute the environment. The purpose of this study is to find alternatives of use of pineapple and banana peel wastes by making liquid organic fertilizer with a natural bacterial starter. This study used an experimental method by making variations in the mass ratio between pineapple peel and banana peel. The first step in producing liquid organic fertilizer is by making starters. After that, organic fertilizer is made based on variations in the ratio of pineapple peels to banana peels and starter. Based on this study, organoleptic test results in the aspect of colour in fertilizer B and fertilizer C obtained were 2.33. The results of organoleptic tests of aroma aspect of fertilizer B recorded was 2.78 and 3.11 for fertilizer C, while the result of the pH test was 4.

Keywords: *Banana, liquid fertilizer, pineapple*

INTRODUCTION

The country of Indonesia is a pineapple producer, contributing 33% of which is harvested from gardens in five provinces with high production quantities (Pusat Data dan Sistem Infomasi Pertanian, 2016) Banana peel contributes to a large amount of waste material, which is about 1/3 of an unpeeled banana. Banana peel is one of the wastes from the banana processing industry (Lubis, 2012). Pineapple peels in various industries are the most abundant part that do not undergo further processing and often disposed as waste (Rukmana, 1996). If the waste is left unattended, it will cause an unpleasant aroma for environmental hygiene and may affect the health (Bayuseno, 2009). If overdone, the use of inorganic fertilizers can actually have negative effects on the physical properties, soil chemistry, and biology. One of the effects of using inorganic fertilizers in agriculture is the accumulation of residues of chemical elements such as nitrogen (N), phosphorus (P), and potassium (K) in the soil due to the excessive and persistent use of inorganic fertilizers. Organic fertilizer is an organic solution to environmental problems (Suryanto, 2019), which is processed into liquid fertilizer because it is easy to make and to apply, quickly dissolved in the soil, quickly absorbed by plant roots, more evenly distributed, and no accumulation of fertilizer concentration in certain places. This study aims to determine on how to make liquid organic fertilizer from pineapple peel waste and banana peel waste, and to determine the feasibility test results for the liquid organic fertilizer. The benefit of this research is as an alternative to the utilization of pineapple and banana peel wastes and not polluting the environment and to increase the usability of pineapple peel waste and banana peel waste.

MATERIALS AND METHODS/ METHODOLOGY

Materials

Banana peel waste and pineapple peel waste were obtained from Ar-Rohmah International Islamic Boarding School in Malang, Indonesia. These fruits were abundantly found in the school as they were consumed by the students.

Making Natural Bacteria Starters

The natural bacteria starter was made with 35 grams of pineapple peel waste and 35 grams of banana peel waste which were mashed using a blender, 70 grams of brown sugar and 70 ml of rice water, and then fermented in a fermenter bottle for 15 days.

Making Organic Liquid Fertilizer

In this research, there are 2 fertilizers, namely fertilizer B and fertilizer C. Fertilizer was made with 100 grams of pineapple peel waste and 100 grams of banana peel waste, which were mashed using a blender. For fertilizer B, 200 ml of water was added, while for fertilizer C, 400 ml of water was added. Then 20 ml of natural bacteria starter was added to each fertilizer and then fermented in a fermenter bottle for 21 days.

Feasibility Test

This is an experimental study that used a simple random sampling technique to obtain data from 9 experts in the field who performed pH tests. Then descriptive analysis technique was used to analyse the data.

RESULTS AND DISCUSSION

Liquid organic fertilizers were tested for feasibility by means of organoleptic tests and comparing fertilizers with commercial inorganic fertilizers (control) as shown in Figure 1.

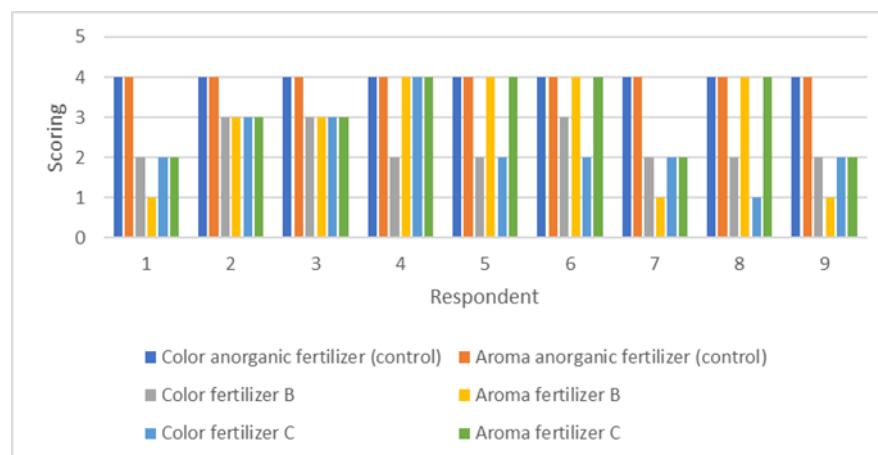


Figure 7. Organoleptic Test Result

The feasibility test is based on the colour and aroma of the fertilizer with a value range of 1 to 4. The organoleptic test results of colour aspects in fertilizer B and fertilizer C were obtained by 2.33, which shows the colour of fertilizers B and C was half of the control sample. The results of organoleptic tests on aroma aspects of fertilizer B amounted to 2.78, which shows the aroma of fertilizer B was half of the control. While

fertilizer C amounted to 3.11 which shows that fertilizer c was closer to the control. The pH test was carried out on the fertilizer and the result was 4, which means it was the same as inorganic fertilizer (control). The ideal liquid organic fertilizer has a pH range of 4 to 8. The feasibility test shows that banana fertilizer is feasible to replace inorganic fertilizers that can damage the soil. In accordance with the opinion (Roidah, 2013) which stated that the use of synthetic chemical fertilizers and pesticides can have a negative impact on environmental health, one of which is land degradation. According to (Simanjuntak, 2013) one of the negative impacts caused by land degradation is a decrease in the amount of agricultural production.

CONCLUSION

The fertilizer was successfully made according to the procedure with the results of organoleptic test results of colour aspects in fertilizer B and C obtained by 2.33. The results of organoleptic tests on aroma aspects of fertilizer B amounted to 2.78 and fertilizer C amounted to 3.11. And the test results for pH were 4. The feasibility test shows that BANAPPLE fertilizer is feasible to replace inorganic fertilizers that can damage the soil.

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