THESIS

THE EFFECT OF BANANA PEEL LIQUID ORGANIC FERTILIZER (LOF) AND GROWING MEDIA ON PRODUCTION OF MUNG BEAN (*Vigna radiata* L.)

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DEPARTMENT OF AGROTECHNOLOGY

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UNIVERSITY OF DARUSSALAM GONTOR

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A THESIS

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In Partial Fulfilment of Requirements

to Complete the Undergraduate Programs

Department of Agrotechnology

Faculty of Science and Technology

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ABSTRACT

Mung bean (*Vigna radiata* L.) is an annual plant belonging to the Leguminosae family. As such, mung beans are one of the staple crops cultivated to meet the nutritional needs of the Indonesian population. The demand for mung beans in the market has increased, prompting Indonesia to enhance mung bean production to meet this growing demand. Therefore, this study aims to improve mung bean production by applying Liquid Organic Fertilizer (LOF) made from banana peels and various combinations of growing media. The research was conducted at the Agrotechnology Garden of Darussalam Gontor University from November 2023 to January 2024. A Completely Randomized Design (CRD) was employed, consisting of two factors. The first factor was the Liquid Organic Fertilizer (LOF) dosage, with three levels: 20, 30, and 40 ml/L. The second factor was the combination of growing media, which included soil + manure (M0), soil + manure + rice husk (M1), and soil + manure + cocopeat (M2). This study involved 9 treatment combinations with 3 replications, resulting in 27 experimental units. The observed parameters included plant height, number of leaves, number of branches, number of pods per plant, dry seed weight per plant, and 100-seed weight. Data were analyzed using ANOVA (Analysis of Variance) at a 5% significance level, followed by the Least Significant Difference (LSD) test 5%. The results showed that banana peel LOF did not show significant differences in the treatment of mung bean plants. However, in the treatment of planting media, it was found that the cocopeat mixture (M2) significantly affected the parameters of plant height, number of branches, and dry seed weight of mung bean plants. In addition, the mixture of cocopeat media and the addition of LOF as much as 40 ml/L showed a significant effect on the parameters of plant height, number of leaves, and number of branches.

Keywords: Banana Peel, Growing Media, Liquid Organic Fertilizer, and Mung Bean

PENGARUH PUPUK ORGANIK CAIR (POC) KULIT PISANG DAN MEDIA TANAM TERHADAP PRODUKSI TANAMAN KACANG HIJAU (Vigna radiata L.)

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ABSTRAK

Kacang hijau (Vigna radiata L.) adalah tanaman tahunan yang termasuk dalam keluarga Leguminosae. Dengan demikian, kacang hijau adalah salah satu tanaman pokok yang dibudidayakan untuk memenuhi kebutuhan nutrisi populasi Indonesia. Permintaan kacang hijau di pasar telah meningkat, mendorong Indonesia untuk meningkatkan produksi kacang hijau guna memenuhi permintaan yang terus berkembang ini. Oleh karena itu, penelitian ini bertujuan untuk meningkatkan produksi kacang hijau dengan menerapkan POC yang terbuat dari kulit pisang dan berbagai kombinasi media tanam. Penelitian ini dilakukan di Kebun Agroteknologi Universitas Darussalam Gontor dari November 2023 hingga Januari 2024. Penelitian menggunakan RAL Faktorial dengan 3 ulangan, yang terdiri dari dua faktor. Faktor pertama adalah dosis POC kulit pisang dengan tiga level: 20, 30, dan 40 ml/L. Faktor kedua adalah kombinasi media tumbuh, yang meliputi tanah + pupuk kandang (M0), tanah + pupuk kandang + sekam (M1), dan tanah + pupuk kandang + cocopeat. (M2). Penelitian ini melibatkan 9 kombinasi perlakuan dengan 3 ulangan, menghasilkan 27 unit percobaan. Parameter yang diamati meliputi tinggi tanaman, jumlah daun, jumlah cabang, jumlah polong per tanaman, berat biji kering per tanaman, dan berat 100 biji. Data dianalisis menggunakan ANOVA pada tingkat signifikansi 5%, diikuti dengan uji BNT 5%. Hasil penelitian ini menunjukkan bahwa kulit pisang POC tidak menunjukkan perbedaan signifikan pada perlakuan tanaman kacang hijau. Namun, pada perlakuan media tanam, ditemukan bahwa campuran cocopeat (M2) signifikan terhadap parameter tinggi tanaman, jumlah cabang, dan berat biji kering tanaman kacang hijau. Selain itu, campuran media cocopeat dan penambahan POC sebanyak 40 ml/L menunjukkan pengaruh signifikan terhadap parameter tinggi tanaman, jumlah daun, dan jumlah cabang.

***Kata Kunci**: Kacang hijau, Kulit pisang, Media tanam dan Pupuk Organik Cair*

SUPERVISOR'S APPROVAL SHEET

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جامعة دار السلام كونتور
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Faculty of Science and Technology
كلية العلوم والتكنولوجيا

To Honorable,
Dean of Faculty of Science and Technology
University of Darussalam Gontor

Bismillahirrahmanirrahim,
Assalamualaikum Wr.Wb

It is my honor to present this thesis written by:

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The Title	:	The Effect of Banana Peel Liquid Organic Fertilizer (LOF) and Growing Media on Production of Mung Bean (*Vigna radiata* L.)

I declare that this thesis has been processed and corrected to fulfill the requirement for the degree of licentiate in Agrotechnology Studies in Faculty of Science and Technology, University of Darussalam Gontor. Therefore, I request that the thesis could be examined soon.

Wassalamualaikum Wr.Wb.

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THESIS RATIFICATION SHEET

THESIS

THE EFFECT OF BANANA PEEL LIQUID ORGANIC FERTILIZER (LOF) AND GROWING MEDIA ON PRODUCTION OF MUNG BEAN (*Vigna radiata* L.)

Prepared and Presented by Nurul Hidayati 42.2021.638028

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Mantingan, 7th January 2025

Best Regard,

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STATEMENT OF ORIGINALITY THESIS

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STATEMENT OF ORIGINALLY THESIS

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I sincerely declare that this thesis originally belongs to own my work and does not belongs to other researcher for different degree. Furthermore, this thesis is not a work published before, except some parts with their original references.

Otherwise, if it is found that this thesis is plagiarism, I'm ready to be ceased academically.

Ngawi, 22nd of Rajab 1446 H
22 nd January 2025 M

Researcher,

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PREFACE

Alhamdulillahirabbil'Alamin, all praise and gratitude to Allah SWT Tho has bestowed His grace, guidance, and blessings so that the author can complete this thesis with the title **" The Effect of Banana Peel Liquid Organic Fertilizer (LOF) and Growing Media on Production Mung Bean (*Vigna radiata* L.)"**. This research has been carried out in the Agrotechnology Garden at Darussalam Gontor University. This thesis is prepared to fulfill the final assignment of the Bachelor Program in the Agrotechnology Department.

This research aims to identify the effect of Liquid Organic Fertilizer (LOF) banana peel and growing medium on the production of mung beans (*Vigna radiata* L.). The academic objective of this research is to provide information about Liquid Organic Fertilizer (LOF) banana peel and good growing medium for mung bean crop production using environmentally sustainable materials according to Maqashid Shari'ah principles. In another aspect, this research also an evaluation material in developing the knowledge obtained during the lecture period. Hopefully, what the author has described in this thesis will be useful for the author and the people in general, particularly in Agriculture.

Mantingan, 7th January 2025

Best Regard,

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