CHAPTER I

INTRODUCTION

A. Background

Mung bean plants (*Vigna radiata* L.) are one of the annual plants that produce starch as a food that serves a substitute for rice[1]. Mung beans (*Vigna radiata* L.) are a legume crop with significant nutritional value, including soybeans and peanuts[2]. Mung beans contain beneficial elements, including protein (14,6-33,0 g /100 g), iron (5,9-7,6 mg/100 g), carbohydrates 6-63%, saturated fat 73%, and unsaturated fat 27%[3].

Therefore, mung beans are one of the agricultural product grown to meet the needs of the community. The market demand for mung bean commodities has increased every year, but this production of mung bean crops remains relatively low, as evidenced in the data from the Central Statistics Agency (CSA) of East Java

[1] Imam Khumaini S.P., "Mengenal Kacang Hijau," Dinas Pertanian dan Pangan Kabupaten Kulon Progo, 2022, https://pertanian.kulonprogokab.go.id/detil/1081/mengenal-kacang-hijau.

[2] Parlinggoman Sinaga, Maizar Maizar, and Fathurrahman Fathurrahman, "Aplikasi Berbagaijenis Pupuk Organik Cair Terhadap Pertumbuhan Dan Produksi Empat Varietas Tanaman Kacang Hijau(Vigna Radiata. L)," *Dinamika Pertanian* 33, no. 3 (September 24, 2019): 297–302, https://doi.org/10.25299/dp.2017.vol33(3).3842.

[3] M A J S Van Boekel N Khetarpaul R B Grewal P. K. Dahiya A. R. Linnemann and M J R Nout, "Mung Bean: Technological and Nutritional Potential," *Critical Reviews in Food Science and Nutrition* 55, no. 5 (2015): 670–88, https://doi.org/10.1080/10408398.2012.671202; Catur Erty Suksesty, "Pengaruh Jus Campuran Kacang Hijau Terhadap Peningkatan Hormon Prolaktin Dan Berat Badan Bayi," *Jurnal Ilmiah Bidan* 2, no. 3 (December 1, 2017): 32–40, https://doi.org/https://doi.org/10.61720/jib.v2i3.42.

Province, mung bean productivity in 2015 was 1.21 tons/ha which decreased in 2017 by 1.16 tons [4].

Several factors influence the relatively low productivity of mung bean crops. The most influential factors are soil fertility and fertilizer application. Fertilizer application must be guided by the principles and values of Maqashid Shari'ah, which is to avoid excessive fertilizer application to crops, as referred to in the Qur'an in surah AL-An ‘am verse 141[5]. The verse is associated with the prohibition of restrictions on the application of fertilizers to crops. Fertilizers are classified into two categories: inorganic and organic fertilizers. The use of inorganic fertilizers can increase crop yields, but the use of these fertilizers will decrease soil fertility and make the soil unproductive.

The Qur'an explains that we are encouraged to preserve the earth and its contents. One form of damage that has occurred on earth, especially in the Agricultural sector, is caused by human actions, as explained in Surah Ar-rum verse 41[6].Al Razi [7]. For this reason, using organic fertilizers can be an alternative to reducing the dependence on inorganic fertilizers.

[4] BPS Jawa Timur, “Produktivitas Kacang Hijau Menurut Kabupaten/Kota Di Jawa Timur (Ton/Ha), 2009-2017,” BPS Jawa Timur, 2018, https://jatim.bps.go.id/id/statistics-table/1/MTMzMSMx/produktivitas-kacang-hijau-menurut-kabupaten-kota-di-jawa-timur-ton-ha-2009-2017.html.

[5] Syaamil Qur’an, *Q.S Al-An’am/6 : 141* (Bandung: Sygma Publishing, 2008).

[6] Syaamil Qur’an, *Q.S Al-Ar-Rum/30 : 41* (Bandung: Sygma Publishing, 2008).

[7] Studi Penafsiran et al., “Kesadaran Ekologi Dalam Al-Qur ’ an: Studi Penafsiran Al-Razi Pada QS. Al-Rum (30) : 41” 5, no. 2 (2020): 51–63.

One type of organic fertilizer that plants more quickly absorb is Liquid Organic Fertilizer (LOF)[8]. Making LOF from banana peel becomes a unique alternative because it is generally used a livestock feed in Indonesia, so it still has other utilization potentials that must be maximized[9]. With the utilization of banana peel as LOF raw material, it is expected to increase Phosphorus (P) and Potassium (K) nutrients in the soil and also affect the increased productivity of mung bean plants.

In other words, apart from the use of Liquid Organic Fertilizer (LOF) the ideal media fertility to support seedlings' growth and development depends on the growing media's composition. The growing media can be said to be good if it has adequate porosity and the nutrients needed by plants are supplied[10]. Therefore, the main growing media used is soil, which is then combined with other media materials to increase soil fertility. The addition of husk charcoal and coconut fiber (Cocopeat) is also beneficial for improving soil structure. Husk charcoal increases the porosity of the growing medium and air circulation. At the same time, cocopeat plays a role in improving soil structure and increasing water storage and air

[8] Yan Yolandra, "Pemanfaatan Limbah Ampas Tahu Dan Pemberian Poc Kulit Pisang Kepok Terhadap Pertumbuhan Dan Hasil Tanaman Lobak Putih (*Raphanus Sativus* L.)" (Universitas Muhammadiyah Sumatera Utara, 2019), http://repository.umsu.ac.id/handle/123456789/61.

[9] Susan Carolina Labatar, "Pengaruh Pemberian Batang Dan Kulit Pisang Sebagai Pakan Fermentasi Untuk Ternak Sapi Potong," *Jurnal Triton* 9, no. 1 SE-Articles (June 30, 2018), https://jurnal.polbangtanmanokwari.ac.id/index.php/jt/article/view/64.

[10] Yusran Ilyas et al., "Pengaruh Media Tanam Terhadap Pertumbuhan Bibit Jabon Merah (Anthocephalus Macrophyllus (Roxb) Havil)," 2015, https://doi.org/https://doi.org/10.35791/cocos.v6i12.8511.

exchange (soil aeration)[11]. Research conducted by Muhammad Riski Wahyudi (2022) also proved that husk charcoal affects the height, number of leaves, stem diameter, number of pods, crown weight, and production of soybeans.[12].

Based on the above background, a method is needed to support the increase in the production of mung bean crops. This approach is in line with the concept of environmental Fiqh (Fiqhul bi'ah)[13], which instructs Muslims to prevent any damage and safeguard the balance of nature. So, this research takes the title **"The Effect of Banana Peel Liquid Organic Fertilizer (LOF) and Growing Media on Production Mung Bean (*Vigna radiata* L.)"**.

B. Formulation of The Problem

1. Is there an effect of Liquid Organic Fertilizer (LOF) banana peel on the production of mung bean (*Vigna radiata* L.)?
2. Is there an effect of the growing media on the production of mung bean plants (*Vigna radiata* L.)?

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[11] Aprilia Ike Nurmalasari et al., "Pemanfaatan Jerami Padi Dan Arang Sekam Sebagai Pupuk Organik Dan Media Tanam Dalam Budidaya Kedelai," *PRIMA: Journal of Community Empowering and Services* 5, no. 2 (December 31, 2021): 102, https://doi.org/10.20961/prima.v5i2.44766.

[12] Muhammad Riski Wahyudi, Bibiana Rini Widiati Giono, and Andi Herwati, "Pertumbuhan Dan Produksi Kedelai (*Glycine Max* L. Merill) Pada Aplikasi Pupuk Kompos Dengan Berbagai Macam Bioaktivator MOL Dan Media Tanam Sekam," *Jurnal Agrotan* 8, no. 2 (September 2022): 2442–9015, https://doi.org/https://doi.org/10.35508/fisa.v6i2.6837.

[13] Mariatul Istiani and Muhammad Roy Purwanto, "Fiqh Bi ' Ah Dalam Perspektif Al-Quran," *AT-THULLAB : Jurnal Pendidikan Guru Madrasah Ibtidaiyah* 1, no. 1 (2022): 24–39.

3. Is there a combination effect of Liquid Organic Fertilizer (LOF) banana peel and growing media on the production of mung bean (*Vigna radiata* L.)?

C. Objectives of Research

1. To determine the effect of the banana peel Liquid Organic Fertilizer (LOF) affects the production of mung bean (*Vigna radiata* L.).
2. To observe the affect of growing media on the production of mung bean (*Vigna radiata* L.) plants.
3. To determine whether the combination of banana peel Liquid Organic Fertilizer (LOF) and growing media affects the production of mung bean (*Vigna radiata* L.)

D. Benefit of Research

1. Theoretical Benefits
   a. Provide information on the research results on Liquid Organic Fertilizer (LOF) banana peel and suitable growing medium for planting mung beans (*Vigna radiata* L.).
   b. Used as reference for a broader study of the importance of mung bean (*Vigna radiata* L.).
2. Practical Benefits

a. It is assumed to get the best concentration of Liquid Organic Fertilizer (LOF) banana peel and growing medium for mung bean (*Vigna radiata* L.) plants.
b. It will hopefully be a treasure of scientific development and used as a reference for further research.

E. Hypothesis

a. Liquid Organic Fertilizer (LOF) affect the production of mung bean (*Vigna radiata* L.) plants.
b. Growing media affects the production of mung bean (*Vigna radiata* L.) plants.
c. The combination of fertilizer Liquid Organic Fertilizer (LOF) banana peel and growing media affects mung bean production (*Vigna radiata* L.)