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# Increasing the Growth and Yield of Java Sprouts Eggplant *(Solanum melongena* Var. Gelatik) by Administering Different Planting Media Compositions and Rabbit Urine LOF Dosages

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**Abstract**

Gelatik eggplant (*Solanum melongena* var. *Gelatik*), commonly referred to as Lalap eggplant, is a variety that can be processed into a vegetable. However, its production has declined due to the inaccurate selection of planting media compositions and the inadequate application of fertilizers. Therefore, optimizing the planting media composition and applying an appropriate dosage of rabbit urine LOF are expected to improve the growth and yield of Gelatik eggplant. The purpose of this study was (1) to examine the interaction between planting media composition and rabbit urine LOF dosage, (2) to assess the effect of planting media composition, and (3) to evaluate the effect of rabbit urine LOF dosage. The experiment was conducted in Tuban, East Java, using a Randomized Block Design (RBD) with two factors. The first factor was planting media composition, consisting of four levels: (a) soil (control), (b) soil: rice husk charcoal: manure (2:1:1), (c) soil: rice husk charcoal: manure (1:2:1), and (d) soil: rice husk charcoal: manure (1:1:2). The second factor was rabbit urine LOF dosage, also with four levels: (a) NPK (control), (b) 300 ml/plant, (c) 400 ml/plant, and (d) 500 ml/plant. The results showed that the combination of soil, rice husk charcoal, and manure (1:1:2) and 300 ml/plant of rabbit urine LOF produced a significant interaction effect on the number of fruits per plant per harvest period. Furthermore, the composition of the planting media alone (soil: rice husk charcoal: manure, 1:1:2) significantly affected plant height, leaf number, fruit weight per fruit, fruit weight per plant, and total fruit weight per plant. Similarly, rabbit urine LOF dosage alone (300 ml/plant) significantly influenced plant height, number of leaves, fruit weight per fruit, fruit weight per plant, and total fruit weight per plant.

**Keywords:** Dose, Media, Rabbit Urine, Randomized Block Design, Eggplant

## 1. Introduction

The Gelatik eggplant (*Solanum melongena* var. *Gelatik*) is a tropical plant native to Indonesia. Belonging to the Solanaceae family, it possesses numerous health benefits, including cholesterol reduction and anticancer properties (Ramadhan et al., 2024). As a widely consumed horticultural commodity, the development of Gelatik eggplant holds significant potential to meet both domestic and international market demand.

The primary factors affecting the productivity of Gelatik eggplant are the inappropriate selection of growing media compositions and the inadequate application of fertilizers, which can lead to suboptimal plant growth. Therefore, restoring nutrient availability in the soil is essential for enhancing yields and maximizing productivity.

The composition of the planting media and fertilization are efforts that can be made to increase the growth and yield of the Gelatik eggplant plant. The selection of the composition of the planting media that can be used, such as soil, rice husk charcoal, and manure. The soil has the necessary nutrients to support plant growth. Rice husk charcoal has the property of easily binding water, making it easier for plant roots to penetrate the planting media. Manure contains macro- and micro-nutrients needed by

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plants and plays a role in maintaining a nutrient balance in the soil. Rabbit urine LOF can increase the yield and production of Gelatik eggplant. The elements in rabbit urine play a role in the formation of vegetative parts of plants and also support the process of photosynthesis by helping to form chlorophyll in plants. (Salman et al., 2024). Previous research conducted by Musthafa (2022) showed that the treatment of the composition of the soil planting media: rice husk charcoal: manure (1:1:2) on Gelatik eggplant plants significantly affected the parameters of fruit weight. Previous research conducted by Ferdiananda et al. (2023) showed that treating rabbit urine LOF at a dose of 300 ml/plant increased the growth and yield of Gelatik eggplant, particularly in terms of plant height, leaf number, and fruit weight. However, this research has not directly examined the effect of the combination of planting media composition and rabbit urine LOF dosage on the yield of Java sparrow eggplant plants.

The composition of the growing medium and rabbit urine fertilizer (RUF) plays a crucial role in providing essential nutrients and promoting plant growth. Of course, the correct dosage is necessary for optimal plant growth. Therefore, the right composition of the growing medium will support the effectiveness of rabbit urine LOF and create ideal conditions for plant growth. This study aimed to determine the optimal composition of the growing medium and dosage of rabbit urine LOF for the development and yield of Java sparrow eggplant.

## 2. Material and Methods

This research was conducted in Perbon Village, Tuban District, Tuban Regency, East Java, from January 2025 to April 2025, at coordinates 6°53'11"S and 112°2'3" E, with an altitude of approximately 200 meters above sea level. The materials used were Provita F1 variety of Gelatik eggplant seeds, Decis pesticide, Dithane M-45 fungicide, Antracol fungicide, NPK fertilizer, rabbit urine, water, molasses, soil, rice husk charcoal, and goat manure. The tools used were seedling plastic, 35x35 cm polybags, 5 liter gallons, measuring cups, syringes, stirrers, hoes, scales, buckets, calipers, scissors, rulers, labels, cameras, and stationery.

This research is a factorial experiment arranged using a Randomized Block Design (RAK). This experiment consists of 2 factors and is repeated 3 times. The first factor is the composition of the planting media which consists of 4 levels, namely soil (control), soil: rice husk charcoal: manure (2:1:1), soil: rice husk charcoal: manure (1:2:1), soil: rice husk charcoal: manure (1:1:2) while the second factor is the dose of rabbit urine LOF (P) which consists of 4 levels, namely The two factors comprised of 4 treatment levels each, including: NPK (control), 300 ml/plant, 400 ml/plant, and 500 ml/plant. The research stages are presented in the following flowchart.

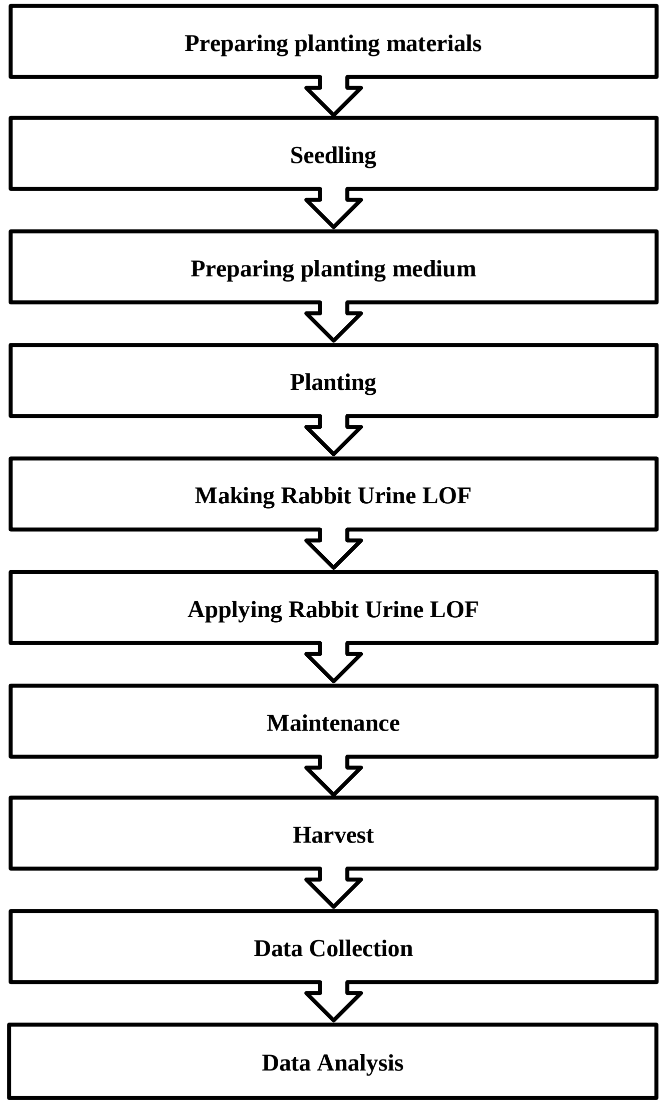


**Figure 1.** Research Flow Diagram

The parameters observed in this study included plant height, number of leaves, age of flower emergence, fruit diameter per plant per harvest period, fruit weight per fruit, fruit weight per plant per harvest period, total fruit weight per plant, number of fruits per plant per harvest period, and total number of fruits per plant.

Observation results were analyzed statistically using a Randomized Block Design (RBD). If the results showed a significant effect, the HSD (Honestly Significant Difference) test was performed at the 5% level using Microsoft Excel 2013.

## 3. Results and Discussion

### 3.1. Plant Height

The results of the data analysis showed that the combination of planting media composition and rabbit urine LOF dosage did not interact with plant height at 35-70 days after planting. The average plant height values for the single treatment of planting media composition and rabbit urine LOF dosage are presented in Table 1.

**Table 1.** Average Effect of Planting Media Composition and Rabbit Urine LOF Dose on Plant Height at 35-70 HST

| Treatment | Plant Height (cm) | | | | | |
|---|---|---|---|---|---|---|
| | 35 HST | 42 HST | 49 HST | 56 HST | 63 HST | 70 HST |
| **Planting Media Composition (Soil: Rice Husk Charcoal: Manure)** | | | | | | |
| Land | 34.06±2.00 a | 46.99±0.65 a | 50.53±0.94 a | 53.62±1.13 a | 55.21±1.11 a | 56.27±1.22 a |
| 2:1:1 | 41.96±1.23 b | 48.08±0.72 a | 53.18±0.95 ab | 56.04±1.07 ab | 57.81±1.02 ab | 59.17±0.99 ab |
| 1:2:1 | 42.66±1.66 b | 50.68±0.87 b | 54.56±1.05 ab | 57.45±0.99 ab | 59.21±0.94 ab | 60.54±0.98 ab |
| 1:1:2 | 43.36±2.10 b | 51.14±1.19 b | 56.58±1.05 b | 58.74±0.83 b | 60.68±0.98 b | 61.92±1.00 b |
| BNJ 5% | 6.81 | 2.53 | 0.55 | 0.63 | 0.64 | 0.79 |
| **Dosage of Liquid Rabbit Urine LOF** | | | | | | |
| 0 ml/tan | 37.76±2.50 | 47.33±0.73 a | 50.35±0.83 a | 53.08±0.95 a | 54.79±0.93 a | 55.94±1.05 a |
| 300 ml/tan | 42.99±1.78 | 50.82±1.07 b | 56.85±0.92 b | 59.64±0.68 b | 61.41±0.74 b | 62.77±0.76 b |
| 400 ml/ton | 41.24±2.77 | 50.59±0.98 b | 54.99±0.95 ab | 57.66±0.70 ab | 59.48±0.85 ab | 60.71±0.87 ab |
| 500 ml/ton | 40.03±1.53 | 48.15±0.98 a | 52.66±0.90 ab | 55.47±0.83 ab | 57.23±0.81 ab | 58.48±0.79 ab |
| BNJ 5% | Tn. | 0.66 | 0.14 | 0.16 | 0.17 | 0.20 |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test; tn = not significant

The provision of a single factor in the composition of planting media has a significant effect on plant height at 35-70 HST. Based on the average value (Table 1), the composition of the planting media (1:1:2 aged 70 HST) showed the best plant height growth of 61.92 cm, which is significantly different from the soil media treatment and not substantially different from the 2:1:1 and 1:2:1 treatments. This observation indicates that during the vegetative phase, a combination of several materials in the planting media is necessary to produce an appropriate structure, as each type of media has a distinct impact on plant growth. Eggplant plants require a balanced mixture of nutrients to support their growth, development, and reproduction processes. The effectiveness of using this combination of planting media is due to the sufficient availability of nutrients for plants.

The single factor of rabbit urine LOF dose affects plant height. Based on the average value (Table 1), the rabbit urine LOF dose of 300 ml/plant at 70 days after planting showed the best plant height growth of 62.77 cm, significantly different from the 0 ml/plant treatment of 55.94 cm and not substantially different from the 400 ml/plant and 500 ml/plant treatments. This finding suggests that administering rabbit urine LOF doses in sufficient quantities can enhance plant growth compared to plants that did not receive LOF treatment. The higher the plant, the more optimal the photosynthesis process is, and the apical meristem tissue is growing actively. Sunlight affects growth through several mechanisms, including chlorophyll formation, anthocyanin pigment production (a red pigment), regulation of leaf and stem temperature, nutrient absorption, protoplasmic activity, and stomatal formation. This finding aligns with research by Zannah et al. (2023), which indicates that plants require sunlight for photosynthesis. A lack of light can hinder stem and leaf growth, ultimately causing plants to become infertile.

### 3.2. Number of Leaves

The results of data analysis showed that the combination of planting media composition and rabbit urine LOF dosage showed an interaction on the number of leaves at 70 HST. The single treatment of planting media composition significantly affected the number of leaves at 35-70 HST, while the single treatment of rabbit urine LOF dosage significantly affected the number of leaves at 35-70 HST. The average number of leaves at 70 HST in the combination treatment of planting media composition and rabbit urine LOF dosage can be presented in Table 2. The average number of leaves in the single treatment can be presented in Table 3.

**Table 2.** Average Number of Leaves at 70 Days After Planting in the Combination Treatment of Planting Media Composition and Rabbit Urine LOF Dose

| Average Number of Leaves (blades) | | | | | |
|---|---|---|---|---|---|
| Age (HST) | Planting Media Composition | Rabbit Urine LOF Dosage (ml/plant) | | | |
| | | 0 | 300 | 400 | 500 |
| 70 | Land | 28.33±0.33 a | 33.00±0.29 ab | 31.00±0.22 ab | 30.11±0.11 ab |
| | 2:1:1 | 32.67±0.33 ab | 38.33±0.33 ab | 37.22±0.22 ab | 35.33 ab±0.33 |
| | 1:2:1 | 36.67±0.33 ab | 41.44±0.22 b | 40.67±0.33 ab | 41.44±0.22 b |
| | 1:1:2 | 40.67±0.33 ab | 41.89±0.29 b | 41.44±0.22 b | 41.56±0.11 b |
| | BNJ 5% | 1.07 | | | |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The combination of a 1:1:2 planting medium composition with a rabbit urine LOF dose of 300 mL per plant yielded the best results for the number of leaves at 70 days after planting (DAP), which was 41.89 leaves. The success of this combination was due to the composition of the planting medium, which was rich in organic matter and had a good physical structure, as well as the availability of liquid nutrients that were quickly absorbed from the rabbit urine LOF, thus supporting plant growth. Plants treated with rabbit urine LOF produced a greater number of leaves and weight compared to plants that did not receive rabbit urine LOF or used other types of planting media. The 1:1:2 planting medium composition used a higher proportion of manure, resulting in a medium with very high availability of macro- and micro-nutrients. One of the roles of manure is not only to provide nutrients but also to increase the activity of soil microorganisms, improve soil structure, and support the nutrient absorption process. This result aligns with research by Musthafa (2022), Who Found That Planting media containing manure in balanced proportions can increase eggplant yields by supporting root growth and maintaining optimal humidity.

The dosage of rabbit urine LOF is 300 mL per plant. Rabbit urine liquid organic fertilizer contains nitrogen and potassium nutrients, and microelements such as magnesium and phosphorus, which are important in supporting vegetative growth, namely the number of leaves and generative growth, namely the formation and enlargement of fruit. A dose of 300 ml/plant contains sufficient nutrients without causing excess nitrogen, which can inhibit the plant's physiological activity. This finding is consistent with research by Hardiana et al. (2023), which suggests that rabbit urine, when used as a liquid organic fertiliser, can enhance growth and quality due to its high nitrogen and potassium content, which supports leaf development, fruit flesh formation, and carbohydrate accumulation.

**Table 3.** Average Number of Leaves Due to Single Treatment of Planting Media Composition and Rabbit Urine LOF Dose

| Treatment | Number of leaves (blades) | | | | | |
|---|---|---|---|---|---|---|
| | 35 HST | 42 HST | 49 HST | 56 HST | 63 HST | 70 HST |
| **Planting Media Composition (Soil: Rice Husk Charcoal: Manure)** | | | | | | |
| Land | 8.85±0.35 a | 11.63±0.62 a | 14.56±0.40 a | 16.31±0.41 a | 19.69±0.99 a | 22.96±0.51 a |
| 2:1:1 | 9.90±0.31 ab | 13.50±0.58 ab | 17.44±0.51 b | 18.69±0.51 b | 22.40±1.46 ab | 26.92±0.66 ab |
| 1:2:1 | 10.40±0.56 b | 14.54±1.14 b | 17.88±1.10 b | 19.25±0.90 b | 24.60±1.59 ab | 30.04±0.61 ab |
| 1:1:2 | 10.67±0.32 b | 14.69±1.02 b | 18.50±1.01 b | 20.13±0.89 b | 26.08±1.62 b | 31.04±0.17 b |
| BNJ 5% | 1.26 | 2.78 | 2.45 | 1.91 | 1.77 | 0.39 |
| **Rabbit Urine LOF Dosage** | | | | | | |
| 0 ml/tan | 9.25±0.39 a | 12.00±0.67 a | 15.81±0.54 a | 16.63±0.71 a | 21.73±1.56 a | 25.94± 1.39 a |
| 300 ml/tan | 10.35±0.30 b | 14.85±1.22 b | 18.88±1.13 b | 19.88±1.03 b | 24.33±1.78 b | 28.94±1.05 b |
| 400 ml/ton | 10.27±0.64 ab | 13.94±1.04 ab | 17.31±0.67 ab | 19.06±0.67 b | 23.83±1.70 b | 28.19±1.25 ab |
| 500 ml/ton | 9.94±0.40 ab | 13.56±0.56 ab | 16.38±1.11 a | 18.81±0.61 b | 22.88±1.71 ab | 27.90±1.46 ab |
| BNJ 5% | 0.33 | 0.72 | 0.64 | 0.49 | 0.46 | 0.10 |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The provision of a single factor of planting media composition has a significant effect on the number of leaves aged 35-70 HST. Based on the average value (Table 3), the composition of the planting media (1:1:2 aged 70 HST) showed the best growth in terms of the number of leaves, namely 31.04 pieces, which is significantly different from the soil treatment, with 22.96 pieces. This finding shows that during the vegetative phase, sufficient nitrogen (N) is required to support optimal growth and phosphorus (P) also plays a role in stimulating leaf growth. Optimal N provision can increase plant height, protein synthesis, and chlorophyll formation, which causes the leaf colour to become greener. Leaves are numerous, and this increases the ratio of root to shoot.

The single-factor dose of rabbit urine fertilizer had a significant effect on the number of leaves produced. The average value (Table 3) shows that the 300 ml/plant treatment at 70 days after planting showed the best leaf growth, namely 28.94 leaves, significantly different from the 0 ml/plant treatment of 25.94 leaves, but not substantially different from the 400 ml/plant and 500 ml/plant treatments. This difference may be attributed to the varying nutrient availability between NPK fertilizer and rabbit urine fertilizer. NPK fertilizer provides nutrients in a form that is more easily absorbed by plants, thus supporting early vegetative growth, including leaf formation. Meanwhile, rabbit urine fertilizer, although containing N, P, and K nutrients, requires time for the decomposition process and the release of nutrients that are available to plants. Nutrients from rabbit urine fertilizer take time to decompose, so that at the beginning of plant growth, plants do not receive optimal intake. However, over time, these nutrients will be available. Rabbit urine LOF has long-term benefits, including improving soil structure, increasing fertility, and supporting the activity of soil microorganisms that promote plant growth.

The administration of rabbit urine LOF can increase vegetative plant growth, especially leaf growth, but the effect may not be as rapid as that of inorganic fertilizers. This finding aligns with research by Pradani et al. (2024), which suggests that increased leaf number also contributes to a larger photosynthetic surface area. The more leaves a plant has, the higher the potential for absorbing light energy and converting carbon dioxide into carbohydrate compounds that support overall plant growth. Therefore, an increase in leaf number in response to the administration of rabbit urine LOF can be considered a positive indicator that the plant is in a healthy and productive physiological condition.

### 3.3. Flower Appearance Age

The results of the data analysis showed that the combination of planting media composition and rabbit urine LOF dosage did not interact with the age of flowering. The average age of flowering for the single treatment of planting media composition and rabbit urine LOF dosage is presented in Table 4.

**Table 4.** Average Age of Flower Emergence in the Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Treatment | Average Flowering Age (days) |
|---|---|
| **Planting Media Composition (Soil: Rice Husk Charcoal: Goat Manure)** | |
| Land | 28.23±0.44 b |
| 2:1:1 | 27.36±0.51 ab |
| 1:2:1 | 26.92±0.60 a |
| 1:1:2 | 26.06±0.52 a |
| BNJ 5% | 0.62 |
| **Rabbit Urine LOF Dosage (ml/plant)** | |
| 0 | 27.53±0.62 b |
| 300 | 27.40±0.72 ab |
| 400 | 26.89±0.77 ab |
| 500 | 26.21±0.72 a |
| BNJ 5% | 0.16 |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The single factor of planting medium composition had a significant effect on flowering time. The average value (Table 4) indicates that the soil composition of the planting medium exhibited the longest flowering time, at 28.23 days, which is significantly different from the 1:1:2 and 1:2:1 treatments but not substantially different from the 2:1:1 treatment. This finding indicates that the soil treatment resulted in slower flowering than the 1:1:2 treatment. This difference may be attributed to the varying nutrient availability in each planting medium. The delay in flowering in this planting medium is attributed to the low availability of nutrients necessary to support the flowering process. Without the addition of organic matter, such as manure or rice husk charcoal, the soil structure tends to be dense, less porous, and has a low cation exchange capacity, thus not providing nutrients efficiently to plants optimally. This results in suboptimal plant growth and delays the generative phase, including flower emergence. The 1:1:2 treatment, a planting medium containing a mixture of rice husk charcoal and manure, tends to have a higher organic matter and nutrient content, which can accelerate the flowering process. Manure, as a source of phosphorus, plays a crucial role in the formation of flowers and fruits in plants. Phosphorus plays a role in photosynthesis, respiration, energy storage, energy transfer, cell division, and expansion. This finding aligns with research showing that phosphorus is used in assimilation and respiration, particularly during plant flowering, and can help accelerate flowering and seed and fruit ripening (Azzahra et al., 2023).

The single-factor administration of rabbit urine LOF significantly affected the flowering time. The average values (Table 4) indicate that the 0 ml/plant rabbit urine LOF treatment delayed flowering by 27.53 days, compared to the 500 ml/plant treatment, which was postponed by 26.21 days. The accelerated flowering time was due to the availability of adequate nutrients in plants treated with rabbit urine LOF. This finding aligns with research by Irawan et al. (2021), which suggests that LOF works faster because it is absorbed directly by plant tissue through the roots and leaf surfaces, thereby providing a more rapid effect compared to solid fertilizers.

### 3.4. Number of Fruits Per Plant

The results of the data analysis showed that the combination of planting media composition and rabbit urine LOF dosage did not show any interaction on the number of fruits per plant from the 1st to the 6th harvest. The average number of fruits per plant in the single treatment of planting media composition and rabbit urine LOF dosage can be presented in Table 5.

The single factor of planting medium composition and rabbit urine LOF dosage had no significant effect on the number of fruits per plant. This finding was attributed to the insufficient availability of nutrients in the growing medium, which failed to support fruit formation. Adequate nutrient availability for plants can minimize flower and fruit loss. This finding is consistent with research by Sulistyowati and Yunita (2017), which demonstrates that nitrogen (N), phosphorus (P), and potassium (K) play a crucial role in photosynthesis, which then utilizes the resulting photosynthate for the development of flowers and fruits.

**Table 5.** Number of Fruits Per Plant in the Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Treatment | Number of Fruits Per Plant (fruit) | | | | | |
|---|---|---|---|---|---|---|
| | Harvest | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| **Planting Media Composition (Soil: Rice Husk Charcoal: Manure)** | | | | | | |
| Land | 8.51±0.06 | 9.54±0.07 | 10.58±0.05 | 11.27±0.05 | 12.06±0.06 | 12.81±0.06 |
| 2:1:1 | 8.87±0.06 | 9.76±0.12 | 11.21±0.05 | 11.99±0.06 | 12.78±0.06 | 13.53±0.06 |
| 1:2:1 | 8.98±0.07 | 9.82±0.14 | 11.28±0.09 | 12.07±0.09 | 12.90±0.08 | 13.65±0.08 |
| 1:1:2 | 8.99±0.08 | 9.87±0.11 | 11.32±0.05 | 12.13±0.05 | 12.95±0.05 | 13.70±0.05 |
| BNJ 5% | Tn. | Tn. | Tn. | Tn. | Tn. | Tn. |
| **Rabbit Urine LOF Dosage** | | | | | | |
| 0 ml/tan | 8.78±0.10 | 9.69±0.12 | 11.01±0.14 | 11.78±0.16 | 12.56±0.17 | 13.31±0.17 |
| 300 ml/tan | 8.91±0.10 | 9.80±0.11 | 11.21±0.13 | 11.96±0.14 | 12.78±0.15 | 13.53±0.15 |
| 400 ml/ton | 8.86±0.11 | 9.77±0.12 | 11.12±0.13 | 11.90±0.16 | 12.71±0.15 | 13.46±0.15 |
| 500 ml/ton | 8.80±0.10 | 9.72±0.13 | 11.06±0.13 | 11.83±0.14 | 12.64±0.15 | 13.39±0.15 |
| BNJ 5% | Tn. | Tn. | Tn. | Tn. | Tn. | Tn. |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test; tn = not significant

The administration of a single dose of rabbit urine LOF did not significantly affect the number of fruits per plant. This finding is due to the nutritional needs of fermented rabbit urine not being met. Rabbit urine contains significant amounts of nitrogen (N), phosphorus (P), and potassium (K), which play an important role in plant growth and development. Nitrogen supports vegetative growth, phosphorus plays a role in flower and fruit formation, and potassium helps in fruit enlargement and ripening. This finding aligns with the statement that meeting plant nutritional needs, influenced by the roles of nutrients such as N, P, and K, can enhance physiological processes. As a result, the number, size, and weight of fruit produced by plants increase in both quantity and quality. This finding aligns with research by Lusia et al. (2024), which suggests that the LOF fermentation process makes nutrients more readily available and can be absorbed gradually according to the physiological needs of the plant. This finding is because fruit formation and filling are processes that require adequate nutrient availability.

### 3.5. Total Number of Fruits Per Plant

The results of the data analysis showed that the combination of planting media composition and rabbit urine LOF dosage did not interact with the total number of fruits per plant. The average number of fruits per plant for the single treatment of planting media composition and rabbit urine LOF dosage is presented in Table 6.

**Table 6.** Average Total Number of Fruits on Plants in the Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Treatment | Average Total Number of Fruits Per Plant (fruits) |
|---|---|
| **Planting Media Composition (Soil: Rice Husk Charcoal: Goat Manure)** | |
| Land | 64.77±0.58 |
| 2:1:1 | 68.15±0.51 |
| 1:2:1 | 68.69±0.72 |
| 1:1:2 | 68.95±0.57 |
| BNJ 5% | Tn. |
| **Rabbit Urine LOF Dosage (ml/plant)** | |
| 0 | 67.13±0.70 |
| 300 | 68.19±0.54 |
| 400 | 67.82±0.66 |
| 500 | 67.44±0.49 |
| BNJ 5% | Tn. |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test; tn = not significant

The single factor of growing medium composition had no significant effect on the total number of fruits per plant. This finding is due to the growing medium, which consists of soil, rice husk charcoal, and manure, having characteristics that support vegetative growth but are less effective in helping the generative phase (flower and fruit formation). This finding is consistent with research by Yuliana et al. (2020), which suggests that growing media with a high organic content have a greater effect on vegetative growth, but do not always increase fruit number.

Giving a single dose of rabbit urine LOF did not have a significant effect on the total number of fruit per plant. This finding is attributed to environmental factors, such as high rainfall, which causes rabbit urine LOF in the form of liquid fertilizer to be washed away more easily by rainwater if the rainfall is excessive. If this liquid fertilizer is not applied properly or does not absorb well into the soil, the nutrients contained in LOF will not be optimally available to plants. This finding is in line with research by Irmawati et al. (2024), which suggests that high rainfall can reduce the efficiency of LOF use because nutrients are easily leached, making them less optimally available to plants.

### 3.6. Fruit Weight Per Fruit

The results of the data analysis showed that the combination of the planting media composition and the rabbit urine LOF dosage had an interaction on the fruit weight per fruit. The single-factor treatment of the planting media composition and the rabbit urine LOF dosage had a significant effect on the fruit weight per fruit. The average weight of the fruit per fruit in the combination of planting media composition and rabbit urine LOF is presented in Table 7. The average weight of the fruit per fruit in the treatment is shown in Table 8.

**Table 7.** Average Fruit Weight per Fruit in the Combination Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Average Fruit Weight Per Fruit (grams) | | | | |
|---|---|---|---|---|
| Planting Media Composition | Rabbit Urine LOF Dosage | | | |
| | 0 | 300 | 400 | 500 |
| Land | 31.53±0.49 a | 33.00±0.35 a | 33.47±0.32 a | 33.40±0.38 a |
| 2:1:1 | 35.53±0.24 a | 38.40±0.40 ab | 37.40±0.40 ab | 26.60±0.38 a |
| 1:2:1 | 40.43±0.41 b | 43.30±0.40 b | 42.20±0.44 b | 41.67±0.50 b |
| 1:1:2 | 43.53±0.43 b | 44.47±0.32 b | 42.73±0.38 b | 43.60±0.32 b |
| BNJ 5% | 2.02 | | | |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The combination of a 1:1:2 planting medium composition treatment with a rabbit urine LOF dose of 300 mL per plant yielded the best results for the fruit weight parameter per fruit, specifically 44.47 grams. This finding suggests that both the planting medium and the LOF dose play a crucial role in supporting plant growth and productivity, particularly in fruit formation and filling. The high fruit weight in this treatment can be attributed to the role of rice husk charcoal and manure, which increase aeration, water retention, and nutrient availability in the planting medium. The administration of rabbit urine LOF at a dose of 300 ml/plant is quite optimal in providing additional nutrients, especially nitrogen, phosphorus, and potassium, which support the process of fruit formation and enlargement. This finding is in line with research by Krisnarini et al. (2023), which suggests that there is a synergy between the right planting medium composition and the administration of rabbit urine LOF in improving the quality of harvest results, especially in terms of fruit weight per fruit. The use of organic materials in planting media and fertilization also provides additional long-term benefits, including increased soil fertility and the sustainability of the cultivation system.

**Table 8.** Average Fruit Weight per Fruit in the Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Treatment | Average Fruit Weight Per Fruit (grams) |
|---|---|
| Planting Media Composition (Soil: Rice Husk Charcoal: Goat Manure) | |
| Land | 24.64±0.29 a |
| 2:1:1 | 27.74±0.35 ab |
| 1:2:1 | 31.43±0.36 ab |
| 1:1:2 | 32.69±0.24 b |
| BNJ 5% | 0.74 |
| Rabbit Urine LOF Dosage (ml/plant) | |
| 0 | 28.32±1.39 a |
| 300 | 29.84±1.38 b |
| 400 | 29.21±1.15 b |
| 500 | 29.11±1.23 b |
| BNJ 5% | 0.19 |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The provision of a single factor in the composition of planting media has a significant effect on fruit weight per fruit. Based on the average value (Table 8), it is evident that the planting media composition of 1:1:2 yields the best fruit weight per fruit, at 32.69 grams, which is significantly different from the soil treatment of 24.64 grams and not substantially different from the 2:1:1 and 1:2:1 treatments. The potassium (K) content in goat manure plays a crucial role in fruit enlargement by enhancing photosynthetic activity and promoting distribution to the fruit. In addition, the availability of phosphorus (P) also affects the number of bunches formed and fruit weight in Gelatik eggplant plants, because phosphorus plays a role in the transport and storage of photosynthesis results. This finding aligns with research by Assadiyah (2023), which suggests that phosphorus nutrients help accelerate the growth of mature plants and stimulate the growth of generative parts, enabling them to produce large fruit weights and a high number of fruits.

The single-factor administration of the rabbit urine LOF dose had a significant effect on fruit weight per fruit. Based on the average value (Table 8), the rabbit urine LOF dose of 300 ml/plant showed the best fruit weight per fruit, namely 29.84 grams, significantly different from the 0 ml/plant treatment of 28.32 grams but not substantially different from the 400 ml/plant and 500 ml/plant treatments. This finding is due to the balanced nutrient content in rabbit urine, especially macronutrients such as nitrogen, phosphorus, and potassium. This finding aligns with research by Hulopi et al. (2024), which suggests that nutrient balance plays a significant role in fruit formation, and an excess of one element, such as nitrogen, can actually encourage excessive vegetative growth and suppress fruit formation.

### 3.7. Fruit Weight Per Plant

The results of the data analysis showed that the combination of planting media composition and rabbit urine LOF dosage did not show any interaction on the fruit weight per plant from the 1st to 6th harvests. The average value of fruit weight per plant in the single treatment of planting media composition and rabbit urine LOF dosage can be presented in Table 9.

**Table 9.** Average Fruit Weight Per Plant Per Harvest Period in the Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Treatment | Fruit Weight Per Plant (grams) | | | | | |
|---|---|---|---|---|---|---|
| | Harvest | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| **Planting Media Composition (Soil: Rice Husk Charcoal: Manure)** | | | | | | |
| Land | 209.75±2.62 a | 235.12±2.95 a | 260.72±2.90 a | 277.66±3.13 a | 297.07±3.05 a | 315.55±2.61 a |
| 2:1:1 | 246.02±1.57 ab | 270.80±2.66 ab | 311.03±3.34 ab | 332.71±2.67 ab | 354.55±2.52 ab | 375.36±2.73 ab |
| 1:2:1 | 282.08±2.22 ab | 308.63±4.37 ab | 354.37±5.13 ab | 379.32±2.68 ab | 405.45±2.77 ab | 429.02±2.88 ab |
| 1:1:2 | 293.80±3.42 b | 322.53±2.77 b | 370.01±2.49 b | 396.37±2.66 b | 423.34±2.54 b | 447.85±2.67 b |
| BNJ 5% | 5.62 | 7.15 | 9.41 | 1.81 | 1.97 | 2.11 |
| **Rabbit Urine LOF Dosage** | | | | | | |
| 0 ml/tan | 248.65±7.56 a | 274.47±9.05 a | 311.80±10.19 a | 333.61±10.55 a | 355.70±10.68 a | 376.94±10.45 a |
| 300 ml/tan | 265.87±7.91 b | 292.53±8.79 b | 334.51±9.90 b | 356.89±10.26 b | 381.36±10.35 b | 403.74±10.63 b |
| 400 ml/ton | 258.80±7.18 b | 285.41±8.29 b | 324.82±9.53 b | 347.60±10.07 ab | 371.26±10.41 ab | 393.17±10.37 ab |
| 500 ml/ton | 256.17±7.36 ab | 283.08±8.76 a | 321.96±10.43 a | 344.37±10.45 ab | 367.95±10.55 ab | 389.78±10.42 ab |
| BNJ 5% | 1.46 | 1.86 | 2.44 | 0.49 | 0.51 | 0.55 |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The single factor of planting medium composition had a significant effect on fruit weight per plant. The average value (Table 9) indicates that the 1:1:2 planting medium composition yielded the highest fruit weight per plant, at 447.85 grams, which is significantly different from the soil treatment, which was 315.55 grams, and not substantially different from the 2:1:1 and 1:2:1 treatments. The increase in fruit weight can be attributed to the higher manure content in the planting medium composition. Potassium (K) content plays a role in fruit enlargement by enhancing photosynthetic activity and facilitating its distribution to the fruit. In addition, the availability of phosphorus (P) also affects the number of bunches formed and fruit weight in the Gelatik eggplant plant, because phosphorus plays a role in the transport and storage of photosynthetic products. This finding is in accordance with the statement by Assadiyah et al. (2023). Phosphorus nutrients help accelerate the growth of mature plants and stimulate the growth of generative parts to grow and develop so that they produce large fruit weights and large numbers of fruit.

The single-factor administration of the rabbit urine LOF dose had a significant effect on fruit weight per plant. Based on the average value (Table 9) it shows that the rabbit urine LOF dose of 300 ml/plant showed the best fruit weight per plant at 403.74 grams, significantly different from the 0 ml/plant treatment of 376.94 grams but not substantially different from the 400 ml/plant and 500 ml/plant treatments. This finding is in line with research by Ferdiananda et al. (2023), which suggests that the rabbit urine LOF dose of 300 ml/plant can affect fruit weight. The rabbit urine LOF dose provides sufficient and balanced nutrition, especially in nitrogen (N), phosphorus (P), and potassium (K), which play a crucial role in flower formation and initial fruit filling.

### 3.8. Total Fruit Weight Per Plant

The data analysis results showed that the combination of planting media composition and rabbit urine LOF dosage did not interact with total fruit weight per plant. The average total fruit weight per plant for the single treatment of planting media composition and rabbit urine LOF dosage is presented in Table 10.

**Table 10.** Average Total Fruit Weight Per Plant in the Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Treatment | Average Total Fruit Weight Per Plant (grams) |
|---|---|
| **Planting Media Composition (Soil: Rice Husk Charcoal: Goat Manure)** | |
| Land | 1595.86±16.80 a |
| 2:1:1 | 1890.47±14.71 ab |
| 1:2:1 | 2158.88±17.29 ab |
| 1:1:2 | 2253.89±15.91 b |
| BNJ 5% | 18.73 |
| **Rabbit Urine LOF Dosage (ml/plant)** | |
| 0 | 1901.17±58.13 a |
| 300 | 2034.88±57.71 b |
| 400 | 1981.05±55.64 ab |
| 500 | 1963.31±56.66 ab |
| BNJ 5% | 4.86 |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The provision of a single factor in the composition of planting media has a significant effect on the total fruit weight per plant. Based on the average value (Table 10), it is evident that the planting media composition of 1:1:2 yields a total fruit weight per plant of 2253.89 grams, which is significantly different from the soil treatment of 1595.86 grams. However, it is not substantially different from the 2:1:1 and 1:2:1 treatments. The increase in total fruit weight in the 1:1:2 treatment can be associated with the high proportion of goat manure in the planting media. Manure is a source of macro- and micro-nutrients that are quite complete, which can increase soil fertility and support plant growth and yield. Manure can improve soil structure, increase cation exchange capacity (CEC), and provide nutrients gradually, thereby supporting plant growth. Rice husk charcoal enhances soil porosity and aeration, while also helping to retain water and nutrients. This finding, in turn, can increase the efficiency of nutrient absorption by plant roots (uddi, 2023). This combination enables the root system to develop more effectively and supports the formation of higher yields.

The single-factor administration of rabbit urine LOF dose significantly affected the total fruit weight per plant. Based on the average value (Table 10), the rabbit urine LOF dose of 300 ml/plant showed the best total fruit weight of 2034.88 grams, significantly different from the 0 ml/plant treatment of 1901.17 grams but not substantially different from the 400 ml/plant and 500 ml/plant treatments. The effectiveness of LOF is largely determined by the form of macronutrient availability (N, P, K) and the balance of microelements that support plant growth and yield. Additionally, rabbit urine has a relatively high nitrogen content; however, if not balanced with phosphorus and potassium, it will not support optimal fruit formation. Nitrogen supports protein synthesis and cell division, phosphorus is important in energy metabolism and nucleic acid formation, while potassium plays a role in the process of carbohydrate transport and osmotic pressure regulation, all of which contribute to fruit enlargement and weight increase. This finding aligns with research by Hulopi et al. (2024), which suggests that the application of rabbit urine LOF can significantly enhance fruit quality and weight.

### 3.9. Fruit Diameter Per Plant

The results of the data analysis showed that the combination of planting media composition and rabbit urine LOF dosage did not exhibit any interaction on fruit diameter per plant from the 1st to the 6th harvest. The average value of fruit diameter per plant in the single treatment of planting media composition and rabbit urine LOF dosage can be presented in Table 11.

The single factor of planting media composition had a significant effect on the fruit diameter per plant. Based on the average value (Table 11), it is evident that the 1:1:2 planting media composition for the 6th harvest yielded the best fruit diameter of 4.79 cm, which is significantly different from the soil treatment of 3.35 cm and not substantially different from the 2:1:1 treatment. The 1:1:2 planting media treatment containing manure resulted in a considerable increase in fruit diameter compared to the control treatment. This finding is attributed to the availability of more complete and easily absorbed nutrients for plants. Manure, especially goat manure, contains the main nutrients, such as nitrogen (N), phosphorus (P), and potassium (K), in adequate amounts. Potassium (K) plays the most important role in the fruit enlargement process. This finding is in line with research by Setiawan et al. (2023)that the availability of macronutrients such as nitrogen (N), phosphorus (P), and potassium (K) in goat manure contributes significantly to increasing eggplant fruit diameter, with potassium playing a major role in fruit enlargement through increasing photosynthetic activity and distribution of its results.

**Table 11.** Average Fruit Diameter Per Plant Per Harvest Period in the Treatment of Planting Media Composition and Rabbit Urine LOF Dosage

| Treatment | Fruit Diameter Per Plant (cm) | | | | | |
|---|---|---|---|---|---|---|
| | Harvest | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| **Planting Media Composition (Soil: Rice Husk Charcoal: Manure)** | | | | | | |
| Land | 2.39±0.07 a | 2.55±0.07 a | 2.86±0.15 a | 3.02±0.10 a | 3.13±0.09 a | 3.35±0.11 a |
| 2:1:1 | 2.84±0.05 ab | 3.28±0.09 ab | 3.38±0.10 ab | 3.63±0.16 ab | 3.83±0.07 ab | 4.18±0.15 ab |
| 1:2:1 | 3.26±0.11 b | 3.46±0.09 b | 3.99±0.09 ab | 4.20±0.07 ab | 4.37±0.09 ab | 4.76±0.08 b |
| 1:1:2 | 3.35±0.06 b | 3.58±0.12 b | 4.59±0.07 b | 4.81±0.10 b | 4.73±0.08 b | 4.79±0.14 b |
| BNJ 5% | 0.24 | 0.27 | 0.32 | 0.33 | 0.23 | 0.36 |
| **Rabbit Urine LOF Dosage** | | | | | | |
| 0 ml/tan | 2.84±0.20 a | 3.01±0.18 a | 3.44±0.29 a | 3.66±0.28 a | 3.86±0.29 a | 3.96±0.25 a |
| 300 ml/tan | 3.10±0.14 b | 3.41±0.21 b | 3.84±0.22 b | 4.11±0.30 b | 4.14±0.25 b | 4.48±0.29 b |
| 400 ml/ton | 2.99±0.13 a | 3.23±0.19 ab | 3.79±0.26 b | 3.98±0.27 ab | 4.03±0.22 ab | 4.34±0.24 ab |
| 500 ml/ton | 2.92±0.17 a | 3.22±0.12 ab | 3.75±0.32 ab | 3.91±0.27 ab | 4.02±0.25 ab | 4.31±0.23 ab |
| BNJ 5% | 0.06 | 0.07 | 0.08 | 0.09 | 0.06 | 0.09 |

Description: Numbers followed by the same letter in the same column and the same treatment show no significant difference in the 5% BNJ test.

The single-factor administration of rabbit urine LOF dose significantly affected the diameter of the fruit per plant. Based on the average value (Table 11), the dose of 300 ml/plant of rabbit urine LOF for the 6th harvest gave the best results, namely 4.48 cm, significantly different from the 0 ml/plant treatment of 3.96 cm, but not substantially different from the 400 ml/plant and 500 ml/plant treatments. The increase in fruit diameter, along with the administration of rabbit urine LOF, is most likely due to the relatively high content of macro- and micronutrients. Fermented rabbit urine LOF also contains natural growth hormones such as auxin and cytokinin, which support cell division and enlargement in fruit organs. This finding aligns with research by Pradani et al. (2023), which indicates that rabbit urine contains nitrogen, phosphorus, and potassium, all of which are essential for supporting the growth and development of plant fruit. Potassium, in particular, plays a crucial role in the processes of fruit enlargement, carbohydrate transport, and regulation of osmotic pressure within cells, thereby directly contributing to the formation of optimal fruit diameter. The high potassium in rabbit urine LOF is sufficient to support fruit enlargement so that the fruit diameter increases significantly.

Potassium helps distribute photosynthetic products from leaves to fruit, increasing water absorption and maintaining the osmotic balance of plant cells. This finding allows fruit to grow with a larger and more consistent diameter. Phosphorus (P) supports the process of fruit cell division and enlargement through its role in energy metabolism. Meanwhile, nitrogen (N) promotes the formation of healthy plant tissue and supports fruit filling during the generative phase. Larger fruit diameter in plants occurs due to increased nutrient availability, improved soil structure and fertility, and support for root development and nutrient transport to the generative parts of the plant.


**Figure 1**Eggplant Samples Between Treatments

## 4. Conclusion

The combination of soil planting media—rice husk charcoal and manure in a 1:1:2 ratio—along with a dose of 300 ml of rabbit urine LOF per plant has been proven to yield the best results. This finding is evidenced by the highest number of leaves (41.89 leaves) and the greatest fruit weight per fruit (44.7 grams) at 70 days after planting (DAP). This treatment also significantly enhances plant height, fruit weight per plant, and total fruit weight per plant. Therefore, the use of organic planting media in a 1:1:2 ratio, combined with 300 ml of rabbit urine per plant, is highly recommended to optimize growth and fruit yield in the cultivation of Gelatik eggplant plants.

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