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EFFECTIVENESS OF GIVING BIOCHAR AND POC TOFU WASTEWATER ON THE GROWTH AND PRODUCTION OF TOMATO PLANTS (Solanum lycopersicum L)

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Abstract
Tomato plants are one of the most popular fruit vegetables among people. To increase the growth and production of tomato plants, you can use husk charcoal biochar and liquid organic fertilizer from tofu waste. This research aims to determine the effect of providing husk charcoal biochar and tofu water liquid organic fertilizer on the growth and production of tomato plants (Solanum lycopersicum L). This research method uses a Factorial Randomized Block Design (RBD). The first factor is the provision of husk charcoal biochar with the symbol (A), consisting of A0 = 0 kg/plot, A1 = 1 kg/plot, A2 = 2 kg/plot, and A3 = 3 kg/plot. The second factor is the provision of liquid organic fertilizer from tofu waste water (T), consisting of T0 = 0 ml/liter/plot, T1 = 200 ml/liter/plot, T2 = 400 ml/liter/plot, T3 = 600 ml/liter/plot. The results of the study showed that the administration of husk charcoal biochar had a very significant effect on plant height (cm), a significant effect on stem diameter (mm), and a very significant effect on the number of fruit/plants (fruit) , number of fruit/plot (fruit), fruit weight. /plant (g) and fruit weight/lot (g). Where the best treatment is A3 = 3 kg/plot. The application of liquid organic fertilizer from tofu waste water had no significant effect on plant height (cm) and stem diameter (mm), but had a very significant effect on the number of fruit/plants (fruit), number of fruit/plots (fruit), weight of fruit/plant (g) and weight of fruit/lot (g). Where the best treatment is T3 = 600 ml/liter/plot. The interaction between giving husk charcoal biochar and liquid organic fertilizer from tofu waste water had no significant effect on all observed parameters.

I. INTRODUCTION

In Indonesia, tomatoes (Solanum lycopersicum L) are widely loved. In addition to being a vegetable plant, tomatoes can also be processed into various kinds of processed foods, such as sweets, juices, sauces, table fruits, cosmetic ingredients, medicines and others. Even without being processed, tomatoes can actually be enjoyed deliciously because tomatoes are delicious to eat fresh. This tomato fruit has a round shape and a beautiful color when ripe, so it becomes a unique attraction that is not owned by other fruits and has great potential to be developed because it has a fairly high economic value.(Azmin et al., 2020).

The problem that often occurs where the demand for tomato supply continues to increase, but there is an imbalance between land area, production and consumption needs of tomato plants from year to year. Therefore, the high demand for tomatoes must be balanced with high tomato production as well. The low productivity of tomatoes is due to inappropriate cultivation techniques, such as the use of fertilizers that are not optimal. One effort that can be made to improve the quality and quantity of tomatoes is by adding organic matter to the soil which aims to improve the soil structure so that the soil becomes loose and plant roots can penetrate more easily and so that it is easy to absorb nutrients contained in the soil. This can support plant growth and development(Maria , 2022).

Realizing the importance of sustainable agriculture and the high price of inorganic

fertilizers among farmers, therefore research is directed at the utilization of organic waste that is always available and can be used as organic fertilizer. In improving the quality and quantity of farmers' activities, we must be able to change our mindset so that we are not always dependent on chemical fertilizers, with that we can utilize organic fertilizers for the needs of our plants.(Sanniwati, 2020). One source of organic material that can be used as fertilizer is rice husk charcoal biochar and tofu wastewater. Rice husk is a waste that has many benefits if processed properly, especially in the agricultural sector. Rice husk can be used as a planting medium and soil conditioner by being processed into rice husk charcoal biochar. Rice husk charcoal biochar is made from rice husks by burning them imperfectly. Rice husk charcoal biochar is easy to bind water and does not clump easily(Firdaus et al., 2021).

Based on the results of the researchSyahid et al., (2013)stated that the provision of rice husk biochar at a dose of 10 tons/ha or equivalent to 1 kg/m2 had a significant effect on the increase in height and the greatest number of leaves as well as the most optimal results in segau plants.

Liquid Organic Fertilizer (POC) is a solution resulting from the decomposition of organic materials originating from plant waste, animal and human waste that contains more than one nutrient element. The advantages of liquid organic fertilizer are that it quickly overcomes nutrient deficiencies, has no problems with nutrient leaching, and is able to provide nutrients quickly.(Prasetyo & Evizal, 2021)

WaterTofu waste is the remaining water from tofu coagulation produced during the washing, soaking, and molding processes during tofu making. During sedimentation, not all of it settles, thus the remaining protein that is not coagulated and other substances that dissolve in water will be present in the liquid tofu waste produced. Organic materials contained in tofu waste are carbohydrates of 25-50%, protein of 40-60%, fat of 10% and oil. Organic materials affect the high levels of phosphorus, nitrogen, and sulfur in water.(Marian et al., 2019)

According toHawalid (2019), stated that the provision of liquid organic fertilizer from tofu waste with a dose of 400 ml/l of water provided the best growth and production for peanut plants. Therefore, the use of this tofu waste POC can be used as an alternative liquid fertilizer for the growth and production of tomato plants. In line with the research(Widari et al., 2020)which states that the length of fermentation time for making liquid organic fertilizer from tofu waste for 10 days provides the most optimal results.

II. RESEARCH METHODS

This study used a Factorial Randomized Block Design (RAK) with 2 treatment factors, 16 treatment combinations and 3 blocks. Factor I: Provision of Rice Husk Biochar with symbol (A), consisting of 4 levels, namely: A0 = 0 kg / plot, A1 = 1 kg / plot, A2 = 2 kg / plot and A3 = 3 kg / plot. Factor II: Provision of Tofu Waste POC with symbol (T), consisting of 4 levels, namely: T0 = 0 ml / liter of water / plot, T1 = 200 ml / liter of water / plot, T2 = 400 ml / liter of water / plot and T3 = 600 ml / liter of water / plot.
The observation parameters were: plant height (cm), stem diameter (mm), number of fruits/plant (fruit), number of fruits/plot (fruit), weight of tomato fruit/plant (g), weight of tomato fruit/plot (g).

III. RESULTS AND DISCUSSION

A. Plant Height (cm)

The results of the study after statistical analysis showed that the provision of biochar had a very significant effect 6 weeks after planting. In the treatment of tofu wastewater POC showed no significant effect. The interaction between the provision of rice husk charcoal biochar and tofu waste POC had no significant effect on plant height (cm). The results of the average difference test of tomato plant height due to the provision of rice husk charcoal biochar and tofu wastewater POC at the ages of 2, 4, and 6 MST can be seen in table 1.

Table 1. Average Plant Height (cm) of Tomato Plants Due to the Provision of Biochar (A) and Tofu Waste POC (T) at the ages of 2, 4, and 6 MST.

Treatment	Plant Height (cm)		
	2 MST	4 MST	6 MST
A =BiocharRice Husk Charcoal			
A0 (0kg/Plot)	15.83 aA	54.77 cB	92.41 bB
A1 (1 kg/Plot)	16.64 aA	57.35 bcB	99.92 aA
A2 (2 kg/Plot)	17.42 aA	59.40 abAB	100.22 aA
A3 (3 kg/ Plot)	17.93 aA	62.15 aA	102.46 aA
T = Tofu Wastewater POC			
T0 (0 ml/liter water/plot)	16.12 aA	56.06 aA	97.41 aA
T1 (200 ml/liter water/plot)	17.50 aA	57.97 aA	98.48 aA
T2 (400 ml/liter water/plot)	17.05 aA	59.16 aA	99.26 aA
T3 (600ml/liter water/plot)	17.15 aA	60.48 aA	99.85 aA

Note: Numbers in the same column followed by different letters mean they are significantly different at the 5% level (lower case letters) and very significantly different at the 1% level (capital case letters).

The graph of the relationship between plant height (cm) of tomatoes aged 6 weeks after planting due to the administration of biochar can be seen in Figure 1.

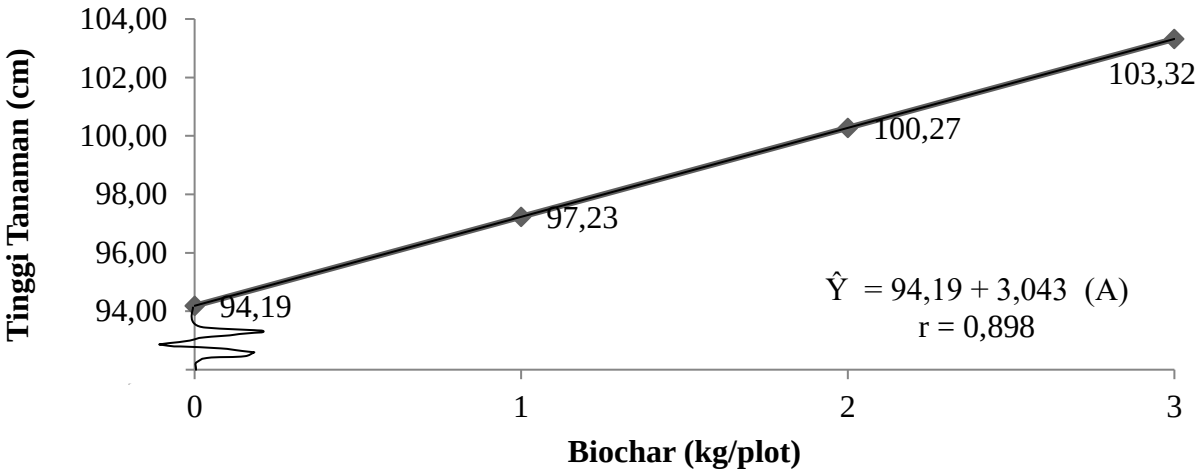

Figure 1. Graph of the Relationship between Plant Height (cm) of Tomatoes 6 Weeks After Planting Due to Biochar Administration.

B. Bar Diameter (mm)

The results of the study after statistical analysis showed that the provision of biochar

had no significant effect at the age of 2 and 4 weeks after planting, but had a significant effect at 6 weeks after planting. Meanwhile, the provision of tofu wastewater POC and the interaction between the two had no significant effect on the stem diameter of tomato plants at the age of 2, 4 and 6 weeks after planting.

The results of the test on the difference in average stem diameter (mm) of tomato plants at the age of 2, 4 and 6 weeks after planting due to the administration of secant charcoal biochar and tofu wastewater POC are presented in Table 2.

Table 2. Average Stem Diameter (mm) of Tomato Plants Due to Application of Biochar (A) and Tofu Wastewater POC (T) at Ages 2, 4 and 6 MST.

Treatment	Bar Diameter (mm)		
	2 MST	4 MST	6 MST
A =BiocharRice Husk Charcoal			
A0 (0kg/Plot)	2.46 aA	5.13 aA	8.39 bA
A1 (1 kg/Plot)	2.48 aA	5.40 aA	8.80 abA
A2 (2 kg/Plot)	2.66 aA	5.41 aA	8.88 abA
A3 (3 kg/ Plot)	2.66 aA	5.45 aA	9.11 aA
T = Tofu Wastewater POC			
T0 (0 ml/liter water/plot)	2.53 aA	5.27 aA	8.59 aA
T1 (200 ml/liter water/plot)	2.56 aA	5.30 aA	8.79 aA
T2 (400 ml/liter water/plot)	2.58 aA	5.35 aA	8.83 aA
T3 (600ml/liter water/plot)	2.60 aA	5.46 aA	8.98 aA

Note: Numbers in the same column followed by different letters mean they are significantly different at the 5% level (lower case letters) and very significantly different at the 1% level (capital case letters).

Relationship Graph of Stem Diameter (mm) of Tomato Plants 6 Weeks After Planting Due to Biochar Applicationcan be seen in figure 2.

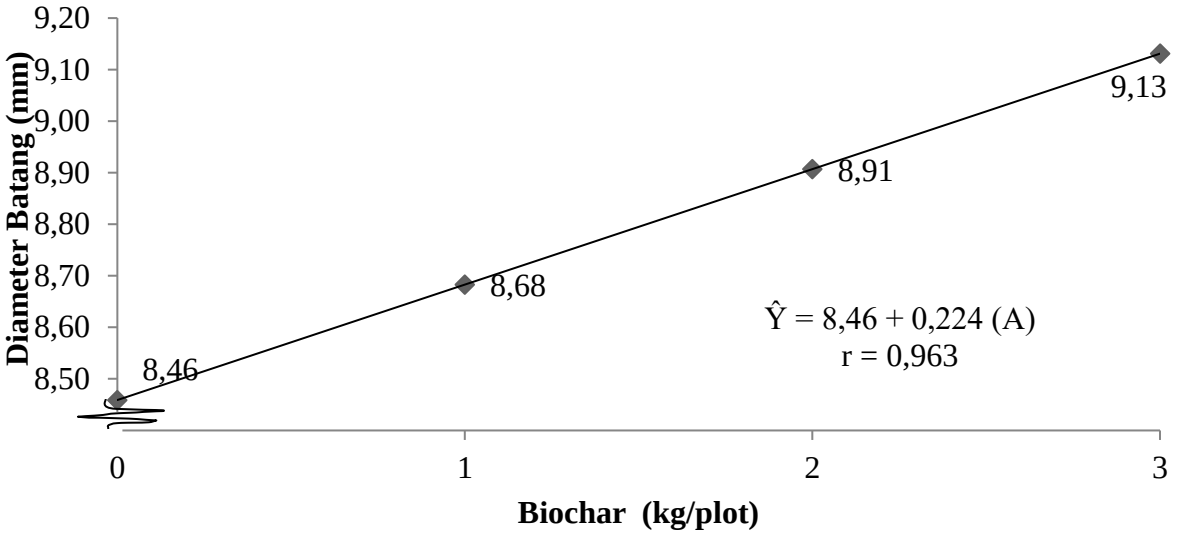

Figure 2. Graph of the Relationship between Stem Diameter (mm) of Tomato Plants 6 Weeks After Planting Due to Biochar Administration.

C. Number of Fruits / Plant (fruit)

The results of the study after statistical analysis showed that the provision of biochar secant charcoal and tofu wastewater POCgives a very real effect on the number of fruits/plants (fruits) of tomato plants. The interaction between the two has no real effect on the number of fruits/plants (fruits) of tomato plants. For more details, the results of the test on the average difference in the number of fruits/plant (fruits) of tomato plants due to the administration of rice husk charcoal and tofu waste POC can be seen in table 3.

Table 3. Average Number of Fruits/Plant (fruit) of Tomato Plants Due to the Provision of Biochar (A) and Tofu Waste POC (T)

Treatment	Number of Fruits/Plants
A =BiocharRice Husk Charcoal	
A0 (0kg/Plot)	78.11 Dd
A1 (1 kg/Plot)	110.44 Cc
A2 (2 kg/Plot)	111.22 bB
A3 (3 kg/ Plot)	116.44 Aa
T = Tofu Wastewater POC	
T0 (0 ml/liter water/plot)	89.33 dD
T1 (200 ml/liter water/plot)	102.78 cC
T2 (400 ml/liter water/plot)	104.89 bB
T3 (600ml/liter water/plot)	119.22 aA

Note: Numbers in the same column followed by different letters mean they are significantly different at the 5% level (lower case letters) and very significantly different at the 1% level (capital case letters).

. Graph of the Relationship between the Number of Fruits/Plant (fruit) of Tomato Plants Due to the Application of Biochar.

can be seen in figure 3.

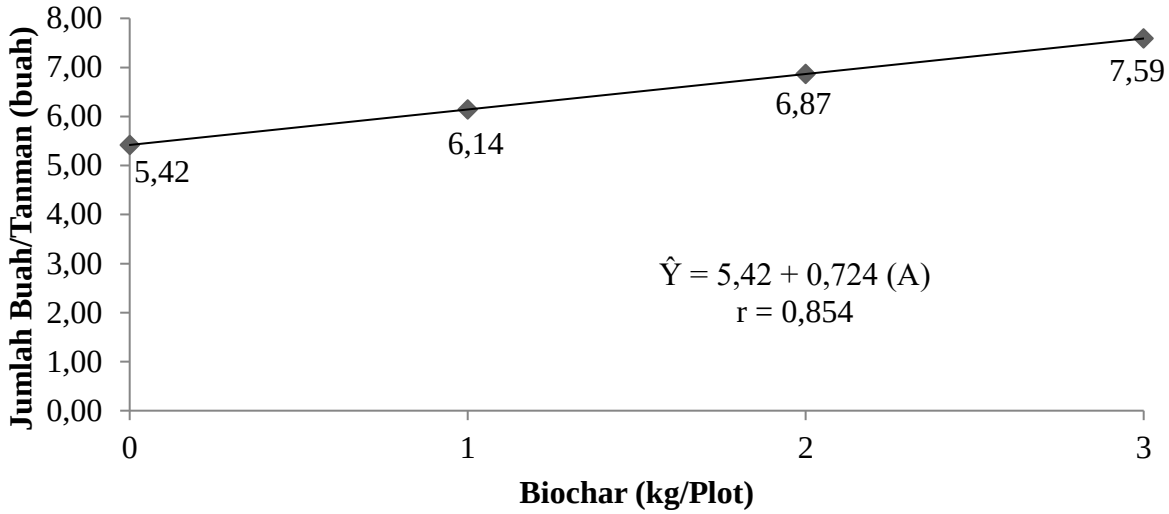

Figure 3. Graph of the Relationship between the Number of Fruits/Plant (fruit) of Tomato Plants Due to the Application of Biochar.

Graph of the Relationship between the Number of Fruits/Plant (fruit) of Tomato Plants Due to the Provision of Tofu Wastewater POC. seen in figure 4.

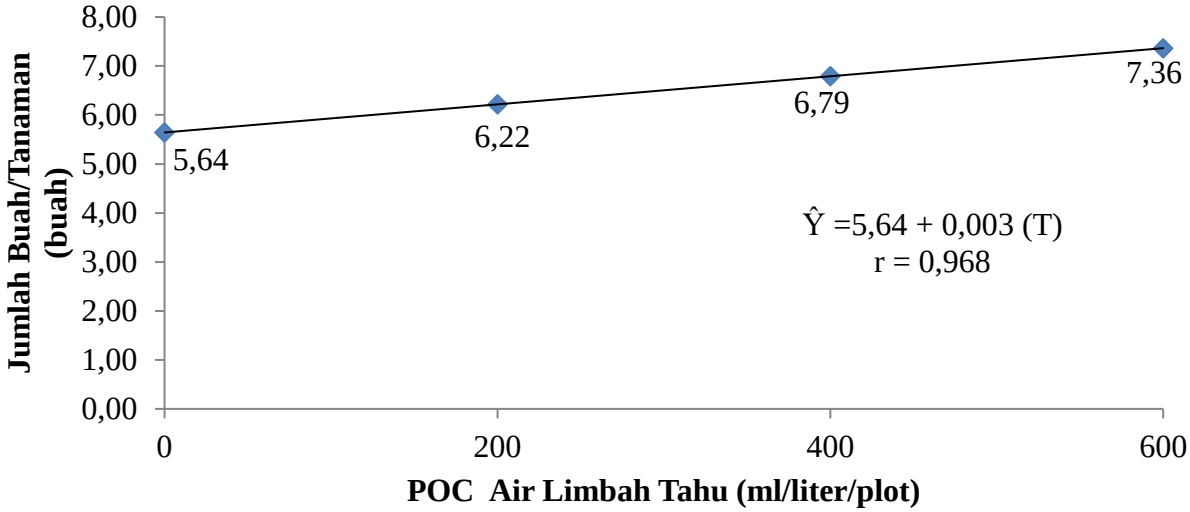

Figure 4. Graph of the Relationship between the Number of Fruits/Plant (fruit) of Tomato Plants Due to the Provision of Tofu Wastewater POC.

D. Number of Fruits/Plot (fruits)

The results of the study after statistical analysis showed that the provision of biochar and tofu waste POC had a very significant effect on the number of fruits/plot (fruit) of tomato plants. While the interaction of the two gave no significant effect on the number of fruits/plot (fruit) of tomato plants. For more details on the effect of the provision of rice husk charcoal and tofu waste POC on the number of fruits/plot (fruit) of tomato plants can be seen in table 4.

Table 4. Average Number of Fruits/Plot (fruit) of Tomato Plants Due to Application of Biochar (A) and POCWaterTofu Waste (T)

Treatment	Number of Fruits/Plot (fruits)
A =BiocharRice Husk Charcoal	
A0 (0kg/Plot)	19.53bB
A1 (1 kg/Plot)	26.28aA
A2 (2 kg/Plot)	27.58aA
A3 (3 kg/ Plot)	27.69aA
T = Tofu Wastewater POC	
T0 (0 ml/liter water/plot)	22.50bB
T1 (200 ml/liter water/plot)	25.06abAB
T2 (400 ml/liter water/plot)	26.06aA
T3 (600ml/liter water/plot)	27.47aA

Note: Numbers in the same column followed by different letters mean they are significantly different at the 5% level (lower case letters) and very significantly different at the 1% level (capital case letters).

Graph of the Relationship between the Number of Fruits/Plot (fruit) of Tomato Plants Due to the Provision of Rice Husk Biochar. can be seen in figure 5.

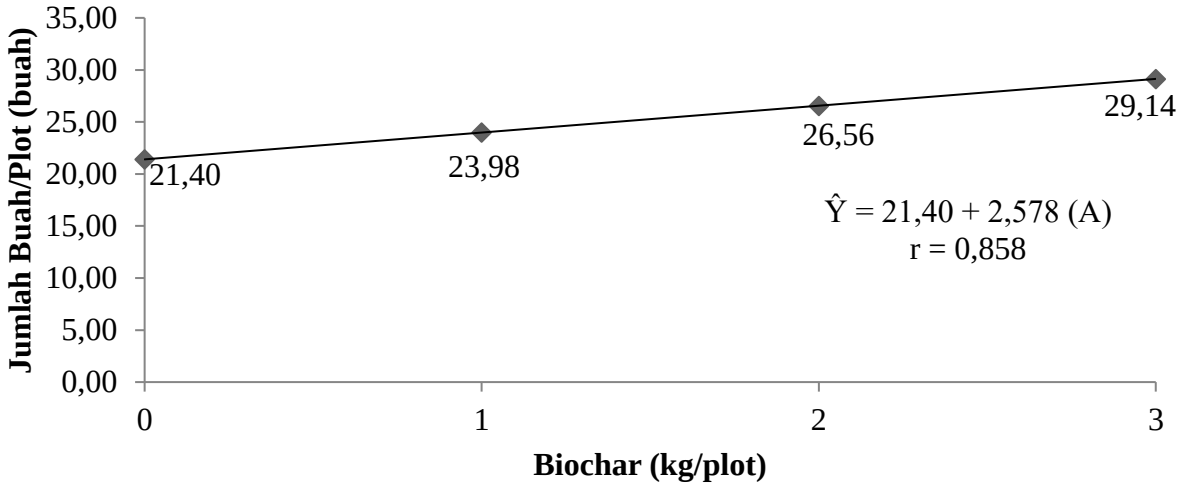

Figure 5. Graph of the Relationship between the Number of Fruits/Plot (fruit) of Tomato Plants Due to the Provision of Rice Husk Biochar.

Graph of the Relationship between the Number of Fruits/Plot (fruit) of Tomato Plants Due to the Provision of Tofu Wastewater POC.

can be seen in figure 6.

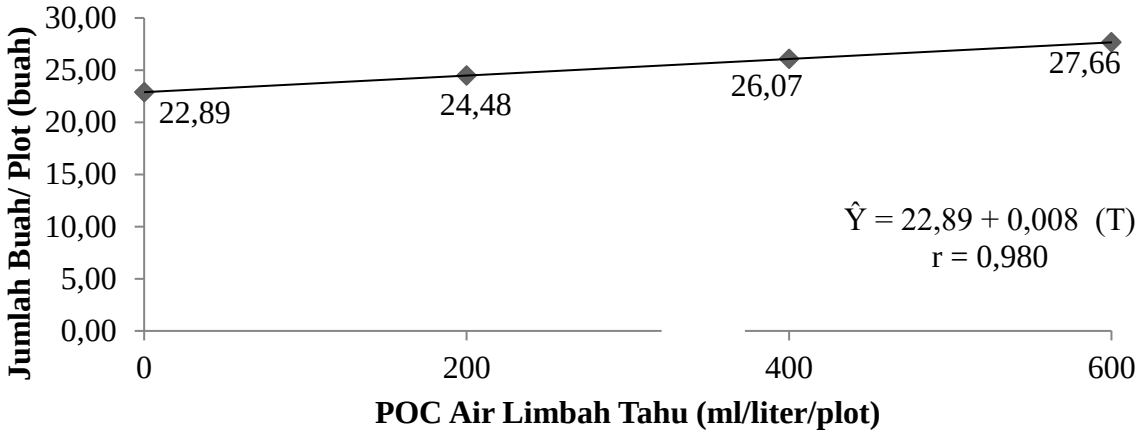

Figure 6. Graph of the Relationship between the Number of Fruits/Plot (fruits) of Tomato Plants Due to the Provision of Tofu Wastewater POC.

E. Fruit/Plant Weight (g)

The results of the study after statistical analysis showed that the provision of rice husk charcoal biochar and tofu wastewater POC had a very significant effect on the weight of fruit/plant (g) of tomato plants. While the interaction between the two had no significant effect. For more details, the provision of rice husk charcoal and tofu wastewater POC on the weight of fruit/plant (g) of tomato plants is presented in table 5.

Table 5. Average Weight of Fruit/Plant (g) of Tomato Plants Due to Application of Biochar (A) and Tofu Wastewater POC (T)

Treatment	Fruit/Plant Weight (g)
A =BiocharRice Husk Charcoal	
A0 (0kg/Plot)	259.92bB
A1 (1 kg/Plot)	366.74aA
A2 (2 kg/Plot)	384.63aA
A3 (3 kg/ Plot)	393.16aA
T = POCWaterTofu Waste	
T0 (0 ml/liter water/plot)	302.33bB
T1 (200 ml/liter water/plot)	358.15aA
T2 (400 ml/liter water/plot)	361.12aA

T3 (600ml/liter water/plot)	382.84aA

Note: Numbers in the same column followed by different letters mean they are significantly different at the 5% level (lower case letters) and very significantly different at the 1% level (capital case letters).

Graph of the Relationship between Fruit Weight/Plot (fruit) of Tomato Plants Due to the Provision of Tofu Wastewater POC. can be seen in figure 7

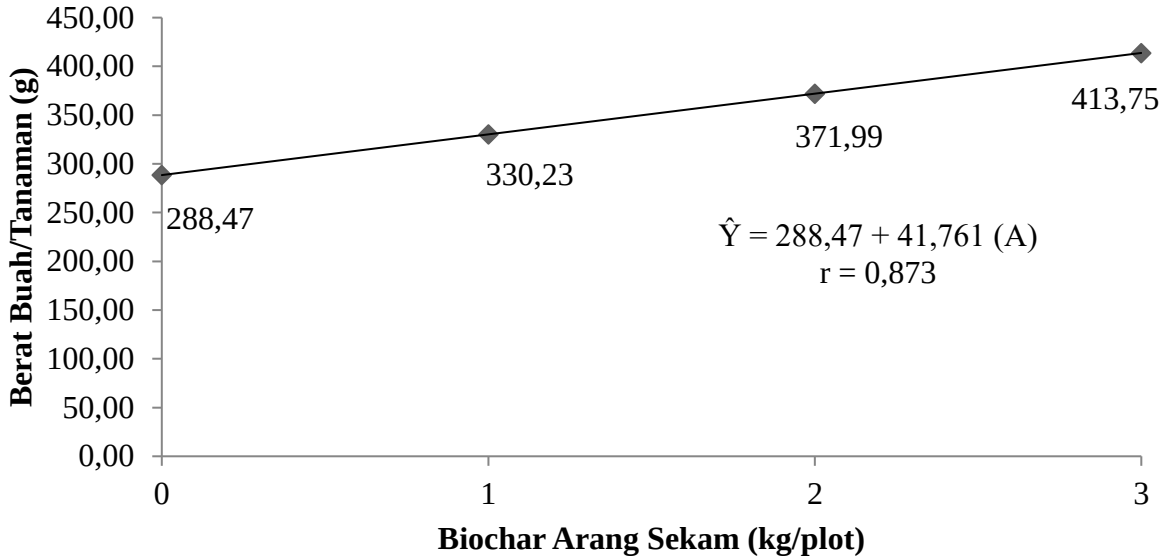

Figure 7. Graph of the Relationship between Fruit/Plant Weight (g) of Tomato Plants Due to the Application of Rice Husk Charcoal.

. Graph of the Relationship between Fruit/Plant Weight (g) of Tomato Plants Due to the Provision of Tofu Wastewater POC. can be seen in figure 8.

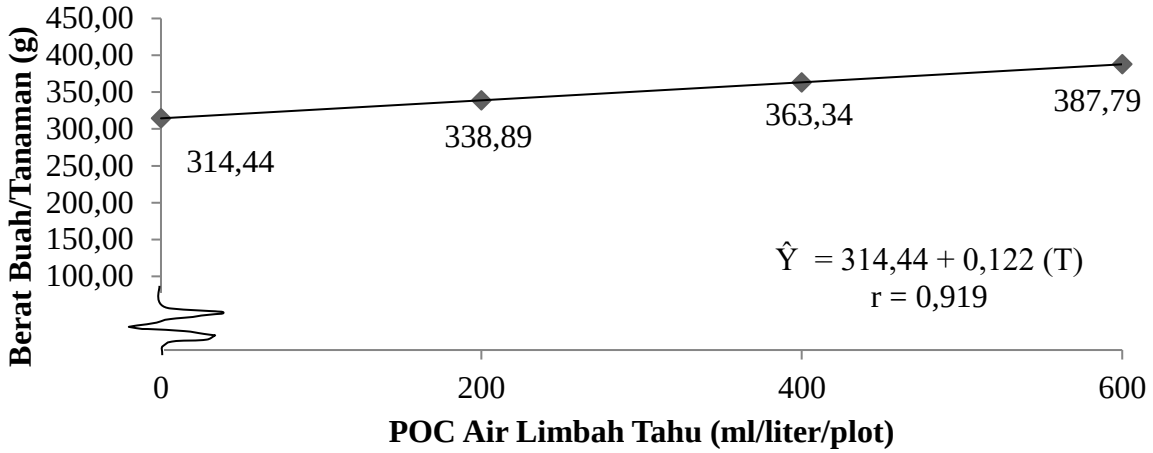

Figure 8. Graph of the Relationship between Fruit/Plant Weight (g) of Tomato Plants Due to the Application of Tofu Wastewater POC.

F. Fruit Weight/Plot (g)

The results of the study after statistical analysis showed that the provision of rice husk charcoal biochar and tofu wastewater POC on the weight of fruit/plot (g) of tomato plants had a very significant effect. The interaction between the provision of rice husk charcoal biochar and tofu wastewater POC had no significant effect on the weight of fruit/plot (g) of tomato plants. The results of the average difference test due to the provision of rice husk charcoal biochar and tofu wastewater POC on the weight of fruit/plot (g) of tomato plants can be seen in table 6.

Table 6. Average Fruit Weight/Plot (g) of Tomato Plants Due to Application of Biochar (A) and Tofu Wastewater POC (T)

Treatment	Fruit Weight/Plot (g)
A =BiocharRice Husk Charcoal	
A0 (0kg/Plot)	1039.67bB
A1 (1 kg/Plot)	1466.97aA
A2 (2 kg/Plot)	1484.25aA
A3 (3 kg/ Plot)	1572.64Aa
T = POCWaterTofu Waste	
T0 (0 ml/liter water/plot)	1209.33bB
T1 (200 ml/liter water/plot)	1414.78aAB
T2 (400 ml/liter water/plot)	1448.53aA
T3 (600ml/liter water/plot)	1490.89aA

Note: Numbers in the same column followed by different letters mean they are significantly different at the 5% level (lower case letters) and very significantly different at the 1% level (capital case letters).

Relationship Graph of Fruit Weight/Plot (g) of Tomato Plants Due to Biochar Application can be seen in figure 9.

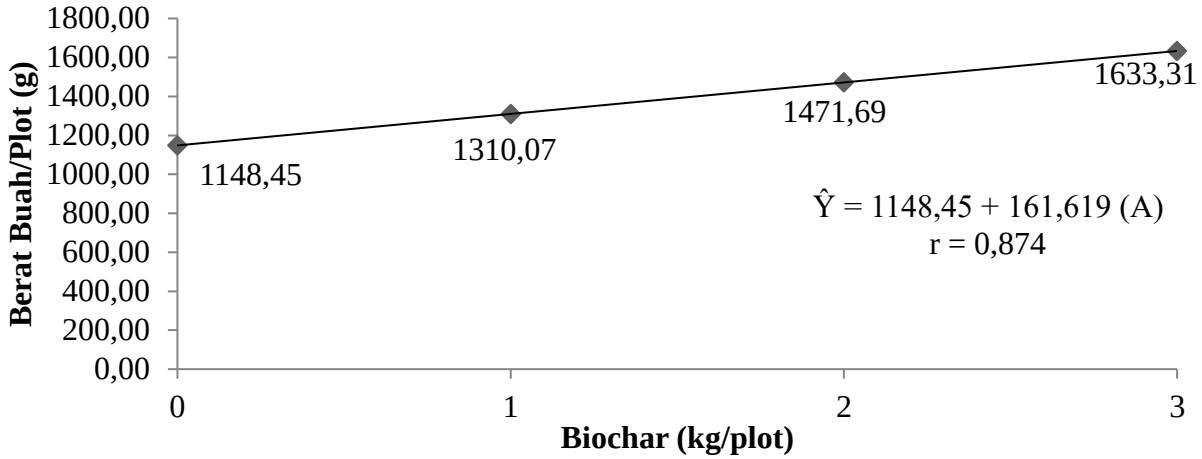

Figure 9. Graph of the Relationship between Fruit Weight/Plot (g) of Tomato Plants Due to Biochar Application

Relationship Graph of Fruit Weight/Plot (g) of Tomato Plants Due to the Provision of Tofu Wastewater POCon fruit weight/plot (g) can be seen in Figure 10.

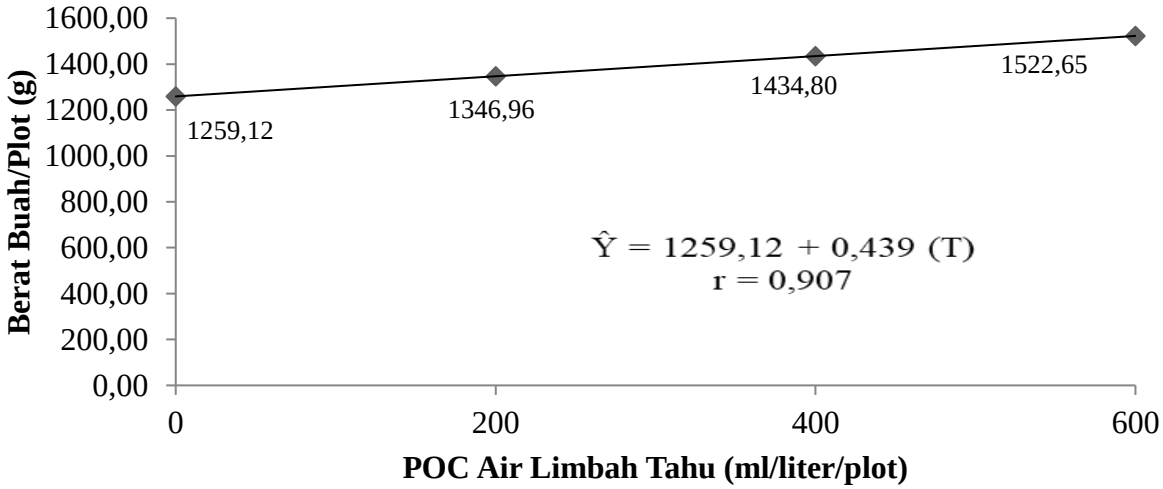

Figure 10. Graph of the Relationship between Fruit Weight/Plot (g) of Tomato Plants Due to the Application of Tofu Wastewater POC.

G. Effectiveness of Rice Husk Charcoal Application on the Growth and Production of Tomato Plants (Solanum lycopersicum L).

The results of the study after being statistically analyzed showed that the provision of rice husk charcoal had a very significant effect on plant height (cm), number of fruits/plant (fruit), number of fruits/plot (fruit), weight of fruit/plant (g) and weight of fruit/plot (g) and had a significant effect on stem diameter (mm). The results of the study showed that the

provision of rice husk charcoal on the height of tomato plants at the age of 6 MST had a very significant effect with the highest average being the A3 treatment.(3 kg/ Plot) which is 102.46 cm.This shows that the administration of rice husk charcoal at different doses provides different plant effectiveness. This is higher than the results of previous research conducted by Widiarsih et al., (2020) where the average highest plant height was 62.20 cm.

Where the provision of rice husk charcoal can improve the physical, biological and chemical properties of the soil. Physical properties can be seen in changes in the structure of the planting media, from being in the form of lumps to being loose. This is in line with the opinion(Dharmasika et al., 2019)The addition of rice husk charcoal contains silica elements to maintain environmental conditions by improving the physical properties of the soil to make it looser and have a high water holding capacity so that the vegetative growth of corn plants and the process of photosynthate distribution in the vegetative organs of corn become better.

The highest stem diameter parameter (mm) of tomato plants was obtained in the A3 treatment (3 kg/plot) which was 9.11 mm, this occurred because of cambium activity that encouraged the growth of a part of the plant followed by the growth of other parts. Changes in soil structure from a solid lump to a loose form make it easier for plants to absorb nutrients in the soil and plant roots develop well. According to(Fadhillah et al,. 2020)stated that the proportion of plant height to stem diameter can make tomato plants stand firmly, thus supporting the growth and development of the tomato plant itself. In addition, rice husk charcoal as one of the organic materials that can function as a nutrient binder (when there is excess nutrient) that can be used by plants when there is a nutrient deficiency, nutrients are released slowly according to plant needs.

Onobservation of the number of fruits/plant (fruit) with the highest average in the A3 treatment (3 kg/plot) which is 7.28 fruits, the number of fruits/plot (fruit) in the A3 treatment is 27.69 fruits, the weight of fruits/plant (g) in the A3 treatment is 393.16 g and the weight of fruits/plot (g) in the A3 treatment is 1572.64 g giving a very real effect due to the provision of rice husk charcoal, where the use of rice husk charcoal can have a positive impact on soil fertility. This is higher than previous research conducted by Widiarsih et al., (2020). Which fertile soil will facilitate the development of plant roots, as a result, plant roots can develop well, so it is easier to absorb water and nutrients available in the soil. So that it grows and develops optimally and produces high production(Fiona, 2018).

In line with the opinion(Hisani et al., 2019)which states that the number of fruits and the weight of the fruit can be influenced by the availability of macro and micro nutrients needed by plants for the physiological processes of plants, so that they can activate meristematic cells and can facilitate photosynthesis in the leaves. By providing this rice husk charcoal, it can loosen the soil so that it can make it easier for plant roots to absorb the nutrients in it. That way, leaf growth will increase and will increase the photosynthesis process, so that the photosynthate produced will be more and will increase the production of the number of fruits and the weight of tomatoes. This is thought to be able to occur because the nutrients absorbed by plants are able to increase the weight of the fruit.

H. Effectiveness of Liquid Organic Fertilizer (POC) from Tofu Waste on the Growth and Production of Tomato Plants (Solanum lycopersicum L).

The results of the study showed that the provision of tofu waste POC had no significant effect on plant height (cm) and stem diameter (mm), but had a very significant effect on the number of fruits/plant (fruit), number of fruits/plot (fruit), fruit weight/plant (g) and fruit weight/plot (g). The provision of tofu waste POC had no significant effect on plant height (cm) where the highest average was in treatment A3 (3 kg/plot) which was 99.85 cm. This was because the tofu waste POC given was not sufficient for the growth needs of tomato plants. The provision of tofu waste POC was not sufficient for plant needs so that it gave a slow

response to growth, especially in plant height. In line with the results of previous research conducted by Hikmah (2020), it was concluded that tofu liquid waste POC had no significant effect on the height of green bean plants. Nitrogen is very much needed in the stem growth process and if sufficient nitrogen is available in fertilizer, the photosynthesis process will run smoothly and photosynthate will increase so that plant length can be accelerated. The results of photosynthesis are used as an energy source to maintain growth and life (Marlina et, al., 2015).

The need for nitrogen during growth is deficient, then the photosynthesis process will be hampered, thus affecting plant growth so that it is less than optimal. In liquid organic fertilizer, nitrogen plays an important role in plant growth and development and nitrogen can help plants in increasing green leaf substances so that when green substances are abundant, plants will be easier to photosynthesize (Eka, 2016).

ResultsThe study showed that the provision of tofu waste POC on the stem diameter (mm) of tomato plants had no significant effect with the highest average in the A3 treatment (3 kg/plot) which was 8.98 mm. This is thought to be because the nutrient content in tofu liquid waste POC has not been able to support the vegetative growth of tomatoes, especially in the stem diameter. As a result of plants lacking nutrients such as Nitrogen and Potassium, cell division is less than optimal. Nitrogen and potassium have an effect on the formation of plant stem diameter growth. Nitrogen is part of protein and protoplasm, enzymes, biological catalysts that function to accelerate the metabolic process. While potassium plays a role in forming proteins, hardening plant stems, increasing plant resistance to disease (Amalia, 2015). The absorption of nutrients by plants is not directly absorbed at once for stem diameter growth, at the beginning of planting nutrients will be directed at plant height growth and when approaching the end of vegetative nutrients will be absorbed by the stem diameter (Puspadewi et, al., 2016).

On the parametersobservation of the number of fruits/plants (fruits) with the highest average was in treatment A3 (3 kg/plot) which was 7.45 fruits, the number of fruits/plots (fruits) with the highest average was in treatment A3 (3 kg/plot) which was 27.47 fruits, the weight of fruits/plants (g) with the highest average was in treatment A3 (3 kg/plot) which was 382.84 g, and the weight of fruits/plot (g) with the highest average was in treatment A3 (3 kg/plot) which was 1490.89 g, on tomato plants gave a very real effect due to the provision of tofu waste POC. This is because tomato plants are able to utilize the nutrients contained in tofu waste POC, one of which is the element P. Phosphorus in plants which functions in the formation of flowers, fruits and seeds and accelerates fruit ripening. In addition, the role of liquid organic fertilizer from tofu waste as an organic material that can improve the physical, chemical and biological properties of the soil so that it will help provide a balance of nutrient absorption by plant roots. If the availability of nutrients is sufficient, the photosynthesis process will be able to run smoothly, so that assimilates can be translocated to all parts of the plant and ultimately there will be an increase in the weight of the plant's fruit.(Sari, 2020).

Research conducted by Hawayanti et al., (2021) on cucumber plants, the administration of tofu waste POC at a dose of 750 ml/liter of water resulted in the best plant growth and production with a fruit weight per plant of 579.65 g and a fruit weight per plot of 5.07 kg. The results of research conducted by Sari (2020) also explained that the administration of tofu waste POC to tomato plants gave different results for each observation variable where the highest average number of fruits per plant was 23.67 fruits and the highest average fruit weight per plant was 37.80 g.

I. Interaction of Rice Husk Charcoal and Liquid Organic Fertilizer from Tofu Waste on the Growth and Production of Tomato Plants (Solanum lycopersicum L).

The interaction of giving rice husk charcoal and tofu waste POC gave no significant effect on all observation parameters, namely plant height (cm) at 2, 4, and 6 MST, stem diameter (mm) at 2, 4, and 6 MST, number of fruits/plant (fruit),

number of fruits/plot (fruit), weight of fruit/plant (g) and weight of fruit/plot (g) on tomato plants. This explains that both factors provide their respective responses to the growth and production of tomato plants (Solanum lycopersicum L).

IV. CONCLUSION AND SUGGESTIONS

A. Conclusion

From the results of the study after analyzing the variance, the provision of rice husk charcoal had a very significant effect on the parameters of plant height (cm) at the age of 4 and 6 MST, had a significant effect on stem diameter (mm) at the age of 6 MST, had a very significant effect on the number of fruits/plant (fruit), number of fruits/plot (fruit), weight of fruit/plant (g) and weight of fruit/plot (g) in tomato plants. With the best treatment at A3 (3 kg/plot). From the results of the study after analyzing the variance, the provision of tofu waste POC had no significant effect on the parameters of plant height (cm) and stem diameter (mm), but had a very significant effect on the number of fruits/plant (fruit), number of fruits/plot (fruit), weight of fruit/plant (g) and weight of fruit/plot (g) in tomato plants. With the best treatment at T3 (600 ml/liter/plot). The interaction between the provision of rice husk charcoal and tofu waste POC had no significant effect on all observation parameters, namely plant height (cm), stem diameter (mm), number of fruits/plant (fruit), number of fruits/plot (fruit), weight of fruit/plant (g) and weight of fruit/plot (g) on tomato plants.

B. Suggestion

Based on the study's findings, it is recommended to apply rice husk charcoal at a dosage of 3 kg/plot to significantly enhance tomato growth and yield, particularly in terms of plant height, stem diameter, and fruit production. Additionally, using tofu waste liquid organic fertilizer (POC) at 600 ml/liter/plot is advised to improve fruit yield, even though it does not impact plant height or stem diameter. Although no significant interaction was found between the two treatments, combining these practices may still offer practical benefits for sustainable tomato cultivation.

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