

Theme: Growth and Production of Suri Cucumbers
(*Cucumis Lativus*) In Several Doses of Goat Manure
Fertilizer and Tofu Liquid Waste

Growth And Production of Suri Cucumbers (*Cucumis Lativus*) In Several Doses of Goat Manure Fertilizer and Tofu Liquid Waste

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ABSTRACT

This research aims to determine the effect of applying goat manure and tofu liquid waste on the growth and production of suri cucumber (*Cucumis lativus*) plants. This research used a factorial Randomized Group Design (RAK), 2 treatment factors, factor I was administration of goat manure (K) consisting of K0= control; K1=1 kg/plot; K2=2 kg/plot; K3=3 kg/plot; Factor II is the provision of tofu liquid waste (T) consisting of T0= control; T1=500 ml/plot; T2=1000 ml/plot; T3=1500 ml/plot. The results of the research showed that the treatment of goat manure and tofu waste POC had no significant effect on plant length and stem diameter, but had a very significant effect on sample fruit production. The interaction of providing goat manure fertilizer and tofu liquid waste had no significant effect on all parameters.

Keywords: Goat Manure Fertilizer, Tofu Liquid Waste, Cucumber Suri

1. Introduction

Cucumber suri (*Cucumis lativus*) is an annual plant from the group of horticultural plants of the pumpkin family (Cucurbitaceae) which can be eaten either fresh or in the form of processed products. Apart from being a food ingredient, cucumber suri is also widely used as a raw material in industry. beauty. Another benefit of cucumber suri is that the seeds contain hypoxanti-type alkaloid poison to treat children who suffer from worms, dysentery, reduce high blood pressure (hypertension) and prevent poisoning during pregnancy.

Cucumber suri has the potential to be developed because it has high economic value. has promising market opportunities to meet the demand for household consumption and processing industries, both in the domestic and international markets (Syahfari, 2010).

The increasing number and variety of consumer demand for suri cucumbers or finished products made from suri cucumbers means that suri cucumbers have great potential in their development. The development of suri cucumber plants often experiences obstacles, especially due to the poor physical, chemical and biological properties of the soil, resulting in a decrease in production. , therefore it is necessary to cultivate the soil and add nutrients. The addition of nutrients can be done using organic fertilizer (Putra, 2011).

To maintain the quality of soil fertility, you can use goat dung as fertilizer. Goat manure contains 1.26% N, 16.36 mg.kg-1 P, 2.29 mg.l-1, Ca, Mg and 4.8% organic C-. When compared with compound inorganic fertilizer, the amount of nutrients contained in goat manure is less, but it has quite complete nutrient content (Rahayu, 2014). Apart from influencing the addition of nutrients, it can also affect the physical, chemical and biological properties of the soil (Lumbanraja, 2012).

Tofu liquid waste is the remainder of the washing, soaking, clotting and molding processes during tofu making. Tofu liquid waste contains a lot of organic material. The protein content of tofu

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liquid waste reaches 40-60%, carbohydrates 25-50% and fat 10%. Organic materials influence the high levels of phosphorus, nitrogen and sulfur in water (Setiawan, 2009).

This research aims to determine the effectiveness of applying goat manure and tofu liquid waste on the growth and production of suri cucumber (*Cucumis lativus*).

2. Methods

This research was carried out from December 2019 to April 2020 on Jalan Paya Bakung, Kampung 9, Sumber Melati Diski. The materials used were suri cucumber seeds (*Cucumis lativus*), goat manure, tofu liquid waste, organic pesticide from papaya leaves, and water. The tools used in this research were a hoe, measuring tape, gembor, camera, raffia rope, saw, bamboo, signboard, scale, caliper, and writing instrument.

This research used a factorial Randomized Block Design (RAK) consisting of 2 treatment factors and 2 blocks. Factor I is the giving of goat manure fertilizer at 0 kg/plot, 1 kg/plot, 2 kg/plot, 3 kg/plot. Factor II is the giving of tofu liquid waste at 0 ml/plot, 500 ml/plot, 1000 ml/plot, and 1500 ml/plot. The parameters observed were plant length (cm), stem diameter (mm), and production per sample (g).

3. Results and Discussion

Plant Length (cm)

The results of the research after statistical analysis showed that the application of goat manure and tofu liquid waste and their interaction had no significant effect on the length of suri cucumber plants at the ages of 2, 4 and 6 weeks after planting.

Table 1. Average Plant Length (cm) of Suri Cucumber Due to the Application Goat Manure Fertilizer (K) and Tofu Waste Liquid Organic Fertilizer (T) Age 2, 4, and 6 Weeks After Planting

Treatment	Plant Length (cm)					
	2MST		4MST		6MST	
K0(0 kg/plot)	5,250	a A	7,344	a A	15,688	a A
K1(1 kg/plot)	6,031	a A	8,031	a A	17,938	a A
K2(2 kg/plot)	6,156	a A	8,156	a A	18,031	a A
K3(3 kg/plot)	6,438	a A	8,438	a A	18,281	a A
T0(0 ml/plot)	5,219	a A	7,594	a A	16,844	a A
T1(500 ml/plot)	5,813	a A	7,938	a A	17,156	a A
T2(1000 ml/plot)	5,938	a A	8,063	a A	17,938	a A
T3(1500 ml/plot)	6,906	a A	8,375	a A	18,000	a A

Note: Numbers in the same column followed by the same letter mean that they are not significantly different at the 5% level (lowercase letters) and the 1% level (uppercase letters) Based on the DNMRT test.

The longest plants were found in the goat dung fertilizer treatment at the K3 level (3 kg/plot) and the tofu waste POC treatment at the T3 level (1500ml/plot). Although statistically there was no

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significant difference, this is because goat dung fertilizer is an organic fertilizer that takes a long time to be available to plants. For vegetable waste POC, it is possible that the plant roots have not been able to absorb it completely, so the two fertilizer treatments have no real effect. Wardhana, et al (2015) concluded that goat manure had no significant effect on plant height at 7 and 14 days after planting lettuce plants. Hikmah (2016) concluded that tofu liquid waste had no significant effect on the height of green bean plants.

Stem Diameter (mm)

The results of the research, after statistical analysis, showed that the application of goat manure and tofu liquid waste, as well as the interaction between the two, had no significant effect on the stem diameter of suri cucumber plants at the ages of 2, 4, and 6 weeks after planting.

Table 2. Average Stem Diameter of Suri Cucumber Plants (mm) Due to the Application of Goat Manure Fertilizer (K) and Tofu Waste Liquid Organic Fertilizer (T) Ages 2, 4, and 6 Weeks After Planting.

Treatment	Stem Diameter (mm)					
	2MST		4MST		6MST	
K0(0 kg/plot)	10,590	a A	11,086	a A	12,325	a A
K1(1 kg/plot)	10,739	a A	11,244	a A	12,472	a A
K2(2 kg/plot)	10,790	a A	11,281	a A	12,531	a A
K3(3 kg/plot)	12,997	a A	13,500	a A	14,781	a A
T0(0 ml/plot)	9,878	a A	10,381	a A	11,626	a A
T1(500 ml/plot)	11,272	a A	11,769	a A	13,038	a A
T2(1000 ml/plot)	11,892	a A	12,386	a A	13,633	a A
T3(1500 ml/plot)	12,075	a A	12,575	a A	13,813	a A

Note: Numbers in the same column followed by the same letter mean that they are not significantly different at the 5% level (lowercase letters) and the 1% level (uppercase letters) Based on the DNMRT test.

Goat manure at a dose of 3 kg/plot is the best dose to help provide the nutrients nitrogen, phosphorus and potassium in the soil which are really needed by plants for growth and development. Hikmah (2009) goat manure contains 1.19% N, 0.92% P₂O₅, and 1.58% K₂O so that the higher the dose given, the more it will increase the nutrient content of the soil. Manure is a source of nitrogen that has the most rapid and striking influence on plant growth (Seopardi and Aria Bara, 2009).

Production / Sample (grams)

The results of the research after statistical analysis showed that the giving of goat manure and tofu liquid waste had a very significant effect on the production per sample of suri cucumber plants.

The interaction between the giving of goat manure and tofu liquid waste had no significant effect on the production per sample of suri cucumber plants.

Table 3. Average Production by Sample (grams) of Queen Cucumber Plants Due to the Application of Goat Manure (K) and Tofu Waste Liquid Organic Fertilizer (T).

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Treatment	Production by Sample (gram)	
K0(0 kg/plot)	304,948	bB
K1(1 kg/plot)	398,313	bB
K2(2 kg/plot)	482,396	a A
K3(3 kg/plot)	511.146	a A
T0(0 ml/plot)	365,260	bB
T1(500 ml/plot)	400,188	bA
T2(1000 ml/plot)	464,479	a A
T3(1500 ml/plot)	466,875	a A

Note: Numbers in the same column followed by letters that are not the same mean they are significantly different at the 5% level (lowercase letters) and very significantly different at the 1% level (uppercase letters) Based on the DNMR test.

The highest sample production was in the K3 treatment (3kg/plot) and the lowest was in the K0 treatment (0kg/plot). When giving POC tofu waste, the highest production was in treatment T3 (1500ml/plot) and the lowest was in treatment T0 (0ml/plot). This shows that the nutrient content contained in goat manure and tofu waste POC can be absorbed by the roots optimally so as to increase plant production (Wulandari, et al (2017)).

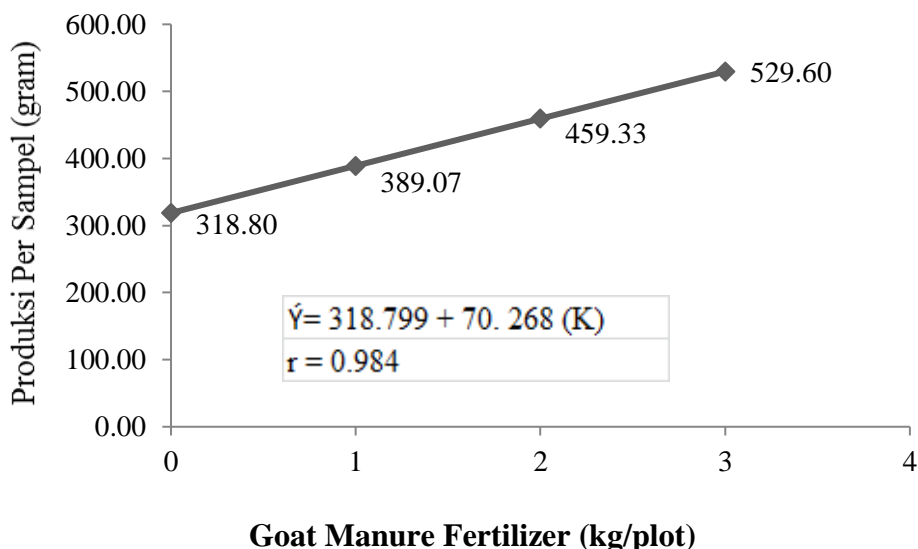


Figure 1. Graph of the relationship between production per sample (grams) and giving of goat manure.

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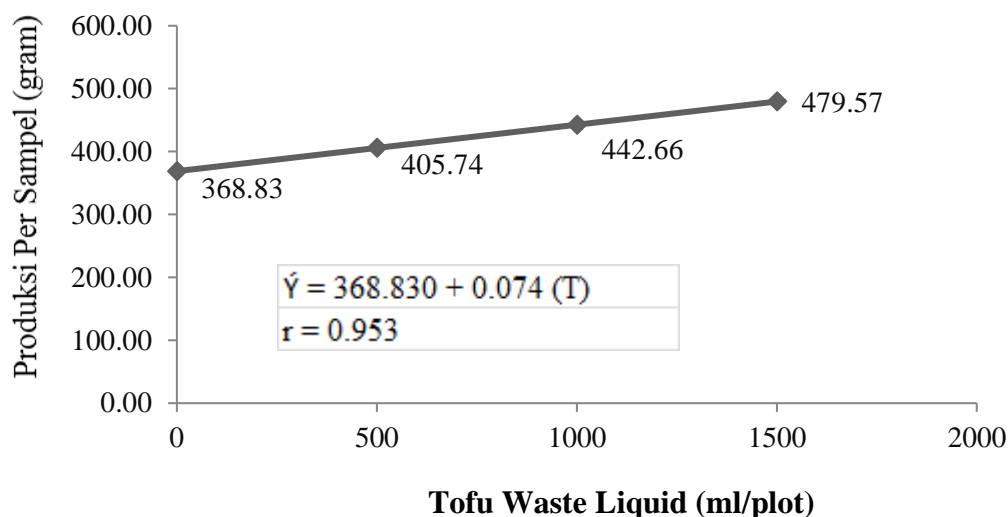


Figure 2. Graph of Relationship between Production per Sample (gram) and giving of Tofu Waste Liquid Organic Fertilizer.

4. Conclusion

Application of goat manure and tofu waste POC causes increased growth and production of suri cucumber plants. Goat manure fertilizer with a dose of 3 kg/plot (K3) and tofu waste POC with 1500 ml/ plot produced the best plant length, stem diameter and sample production

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