THE EFFECT OF GOAT FERTILIZER DOSAGE ON RESULTS CUCUMBER VARIETY (*Cucumis sativus* L.)

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Abstract

Effect of the dose of goat manure on the yield of cucumber varieties (Cucumis sativus L.). This research was conducted in the experimental garden of the Faculty of Agriculture, Slamet Riyadi University, Surakarta, Central Java, on December 20, 2021 - February 25, 2022. The purpose of this study was to determine the effect of goat manure on cucumber varieties. The experimental design used a completely randomized design (CRD) was arranged with a split plot design, with 3 types of varieties (V) Metavy, Ethana, and Mercy with doses of goat manure (K) 300 gr, 400 gr, and 500 gr. The dose of goat manure at a dose of 500 g/plant on the Metavy variety showed the best average results on the observation of fruit length, fruit weight, fruit diameter, while the number of fruit had no effect. The dose of goat manure 500 gr/plant on the Ethana variety showed the best average results in observing fruit length, fruit weight, fruit diameter, while the number of fruit had no effect. Dosage of goat manure at a dose of 500 g/plant on the Mercy variety showed the best average results on observations of fruit length, fruit weight, fruit diameter, while the number of fruit had no effect.

Keyword : Cucumber; Variety; Goatmanure.

1. Introduction

Indonesia is an agricultural country with abundant natural resources. Various kinds of natural wealth in the form of food plants that grow in Indonesia on the outskirts of the city. One of them is the cucumber plant (*Cucumis sativus* L.). Cucumber with the Latin name *Cucumis sativus* L. is a vine or creeping annual plant. Cucumber is a vegetable commodity in the form of fresh fruit which has begun to enter the export market. Based on data from the Central Statistics Agency (2017).

The sophistication of modern technology can be done to increase the productivity of cucumber fruit, namely by cultivating superior/good quality varieties. Superior varieties are recommended to be planted because these varieties can improve the quality of the cucumbers. In this study, cucumbers will be placed in regosol soil. This regosol soil is included in volcanic soil, this soil is fertile with a gray to yellowish coarse grain texture. The pH of this soil is around 6.6, so this soil is suitable for cucumber cultivation.

Although the soil can be said to be fertile in order to retain soil organic carbon, the addition of larger amounts of organic matter is needed every season (Nurhayati & Siswadi, 2019). There are various types of organic fertilizers, one of which is goat manure which is very easy to obtain and there are quite a lot of them. Goat manure is one of the organic fertilizers that is quite widely available in the environment, especially in the livestock environment where the nutrient content is quite high. Goat manure contains Nitrogen, Phosphor, Calium (Hartati & Rachman, 2022).

2. Literature Review

(*Cucumis sativus* L.) is an annual plant that propagates or climbs by means of a spiral or spiral-shaped holder. The edible part of this vegetable is the fruit. Cucumbers are usually eaten raw as a salad in food dishes and are also served in the form of fresh fruit (Ridwansyah & Wibowo, 2017).

The most important requirements for growing cucumber plants during growth require a dry and slightly wet climate, sufficient sunlight with temperatures ranging from 21-26°C, generally planted in long plains between 1000-1200 meters above sea level. (Amin, 2015).

Superior varieties have long production and short lifespan, are resistant to environmental stresses and disease and are responsive to fertilization. The use of high-yielding varieties can increase cucumber production and have a long economic value in the market (Rahmadani dkk., 2012).

Manure is able to improve soil aeration, increase water holding capacity, increase soil resistance, as an energy source for soil microorganisms, and as a source of nutrients. Goat manure contains nutrient N (Nitrogin) which can encourage leaf growth so that it can increase plant photosynthesis (Muhammad Syahril et al., 2019).

3. Research Method

This research was conducted in the experimental garden of the Faculty of Agriculture, Slamet Riyadi University, Surakarta, Central Java, on December 20, 2021 – February 25, 2022. The purpose of this study was to determine the effect of goat manure on 3 varieties. cucumber (*Cucumis sativus* L.). The experimental design using a completely randomized design (CRD) was arranged in a divided plot design, with 3 types of varieties (V1) Metavy, (V2) Ethana, and (V3) Mercy with a dose of goat dung (K0) 0 gr, (K1) 300 gr, (K2) 400 gr, and (K3) 500 gr. so that the design obtained 12 treatment combinations with 3 replications. Parameter data were analyzed using ANOVA test analysis, followed by Multiple Linear Regression test.

Soil criteria for growing cucumbers are basically that almost any type of soil used for agriculture is suitable for growing cucumbers. Cucumber plants are planted on fertile, loose soil or land, lots of humus, the soil does not stagnate, and the soil ph is 6-7, then the soil is mixed with the recommended dose of goat manure, which is 300 gr/plant, 400 gr/plant, and 500 gr /plant, and each polybag was planted with 3 cucumber seedlings according to their respective varieties.

4. Result and Discussion

Observation of cucumber yields was carried out at the first harvest at 47 days after planting to the last harvest at 61 days after planting.

1. Number of fruit

Table 1. The results of observations of the number of cucumbers due to the dose of goat manure on 3 cucumber varieties.

Treatment	Number of fruit
V1K0	7,52
V1K1	9,54
V1K2	10,23
V1K3	10,38
V2K0	10,69
V2K1	10,91
V2K2	10,76
V2K3	10,30
V3K0	7,95
V3K1	9,87
V3K2	10,44
V3K3	10,41

Based on the regression tests that have been carried out, the highest response parameters are the number of fruits of the metavy variety at a dose of 500 g of goat manure with a value of 10.38, the ethane variety at a dose of 300 g of fertilizer with a value of 10.91, and the rahmat variety at a dose of 400 g of goat manure. with a value of 10.44. While the lowest response in the metavy variety was at a dose of 0 g of goat manure (control) with a value of 7.52, the ethane variety at a fertilization dose of 500 g/plant with a value of 10.30, and the pity variety was found in the metavy variety. goat manure with a dose of 0 g (control) with a value of 7.95. This is because in the rainy season cucumber production is low in the dry season, too long rainfall can cause male and female flowers to experience what will happen later will produce fruit that fails. This assumption is reinforced by Sumpena (2007) that rainfall can interfere with the growth of cucumbers during flowering because it can abort cucumber flowers.

2. Fruit length

Table 2. The results of observations of cucumber fruit length due to the dose of goat manure on 3 varieties of cucumber.

Treatment	Fruit lenght
V1K0	16,8
V1K1	18,4
V1K2	20,3
V1K3	23,4
V2K0	16,8
V2K1	18,4
V2K2	20,3
V2K3	23,4
V3K0	16,8
V3K1	18,4
V3K2	20,3
V3K3	23,4

Based on the regression test that has been carried out, the highest response parameters for the length of the cucumber varieties of metavy, ethana varieties, and mercy varieties were found in goat manure with a dose of 500 g with a value of 23.49. While the lowest response of cucumber varieties of metavy, ethana varieties, and mercy varieties was found in goat manure with a dose of 0 gr (control) with a value of 16.86. Goat manure can provide sufficient and balanced nutrients for plant needs. There are many nutrients in goat manure, especially P (phosphorus), according to Sumpena (2007), the phospor element has an important role in the process of forming fruit length.

3. Fruit weight

Table 3. The results of observations of cucumber fruit weight due to the dose of goat manure in 3 varieties of cucumber.

Treatment	Fruit weight
V1K0	323,3
V1K1	346,6
V1K2	361,7
V1K3	378,7
V2K0	323,3
V2K1	346,6
V2K2	361,7
V2K3	378,7
V3K0	323,3
V3K1	346,6
V3K2	361,7
V3K3	378,7

Based on the regression test that has been carried out, the highest response to the parameter of cucumber fruit weight for the metavy variety, ethana variety, and rahmat variety was found in goat manure with a dose of 500 gr with a value of 378.70, while the lowest response was cucumber fruit weight for the metavy variety, ethana variety. , the rahmat variety was found in goat manure with a dose of 0 g (control) with a value of 323.37. According to Dewi (2018), nutrients (P) phosphorus and (K) potassium are two combinations of nutrients that are useful during the flowering and ripening process of fruit and seeds. The availability of nutrients in the soil that contains goat manure greatly influences the formation of fruit ovules.

4. Fruit diameter

Table 4. The results of observations of cucumber fruit diameter due to the dose of goat manure on 3 cucumber varieties.

Treatment	Fruit diameter
V1K0	5,34
V1K1	5,70
V1K2	5,90
V1K3	6,14
V2K0	5,34
V2K1	5,70
V2K2	5,90
V2K3	6,14
V3K0	5,34
V3K1	5,70
V3K2	5,90
V3K3	6,14

Based on the regression test that has been carried out, the highest response parameters for the diameter of the metavy cucumber, the ethana variety, and the rahmat variety were found in goat manure with a dose of 500 g with a value of 6.14. While the lowest response was the diameter of the metavy cucumber, the ethana variety, and the rahmat variety found in goat manure with a dose of 0 gr (control) with a value of 5.34. According to Soegiman (1982) due to the availability of sufficient nitrogen (N) nutrients needed by plants

to provide maximum results in quantity and excellence in these plants, the presence of nitrogen is very important in plant development, it is related to plant length and ear diameter.

5. Conclusions

1. The use of goat manure at a dose of 500 g/plant on the metavy variety showed the best average results on fruit length (24.33 cm), fruit weight (414.92 g), fruit diameter (6.89 cm), while fruit number does not affect.

2. The use of goat manure doses at a dose of 500 g/plant on the ethana variety showed the best average results in observing fruit length (23.60 cm), fruit weight (341.95 g), fruit diameter (6.10 cm), while the number of fruit has no effect.

3. The use of goat manure doses at a dose of 500 g/plant on the Mercy variety showed the best average results in observing fruit length (23.20 cm), fruit weight (387.80 g), fruit diameter (6.18 cm), while fruit has no effect.

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