THE EFFECT OF GOAT CAGE FERTILIZER DOSAGE ON RESULTS OF THREE VARIETIES OF SESALE PLANT (Sesame indicum L.)

Awaludin Sinur Kholis[1], Dewi Ratna Nurhayatidan[1], Sartono Joko Santosa[2]

[1]Agrotechnology, Faculty of Agricultere, Slamet Riyadi University, Surakarta, Cental Java, Indonesia

Correspondence Email : awaludinjozz@gmail.com

Abstract

Effect of dose of goat manure on yield of several varieties of sesame (Sesamum indicum L.). This research was conducted in Wonoharjo Village, Kemusu District, Boyolali Regency on November 5, 2021 until February 13, 2022. The purpose of this study was to determine the effect of goat manure dosage on the growth and yield of three varieties of sesame (Sesamum indicum L.). This study used a Completely Randomized Block Design (RAKL) which was arranged in a Split Plot consisting of 3 replications. The treatment was as follows: The first factor was 3 types of sesame varieties, namely Sbr 1, Winas 1 and Winas 2 varieties, the second factor was giving goat manure doses of 240 g / plant (D3), 180 g / plant (D2), 120 g / plant (D1), and without goat manure (D0), the design obtained 12 treatment combinations. Observational data were analyzed using Analysis of Variety (Anova) and further tested with the Honest Significant Difference Test (BNJ) at the 5% level. The results showed that the application of goat manure with a dose of 10 tons/ha (240 g/plant) gave the best results on the Winas 1 (V2) Sesame Variety.

Keyword : Sesame, varieties, organic fertilizer

1. Introduction

Sesame (Sesamum indicum L.) is an agricultural crop that has the potential to be cultivated by farmers. From an economic point of view, sesame has a high selling value and is used for various preparations, processed in various industries and can be processed into vegetable oil. (Rismunandar, 1976).

Goat manure is an organic fertilizer that is very good for plants, this fertilizer has the ability to deal with the growth of wild plants and sesame seeds and improve soil conditions at the research site. There are several elements in it, which macronutrients are needed and these include nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), and Sulfur (S). (Hartatik and Widowati, 2006)

Sesame plants in Indonesia have various types of seed colors, namely white and black. Both have the same protein content. The difference is in the ash content, namely black sesame has a greater ash content than white sesame. The Research Institute has published various superior varieties of sesame, namely Sbr-1, Sbr-2, Sbr-3, Sbr-4, Winas 1 and Winas 2. There are six varieties published, namely the Sbr-3 variety with black-brown seeds. (Sunanto and Hatta, 2002)

2. Literature Review

Sesame or shrub which has the Latin name (Sesamum indicum L.) is one of the annual plants belonging to the Pedaliaceae family. This plant has many benefits, such as a source of vegetable oil. This vegetable oil is extracted from the seeds and then the results are obtained in the form of oil which is better known as sesame oil. Industrial products from sesame include pesticide raw material, snack food raw material, and plastic raw material. Sesame plant originating from Iraq has now spread throughout the world. Indonesia still has sesame from Thailand and Vietnam. Thus the opportunity for sesame cultivation is promised. (Susilo, et al, 2021).

Sesame (Sesamum indicum L.) is a herbaceous plant with upright growth. Each plant certainly has its own characteristics, especially in the form of visual morphology (Suprijono, 2000).

Sesame plants also have various types of varieties, there are various kinds of sesame varieties that have been developed in Indonesia. The use of varieties needs to be adapted to climatic conditions, soils, and planting objectives, considering that each variety has a different adaptability to local conditions, and has a different habitus and age (Suprijono and Mardjono, 2004).

Goat manure is manure derived from goat manure which contains a lot of macro and micro nutrients that are needed for plants, especially sesame plants. Goat manure is not only useful for plants, goat manure is also useful for the soil because this fertilizer can improve soil conditions, both soil chemistry, soil biology and soil physics in the research area. (Hartatik dan Widowati, 2006)

3. Research Method

This study used various materials such as sesame seeds of Sbr 1, Winas 1, Winas 2varieties, stakes, goat manure, water, soil, and insecticides. The tools used are hoe, bucket, tape measure, bucket, and thread.

The experimental design used for this study was a Split Plot Design with 2 factors, namely the type of sesame plant variety, and the dose of goat manure. The factorial pattern in this study was 4 x 3 with 3 replications. For types, treatment as follows.

Factors for Dosing Goat Manure (D):

D0: Control (without goat manure)

D1: Goat manure dose of 120 g/plant (5 tons/ha)

D2: Goat manure dose of 180 g/plant (7.5 tons/ha)

D3: Goat manure dose of 240 g/plant (10 tons/ha)

Sesame Plant Varieties Type Factor (V):

V1: Sbr 1 . variety

V2: Winas variety 1

V3: Winas variety 2

With this idea, there were 12 treatment combinations with 3 repetitions, so 36 experimental units were obtained. The 12 combinations of these treatments can be seen in the following:

D0V1 : control (without goat manure) with sesame variety Sbr 1

D1V1 : Dose of goat manure 120 g/plant sesame variety sbr 1

D2V1 : Dose of goat manure 180 g/plant sesame variety Sbr 1

D3V1 : Dosage of goat manure 240 g/plant sesame variety Sbr 1

D0V2 : control (without goat manure) sesame variety Winas 1

D1V2 : Dose of goat manure 120 g/plant of sesame variety Winas 1

D2V2 : Dose of goat manure 180 g/plant Winas 1

D3V2 : Dose of goat manure 240 g/plant sesame variety Winas 1

D0V3 : control (without goat manure) sesame variety Winas 2

D1V3 : Dose of goat manure 120 g/plant sesame variety Winas 2

D2V3 : Dose of goat manure 180 g/plant of sesame variety Winas 2

D3V3 : Dosage of goat manure 240 g/plant sesame variety Winas 2

4. Result and Discussion

Treatment	Average Sesame Yield					
	Number of Pods Per Plant	Number of Pods Per Plant	Number of Pods Per Plant	Number of Pods Per Plant	Number of Pods Per Plant	Number of Pods Per Plant
D0V1	174,33 c	269,33 bc	164,44 c	3,23 a	391,00 b	142,12 c
D1V1	173,78 c	268,33 c	163,44 c	3,21 a	396,89 b	144,59 b
D2V1	178,22 b	270,56 b	166,78 b	3,22 a	377,56 c	143,65 b
D3V1	183,00 a	272,94 a	169,67 a	3,25 a	422,33 a	147,52 a
D0V2	183,93 b	280,11 c	166,22 c	3,14 c	430,47 c	147,55 b
D1V2	186,44 b	281,11 bc	169,00 b	3,31 b	422,67 c	148,68 b
D2V2	187,00 b	282,44 b	171,44 a	3,40 ab	453,11 b	148,71 b
D3V2	192,56 a	285,33 a	170,67 a	3,42 a	480,33 a	152,01 a
D0V3	182,11 c	275,22 b	164,85 c	2,83 b	392,33 c	144,31 b
D1V3	184,00 bc	276,11 b	165,20 c	2,91 b	441,67 b	144,42 b
D2V3	186,05 b	276,77 b	166,89 b	2,86 b	444,44 b	146,28 b
D3V3	189,11 a	278,78 a	170,67 a	3,23 a	460,70 a	149,48 a

Note: Numbers followed by the same notation in the same column show that the results are not significantly different at the 5% BNJ level.

The treatment dose of goat manure (D) on the sesame variety (V) had a significant effect on the number of ipolongi iperi itanamani, weight of ipolongi iperi itanamani, iberati ibijii iperi itanamani, weight of wet pods, weight of dry pods, because goat manure contains a source of potassium (K).) required for pod filling. Potassium element is needed by plants in the process of photosynthesis so that it will affect the growth of leaves, stems, roots, and flowering which flowers will become pods. (Handayanto, et al, 2017). If the nutrient content is sufficient for plant metabolism, the seed formation process will be optimal and the seed weight per plant will be more filled. The addition of fertilizers with large doses results in weight gain on plants. Because fertilizers provide the nutrients needed for vegetative and generative growth (Nurhayati, et al, 2020).

Parameter weight of 1000 seeds in the treatment dose of goat manure (D) on sesame varieties showed no significant effect, because the nutrients in goat manure were low, so it took a long time to get nutrients. Fertilizers containing microbes can produce active compounds to decompose nutrients in the soil. Microorganisms are also useful for storing water in the soil so that plants can easily absorb it. If nutrients are available then growth will increase (Dan et al., 2022).

5. Conclusions

The treatment of goat manure on sesame varieties (D) affected plant height, leaf green, number of flowers, number of pods. But it has no effect on when the flowers appear.

6. References

Dan, P., Plants, H., & Sweet, J. (2022). The Effect of Goat Manure Dosage. 5431(D), 71-85

Handayanto, E., N., Mudarisna and A., Fiqri. 2017. Soil Fertility Management. UB Press: Malang.

Hartatik, W., L.R. Widowati. 2006. Organic Manure and Biological Fertilizer. Center for Research and Development of Agricultural Land Resources. p.59–82

Nurhayati, D. R., & Siswadi,. (2019). Growth of sesame (Sesamum indicum l.) plants with mediated compost biochar on coastal sandy land area in Bantul regency, Indonesia. EurAsian Journal of BioSciences, 13(2), 673–679.

Nurhayati, D. R., Yudono., P., Taryono, T., & Hanudin, E. (2018). Effect on Fertilization Time of Two Seasons of Planting on Characteristics of Sbr-1 and Sbr-3 Sesame in Coastal Sand Land. Caraka Tani: Journal of Sustainable Agricultur, 33 (1), 19. https://doi.org/10,.20961/carakatani.v33i1.19442

Rismunandar, 1976. Sesame Planting. Bandung : Terate Publisher.

Riyanto, T., Ihsan, M., Pamujiasih, T., Agriculture, S., Surakarta, U., Engineering, P. F., Agriculture, S., Surakarta, U., Lecturer, S., Engineering, F., Agriculture , S., & Surakarta, U. (2020). INCREASING THE PRODUCTION OF OKRA (Abelmoschos esculentus L Moench) WITH THE COMPOSITION OF PLANTING MEDIA AND BIO-LIQUID FERTILIZER. 1(2), 6–9.

Sunanto, Hatta. 2002. Sesame Cultivation Benefits and Economic Aspects. Yogyakarta: Kanisius