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Response to Some Varieties of Onion (*Allium ascalonicum* L.) in Manure Application with Different Doses

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ABSTRACT

Shallot farmers in Poncokusumo District have struggled with crop failures due to unsuitable soil types. Addressing this, a study was conducted to evaluate the optimal manure dosage and the best shallot varieties for improving production. The research, held from October 2023 to January 2024 in Wonorejo Village, applied a Randomized Complete Block Design (RCBD) with factorial arrangements, including two factors: shallot varieties (Batu Ijo, Tajuk, Super Philip) and manure dosages (15 t/ha, 25 t/ha, 35 t/ha), each replicated three times. Data were analyzed using ANOVA and a 5% BNJ test. Growth observations began at 14 days after planting and continued every 10 days, measuring plant height, leaf count, and tillers. Yield parameters included wet and dry weights per clump, number of bulbs, bulb diameter, and total harvest yield. Results showed significant interactions between manure dosage and variety, with V1D1 (Batu Ijo + 15 t/ha goat manure) achieving higher yields. Additionally, Batu Ijo consistently outperformed other varieties across all variables, demonstrating greater plant height, bulb diameter, and overall yield. This suggests Batu Ijo with moderate manure dosage as an optimal combination for enhanced shallot production.

Keywords: Environmental; Factor; Harvest; Yield; Soil improver

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INTRODUCTION

Shallots (*Allium ascalonicum* L.) are classified as seasonal plants that are in high demand. Therefore, onions have great potential to meet market needs. East Java is the center of shallot production from 24 provinces. East Java Province has many shallot production centers in the areas of Jember, Lumajang, Lamongan, Nganjuk, Malang, Blitar, Pasuruan, and Probolinggo (Astoko, 2022). Shallots have a high selling value and are a horticultural commodity so that the demand for shallots for consumption and seeds continues to increase while production is still lacking, so it is necessary to increase and develop shallot productivity. This study can provide information for farmers on how to increase shallot productivity, especially in the Poncokusumo District area. Shallots are susceptible to environmental changes, including changes in soil nutrients. Therefore, this study can help understand how shallots react to changes in soil nutrients caused by the application of manure with different doses. Therefore, the application of manure with the right dose can increase the productivity and quality of shallots. By conducting this study, it can be seen which varieties provide the best response to manure application, so that it can be a reference for farmers in increasing the yield and quality of shallots. Manure is a source of environmentally friendly organic nutrients. By evaluating the response of several shallot varieties to manure application, this study can also provide knowledge about the potential use of organic materials in increasing crop yields sustainably and minimizing negative impacts on the environment. Land in the Poncokusumo District, Malang Regency is widely used for cultivating horticultural crops such as cabbage and spring onions, but no one cultivates shallots. Based on farmers in the Poncokusumo District, they stated that the production of shallots in Poncokusumo District experienced crop failure which was suspected to be due to the type of soil that was not suitable for shallot cultivation. The type of soil in Poncokusumo District, Malang Regency is inceptisol. In general, Inceptisol soil has low nutrient availability, slightly acidic soil pH and moderate organic C content (Yuniarti et al., 2020). According to Fitra et al. (2021) stated that inceptisol soil is less fertile and has a low chemical content, adding organic matter to the soil is one effort to improve soil fertility. Soil fertility can be increased by providing soil conditioner treatment because it has the ability to improve soil properties and structure, one of which is to change the soil's capacity to hold water and increase cotton (CEC) so that the soil's ability to hold nutrients also increases. However, it is necessary to select the right soil conditioner and dosage so that soil fertility can increase, both physically, biologically, and chemically (Astoko, 2022). Organic matter from goat manure can be used to improve the soil.

Goat manure contains micro and macro nutrients that can be utilized by plants. According to Peni (2023) goat manure contains C/N of 20-25 which causes an effective weathering process so that plants can utilize the nutrients contained in it. Goat manure also contains

micro nutrients (Ca, S, Mg, Na, Cu, Fe Mo) and macro (N, P, K). According to Sinuraya & Melati (2019) goat manure contains 0.70% N, 0.40% P2O5, 0.25% K2O, C/N 20-25, and organic matter of 31%. According to Made et al. (2019) Potassium nutrients help the metabolism process, the process of opening and closing stomata, make water use more efficient, expand roots, increase plant resistance, and increase the number of shallot bulbs. Research results by Rezta Kania et al. (2022) stated that a dose of 20 t/ha of manure was able to obtain a fresh weight of 13.98 t/ha, a dry weight of 12.85 t/ha and a dry weight of 12.11 t/ha of bulbs. In addition, a dose of 20 t/ha of manure was able to obtain an average bulb diameter of 2.16 cm and a leaf length of 21.17 cm. Efforts to increase shallot production in Poncokusumo District, Malang Regency can also be done by selecting shallot varieties, which is also an important thing in increasing production results. Several superior varieties that have high productivity in East Java such as the Batu Ijo, Tajuk, and Super Philp varieties. According to Evantius Sinaga et al. (2021) One of the best shallot varieties planted in Batu City, East Java is the Batu Ijo variety. Based on the description of the Batu Ijo variety, it is able to produce a plant height of 45-60 cm, 2-5 bulbs per clump, 45-50 leaves, 3-5.4 cm bulb diameter with a bulb weight of 15-25 grams. The Batu Ijo variety is able to adapt in areas with an altitude of 50-1000 meters above sea level and has a harvest age of 60-65 days after planting.

The Tajuk variety is a shallot variety that developed in Nganjuk-East Java, this variety has high productivity. Based on the description of the Tajuk variety of shallots, it is stated that Tajuk is able to produce a height of 26.4-40.0 cm, 15-48 leaves per clump, 30-80 grams of bulbs per clump and 6-12 shoots. The puncak variety has a harvest age of 52-59 days after planting and can adapt to the dry and rainy seasons. The introduced variety from the Philippines is Super Philip. According to Harahap et al. (2022) This variety is suitable for planting in low to high lands and has a potential plant height of 36-45 cm, 9-18 shoots, 40-50 leaves, and a harvest age of 50-60 days after planting. This Super Philip variety has the potential to produce 18 tons/ha of dry bulbs. The Super Philip variety of red onion has the characteristics of a yellowish brown leaf base and a bulb diameter of 2.5-3 cm. Several of these varieties are thought to be able to increase red onion production in the Poncokusumo District, Malang Regency. Therefore, the purpose of this study was to determine the response of plants and the best varieties and doses of goat manure that can increase red onion productivity in the Poncokusumo District.

MATERIAL AND METHOD

Time and Place

This research was conducted from October 2023 to January 2024, in Wonorejo Village, Poncokusumo District, Malang Regency, The topography is around 500-600 meters above sea level.

Tools and Material

This research used materials consisting of manure, red onion seeds of Tajuk, Super Philip, Batu Ijo varieties, mica paper, pines, polybags, insecticides with active ingredients Metomil 45 SP (45%), fungicides with active ingredients Propineb 70% and Piraclostrobin 5% + Metiram 55%, adhesives with active ingredients Nonyl Phenol Ethoxy Ethanol 412 g/l while the equipment used included calipers, analytical scales, sprayers, and stationery.

Research Design

The experiment was conducted in open land and used a Randomized Complete Group Design (RKLT) arranged factorially. Factor I how many varieties (V) consisting of Batu Ijo (V1), Tajuk (V2) and Super Philip (V3). Factor II dose of goat manure consisting of: 15 t / ha (D1), 25 t / ha (D2) and 35 t / ha (D3). This study consists of 9 combinations of treatments repeated 3 times to produce 27 treatment combinations, each treatment consisting of 6 plant samples so that 162 populations were obtained.

Implementation Method

The implementation method used includes preparation of tools and materials, conducting NPK analysis of soil and manure at the UPT for Development of Food Crops and Horticulture Agribusiness of the Department of Agriculture and Food Security of East Java Province, calculating the dosage and content of manure and soil, weighing manure and soil according to the calculated dosage, conducting layout, applying manure doses 1, 2, and 3 according to the layout, planting red onions of Batu Ijo, Tajuk, and Super Philip varieties according to the layout, conducting maintenance such as broadcasting, weeding, fertilizing, spraying insecticides and fungicides, then at the age of 62 days after planting, harvesting and drying (air drying) were carried out.

Observation Variables

Observations were carried out at intervals of 10 days and starting at the age of 14 days after planting (DAP) with 6 plant samples. Growth parameters include: plant height (cm), number of leaves (strands) and number of shoots. Meanwhile, the result parameters include: wet weight per clump (g), number of tubers, tuber diameter (cm), dry weight per clump (g), and harvest results (t/ha). The research data obtained were tested using the Anova test. If it displays results that have a significant effect, the next step is to carry out a further FSD 5% test using Microsoft Excel software.

RESULT AND DISCUSSION

Result

Based on the results of ANOVA in Appendix 1, there is an interaction only on plant height at 34 DAP and 54 DAP. Growth and harvest parameters in the variety treatment showed a significant effect, while the dose treatment did not show a significant effect in Appendix 1 and Appendix 2.

Plant Height

The average results on the observation variable of plant height showed a mutual influence between the variety and the dose of goat manure at 34 DAP and 54 DAP, so the average results of the observation variable of plant height that showed interaction are presented in Table 1. While the height of plants at 14 DAP, 24 DAP, and 44 DAP did not have any interaction but showed a significant effect, so the average results are in Table 2.

Table 1. Average Interaction of Plant Height of Several Varieties of Red Onion Due to Application of Manure at Various Observation Ages.

Treatment	Plant Height (cm) / Age (DAP)	
	34	54
V1D1 (Batu Ijo + Goat Manure 15 t/ha)	49,63 c	45,30 b
V1D2 (Batu Ijo + Goat Manure 25 t/ha)	45,77 bc	44,94 b
V1D3 (Batu Ijo + Goat Manure 35 t/ha)	46,64 bc	43,94 b
V2D1 (Tajuk + Goat Manure 15 t/ha)	41,66 abc	39,95 ab
V2D2 (Tajuk + Goat Manure 25 t/ha)	38,17 ab	37,64 a
V2D3 (Tajuk + Goat Manure 35 t/ha)	38,73 ab	39,86 ab
V3D1 (Super Philip + Goat Manure 15 t/ha)	36,21 a	36,94 a
V3D2 (Super Philip + Goat Manure 25 t/ha)	43,56 abc	42,94 ab
V3D3 (Super Philip + Goat Manure 35 t/ha)	39,94 ab	39,72 ab
FSD 5%	9,19	6,11

The effect of treatment of shallot varieties with different doses of goat manure showed an interaction on the height of shallot plants at the age of 34 DAP and 54 DAP. Treatment VID1 (Batu Ijo + Goat Manure 15 t/ha) at the age of 34 DAP showed a relatively higher average compared to treatments V2D2 (Tajuk + Goat Manure pen 25 t/ha), V2D3 (Tajuk + Goat Manure 35 t/ha), V3D1 (Super Philip + P. Goat pen 15 t/ha) and V3D3 (Super Philip + Goat Manure 35 t/ha). While at the age of 54 DAP, treatment V1D1 (Batu Ijo + Goat Manure 15 t/ha) was relatively higher compared to treatments V2D2 (Tajuk + Goat Manure 25 t/ha) and V3D1 (Super Philip + Goat Manure 15 t/ha). At 34 DAP, the VID1 treatment (Batu Ijo + Goat Manure 15 t/ha) showed an average of 49.63 cm and at 54 DAP showed an average of 45.30 cm.

Table 2. Average Plant Height of Several Varieties of Red Onion Due to Application of Manure at Various Observation Ages.

Treatment	Plant Height (cm) / DAP		
	14	24	44
V1 (Batu Ijo)	26,30 b	41,52 b	47,69 b
V2 (Tajuk)	22,29 a	32,98 a	40,68 a
V3 (Super Philip)	21,85 a	34,43 a	39,89 a
FSD 5%	2,22	2,48	8,83
D1 (Goat Manure 15 t/ha)	24,26	37,38	42,6
D2 (Goat Manure 25 t/ha)	23,15	36,24	43,71
D3 (Goat Manure 35 t/ha)	23,03	35,31	41,96

Based on Table 2, variety treatment significantly affected plant height at 14-44 DAP. V1 (Batu Ijo) showed a relatively higher average compared to treatments V2 (Tajuk) and V3 (Super Philip). At the age of 14 DAP - 44 DAP V1 (Batu Ijo) showed a significant difference in treatments V2 (Tajuk) and V3 (Super Philip) while V2 (Tajuk) with V3 (Super Philip) showed no significant difference.

Number of Leaves

The results of the ANOVA shown in Appendix 1, variety treatment had a significant effect on the number of leaves at the ages of 34 DAP and 54 DAP so that further testing was carried out using the 5% BNJ test. Table 3 below shows the average results of the observation variable for the number of leaves.

Table 3. Average Number of Leaves of Several Varieties of Red Onion Due to Application of Manure at Various Observation Ages.

Treatment	Leave Number (DAP)				
	14	24	34	44	54
V1 (Batu Ijo)	16,33	30,03	35,86 a	42,03	39,97 a
V2 (Tajuk)	15,31	28,08	46,92 b	50,86	50,72 b
V3 (Super Philip)	13,94	27,44	40,69 ab	47,31	48,36 ab
FSD 5%			8,83		8,58
D1 (Goat Manure 15 t/ha)	15,19	29,69	42,47	45,47	45,61
D2 (Goat Manure 25 t/ha)	15,33	28,42	42,17	48,72	49,17
D3 (Goat Manure 35 t/ha)	15,06	27,44	38,83	46,00	44,28

Based on Table 3, the variety treatment has a significant effect on the number of leaves at the age of 34 DAP and 54 DAP. Meanwhile, the variety treatment at the age of 14, 24, and 44 DAP as well as the dose treatment at the age of 14 DAP - 54 DAP showed no significant effect on the number of leaves, this is indicated by the numbers that are not followed by notation in the same column. At the age of 34 DAP and 54 DAP, the V1 (Batu Ijo) treatment showed a relatively higher average compared to the V2 (Tajuk) treatment, while V3 (Super Philip) showed a relatively higher but not significantly different.

Number of Shoots

The ANOVA results shown in Appendix 1 state that the variety treatment has a significant effect on the number of onion offshoots at the ages of 14 DAP, 24 DAP, 34 DAP, 44 DAP, and 54 DAP so that further testing was carried out using the 5% BNJ test, then the average results of the observation variable for the number of offshoots are shown in Table 4 below.

Table 4. Average Number of Offshoots of Several Varieties of Red Onion Due to Application of Manure at Various Observation Ages.

Treatment	Offshoots / DAP				
	14	24	34	44	54
V1 (Batu Ijo)	5,83 a	7,81 a	8,44 a	8,75 a	8,89 a
V2 (Tajuk)	7,22 b	9,89 b	12,78 c	13,67 b	13,67 b
V3 (Super Philip)	6,44 ab	9,28 ab	10,78 b	12,14 b	13,25 b
FSD 5%	1,16	1,93	1,65	1,95	2,11
D1 (Goat Manure 15 t/ha)	6,58	9,36	10,83	12,03	11,86
D2 (Goat Manure 25 t/ha)	6,56	8,78	10,72	11,75	12,53
D3 (Goat Manure 35 t/ha)	6,36	8,83	10,44	10,78	11,42

Based from the thickness of the 4 treatments, the variety showed a significant effect on the number of tillers. At the age of 14 DAP - 54 DAP, the V2 (Tajuk) treatment showed a relatively higher average compared to the V1 (Batu Ijo) and V3 (Super Philip) treatments except at the ages of 14 DAP, 24 DAP, 44 DAP, and 54 DAP which showed no significant difference in the 5% BNJ follow-up test.

Harvest Results

The variety treatment had a significant effect on tuber diameter, number of tubers per clump, dry weight per clump, wet weight per clump, and harvest results as shown by the results of the analysis of variance in Appendix 2, so that a 5% BNJ follow-up test was carried out, the average results are presented in table 5 below.

Based on the results in Table 5, it states that there is a significant effect on the variety treatment. The observation variables of wet weight per clump and tuber diameter, dry weight per clump are directly proportional. The larger the tuber diameter, the higher the wet weight per clump and the dry weight of the clump, thus affecting yield. Treatment V1 (Batu Ijo) The observation variables of tuber diameter, wet weight per clump and dry weight of clump showed a relatively higher average and were significantly different from treatments V2 (Tajuk) and V3 (Super Philip). Meanwhile, the treatment of V2 (Tajuk) and V3 (Super Philip) showed no significant difference.

Table 5. Average Yield of Several Varieties of Red Onion Due to Application of Manure on Various Observation Parameters.

Treatment	Tube Diamete (g)	Total Tube Per Clump	Fresh Weight per Clump (g)	Dry Weight per Clump (g)	Yield (t/ha)
V1 (Batu Ijo)	2,91 b	8,89 a	97,11 b	87,84 b	21,96 b
V2 (Tajuk)	1,98 a	13,67 b	64,72 a	56,34 a	14,09 a
V3 (Super Philip)	2,06 a	12,92 b	73,77 a	65,24 a	16,31 a
FSD 5%	0,30	2,01	18,92	18,89	4,72
D1 (Goat Manure 15 t/ha)	2,28	11,64	75,03	66,25	18,76
D2 (Goat Manure 25 t/ha)	2,32	12,47	85,81	76,56	21,45
D3 (Goat Manure 35 t/ha)	2,34	11,36	74,76	66,62	18,69

The variable of the number of bulbs shows that the V2 (Tajuk) treatment produces a relatively higher average compared to V1 (Batu ijo) while the V2 (Tajuk) and V3 (Super Philip) treatments show no significant difference. The results of the number of bulbs are proportional to the number of shoots, as seen in Table 4, the V2 (Tajuk) treatment has a relatively higher number of shoots. V1 and V2 (age 54 DAP) experienced a decrease while the V3 treatment experienced an increase. The difference is because different varieties of shallot plants can have different responses to the treatments given. Varieties that are more suited to

certain environmental conditions or certain fertilizer treatments may show increased growth, while other varieties may experience a decrease. This difference is also triggered by environmental conditions such as soil conditions, air humidity, and sunlight intensity can also affect plant response to treatment. If environmental conditions at the time of observation are different for each treatment, this can affect plant growth differently.

Discussion

Growth Response of Several Shallot Varieties Due to Manure Application

There is a significant effect of varieties on the number of leaves, plant height at the age of 34-54 DAP, number of tillers, bulb diameter, dry weight per clump, number of bulbs and wet weight per clump. This occurs because plant genetic factors are able to produce different growth and yields. In addition, there is an interaction between the variety treatment with the dose of goat manure on plant height at the ages of 34 DAP and 54 DAP. This interaction shows that the variety treatment with the dose of goat manure affects each other on plant height at the ages of 34 DAP and 54 DAP.

After observations and statistical analysis tests were carried out, a significantly different effect was found on the variety treatment and there was an interaction between the combination of treatments on the height of the shallot plant. Treatment V1 (Batu Ijo) had a relatively higher average compared to treatments V2 (Tajuk) and V3 (Super Philip). In addition, there was an interaction with a relatively higher average showing in the V1D1 treatment (Batu Ijo + Goat Manure 15 t / ha). This shows that there is a genetic influence of the Batu Ijo variety in adapting to the environment which can affect plant height. According to Purwasi et al. (2022) varieties have the ability to adapt to the environment because the variety itself has a genetic composition that is able to regulate morphology and physiology so that it can adapt to the environment.

November to January is the rainy season in some parts of Indonesia, including Poncokusumo District, Malang Regency. High rainfall during this period can have a negative impact on shallot productivity. Based on data from the BMKG East Java Climatology Station, (2024) the criteria for rainfall that falls in November to January are in the range below normal (51-84%) for the southern Malang region, normal (85-115%) for the northern Malang region, and normal (85-115%) in the western Malang region. Meanwhile, rainfall that falls in Poncokusumo District, Malang Regency, namely in November has moderate criteria (51-100 mm) and December has high criteria (301-400 mm), while in January it has moderate criteria (201-300). High rainfall can cause the soil to become too wet or waterlogged, which can interfere with the respiration of shallot roots. Soil conditions that are too wet can inhibit roots and cause a decrease in overall plant growth. According to Sholikin and Haryono (2019), stagnant water around shallot plants can be an ideal medium for the growth of fungi and bacteria that cause plant diseases. This can increase the risk of disease attacks such as powdery mildew, bulb rot, or Fusarium wilt. In addition, it can also facilitate the spread of plant diseases from one plant to another. Raindrops carrying disease spores or bacteria can easily spread between shallot plants in the garden. Shallot plants that are waterlogged or experience excess water tend to experience decreased nutrient absorption. This condition can interfere with plant growth and cause the quality of the harvest. High rainfall can also cause physical damage to shallot plants, such as broken stems or damaged leaves due to strong rainwater pressure. As a result of these unfavorable environmental conditions, shallot plants are likely to experience a decrease in growth and yield variables such as plant height, number of leaves, bulb weight, and others (Susanto and Herlina, 2021). Therefore, it is important to pay attention to proper preventive measures, such as arranging good soil drainage (Marhama et al., 2023), carrying out regular pest and disease control, and paying attention to cultivation practices that are in accordance with weather conditions to minimize the adverse effects of high rainfall on shallot plants. The treatment of several shallot varieties due to the application of manure with different doses showed interactions at the ages of 34 DAP and 54 DAP. The V1D1 treatment (Batu Ijo + Goat Manure 15 t/ha) showed a relatively higher average compared to other treatments. This can illustrate that the dose of goat manure of 15 t/ha given to shallot plants of the Batu Ijo variety has more optimal growth compared to other treatments. Plants can grow optimally, one of the reasons is the balance of nutrients in the soil. According to Manik et al. (2022) Goat manure mixed into the soil surface will decompose to produce N nutrients. Sodium has the function of forming more chlorophyll, so that photosynthate increases and can be utilized by plants in growing and developing.

Treatment V2 (Tajuk) showed a relatively higher average than other treatments. The number of leaves is proportional to the number of tillers, the more tillers, the more leaves there will be. The number of tillers is relatively higher in treatment V2 (Tajuk) and is directly proportional to the number of leaves in V2 (Tajuk). This is due to the genetic influence of the Tajuk variety in adapting to the environment, thus affecting the number of leaves and tillers. According to Purwasi et al. (2022) stated that the environment can affect plants in growing and developing, so that the response of plant genetics to the environment can affect plant growth and development, including the number of leaves and tillers. However, genetics will not show any effect if environmental conditions are appropriate.

Response of Several Shallot Varieties Due to Application of Manure on Results

Plant growth can be influenced by environmental factors in the soil and environmental factors above the soil surface. So that there is continuity between growth and yield. An increase in plant height will be followed by an increase in leaf area, so that the wider the leaf surface, the more optimal photosynthesis and can affect plant yields. According to Sinaga et al. (2021) the enlargement of tuber diameter and the increase in tuber weight are caused by the accumulation of photosynthate assimilates translocated to the tubers. This statement is in accordance with the results of this study. Based on the parameters of plant height growth and yield parameters, it states that the V1 (Batu Ijo) treatment showed relatively higher results in the parameters of plant height growth and the parameters of tuber diameter yield, wet weight per clump and dry weight per clump. So it can be stated that plant height will affect the size of the tuber and also

the weight of the tuber. However, the larger the diameter of the tuber, the fewer tubers will be produced.

Manure is essential to provide nutrients for shallot plants. The macro and micro nutrients contained in manure are needed by plants, such as N, P, K, and other nutrients. Nutrients from goat manure help shallot plants build tissue, produce green and healthy leaves, and form quality tubers. Regular use of goat manure can also improve soil health and soil microbial activity, which contributes to the balance of the soil ecosystem.

The enlargement of the leaf layer will cause the formation of shallot bulbs which are influenced by internal factors, namely growth hormones and carbohydrate metabolism, and also environmental factors such as temperature, humidity and nutrients. In the process of metabolism, elements will be very much needed. The formation of bulbs is influenced by the availability of potassium nutrients. Application of goat manure can increase potassium nutrients in the soil. According to Priyadi et al. (2021) root volume, number of leaves, plant height, number of bulbs, and bulb weight in shallot plants can be increased by the application of goat manure. Higher doses can cause a decrease in plant growth and development, one of which is a decrease in the number of bulbs (Nuryani et al., 2019).

Apart from genetic factors, the addition of higher doses of goat manure can result in a decrease in the number of shallot bulbs. The addition of fertilizer application results in a decrease in the number of bulbs. Judging from the growth parameters and results, it shows that the number of shoots will affect the number of bulbs formed. The drying process causes weight loss due to reduced water content from the leaves and bulbs. Judging from the results in Table 5, it states that the average dry weight per clump is relatively lower in the V2 (canopy) treatment. Shrinkage in the canopic variety ranges from 13.30%, the Super Philip variety ranges from 11.90% and the green stone variety ranges from 9.84%. Thus, it can be stated that the amount of weight loss will cause a decrease in the dry weight produced. The canopic variety shows a relatively lower average dry weight and shows more shrinkage than other treatments. This is because the number of leaves of the canopic variety is relatively greater than other varieties, causing higher weight loss and affecting the dry weight results per clump. In this study, drying was carried out by air drying. Air-dried shallots will result in lighter weight, due to reduced water content in the leaves and bulbs (Rahmah et al., 2023).

Description of shallot varieties involves an understanding of genetic characteristics, agronomic properties, and responses to environmental conditions. Different varieties may have different levels of tolerance to environmental factors. The yields shown by the Batu Ijo and Tajuk varieties are higher compared to the description of the Batu Ijo variety, where the yield of the Batu Ijo variety is 21.96 t/ha higher than the description of the Batu Ijo variety which shows a yield of 18.5 t/ha. The yield of the Tajuk variety 14.09 t/ha is also higher than the description of the Tajuk variety, which is 6-12 t/ha. However, the yield of the Super Philip variety is lower than the description of the Super Philip variety, where the yield of the Super Philip variety 16.31 t/ha is lower than the yield in the description of the Super Philip variety, which is 17.60 t/ha. Thus, it can be stated that the Batu Ijo and Tajuk varieties can adapt to the environment so that they can produce optimal harvest results.

CONCLUSION

Treatment of various varieties of shallots with different doses of goat manure showed interaction only on plant height at 34 DAP and 54 DAP. The combination of Batu Ijo variety treatment applied with goat manure at a dose of 15 t/ha showed relatively better plant height compared to other treatments. Batu Ijo variety showed better yields compared to Tajuk and Super Philip varieties. The yield of Batu Ijo variety in this study also showed better when compared to the description of Batu Ijo variety. Application of goat manure at doses of 15 t/ha, 25 t/ha, and 35 t/ha did not show a significant effect on the growth or yield of shallots

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