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THE EFFECT OF COMPOST COMBINATION ON GROWTH AND YIELD OF THREE VARIETIES SHALLOT PLANTS (Allium ascalonicum L).

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Abstract
This experiment aims to determine the effect of the combination of compost on the growth and yield of plants of three varieties of shallots (Allium ascalonicum L). The experiment was carried out in Karangwangun Village, Babakan District, Cirebon Regency - West Java. The research period will be carried out from January to May 2023. The location is located at an altitude of 93 meters above sea level (asl), the soil type of Latosol and Regosol association, including rain type C (moderately wet). The experimental method used is using an experimental method with a Randomized Group Design (RAK) combination pattern, the treatment consists of two factors that are repeated three times. The first factor is compost which consists of three levels, namely compost 10 tons / ha, compost 15 tons / ha, and compost 20 tons / ha. While the second factor is varieties consisting of three levels, namely pancasona varieties, violetta varieties, and bima varieties. The main observation data were processed using linear model statistical tests, fingerprint analysis, and scott-knot group follow-up test analysis. To determine the correlation between the treatment and the growth and yield components of shallots, the correlation used is with the Product Moment correlation coefficient. The experimental results showed: (1) The combination of compost treatment and onion plant varieties had an effect on the weight of fresh bulbs per plot and the weight of dry tubers per clump, but did not affect plant height, number of leaves, number of saplings per clump, root volume, number of tubers per plant, diameter of tubers per plant, weight of fresh bulbs per plant, and weight of dry tubers per plot, (2) The highest dry tuber weight per plot was produced by a combination of compost treatment of 10 tons / ha and bima varieties of 3.85 kg / plot or equivalent to 10.26 tons / ha and was not significantly different from other treatment combinations, and (3) There was a significant correlation between plant height and the number of leaves aged 35 HST and 45 HST with seed weights per plot with weak and medium categories. However, there was no apparent correlation between plant height and leaf count aged 25 HST with seed weight per plot with very weak category.

Keywords: Fertilizer, compost, varieties, growth, yield, onion

INTRODUCTION

In Indonesia, shallot production is currently still concentrated in several provinces. Based on data from the Central Statistics Agency, the six main shallot-producing provinces in 2018 are Central Java, East Java, West Nusa Tenggara, West Java, West Sumatra and South Sulawesi. Production from each province reached more than 90 thousand tons and in total the six provinces accounted for 93 percent of the total national production of shallots which reached 1.503 million tons. National shallot production in 2018 grew by 2.26 percent compared to the previous year (Ashari, 2006).

Shallots (Allium ascalonicum L.) is a horticultural commodity that has many benefits and high economic value and has attractive market prospects. In the shallot farming business, farmers are able to increase their income by 4 times compared to planting rice and open cooperative relationships with various parties, both government, private and farmers outside the region (Fajarika & Fahadha, 2020).

As one of the strategic horticultural commodities, shallots get special attention from all parties because this commodity actually has important economic value. Shallots are a national leading vegetable that has not had much varietal diversity, both local and national varieties. This is because the majority of onion propagation uses bulbs so that there is no segregation or diversity in the variety. From 1984 to 2017, the Shallot Plant Research Institute (Balitsa) has released or registered 14 varieties of shallots suitable for planting in lowlands and highlands (Handayani, 2021).

The increasing need for shallots along with the increase in population and purchasing power. Although farmers' interest in shallots is quite strong, in the process of exploitation there are still various obstacles, both technical and (Cahyono & Samadi, 2005). To meet these needs, it must be balanced with the amount of production (Rifai & Wulandari, 2020).To increase onion production is to optimize the application of the right fertilizer, the use of superior seeds, and the selection of the right variety.

According to Saputra, (2016) the low production of shallots is caused by the use of poor quality seeds, poor planting media, and inadequate pest / disease control. Efforts to increase the productivity of shallots cannot be separated from the role of fertilizer as a soil fertilizer. This use needs to be increased because one of the factors that limit crop production is nutrients (Wibowo, 2013). The application of organic fertilizers is very appropriate to be used to improve the physical, chemical and biological properties of the soil, increase the effectiveness of soil microorganisms and be more friendly to the environment (Yeptho et al., 2012).

With the addition of organic fertilizers, it is expected to overcome the condition of the soil. According to Sopha et al., (2015), organic fertilizer is fertilizer made from green or other organic materials that are deliberately added certain ingredients so that the decay process occurs faster. Compost is very appropriate to meet these criteria. Compost is the result of incomplete (partial) decomposition of organic materials which are then accelerated by certain types of bacteria or microbes under certain conditions. Meanwhile, composting is a process of organic matter that begins to undergo decomposition and is assisted by bacteria as its energy source.

In addition to fertilizers, one of the technologies that plays a role in increasing productivity is the use of superior varieties that are in accordance with agroecological conditions, willingness, and the ability of farmers to develop varieties (Hidayat, 2018). Many seeds used by farmers so far still use seeds from previous cultivation and are not superior varieties and do not adjust to site specifics. Choosing the right variety for planting in the lowlands is one way to increase onion crop production. Variety is one among many determining factors in plant growth and yield. The cultivation of onion plants in the lowlands is also still constrained by the availability of seedlings.

The purpose of this study was to (1) determine the effect of the combination of compost doses on the growth and yield of three varieties of onion plants, (2) determine the dose treatment of compost and good varieties on the yield of three varieties of onion plants, and (3) determine the correlation between growth components and yields of three varieties of onion plants (Allium ascalonicum L.).

METHOD RESEARCH

The research was carried out in Karangwangun Village, Babakan District, Cirebon Regency, West Java, when the research was carried out from Jabuari to May 2023. The research method used in this experiment is a field experiment (experimental), namely

Group Randomized Design (RAK) combination pattern. The treatment consists of compost (PK) and onion varieties (V). This experiment consisted of 9 combinations of compost treatments and onion varieties, each of which was repeated three times, so that there were 27 experimental plots. The experimental land area per plot is 1.5 m x 2 m. First factor: Compost dose consists of 3 levels, namely: 10 tons / ha, 15 tons / ha, and 20 tons / ha. Second factor: Shallot varieties consist of 3 levels, namely: Pancasona, Violetta, and Bima.

Observations include two, namely supporting observations and main observations. Supporting observations were made on the growth power of seedlings, soil analysis before the experiment, rainfall, pest and weed attacks, flowering age and harvest age. While the main observations include: observation of plant height, number of leaves number of saplings, root volume, number of tubers, tuber diameter, weight of fresh tubers per plant, weight of fresh tubers per plot, weight of dry tubers per plant, and weight of dry tubers per plot and correlation of the relationship between plant growth and yield components.

The experimental data on the main observation were processed using statistical tests with a linear model proposed by Ali, (2001) as follows: Xij = + μ ri + tj + eij.

Table 1. Fingerprint List

Sources of Diversity	DB	JK	KT	F_{hitung}	$F_{0,05}$
Ulangan (r)	2	$\Sigma Yi...^2/t-Y...^2/rt$	JK(r)/DB(r)	KT (r)/KTG	3,63
Perlakuan (t)	8	$\Sigma Yj..^2/ r-Y...^2/rt$	JK(t)/DB(t)	KT (t)/KTG	2,59
Galat	16	JK(T)-JK(r)-JK(t)	JK(G)/DB(G)	-	-
Total (T)	26	$\Sigma Yij.^2-Y...^2/rt$	-	-	-

Source : Kemas Ali Hanafiah (2001)

From the results of data processing or variety analysis, if there is a noticeable difference from the treatment or the F-count value is greater than the F-table at a real level of 5%, then the test is continued using the Scott-Knot Group Testt. Analysis of the correlation between growth components and sesame yield was performed on Plant height (cm) with the yield of dry tuber weight per plot. Number of leaves (strands) with the result of dry tuber weight per plot. To determine the correlation between treatment and the growth component and sesame yield, the correlation used is with the Product Moment correlation coefficient proposed by Wijaya et al., (2000) as follows:

Table 2. Categories Correlation Coefficient [r]

No.	Nilai r	Katagori
1.	0,000 – 0,199	Korelasi sangat rendah
2.	0,200 – 0,399	Korelasi rendah
3.	0,400 – 0,599	Korelasi sedang
4.	0,600 – 0,799	Korelasi kuat
5.	0,800 – 1,000	Korelasi sangat kuat

Sumber : Vincent Gaspersz. 2015

RESULT AND DISCUSSIO

Plant Height (cm)

The results of variance analysis using Test F showed that the treatment tested had no real effect on the average variable plant height of the three varieties at the age of 25 HST, 35 HST and 45 HST (Table 3).

Table 3. The Effect of Compost Dose on Plant Height of Pancasona, Violetta, and Bima Varieties at the Age of 25, 35, and 45 HST

No	Perlakuan	25 HST (cm)		35 HST (cm)		45 HST (cm)	
1	A. PK.10 : Var. Pancasona	25.6	a	32.8	a	41.8	a
2	B. PK.10 : Var. Violetta	24.5	a	33.3	a	41.5	a
3	C. PK.10 : Var. Bima	26.2	a	**34.5**	a	44.5	a
4	D. PK.15 : Var. Pancasona	26.2	a	34.4	a	**44.6**	a
5	E. PK.15 : Var. Violetta	23.3	a	31.9	a	41.3	a
6	F. PK.15 : Var. Bima	25.9	a	34.4	a	43.1	a
7	G. PK.20 : Var. Pancasona	**27.3**	a	32.8	a	41.9	a
8	H. PK.20 : Var. Violetta	22.8	a	30.9	a	39.8	a
9	I. PK.20 : Var. Bima	24.9	a	33.0	a	42.9	a

Remarks : The average number followed by the same letter in the same column shows no real difference based on the Scott-Knott Cluster Test at a real level of 5%.

In the observation of plant height (Table 3), based on the results of statistical tests that the treatment of various compost applications did not have a significant effect on the height of plants of three varieties at the age of 25, 35 and 45 HST. This is thought to be because the absorption of compost cannot be utilized by plants so that the application of compost to various varieties of shallots has not had a noticeable effect.

In table 3 it can be seen that compost treatment exerts no real influence on the average plant height of three onion varieties in all observation periods. At the observation of 25 HST, the highest plant height of 27.3 cm was obtained in the combination of treatment G (compost 20 tons / ha and pancasona varieties) but did not differ significantly from other treatment combinations. At 35 HST observations, the highest plant height of 34.5 cm was obtained in the C treatment combination (compost 10 tons / ha and bima varieties) but did not differ significantly from other treatment combinations. At 45 HST observations, the highest plant height of 44.6 cm was obtained in the combination of treatment D (compost 15 tons / ha and pancasona varieties) but did not differ significantly from other treatment combinations.

This shows that compost is sufficient for the growth of onion plants. Different applications of compost can not increase the height of onion plants. This is in accordance with the opinion of Abdissa et al., (2011) and Abo-Elyousr et al., (2014) that nutrients are available in the soil according to the needs for plant growth, excessive nutrients are not utilized by plants and can even inhibit plant growth.

Number of Leaves (fruit)

The results of variance analysis using Test F showed that the tested treatment had no real effect on the average variable number of leaves of the three varieties at the age of 25 HST, 35 HST and 45 HST (Table 4).

Table 4. The Effect of Compost Dosage on the Number of Leaves of Pancasona, Violetta, and Bima Varieties at the Age of 25, 35, and 45 HST

No	**Treatment**	**25HST (sheet)**		**35 HST (sheet)**		**45 HST (sheet)**	
1	A. PK.10 : Var. Pancasona	18.97	a	30.23	a	41.90	a
2	B. PK.10 : Var. Violetta	18.93	a	28.33	a	34.40	a
3	C. PK.10 : Var. Bima	18.47	a	**33.10**	a	41.73	a
4	D. PK.15 : Var. Pancasona	17.10	a	32.37	a	42.30	a
5	E. PK.15 : Var. Violetta	19.50	a	29.20	a	38.07	a
6	F. PK.15 : Var. Bima	**22.03**	a	32.83	a	40.50	a
7	G. PK.20 : Var. Pancasona	18.83	a	31.87	a	38.70	a

No	Treatment	25HST (sheet)		35 HST (sheet)		45 HST (sheet)	
8	H. PK.20 : Var. Violetta	21.47	a	31.33	a	37.03	a
9	I. PK.20 : Var. Bima	19.73	a	32.87	a	**42.73**	a

Remarks : The average number followed by the same letter in the same column shows no real difference based on the Scott-Knott Cluster Test at a real level of 5%.

In table 4 it can be seen that compost treatment exerts no real influence on the average number of leaves of plants of three onion varieties in all observation periods. At the observation of 25 HST, the average number of plant leaves of the highest 22.03 strands was obtained in the combination of treatment F (compost 15 tons / ha and bima varieties) but did not differ significantly from other treatment combinations. In the observation of 35 HST, the highest average number of plant leaves of 33.10 strands was obtained in the combination of treatment C (compost 10 tons / ha and bima varieties) but not significantly different from other treatment combinations. In the observation of 45 HST, the highest average number of plant leaves of 42.73 strands was obtained in the combination of treatment I (compost 20 tons / ha and bima varieties) but not significantly different from other treatment combinations.

It is suspected that in the results of soil analysis before the experiment, the C-organic content in the research field is very low so that it can inhibit the growth of onion plants. Compost which is organic matter is a mineral element needed by plants in large enough quantities. Organic matter serves as a constituent of many components of plant cells, including amino acids and nucleic acids (Hussain et al., 2017). Therefore, lack of organic matter greatly inhibits plant growth. If the deficiency continues, most will show symptoms of chlorosis (yellowing of leaves), especially on the lower old leaves of the plant (Ghiasy-Oskoee et al., 2018) (Ghiasy-Oskoee et al., 2018) and (Havlin et al., 2016).

This is in accordance with the opinion of Aboukhadrah et al., (2017), the response of plants to fertilization will increase if the application of fertilizer is in accordance with the time, and the right way. The results of Kwaghe et al., (2017), showed that the addition of compost up to a dose of 20 tons / ha did not affect the growth of plant height, stem diameter, leaf area index and number of leaves per plant.

Root Volume (ml)

The results of variance analysis using Test F showed that the tested treatment had no real effect on the average variable root volume of plants of the three varieties at the age of 25 HST, 35 HST and 45 HST (Table 5).

Tabel 5. Pengaruh Takaran Pupuk Kompos Terhadap Volume Akar Varietas Pancasona, Violetta, dan Bima pada Umur 25, 35, dan 45 HST

No	Perlakuan	25 HST (ml)		35 HST (ml)		45 HST (ml)	
1	A. PK.10 : Var. Pancasona	3.83	a	2.50	a	3.17	a
2	B. PK.10 : Var. Violetta	4.17	a	2.00	a	**4.67**	a
3	C. PK.10 : Var. Bima	4.17	a	2.50	a	3.67	a
4	D. PK.15 : Var. Pancasona	3.50	a	1.50	a	2.67	a
5	E. PK.15 : Var. Violetta	**4.67**	a	2.67	a	2.53	a
6	F. PK.15 : Var. Bima	3.50	a	3.33	a	3.67	a
7	G. PK.20 : Var. Pancasona	3.17	a	2.50	a	2.03	a
8	H. PK.20 : Var. Violetta	**4.67**	a	**5.00**	a	2.33	a
9	I. PK.20 : Var. Bima	3.67	a	2.67	a	2.17	a

Remarks : The average number followed by the same letter in the same column shows no real difference based on the Scott-Knott Cluster Test at a real level of 5%.

In table 5 it can be seen that the treatment of compost fertilizer exerts an intangible influence on the average volume of the roots of plants of three onion varieties in all periods of observation. In the observation of 25 HST, the average plant root volume of 4.67 ml was obtained in the combination of treatment E (compost fertilizer 15 tons / ha and violetta varieties) and combination treatment H (compost fertilizer 20 tons / ha and violetta varieties) but did not differ significantly from other treatment combinations.

At the observation of 35 HST, the average plant root volume of 5.0 ml was obtained in the combination of treatment H (compost 20 tons / ha and violetta varieties) but not significantly different from other treatment combinations. In the observation of 45 HST, the average plant root volume of 4.67 ml was obtained in the combination of treatment B (compost 10 tons / ha and violetta varieties) but did not differ significantly from other treatment combinations.

This is thought to be because the provision of various doses of compost has not affected the hunting of plants. This is also in accordance with the research of Palupi & Alfandi, (2019) that experimental environmental conditions with even fertility levels caused root volumes that did not differ markedly in all treatments and observation ages. The volume of roots in all periods of observation is influenced by the genetic properties of the plant. In accordance with the research of Lee et al., (2018) the amount of root volume per plant is not influenced by compost. According to Lee, Son, et al., (2018) root volume per plant is an inherited genetic trait.

Number of saplings (fruit)

The results of variance analysis using Test F showed that the tested treatment had no noticeable effect on the average number of plant saplings of the three varieties at the age of 25 HST, 35 HST and 45 HST (Table 6).

Table 6. The Effect of Compost Dosage on the Number of Saplings of Pancasona, Violetta, and Bima Varieties at the Age of 25, 35, and 45 HST

No	Perlakuan	25 HST (sheet)		35 HST (sheet)		45 HST (sheet)	
1	A. PK.10 : Var. Pancasona	5.37	a	7.53	a	7.27	a
2	B. PK.10 : Var. Violetta	4.97	a	7.30	a	7.27	a
3	C. PK.10 : Var. Bima	6.03	a	8.00	a	7.97	a
4	D. PK.15 : Var. Pancasona	5.17	a	7.30	a	7.53	a
5	E. PK.15 : Var. Violetta	5.60	a	7.23	a	7.77	a
6	F. PK.15 : Var. Bima	**6.33**	a	**9.07**	a	**9.20**	a
7	G. PK.20 : Var. Pancasona	5.33	a	7.67	a	7.87	a
8	H. PK.20 : Var. Violetta	5.60	a	7.63	a	7.93	a
9	I. PK.20 : Var. Bima	5.67	a	8.73	a	8.77	a

Remarks : The average number followed by the same letter in the same column shows no real difference based on the Scott-Knott Cluster Test at a real level of 5%.

In table 6 it can be seen that compost treatment has no real effect on the average number of plant saplings of three onion varieties in all observation periods. At the observation of 25 HST, the average number of plant saplings of 6.33 pieces was obtained in the F treatment combination (compost 15 tons / ha and bima varieties) but did not differ significantly from other treatment combinations. In the observation of 35 HST, the average number of plant saplings of 9.07 fruits was obtained in the F treatment combination (compost 15 tons / ha and bima varieties) but did not differ significantly from other treatment combinations. At the observation of 45 HST, the average number of plant saplings of 9.20 pieces was obtained in the F treatment combination (compost 15 tons / ha and bima varieties) but did not differ significantly from other treatment combinations.

Compost exerts an intangible influence on the average number of plant saplings of three varieties of onions in all periods of observation. Compost should be used for plant growth such as the number of saplings, but this availability of nutrients is not utilized optimally by onion plants so that the growth of the number of saplings does not have a real effect. This is because the nutrients contained in the compost absorbed by the roots are not optimal for the growth of the number of saplings Maboko & Du Plooy, (2018) and (Mafongoya & Jiri, 2016). This shows that onion plants have not utilized the nutrients available in compost for their growth. As stated by Lloyd et al., (2016) reporting the results of their research on clay soils in California that compost does not have a noticeable effect on the number of onion saplings

This is in line with the opinion of Priyadharsini et al., (2012) compost has low macro and micro nutrients, and cannot be directly absorbed by plants, so that plant nutrient needs are still not met as a result of which plant growth becomes hampered.

Number of Tubers (fruit) and Diameter of Tubers (cm)

The results of variance analysis using Test F showed that the tested treatment had no noticeable effect on the number of tubers per clump and the diameter of the tubers of the three varieties (Table 7).

Table 7 Diameter of Pancasona, Violetta, and Bima Varieties

No	Treatment	Number of Tubers Per Clump (Fruit)		Tuber diameter (cm)	
1	A. PK.10 : Var. Pancasona	7.57	a	2.37	a
2	B. PK.10 : Var. Violetta	7.93	a	**3.78**	a
3	C. PK.10 : Var. Bima	7.83	a	2.63	a
4	D. PK.15 : Var. Pancasona	8.50	a	2.68	a
5	E. PK.15 : Var. Violetta	9.03	a	2.63	a
6	F. PK.15 : Var. Bima	**9.73**	a	2.61	a
7	G. PK.20 : Var. Pancasona	8.47	a	2.93	a
8	H. PK.20 : Var. Violetta	8.47	a	2.65	a
9	I. PK.20 : Var. Bima	8.97	a	2.46	a

Remarks : The average number followed by the same letter in the same column shows no real difference based on the Scott-Knott Cluster Test at a real level of 5%. In observing the number of tubers per clump and the diameter of plant tubers (Table 7), based on statistical test results showed that the treatment of various applications of compost did not have a significant effect on the average number of tubers per clump and the diameter of plant tubers at three variances.

In table 7 it can be seen that compost treatment has no real influence on the average number of bulbs per clump and the diameter of the bulbs of the three onion varieties. In observation, the highest average number of tubers per clump of 9.73 pieces was obtained in the F treatment combination (compost 15 tons / ha and bima varieties) but did not differ significantly from other treatment combinations. The average number of tubers per clump of bima varieties based on the description is 7-12 pieces.

On observation, the highest plant tuber diameter of 3.78 cm was obtained in the combination of treatment B (compost 10 tons / ha and violetta varieties) but did not differ markedly from other treatment combinations. This is in line with the opinions of Mythili et al., (2018) and Petrovic et al., (2019), stating that the use of compost on various varieties does not increase the number of tubers and diameter of tubers but only encourages vegetative growth. In addition, the number of tubers and the diameter of tubers in plants depends on the growth period of plants, especially plant height and number of leaves (Harvendra et al., 2019). In the formation of the number of tubers and the diameter of tubers in plants is greatly supported by the fulfillment of nutritional needs or nutrients obtained by plants from nutrients contained in the fertilizer given (Sopha et al., 2015)

Weight of Fresh Tubers Per Clump (g) and Weight of Fresh Tubers per Plot (kg)

The results of variety analysis using Test F showed that the tested treatment did not have a noticeable effect on the variable weight of fresh tubers per clump, but was significantly different on the variable weight of fresh beans per plot (Table 8).

Table 8. The Effect of Compost Dosage on the Weight of Fresh Tubers Per Clump and the Weight of Fresh Tubers per Plot of Pancasona, Violetta, and Bima Varieties

No	Treatment	Weight of Fresh Tubers Per Clump (g)		Weight of Fresh Tubers per Plot (kg)	
1	A. PK.10 : Var. Pancasona	22.66	a	3.76	a
2	B. PK.10 : Var. Violetta	25.41	a	4.61	a
3	C. PK.10 : Var. Bima	26.27	a	5.88	b
4	D. PK.15 : Var. Pancasona	27.58	a	4.42	a
5	E. PK.15 : Var. Violetta	27.95	a	4.80	a
6	F. PK.15 : Var. Bima	29.19	a	4.71	a
7	G. PK.20 : Var. Pancasona	31.32	a	4.32	a
8	H. PK.20 : Var. Violetta	31.64	a	4.41	a
9	I. PK.20 : Var. Bima	30.87	a	4.57	a

Remarks : The average number followed by the same letter in the same column shows no real difference based on the Scott-Knott Cluster Test at a real level of 5%.

In Table 8, it can be seen that the treatment of compost dose has an intangible effect on the weight of fresh tubers per clump. In the observation of the weight of fresh tubers per clump, the highest average weight of 79.11 grams was obtained in the combination of treatment H (compost 20 tons / ha and violetta varieties) but did not differ significantly from other treatment combinations. It is suspected that differences in the application of compost to various varieties have not been able to affect the weight of fresh tubers per clump, so that the same weight is produced, meaning that genetic factors of onion plants are more influential than environmental factors. This is also in accordance with the research of Yeptho et al., (2012), that the weight of fresh tubers per clump is not influenced by compost and variety. According to Bhai & Thomas, (2010), that the weight of fresh tubers per clump is an inherited genetic trait.

The highest average weight of dry tubers per plot obtained in combination C treatment (compost 20 tons / ha and bima variety) reached a fresh weight per plot of 14.70 kg in marked contrast to other treatments. This is in accordance with the opinion of Van den Brink & Basuki, (2011) who say that the application of compost combined with varieties shows a noticeable difference in the weight of dry tubers per plot. This is also stated by Alizadeh et al., (2013) stated that to form plant tissue nutrients are needed, with the presence of nutrients and being in a balanced state will be able to increase plant weight. Nutrients derived from compost will increase photosynthetic activity and leaf chlorophile content and increase leaf growth so as to increase the fresh weight of plants. In addition, it will also affect the quality of tubers, namely increasing tuber diversity and increasing tuber dry matter (Salisbury, 1996).

Dry Weight of Tubers Per Clump (g) and Dry Weight of Tubers per Plot (kg)

The results of variety analysis using Test F showed that the tested treatment did not have a noticeable effect on the variable weight of dry tubers per clump, but was significantly different on the variable weight of dry beans per plot (Table 9).

Table 9. The Effect of Compost Dosage on the Weight of Dry Tubers per Clump of Pancasona, Violetta, and Bima Varieties

No	Perlakuan	Bobot Umbi Kering Per Rumpun (g)		Bobot Umbi Kering per Petak (kg)	
1	A. PK.10 : Var. Pancasona	22.66	a	2.28	a
2	B. PK.10 : Var. Violetta	25.41	a	3.05	a
3	C. PK.10 : Var. Bima	26.27	a	3.85	a
4	D. PK.15 : Var. Pancasona	27.58	b	2.69	a
5	E. PK.15 : Var. Violetta	27.95	b	3.19	a
6	F. PK.15 : Var. Bima	29.19	b	2.95	a
7	G. PK.20 : Var. Pancasona	29.99	b	2.19	a
8	H. PK.20 : Var. Violetta	31.38	b	2.71	a
9	I. PK.20 : Var. Bima	31.67	b	3.07	a

Remarks : The average number followed by the same letter in the same column shows no real difference based on the Scott-Knott Cluster Test at a real level of 5%.

In Table 9, it can be seen that the treatment of compost dose has a real effect on the weight of dry tubers per clump, but has no real effect on the observation of dry tuber weight per plot. On observation of the weight of dried tubers per clump the highest average weight of 42.21 grams was obtained in the combination of treatment C (compost 10 tons / ha and bima varieties) but not significantly different from the combination of treatments B, E, F, H, and I, but significantly different from other treatment combinations (treatment A, D, and G).

This shows that at certain levels compost will encourage growth, while at higher levels it will inhibit growth, and poison plants Idhan et al., (2015) and (Khayat et al., 2015). As the results of research in Xu et al., (2015), the application of organic fertilizers to a certain extent can increase production and yield quality.

In the dosing treatment of compost on various cultivars did not have a significant effect on the average weight of dry tubers per plot, where the combination of treatment C (compost 10 tons / ha and bima varieties) achieved the largest dry tuber weight per plot of 3.85 kg / plot or equivalent to 10.26 tons / ha which was not significantly different from other treatments. It is suspected that the nutrients contained in compost are not responded well by onion plants so that it does not affect the increase in yield of onion plants.

This is in accordance with the results of previous research conducted by Simon et al., (2014) about the efficiency of fertilization in onion plants which showed that excessive doses of compost did not provide benefits in terms of its effect on the yield of onion plants, there was even a tendency to increase weight loss. (Rashmi et al., 2015), said that the use of organics has no real effect on the weight of dry tubers per plot.

Correlation of Plant Height and Number of Leaves with Dry Tuber Weight per Plot.

Based on the calculation of the Pearson product moment correlation test (Table. 10) shows that the correlation between plant height and dry tuber weight per plot there is no real correlation at the age of 25 HST with very weak categories. Thus, the height of plants at the observed age of 25 HST which is a growth component does not affect the yield of dry tuber weight per plot because based on the calculation of the Coefficient of Determination (R Square) of 0.020, it means that the yield of dry tuber weight per plot is influenced by plant height at the age of 25 HST is only 2.0% (very weak category).

Meanwhile, at the observation of the age of 35 HST and 45 HST there was a real correlation between plant height and the yield of dry tuber weights per plot with weak and medium categories, because after testing the correlation t.count > t.table. Based on the calculation of the coefficient of determination (r2) is 0.269 and 0.616, it means that the yield of dry tuber weight per plot is influenced by the height of plants aged 35 HST and 45 HST by 26.9%, and 61.6%.

Thus, it can be concluded that plant height at the age of 25 HST has no effect on the yield of dry tuber weight per plot , while plant height at the age of 35 HST and 45 HST indicates an increased effect on the yield of dry tuber weight per plot. According to the results of research by Mojaddam & Noori, (2015) and (Pandey et al., 2015), growth components that affect the yield of onion plants consist of, bulb diameter, bulb weight, and plant height before plant flowering .

Table 10. Correlation Between Plant Height and Number of Leaves with Dry Tuber Weight per Plot

No	Correlation Coefficient	Plant Height			Number of leaves		
		25 HST	35 HST	45 HST	25 HST	35 HST	45 HST
1	*R*	0,142	0,519	0,379	0,018	0,523	0,389
2	*Kategori r*	Sangat Lemah	Lemah	Sedang	Sangat Lemah	Lemah	Sangat lemah
3	r^2	0,020	0,269	0,616	0,012	0,274	0,151
4	*Sig.*	0,479	0,006	0,001	0,929	0,005	0,045
5	*t-hitung*	0,720	3,030	3,919	0,090	3,070	2,110
6	*t-tabel* $_{0.05(25)}$	2,060	2,060	2,060	2,060	2,060	2,060
7	Kesimpulan	TN	N	N	TN	N	N

Sumber : Data primer 2021

Description : TN = Unreal, and N = Real

Based on the calculation of the Pearson product moment correlation test (Table. 10) shows that the correlation between the number of leaves and the weight of dry tubers per plot there is no real correlation at the age of 25 HST with very weak categories. Thus, the height of the plant at the observed age of 25 HST which is a growth component does not affect the yield of dry tuber weight per plot because based on the calculation of the Coefficient of Determination (R Square) of 0.012, it means that the yield of dry tuber weight per plot is influenced by the number of plant leaves at the age of 25 HST is only 1.2% (very weak category).

Meanwhile, at the age observation of 35 HST and 45 HST there was a real correlation between the number of plant leaves and the yield of dry tuber weight per plot with weak and very weak categories, because after testing the correlation t. count > t. table. Based on the calculation of the coefficient of determination (r2) is 0.274 and 0.151, meaning that the yield of dry tuber weight per plot is influenced by the number of leaves of plants aged 35 HST and 45 HST by 27.4%, and 15.1%. Thus, it can be concluded that the number of plant leaves at the age of 25 HST has no effect on the yield of dry tuber weight per plot, while the number of plant leaves at the age of 35 HST and 45 HST indicates an increase in the yield of dry tuber weight per plot.

It is suspected that the number of leaves that are growth components does not affect the yield of dry tuber weights per plot at the beginning of growth while the number of leaves before flowering (reduced growth of vegetative components) affects the yield of dry tuber weights per plot. This suggests that the number of leaves formed at the end of vegetative growth or before flowering results in a high number of bulbs. The results of research by Weraduwage et al., (2015), if the number of leaves formed is increasing and supported by the availability of nutrients and getting enough sunlight on all leaves, then many leaves are able to produce high tubers, then the results will increase. According to Hochberg, et al (2015), the number of red onion leaves formed will produce bulbs, and affect plant yield. The higher the number of leaves, the more the yield of onion crop production will increase.

CONCLUSION

Based on the results of research and discussion, the following conclusions can be drawn The combination of compost treatment and onion plant varieties had a significant effect on the weight of fresh bulbs per plot and the weight of dry bulbs per clump, but did not have a significant effect on plant height, number of leaves, number of saplings per clump, volume of roots, number of tubers per plant, diameter of tubers per plant, weight of fresh tubers per plant, and weight of dry tubers per plot. The highest weight of dry tubers per plot was produced by a combination of treatment C (compost 10 tons / ha and bima varieties) of 3.85 kg / plot or equivalent to 10.26 tons / ha and was not significantly different from other treatment combinations. There was a significant correlation between plant height and leaf count aged 35 HST and 45 HST with seed weight per plot with weak and medium categories. However, there was no apparent correlation between plant height and leaf count aged 25 HST with seed weight per plot with very weak category.

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