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Responsive Production of Several Varieties of Shallots as a Result of City's Garbage Compost Application

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ABSTRACT

The refractive production of shallots is enhanced with appropriate crop cultivation techniques as in the determination of varieties and the use of city garbage compost applications. The purpose of the study is to know the best dosage in increasing the production of shallots. This research was conducted in North Sumatera province in March-April 2019. This research uses the random draft group (RAK) with 2 factors and 2 blocks. The first factor is the varieties (V) and the second factor is the compost garbage city (B). The results showed that the most excellent varieties are the Bima Brebes varieties which show the results of wet and dried dry bulbs at most whereas the city's garbage compost application at a dose of 3 kg/m^2.

Keywords: Enhancement, Plants, Soil Uplift, Varieties, Shallots

INTRODUCTION

Indonesia is one of the world's most shallots exporters. The prospect of developing Indonesian shallot in the world ranks fourth as a producer of shallots after New Zealand, France and the Netherlands. Indonesia was ranked first in the ASEAN state, and experienced an increase in harvest area growth of 3.70% in the year 2010-2014 compared to the previous year (PUSDATIN, 2015).

Shallots have long been cultivated by farmers intensively because it is a source of income and employment opportunities that contribute sufficiently high to the economic development of the region. Because it has a high economic value, the onion cultivation has spread in almost all provinces in Indonesia.

Shallots can be used in various menu dishes already familiar, both as a flavor enhancer and beauty (aesthetic) on the menu, as well as a source of some vitamins and minerals. Results of the analysis of the ingredients showed that in 100 g of shallots contains 1.5 g of Protein, 0.3 g fat, 9.2 g carbohydrates, 36 mg calcium, 40.0 mg iron, 0.03 mg of Vitamin B, 2.0 mg of Vitamin C, and Water 88 g (Anshar, 2002).

Good cultivation will achieve a high level of productivity and is required in the selection of varieties that are highly determined by the genetic potential of such varieties or cultivars. Plant varieties are a group of plants of a type or species characterized by the form of plants, growth of plants, leaves, flowers, bijiand expressions of genotyping characteristics or combinations of genotypes that can distinguish from the same type or species by the establishment of a determinative trait and when reproduced is not subjected to change. There are some cultivars or varieties that come from certain areas such as Bima Brebes, Maja Cipanas, Sumenep, Super Philip, Medan and other varieties. Where between these varieties has a clear distinction. The difference in growth affects the production results of any varieties or cultivars. The difference is not always dependent on the genetic, but also influenced by the conditions and situations of planting areas, fertilization of plants, water and Agroklimat is also an influence in

the high production and quality of the shallots bulbs (Sumarni and Hidayat, 2005).

In cultivating plant varieties crops become one of the main factors that become the determinant of success. According to the FAO, the increase in the mixture of other varieties and the deterioration of production about 2.6% of each crop generation is a result of a less controlled variety of quality. The use of quality varieties can reduce the risk of cultivation failure because free from pest and disease is able to grow well in less favorable land conditions.

Efforts to increase the production of shallots in addition to genetic factors i.e. with cultivation techniques with City garbage compost application. Garbage waste many of the city is produced from the remnants of vegetables that are widely found in the traditional market of garbage leaves of the city park, and a small portion resulting from household waste. City garbage contains a variety of materials, but the biggest content is organic waste that reaches 65%.

Compost is an organic waste that has undergone a weathering process or decomposition due to the interaction of microorganisms that work inside of it. Commonly used organic materials can be leaves, grass, straw, the rest of the branches or branches, animal dung, flowers that have died, animal urine, and kitchen garbage (Redaksi Agromedia, 2007). Composting is a process of reshuffle (decomposition) and stabilization of organic matter by microorganisms in a controlled environment with the end result of humus or compost.

According to Santoso (2000) Compost Garbage City serves as: Soil Conditioner that contains nutrients such as nitrogen, phosphorus, and potassium as well as essential minerals that plants need. This function will improve soil structure, critical land texture, increase porosity aeration, and decomposition by soil microorganisms. Soil Ameliorant that serves to enhance the cation exchange capacity (KTK) in both the land and paddy fields. Based on the results of laboratory analysis conducted against garbage compost the city of Medan gained that the nutrients it contains is 2.15% N, 0.57% P and 3.38% K. Besides its advantages, compost the city as well as other organic fertilizer has the limitation of low nutrient content, the availability of slow nutrients and provide a limited amount of nutrients (Lestari, 2010).

METHODS

Methodology

This research activity was conducted in the province of Sumatera Utra Indonesia from March to April 2019. The material used is a shallots tuber consisting of several varieties of shallots and garbage compost town. The study used the Randomize group factorial design with 2 treatment factors and 2 blocks. First factor varieties (heading, terrain specific location Samosir and Bima Brebes). Second factor is Compost city garbage (Control, 1 kg/m2, 2 kg/m2 and 3 kg/m2. Plot size 1x1 m2 with the number of plants 16 per m2 (plot) and sample plants 10 plant samples per m2 (plot). The sample plants are taken randomly.

The implementation of research includes land preparation, the preparation of shallots, preparation of moving crops, preparation of compost city garbage, the determination of plant samples every m2 (plot) and maintenance such as watering, fertilization, weed control, insertion and management of plant destruction organisms. The observed parameters are the wet weight of the bulbs per plot (g) and the dry weight of the tuber per plot (g). Data is analysed using various print analyses. If there is a significant influence of the treatment factor then the data analysis is followed by a double distance test Duncan (Duncan multiple Range Test).

RESULT AND DISCUSSION

Wet Weight Bulbs Per Plot (G)

The results of statistically diverse prints showed that the treatment of varieties and the city's garbage compost application showed significant influence while the interaction of varieties and garbage compost

the city gave an insignificant difference to the wet weight of the bulbs per plot. Wet weight of bulbs on some variety and City garbage compost application is visible on table 1.

Table 1. Average Wet Weight Tuber Per Plot (G) Some Varieties Of Shallots Plants Due To The City's Garbage Compost Application

Treatment	Wet Weight Bulbs Per Plot (G)
V = Varieties	
V_1 = Tajuk	300.00 c
V_2 = Samosir	343.75 b
V_3 = Bima Brebes	391.25 a
K = City's Garbage Compost	
K_0 = 0 kg/m^2	300.00 bc
K_1 = 1 kg/m^2	316.67 b
K_2 = 2 kg/m^2	333.33 b
K_3 = 3 kg/m^2	430.00 a

Description: The numbers followed by the letters that are not the same show differ very real according to the double Distance Test (Duncan) at 5% level

In table 1 It is known that the varieties of Bima Brebes (V3) are the most superior varieties compared to the treatment of Samosir varieties (V2) and the title (V1) for the parameters of wet weight of bulbs per plot. The wet weight of the highest bulbs in Bima brebes variety treatment (V3) is 391.25 G and the lowest on the heading varieties (V1) is 300 g. According to Azmi, et al (2011) that the varieties of Bima Berebes can adapt well in sour sulphate land, so the Bima varieties are able to adapt extensively due to the plant phenotype is determined by the interaction The high-yielding varieties in a from do not necessarily give the same results elsewhere. These different genetic properties cause the difference in response between the three varieties to various environmental conditions, so that the growth and production activities shown are different. In the number of tillers every variety in will vary and also the same as the speed and vigor puppies are different depending on the varieties. Where this number of saplings will affect the weight of the product. Different varieties will produce a lot of saplings and very fast and others will be slow and slightly so as to produce maximum production.

Garbage Compost Treatment City 3 kg/m2 (K3) is the best application compared to 0 kg/m2 (K0), 1 kg/m2 (K1) and 2 kg/m2 (K2). The wet weight of the highest plots in K3 is 430 g and the lowest in the K0 is 300 g. It can be seen that in the area planted in this research, the higher nutrient of elements nutrients in the production of shallots. Giving compost can improve soil structure. In the soil of the land, compost can increase the connective power of soil particles. While on heavy soil can reduce the bonds of soil particles so that the structure becomes crumb. Compost can increase the capacity of water-holding, the activity of microorganisms in soil and the availability of soil nutrients (Sutejo, 2004).

Chemically, compost can increase cation capacity (KTK), availability nutrients, and availability humic acid. Humic acid will help improve the process of weathering mineral materials. Biologists, compost that is not another organic material is a source of food for soil microorganisms. In the presence of compost, fungi, bacteria and other beneficial microorganisms will develop faster. Many beneficial soil microorganisms can increase soil fertility (Razali, 2002).

Dry Weight Bulbs per Plot (g)

The results of statistically diverse prints showed that the treatment of varieties and the city's garbage compost application showed significant influence while the interaction of varieties and garbage compost the city gave an insignificant difference to the dry weight of the tuber per plot. The dry weight of bulbs on some varieties and the city garbage compost application is seen in table 2.

Table 2. Average Dry-Weight Bulbs Per Plot (G) Some Varieties Of Shallots Plants Due To The City's Garbage Compost Application

Treatment	Dry Weight Bulbs per Plot (g)
V = Varieties	
V_1 = Tajuk	238.75 c
V_2 = Samosir	282.50 b
V_3 = Bima Brebes	323.75 a
K = City's Garbage Compost	
K_0 = 0 kg/plot	233.33 bc
K_1 = 1 kg/plot	248.33 b
K_2 = 2 kg/plot	265.00 b
K_3 = 3 kg/plot	380.00 a

Description: The figures in the same column followed by the same letter show no distinct difference according to the double distance test Duncan α 5%.

In table 2 It is known that the varieties of Bima Brebes (V3) are the most superior varieties compared to the treatment of the varieties of Samosir (V2) and the title (V1) for the weight parameter of tuber keing per plot. The dry weight of the highest tuber in Bima brebes variety treatment (V3) is 323.75 G and the lowest in the heading varieties (V1) is 238.75 G.

Test and statistical analysis showed that the varieties factor gave a very significant difference to the dry weight of the tuber per plot (g). The difference in response varieties are shown between different varieties, it is suspected because of the difference between the three varieties influenced by the genetic properties of each variety. These different genetic properties cause the difference in response between the three varieties to various environmental conditions, so that the growth and production activities shown are different. According to Ramija, et. Al. (2010) Because of the genetic nature of the varieties itself the occurrence of differences in the production that each of these varieties have. In addition to genetic factors inside. The difference in response is also influenced by external factors. External factors especially in the form of environment such as humidity and temperature around the plant greatly affects the growth and production of plants, in addition to the internal (genetic) factor (Sudadi, 2003).

Garbage Compost Treatment City 3 kg/m2 (K3) is the best application compared to 0 kg/m2 (K0), 1 kg/m2 (K1) and 2 kg/m2 (K2). The wet weight of the highest plots in K3 is 380 g and the lowest in K0 is 233.33 G. It can be seen that the higher the dosage given will imparted the production of dry-weight bulbs per plot the better. City garbage compost is an organic material that can donate nutrients in plants such as shallots. If plant growth will either affect the amount of production produced. It is suspected because the City's Garbage Compost has been able to suffice the needs of nutrients and water as well as creating good soil conditions on the soil. Garbage compost Fertilizer City as organic fertilizer has a complete nutrient although the number is few and has the properties of slow release fertilizer (Hastuti, et.al., 2003).

CONCLUSION

The best varieties are Bima brebes varieties. Where the varieties show the results of the production of wet and dry weights per plot the most and the city's garbage compost application shows the real influence on this research with the best dose at 3 kg/m2 (plot).

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