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INCREASED PRODUCTION OF SHALLOTS DUE TO PROVISION OF PLANTING MEDIA AND LIQUID FERTILIZER

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ABSTRACT

Increase the productivity of shallots through the provision of organic materials such as planting media and liquid fertilizers. The aim of this study was to determine the effect of planting media and ecoenzyme treatment on shallot production. This study used a factorial randomized block design which consisted of 2 treatment factors, namely first factor was Planting Media (M) consisting of M_0 : 100% topsoil, M_1 : topsoil (75%) + chicken manure compost (25%), M_2: topsoil (50%) + chicken manure compost (50% and M_3 : topsoil (25%) + chicken manure compost (75%). The second factor was Ecoenzyme (E) which consists of 0, 10, 20 and 30 ml. Plant observations included wet tuber weight per plot (g), dry bulb weight per plot (g) and tuber diameter (mm).The results obtained that the provision of planting media in the form of 75% topsoil + 25% compost was able to respond to the production of shallots**.** Ecoenzyme and the interaction between ecoenzyme in the growing media gave an insignificant effect on the production of shallots as wet tuber weight per plot, dry bulb weight per plot and tuber diameter.

Keywords: liquid organic fertilizer, solid organic fertilizer,shallot,

INTRODUCTION

According to the Department of Agriculture in 2018, the production of shallots in North Sumatra was 16,337 tons while the demand for it was 33.96 tons, which is still far from the total demand. This is due to dependence on inorganic fertilizers which provide high yields but reduce agricultural land productivity (Hawayanti and Palmasari, 2018). Therefore, to increase yields, it is necessary to maintain and characterize the soil by giving organic matter to the soil (Tarigan and Sembiring, 2017).

The demand for shallots is evenly distributed throughout the year, while production is highly dependent on cropping patterns. Fertilization with the use of organic fertilizers is a highly recommended fertilizer for plants in order to improve soil fertility and quality. Shallot cultivation in increasing production requires a more effective study, especially in increasing productivity. One of them is the provision of planting media and the provision of ecoenzymes (Elisabeth, et al, 2013).

Excessive use of inorganic fertilizers has a serious impact on the soil. Inorganic fertilizers if used in the long term can harden the soil and reduce the stability of soil aggregates (Humberto and Alan, 2013). This research uses planting media from chicken manure. The requirements for a good growing media are that it is able to hold water and is also able to release or distribute excess water, is easily broken and prorous. Planting media from chicken feces is a medium derived from chicken waste containing nutrients needed by plants (Saepuloh, et.al., 2020). Based on the content test at the Socfindo Laboratory, namely c-organic 7.2500 %, pH 5.7700 %, N 2.9810%, P 3.9600 %, K 0.4380 %.

Ecoenzyme is a solution produced from a simple decomposition process of vegetable and fruit waste in the presence of sugar and water filling using selective microorganisms (Thirumurugan, 2016). Ecoenzymes also contain bacteria that have the potential as decomposers of organic matter, development stimulants and as agents of controlling plant-disturbing organisms (Utami, et al, 2020). The ecoenzyme has a pH in the range of 4 and an organic C-0.90%; N 0.09%; P 0.01%; K 0.12% (Hasanah, 2021), The process of plant growth to be more optimal requires ecoenzymes because it contains a number of enzymes such as Trypsin, Lipase, Amylase. This research not only increases growth and production, but in this study the treatment given was able to help in the decomposition process of plants and the treatment given was more environmentally friendly (Vama and Chereker, 2020). This study aims to determine the effect of planting media and ecoenzyme treatment on shallot production.

MATERIALS AND METHODS

The research was carried out in Sunggal, Medan, North Sumatra in February-May 2022. The materials used were shallot bulbs of the bauji variety, ecoenzymes, chicken manure compost, trichozia, top soil, polybags. The tools used are meter, hoe, gembor, analytical scale, ruler, stationery, and bamboo. This study used a factorial randomized block design (RAK) which had two blocks. Factor I is Planting Media (M) which consists of M0: 100% topsoil, M1: topsoil (75%) + chicken manure compost (25%), M2: topsoil (50%) + chicken manure compost (50%) and M3 : topsoil (25%) + chicken manure compost (75%). Factor II is Ecoenzyme (E) which consists of 0, 10, 20 and 30 ml. Observations of production parameters were observed such as wet tuber weight per plot (g), dry bulb weight per plot (g) and tuber diameter (mm). This study uses analysis of variance and further test for real treatment using Duncan.

RESULTS AND DISCUSSION

Wet Bulbs Weight per Plot (g)

The results of the analysis showed that the growing media showed a very significant effect on wet tuber weight per plot (g) while ecoenzymes and the interaction between the two had no significant effect on wet tuber weight per plot (g).

Table 1. Wet Bulbs Weight per Shallot Plot (g) Due to Provision of Several Planting Media and Ecoenzymes

Growing Media	Eco Enzyme				Average
	E0	E1	E2	E3	
	..... g.....				
A0	235,50	242,50	239,50	235,50	238,25 c
A1	510,00	545,00	529,50	533,50	529,50 a
A2	431,00	475,00	539,00	492,00	484,25 a
A3	346,50	342,50	373,00	364,50	356,63 b
Average	380,75	401,25	420,25	406,38	

Note: Numbers followed by unequal letters indicate a very significant difference according to the Multiple Distance Test (Duncan) at the 5% level.

Table 1 shows that the weight of wet tubers per plot was significantly different to the growing medium, while the ecoenzyme was not significantly different to the weight of wet tubers per plot. The treatment of M1 growing media was significantly different to M3 and M0 while M1 was not significantly different from M2. The availability of nutrients in appropriate and comparable quantities in the soil to be able to grow and produce optimally is needed by shallot plants. This happens because by giving doses in a balanced and appropriate amount in the soil, the plants can produce optimally. Elements contained in compost Chicken manure includes elements of Nitrogen (N) and Potassium (K) and has an important role in tuber formation. The high content of nitrogen (N) elements makes plants more fertile green so that the photosynthesis process can run perfectly which affects the quality and the quantity of the final harvest with a higher N content, it will Stimulates the growth of tillers so that yields will be obtained with the amount of tuber weight more (Elisabeth et al, 2013).

Dried Bulbs Weight per Plot (g)

The results of the analysis showed that the planting medium had a very significant effect on the dry tuber weight per plot (g) while the ecoenzyme and the interaction between the two had no significant effect on the dry tuber weight per plot (g) as shown in Table 2.

Table 2. Dried Bulbs Weight per Shallot Plot (g) Due to Provision of Several Planting Media and Ecoenzymes

Growing Media	Eco Enzyme				Average
	E0	E1	E2	E3	
	..... g.....				
A0	135,00	142,50	139,50	135,50	138,13 c
A1	407,50	444,00	428,50	433,00	428,25 a
A2	330,00	372,50	435,50	391,00	382,25 a
A3	244,00	242,00	272,00	264,00	255,50 b
Average	279,13	300,25	318,88	305,88	

Note: Numbers followed by unequal letters indicate a very significant difference according to the Multiple Distance Test (Duncan) at the 5% level

Table 2 shows that the dry tuber weight per plot was significantly different to the growing media, while the ecoenzyme was not significantly different to the dry tuber weight per plot. The treatment of M1 growing media was significantly different to M3 and M0 while M1 was not significantly different from M2. Shallot tubers that experience weight loss are related to the water content which will affect the quality of the bulbs, especially the freshness of the bulbs. based on Azmi, et al, (2018) that shrinkage occurs because the water content is still high and the respiration rate is still high.

Bulb Diameter (mm)

The results of the analysis showed that the planting medium had a very significant effect on tuber diameter (mm) while ecoenzyme and the interaction between the two had no significant effect on tuber diameter (mm) as shown in Table 3.

Table 3. Diameter of Shallot Bulbs (mm) Due to Provision of Several Planting Media and Ecoenzymes

Growing Media	Eco Enzyme				Average
	E0	E1	E2	E3	
	..... mm.....				
A0	11,39	11,47	10,81	12,72	11,60 c
A1	18,63	20,97	20,13	17,72	19,36 a
A2	20,19	19,16	18,59	18,37	19,08 a
A3	13,09	13,19	17,72	17,19	15,30 b
Rataan	15,83	16,20	16,81	16,50	

Note: Numbers followed by unequal letters indicate a very significant difference according to the Multiple Distance Test (Duncan) at the 5% level

Table 3 shows that the tuber diameter was significantly different to the growing medium while the ecoenzyme was not significantly different to the tuber diameter. The treatment of M1 growing media was significantly different to M3 and M0 while M1 was not significantly different from M2. This is because the nutrient content in the growing media meets the needs needed in the formation of tubers and the nature of the growing media that contains water. According to Wiraatmaja (2017), metabolism is also called enzymatic because it always uses enzyme-catalyzed reactions. This reaction is the basis of life that allows cells to grow and develop to form fruit / tubers.

CONCLUSION

1. Provision of planting media in the form of topsoil (75%) + chicken manure compost (25%), able to give a real effect on the production of shallots
2. The administration of ecoenzymes and their interaction did not show an insignificant effect on the production of shallots.

DAFTAR PUSTAKA

Azmi, C, IM Hidayat and Wiguna, W. 2018. Effect of Variety and Tuber Size on Red Bean Productivity. Horticulture Journal. 21(3) : 206-213

Elisabeth DW., Santosa. M and Herlina. M. 2013. The effect of various compositions of organic matter on the growth and yield of shallots (Allium ascalonicum L.). Journal of Plant Production. 1(3): 21-29.

Hasanah Y. 2021. "Eco Enzyme and Its Benefits for Organic Rice Production and Disinfectant." Journal of Saintech Transfer 3(2): 119–28.

Humberto, Blanco-Canqui and J. S. Alan. 2013. Implication of Inorganic Fertilization of Irrigated Corn on Soil Properties : Lesson Learned After 50 Years'. Journal of Environment Quality 42(3) pp.861.

Saepuloh, Isnaeni, S. and Firmansyah, E. 2020. The Effect of Combination Dosages of Chicken Manure and Goat Manure on the Growth and Yield of Pagoda (*Brassica narinosa* L.). 2(1), Journal of Applied Agricultural Sciences. pp. 34–48.

Tarigan S and Sembiring M. 2017. Changes in the Growth and Production of Shallots (*Allium ascalonicum* L.) from the Effects of Using Organic Fertilizers and KCL Fertilizer Doses. Journal of Agrotechnoscience, 1(2): 100-110.

Thirumurugan P. 2016. Production and analysis of enzyme bio-cleaners from fruit and vegetable wastes by using yeast and bacteria. Student project Report (D.O.Rc.No.1082/2015A; Project No: 28) submitted to Tamil Nadu State Council for Higher Education (TANSCHE), India pp: 4-6.

Vama, L. and Cherekar, M.N. 2020. Production, Extraction And Uses Of EcoEnzyme Using Citrus Fruit Waste: Wealth From Waste. Asian Jr. of Microbiol. Biotech. Env. Sc., 22(2): 346–351.

Wiraatmaja, W. 2017. Metabolism teaching materials in plants. Agrotechnology Study Program, Faculty of Agriculture, UNUD. Denpasar. Thesis of the Faculty of Agriculture, Islamic University of Riau. Pekan Baru