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DIFFERENCES OF PLANTING MEDIA AND CONCENTRATION OF ONION (*Allium ascalonicum* L) EXTRACT TOWARDS BODY GUAVA CITRA (*Syzygium aquenum* Burn)

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ABSTRACT
This study aims to determine the effect of planting media and onion extract concentration on the growth of guava image cuttings using a factorial RAK consisting of 12 treatment combinations, namely: T0B1 = Soil with 17% extract, T0B2 = Soil with 33% extract, T0B3 = Soil with 50% extract, T1B1 = 3 kg Mixed soil 1 kg sand with 17% extract, T1B2 = 3kg Soil mixed 1 kg sand with 33% extract, T1B3 = 3 kg Soil mixed 1 kg sand with 50% extract, T3B1 = 3 kg Soil mixed with fertilizer 1 kg with 17% extract, T3B2 = 3 kg Soil mixed with fertilizer 1 kg with extract 33%, T3B3 = 3 kg Soil mixed with fertilizer 1 kg with extract 50%. Each treatment was repeated 3 times so that there were 36 polybags. The results of this study showed that in observing the number of shoots the best-growing media treatment was T0 at the age of 6 WAP (4.33) and 7 WAP (4.56), the best concentration of onion extract was treatment B1 at 6 WAP (3,50) and 7 WAP (4,67), observing the number of roots with the best treatment B1 at the age of 8 WAP (3.00), observing the number of roots with the best B1 at the age of 8 DAP (3,96). There was no interaction between the growing media and onion extract.

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1. INTRODUCTION

Planting media is a place or container that is intentionally made according to someone's needs that are used for plant growth. The suitability factor for planting media and planting good seeds will support the growth of the guava (*Syzygium aqueum* Burm) plant in the early stages of its development. After the seeds are ready for planting, they carry out routine maintenance such as fertilizing every 3 months, or at least 2 times a year, namely at the beginning of the rainy season and the beginning of the dry season. In general, people use planting media consisting of various materials, mainly organic material that has been weathered or intentionally weathered through a decomposition process, then the material is mixed with soil and used as a place to grow plants (Lukman and Kusriyanti 2021). derived from manure combined with water hyacinth will provide sufficient nutrients so that it can accelerate plant growth. In addition to nutrients, plants also need hormones in cell growth, although they are needed in small amounts. Organic hormones can be obtained from onion extract. Shallots contain the hormones Auxin and Gibberellins which are composed of Riboflavin and thiamin and function to stimulate root initiation in stem cuttings, lateral roots in root development so as to stimulate cell division, shoot growth and prevent aging and leaf fall (Dule et al., 2017); Salsabila, et al., 2021); These hormones are non-nutrient organic compounds which in certain amounts actively stimulate or inhibit plant growth and development.

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2. METHODS

Tools and Materials

Tools used: hoe, cutter knife, scissors, rubber band, plastic paper, machete, bamboo, sack, label, camera, para net, from and polybag measuring 7.5 cm x 20 cm. The tools to make the extract are a basin, a filter, a 100 ml measuring cup, a blender, a 1.5 L used mineral water bottle, a scale, stationery, and a stopwatch.

Materials used: water guava cuttings of the image variety, the shoots of the branches, the middle of the mother plant. The ingredients for making the extract are shallots and water. Materials for planting media are pulverized wind-dried soil, sand, sawdust, and organic fertilizer.

Making Shallot Extract. The working stages of making natural PGR of shallot extract are: the onion is cleaned of dry skin as much as 1 kg, then rinsed with clean water, the onion is blended until smooth. Then the extract that has been finely filtered is separated from the dregs. After 2 x 24 hours with the condition of the container is tightly closed (anaerobic). After being allowed to stand for 2 x 24 hours, the solution was then filtered so that a clear filtrate was obtained.

Seedling Preparation and Planting

The guava seeds are taken from the main shoot of the parent tree which is part of the middle branch of the mother plant, with a length of about 15-20 cm, the parent used is a plant that is 5 years old, the shoots taken are shoots that are neither young nor old, then the leaves that are still on the shoots of the branches that have been taken are cut using scissors and leaving 2 pieces of shoots to reduce evaporation of water and facilitate the growth of new shoots. Then the seeds were soaked with onion extract for 1 x 24 hours at each concentration. Then the seeds are planted into polybags that have been filled with planting media as deep as 5 cm, then the seeds are covered with plastic paper as a lid, the paper is tied with a rubber band. The seeds that have been planted are placed in a para net that gets enough sunlight until they are 30 days old. After 30 days the seedlings were transferred to the greenhouse.

Data Analysis

This research is an experimental type of research that tries various types of growing media and the concentration of onion extract. The guava plant as an indicator plant was based on the experimental design, the treatment was a combination of two factors arranged using a randomized block design (RBD). The first factors were:

The use of various types of planting media (T) consists of 4 levels, namely:

T0= control

T1 = 3kg soil + 1kg sand

T2= 3kg soil + 1kg sawdust

T3= 3kg soil + 1kg organic fertilizer

The second factor was the length of concentration of onion extract (B) consisting of three types of treatment, namely:

B1= concentration 17% + 38% water

B2= concentration 33% + 33% water

B3= 50% concentration + 29% water

Used on the two factors above, 3x4 = 12 treatment combinations. Each treatment combination was repeated three times 12x3 = 36 experimental polybags. The treatment combinations are presented in the following table.

Table 1 treatment combinations of planting media and onion extract.

Growing media (T)	Concentration (B)		
	B1	B2	B3
T0	T0B1	T0B2	T0B3
T1	T1B1	T1B2	T1B3
T2	T2B1	T2B2	T2B3
T3	T3B1	T3B2	T3B3

To see the effect of treatment on the observed variables, statistical analysis was carried out. The analytical method used was factorial Randomized Block Design (RAK). The test statistic used calculated F (Univariate Test) for plant response variables, treatments that had a significant effect were further tested with the BNJ test at a 5% confidence level.

3. RESULTS AND DISCUSSION

Number of Shoots

The results of observations of the number of shots at the age of 4,5,6,7 WAP are presented in appendices 1a, 2a, 3a, 4a. While the variance is presented in appendices 1b, 2b, 3b, 4b. Based on statistical tests showed the interaction of planting media treatment and concentration of onion extract had no significant effect on the growth of

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the number of shots at the age of 4 to 7 WAP. For a single factor, the use of planting media had a significant effect on the growth of the number of shots of image guava cuttings at the age of 6 WAP and 7 WAP, as well as the use of onion extract ZPT had a significant effect on the growth of image guava cuttings at the age of 6 WAP and 7 WAP.

Table 2. The average number of shoots of the guava plant at the age of 6 WAP on the treatment of the type of planting media and the concentration of onion extract

		Consentration			Average	BNJ 5%
WAP	Growing Media	17%	33%	50%		
6	Soil	5,00	7,00	1,00	4,33b	0,88
	Soil+Sand	4,67	2,33	1,67	2,89ab	
	Soil+Powder	3,33	2,67	1,33	2,44ab	
	Soil+Fertilizer	1,00	1,00	1,00	1,00a	
	Average	3,50b	3,25ab	1,25a		1,09

Note: Numbers marked with the same letter in the same column are not significantly different at the 5% BNJ test rate.

The results of the 5% BNJ test on the planting media treatment showed that the T0 treatment showed the highest number of shoots, namely an average of 4.33 and the lowest was in the T3 treatment, which was an average of 1.00, for the treatment with the concentration of onion extract B1 showed the highest number of shoots. ie the average is 3.50 and the lowest is B3 1.25, at the age of 6 MST.

The effect of auxin on cell development shows that there are indications that auxin can increase osmotic pressure, increase cell permeability to water, cause a reduction in pressure on the cell wall, increase protein synthesis, increase plasticity and cell wall development (Wiraatmaja, 2017). , the presence of auxin increases the diffusion of water into the cell, thereby supporting an increase in the permeability of water into the cell. The entry of water into the cells provides nutrient intake insufficient conditions so that there is an increase in the number of shoots in experimental plants.

Table 3. Average number of shoots of herbal plants at the age of 7 WAP on the type of planting media and the concentration of onion extract.

		Consentration			Average	BNJ 5%
WAP	Growing Media	17%	33%	50%		
7	Soil	7,67	5,00	1,00	4,56c	0,94
	Soil+Sand	5,00	3,00	2,33	3,44b	
	Soil+Powder	5,00	4,00	1,33	3,44b	
	Soil+Fertilizer	1,00	1,00	1,00	1,00a	
	Average	4,67c	3,25b	1,42a		1,17

Note: Numbers marked with the same letter in the same column are not significantly different at the 5% BNJ test rate.

The results of the 5% BNJ test in the planting media treatment showed that the T0 treatment showed the highest number of shoots, namely an average of 4.56 and the lowest was in the T3 treatment, which was an average of 1.00, for the concentration treatment of onion extract B1 showed the highest number of shoots. ie an average of 4.67 and the lowest B3 is an average of 1.42 at the age of 7 MST. In soil media not using treatment gave a better effect than using treatment, this was due to the presence of similar hormones in the materials used, such as organic fertilizers which some of the ingredients contained the hormones Auxin and Gibberellins. The accumulation of hormones in the plant environment will inhibit root growth because the roots will make physiological adaptations by dropping leaves or shortening the roots. This physiological stress will affect the absorption of nutrients, even though the nutrients are available in sufficient conditions. On the other hand, a balanced environment and sufficient auxin will provide a good growth response. This is in line with Kurniati's opinion. et al., (2019) at an optimal concentration will have the greatest effect and after that, if the concentration is increased it will inhibit growth. Alimudin, et al., (2017) that root formation is not only influenced by auxin but is also influenced by other growth regulators such as cytokinins, gibberellins, and a number of other root-forming factors. It was further stated that if the cytokinin concentration was smaller than auxin, it would stimulate root growth, and if the cytokinin concentration was balanced with the auxin concentration, the shoot, leaf, and root growth would be balanced as well. According to Kurniati et al., 2019) that the onion extract contains high cytokinins close to the auxin content, namely 122.34 ppm and 140.11 ppm.

Number of Roots

The results of statistical analysis showed that the interaction of planting media treatment and the concentration of onion extract had no significant effect on the growth of the number of roots of the guava cuttings at

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the age of 8 WAP. Meanwhile, in the single factor treatment, the concentration of onion extract had a significant effect on the growth of the number of roots at the age of 8 WAP.

Table 4. Average number of guava plant roots at the age of 8 WAP at the concentration treatment of shallot extract

WAP	Treatment	Avarage	BNJ 5%
	17%	3,50b	
8	33%	1,92a	0,89
	50%	1,25a	

Note: Numbers marked with the same letter in the same column are not significantly different at the 5% BNJ test rate.

The results of the 5% BNJ test in the onion extract treatment with the highest number of roots were shown by treatment B1 which was an average of 3.50 and the lowest was shown by B3 which was an average of 1.25 at the age of 8 WAT. The use of extracts with a concentration of 17% is better than high concentrations of 33%-50% because high concentrations can inhibit further cell growth (Fahly et al., 2017); Rugayah et al., 2021) stated that the concentration of growth regulators that are too high in plants can disrupt the hormonal balance in the planting material. Auxin functions in root elongation (root initiation) in conjunction with root growth. The types of auxins include NAA (Naphthalene acetic acid), IAA (Indole acetil acid), and IAN (Indole-3-acetonitrile). However, giving a relatively high concentration of IAA to the roots will cause inhibition of root elongation but increase the number of roots (Wiraatmaja, 2017). Tarigan et al., 2017) administration at excessive concentrations causes disruption of cell functions, so that plant growth becomes inhibited. On the other hand, at concentrations that are too low, the effect of giving PGR is not visible. Therefore, giving PGR to plants must be in the right concentration (Wattimena, 2000).

Root Length

The results of statistical analysis showed that the interaction of planting media treatment and onion extract concentration had no significant effect on root length growth of guava image cuttings, while the single factor treatment with onion extract concentration had a significant effect on root length growth at 8 WAP.

Table 5. Average root length of the guava plant at the age of 8 WAP at the concentration treatment of onion extract.

WAP	Treatment	Avarage	HRD 5%
	17%	3,96b	
8	33%	2,57b	1,63
	50%	0,18a	

Note: Numbers marked with the same letter in the same column are not significantly different at the 5% BNJ test rate.

The results of the 5% BNJ test on onion extract treatment with the longest root length were shown by treatment B1, which was 3.96 cm in average and the shortest was shown by B3, which was 0.18 cm in general MST.

The process of root extension as a result of the reaction of the given auxin hormone, auxin hormone pushes the root primordial and triggers cell division. Extract concentrations of 17% to 33% had a significant effect on root length, it can be said that the use of up to 33% shallot extract was not a threat to growth, but began to show a decline. The use of shallot extract 50% will inhibit root elongation of guava image cuttings; this is in line with the opinion of Salsabila, et al., (2021) that the use of onion extract up to 100% can inhibit root elongation in soca mini cuttings. Tarigan, et al., (2017) stated that concentrations that are too low or too high cause the growth regulators to work ineffectively. Furthermore (Pamungkas and Puspitasari 2018) explained that the stimulation of auxin to tissues was different, the strongest stimulation was especially to stem apical meristem cells. At too high levels, auxin is more inhibiting than stimulating or stimulating plant growth and, if auxin levels are increased, root length growth will decrease.

CONCLUSION

The use of onion extract at all concentrations with various types of growing media did not have any interaction with all experimental parameters, this was due to the growth hormone being used in the growing media, so the hormones used were not effective. The use of onion extract at all concentrations with various types of growing media did not have any interaction with all experimental parameters, this was due to the growth hormone being used in the growing media, so the hormones used were not effective.

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