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Growth of avocado plant seedlings of YM Variety (*Persea americana* Mill.) to the Composition of Organic Planting Media and Nanosil Technology Liquid Fertilizer

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Abstract

This research was aimed to know the Growth of Avocado Plant Seedlings of YM Variety (*Persea americana* Mill.) to the Composition of Organic Planting Media and Nanosil Technology Liquid Fertilizer. This research was carried out at the Experimental Land of the Faculty of Agriculture Sultan Ageng Tirtayasa University Kp Cikuya Karang Kitri Sindang Sari Village Pabuaran District Serang Regency Banten This research used a Randomized Completely Block Design (RCBD) with two factors. The first factor was effect of Planting Media (M) which consisted of 3 levels, namely: Sawdust + soil 1:2 (M1), Rice husk + soil 1:2 (M2), Sawdust + rice husk+ soil 1:1:2 (M3). The second factor was Nanosil Liquid Fertilizer which consisted of 3 levels, namely: control (N0), Nanosil Liquid Fertilizer 5 ml/l (N1), and Nanosil Liquid Fertilizer 10 ml/l (N2). The result showed that the composition treatment of planting media has the best influence on the parameters of plant height (11.66 cm), number of leaves (50.44 strands), and level of greenness of the leaves (51.31 unit). The nanosil liquid fertilizer gave the best influence on the parameters of plant height (13.66 cm), number of leaves (50.66 strands), stem diameter (2.72 mm) and leaf width (4.3 mm). There was an interaction between the composition treatment of growing media and the nanosil liquid fertilizer to parameters plant height and number of leaves.

Keywords: Avocado; Growing Media; Nanosil Liquid Fertilizer

1. Introduction

Horticultural plant is one of the superior plants in the field og agriculture, especially fruit plant. These plants are a staple food for the community as a source of vitamins and minerals that are useful for fulfilling human nutrition. In addition to its beneficial content fruits also have a very delicious taste. One type of fruit which is often favored is avocado. Avocado plant (*Persea americana* Mill) is one of the horticultural commodities originating from the highlands of Central America, especially Mexico, Peru and Venezuela. The distribution of avocados has spread to various countries to Southeast Asia, including Indonesia. Avocados are generally divided into three types namely the Mexican type (*Persea drymifolia*), the Guatemalan type (*Persea guatemalensia*) and the West Indian type (*Persea americana*) (Barus et al., 2023).

Based on data from the Central Statistics Agency, avocado production in Banten Province in 2019-2022 fluctuated. In 2019 there were 17.131.00 trees with a productivity of 1.19 quintals/hectare and a production yield of 2.046.80 quintals/hectare. In 2020 there were

16.226.00 trees with a productivity of 1.24 quintals/hectare and a production yield of 2,019.20 quintals/hectare. In 2021 there were 25.071.00 trees with a productivity of 0.58 quintals/hectare and a production yield of 1,444.40 quintals/hectare. In 2022 their ware 28,143.00 trees with a productivity of 0.85 quintals/hectare and a production yield

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of 2,402.60 quintals/hectare. From these data, it can be seen that avocado plant production, especially in Banten Province, has fluctuated along with the number of productive trees (Central Statistics Agency, 2022).

Effort thet need to be made to continue to increase avocado production in Banten Province are by increasing the number of superior and quality avocado plant seeds. Avocado plants can generally be propagated generatively or vegetatively. However, generative plant propagation (seeds) has the disadvantage that it takes a long time to produce fruit and the fruit produced is not the same as the parent plant. So, it is necessary to use the recommended propagation technique in vegetative avocado cultivation, one of wich is the grafting method.

Planting media is one of the factors that play a role in supporting plant growth and development. The usage of organic-based planting media is more superior than inorganic materials. Organic materials have the potential to store water and have excellent porosity for seedling growth. There are organic planting media that can be used for plant growth, namely sawdust and rice husks. In addition to planting media, another equally important factor is fertilizaztion. Fertilization also needs to be considered in efforts to increase plant groewh and development. Nano-technology fertilizers have the potential to increase the efficiency of the use of fertilizers, pesticides, agricultural tools and machinery, and seeds through the development of high productivity varieties that are resistant to pests and diseases (Ariningsih, 2016). One of the nutrients found in abundance in the earth's crust is silica (Si). This element can be used as a fertilizer based on nanotechnology. Nanosil 99 technology fertilizer that has a nanometer size ($1x10^{-}$ 9 m) so that with its very small size it will be absorbed more easily and quickly by plant. Si fertilization has benefits in increasing photosynthetic pigments, growth, biomass, antioxidant enzymes, gene expression, and nutrient absorption. In addition, Si can increase crop production, yield and grain quality during drought stress (Malik et al., 2021).

2. Research method

The research was experimental kind and was conducted at the Experimental Land of the faculty of Agriculture Sultan Ageng Tirtayasa University Cikuya Karang Kitri Sindang Sari Village Pabuaran District Serang Regency Banten Province.

The tools were used: 1) hoe, 2) bucket, 3) ruler 4) hand sprayer 5) label 6) meter 7) shovel, 8) scissors, 9) SPAD (Soil Palnt Analysis Development), 10) digital caliper, 11) analytical, scales, 12) sieve, 13) camera and 14) stationery. The materials were used: 1) 7 months old avocado seedlings of the "YM" variety, 2) 99 nanosilica fertilizer, 3) furudan, 4) top soil, 5) rice husks, 6) sawdust, 7) polybags measuring 35 cm x 35 cm, and 8) water. The treatment design consisted of 2 factors. The first factor was organic planting media (M) consisting of three levels, namely; M_1: Sawdust + Soil (1:2), M_2: Rice Husk + Soil (1:2), and M_3: Sawdust + Rice Husk + Soil (1:1:2). The second factor was the concentration of nanosil fertilizer (N) with three levels of treatment, namely: N_0: Without nanosil liquid fertilizer 0 ml/l (Control), N_1: Concentration of nanosil liquid fertilizer 5ml/l, and N_2: Concentration of nanosil liquid fertilizer 10ml/l. Based on the first and second factirs, 9 treatments had 3 replications. So that 27 experimental units were obtained. The data results were analyzed using analysis of variance (Anova). This research used Duncan Multiple Range Test (DMRT) at a level of 5% as further test.

3. Results and discussion

3.1. Plant Height Increase (cm)

Baed on Table. 4 presented, it can be seen that the treatment of organic planting media composition and liquid fertilizer with nanosil technology showed a very significant effect and both treatments showed interaction.

Table 1 Averange increase in plant height in the treatment of organic planting media composition and liquid fertilizer with nanosil technology on the growth of avocado seedlings of the YM variety (Perea americana Mill.)

		Nanosil (N) (ml/l)			
Plant Age (WAT)	**Planting Media (M)**	**N0 (0 ml)**	**N1 (5 ml)**	**N2 (10 ml)**	**Average**
	M1	0.33	1.33	1.66	1.11ab
2	M2	0.66	2.66	2.33	1.88a
	M3	0.00	1.33	0.33	0.55b
Average		0.33b	1.77a	1.44a	
	M1	1.33	3.00	3.00	2.44b
	M2	1.66	5.33	3.00	3.33a
4	M3	0.66	3.66	1.33	1.88b
Average		1.22c	4.00a	2.44b	
	M1	2.33	5.33	5.00	4.22b
	M2	3.00	8.33	5.66	5.66a
6	M3	2.66	6.33	3.66	4.22b
Average		2.66c	6.66a	4.77b	
	M1	3.33	7.00	7.66	6.00b
	M2	4.00	11.33	7.33	7.55a
8	M3	3.66	8.33	5.66	5.88b
Average		3.66c	8.88a	6.88b	
	M1	4.66bc	9.00bc	9.33d	7.66b
10	M2	5.00d	14.33a	9.00bc	9.44a
	M3	4.66d	10.00b	7.00cd	7.22b
Average		4.77c	11.11a	8.44b	
	M1	6.33c	11.66b	11.33b	9.77b
	M2	6.33c	17.66a	11.00b	11.66a
12	M3	6.00c	11.66b	9.00c	8.88b
Average		6.22c	13.66a	10.44b	

Note: numbers were followed by the same letter in the same row or column showed difference no significant based on the 5% DMRT test.

Based on the results in Table 4. The average height of avocado plants, it can be seen that the treatment pf planting media showed a very significant effect when the plants were 2 WAT, 4 WAT and 12 WAT. The best average increase in plant height was in the M_2: Rice husk + Soil (1:2) treatment, which was 11.66 cm, while the lowest average increase in plant height was in the M3 treatment with an average height of 8.88 cm. This is thought to be because the composition of organic planting media of media of rice husk and soil is a fairly ideal and good medium for the growth of avocado seedlings, especially in terms of plant height parameters.

Soil composed with organic planting media of rice husk is easily decomposed so that the availability of nutrients for the growth of avocado seedlings is sufficient. According to Pratiwi et al., (2017) that in a planting medium it would be better if it contained components of the planting media that were suitable for plant growth, namely soil, water, air, and organic matter. The composition of the soil and organic rice husk planting media can fertilize the soil and plant, and the porosity structure of the rice husk planting media can be easily penetrated by roots witch causes perfect growth.

The treatment of liquid fertilizer nanosil N1 treatment showed avery significant effect on the increase in plant height at the ages of 2 Weeks After Transplanting (WAT), 4 WAT, 6 WAT, 8 WAT, 10 WAT and 12 WAT. The N1 treatment (5ml/l) gave the best average result with the highest results at 12 WAT, namely 13.66, while the lowest average increase in plant height was in the N0 Ttreatment with an average value of 6.22 cm. In this case because the liquid fertilizer nanosil can meet the nutrient needs of avocado seedlings. Nanosil fertilizer has a nutrient content of n-SiO2 13%, which is the nutrient Si contained in the fertilizer can stimulate plant growth and development, especially in plant height. Accorfing to the statement of Laksmita et al., (2018), that Silica (Si) can indirectly inscrease the rate of photosynthesis in plants. Si will experience deposition on the epidermal cells of the leaf surface so that the leaves become more upright, as a result many wavelengths or energy from sunlight are absorbed for the photosynthesis process. With this process, the photosysintat produced is also high so that it will stimulate cell division and elongation whivh can increase the growth rate of plant. This is reinforced by the statement of Sabatini et al., (2017), that the element Silica (Si) can improve the growth pattern of plant height, because Si can affect the uprightness of the leaves so that it can increase photosynthesis activity will stimulate cell division so the plant height can increase.

From the table presented the average results of the increase in avocado plant height, it can be seen that the treatment of organic planting media and nanosil technology fertilizer showed a significant interaction effect. At the age of 10 WAT and 12 WAT. According to the statement of Arifianto et al., (2014), two treatment factors can be said to interact if they have an effect on plant growth and yield, and vice versa, the two factors that do not show any interaction of both factors have their own effect on the plant.

3.2. Increase in Number of Leaves (strands)

Leaves are one of the most important primary organs for plants to survive, generally leaves are green, flat bilateral and act as the main place for photosynthesis. Observations of the number of leaves were carried out when the plants were 0 WAT to 12 WAT with an interval of 2 weeks. Based on the result in Table 5. The average increase in the number of avocado plants leaces can be seen that the treatment of planting media and liquid fertilizer with nanosil technology has a very real effect and both treatments show interaction.

Table 2 Average increase in the number of leaves in the treatment of organic planting media compostion and liquid fertilizer with nanosil technology on the growth of avocado seedlings of the YM variety (*Persea americana* Mill.).

		Nanosil (N) (ml/l)			
Plant Age (WAT)	**Planting Media (M)**	**N0 (0 ml)**	**N1 (5 ml)**	**N2 (10 ml)**	**Average**
	M1	1.00	4.66	4.66	3.44
2	M2	1.33	7.00	6.66	5.00
	M3	4.33	5.00	3.66	4.33
Average		2.22b	5.55a	5.00a	
	M1	3.33	8.33	8.00	6.55
	M2	4.33	13.00	11.66	9.66
4	M3	6.66	9.00	7.33	7.66
Average		4.77b	10.11a	9.00a	
	M1	6.66	11.66	13.33	10.55b
	M2	8.33	21.66	17.00	15.66a
6	M3	10.00	13.33	12.66	12.00b
Average		8.33b	15.55a	5.33a	
	M1	12.66e	20.00bcde	21.66bcd	18.33b
	M2	14.33de	40.00a	27.66b	27.33a
8	M3	15.00cde	23.33b	22.66bc	20.33b
Average		14.00b	28.00a	24.00a	

	M1	22.66d	31.00bcd	29.66cd	27.77b
	M2	24.66d	55.33a	39.66b	39.88a
10	M3	21.66d	35.66bc	34.33bc	30.55b
Average		23.00c	40.66a	34.55b	
	M1	27.66d	37.00cd	41.33cd	35.33c
	M2	31.66d	62.00a	57.66b	50.44a
12	M3	26.66d	53.00b	47.66bc	42.44b
Average		28.66c	50.66a	48.88b	

Note: numbers were followed by the same letter in the same row or column showed difference no significant based on the 5% DMRT test.

The average results of increase in the number of avocado plant leaves are presented in Table 5. It can be seen that the treatment of planting media has a very d=significant effect when the plants are 6 WAT, 8 WAT, 10 WAT and 12 WAT. Treatment M2 Rice husk + soil (1:2) gave the best average results with the highest results at 12 WAT, namely 50.44 strands, while the lowest average increase in the number of leaves was in treatment M1 with an average of

35.33 strands. In this case because the composition of the organic plating media of rice husk + soil (1:2) already has sufficient nutrients to support plant growth, especially in the number of leaves. In addition, good and fertile planting media can increase the availability of nutrients, water, and oxygen for plants, indirectly affecting plant growth and development including leaf production. Strengthened by the statement of Cahyono et al., (2014), that sufficient nutrients make plant metabolism run smoothly and then the results of this metabolism will increase the number of leaves.

Nanosil liquid fertilizer treatment had a very significant effect on the parameters of leaf number increase at the ages of 4 WAT, 6 WAT, 8 WAT, 10 WAT and 12 WAT. The N1 treatment (5 ml/l) gave the best average results with the highest results at 12 MSPT, namely

50.66 leaves, while the lowest average increase in the number of leaves was in the N0 treatmnet (0ml/l) with an average number of leaves of 28.66 leaves. It maybe because the avaibility of sufficient silica (Si) elements in nano liquid fertilizers will help in the formation of chlorophyll and enzymes so that metabolic processes, especially photosynthesis activities, will also increase. This is in line with the statement of Hayati et al., (2021), that the role of silica (Si) nutrients for plants is to help the processes that occur in plants including translocation, photosynthesis, carbon dioxide, reducing biotic and abiotic stress.

Both treatments showed a significant interaction effect on avocado seedlings at the age of 8 WAT, 10 WAT and 12 WAT. The interaction of organic planting media and nanosil liquid fertilizer treatments is thought to occur from both treatments working together.

3.3. Increase in Stem Diameter (cm)

Stem diameter is the most common plant growth parameter to determine whether the plant stem has developed or not from the two-treatment given during the study. Stem diameter measurements were carried out using a digital caliper.

Based on Table 6. The average increase in stem diameter presented shows that the organic planting media treatment did not have a significant effect, while the nanosil liquid fertilizer treatment had a significant effect when the plants were 10 WAT and 12 WAT. The N1 treatment (5 ml/l) gave the best average results at the age of 12 WAT, namely 2.72 mm, while the lowest average increase in the number of leaves was in the N2 treatment with a value of 1.81 mm. This is thought to be because the nanosilica (Si) given can help in cell elongation and divison so that this process has an effect on increasing the size of the stem diameter. This is reinforced

by the statement of Pukukuh (2015), that silica (Si) fertilizer can help in the process of elongation and division of plant cells. The activity of cell display in a stem is a process of development or addition to the size of plant stem so that the translocation of assimilates in the tissue assisted by the presence of silica (Si) nutrients can increase the size of the plant stem diameter because it can develop well.

Table 3 Average stem diameter in the treatment of organic planting media composition and liquid fertilizer with nanosil technology on the growth of avocado seedlings of the YM variety *(Persea americana* Mill.)

		Nanosil (N) (ml/l)			
Plant Age (WAT)	**Planting Media (M)**	**N0 (0 ml)**	**N1 (5 ml)**	**N2 (10 ml)**	**Average**
	M1	0.20	0.26	0.36	0.27
2	M2	0.36	0.50	0.23	0.36
	M3	0.40	0.20	0.16	0.25
Average		0.32	0.32	0.25	
	M1	0.30	0.43	0.50	0.41
	M2	0.43	0.80	0.36	0.53
4	M3	0.63	0.36	0.26	0.42
Average		0.45	0.53	0.37	
	M1	0.73	1.03	0.63	0.80
	M2	0.93	1.33	0.80	1.02
6	M3	1.03	0.70	0.53	0.75
Average		0.90	1.02	0.65	
	M1	1.16	1.56	0.93	1.22
	M2	1.23	1.93	1.43	1.53
8	M3	2.00	1.66	0.80	1.48
Average		1.46	1.72	1.05	
	M1	1.46	1.93	1.50	1.63
	M2	1.53	3.23	1.86	2.21
10	M3	2.23	1.86	1.03	1.71
Average		1.74ab	2.34a	1.46b	
	M1	1.80	2.16	1.73	1.90
	M2	2.03	3.66	2.30	2.66
12	M3	2.43	2.33	1.40	2.05
Average		2.08b	2.72a	1.81b	

Note: numbers were followed by the same letter in the same row showed difference no significant based on the 5% DMRT test.

3.4. Leaf Length Increase (mm)

In addition to observing the number of leaves, observations were also made of leaf length on one leaf of each plant. Observations of leaf length were carried out when the plants were 12 WAT old. In avocado plants, leaf length measurements were carried out by measuring from the base of the leaf to the tip of the leaf using a ruler.

Based on Table 7. The average increase in leaf length presented shows that the provision of planting media composition and nanosil liquid fertilizer or the interaction between the two treatments did not have a significant effect, it maybe to be due to genetic factors, where each leaf has different growth characteristics, including the maximum leaf size that can be achieved. After reaching a certain size, the leaves stop growing. Although leaf growth is largely determined by genetic factors, the lack of effect of the treatment given on leaf length parameters is also thought to be due to environmental factors such as lack of water availability or too much water in the planting medium, and lack of sunlight which inhibits photosynthesis. This is in accordance with the steatment of Zulkifli et al., (2022), that leaf formation in a plant is influenced by genetic factors and environmental factors.

Table 4 Average increase in leaf length in the treatment of organic planting media composition and liquid fertilizer with nanosil technology on the growth of avocado seedlings of the YM variety (*Persea americana* Mill.)

		Nanosil (N) (ml/l)			
Plant Age (WAT)	**Planting Media (M)**	**N0 (0 ml)**	**N1 (5 ml)**	**N2 (10 ml)**	**Average**
	M1	3.3	4.3	3.6	3.7
12	M2	4.3	5.0	4.6	4.6
	M3	3.0	3.0	3.6	3.2
	Average	3.5	4.1	4.0	

Genetic factors are factors found in seeds, seedlings or plants, while environmental factors are factors found outside seeds, seedlings or plants. According to A'yuningsih (2017), the environment plays a role in plant growth, because it has physiological of plants that are influemced by environmental factors. An environment that is said to be suitable if it can optimize plant growth. The factors that can affect plant growth include soil, humidity,and water.

3.5. Leaf Width Increase (mm)

Observation of leaf width increase to determine whether leaf width has developed or not especially from the provision or organic planting media and nanosil liquid fertilizer given during the research.

Table 5 Average increase in leaf width in the treatment of organic planting media compostion and nanosil liquid fertilizer on the growth of avocado seedlings of the YM variety (*Persea americana* Mill.)

		Nanosil (N) (ml/l)			
Plant Age (WAT)	**Planting Media (M)**	**N0 (0 ml)**	**N1 (5 ml)**	**N2 (10 ml)**	**Average**
	M1	2.3	3.0	2.3	2.5
12	M2	3.0	5.6	3.3	4.0
	M3	3.0	4.3	1.3	2.8
Average		2.7ab	4.3a	2.3b	

Note: numbers were followed by the same letter in the same row showed difference no significant based on the 5% DMRT test.

Based on Table 8. The average increase in leaf width presented shows that the treatment of the planting media composition did not have a significant effect while the treatment of nanosil liquid fertilizer gave a significant effect, with the best treatment being N1 4.3 CM (5 ml/l). The significant effect of the nanosil liquid fertilizer treatment on leaf width is thought to be because the nanosil fertilizer was applied evenly on the leaf surface so that it supports the increase on leaf width. Aplication of silica (Si) fertilizer to the leaves is the most effective application method because silica particles can penetrate the cuticle and stomata into the leaves. This is in accordance with Prasetya statement (2011), that fertilizer application can be through the leaves with the aim that the nutrient provided can be absorbed through the cuticle and stomata holes found in the leaves. Streangthened by the statement of Lingga and Marsono (2010), that the absorption of fertilizer nutrients in leaves is faster than fertilizer given through the roots. Therefore, fertilization through the leaves is more effective than through the roots.

3.6. Leaf Length and Width Ratio (cm)

The ratio of leaf length and width is an observation of the combined results of leaf length and leaf width parameters. Observations of the ratio of leaf length and width were carried out at the end of the observation, namely 12 WAT.

Table 6 Average ratio of leaf length and width in the treatment of organic planting media composition and liquid fertilizer with nanosil technology on the growth of avocado seedlings of the YM variety (*Persea americana* Mill.)

		Nanosil (N) (ml/l)			
Plant Age (WAT)	**Planting Media (M)**	**N0 (0 ml)**	**N1 (5 ml)**	**N2 (10 ml)**	**Average**
	M1	2.02	1.95	1.79	1.92
12	M2	2.19	2.17	1.95	2.10
	M3	2.30	2.24	2.07	2.20
Average		2.17	2.12	1.94	

Based on Table 9. The average ratio of leaf length and widh presented shows that the treatment has no significant effect on the provision of planting media composition and liquid fertilizer or the interaction between the two treatments. This can occur due to several factors including insufficient or insufficient nutrient obtained, the condition of the planting media that is too moist and dray can cause the avaibility of nutrients to be slowly absorbed by plants because if this happens it can inhibit plant growth. According to statement Usrin *et al* (2019), that media conditions that if the condition is very wet or dry can inhibit plant growth, due to physiological disorders such as water and nutrient transportation. The availability of nutriens in the soil will increase plant photosynthesis activities such as enzymes, cell division, and the root system to develop. Strengthened by the statement of I Nyoman (2020), that the availability of nutriens that can be absorbed by plants is one of the factors that can affect the level of plant growth and development. The avaibility of sufficient and balanced nutriens will affect the metabolic process in plant tissue. In addition, it can also be assumed that when entering a more mature age, spraying nanosil fertilizer throught the leaves is no longer effective and efficient, spraying throught the leaves if done in inappropriate stomata conditions will decrease its effectiveness. In addition, spraying throught the leaves is also influenced by environmental and plant transpiration activity.

3.7. Leaf Greenness Index (Unit)

Leaf greenness index is a parameter to determine the chlorophyll content in leaves. Measurements are carried out at the beginning before transplanting and at the end of observation using the SPAD (Soil Plant Analysis Development) tool. Measurements are made by clamping the leaves into several parts, then the tool will automatically detect the leaf chlorophyll units.

Table 7 Average leaf greenness index in the treatment of organic planting media composition and liquid fertilizer with nanosil technology on the growth of avocado seedlings of the YM variety (*Persea americana* Mill.)

		Nanosil (N) (ml/l)			
Plant Age (WAT)	**Planting Media (M)**	**N0 (0 ml)**	**N1 (5 ml)**	**N2 (10 ml)**	**Average**
	M1	2.02	1.95	1.79	1.92
0	M2	2.19	2.17	1.95	2.10
	M3	2.30	2.24	2.07	2.20
	Average	2.17	2.12	1.94	
	M1	47.9	48.20	45.90	47.33b
	M2	51.03	50.96	51.93	51.31a
12	M_3	52.60	50.50	49.13	50.74a
	Average	50.51	49.88	48.98	
	M1	47.9	48.20	45.90	47.33b

Note: numbers were followed by the same letter in the same column showed difference no significant based on the 5% DMRT test.

Based on Table 10. The average leaf greenness index presented shows that the treatment of the planting media composition has a significant effect while the treatment of nanosil liquid fertilizer has no significant effect and there is

no interaction between the two treatments. Based on the results in Table 10. The average leaf greenness index can be seen that the treatment of the planting media shows a significant effect when the plants are 12 WAT old. The best leaf greenness index is found in the M2 Rice husk + soil (1:2) treatment, which is 51.31 units, while the lowest average increase in plant height is in the M1 treatment with an average of 47.33 units. This can happen because the treatment of rice husk and soil planting media is good and ideal media, where the media plays a role im improving the soil structure so that the aeration and drainage systems in the panting media become better, the composition between the two media has a goos impact on plants. Strengthened by Fahmi statement (2019), that rice husk and soil planting media are often used because they have several adantages, namely easy to bind water, not easily weathered, a source of potassium (K), cheap, easy to obtain, not easy to clump or compact so that roots can grow perfectly. The ability of water in organic planting media greatly affects all growth, including physiological, biochemical, anatomical and morphological. According to Statement of Song Ai and Banyo (2011), several factors that can affect shlorophyll content are light, water, temperature, and nutrients in the process of chlorophyll synthesis in the leaves resulting in decreased photosynthesis rates and increased temperatures nad transpiration which cause chlorophyll disintegration.

4. Conclusion

Based on the results and discussion of the research, it can be concluded as follows:

- The composition of the planting media Rice husk + soil 1:2 (M2) gave the best average effect on the parameters of plant height increase at the age of 12 weeks after transplanting WAT) (11.66 cm), increase in the number of leaves (50.44 strands), and leaf greenness index (51.31 units)
- Nanosil liquid fertilizer with a concentration of 5 ml/l (N1) gave the best average effect on the parameters of plant height increase at the age 12 weeks after transplanting (WAT) (13.66 cm), increase in the number of leaves (50.66 strands), increase in stem diameter (2.72 mm), and increase on leaf width (4.3 mm).
- There is an interaction between the treatment of organic planting media and nanosil liquid fertilizer on the parameter of increasing plant height at the age of 12 WAT, 12 WAT and the parameter of increasing the number of leaves at the age of 8 WAT, 10 WAT and 12 WAT.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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