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APPLICATION OF PLANTING MEDIA AND AB MIX APPLICATION INTERVALS ON THE GROWTH AND PRODUCTION OF CHERRY TOMATO (*SOLANUM LYCOPERSICUM VAR. CERASIFORME*) USING THE WICK SYSTEM HIDROPONIC

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ABSTRACT

Cherry tomatoes are a horticultural plant that is quite popular in Indonesia. This study was carried out to determine the effect of the growing medium, the effect of the AB Mix application interval and the effect of the interaction between the combination of these treatments on the growth and production of cherry tomato hydroponically of the wick system. This research was carried out from April to August 2025 at the Experimental Garden Gauze House, Faculty of Agriculture, Samudra University. The research used a Complete Random Design (CRD) Factorial pattern with 2 factors, namely planting media (M) which consists of 3 levels, namely M_1 = Cocopeat, M_2 = Rockwool, and M_3 = Hydroton, as well as the AB Mix (I) administration interval factor which consists of 4 levels, namely I_1 = 1 day, I_2 = 2 days, I_3 = 3 days, and I_4 = 4 days. The results showed that the growing medium had a very marked effect on several observational parameters, the best results being obtained in the cocopeat growing medium (M_1). AB Mix administration interval had a marked effect on several observational parameters, the best results being obtained at the 2 day interval treatment (I_2).

Keywords: Hydroponics, Planting Media, AB Mix Application Interval, Cherry Tomatoes.

INTRODUCTION

Cherry tomatoes are a popular horticultural crop in Indonesia and are one of the most sought-after types of tomatoes by consumers. Cherry tomatoes are rich in vitamins that are beneficial to health, including vitamins A, B, C, carbohydrates, fats, and higher levels of protein than regular tomatoes. Cherry tomatoes also command a higher selling price. They are more commonly found in modern markets and restaurants, with few traditional markets selling them because their consumers are mostly urban residents. Cherry tomatoes are in high demand due to their sweet, fresh taste and

small fruit size (Manalu and Rahmawati, 2019).

The demand for cherry tomatoes is increasing. In addition to being consumed as fruit, they can also be processed into various foods such as salads and juices. To meet the increasing demand for cherry tomatoes, accompanied by population growth and limited land availability, cultivation methods that can increase the production and quality of cherry tomatoes are needed.

Conventional cherry tomato cultivation is considered ineffective and poses a major challenge for farming activities because it requires a large area of land, especially when carried out in urban areas with dense settlements and limited agricultural land. Therefore, hydroponics can be a solution to these land constraints. Hydroponics allows plants to grow without soil and can be done in small spaces by utilizing home yards, but they must be exposed to direct sunlight so that the plants' light requirements are met, and they must also be protected from rain and direct wind (Fajriyani, 2020).

Hydroponic cultivation can produce optimal quality plants that are clean and relatively free from pests and diseases. Cherry tomatoes can be grown using one type of hydroponic system, namely the wick system, which is the simplest system in hydroponic cultivation. This system uses a wick to deliver nutrients to the plant roots through capillary action (Wibowo, 2021).

One important aspect in supporting hydroponic cultivation is the use of growing media, which is used as a substitute for soil. Growing media is necessary for plant growth as it acts as a medium for absorbing water and nutrients. The selection and use of growing media must also be considered carefully, as the use of appropriate growing media can affect plant growth.

The growing medium used for cherry tomatoes in hydroponics serves as a support to prevent the plants from falling over. Therefore, the growing medium must be strong yet lightweight and have good porosity (pores/voids) so that the plants are not damaged and the roots can develop properly and optimally. There are several types of growing media that can be used for hydroponic cultivation, including cocopeat, rockwool, and hydroton.

Cocopeat is made from coconut fiber that has been crushed into fine granules. Cocopeat is widely used as a growing medium because of its ability to retain water and provide good air circulation for plants. Arifin (2020) states that cocopeat growing media affects plant height, number of fruits, and fruit weight per tomato plant.

Next is rockwool growing media, which is a foam-shaped fiber made from rock (limestone, basalt, coal) melted at high temperatures. Harahap et al. (2022) stated that rockwool growing media affects the height of plants, stem diameter, and fruit weight of tomato plants. Another growing medium is hydroton, which is made from heated clay and shaped into small balls. Alwi et al. (2022) state that the use of hydroton as a growing medium affects root growth and tomato plant productivity.

In addition to the right growing medium, the success of cherry tomato cultivation using the hydroponic system is also influenced by the availability of nutrients. In hydroponic cultivation, the fertilizer used to support plant growth is called AB Mix nutrients, which consist of two important components, A and B, containing macro and micro nutrients. The timing of nutrient application can also affect plant growth. Based on Suhertian's (2022) research, the application of AB Mix nutrients at intervals of 1 and 2 days once has an effect on the growth and production of cherry tomatoes using hydroponics. This is measured by parameters such as plant height, stem diameter, number of leaves, number of fruits per plant, fruit weight per plant, and fruit weight per hectare.

The purpose of this study was to determine the effect of growing media, the effect of AB Mix application intervals, and the effect of interactions between these treatment combinations on the growth and production of cherry tomatoes grown hydroponically using a wick system.

Meanwhile, the findings of this study are expected to serve as a basis for consideration in future research or as information on how to cultivate cherry tomatoes using a wick hydroponic system with different growing media and AB Mix application intervals.

RESEARCH METHODS

This research was conducted from April to August 2025 at the Greenhouse of the Experimental Garden, Faculty of Agriculture, Samudra University, Langsa City, Aceh Province. The tools used in this study were stationery, cameras, 60×40 cm styrofoam fruit boxes, tables, black plastic, duct tape, net pots, flannel cloth, TDS (Total Dissolved Solids) meters, pH meters, measuring cups, buckets, wire, digital scales, rulers, seedling trays, scissors, rope, and raffia rope. The materials used were cocopeat, Rockwool, and Hidroton (all growing media were obtained from an online store), AB mix nutrients, water, and Tropical Ruby cherry tomato seeds (obtained from PT. Known You Seed Indonesia).

The research used a Complete Random Design (CRD) Factorial pattern with 2 factors, namely planting namely the planting medium factor (M) consisting of three levels, namely M_1 = Cocopeat, M_2 = Rockwool, and M_3 = Hidroton, and the AB Mix application interval factor (I) consisting of four levels, namely I_1 = 1 day, I_2 = 2 days, I_3 = 3 days, and I_4 = 4 days. There were 12 treatment combinations that were repeated 3 times, resulting in 36 experimental units. Each experimental unit consisted of 4 plants, bringing the total number of plants to 144. For transplanting, 20% (28 plants) of the total cherry tomato seedlings were prepared. In one experimental plot, there were 3 plants that were used as samples for research data. The data obtained was analyzed using analysis of variance (ANOVA) at a significance level of 5% and 1%. If the treatment results had a significant effect, it would be followed by a 5% Least Significant Difference (LSD) test. The parameters observed included plant height (cm), stem diameter (mm), number of fruits per plot (fruits), fruit weight per plot (g), and root length (cm).

Research implementation

Preparation of the greenhouse begins with sanitization by cleaning up the remains of previous cultivation activities. This is done to eliminate any remaining bacteria and pests. This study used a wick hydroponic system that utilized 36 used 60×40 cm fruit styrofoam boxes as containers for the nutrient solution. The lids of the styrofoam boxes were perforated using round wire that had been heated to a diameter of ± 9 cm, with 4 holes each for the net pots. Then, net pots with a diameter of 10 cm were attached to a wick made of flannel cloth to distribute nutrients to the plant roots. Next, the inside of the styrofoam was lined with black plastic and taped with duct tape. Then, the perforated styrofoam lids were turned upside down, and a net pot with a wick attached was placed in each hole.

The growing media used in this study consisted of three types, namely cocopeat, rockwool, and hydroton. The cocopeat growing media was placed in 48 net pots, each containing 135 grams of cocopeat. Then, the rockwool growing media was cut into 48 pieces measuring 7.5 × 7.5 × 7.5 cm. The hydroton growing medium was placed in 48 net pots, each containing 253 grams of hydroton.

Cherry tomato seeds are sown using seed trays, with cocopeat as the growing

medium. Each hole is filled with one cherry tomato seed. In this sowing process, the number of seeds sown is 20% more than the number of plants to be transplanted. After the seedling tray is filled with seeds, it is covered with black plastic to accelerate germination. Once the seeds have germinated, the black plastic is removed and the seedling tray is placed in a sunny spot so that the plants do not become spindly. Watering must be done regularly in the morning and evening so that the plants do not dry out.

Transplanting is carried out when cherry tomato seeds are 21 days old after sowing. Seedlings are selected based on their condition, choosing those that are not thin, have strong and sturdy stems, have 5 true leaves, and show no signs of pest or disease infestation. The seedlings are removed from the sowing tray, then the roots of the cherry tomato seedlings are first cleaned of any remaining cocopeat attached to them, then placed in net pots containing the planting medium according to the research treatment.

The AB Mix nutrients used are in powder form, consisting of stock A and stock B. Each stock A and B is dissolved in 500 ml of water. Next, a bucket of water is prepared, and stock A and stock B solutions are added alternately in equal amounts and stirred evenly until reaching a value of 1,700 ppm, which is checked using a TDS meter (Urfan and Wahyuni, 2025). This dissolution is repeated until the AB Mix nutrient requirements for the study are met. After that, the AB Mix nutrient solution water was transferred into styrofoam boxes, each containing 4.5 liters of nutrient water. The nutrient solution in the styrofoam boxes was checked using a TDS meter in the morning. If the nutrient concentration decreased, AB Mix nutrients were added until the concentration reached 1,700 ppm. Nutrients were added according to the research treatment, namely 1, 2, 3, and 4 days. If the water in the styrofoam decreased, it was also added.

There were 6 plants that were pruned because they were wilting and dying. Water sprouts were removed at 28-50 days after planting using scissors to cut the sprouts growing in the leaf axils. Stakes were installed on cherry tomato plants at 28 days after planting. This was done by tying the end of the raffia rope to the net pot, then pulling it straight up and tying the other end to a rope that had been installed horizontally from one pole to another inside the greenhouse. A total of 144 raffia ropes were used, corresponding to the number of plants. The purpose of installing stakes was to prevent the cherry tomato plants from breaking and falling over.

Harvesting was carried out when the cherry tomato plants were 60 days old. Cherry tomatoes were ready for harvest when they changed color from green to orange to red and were slightly soft when pressed. Harvesting is done by cutting the stems of the cherry tomatoes using scissors. The harvesting interval is every 3 days, and in this study, harvesting was done 7 times to collect data.

RESULTS AND DISCUSSION

The Influence of Planting Media

Plant Height (cm)

The results of the analysis of variance showed that the planting medium treatment had a very significant effect on the height of cherry tomato plants at 14, 28, and 42 days after planting. The average height of cherry tomato plants at 14, 28, and 42 days after planting due to the planting medium treatment is presented in Table 1.

Table 1. Average height of cherry tomato plants at 14, 28, and 42 days after planting due to planting media treatment

Treatment	Plant Height (cm)		
	14 days	28 days	42 days
M_1	14,15 b	29,67 c	60,01 c
M_2	10,59 a	17,09 a	29,50 a
M_3	11,31 a	21,13 b	44,51 b
$CRD_{0,05}$	0,99	2,92	3,74

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 1 shows that the highest cherry tomato plant height at 14 days after planting was found in treatment M_1 (cocopeat), which was significantly different from treatments M_2 (rockwool) and M_3 (hydroton) in the $CRD_{0,05}$ test. However, treatment M_2 (rockwool) was not significantly different from treatment M_3 (hydroton). The highest cherry tomato plants at 28 and 42 days after planting were found in treatment M_1 (cocopeat), which was significantly different from treatments M_2 (rockwool) and M_3 (hydroton) in the $CRD_{0,05}$ test. This suggests that cocopeat is one of the better growing media for supporting the height growth of cherry tomato plants.

According to Kuntardina et al. (2022), cocopeat growing media contains Trichoderma mold, a type of enzyme from fungi that can maintain healthy growing media, thereby helping plant growth. This fungal enzyme is able to inhibit the growth of root pathogens through a mechanism of space and nutrient competition. It can also produce plant growth hormones such as gibberellin and cytokinin, which play a role in stimulating vegetative growth, including increasing plant height. This is in line with the results of research by Setiawati et al. (2021), which showed that cocopeat growing media had a significant effect on the height of cherry tomato plants.

Stem Diameter (mm)

The results of the variance analysis show that the planting medium treatment had a very significant effect on the diameter of cherry tomato stems at 14, 28, and 42 days after planting. The average diameter of cherry tomato stems at 14, 28, and 42 days after planting due to the planting medium treatment is presented in Table 2.

Table 2. Average diameter of cherry tomato stems at 14, 28, and 42 days after planting due to planting media treatment

Treatment	Stem Diameter (mm)		
	14 days	28 days	42 days
M_1	3,34 b	5,84 b	7,81 b
M_2	2,91 a	4,90 a	6,38 a
M_3	2,76 a	4,98 a	6,78 a
$CRD_{0,05}$	0,28	0,44	0,63

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 2 shows that the highest stem diameters of cherry tomato plants aged 14, 28, and 42 days after planting were found in treatment M_1, which was significantly different from treatments M_2 and M_3 in the $CRD_{0,05}$ test. However, treatment M_2 was not significantly different from treatment M_3. This is thought to be because the cocopeat growing medium is able to absorb and store sufficient water and nutrients to support the growth of the stem diameter of cherry tomato plants.

According to Auliana et al. (2025), cocopeat has a high water absorption and retention capacity, as well as pores that allow sunlight to penetrate and facilitate air and water exchange, allowing excess water to drain away easily. Cocopeat growing media promotes healthy plant roots, prevents root rot due to excessive moisture, and allows roots to absorb nutrients well to support the growth of cherry tomato stem diameter. This is in line with the results of research by Saydi

et al. (2022), which shows that cocopeat growing media has an effect on tomato stem diameter.

Number of Fruits per Plot (fruit)

The results of the analysis of variance show that the planting medium treatment has a very significant effect on the number of fruits per plot. The average number of fruits per plot of cherry tomato plants due to the planting medium treatment is presented in Table 3.

Table 3. Average number of fruits per plot of cherry tomato plants due to planting media treatment

Treatment	Number of Fruits per Plot
M_1	14,62 b
M_2	9,54 a
M_3	8,60 a
$CRD_{0,05}$	2,24

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 3 shows that the highest number of cherry tomato fruits was found in treatment M_1, which was significantly different from treatments M_2 and M_3 based on the $CRD_{0,05}$ test. However, treatment M_2 was not significantly different from treatment M_3. This is thought to be because cocopeat growing media can retain more water to support flower and fruit formation.

Cocopeat growing media can retain 9 times more water and hold nutrients better than other growing media, allowing cherry tomato plants to survive in fairly hot lowland climates. Cherry tomato plants require a lot of water for flower and fruit formation. A lack of water and nutrients during the generative phase or flower formation can cause flowers to dry out and fall off, preventing fruit formation (Wulansari et al., 2022). This is in line with the results of a study by Wahid et al. (2022), which showed that cocopeat growing media produced the highest average number of cherry tomato fruits.

Fruit Weight per Plot (g)

The results of the variance analysis show that the planting medium treatment has a very significant effect on the fruit weight per plot. The average fruit weight per plot of cherry tomato plants due to the planting medium treatment is presented in Table 4.

Table 4. Average fruit weight per plot of cherry tomato plants due to planting media treatment

Treatment	Fruit Weight per Plot (g)
M_1	145,77 b
M_2	80,89 a
M_3	71,84 a
$CRD_{0,05}$	19,48

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 4 shows that the highest fruit weight of cherry tomato plants was found in treatment M_1, which was significantly different from treatments M_2 and M_3 in the $CRD_{0,05}$ test. However, treatment M_2 was not significantly different from treatment M_3. This is thought to be because cherry tomato production is supported by the ability of cocopeat growing media to absorb and bind nutrients from AB Mix nutrient solution better than other growing media.

The macro and micro nutrients available and stored in the growing medium are essential for cherry tomato plants for fruit enlargement and ripening, such as nitrogen, which is a component of protein and plays an active role in the respiration process so that photosynthesis runs well. In addition, potassium nutrients also play an important role in the formation and

ripening of cherry tomatoes (Haryanto and Sasmita, 2021).

Root Length (cm)

The results of the variance analysis show that the planting medium treatment has a very significant effect on plant root length. The average root length of cherry tomato plants due to planting medium treatment is presented in Table 5.

Table 5. Average root length of cherry tomato plants due to planting media treatment

Treatment	Root Length (cm)
M_1	44,00 b
M_2	50,70 a
M_3	40,19 a
$CRD_{0,05}$	8,35

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 5 shows that the longest roots of cherry tomato plants were found in treatment M_2, which was significantly different from treatment M_3 in the $CRD_{0,05}$ test, but not significantly different from M_1. This is thought to be because rockwool growing media has a light structure and large pores, which supports the growth of cherry tomato roots.

According to Ziazia et al. (2023), rockwool has high porosity (92–98%), far exceeding media such as sand or cocopeat, making it ideal for root growth because it allows sufficient space for oxygen and water to circulate optimally around the root zone. This structure allows tomato roots to grow and penetrate the media easily. Wulandari and Widiwurjani (2023) also state that rockwool growing media can stimulate faster root growth than cocopeat or charcoal husk growing media.

The Effect of AB Mix Administration Intervals

Plant Height (cm)

The results of the analysis of variance showed that the AB Mix application interval treatment had a very significant effect on the height of cherry tomato plants at 14, 28, and 42 days after planting. The average height of cherry tomato plants at 14, 28, and 42 days after planting due to the AB Mix application interval treatment is presented in Table 6.

Table 6. Average height of cherry tomato plants at 14, 28, and 42 days after planting due to AB Mix application interval treatment

Treatment	Plant Height (cm)		
	14 days	28 days	42 days
I_1	12,09 ab	21,14 a	43,84 a
I_2	11,19 a	20,82 a	41,13 a
I_3	12,86 b	25,36 b	48,93 b
I_4	11,93 ab	23,21 ab	44,79 a
$CRD_{0,05}$	0,99	2,92	3,74

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 6 shows that the highest height of cherry tomato plants at 14 and 28 days after planting was found in treatment I_3 (3 days), which was significantly different from treatment I_2 (2 days) at 14 days after planting based on the $CRD_{0,05}$ test, but not significantly different from treatments I_1 (1 day) and I_4 (4 days). At 28 days after planting, it was significantly different from treatments I_1 and I_2, but not significantly different from treatment I_4. The highest cherry tomato plant height at 42 days after planting was found in treatment I_3, which was significantly different from treatments I_1, I_2, and I_4 based on the $CRD_{0,05}$ test. This is thought to be because the application of AB Mix at 3-day intervals allows the plants to obtain sufficient and balanced nutrients for the growth of cherry tomato plants.

The results of this study are supported by the statement of Prayitno and Nurlaelih

(2024), which states that a 3 day interval between AB Mix applications supports the efficient absorption of nutrients by plant roots. The 3-day interval provides sufficient time for plants to absorb nutrients optimally before receiving the next nutrient supply. This maintains nutrient balance and prevents salt accumulation around the roots, which can inhibit the growth of tomatcherry plants in the vegetative phase.

Stem Diameter (mm)

The results of the analysis of variance showed that the AB Mix application interval treatment had a very significant effect on the stem diameter of cherry tomato plants at 14, 28, and 42 days after planting. The average stem diameter of cherry tomato plants at 14, 28, and 42 days after planting due to the AB Mix application interval treatment is presented in Table 7.

Table 7. Average diameter of cherry tomato stems at 14, 28, and 42 days after planting due to AB Mix application interval treatment

Treatment	Stem Diameter (mm)		
	14 days	28 days	42 days
I_1	2,99 a	5,44	7,47
I_2	2,83 a	4,95	6,51
I_3	3,29 b	5,29	7,15
I_4	2,91 a	5,27	6,84
$CRD_{0,05}$	0,28	ns	ns

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 7 shows that the highest stem diameter of 14 days after planting was found in treatment I_3, which was significantly different from treatments I_1, I_2, and I_4 in the $CRD_{0,05}$ test. However, treatment I_1 was not significantly different from treatments I_2 and I_4. This is thought to be because the application of AB Mix at 3-day intervals can maintain stable nutrient levels in the growing medium without causing excess or deficiency of nutrients to support the growth of cherry tomato plant stem diameter.

During the early vegetative phase, cherry tomato plants are still focused on root, stem, and leaf growth. Therefore, nutrient uptake is not yet very high because the root system is not yet fully developed. Applying AB Mix every 3 days gives young roots time to adapt and maintain a balanced root environment, resulting in optimal early vegetative growth. This is supported by Nazari et al. (2024), who state that each plant has its own nutrient requirements according to its growth phase, so that the nutrients provided can be utilized by the plant according to its needs.

Number of Fruits per Plot (fruit)

The results of the variance analysis show that the AB Mix application interval treatment had a very significant effect on the number of fruits per plot of cherry tomato plants. The average number of fruits per plot of cherry tomato plants due to the AB Mix application interval treatment is presented in Table 8.

Table 8. Average number of fruits per plot of cherry tomato plants due to AB Mix application interval treatment

Treatment	Number of Fruits per Plot
I_1	10,67 a
I_2	13,03 b
I_3	10,71 a
I_4	9,25 a
$CRD_{0,05}$	2,24

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 8 shows that the highest number of cherry tomato fruits was found in treatment I_2, which was significantly different from treatments I_1, I_3, and I_4 based on the $CRD_{0,05}$ test. However, treatment I_1 was not significantly different from treatments I_2 and I_4. This is thought to

be because plants that have entered the generative phase require a large supply of nutrients for fruit formation, so that the application of AB Mix at 2-day intervals was able to support the number of cherry tomato fruits.

The application of AB Mix nutrients at 2 day intervals can support cherry tomato plant production. Adequate nutrient requirements can increase the number of flowers formed and reduce flower drop, resulting in a large number of fruits. Based on research by Gaol et al. (2020), the frequency of AB Mix application has a significant effect on flowering time and the number of flowers formed. Regular and not too infrequent application helps plants enter the generative phase properly, as plants have sufficient energy and nutrient reserves to form flowers and fruits. During the generative phase, the nutritional needs of cherry tomato plants increase because the plants begin to flower and bear fruit, so they require more water and nutrients. This is supported by Yuni (2021), who states that the AB Mix nutrient application interval of once every two days can be used in hydroponic tomato cultivation.

Fruit Weight per Plot (g)

The results of the analysis of variance show that the AB Mix application interval treatment has a very significant effect on the fruit weight per plot of cherry tomato plants. The average fruit weight per plot of cherry tomato plants due to the AB Mix application interval treatment is presented in Table 9.

Table 9. Average fruit weight per plot of cherry tomato plants due to AB Mix application interval treatment

Treatment	Fruit Weight per Plot (g)
I_1	96,86 a
I_2	116,97 b
I_3	99,98 a
I_4	84,18 a
$CRD_{0,05}$	19,48

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 9 shows that the highest fruit weight of cherry tomato plants was found in treatment I_2, which was significantly different from treatments I1, I_3, and I_4 in the $CRD_{0,05}$ test. However, treatment I1 was not significantly different from treatments I2 and I4. This is thought to be because the application of AB Mix at 2 day intervals was able to meet the nutritional requirements of cherry tomato plants to support increased fruit weight.

The application of AB mix nutrients at 2 day intervals can significantly increase the weight of cherry tomatoes, thanks to more consistent and optimal nutrient intake during the fruit enlargement phase. In the generative phase, nutrient absorption by plants is faster because the roots are numerous and active. The 2-day interval for applying AB Mix ensures that the availability of nutrients in the growing medium remains at an optimal level so that the absorption process by the roots is not disrupted. AB Mix nutrients contain macro elements (N, P, K, Ca, Mg, S) and micro elements (Fe, Zn, Mn, Cu, B, Mo) that are very important for the generative phase (Ardiansyah, 2025).

This is also in line with the results of research by Simbolon and Suryanto (2019), which shows that the appropriate nutrient application interval according to the growth phase (28 days after planting) can increase crop yields, namely fruit weight, fruit volume, and fruit flesh thickness.

Root Length (cm)

The results of the variance analysis show that the AB Mix application interval treatment had no significant effect on the root length of cherry tomato plants. The average root length of cherry tomato plants due to the AB Mix application interval treatment is presented in Table 10.

Table 10. Average root length of cherry tomato plants due to AB Mix application interval treatment

Treatment	Panjang Akar (cm)
I_1	42,65
I_2	45,27
I_3	45,59
I_4	46,36

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 10 shows that the AB Mix application interval treatment had no significant effect on root length parameters. This is thought to be due to stable and optimal environmental conditions, so that root growth was more focused on root branch growth.

In hydroponic systems, water and nutrient availability are maintained in the growing medium, so root conditions remain relatively stable. Plant roots absorb nutrients from the available solution. If the nutrient solution is never completely depleted or critically deficient, differences in the interval of AB Mix application have little effect on plant root growth (Mulya, et al. 2024).

The Effect of Interaction between Planting Media and AB Mix Application Intervals

The results of the analysis of variance show that the interaction between the planting medium treatment and the AB Mix interval had a significant effect on the height parameter of cherry tomatoes aged 42 days after planting, while for other parameters the effect was insignificant. The average height of cherry tomatoes aged 42 days after planting due to the interaction between the planting medium treatment and the AB Mix interval is presented in Table 11.

Table 11. Average height of of cherry tomato plants at 42 days after planting due to the interaction of growing media treatment and AB Mix application interval

Treatment	Plant Height at 42 days
M_1I_1	56,91 fg
M_1I_2	53,97 ef
M_1I_3	65,01 h
M_1I_4	64,13 gh
M_2I_1	32,66 b
M_2I_2	27,84 ab
M_2I_3	34,84 bc
M_2I_4	22,66 a
M_3I_1	41,96 cd
M_3I_2	41,59 cd
M_3I_3	46,92 de
M_3I_4	47,58 de
$CRD_{0,05}$	7,48

Description : The figures followed by the same letter in the same column are not significantly different based on the CRD test at the 5% level.

Table 11 shows that the highest cherry tomato plant height was found in treatment M_1I_3 (cocopeat and AB Mix interval of 3 days), which was significantly different from the treatment combinations M_1I_1, M_1I_2, M_1I_4, M_2I_1, M_2I_2, M_2I_3, M_2I_4, M_3I_1, M_3I_2, M_3I_3, and M_3I_4. It is suspected that the cocopeat growing medium and the application of AB Mix nutrients at 3 day intervals can support the height growth of cherry tomato plants.

The combination of cocopeat growing media and AB Mix at 3 day intervals provides sufficient nutrients and good growing space for plant roots to absorb nutrients in order to support plant height growth. Cocopeat growing media has a high water retention capacity, allowing for longer intervals between AB Mix applications (Rayhan et al., 2024). Hydroponic cultivation of cherry tomatoes is most optimal when using a combination of treatments involving the use of cocopeat growing media and maintenance through the application of AB Mix

solution at intervals or using a 3 day interval for nutrient addition, thereby achieving maximum cherry tomato plant height.

CONCLUSION AND SUGGESTION

Conclusion

The growing medium had a very significant effect on plant height and stem diameter at 14, 28, and 42 days after planting, number of fruits per plot, fruit weight per plot, and a significant effect on root length. The best results were obtained with the cocopeat growing medium (M_1). The AB Mix application interval had a very significant effect on plant height at 42 days after planting and a significant effect on plant height at 14 and 28 days after planting, stem diameter at 14 days after planting, number of fruits per plot, and fruit weight per plot. However, it had no significant effect on stem diameter at 28 and 42 days after planting or root length. The best results were obtained at the 2 day AB Mix interval (I_2). The interaction between the growing medium treatment combination and the AB Mix application interval had a significant effect on the plant height parameter at 42 days after planting. However, it had no significant effect on all other parameters. The best results were obtained from the combination of cocopeat growing medium treatment with a 3 day AB Mix application interval (M_1I_3).

Suggestion

Based on the results of this study, to obtain optimal results in hydroponic cherry tomato cultivation using the wick system, it is recommended to use cocopeat as the growing medium and apply AB Mix nutrients at 2 day intervals simultaneously.

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