Journal of Agricultural Sciences (Agrosci)
e-ISSN : xxxx-xxxx
p-ISSN : 3032-7547

Growth and Yield Response of Caisim Plant (*Brassica Juncea* L.) to Treatment of Growing Media Type and AB Mix Solution Concentration in Floating System Hydroponic Technology

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Abstract. This research aims to determine the effect of AB mix solution and planting media on the growth and yield of caisim (Brassica juncea L.) in a floating hydroponic system. This research was carried out from March 2022 to April 2022 at the CV Green Vest Hydroponic Garden located in Cirebon City, West Java, at an altitude of 4 m above sea level. The research used the Split Plot Design method, the main factor AB mix concentration consisting of 3 levels (10, 14, 18 ml/l) and the second factor as a subplot, namely the planting medium consisting of 3 levels (cocopeat, sawdust, zeolite). Observations were made on plant height, number of leaves, root length, root volume, fresh weight per plant, and fresh weight per plot. The results showed that there was an interaction between the concentration of AB mix and planting media on plant height at 7 DAP, number of leaves at 7, 14, and 21 DAP, root length at 21 DAP, root volume at 14 DAP and 21 DAP, fresh weight per plant, and fresh weight per plot. The AB mix concentration treatment had an independent effect on plant height at 14 and 21 DAP, root length at 7 and 14 DAP, and root volume at 7 DAP. Meanwhile, the planting media treatment had an independent effect on plant height at 14 and 21 DAP, root length at 7 and 14 DAP, and root volume at 7 DAP. The treatment of cocopeat planting media and AB mix concentration of 18 ml/l gave the highest average fresh weight per plot, 4.01 kg.

Keywords: AB Mix Concentration, Caisim, Planting Media

INTRODUCTION

Caisim (*Brassica juncea L.*) is a sub-tropical vegetable crop but can adapt well to tropical climates. In tropical areas, caisim is generally grown in lowlands that are tolerant of high temperatures (heat), but there are also many caisim in the highlands. The need for crisis increases along with the increase in human population, which increasingly needs food and traditional vegetables (Cahyono, 2003).

Along with the condition of minimal land in urban areas and food needs that must continue to be met, this encourages the community to overcome these problems by increasing the application of agriculture on narrow land, one of which is using hydroponic cultivation techniques. Hydroponics floating raft system is a method of plant cultivation by embedding

plants in styrofoam holes that float above the surface of nutrient water in a tub or pond so that the roots are submerged in nutrient water.

In this system, nutrients are not flowed or circulated but left alone. An aerator is added to increase oxygen in the nutrients (Ifanto & Suprihati, 2020). According to Sarawa (2011) the growing medium often used in hydroponic cultivation using floating rafts is rockwool. *Rockwool* is a planting medium that does not contain nutrients and only acts as a plant support or buffer. Efforts to overcome nutrients in the media in floating rafts can use planting media. For example, *cocopeat* is an organic planting medium made from coconut husk powder, sometimes mixed with burnt husks. Besides being environmentally friendly, *cocopeat* has high water absorption (Saroh et al., 2017).

Sawdust includes planting media that can absorb water optimally so that plant roots stuck into it will grow and develop faster. Zeolite has important chemical properties that can be used as an ion exchanger and has high catalysis activity. Zeolite can also absorb water in high enough quantities, making it practical for plant care and watering (Rokhmah et al., 2017). Planting media must be balanced with fulfilling the nutritional needs of plants. It aims to prevent competition between plants caused by limited nutrients. Competition between the same species impacts plants more regarding nutrient competition (Dacbhan, 2010). The nutrients used for casino plants hydroponically are AB mix nutrients with different concentrations for each treatment.

METHOD

This experiment was carried out from March to April 2021 at the CV GreenVest Hydroponic Garden in Cirebon City, West Java Province, with a height of 4 meters above sea level. The ingredients used are nutrient mix AB, caisim seeds, water, and growing media, namely *cocopeat*, sawdust, and zeolite. The tools used in this study were floating raft hydroponic cultivation tubs, measuring cups, seedling try, gauze, ruler, pH meter, TDS meter, digital scale, thermometer, oven, measuring cup, measuring tube, and RH meter. This study used a Split plot *design*, with the main plot being the AB Mix concentration consisting of K1 = 10 ml / l, K2 = 14 ml / l, K3 = 18 ml / l, and planting media as plot children, namely N1 = *cocopeat*, N2 = Zeolite, N3 = sawdust. The primary observation data obtained are then analyzed using the ANOVA Test or LSD follow-up test at 5%.

DISCUSSION

Plant Height

Based on the results of variety analysis, there is an interaction between AB mix concentration treatment and planting media on plant height aged 7 HST (Table 1).

Table 1. Effect of AB Mix Concentration and Growing Media to Plant Height (cm) Age 7 HST

Treatment	Concentration AB Mix		
	K1 (10ml/l)	K2 (14ml/l)	K3 (18ml/l)
Me Half Tanam	…….. cm ……..		
N1 Cocopeat	4.83 c	5.30 b	5.90 c
	A	B	C
N2 (Zeolit)	4.17 b	4.67 a	5.50 b
	A	B	C
N3 (Wood Powder)	2.77 a	4.40 a	4.70 a
	A	B	C

Description: Numbers followed by lowercase letters in the same column and numbers followed by uppercase letters in the same row did not differ markedly at the LSD level of 5%.

The application of AB mix concentration of 10 – 18 ml / l in cocopeat, zeolite, and sawdust planting media has the same pattern of influence on the average plant height at 14 HST namely, the average plant height continues to increase; it is suspected that the AB mix concentration given has not reached the optimum concentration (Table 1) so that all available nutrients are utilized optimally by plants for plant height growth. AB mix concentrations that are too low cause plants to experience deficiency and dwarfism, while if the concentration is too high, plants can absorb nutrients optimally ((Aziz et al., 2006; Sukawati, 2010).

Cocopeat planting media at various concentrations of AB mix shows the best influence on the average height of caisim plants; this is suspected because cocopeat is organic matter that contains nutrients needed by plants; plants, in addition to utilizing nutrients from AB mix solution, also utilizes nutrients found in cocopeat, so that plant growth is more optimal. This is in line with Agoes (2010), who states that *cocopeat* can store water containing nutrients in its pores so that the concentration of nutrients can be reduced, high water absorption, contains nutrients from nature needed by plants, supports root growth quickly so that it is suitable for growth.

Table 2. Effect of AB Mix Concentration and Growing Media to Plant Height (cm) Age 14 HST and 21 HST

Treatment	Plant height (cm)	
	14 HST	21 HST
AB mix concentration		
K1 (10 ml/l)	8,08 a	11,63 a
K2 (14 ml/l)	10,48 b	15,38 b
K3 (18 ml/l)	12,25 c	18,71 c
Half tanam		
N1 (cocopeat)	11,35 c	16,40 b
N2 (zeolite)	10,77 b	15,49 a
N3 (wood powder)	8,69 a	13,82 a

Description: Numbers followed by the same lowercase letter in the same column did not differ markedly at the LSD level of 5%.

At the age of 14 HST and 21 HST, it was shown that the more concentrated concentration of AB mix resulted in higher plant height, while the lower concentration of AB mix resulted in lower plant height. This is because the higher the concentration of AB mix, the more macronutrients (N, P, and K) are available and used by plants for vegetative growth, including plant height (Table 2). This is in line with Bugbee (2003), who states that nitrogen for plants has a vital role in stimulating overall plant growth, mainly stems, branches, and leaves. Meanwhile, *cocopeat planting media* (N1) treatment produces the highest plant height. This is because *cocopeat can* absorb water greater than sawdust, and zeolite can store nutrients needed for plants (Kalsim & Sukendro, 2013).

Number of leaves

Based on the results of variety analysis, there is an interaction between AB mix concentration treatment and planting media on the number of leaves at the age of 7, 14, and 21 HST.

Table 3. Effect of AB Mix Concentration and Growing Media to Number of Leaves (Strands) Age 7 HST

Treatment	AB Mix Concentration		
	K1 (10ml/l)	K2 (14ml/l)	K3 (18ml/l)
Me Half Tanam	…….. helai ……..		
N1 Cocopeat	4.13 c	4.20 b	5.40 b
	A	A	B
N2 (Zeolit)	3.13 a	3.47 a	4.07 a
	A	B	C
N3 (Wood Powder)	3.67 b	3.77 a	4.27 a
	A	A	B

Description: Numbers followed by lowercase letters in the same column and numbers followed by uppercase letters in the same row did not differ markedly at the LSD level of 5%.

In N1 (cocopeat) and N_3 (sawdust) planting media, the concentration of AB mix K_1 and K2 did not provide a significant difference in the number of leaves but was significantly different from the K3 treatment. While in zeolite planting media the provision of different AB mix concentrations has a significant effect, the AB mix concentration of 18 ml / l has the best effect on the average number of leaves, which is 4.07 strands and is significantly different from other AB mix concentration treatments.

Table 4. Effect of AB Mix Concentration and Growing Media to Number of Leaves (Strands) Age 14 HST

Treatment	AB Mix Concentration		
	K1 (10ml/l)	K2 (14ml/l)	K3 (18ml/l)
Me Half Tanam	…….. helai ……..		
N1 (Cocopeat)	6.13 b	6.20 a	8.40 b
	A	A	C
N2 (Zeolit)	5.20 a	5.47 a	5.87 a
	A	B	C
N3 (Wood Powder)	5.80 a	5.87 a	6.27 a
	A	A	C

Description: Numbers followed by lowercase letters in the same column and numbers followed by uppercase letters in the same row did not differ markedly at the LSD level of 5%.

In the conditions of N1 and N3 growing media, AB mixes K1 and K2 concentration treatment produced a significantly different number of leaves with K3 treatment. Meanwhile, each AB mix concentration treatment has a different effect on zeolite-growing media. Under conditions of AB mix, K1, and K3 concentrations, the N1 treatment produced a significantly different number of leaves than other treatments. Meanwhile, the concentration of AB mix K2 showed that each planting media treatment did not significantly affect the number of leaves. Based on Table 4. N1K3 treatment (*cocopeat planting media* and AB mix concentration of 18 ml / l) has the best average number of leaves with an average value of 8.40 strands.

Table 5. Effect of AB Mix Concentration and Growing Media to Number of Leaves (Strands) Age 21 HST

Treatment	AB Mix Concentration		
	K1 (10ml/l)	K2 (14ml/l)	K3 (18ml/l)
Me Half Tanam	…….. helai ……..		
N1 (Cocopeat)	8.13 b	8.60 b	10.13 b
	A	B	C
N2 (Zeolit)	7.26 a	7.56 a	7.86 b
	A	B	C
N3 (Wood Powder)	7.93 a	8.00 a	8.40 a
	A	A	B

Description: Numbers followed by lowercase letters in the same column and numbers followed by uppercase letters in the same row did not differ markedly at the LSD level of 5%.

In N1 and N2 growing media conditions, each AB mix concentration treatment has a different influence. Meanwhile, AB mixes K1 and K2 concentration treatments in the wood powder planting medium, producing a significantly different number of leaves with K3 treatment. The concentration of AB mix (K1, K2, and K3) and N1 growing media produced the highest average number of leaves and significantly differed from other growing media (Tables 3, 4, and 5). Applying AB mix K 3 concentration (18 ml / l) and N1 planting media (cocopeat) produced the highest average number of leaves of 5.40 strands per plant. The application of AB mix K3 concentration (18 ml / l) and N1 planting media (cocopeat) produced the highest average number of leaves at the age of 7, 14, and 21 HST, namely 5.40 strands, 8.40 strands, and 10.13 strands per plant, respectively. It is suspected that in N1K3 (cocopeat *planting media* and AB mix concentration of 18 ml / l) plants can absorb nitrogen nutrients that can support plant growth because the nitrogen content plays a vital role in the formation of chlorophyll.

When N increases, chlorophyll also increases so that the photosynthetic is produced and accumulated to increase the number of leaves. This is also the opinion of Iqbal (2006) that element N in plants increases leaf growth so that the leaves will become many in number and wide with a greener color, which will increase protein levels in the plant body. Rahmawati (2018) stated that *cocopeat* or coconut husk powder absorbs water well and contains nutrients, namely macro and micro, such as Potassium (K), Phosphorus (P), Calcium (Ca), Magnesium (Mg), Sodium (Na) and Nitrogen (N).

Root Length

Based on the results of variety analysis, there was no significant interaction between AB mix concentration treatment and growing media on root length (cm) at the age of 7 HST and 14 HST, but each treatment showed an independent effect on root length at the age of 7 HST and 14 HST (Table 6).

Table 6. Effect of AB Mix Concentration and Tanaam Media to Root Length (cm) at 7 HST and 14 HST

Treatment	Root Length (cm)	
	7 HST	14 HST
AB mix concentration		
K1 (10 ml/l)	6,30 a	10,50 a
K2 (14 ml/l)	8,33 c	12,27 c

K_3 (18 ml/l)	7,92 b	11,27	b
Half tanam			
N_1 (cocopeat)	7,61 b	10,91	a
N_2 (zeolite)	8,67 c	13,21	c
N_3 (wood powder)	6,28 a	9,90	b

Description: Numbers followed by the same lowercase letter in the same column did not differ markedly at the LSD level of 5%.

At the age of 7 HST and 14 HST, AB mixes K2 concentration treatment (14 ml/l) gave better results against root Panjang compared to K1 and K2 concentration treatment. It is suspected that the nutrient content at the concentration of K2 is sufficient for the growth of root length. This is also in line with the opinion of Hadid et al. (2015), which states that to get optimal nutritional efficiency, nutrients must be provided in sufficient quantities for plant needs.

The treatment of zeolite planting media (N2) produces the highest root length of caisim plants compared to the treatment of N1 and N3 planting media. This is because good growing media such as zeolite have pore cavities to facilitate root penetration and absorb nutrients to optimize root growth. In line with Mubarok et al. (2012), a suitable growing medium such as zeolite greatly determines porosity for providing oxygen plants need in respiration. The effect of a significant interaction between AB mix concentration treatment and growing media on root length (cm) was seen at the age of 21 HST (Table 7).

Table 7. Effect of AB Mix Concentration and Growing Media to Root Length (cm) At Age 21 HST

Treatment	AB Mix Concentration		
	K_1 (10ml/l)	K_2 (14ml/l)	K_3 (18ml/l)
Me Half Tanam	…….. cm ……..		
N_1 Cocopeat	14.90 a	17.93 b	21.30 b
	A	B	C
N_2 (Zeolit)	16.76 a	20.26 b	21.86 b
	A	B	C
N_3 (Wood Powder)	13.26 a	15.76 a	17.03 a
	A	B	C

Description: Numbers followed by the same lowercase letter in the same column and numbers followed by the same uppercase letter in the same row did not differ markedly at the LSD level of 5%.

The application of various concentrations of AB mix (K1, K2, and K3) in the growing media (N1, N2, and N3) each gives a different effect. The N2K3 treatment (AB mix concentration 18 ml / l and zeolite planting media) showed the highest root length of 21.86 cm. It is suspected that in the treatment of zeolite planting media and AB mix, 18 ml / l plants can absorb nutrients well because the nutritional content of AB mix containing elements N and P can help stimulate root growth and root length than the zeolite has large pores so that oxygen

circulation is good for plant roots and can have a direct effect on the growth of caisim plants. In their research, Zubaidah and Munir (2007) stated that phosphorus is part of the cell nucleus, which is essential in cell division and for developing meristem tissue.

Root Volume

Based on the results of variety analysis, there was no interaction between AB mix concentration treatment and planting media on root volume at the age of 7 HST, but each of them had an independent influence on AB mix concentration treatment and planting media treatment (Table 8).

Table 8. Effect of AB Mix Concentration and Growing Media Against root volume (ml) at age 7 HST

Treatment	Root Volume (ml)
	7 HST
AB mix concentration	
K_1 (10 ml/l)	0,31 a
K_2 (14 ml/l)	0,34 b
K_3 (18 ml/l)	0,37 c
Media tanam	
N1 (cocopeat)	0,44 b
N2 (zeolit)	0,34 a
N3 (serbuk kayu)	0,24 a

Description: Numbers followed by the same lowercase letter in the same column did not differ markedly at the LSD level of 5%.

At age 7, HST showed that caisim plants with AB mix concentration treatment of 18 ml/l (K3) gave better root volume values than the other two concentration treatments. It is suspected that at a concentration of AB mix 18 ml/l (K3), the amount of macronutrients (N, P, K, Mg, Ca, S, C, H, and O) and micronutrients (B, Cu, Fe, Mn, Zn, Mo) needed for root growth is sufficient so that plant roots experience an increase.

The treatment of *cocopeat planting media* (N1) provides a better root volume value than the other two. This is because *cocopeat* planting media has advantages that allow the roots to absorb water and nutrients from nutrients that cause better root growth. Edi (2014) states that roots that readily absorb water and nutrients will produce growth substances, such as growth regulators needed by plants to grow and develop.

Table 9. Effect of AB Mix Concentration and Growing Media to Root Volume (ml) At Age 14 HST

Treatment	AB Mix Concentration		
	K1 (10ml/l)	K2 (14ml/l)	K3 (18ml/l)
Me Half Tanam	…….. ml ……..		
N1 Cocopeat	0.73 c	0.97 c	1.13 c
	A	B	C
N2 (Zeolit)	0.60 b	0.80 b	1.03 b
	A	B	C
N3 (Wood Powder)	0.53 a	0.67 a	0.87 a
	A	B	C

Description: Numbers followed by the same lowercase letter in the same column and numbers followed by the same uppercase letter in the same row did not differ markedly at the LSD level of 5%

In the conditions of the growing media (N1, N2 and N3) each AB mix concentration treatment has a real different influence. The concentration conditions of AB mix (K1, K2, and K3) showed that the N1 treatment produced a significantly different root volume compared to other treatments. Based on Table 9, N1K3 treatment (*cocopeat growing media* and AB mix concentration of 18 ml/l) has the best average root volume with an average value of 1.13 ml.

Table 10. Effect of AB mix concentration and growing media to Root Volume (ml) Age 21 HST

Treatment	AB Mix Concentration		
	K1 (10ml/l)	K2 (14ml/l)	K3 (18ml/l)
Me Half Tanam	…….. ml ……..		
N1 Cocopeat	1.07 b	1.70 c	2.43 c
	A	B	C
N2 (Zeolit)	0.87 a	1.40 b	2.27 b
	A	B	C
N3 (Wood Powder)	0.80 a	1.03a	1.50 a
	A	B	C

Description: Numbers followed by the same lowercase letter in the same column and numbers followed by the same uppercase letter in the same row did not differ markedly at the LSD level of 5%

The interaction between the treatment of planting media (N1, N2, and N3) and AB mix concentration (K1, K2, and K3) showed a significant influence on the average root volume with the same pattern of influence, namely on each planting media if the AB mix concentration was increased, the average root volume also showed an increase both at the age of 14 HST and 21 HST (Tables 9 and 10). The N1K3 treatment (cocopeat growing media and AB mix concentration of 18 ml/l) showed the best effect on the average root volume (2.43 ml) and significantly differed from other treatments.

It is suspected that in *cocopeat* planting media and AB mix concentration of 18 ml / l, there are nutrients in the hydroponic solution, which has a composition of macro and micronutrients according to what plants need. When nutrients are given to plants too low, it will interfere with plant root formation activities and *cocopeat* planting media, which has an excellent water-holding capacity for the growth of caisim plants. In line with Avinda's opinion (2018), produced can absorb nutrients from nutrients Athe B mix given the n cont,awhichutrients including N, P, and K, which are essential nutrients for plants. The primary role of element N is to grow the vegetative parts of plants, such as leaves, stems, and roots. Furthermore, Agoes (2010) stated that *cocopeat* planting media has a high water-holding capacity so that plants can absorb more nutrients to support the growth and development of plant roots.

Plant dry weight

Based on the results of statistical analysis, it shows that there is no interaction between AB mix concentration treatment and planting media on plant dry weight at the age of 7, 14, and 21 HST but each has an independent influence on AB mix concentration treatment and planting media treatment can be seen in Table 11.

Table 11. Effect of AB mix Concentration and Growing Media against Plant Dry Weight (g) Age 7 HST, 14 HST, and 21 HST

Treatment	Plant dry weight (g)		
	7 HST	14 HST	21 HST
AB mix concentration			
K1 (10 ml/l)	0,05 a	0,13 a	0,58 a
K2 (14 ml/l)	0,06 b	0,21 b	0,74 b
K3 (18 ml/l)	0,10 c	0,28 c	0,96 c
Half tanam			
N1 (cocopeat)	0,09 b	0,31 c	0,95 b
N2 (zeolit)	0,07 a	0,18 b	0,72 a
N3 (wood powder)	0,05 a	0,13 a	0,62 a

Description: Numbers followed by the same lowercase letter in the same column did not differ markedly at the LSD level of 5%.

The effect of AB mix concentration treatment at the age of 7, 14, and 21 HST on the dry weight of plants has the same pattern; namely, with increasing AB mix concentration, the dry weight of claim plants also increases. This is likely due to the more nutrients plants can absorb; plant production can increase because plants can use these nutrients for photosynthesis. In line with Rizal's opinion (2017), the dry weight of plants is a component of successful plant growth

because it indicates the existence of clean photosynthesis results that can be precipitated after the water content is dried.

Treatment of the type of growing media shows that *cocopeat* (N1) planting media produces better results than the other two types of growing media. This is because *cocopeat* planting media has a higher N, P, and K nutrient content than zeolite and sawdust planting media. The higher the nutrients contained in the growing media, the higher the growth and yield of the plant. This is the opinion of Sitompul et al. (2014), who state that the availability of optimal nitrogen, phosphorus, and potassium elements will increase photosynthetic activity, producing more assimilation and supporting plants' dry weight.

Fresh Weights Per plant and per plot

Based on the results of variety analysis, there was a real interaction effect between the concentration of AB mix and planting media on the average fresh weight per plant and per plot aged 28 HST (Table 12 and 13).

Table 12. Effect of AB mix Concentration and Growing Media against Fresh Weight Per Plant (g)

Treatment		AB Mix Concentration					
		K1 (10ml/l)		K2 (14ml/l)		K3 (18ml/l)	
	N1	126,33	c	141,67	c	**169,67**	c
	Cocopeat	A		B		**C**	
Half Tanam	N2	94,00	a	113,67	a	126,67	a
	Zeolit	A		B		B	
	N3	101,67	b	124,33	b	146,67	b
	Serbuk Kayu	A		B		C	

Description: Numbers followed by lowercase letters in the same column and numbers followed by uppercase letters in the same row did not differ markedly at the LSD level of 5%.

Table 13. Effect of AB mix Concentration and Growing Media against Fresh Weight Per Plot (kg)

Treatment	AB Mix Concentration		
	K1 (10ml/l)	K2 (14ml/l)	K3 (18ml/l)
Me Half Tanam	…….. cm ……..		
N1 (Cocopeat)	3.05 a	3.42 c	**4.01 b**
	A	B	C
N2 (Zeolit)	2.17 a	2.79 a	3.03 a
	A	B	C
N3 (Wood Powder)	2.51 a	3.10 b	3.40 a
	A	B	C

Description: Numbers followed by lowercase letters in the same column and numbers followed by uppercase letters in the same row did not differ markedly at the LSD level of 5%.

The interaction between the treatment of the type of growing media (N1, N2, and N3) and the concentration of AB mix showed a significant effect. They were significantly different from each combination of treatments. At the level of each type of planting media, it shows that if the concentration level of the AB mix is increased, the average fresh weight per plant and plot tends to continue to increase (Tables 12 and 13). N1K3 treatment (cocopeat *planting media* and AB mix concentration of 18 ml/l) showed the best results against the highest average fresh weight per plant and plot, 169.57 g per plot and 4.01 kg per plot. It is suspected that the water and nutrient content absorbed by caisim plants is relatively high, and the availability of nutrients during the adult phase process can provide the needs of essential macro and micro elements in caisim plants. The interaction *of cocopeat* planting media can support the supply of nutrients to the root area so that the roots will quickly absorb the nutrients needed optimally.

This is in line with the opinion of Lahadassy et al. (2007) that to achieve optimal fresh plant weight, plants still need a lot of energy and nutrients so that the increase in the number and size of cells can reach optimal and allow an optimal increase in plant water content as well, most of the plant weight is due to water content. Laksono & Sugiono (2017) stated that the availability of nutrients in *cocopeat* for metabolic processes plays a vital role in the formation of proteins, enzymes, hormones, and carbohydrates so that it will increase the process of cell division in plant tissues, the process will affect the formation of buds, root growth, and leaves so that it will increase the wet weight of plants and the weight of dry stash plants.

CONCLUSION

1. There was a significant interaction effect between AB mix concentration treatment with planting media on plant height 7 HST, number of leaves 7, 14, 21 HST, root length 21 HST, root volume 14 HST and 21 HST, fresh weight per plant, and fresh weight per plot.
2. AB mix concentration exerts a significant independent influence on plant height 14 HST and 21 HST, root length 7 HST and 14 HST, root volume 7 HST and dry weight of plants. While the growing media showed a significant independent influence on plant height of 14 HST and 21 HST, root length of 7 HST and 14 HST, root volume of 7 HST and dry weight of plants. The treatment *of cocopeat* planting media and AB mix concentration of 18 ml / l gave the best effect on the average fresh weight per plot, which was 4.01 kg

BIBLIOGRAPHY

Agoes. (2010). *Aneka Jenis Media Tanam dan Penggunannya*. Penebar Swadaya. Jakarta.

Azis, A. H., M.Y. Surung., dan Buraerah (2006). *Produktivitas Tanaman Selada pada Berbagai Dosis Posidan-HT*. Jurnal Agrisitem, 2(1), 36–42.

Advinda, L. (2018). *Dasar–dasar fisiologi tumbuhan*. Deepublish**.**

Bugbee, B. (2003). *Nutrient management in recirculating hydroponic culture*. *South Pacific Soilless Culture Conference-SPSCC 648*, 99–112.

Cahyono. (2003). *Tanaman Hortikultura*. Penebar Swadaya. Jakarta.

Dacbhan S. (2010). Pengaruh Sistem Tanam, dengan Media Tanam Terhadap Pertumbuhan dan Hasil Tanaman Sawi (*Brassica juncea* L.). Jurnal Ilmiah Pendiidkan Tinggi, 2(1), 32–42.

Edi, S. (2014). Pengaruh pemberian pupuk organik terhadap pertumbuhan dan hasil tanaman kangkung darat (Ipomea reptans Poir). Jurnal Bioplantae, 3(1), 17–24.

Hadid, A., Wahyudi, I., & Sarif, P. (2015). Pertumbuhan dan hasil tanaman sawi (*Brassica juncea* L.) akibat pemberian berbagai dosis pupuk urea. Jurnal Agritekbis, 3(5), 585–591.

Iqbal, M. (2006). Penggunaan pupuk mejemuk sebagai sumber hara pada budidaya bayam secara hidroponik dengan tiga cara fertigasi. Bogor: Institut Pertanian Bogor.

Ifanto, I., dan Suprihati, S. (2020). Pengaruh EC Saat Pembibitan Terhadap Hasil Sawi (*Brassica rapa* L.) Metode Hidroponik Sistem Apung. Jurnal Agritech, *21*(2), 118–128.

Kalsim, D. K., & Sukendro, A. (2013). Kajian Serbuk Sabut Kelapa (*Cocopeat*) sebagai Media Tana. Jurnal Departemen Teknik Sipil Dan Lingkungan, 5(2), 1–7.

Lahadassy, J., Mulyati, A. M., & Sanaba, A.H. (2007). Pengaruh konsentrasi pupuk organik padat daun gamal terhadap tanaman sawi. Jurnal Agrisistem, 3(6), 51–55.

Laksono, R. A., & Sugiono, D. (2017). Karakteristik Agronomis Tanaman Kailan (*Brassica oleraceae* L. var. acephala DC.) Kultivar Full White 921 Akibat Jenis Media Tanam Organik dan Nilai EC (Electrical Conductivity) pada Hidroponik Sistem Wick. Jurnal Agrotek Indonesia (Indonesian Journal of Agrotech), 2(1), 25–33.

Mubarok, S., Salimah, A., Farida, F., Rochayat, Y., & Setiati, Y. (2012). Pengaruh kombinasi komposisi media tanam dan konsentrasi sitokinin terhadap pertumbuhan Aglaonema. Jurnal Hortikultura, 22(3), 251–257.

Rizal, S. (2017). Pengaruh nutriasi yang diberikan terhadap pertumbuhan tanaman sawi pakcoy (Brassica rapa l.) Yang ditanam secara hidroponik. *Sainmatika:* Jurnal Ilmiah Matematika Dan Ilmu Pengetahuan Alam, 14(1), 38–44.

Rokhmah, N. A., Fitriandi, R., & Sastro, Y. (2017). Pengaruh media tanam pada pertumbuhan dan hasil bawang merah (Allium ascalonicum L.) Secara hidroponik. Jurnal Buletin Pertanian Perkotaan (Vol. 7, Issue 1, pp. 13–26).

Rahmawati, E. (2018). *Pengaruh Berbagai Berbagai Jenis Media Tanam dan Konsentrasi Nutrisi Larutan Hidroponik Terhadap Pertumbuhan Tanaman Mentimun Jepang (Cucumissativus L.)*. Universitas Islam Negeri Alauddin Makassar.

Sarawa. (2011). Perkecambahan dan Pertumbuhan Tanaman Sawi (*Brassica juncea*, L.) yang diberi Pupuk Cair Nutriflora dengan sistem hidroponik. Jurnal Agroteknos, 1(2), 82–88.

Saroh, M., Syawaluddin, S., & Harahap, I. S. (2017). Pengaruh Jenis Media Tanam dan Larutan Ab Mix dengan Konsentrasi Berbeda pada Pertumbuhan dan Hasil Produksi Tanaman Selada (*Lactuca sativa* L) dengan Hidroponik Sistem Sumbu. Jurnal AGROHITA. 1(1), 29–37.

Sitompul, H., Simanungkalit, T., & Mawarni, L. (2014). Respons Pertumbuhan Bibit Kakao (*Theobroma Cacao* L.) Terhadappemberianpupuk Kandang Kelinci Dan Pupuk NPK (16:16:16). Jurnal Agroekoteknologi Universitas Sumatera Utara, 2(3), 99703.

Sukawati, I. (2010). *Pengaruh kepekatan larutan nutrisi organik terhadap pertumbuhan dan hasil baby kailan (brassica oleraceae var. Albo-glabra) pada berbagai komposisi media tanam dengan sistem hidroponik substrat*. Surakarta: Fakultas Pertanian Universtas Sebelas Maret UNS.

Zubaidah, Y., & Munir, R. (2007). Aktifitas pemupukan fosfor (P) pada lahan sawah dengan kandungan P-sedang. Jurnal Solum, *4*(1), 1–4