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The Effect of Different Ratio Combinations of Rice Husk Charcoal: Soil Media and Different NPK Fertilizer Rates on Growth and Fruit Yield of Okra (*Abelmoschus esculentus* L. Moench)

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Authors' contributions

This work was carried out in collaboration among all authors. Author MAA designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Author NA and Author WW managed the analyses of the study. Author WW managed the literature searches and improved this article. All authors read and approved the final manuscript.

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ABSTRACT

Okra plant is a vegetable plant that contains many vitamins and minerals that are very good for health. Increased production of okra plants can be done by setting the composition of the media and the provision of NPK fertilizer. The purpose of this study is to determine the influence of the composition of charcoal husk planting media and NPK fertilizer is appropriate for the growth and

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yield of okra plants. The experiment was carried out in Air Tawar Barat sub-district, North Padang sub-district, Padang City from September to December 2019. This study used a Complete Randomized Design (CRD) factorial with 2 factors. The first factor with the composition of charcoal planting media husks banding soil 0:1, 1;1, 1;2 and 1:3 . and the second factor with NPK fertilizer doses 400kg/ha, 500kg/ha and 600kg/ha repeated 4 times. The observation data is analyzed with the F test at a 5% level, if the F count is greater than the F table then continue with the Duncan New Multiple Range Test (DNMRT) at a real level of 5%. The results of the study showed there is an interaction between the administration of the composition of the planting media of charcoal husks and soil 1:2 and the administration of NPK fertilizer dose 3.0g / polybag to the height of plants, as well as the provision of the composition of planting media affects the lifespan of flowers, the number of flowers, the number of fruit, the length of fruit, the diameter of the fruit and the total weight of the fruit.

Keywords: Soil; rice husk charcoal; NPK fertilizer; okra; growth; fruit yield; okra plant; cancer cells; vermicompost.

1. INTRODUCTION

The okra plant (Abelmoschus esculentus (L.) Moench) is a vegetable originating from Africa and is distributed in tropical and subtropical areas. In general, this plant is known as okra or lady's finger because the fruit resembles a noble lady's finger with a cylindrical shape with pointed ends. Okra fruit entered Indonesia under the market names of bindi nuts, Arabic coffee, and okra [1].

Okra has a high economic value compared to other vegetables [2]. The okra plant has been known as a multipurpose plant because almost all parts of the plant can be used. The stems of the okra plant can be used for fuel. Apart from that, the stems of the okra plant are also used as fiber which can be used in making paper pulp [3]. Okra is filled with antioxidants, which makes it an excellent anti-fatigue food, contains adequate fiber to boost digestion, and lower cholesterol levels which contribute to heart health. Okra fruit, also, contains, pectin, which could fight human breast cancer cells.

Okra plant production often declines due to problems with a lack of nutrients and the level of aeration and drainage in the soil. There needs to be good cultivation efforts such as soil processing such as choosing planting media that can regulate and loosen the soil texture, good aeration and air circulation and be free from pests and diseases, thus allowing the roots to develop widely.

One factor to increase plant growth and yield is the planting medium. Organic growing media can be used to increase okra growth and yield, including chicken manure, husk charcoal, guano, and vermicompost. Agustanto et al.,[4] report that the application of chicken manure at a dose of 20 tons/ha affected the number of leaves, number of branches, number of fresh pods per plant, number of fresh pods per plot, and fresh weight of pods per hectare.

Apart from functioning as a zeolite, rice husk charcoal can also increase the availability of nutrients and store nutrients in the soil so that they are not easily leached by water but are very easily released when needed by plants. Apart from that, roasted husks are porous and cannot clump or compact so plant roots can grow and develop well and perfectly. The nutrients contained in husk charcoal include 0.32% nitrogen, 0.15% phosphate, 0.31% potassium, 0.96% calcium, 180 ppm iron, 14.10 ppm zinc, 0.4 ppm manganese, and pH 8.5 – 9.0. Husk charcoal also has the characteristics of being light with a specific gravity of 0.2 kg/l, rough in shape so that air circulation is high, good porosity, and low water absorption capacity. Nursanti et al., [5] so that the use of nutrient elements by plants will become easier and it is hoped that this can support plant growth and increase yields. The advantages of rice husk charcoal in using it as a planting medium include that it easily binds water contains potassium (K) which plants need, and helps plant roots grow well because it is loose. Based on research results from Avisca [6] rice husk charcoal mixed with soil as a growing medium for cotton plants, showed that the ratio (1:3) of rice husk charcoal to soil showed the best results in flower emergence, fruit emergence, and the number of cotton plant fruits. Apart from that, burning husks can increase microorganism activity increase humus levels, and improve soil structure [7]; [8].

NPK fertilizer is an artificial fertilizer containing the macronutrients Nitrogen, Phosphorus, and Potassium which are needed by plants in relatively large quantities. Warnita et al. [9] reported that a high N content would increase the size and number of leaf cells, thus increasing the number of leaves. NPK fertilizer has the advantage that one application of fertilizer can include several elements so that it is more efficient to use compared to a single fertilizer. Based on Yuliartini's [10] research results, applying NPK fertilizer at a dose of 400 kg/ha showed the highest results in the number of fruit, fresh fruit weight per plant, and oven-dry weight of okra plant fruit. The research results of Novriani et al., [11] show that P2N2 (chicken manure 20 tons/ha and compound NPK 150 kg/ha) is a treatment that tends to be better than other treatments.

The research aimed at determining technically recommendable ratio combination(s) of rice husk charcoal: soil media that will mix with technically recommendable NPK fertilizer rate(s) for improved growth and fruit yield of okra (*Abelmoschus esculentus* L. Moench)

2. METHODOLOGY

2.1. Place and Time

The experiment was carried out in Air Tawar Barat sub-district, North Padang sub-district, Padang City. This implementation will take place from September 2019 to December 2019.

2.2. Materials and Tools

Green okra plant seeds (*Abelmoschus esculentus* L.) Lucky Five 473 variety, rice husk charcoal, NPK phonska fertilizer (15:15:15), ultisol soil, 10 kg polybags of soil, hoe, tuber, measuring tape, caliper, analytical balance, label paper, stationery and documentation tools.

2.3. Experimental Design

The experiment was a two-factor factorial experiment in a Completely Randomized Design (CRD). The first factor is the comparison of rice husk charcoal planting media with 4 levels, namely:

A1: Rice husk charcoal: Soil (0: 1)
A2: Rice husk charcoal: Soil (1: 1)
A3: Rice husk charcoal: Soil (1: 2)
A4: Rice husk charcoal: Soil (1 : 3)

The second factor is the dose of NPK fertilizer (15:15:15) which consists of 3 levels, namely:

B1: 400 kg/ha (equivalent to 2.4 g/polybag)
B2: 500 kg/ha (equivalent to 3.0 g/polybag)
B3: 600 kg/ha (equivalent to 3.6 g/polybag)

The experiment was repeated 4 times and each experimental unit consisted of 4 plants. The observation data was analyzed using the F test at the 5% level. If the calculated F is large from the F table then it is continued with the Duncan's Multiple Range Test (DMRT) at the 5% level.

2.4. Implementation of Research

2.4.1. Media preparation

The planting medium used is a composition of rice husk charcoal and soil based on the volume ratio (v/v) which is put into polybags. The ratio of the volume of rice husk charcoal planting media and soil is (0:1), (1:1), (1:2), and (1:3). Next, use the soil and rice husk charcoal and incubate for a week.

2.4.2. Planting

Okra seeds were put into polybags with a total of 3 seeds per polybag to a depth of 5 cm and covered with soil. If the plants are 7 days old after planting, leave one plant per polybag.

2.4.3. Providing NPK fertilizer treatment

NPK fertilization is carried out 2 times. The first fertilization begins at 3 weeks after planting (WAP), then 2 weeks after the first fertilizer application. Apply fertilizer in a circle at a distance of 5 cm from the plant.

2.4.4. Harvest

Harvesting is carried out when the okra has shown the criteria for being ready to harvest for consumption. Harvest starts 6 days after the flowers open until 90 HST. Harvesting is done by using scissors or a knife cutter to pick the fruit.

3. RESULTS AND DISCUSSION

Table 1 shows that there is an interaction between the application of rice husk charcoal planting media at various doses of NPK fertilizer which are significantly different in okra plant height. Providing planting media with rice husk charcoal and soil 1:2 and an NPK fertilizer dose of 3.0 g/polybag produced the highest okra plant

height of 97.00 cm compared to the ratio of 1:0, 1:1 and 1:3 and an NPK fertilizer dose of 2.4 g/polybag and 3.6 g/polybag. This is because the planting medium of rice husk charcoal and soil 1:2 and the NPK fertilizer dose of 3.0 g/polybag was able to provide the best results for okra plant height, followed by the NPK fertilizer dose of 3.6 g/polybag, only it was significantly different from the fertilizer dose treatment. NPK 3.0 g/polybag.

Providing a planting medium of rice husk charcoal and 0:1 soil gave the lowest results for okra plant height due to the absence of rice husk charcoal which is useful for increasing aeration and binding nutrients in the soil. If the planting medium is not provided with rice husk charcoal, it would cause the plant roots to obtain nutrients, and air circulation in the soil will be disrupted because the structure of rice husk charcoal is light and porous. Prihmantoro and Indriani [12] stated that the addition of rice husk charcoal to the planting medium or soil functions to increase soil water reserves, bind nutrients, increase exchange levels of potassium (K) and magnesium (Mg), and improve the aeration system in the root zone.

Providing planting media with rice husk charcoal and soil in a 1:1 ratio with NPK fertilizer doses of 2.4 g/polybag, 3.0 g/polybag, and 3.6 g/polybag were almost the same for the height of okra plants, namely 93.12 cm, 91.31 cm, and 93.75 cm, only significantly different for the dose treatment. NPK fertilizer was given. and giving a planting medium of rice husk charcoal and soil in a ratio of 1:3 with a dose of NPK fertilizer of 2.4 g/polybag, 3.0 g/polybag, and 3.6 g/polybag gives a plant height that is almost the same as the height of the okra plant, namely 92.68cm, 92.81cm and 89.93 different. real impact on the dose of NPK fertilizer given.

Providing a planting medium of rice husk charcoal and soil 1:2 gave the best results because the provision of a planting medium of rice husk charcoal mixed with soil can hold water and bind nutrients well, if the amount of rice husk charcoal is greater than the soil it will produce water is easy to escape. Nelson, [13] stated that high porosity can improve media aeration and drainage but reduces the water-holding capacity of rice husk charcoal, the water holding capacity of rice husks is 12.3% which is a much lower value when compared to sand which has a water-holding capacity. amounting to 33.7%.

Providing NPK fertilizer which contains nitrogen, phosphate, and potassium can help plant growth. Applying NPK fertilizer to okra plants gave the same results on the height of okra plants on husk charcoal media: 1:1 and 1:3 soil, this could be caused by the nutrient content in the soil being fulfilled. Different from the silken charcoal media: soil 0:1 and 1:2 plant height. Pasta et al., [14] stated that nitrogen elements can increase the rate of plant photosynthesis so that it can stimulate vegetative growth. One of the vegetative growth is plant height. The dose of Mutiara NPK fertilizer has a very significant effect on the height of plants aged 40 HST. The best plant height was found in the treatment with a Mutiara NPK fertilizer dose of 300 kg ha-1 [15].

Observation results on the number of okra plant leaves varied. The number of okra plant leaves is presented in Fig. 1.

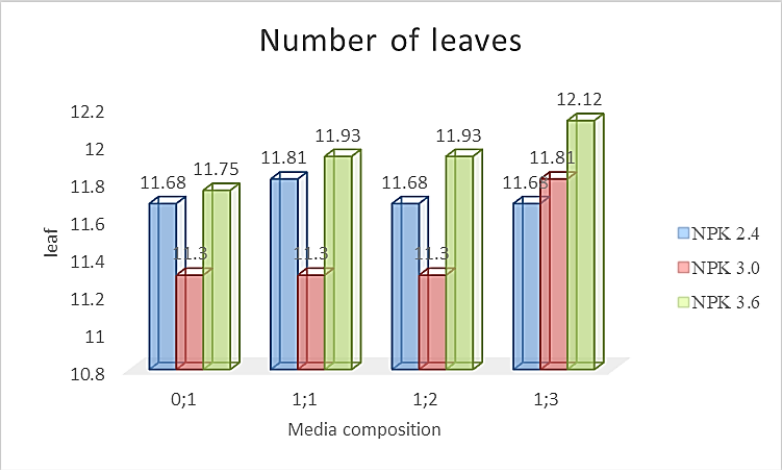

Fig. 1. Number of leaves of okra plants in several compositions of husk charcoal planting media: soil with a dose of NPK fertilizer

Table 1. Height of okra plants on rice husk charcoal planting media and soil with NPK fertilizer dose of 14 WAP

Rice husk charcoal: Soil	NPK fertilizer dosage (g/polybag)		
	2.4	3.0	3.6
	----------cm----------		
0:1	85.75 B b	91.50 B a	91.75 B a
1:1	93.12 A a	91.31 B a	93.75 B a
1:2	93.06 B b	97.00 A a	95.50 A b
1:3	92.68 B a	92.81 A a	89.93 B a
CV = 2.65%			

Means that each row and column with different letters are different significantly (P<0.05). by Duncan's Multiple Range Test

Giving various doses of NPK fertilizer of 3.6 g/polybag gave the best results for the number of okra leaves, namely 11.12 leaves. Providing various doses of NPK fertilizer, the dose of which was increased based on recommendations from Yuliartini's [9] research results, where the recommended NPK fertilizer dose of 400 kg/ha gave the highest maximum number of leaves of 9.58 pieces, which was not significantly different from other NPK treatments on okra plants.

The use of NPK fertilizer given to the planting medium will add nutrients needed for plant growth, some of which are N, P, and K. The N, P, K, and Ca elements in rice husk charcoal can help the growth and development of Okra varieties. lucky five. Rice husk charcoal also contains quite high levels of silica (Si), which functions to improve the physical properties of the soil, making plants strong and not easily collapsing. According to Martanto [16] silica is considered a non-essential nutrient, however, Si can stimulate plant growth and production.

In Table 2 indicate that the composition of the rice husk charcoal media: soil is significantly different in the number of okra plant flowers, but various doses of NPK fertilizer are not significantly different in the number of okra plant flowers. Giving rice husk charcoal and soil in a ratio of 0:1 gave the lowest results for the number of okra flowers, namely 11.91 pieces. The ratio of rice husk charcoal and soil planting media of 1:2 gave the highest number of flowers, namely 13.50 flowers, but was significantly different from the comparison of other planting media of 1:0, 1:1, and 1:3 respectively, namely 11.91, 12.85, and 13.20. The composition of the planting media, rice husk charcoal, and soil, 1:2 can provide the highest number of flowers, because this planting media can meet optimal plant needs, both in terms of growth and development of the number of flowers due to the fulfillment of nutrients and other environmental factors.

Providing planting media with rice husk charcoal and soil with several doses of urea fertilizer affects the flowering and fruiting process about the ratio of C (carbon) and N (nitrogen). The balance of C/N will determine the vegetative phase and generative phase. A low or small C/N ratio will make the plant remain in the vegetative phase, of course, it will experience problems in the flowering and fertilization process because the condition for the flowering process to occur is reaching the generative phase. Plants with high C/N will be more easily stimulated to immediately enter the generative phase so that the flowering and fertilization process can occur immediately, conversely, if C/N is low then the plant will be in the vegetative phase for longer. Based on this research, providing rice husk charcoal as a planting medium can speed up the emergence of flowers because it has a high C (carbon) content from rice husk charcoal and nitrogen content from NPK fertilizer. Nursanti et al., [5] stated that one of the requirements for a good C/N ratio is to have a value below 20%.

Providing 1:2 rice husk charcoal and soil planting media at a dose of 3.0 g/polybag can produce flowers which will later affect the number of fruit, 1:2 rice husk charcoal planting media has a good C content compared to other planting media because charcoal The rice husks given are according to what is needed for okra plants compared to other ratios, this is what causes the number of okra flowers to be greater on the rice husk charcoal plant media and 1:2 soil.

Table 3 shows that the composition of rice husk charcoal planting media: soil and various doses of NPK fertilizer are significantly different in the number of okra fruit plants. The number of fruits

produced from a 0:1 composition of rice husk charcoal and soil as the planting medium was the lowest, namely 11.60. Providing planting media with rice husk charcoal and soil 0:1, 1:1, and 1:3 showed that the results were not significantly different in the number of okra plants. On the planting medium, rice husk charcoal and soil 1:2 gave the best results, namely 13.20 okra compared to 0:1, 1:1, and 1:3.

Giving a dose of NPK fertilizer at a dose of 2.4 g/polybag gave the lowest yield with a figure of 11.75 number of fruits. Giving NPK fertilizer doses of 3.0 g/polybag and 3.6 g/polybag were not significantly different and obtained almost the same values, namely 12.92 and 12.93 for okra fruit. Providing the correct dose needed by the okra plant and under recommendations will produce maximum fruit.

The success of pollination is determined by the pollen nucleus and the condition of the stigma. Plant growth stages consist of the growth period, flowering period, can, and fruiting period. During the growing period, rice husk charcoal can retain water because the water requirement continues to increase until it reaches its peak during the flowering period, while at the fruiting stage, the water requirement continues to decrease and stops when the fruit ripens

Based on Table 4, the lowest fruit length was 12.92 cm which was produced from a planting media composition of rice husk charcoal and soil of 0:1 and the highest was 13.20 cm with a planting media composition of charcoal and soil of 1:2. Providing a dose of NPK fertilizer at a dose of 3.0 and 3.6 g/polybag gave results. the same fruit length and the lowest with a figure of 12.90 cm at an NPK dose of 2.4 g.

The composition of the planting media, rice husk charcoal, and soil, was 1:3, producing the longest okra fruit length, namely 13.50 cm. The NPK 3.6 fertilizer dose produced the longest okra fruit length, namely 13.32 cm, while 2.4 and 3.0 g/plant had the same results.

The functions of N, P, and K are closely related in supporting the photosynthesis process and the production of photosynthate produced, as well as increasing plant growth through the mechanism of converting NPK nutrients into organic compounds or energy called metabolism, nutrients cannot be replaced with other nutrients so that with nutrients Plants can fulfill their life cycle. According to Sutrisna and Yanto [17] providing sufficient N guarantees good growth, higher yields, and full fruit development. The P element has a lot of influence on flowering and development, fruit hardness, fruit color, vitamin content, and accelerates fruit ripening. The use of K fertilizer increases the sugar content, and vitamin content and increases the number of fruit harvested.

The results of the analysis of various fruit diameters is presented in Table 5.

The composition of the planting media, rice husk charcoal, and soil, was 1:3 and the NPK fertilizer dose was 3.0 g/polybag, resulting in the largest diameter of okra fruit, namely 17.92 mm compared to the ratio of 0;1, 1;1 and 1;3. This is because the planting medium of rice husk charcoal and soil 1:3 and the NPK fertilizer dose of 3.0 g/polybag can provide the best results for okra plant height, followed by the NPK fertilizer dose of 3.6 g/polybag which is almost close to the plant height with the fertilizer dose. NPK 3.0 g/polybag.

Table 2. Number of okra plant flowers on rice husk charcoal planting media: soil and NPK fertilizer dose

Rice husk charcoal: Soil	NPK fertilizer dosage (g/polybag)			Main Effect of Rice Husk Charcoal: Soil
	2.4	3.0	3.4	
	----------Flowers----------			
0:1	10.87	12.31	12.56	11.91 B
1:1	12.43	13.50	12.60	12.85 B
1:2	12.93	14.50	13.06	13.50 A
1:3	12.87	12.81	13.93	13.20 B
Main Effects of NPK Fertilizer	12.28	13.28	13.04	
CV = 9.86%				

Means that each row and column with different letters are different significantly (P<0.05). by Duncan's Multiple Range Test

Table 3. Number of okra plants on rice husk charcoal planting media and dosage of NPK fertilizer

Rice husk charcoal: Soil	NPK fertilizer dosage (g/polybag)			Main Effect of Rice Husk Charcoal: Soil
	2.4	3.0	3.6	
	----------Fruit----------			
0:1	10.50	11.87	12.43	11.60 B
1:1	11.50	13.00	12.56	12.35 B
1:2	12.43	14.12	13.06	13.20 A
1:3	12.56	12.68	13.68	12.97 B
Main Effects of NPK Fertilizer	11.75 b	12.92 a	12.93 a	
CV = 9.18%				

Means that each row and column with different letters are different significantly (P<0.05). by Duncan's Multiple Range Test

Table 4. Length of okra plant fruit on rice husk charcoal planting media and soil with doses of NPK fertilizer

Rice husk charcoal: Soil	NPK fertilizer dosage (g/polybag)			Main Effect of Rice Husk Charcoal: Soil
	2.4	3,0	3,6	
	----------cm----------			
0:1	12.65	12.84	13.28	12.92 B
1:1	13.01	12.84	13.15	13.00 B
1:2	12.68	13.25	13.28	13.07 B
1:3	13.25	13.65	13.59	13.50 A
Main Effects of NPK Fertilizer	12.90 b	13.14 b	13.32 a	
CV = 3.34%				

Means that each row and column with different letters are different significantly (P<0.05). by Duncan's Multiple Range Test

Table 5. Diameter of okra fruit on rice husk charcoal planting medium and dose of NPK fertilizer

Rice husk charcoal: Soil	NPK fertilizer dosage (g/polybag)		
	2.4	3.0	3.6
	----------mm----------		
0:1	16.56 B b	16.82 B a	17.55 B a
1:1	16.75 B a	16.74 B a	17.23 A a
1:2	17.08 B a	17.01 A b	17.14 B a
1:3	17.09 A b	17.92 A a	17.66 A b
CV = 2.65%			

Means that each row and column with different letters are different significantly (P<0.05). by Duncan's Multiple Range Test

The composition of the rice husk charcoal planting medium and soil in a ratio of 1:3 gave the largest diameter compared to other planting media, namely 17.56 cm. The composition of this media has good and loose properties. Kantikowati *et a*l., [18] report that good soil physical properties have an impact on the development of deeper and wider roots so that the absorption of nutrients and water needed by plants is also better and ultimately will support plant growth. According to Nasruslloh [19], if the availability of water in the soil is low and the plant experiences a lack of water during fruit enlargement and ripening, it is likely that the fruit produced will be small, thus affecting the weight and quality of the fruit produced.

Providing a dose of NPK fertilizer on fruit diameter yielded results that were not significantly different from plants with other treatments. The largest fruit diameter in the NPK fertilizer dose of 3.6 g/polybag was 17.40mm,

Table 6. Total fruit weight of okra plants on rice husk charcoal planting medium and dose of NPK fertilizer

Rice husk charcoal: Soil	NPK fertilizer dosage (g/polybag)			Main Effect of Rice Husk Charcoal: Soil
	2.4	3.0	3.6	
	----------g----------			
0:1	117.16	144.34	164.16	141.89 B
1:1	140.06	155.10	160.83	152.00 B
1:2	151.68	180.04	167.24	166.32 B
1:3	153.05	182.29	188.59	174.64 A
Main Effects of NPK Fertilizer	14.49 b	165.44 a	170.2 a	
CV = 12.95%				

Means that each row and column with different letters are different significantly (P<0.05). by Duncan's Multiple Range Test

then the NPK fertilizer dose of 3.0 g/polybag was 17.12mm and the lowest fruit diameter was obtained in the NPK fertilizer dose of 2.4 g/polybag, namely 16.87mm. According to Havlin, [20] the nutrients P and K play a role in the process of root formation, fruit filling, and fruit ripening. The element phosphorus plays a role in the formation of energy which is used for the growth and development of plants, including plant fruit. The element potassium plays an important role in osmotic pressure, and ion balance, and is involved in the synthesis and transport of photosynthesis products for production and storage in plants (seeds, fruit, and tubers).

The composition of rice husk charcoal planting media: soil and various doses of NPK fertilizer influence the total fruit weight of okra plants. These results can be seen in Table 6.

The composition of the planting medium: rice husk charcoal: soil 0:1 and several doses of NPK fertilizer gave a total fruit weight of 141.89 g which differed from 1: 1, 1: 2, and ! : 3. Providing a dose of NPK fertilizer at a dose of 2.4 g/polybag gave the lowest yield with a figure of 140.49g total fruit weight. The planting medium composition of rice husk charcoal and soil of 1:3 gave the best results, namely 174.64 g total weight of okra fruit compared to other treatments. This is reinforced by the statement by Alam et al,. [21] that organic material is useful as a provider of nutrients for plants which can increase production, and is also useful in improving the physical, chemical, and biological properties of the soil. Organic materials help plants to increase plant biomass, stimulate growth, and increase crop yields (Verma et al., [22] According to Nasrulloh [19] states that sufficient water at the time of fertilization affects the number of fruit and fruit weight produced by plants because water is very important for this to occur. The process of photosynthesis thus influences the amount of photosynthate produced which is then distributed to the fruit for fruit growth.

Giving a fertilizer dose of 3.6 g/polybag resulted in a total fruit weight of 170.20 g, which was different from NPK fertilizer doses of 2.4 and 3.0 g/polybag. Providing the correct dosage required by the okra plant and by the recommendations will produce maximum fruit. According to Suwarno, [23] plants would grow well if the nutrients needed by the plant are in balanced proportions, especially macronutrients such as N, P, and K.

4. CONCLUSION

There was an interaction between the composition of the charcoal and soil planting media with several doses of NPK fertilizer on plant height and okra fruit diameter. Providing a mixture of soil and rice husk charcoal in a ratio of 1:2 and administering NPK fertilizer at a dose of 3.0 g/polybag was able to increase the height of okra plants, namely 97.00 cm compared to other treatments. Providing a mixture of rice husk charcoal with soil at 1:3 and a dose of 3.0 g/ Polybags provides the largest fruit diameter for okra plants, namely 17.92 mm. Providing a planting medium composition of rice husk charcoal and soil of 1:3 showed the best growth and results in terms of fruit number, fruit length, and total fruit weight. Giving a dose of NPK fertilizer of 3.6 g/polybag gave the best results for the number of leaves, number of fruits, fruit length, and total fruit weight.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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