Advances in Social Science, Education and Humanities Research, volume 429
International Conference on Agriculture, Social Sciences, Education, Technology and Health (ICASSETH 2019)

The Effect of Doses of Manure and the Concentration of Organic Herbicides on the Growth and Yield of Cucumber (*Cucumis sativus* L.) Cultivars Bhakti

Deden Deden*, Wijaya Wijaya, Dukat Dukat, Richie Agustirra
Faculty of Agriculture
Universitas Swadaya Gunung Jati
Cirebon, Indonesia
*duw85@yahoo.co.id, wijaya6104@gmail.com, dukat.mianta@yahoo.co.id, richieagustirra@gmail.com

***Abstract*—This study aims to determine the effect of doses of manure and the concentration of organic herbicides on the growth and yield of cucumber (*Cucumis sativus* L.) cultivars Bhakti. The experimental design used Randomized Complete Block Design (RCBD). This experiment consisted of 12 combinations of manure dosage treatment and concentrations of organic herbicides. Each of which was repeated three times, so that there were 36 experimental plots. The combination of treatments tested in the field was manure 5 t/h, 10 t/ha, 15 t/ha, organic herbicide 0 g/l, 100 g/l, 200 g/l, 300 g/l. The results showed that there was a significant effect of doses of manure and organic herbicide concentrations on plant height of 14 DAP, 21 DAP and 28 DAP, number of leaves aged 21 DAP and 28 DAP, number of fruits per plant and per plot, fruit length per plant, fruit diameter per plant, fruit weight per plant and per plot (14,46 kg/plot), and wet weed per plot. The best results were shown in the combination treatment K (15 t/ha manure and organic herbicide 200 g/l) with an average yield of 14.46 kg/plot (36.15 t/ha).**

Keywords: cucumber, manure, organic herbicide

I. INTRODUCTION

Cucumber (*Cucumis sativus L.*) is a plant originating from India. The plant experts ensure that the area of origin is precisely on the slopes of Mount Himalaya. Cucumber distribution areas in Indonesia are Aceh Special Province, Bengkulu, West Java, Central Java and East Java. The business prospects for cucumbers are fairly bright, because the marketing of the results is not only done domestically (domestically), but also abroad (exports). Potential markets for Indonesian vegetable exports include: Malaysia, Singapore, Taiwan, Hong Kong, Pakistan, France, Britain, Japan, the Netherlands and Thailand. Specifically, for the target market for cucumber exports, the potential is Japan [1].

The average yield of cucumbers in Indonesia from 2012-2016 was 10.34 tons / ha. This has not yet reached the potential level of cucumber yield, which is above 20 tons / ha. The low productivity of cucumber plants in Indonesia can also be caused by several factors including climate factors, farming techniques such as land management, fertilization, irrigation, as well as the presence of pests, diseases and weeds [2]. To support optimal growth and yield, plants really need fertilizer. There are two types of fertilizers that are currently widely used, namely inorganic fertilizer (chemical) and organic fertilizer. Chemical fertilizers can increase soil productivity in a short time but cause damage to the soil structure [3]. Organic fertilizer has the advantage of releasing nutrients slowly so that it has a residual effect in the soil and is beneficial for subsequent plants [4].

Increasing cucumber production can be done by improving cucumber cultivation techniques, one of the intensive cultivation techniques to increase growth and yield is proper fertilization and weed control. Fertilization is the act of providing additional nutrients to the soil to meet the nutritional needs of plants both macro and micro nutrients. Fertilization needs to be done because the nutrient content in the soil is always reduced due to absorbed by plants. In general, there are two types of fertilizers, namely organic fertilizer and inorganic fertilizer. Organic fertilizer is fertilizer made up of living matter, such as weathering the remains of plants, animals and humans. Organic fertilizer can be in the form of solid or liquid which is used to improve physical, chemical, and biological soil properties.

One type of organic fertilizer is manure, besides that it has natural properties and does not damage the soil, provides macro nutrients (nitrogen, phosphorus, potassium, calcium, and sulfur) and micro (iron, boron, zinc, cobalt and molybdenum). In addition, manure works to increase water retention capacity, soil microbiological activity, the value of cation exchange capacity and can improve soil structure and indirect effect is to facilitate the soil to absorb water [5], besides manure has a weakness in the content of nutrients that are small in number, so the amount of fertilizer given must be relatively large when compared with inorganic fertilizer.

Weed is a plant that easily and quickly grows around cucumber plants and is a competitor for the necessities of life. Weed acts as a competitor of nutrients, water, sunlight and growing space for staple crops, besides that weeds can be a host for pests and pathogens that cause disease for plants [6].

In modern agricultural production systems, the use of herbicides is one of the contributing factors in increasing

agricultural output. Nevertheless, the use of similar herbicides in a long time can cause weed resistance, damage to soil structure, environmental pollution and cause poisoning to staple crops [7].

Now it continues to be developed by experts and practitioners to control weeds that are more environmentally friendly. Some weed species are reported to release chemical compounds (allelochemicals) that can inhibit the surrounding plants. If this compound can inhibit weeds but does not negatively affect or even positively affect the staple crop, then the weed has the potential to be developed as an organic herbicide. Imperata cylindrica is reported to produce polyphenol chemical compounds that can inhibit the germination of several types of weed seeds in the ground [8]. Polyphenols can affect plant growth in terms of nutrient absorption, decrease the speed of ions by plants, inhibit the division of plant root cells, inhibit enzyme activity, inhibit protein synthesis and extend dormancy [9].

Therefore, research on the combination of manure dosage and herbicide concentration needs to be carried out to determine the growth and yield of cucumber (*Cucumis sativus L.*) cultivars of Bhakti.

II. Research Methods

A. Test Equipment and Materials

Materials used in this experiment included the seeds of cucumber (*Cucumis sativus L.)* Bhakti cultivars, chicken manure, organic herbicide *alang-alang* extract, SP-36 urea fertilizer, KCl, Furadan 3G, water, Regent, Antracol and ingredients others support implementation.

The tools used in this experiment include: hoes, blenders, filters, shovels, gauges, scales, rulers, plastic buckets, hand sprayers, measuring cups, stationery, cameras, tips, *rapia* ropes, and other supporting tools.

B. Experimental Design

The experimental design used Randomized Complete Block Design (RCBD). The experiment consisted of 12 combinations of manure dosages treatment and concentrations of organic herbicides, each of which was repeated three times, so that there were 36 experimental units.

A = Manure 5 t / ha and OH 0 g / l
B = Manure 5 t / ha and OH 100 g / l
C = Manure 5 t / ha and OH 200 g / l
D = Manure 5 t / ha and OH 300 g / l
E = Manure 10 t / ha and OH 0 g / l
F = Manure 10 t / ha and OH 100 g / l
G = Manure 10 t / ha and OH 200 g / l
H = Manure 10 t / ha and OH 300 g / l
I = Manure 15 t / ha and OH 0 g / l
J = Manure 15 t / ha and OH 100 g / l
K = Manure 15 t / ha and OH 200 g / l
L = Manure 5 t / ha and OH 300 g / l

C. Observation

Observations were made on plant height, number of leaves, number of fruits per plant, fruit diameter per plant, fruit length per plant, fruit weight per plant and per plot, fresh weed weight.

D. Analysis of Observational Data

Data processing is done by analysis of variance, if there is a significant difference from the treatment or F-count greater than F-table at the 5% level, then the test is continued using the Scott-Knott Cluster Test.

III. Results and Discussion

A. Plant Height

Statistical analysis showed that the treatment of chicken manure and the concentration of organic herbicides had a significant effect on plant height at the ages of 14, 21 and 28 days after planting (DAP). The results of statistical analysis can be seen in detail in table 1.

TABLE I. Effect of Manure Dosing and Concentration of Organic Herbicides on Plant Height (cm) Age 14, 21 and 28 DAP

No	Treatment	Average Plant Height (cm)		
		14 DAP	***21 DAP***	***28 DAP***
1	A(Manure 5 t/ha, Organic herbicide 0 g/l)	5.23 a	27.33 a	62.27 a
2	B(Manure 5 t/ha, Organic herbicide 100 g/l)	5.87 a	31.27 a	69.63 a
3	C(Manure 5 t/ha, Organic herbicide 200 g/l)	5.30 a	30.40 a	78.53 b
4	D(Manure 5 t/ha, Organic herbicide 300 g/l)	4.87 a	26.07 a	78.85 b
5	E(Manure 10 t/ha, Organic herbicide 0 g/l)	5.60 a	37.27 b	64.60 a
6	F(Manure 10 t/ha, Organic herbicide 100 g/l)	6.57 b	39.97 b	77.33 b
7	G(Manure 10 t/ha, Organic herbicide 200 g/l)	6.57 b	40.31 b	76.15 b
8	H(Manure 10 t/ha, Organic herbicide 300 g/l)	5.23 a	26.93 a	79.13 b
9	I(Manure 15 t/ha, Organic herbicide 0 g/l)	7.07 b	40.53 b	67.87 a
10	J(Manure 15 t/ha, Organic herbicide 100 g/l)	6.30 b	40.20 b	76.94 b
11	K(Manure 15 t/ha, Organic herbicide 200 g/l)	6.90 b	41.78 b	80.48 b
12	L(Manure 15 t/ha, Organic herbicide 300 g/l)	7.60 b	40.53 b	68.91 a

Note: The average number is accompanied by the same letters in the same column, showing no significant difference based on the Scott-Knott Cluster Test at 5% significance level

In table 1 it can be seen that the combination of quantities of chicken manure and the concentration of organic herbicides significantly affected the height of cucumber plants at each observation period. The provision of chicken manure with a dose of 15 t / ha combined with various concentrations of organic herbicides produces an average plant height that is higher than that of giving chicken manure 5 t / ha at the age of 21 DAP.

This shows that to stimulate the vegetative growth of cucumber plants, the chicken manure given reaches 15 t / ha with a better high dose. This situation illustrates that to stimulate the vegetative growth of cucumber plants, it is necessary to have sufficient nutrients available, while the availability of these nutrients is influenced by the high soil KTK. The addition of organic / manure in the soil will increase the cation exchange capacity, so that the nutrients contained in the soil are not easily washed and will be absorbed by many plants [10].

But at 28 DAP, treatments A, B, E, I, L were shorter in height. This is due to the competition of weeds with cucumber plants so that the growth of cucumber plants is inhibited. Weeds can interfere with plant height because of competition for water, nutrients, growth space and light. Competition of plants with weeds can result in plants lacking nutrients and their growth is inhibited because weeds have strong roots and are attached to the soil and are very competitive and highly efficient in nutrient absorption compared to cucumber plants [11].

B. Number of Leaves

Statistical analysis showed that the treatment of chicken manure dosages and the concentration of organic herbicides did not have a significant effect on the number of leaves at 14 days after planting (DAP) (Appendix 14). However, the treatment of chicken manure dosage and concentration of organic herbicides have a significant effect on the number of leaves at the age of 21 and 28 days after planting (DAP). The results of statistical analysis can be seen in detail in table 2.

TABLE II. EFFECTS OF MANURE DOSING AND CONCENTRATION OF ORGANIC HERBICIDES ON THE NUMBER OF LEAVES (STRANDS) AGED 14, 21 AND 28 DAP

No	Treatment	Average Number of Leaves (Sheet)		
		14 DAP	*21 DAP*	*28 DAP*
1	A(Manure 5 t/ha, Organic herbicide 0 g/l)	2.60 a	6.67 a	12.60 a
2	B(Manure 5 t/ha, Organic herbicide 100 g/l)	2.60 a	6.73 a	12.73 a
3	C(Manure 5 t/ha, Organic herbicide 200 g/l)	2.40 a	6.60 a	12.73 a
4	D(Manure 5 t/ha, Organic herbicide 300 g/l)	2.60 a	6.67 a	12.40 a
5	E(Manure 10 t/ha, Organic herbicide 0 g/l)	2.67 a	7.40 a	12.13 a
6	F(Manure 10 t/ha, Organic herbicide 100 g/l)	2.80 a	7.93 b	13.93 b
7	G(Manure 10 t/ha, Organic herbicide 200 g/l)	2.73 a	7.80 b	13.67 b
8	H(Manure 10 t/ha, Organic herbicide 300 g/l)	3.00 a	8.07 b	14.73 b
9	I(Manure 15 t/ha, Organic herbicide 0 g/l)	2.67 a	7.87 b	15.60 b
10	J(Manure 15 t/ha, Organic herbicide 100 g/l)	2.73 a	8.27 b	14.33 b
11	K(Manure 15 t/ha, Organic herbicide 200 g/l)	2.87 a	8.40 b	15.27 b
12	L(Manure 15 t/ha, Organic herbicide 300 g/l)	2.80 a	9.07 b	14.67 b

Note: The average number is accompanied by the same letters in the same column, showing no significant difference based on the Scott-Knott Cluster Test at 5% significance level.

In Table 2 it can be seen that the combination of quantities of chicken manure and the concentration of organic herbicides has a significant effect on the number of leaves of cucumber plants in each observation period. The provision of chicken manure with a dose of 15 t / ha and 10 t / ha combined with various concentrations of organic herbicides produces an average number of leaves more than the provision of chicken manure 5 t / ha at the age of 28 DAP.

The number of plant leaves based on variance shows that the treatment of chicken manure dosages has a very significant effect on the number of leaves of cucumber plants. This is consistent with the opinion that chicken manure contains nitrogen three times more than other animal manure [12]. This content can increase growth and development of the number of plant leaves more than any other manure.

At 21 DAP and 28 DAP the treatment showed significant differences. This is due to the higher dosage of herbicide given, the relatively small growth of weeds. Cucumber plants that grow in conditions where the land is overgrown with weeds cannot photosynthesize optimally. This is in accordance with Jumin, that if a plant is stressed by water, temperature, light or nutrients, it will disturb the plant growth [13]. Therefore, the amount of herbicide dose is very influential on the level of suppression of weeds that ultimately affect the growth of cucumber plants.

C. Number of Fruits per Plant

The results of statistical analysis showed that the treatment of chicken manure and the concentration of organic herbicides had a significant effect on the number of fruits per plant. The results of statistical analysis can be seen in detail in Table 3.

TABLE III. EFFECTS OF MANURE DOSING AND CONCENTRATION OF ORGANIC HERBICIDES ON THE AMOUNT OF FRUIT (FRUIT)

No.	Treatment	Average Amount of Fruit (fruit)
1	A(Manure 5 t/ha, Organic herbicide 0 g/l)	5.33 a
2	B(Manure 5 t/ha, Organic herbicide 100 g/l)	5.83 a
3	C(Manure 5 t/ha, Organic herbicide 200 g/l)	5.83 a
4	D(Manure 5 t/ha, Organic herbicide 300 g/l)	5.58 a
5	E(Manure 10 t/ha, Organic herbicide 0 g/l)	5.83 a
6	F(Manure 10 t/ha, Organic herbicide 100 g/l)	6.25 a
7	G(Manure 10 t/ha, Organic herbicide 200 g/l)	6.50 b
8	H(Manure 10 t/ha, Organic herbicide 300 g/l)	6.92 b
9	I(Manure 15 t/ha, Organic herbicide 0 g/l)	6.50 b
10	J(Manure 15 t/ha, Organic herbicide 100 g/l)	6.67 b
11	K(Manure 15 t/ha, Organic herbicide 200 g/l)	7.08 b
12	L(Manure 15 t/ha, Organic herbicide 300 g/l)	7.25 b

Note: The average number is accompanied by the same letters in the same column, showing no significant difference based on the Scott-Knott Cluster Test at 5% significance level.

In Table 3 it can be seen that the high average number of fruits per plant produced by a combination of treatments G, H, I, J, K and L are significantly different from the treatments A, B, C, D, E and F. The average is - the average number of fruits per plant produced by the treatment is due to the increased amount of manure so that there are enough nutrients available.

This shows, that by giving chicken manure 15 t / ha and the concentration of 300 g / l organic herbicide is sufficient to produce a large amount of fruit. This is due to the provision of chicken manure reaching 15 t / ha, the plant nutrient needs in particular have been met for growth. The higher the dose of fertilizer, the amount of nutrients (such as N, P, K, and organic matter) that affect soil characteristics becomes higher so that it allows an increase in soil pH, total N content and P available soil [14].

D. Fruit Diameter and Fruit Length Per Plant (cm)

Statistical analysis showed that the treatment of chicken manure dosage and concentration of organic herbicides had a significant effect on fruit length per plant but did not significantly affect fruit diameter per plant. The results of statistical analysis can be seen in detail in Table 4.

TABLE IV. EFFECTS OF MANURE DOSING AND CONCENTRATION OF ORGANIC HERBICIDES ON FRUIT DIAMETER (CM) AND FRUIT LENGTH (CM)

No	Treatment	Diameter (cm)	Length (cm)
1	A(Manure 5 t/ha, Organic herbicide 0 g/l)	3.37 a	22.38 a
2	B(Manure 5 t/ha, Organic herbicide 100 g/l)	3.41 a	23.18 a
3	C(Manure 5 t/ha, Organic herbicide 200 g/l)	3.25 a	23.31 a
4	D(Manure 5 t/ha, Organic herbicide 300 g/l)	3.31 a	22.37 a
5	E(Manure 10 t/ha, Organic herbicide 0 g/l)	3.30 a	22.88 a
6	F(Manure 10 t/ha, Organic herbicide 100 g/l)	3.42 a	23.27 a
7	G(Manure 10 t/ha, Organic herbicide 200 g/l)	3.45 a	23.80 a
8	H(Manure 10 t/ha, Organic herbicide 300 g/l)	3.58 a	24.37 b
9	I(Manure 15 t/ha, Organic herbicide 0 g/l)	3.40 a	23.86 a
10	J(Manure 15 t/ha, Organic herbicide 100 g/l)	3.51 a	24.40 b
11	K(Manure 15 t/ha, Organic herbicide 200 g/l)	3.50 a	25.03 b
12	L(Manure 15 t/ha, Organic herbicide 300 g/l)	3.48 a	25.59 b

Note: The average number is accompanied by the same letters in the same column, showing no significant difference based on the Scott-Knott Cluster Test at 5% significance level.

From Table 4 shows that fruit length per plant was significantly different in the treatments H, J, K and L gave longer results compared to treatments A, B, C, D, E, F, G and I. These conditions indicate that the treatment the dose of chicken manure and the concentration of organic herbicide affect the length of fruit per plant, but different from the observation of the diameter of fruit per plant did not significantly affect each treatment. This could be due to genetic factors, nutrient availability, water and plant growth environment is less supportive. Fruit size seems to be more controlled by genetic factors (internal factors) than environmental factors [15].

E. Fruit Weight per Plant and Per Plot

The results of statistical analysis showed that the treatment of chicken manure and the concentration of organic herbicides had a significant effect on fruit weight per plant and per plot. The results of statistical analysis can be seen in detail in Table 5.

TABLE V. EFFECTS OF MANURE DOSING AND CONCENTRATION OF ORGANIC HERBICIDES ON FRUIT WEIGHT PER PLANT (KG) AND PER PLOT (KG)

No	Treatment	Average Fruit Weight	
		Per Plant (kg)	*Per Plot (kg)*
1	A(Manure 5 t/ha, Organic herbicide 0 g/l)	1.08 a	12.00 a
2	B(Manure 5 t/ha, Organic herbicide 100 g/l)	1.29 a	12.28 a
3	C(Manure 5 t/ha, Organic herbicide 200 g/l)	1.41 b	10.85 a
4	D(Manure 5 t/ha, Organic herbicide 300 g/l)	1.43 b	10.53 a
5	E(Manure 10 t/ha, Organic herbicide 0 g/l)	1.54 b	10.46 a
6	F(Manure 10 t/ha, Organic herbicide 100 g/l)	1.53 b	10.39 a
7	G(Manure 10 t/ha, Organic herbicide 200 g/l)	1.71 c	12.15 a
8	H(Manure 10 t/ha, Organic herbicide 300 g/l)	1.83 c	12.36 a
9	I(Manure 15 t/ha, Organic herbicide 0 g/l)	1.88 c	12.17 a
10	J(Manure 15 t/ha, Organic herbicide 100 g/l)	1.77 c	12.54 a
11	K(Manure 15 t/ha, Organic herbicide 200 g/l)	1.93 c	14.46 b
12	L(Manure 15 t/ha, Organic herbicide 300 g/l)	2.05 c	13.67 b

Note: The average number is accompanied by the same letters in the same column, showing no significant difference based on the Scott-Knott Cluster Test at 5% significance level.

Table 5 shows that the average weight of fruit per plant produced by a combination of treatments G, H, I, J, K, L is significantly different from treatments A and B. The high average fruit weight per plant produced by the treatment due to plant height, number of leaves, fruit length and fruit diameter better.

While the high average fruit weight per plot was produced by a combination of treatments K and L that were significantly different from treatments A, B, C, D, E, F, G, H, I and J. If the fruit weight per plant in the treatment better, then it will directly affect the weight per plot.

The high fruit weight per plant and per plot produced has also been reflected in better vegetative growth, better fruit length and higher number of fruits. Thus to produce high fruit weights per plant and per plot required with sufficient manure

This is in accordance with Cahyono opinion that organic fertilizer can increase the binding capacity of the soil against nutrients present in the soil or given through inorganic fertilizer, so that it is not easily washed and subsequently can stimulate better growth and produce a higher fruit weight. Higher [16].

Table 5 shows that all treatments have a significant effect on fruit weight per plant compared to treatment A. This is because many weeds compete with cucumber due to the absence of plant-based herbicide treatment. The level of competition of weeds with plants depends on climate factors, varieties, soil conditions, weed density and the length of time the plants grow with weeds [17].

F. Weight of Fresh Weeds per plot

The results of statistical analysis showed that the treatment of chicken manure dosages and the concentration of organic herbicides had a significant effect on the fresh weight of weeds per plot. The results of statistical analysis can be seen in detail in Table 6.

TABLE VI. EFFECT OF MANURE DOSING AND CONCENTRATION OF ORGANIC HERBICIDES ON THE WEIGHT OF FRESH WEEDS PER PLOT (KG).

No	Treatment	Average Weight of Fresh Weeds Per Plot (kg)
1	A(Manure 5 t/ha, Organic herbicide 0 g/l)	1.63 b
2	B(Manure 5 t/ha, Organic herbicide 100 g/l)	1.07 a
3	C(Manure 5 t/ha, Organic herbicide 200 g/l)	0.93 a
4	D(Manure 5 t/ha, Organic herbicide 300 g/l)	0.67 a
5	E(Manure 10 t/ha, Organic herbicide 0 g/l)	1.37 b
6	F(Manure 10 t/ha, Organic herbicide 100 g/l)	0.87 a
7	G(Manure 10 t/ha, Organic herbicide 200 g/l)	0.83 a
8	H(Manure 10 t/ha, Organic herbicide 300 g/l)	0.70 a
9	I(Manure 15 t/ha, Organic herbicide 0 g/l)	1.90 b
10	J(Manure 15 t/ha, Organic herbicide 100 g/l)	0.93 a
11	K(Manure 15 t/ha, Organic herbicide 200 g/l)	0.80 a
12	L(Manure 15 t/ha, Organic herbicide 300 g/l)	0.72 a

Note: The average number is accompanied by the same letters in the same column, showing no significant difference based on the Scott-Knott Cluster Test at 5% significance level.

In Table 6 it can be seen that the high average fresh weed weights per plot produced by a combination of treatments A, E and I were significantly different from the treatments B, C, D, F, G, H, J, K, L. The higher of the average fresh weight of weeds per plot produced by the treatment is due to the presence of sufficient nutrients and no treatment of plant-based herbicides. Judging from the results of fresh weed weights at harvest the highest average is owned by treatments A, E and I compared with other treatments.

This is consistent with Moenandi opinion that weeds that are allowed to grow on plants can reduce yield [18]. Competition or competition between weeds and plants cultivated occurs in terms of absorption of nutrients and water from the soil, the reception of sunlight for photosynthesis, and space for growth.

Based on Table 6, weights per plot showed a significant difference. All those treated with plant-based herbicides gave fresh weed weights very low compared to the control treatments (0 g / l). This is because weed control does not mean that it has to eradicate all the weeds in the land, but rather enough to suppress weed growth and reduce its population to a level that is not detrimental or still within the economic threshold.

G. Correlation Analysis

Pearson Product Moment correlation test results between the components of plant height growth age 14, 21, 28 DAP and the number of leaves per plant age 14, 21, 28 DAP on the yield component of fruit weight per plot. The results of correlation analysis can be seen in detail in Table 7.

TABLE VII. CORRELATION ANALYSIS BETWEEN GROWTH COMPONENTS AND RESULTS

Variable	Fruit Weight Per Plot		
	Coefficient r	*Sig. (2-failed)*	*Conclusion*
Plant Height 14 DAP	0,349	0,037	Real
Plant Height 21 DAP	0,295	0,081	Not Real
Plant Height 28 DAP	0,333	0,047	Real
Number of Leaves 14 DAP	0,417	0,011	Real
Number of Leaves 21 DAP	0,550	0,001	Real
Number of Leaves 28 DAP	0,416	0,012	Real

Note: positive or negative indicates the direction of the relationship (correlation)

Based on Table 7 shows that the relationship between plant height at the age of 21 DAP with fruit weight per plot shows no significant correlation. A positive correlation occurred between the number of leaves at the age of 21 DAP with the weight of fruit per plot, this is indicated by the value of the coefficient r 0550 (medium correlation). However, plant height at 21 DAP did not show a real correlation.

With a large number of leaves can produce a high fruit weight per plot. The number of leaves aged 21 DAP with fruit weight per plot shows a positive correlation, this means that increasing the number of leaves aged 21 DAP will increase fruit weight per plot. Thus the higher the number of cucumber plants the more leaves and in turn the results will be higher. This is in accordance with Haryadi opinion, a good vegetative phase becomes a benchmark of good results [19].

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

- The amount of chicken manure and the concentration of organic herbicides significantly affect plant height (14, 21 and 28 DAP), number of leaves (21 and 28 DAP), fruit length, fruit weight per plant and per plot, fresh weed weight per plot.
- The treatment of chicken manure dosages and concentrations of organic herbicides produce high fruit weight per plot produced by a combination of 15 t / ha chicken manure combined with 200 g / l organic herbicide, namely: 14.46 kg / plot. The lowest fresh weed weights per plot were produced by a combination of 5 t / ha chicken manure combined with 300 g / l organic herbicide that is 0.67 kg / plot.

There is a significant positive correlation between plant height (age 14 and 28 DAP), number of leaves (age 14, 21 and 28 DAP) and fruit weight per plot

B. Recommendations

Based on the conclusions above, the authors can suggest the following:

- Application of 15 t / h manure and 300 g / l organic herbicide concentration can be used for fertilizing and can suppress weed growth in increasing yields in cucumber cultivation.

- Further research should be carried out on the concentration of plant-based herbicides used, because optimal use of plant-based herbicides has not been obtained in suppressing the growth of weeds to increase the yield of cucumber plants.

REFERENCES

[1] P.M. Wijoyo, The More Profitable Cucumber Cultivation. Jakarta: Indonesian Agro Reader, 2012.

[2] U. Sumpena, Intensive Cucumber Cultivation, with Mulch, in a Shift. Jakarta: Self-Help Spreaders, 2008.

[3] R. Sutanto, Organic Agriculture Towards Alternative and Sustainable Agriculture. Yogyakarta: Kansius, 1992.

[4] Suprapto and I.B. Ariba, "The effect of residues of several types of organic fertilizer on the growth and yield of shallots in dry land," [Online] Retrieved from http: www.bptp.jatim deptan.go.id/templates/16 suprapto

[5] Shaykhfani, "The importance of organic matter for soil fertility," Journal of Organic Fertilizer Research, 2000.

[6] V.S. Rao, Principles of Weed Science. California, USA: Science Publishers Inc., 2000.

[7] D. Metusala, Study of Application Time and Dosage of Herbicide Mixture of Atrazine and Mesotrione in Weed Control of Yield and Quality of Corn (Zea mays). Essay. Yogyakarta: Faculty of Agriculture. University of National Development, 2006.

[8] Y. Syawal, Basic Weed Control. Palembang: Publisher of Sriwijaya University, 2011.

[9] Solichatun, "Green Bean Extract (Vigna radiata L.) Allelopathy to Soybean Germination (Glycine max Merr.)," Journal Biosmart, vol. 2, no. 2, pp. 31-26, 2000.

[10] A. Rosmarkam and N.W. Yuwono, The Science of Soil Fertility. Yofyakarta: Kansius, 2002.

[11] B.S. Noeriwan and Noerizal, "Techniques for Execution of Experiments on the Effects of Fertilizer Application on Population of Three Types of Weeds," Technical Bulletin Agriculture, vol. 9, 2004.

[12] M.M.B. Damanik, E.H. Bachtiar, and Fauzi, Soil Fertility and Fertilization. USU Press, 2011.

[13] H.B. Jumin, Fundamentals of Agronomy. Jakarta: Raja Grafindo Persada, 2005.

[14] M. Tufaila, Y. Yusrina and S. Alam, "The Effect of Cow Manure Bokashi Fertilizer on Growth and Production of Paddy Rice in Ultisol Puosu Jaya, Konda District, South Konawe," Jurnal Agroteknos, vol. 4, no. 1, pp. 18-25, 2014.

[15] B. Lakitan, Fundamentals of Plant Physiology. Jakarta: Rajagrafindo Persada, 2011.

[16] Cahyono, Cucumber Cultivation. Bogor: Bogor Institute of Agriculture, 2003.

[17] S.Y. Jatmiko, S. Harsanti, Sarwoto and A.N. Ardiwinata, Are the herbicides used safe enough?, pp. 337-348 in J. Soejitno, I.J. Sasa and Hermanto (Ed), "The Proceedings of the National Seminar on the Development of the System for the Production of Food Crops with Environmental Insights Center for Research and Development of Food Plants, Bogor," 2002.

[18] J. Moenandir, Introduction to Weed Knowledge and Control (Weed-Book I Knowledge). Jakarta: Rajawali Press, 1993.

[19] S.S. Haryadi, Introduction to Agronomy. Jakarta: Gramedia, 1993.