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An Increasing Sweet Corn Production With Hybrid Compost

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ABSTRACT
This research aims to determine the response of giving vegetable compost and cow urine to the growth and production of sweet corn (Zea mays L). This research was conducted on Jalan Kelambir V, Hamparan Perak District, Deli Serdang Regency. The research method used was a factorial Randomized Group Design (RAK) with 2 treatments. The first treatment is vegetable compost (K) consisting of 4 levels of enrichment, namely K0= 0 kg/ plot, K1= 1 kg/ plot, K2= 2 kg/ plot, K3= 3 kg/ plot. And the second treatment, namely cow urine (U), consists of 4 treatment levels, namely U0= 0 liter/plot, U1= 1 liter/plot, U2= 2 liters/plot, U3 = 3 liters/plot. The parameters observed were stem diameter (mm), leaf area (cm), fruit length per sample (g), production per sample (g), and production per plot (g). The results of the treatment of giving vegetable compost fertilizer had no significant effect on the parameters, namely stem diameter (mm), leaf area (cm), production per sample (g), and production per plot (g), but had a significant effect on fruit length per sample (g). Meanwhile, cow urine had no significant effect on stem (mm), leaf area (cm), fruit length per sample (g), production per sample (g), and production per plot (g). The interaction between the application of vegetable compost fertilizer and cow urine had no significant effect on stem (mm), leaf area (cm), fruit length per sample (g), production per sample (g), and production per plot (g).

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INTRODUCTION

Corn is a plant that is quite important for human life, especially in Indonesia. This is because corn is the second food crop commodity after rice. Sweet corn (Zea mays L.) has been known in Indonesia for a long time. This sweet corn in North Sulawesi, especially Manado, is consumed by the public in the form of roasted corn, boiled corn and cake snacks. Apart from these three products, sweet corn is also used by the community as an ingredient in the typical food of Minahasa and Manado, namely Tinutuan. Survey results in several places that usually serve Tinutuan food stated that Tinutuan mixed with sweet corn has a better taste because it tastes sweeter compared to Tinutuan which does not use sweet corn (Syukur, 2013).

Sweet corn (Zea mays L.) or better known as Sweet corn is one of the most popular horticultural commodities in the United States and Canada. Sweet corn became known in Indonesia since the 1970s (Syukur, 2013). Sweet corn is increasingly popular with the public because it has a sweeter taste, more fragrant aroma and higher nutritional content.

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Sweet corn is usually served in the form of boiled corn, grilled corn, corn sugar, corn milk, cakes and corn chips. Sweet corn is also very good for consumption by diabetics because it contains low levels of sugar and fat.

Sweet corn has a sugar content 48 times higher than regular corn, namely containing 12-14% sugar content, while regular corn only has 2-4%. Not only that, sweet corn turns out to have better nutritional value compared to regular corn, that is, every 100 grams of wet edible sweet corn contains 96 calories; 3.5 grams of protein; 1.0 grams fat; 22.8 grams of carbohydrates; 3.0 mg potassium; 0.7 mg iron; 111.0 mg phosphorus; 400 SI vitamin A; 0.15 mg B vitamins; 12 mg vitamin C and 0.727% water (Abdulrachman et al., 2011).

The nutritional content and sweet taste of sweet corn causes market demand for this commodity to be quite high, but sweet corn productivity has not been able to meet this demand. Listyobudi (2011) stated that sweet corn productivity in Indonesia is still low compared to other countries, especially the United States and Australia, which are capable of producing 7-10 tonnes/ha.

The wider the public's knowledge of the sweet corn plant, the greater the public's demand for this sweet corn plant. The increasing demand for sweet corn is not balanced by the production of sweet corn. Sweet corn productivity in Indonesia averages 8.31 tons per ha. Meanwhile, the potential yield of sweet corn for the 2 Kumala F1 varieties can reach 13-15 tons per ha and the Bonanza F1 variety can reach 33-34.5 tons per ha. Sweet corn production in Indonesia in 2013 was 18,506,287 tons, a decrease of around 670,743 tons compared to sweet corn production in 2012, namely 19,377,030 tons (Soegianto, 2014). Based on data from the Central Statistics Agency in 2011, in 2008-2010 sweet corn exports decreased by 17.25% per year, while sweet corn imports increased by 6.26% per year. This indicates that national sweet corn production has not been able to meet market demand (Paramita, 2013).

Farmers' dependence on the use of inorganic fertilizers is increasing at this time, this can cause various problems in the cultivation of agricultural commodities. A common problem that definitely arises from the above habits is a decrease in soil fertility. Continuous use of chemical fertilizers causes soil hardening. The hardness of the soil is caused by the buildup of chemical fertilizer residues, which makes it difficult for the soil to decompose. The nature of chemicals is that they are relatively more difficult to decompose or destroy compared to organic materials. The harder the soil can make it more difficult for plants to absorb nutrients, the use of higher concentrations of fertilizer to get the same results as the previous harvest, and the process of root distribution and root aeration (breathing) being disrupted results in roots not being able to function optimally and in turn reducing production capacity. these plants (Notohadiprawiro et al., 2010).

Compost is the result of the decomposition of organic materials (Khusmiati, 2011). Providing compost can increase the availability of macro and micro nutrients in the soil. The macro nutrient elements contained in compost include N, P, K, Ca, Mg and S, while the micro nutrient content includes Fe, Mn, Zn, Cl, Cu, Mo, Na and B. Vegetable compost fertilizer is made from - Materials that are easy to obtain are widely available in our environment, making it easier for farmers to obtain and manage them. Apart from that, there

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have been several studies proves that the addition of organic matter to the soil can improve the physical, chemical and biological properties of the soil.

Organic materials are very important for plants, including: helping to retain water, so that soil water availability is better maintained, helping to hold ions, thereby increasing ion exchange capacity or nutrient availability. adding nutrients, especially N, P, and K after the organic material is completely decomposed, helps granulate the soil so that the soil becomes more loose or crumbly, which will improve soil aeration and root system development, as well as stimulate the growth of microbes and other soil animals which really help the material decomposition process. soil organics (Abdulrachman et al., 2011).

Compost is one of the best natural soil and root covers and soil correctors. Compost can be used as a substitute for artificial fertilizer at a very low cost. It is necessary to process solid waste in the form of vegetables. One way to process this solid waste is by making 1 or 2 compost fertilizers. Compost is an important organic fertilizer because it is an organic fertilizer. The use of organics is widely used because it has 3 advantages, namely: benefits for the environment, soil and plants, compost is very helpful in solving environmental problems, especially waste. The raw material for making compost is waste, so the problem of household waste and municipal waste can be overcome. For soil, compost can add nutrients and can improve soil structure and texture, and store water. Thus, the better the quality of the soil and supported by sufficient nutrients, the plants will produce optimal production (Murbandono, 2010).

Compost functions to improve soil structure, soil texture, aeration and increase the soil's water absorption capacity. Compost can reduce the density of clay soil and help sandy soil to retain water, besides that compost can function as a stimulant to improve the health of plant roots. This is possible because compost is able to provide food for microorganisms that keep the soil in a healthy and balanced condition, apart from that, the process of consuming these microorganisms produces nitrogen and phosphorus naturally.

Vegetable compost is a type of organic waste produced from biological materials. Composting products made from vegetable waste are declared safe for use if the organic waste has been completely composted. Indications can be seen from the maturity of the compost which includes temperature, pH, water content, C, N and C/N. The macro nutrient content contained in vegetable compost is C-organic 21.73% -33.66%, N-total 1.84%-2.61%, and C/N ratio 9.97%-14.15% (Paramita, 2013).

Cow urine, which is usually only livestock waste, would be more useful if used as liquid fertilizer for plants. According to Sutedjo (2010), urine in cattle consists of 92% water, 1.00% nitrogen, 0.2% phosphorus and 0.35% potassium. The high nitrogen content in cow urine makes cow urine suitable for use as liquid fertilizer which can provide nitrogen nutrients for plants. Cow urine also contains the nutrient phosphorus which is useful for the formation of flowers and fruit, as well as the nutrient potassium which functions to increase the process of photosynthesis, an activator of various systems.

The results of laboratory studies show that liquid organic fertilizer derived from cow urine meets the requirements as fertilizer, both as a source of macro elements and micro elements. The macro element content includes N, P, K Ca, Mg and S ranging from 101 to

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3,771 Mg, while the micro nutrient content includes Fe, Mn, Cu and Zn ranges from 0.2 to 0.62 Mg.

Literature Review

Stem

Corn plants have stems that are unbranched, cylindrical in shape, and consist of a number of segments and nodes. At the node there are shoots that develop into cobs. The top two shoots develop into productive cobs. The stem has three main tissue components, namely the skin (epidermis), vascular tissue (vascular bundles), and the center of the stem (pith). The vascular bundles are arranged in concentric circles with a high bundle density, and the circles lead to the pericarp near the epidermis. The density of the bundles decreases as they approach the center of the stem. The high concentration of vascular bundles below the epidermis makes the stem resistant to lodging. Corn plants require several weeks to develop from seed to maturity, with an average height of 2 - 3.5 m (Purwono and Hartono, 2011).

Leaf

Corn leaves begin to open after the coleoptile appears above the soil surface. Each leaf consists of a leaf blade, ligula, and leaf midrib which are tightly attached to the stem. The number of leaves is the same as the number of stem nodes. The number of leaves generally ranges from 10 - 18, the average appearance of fully open leaves is 3 - 4 days per leaf. Corn plant leaves can develop up to 20 - 21 leaves, even though corn produces 20 leaves , but only 14 - 15 have completed their vegetative stage (Farnham et al., 2013).

Corn has separate male and female flowers on one plant (monoecious). Male flowers grow at the top of the plant, in the form of a bouquet. The pollen is yellow and has a distinctive aroma. The female flowers are located at the nodes of the corn plant, namely between the stem and the midrib of the leaves in the middle (Purwono and Hartono, 2011).

Cob

Corn plants have 1 or 2 cobs, which depends on the variety. Corn cobs covered with husk leaves. Corn cobs are the development of corn flowers that grow from the node, between the stem and the leaf midrib. In general, one plant can only produce one productive cob even though it has a number of female flowers. Sweet corn seeds are located on the cobs (cobs) which are arranged lengthwise. Each cob consists of 10 - 16 rows of seeds, the number of which is always even (Purwono and Hartono, 2011). Corn kernels are called karyopsis, the ovary wall or pericarp is fused with the seed coat or testa, forming the fruit wallhairs that extend out of the covering (husk). Some superior varieties can produce more than one productive ear (Purwono and Hartono, 2011).

Growing Conditions

The climate and agroecology of sweet corn plantations vary greatly, from lowlands to highlands, on various types of soil, various types of climate and various planting patterns. Corn can grow in areas between 58° N-40° S latitude and the desired temperature for sweet corn plants to grow well is 21°C-30°C (Syukur, 2013). To grow, sweet corn plants require sufficient sunlight and do not require shade. On land that is not irrigated, the growth of corn plants requires rainfall of around 85 mm-200 mm per year. (Gratitude, 2013). Altitude Sweet corn plants have a fairly wide distribution area because they are able to

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adapt well to various environments ranging from lowland to highland with an altitude of 0 m-1,500 m above sea level (Syukur, 2013).

Corn plants can grow in almost all types of soil, from sandy soil to clay, but corn will grow well in soil that is loose and rich in humus with a certain degree of acidity. (pH) of the soil is between 5.5 - 7.5, with a groundwater depth of 50 - 200 cm from the soil surface and a root surface depth (effective soil depth) reaching 20 - 60 cm from the soil surface (Rinekso, 2014).

Vegetable Compost

Fertilizer is a substance that contains one or more elements which is intended to provide nutrients for soil or plants (Lingga, 2010). Using fertilizer for planting is one way to increase sweet corn production. Providing fertilizer to sweet corn cultivation aims to fulfill nutrient deficiencies in the soil and increase growth and development in order to obtain high sweet corn production results (Sutedjo, 2010).

Compost can be made from various organic materials originating from agricultural and non-agricultural waste (Harizena, 2012). Agricultural waste that can be used as compost includes straw, rice bran, peanut shells and sugar cane bagasse. Meanwhile, non-agricultural waste that can be processed into compost comes from organic waste collected from markets and household waste. These organic materials then undergo a composting process with the help of decomposing microorganisms so that they can be utilized optimally on agricultural land. In an open environment, the composting process can take place naturally. Through a natural composting process, these organic materials will decompose over a long time due to the cooperation between microorganisms and the weather. This process can be accelerated by adding decomposing microorganisms so that in a short time good quality compost will be obtained (Widarti, 2015).

Composting products made from vegetable waste are declared safe for use if the organic waste has been completely composted. Indications can be seen from the maturity of the compost which includes temperature, pH, water content, C, N and C/N. The macro nutrient content contained in vegetable compost is organic C 21.73% - 33.66%, total N 1.84% - 2.61%, and C/N ratio 9.97% - 14.15% (Paramita, 2013).

Cow Urine

Cow urine is livestock waste that can be used as liquid fertilizer. Urine has a high N and K content and there is enough P content for plant development. Apart from being able to work quickly, urine apparently contains certain hormones that can stimulate plant development. Urine in cattle consists of 92% water, 1.00% nitrogen, 0.2% phosphorus, and 0.35% potassium (Sutedjo, 2010).

Based on the results of laboratory studies, liquid organic fertilizer derived from vegetable waste starch meets the requirements as fertilizer, both as a source of macro elements and micro elements. The macro element content includes N, P, K Ca, Mg and S ranging from 101 to 3,771 Mg, while the micro nutrient content includes Fe, Mn, Cu and Zn ranges from 0.2 to 0.62 Mg.

The nutrient content in cattle is N 1.00%, P 0.50%, K 1.50%, and water content 92%. Meanwhile, in sheep, N is 1.35%, P is 0.52%, K is 2.10%, and water is 85%. And in goats N1.50%, P 0.30%, K 1.80% and water content of 85% (Huda, 2013). Cow urine contains

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nutrients such as N, P, K, Ca, Mg, which are bound in organic compounds including urea, ammonia, keratinin and keratin. Cow urine has the advantage of having higher nutrient elements compared to cow feces, namely only 0.4% (Indrawaty, 2016).

Fermented cow urine has higher levels of nitrogen, phosphorus and potassium than before fermentation, while organic C levels in fermented cow urine decrease. Rinekso (2014), also stated that cow urine fermented for 15 days had higher N, P and K contents than cow urine fermented for 3, 6, 9 and 12 days or cow urine that was not fermented.

According to research by Soleh (2012), liquid fertilizer can be used after going through several processes for 14 days with indicators that the smell of urea in the urine has reduced or disappeared. The fermentation process is carried out by adding 2% biological agents. According to research by Styorini (2010), the cow urine fermentation process is by mixing 1.25% bamboo roots for 7 days with indicators that the strong odor in the cow urine disappears and the color of the cow urine changes to black.

Research by Sukadana et al., (2013), shows that corn plants given cow urine and organic fertilizer can produce almost twice as many oven-dried seeds compared to plants not given urine and organic fertilizer. This research shows that corn plants that were treated with cow urine had better sweet corn yields compared to plants that were not treated with cow urine fertilizer.

METHOD

This research was conducted Namorambe, Deli Serdang Regency, North Sumatra Province. This research was carried out from November 2023 to February 2024. The materials used in this research were vegetable compost, cow urine, corn seeds of the Bima-1 variety, organic pesticides from tobacco leaves and water.

The tools used in this research were a hoe, measuring tape, gembor, plastic rope, camera, and other research support tools. The method that will be used in this research is a factorial randomized block design (RAK) with 2 treatments.

a. Factor I is the provision of vegetable compost (K) which consists of 4 levels of application, namely:
   K0= Control K1= 1 kg/plot K2= 2 kg/plot K3= 3 kg/plot
b. Factor II is the administration of cow urine (U)
   U0= Control
   U1= 1 liter/plot
   U2= 2 liters/plot
   U3= 3 liters/plot
c. Treatment combinations: 16 combinations.

K0U0	K0U1	K0U2	K0U3
K1U0	K1U1	K1U2	K1U3
K2U0	K2U1	K2U2	K2U3
K3U0	K3U1	K3U2	K3U3

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d. Number of repetitions

(t-1) (n-1)	≥ 15
(16-1) (n-1)	≥15
15 (n-1)	> 15
15 n-15	≥15
15 n	≥ 15+15
15n	≥ 30
n	≥ 30/15
n	≥ 2 .....2 repetitions

The data analysis method used to draw conclusions in this research is the following linear method:

$$Yijk= \mu + pi+ \alpha j+ \beta k+ (\alpha\beta)jk+\varepsilon ijk$$

Information:

Yijk =Observation results in block i, factors for giving vegetable compost at level j, and giving cow urine at level k.
μ =Median value effect.
pi =The i-th block effect
αj = Effect of giving vegetable compost at the jth level
βk = Effect of giving cow urine at the kth level
(αβ)jk = Interaction effect between the factors of giving vegetable compost at the jth level and giving cow urine at the kth level
εijk = Effect of error in block i, factor from giving vegetable compost at level j and factor giving cow urine at level k (Kusriningrum, 2011).

RESULT

Test

Prepare 30 kg of remaining vegetables, 200 ml EM-4, 300 g brown sugar, 10 kg bran, and enough water. Here's how to make compost from vegetable waste using a composter in the form of an old pot. First, chop the compost material into short pieces with a size of 5-7 cm so that the pieces are uniform. Mix the sawdust and bran (can also be husks, dry leaves or soil), and pour in the activated EM-4, then stir until evenly mixed. Mix the compost material into the pot composter, then close it tightly. Repeat these steps every day.

If the compost is blackish brown in color, does not have a strong odor, and is easily crushed (crumbs), it means that the compost can be used as a planting medium. One factor that really determines temperature is the height of the pile. Land piles that are too low will result in rapid heat loss. This is because there is not enough material to retain the heat released so that microorganisms will not develop naturally. The ideal temperature during the composting process is around 40°C-50°C.

Preparation of Cow Urine

Cow urine was obtained from cattle breeders in the area around the research. 50 L of cow urine is provided. Where the cow urine is cooled for 14 days without any treatment. 8 liters. The tools used are buckets, jerry cans, filters and spoons. Chop the 300 grams of

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tobacco leaves that have been provided, then soak them in 8 liters of water. After the solution is mixed thoroughly, leave the solution for 1-2 nights. Strain the solution, then spray it evenly on the plants. The ingredients used are 300 grams of tobacco leaves and water.

The land used for research is flat land and close to water sources. The land must be cleaned of weeds growing on it, as well as existing rubbish and twigs. Next, weeds and twigs are removed and burned so that they do not become a home for pests or disease. The purpose of clearing land is to prevent pest attacks and suppress competition with weeds in absorbing nutrients that may occur. The soil is hoeed and turned over. The purpose of soil turning is to improve soil aeration. The soil that is turned over is left for 2 weeks with the aim of killing disease-causing pathogens, as well as providing good air for the soil.

The soil is processed by hoeing, then the soil is turned over and the second stage of soil processing is carried out, then experimental plots are made with a size of 150 cm x 100 cm with a distance between plots of 50 cm and between repetitions is 100 cm with a bed height of 30 cm. 32 plots were made consisting of 2 replications, and each replication consisted of 16 experimental plots.

Bar Diameter (Cm)

Data measuring the average diameter of the rod as a result of giving compost vegetables and urine from cows aged 3 WAP to 7 WAP are shown in appendix 1.3, and 5. The research results after statistical analysis show compost fertilizer vegetables had no significant effect on stem diameter at 3, 5, and 7 WAP. Results Research after statistical analysis shows that cow urine has an effect not significant for stem diameters 3, 5, and 7 WAP. Results of research after statistically analyzed showed the interaction of vegetable compost and cow urine no significant effect on stem diameter at 3, 5, and 7 WAP**,** Results of the average stem diameter at 3 WAP to 7 MST consequence giving vegetable compost and cow urine after testing the average difference with using the DMRT Test as seen in Table 1.

Table 1. Data on the average stem diameter (cm) of corn plants based on the provision of vegetable compost and cow urine aged 3, 5 and 7 WAP

Treatment	Bar Diameter (Cm)		
	3 WAP	5 WAP	7 WST
Vegetable Compost			
K0 = Control	1.44 AA	1.77 aA	2.23 aA
K1 = 1kg/ Plot	1.45 aA	1.80 aA	2.24 aA
K2 = 2kg/Plot	1.46 aA	1.81 aA	2.25 aA
K3 = 3kg/ Plot	1.47 aA	1.83 aA	2.26 aA
Cow Urine			
U0 = Control	1.43 aA	1.78 aA	2.23 aA
U1 = 1liter/ Plot	1.45 aA	1.79 aA	2.24 aA
U2 = 2liter/ Plot	1.46 aA	1.80 aA	2.25 aA
U3 = 3 liters/ Plot	1.48 aA	1.83 aA	2.27 aA

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In Table 1 it can be seen that the application of vegetable compost fertilizer to plants had no significant effect at 3, 5 and 7 WAP on stem diameter. The highest crop yields were obtained at 7 WAP in treatment K3namely 2.26 cm and the lowest in treatment K0namely 2.23. In the treatment of giving cow urine, the effect was not significant at 3, 5 and 7 MST to stem diameter. Where the tallest plants were obtained at age 7 MSTin U treatment 3 namely 2.27 and the lowest is U0namely 2.23.

Leaf Area (Cm^3)

Data on measuring the average area of plant leaves resulting from the application of vegetable compost and cow urine from the age of 3 WAP to 5 WAP are shown in appendices 7 and 9. The results of the research after statistical analysis showed that the effect of providing vegetable compost had no significant effect on leaf area at 3 and 5 WAP. The results of the research after statistical analysis showed that the effect of giving cow urine had no significant effect on leaf area at 3 and 5 WAP. The results of the research after statistical analysis showed that the interaction of vegetable compost and cow urine had no significant effect on leaf area at 3 and 5 WAP. The average results of plant leaf area at the age of 3 WAP to 5 WAP due to the application of vegetable compost and cow urine after being tested for average differences using the DMRT Test can be seen in Table 2.

Table 2. Data on average leaf area (cm^3) Corn Plants Based on Giving Vegetable Compost and Cow Urine Aged 3 and 5 WAP.

Treatment	Leaf Area (cm)	
	3 WAP	5 WAP
Vegetable Compost		
K0 = Control	102.13 aA	315.00 aA
K1 = 1kg/ Plot	102.75 aA	320.00 aA
K2 = 2kg/Plot	103.00 aA	321.20 aA
K3 = 3kg/ Plot	103.13 aA	323.20 aA
Cow Urine		
U0 = Control	101.25 aA	315.80 aA
U1 = 1liter/ Plot	103.13 aA	319.60 aA
U2 = 2liter/ Plot	103.25 aA	320.00 aA
U3 = 3 liters/ Plot	103.38 aA	324.00 aA

In Table 2 it can be seen that the provision of compost fertilizer vegetables no significant effect on leaf area from 3 WAP to 5 WAP. For results the highest plants were obtained at the age of 5 WAP in treatment K3namely 323.20 and the lowest is K0which is 315.00. And in the treatment of giving cow urine there was no significant effect on 3, and 5 WAP on leaf area. Where the highest results were obtained at the age of 5 WAP in treatment U3namely 315, 80 and the lowest in treatment U0which is 324.00. And in the treatment of giving cow urine there was no significant effect on the length of the plant fruit. Where the highest results were obtained in the U treatment3namely 20.33 and the lowest is U0namely 19.78.

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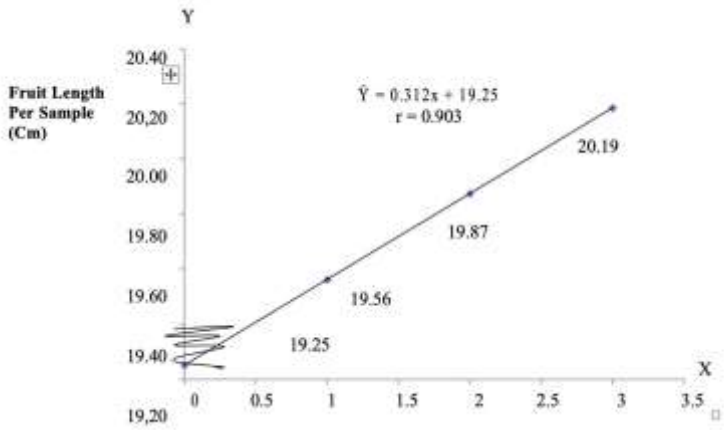

Figure 1. Relationship between fruit length and vegetable compost

In the figure 1 above, it can be seen that the higher the dose of vegetable compost given, the longer the fruit of the sweet corn plant will be. Data measuring the average production per sample (g) due to the application of vegetable compost and cow urine is shown in Appendix 13. The results of the research after statistical analysis showed that the provision of vegetable compost had no significant effect on production per sample.

The Effect of Providing Vegetable Compost Fertilizer on the Growth and Production of Sweet Corn (Zea mays L)

From the research results after statistical testing, it was found that the provision of vegetable compost had no significant effect on the observation parameters of stem diameter (mm), leaf area (cm), production per sample (g) and production per plot (g). This is thought to be because the vegetable compost has not decomposed completely so that plant growth is less than optimal, which causes plant production to be less than optimal. Apart from that, as the age of the plant increases, nutrient requirements also increase. This is in line with previous research conducted by Djunaedy (2019), which reported that young plants will be able to absorb nutrients in small amounts in line with plant age, the speed of plant nutrient absorption will increase as age increases according to their life cycle. The quality of life of plants also depends greatly on the adequacy of nutrients from their environment and the ability of the roots to absorb nutrients to support the vegetative phase of the plant. Mulyono (2014), states that a lack of nitrogen can cause slow plant growth and plants become stunted.

When observing plant production, results were also obtained that had no real effect, this occurred because there was a lack of P and K nutrients in the soil which caused the flowers to fall off easily and the results obtained were not optimal, this is in accordance with Susetya's statement (2014) One of the functions of potassium for plants is to prevent flowers and fruit from falling off easily. Fruit filling greatly influences availability.

Interaction Between Giving Vegetable Compost Fertilizer and Cow Urine on the Growth and Production of Sweet Corn (Zea mays L)

From the statistical test results obtained by the interaction between giving vegetable compost and cow urine, results were not significant for each parameter of stem diameter

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(mm), leaf area (cm), fruit length per sample (cm), production per sample (g) and production. per plot (g), this happens because each fertilizer works at its own time so interactions cannot occur. The absence of interaction between vegetable compost and cow urine makes it difficult for plants to obtain the nutrients N, P and K provided by this organic fertilizer. This causes plants to become deficient in the nutrient N and causes plant growth to be less than optimal. This is in line with research conducted by Sutresnawan (2012) which states that nitrogen is needed to stimulate vegetative growth, increase leaf size and increase chlorophyll content.

This is thought to be because the treatment of corn plants does not have a mutually influencing relationship, so that each affects each other separately. This is in accordance with the opinion of Steel and Torrie (2011) that the different interaction effects are not significant, it can be concluded that the treatment factors act independently of each other.

Awodun et al., (2017) stated that vegetable compost and cow urine can increase the availability of nutrients in the soil, plant growth and yield, because vegetable compost and cow urine are effective sources of N, P, K and Mg and organic matter. for plants. However, this is not in line with previous research conducted by Rohmawati (2015) which stated that increasing nutrient content cannot directly increase the fruit weight of eggplant plants. So the number of fruit and fruit weight are less than optimal.

CONCLUSION

After statistical analysis, the results of the research showed that the application of vegetable compost had no significant effect on the parameters, namely stem diameter (cm), leaf area (cm^3), production per sample (g), but had a significant effect on fruit length per sample (cm). The best production results were in the K3 treatment with a dose of 3 kg/ plot. The research results after statistical analysis showed that giving cow urine had no significant effect on all observation parameters. The research results after statistical analysis. The interaction between vegetable compost and cow urine had no significant effect on all observed parameters.

REFERENCES

Abdulrachman A, Dariah A, Mulyani A. 2013. Dry land management strategies and technology to support national food procurement. Journal of Agricultural Research and Development 27(2):43-49.

Asmaq, N., & Marisa, J. (2020). Physical and organoleptic characteristics of fresh milk in Medan Sunggal. Indonesian Animal Science Journal (Indonesian Journal of Animal Science), 22(2), 168-175.

Awodun, MA, Ll Omonijo and SO Ojeniyi. 2017. Effect of Goat Dung and NPK Fertilizer on Soil and Leaf Nutrient Content, Growth and Yield of Pepper. International Journal of Soil Science. 2 (2) : 142 – 147.

Azhar, MA, I. Bahua, and FS Jamin. 2013. Effect of Providing Pelangi NPK Fertilizer on Growth and Production of Eggplant Plants (Solanum melongena L.). Bone Bolango.http://docplayer.info/46653243-Influence-fertilizer applicationnpkrainbow-

on-plant-growth-and-production-of-eggplant solanum melongena-l.html (Accessed on 24 July 2019).

Farnham, J. Puspadewi, SW Sutari and Kusmiati. 2013. The Effect of NPK Fertilizer Concentration on the Growth and Production of Sweet Corn Plants. Takenta cultivar. Journal of Agriculture. 1(4):198-205.

Harizena, D. 2012. Organic Cultivation Methods for Sweet Corn Plants. Poor. Agrisystems Journal. 2(2):97-101.

Harjadi, MS 2011. Introduction to Agronomy.PT. Gramedia, Jakarta.

Huda, M, K. 2013. "Making Liquid Organic Fertilizer from Cow Urine with Additives of Molasses (Molasses) Fermentation Method". Thesis.

Indrawati R. (2016). Influence of Media Composition and Hydroponic Nutrient Levels. On the Growth and Yield of Tomatoes (Lycopersicon esculentum Mill). Faculty of Agriculture. Gadjah Mada University. Yogyakarta.

Johan, S. 2010. The Effect of Types of NPK Fertilizer and Types of Varieties on the Growth and Yield of Purple Eggplant Plants. Thesis. Eleven March University. Surakarta.

Jhunaidy, LHS, 2010. Making Compost. Self-Help Spreader, Jakarta.

Khusmiati. 2011. Analysis of the Impact of Integrated Pest Management Community Communication on Highland Vegetable Farmers in Cianjur Regency. Thesis. IPB: Bogor.

Lakitan, B. 2011. Basics of Plant Physiology. Raja Grafindo Persada. Jakarta.

Lingga, D. 2010. Complete Guide to Making Organic Fertilizer. Bandung. Listyobudi, RV 2011. Herbicide treatment in a no-till system against

growth, yield and quality of sweet corn (Zea mays saccharata sturt). Thesis. Yogyakarta. Faculty of Agriculture, National Development University.

Marisa, J., & Sitepu, S.A. (2019, July). Profit analysis of broiler chicken business in Beringin Village, STM Hilir District, Deli Serdang Regency. In IOP Conference Series: Earth and Environmental Science (Vol. 287, No. 1, p. 012037). IOP Publishing.

Mulyono. 2014. Making MOL and Compost from Household Waste. Jakarta: PT AgroMedia Pustaka.

Murbandono, 2010. Making Compost. Jakarta: Self-help publisher.

Notohadiprawiro, Soeprapto and E. Susilowati. 2010. Soil Fertility Management and Fertilizer Efficiency. Yogyakarta: UGM Soil Science.

Paramita, 2013. Cultivation of Yasaguna Sweet Corn Plants. Bogor.

Parda, AS2014. Liquid Organic Fertilizer: Applications and Benefits. Agromedia Library. Bandung.

Trust. 2013. Planting chili peppers. Canisius. Yogyakarta.

Purwono, M. and Hartono, R. 2011. Planting sweet corn. Self-Help Spreader. Bogor. 68 p.

Putra, A., Ismail, D., & Lubis, N. (2018). Technology of Animal Feed Processing (Fermentation and Silage) in Bilah Hulu Village, Labuhan Batu Regency. Journal of Scientific Transfer, 1(1), 41-47.

Rinekso, H. 2014. The Effect of Various Liquid Organic Fertilizers. Agrisystems Journal.5(2): 115-122.