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The Effect Of Giving Cow Manure And Liquid Organic Fertilizer On Growth And Production Sweet Corn Plant (*Zea mays Saccharata* Sturt.)

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Abstract. *The research aims to determine red onion plants' growth and production response (Allium cepa L.) on Planting Distance Treatment and Eco enzyme Concentration. This study used a Randomized Block Design (RBD) with two treatment factors. The first factor is the Planting Distance treatment consisting of 3 levels, namely J1 = 15 cm x 15 cm, J2 = 20 cm x 15 cm, and J3 = 25 cm x 15 cm. The second factor is the Eco enzyme Concentration, consisting of 3 levels, namely E1 = 0.8 ml ee / 240 ml water, E2 = 1.6 ml ee / 240 ml water, and E3 = 2.4 ml ee / 240 ml water. The study results showed that the Planting Distance treatment significantly affected root length and tuber diameter per sample. However, they had no significant effect on fresh tuber weight on the growth and production of shallots. The Eco enzyme concentration treatment had no significant effect on all observation treatments. The interaction between Planting Distance and the Eco enzyme concentration had no significant effect on all observation treatments.*

Keywords: *Eco Enzyme Concentration, Planting Distance, Shallots.*

1. INTRODUCTION

Sweet corn (Zea mays Saccharata Sturt) is one of the most popular food commodities compared to regular corn because of its sweet taste. BPS data (2021) shows that national corn productivity reached 54.74 kg/ha. National corn production for the 2018-2021 experienced an average growth of 3.97%/year, while consumption and seed needs increased by 6.09%/year. In recent years, the need for corn has continued to increase along with the increasing population growth rate and the increasing need for feed. Based on data from the North Sumatra Central Statistics Agency (2021), sweet corn production has fluctuated over the past five years. In 2017, it was 1,741,257 tons, in 2018, it was 1,710,784 tons, in 2019, it was 1,960,424 tons, in 2020, it was 1,965,444 tons, and in 2021, sweet corn production was 1,724,398 tons.

Sweet corn is generally eaten boiled, grilled, fried, and in soups and puddings. In addition to its taste, sweet corn has important nutrients for the body (Mikael & Nurhadiah, 2023). Every 100 grams of sweet corn contains 16% glucose; the high glucose content in sweet corn makes it taste sweeter than other types of corn, so it is called sweet corn. Almost all parts of the sweet corn plant can be used, including young stems and leaves for animal feed, old stems and leaves can be used to make compost and fertilizer, green, dry stems and leaves for firewood (Hawayanti et al., 2021). The high nutritional value, utilization, and sweet taste cause high demand for sweet corn. However, the high demand is not balanced by its availability because production is still low. One effort to increase sweet corn production is to improve soil fertility

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by adding nutrients through fertilization.

Manure is an example of an organic fertilizer containing macronutrients N, P, and K, and can improve the soil's physical, chemical, and biological properties (Oktasari, 2022). Cow manure provides a place for soil organisms to live and develop well, increases the availability of water and nutrients, and promotes plant growth and production (El Hasanah & Isfianadewi, 2019).

Cow manure is needed in sweet corn plants to increase the soil's ability to store water. It will later function to mineralize organic matter into nutrients that plants can use directly during their growth period. Cow manure contains high levels of cellulose and provides macro and micro nutrients for plants; cow manure can increase the availability of essential plant nutrients and increase the diversity and activity of microorganisms in the rhizosphere area. Cow manure contains essential nutrients to support plant height growth. These essential nutrients are Nitrogen (N), Phosphorus (P), and Potassium (K). The high N content helps plants maximize the vegetative growth process, such as increasing plant height. In addition, the P nutrient element also helps root development, which increases the nutrient absorption process (Azhary, 2024).

The nutrient composition of cow dung is advantageous for plant nourishment, hence enhancing optimal growth. Cow dung comprises nutrients including Nitrogen (N) at 28.1%, Phosphorus (P) at 9.1%, and Potassium (K) at 20%; these elements can facilitate plant growth (Azhary, F 2024), as noted by Mokh. Bay'ul Maryo Khan, Ahmad Zainul Arifin, and Ratna Zulfarosda (2021). A dosage of 25 tons of bovine dung per hectare can yield a dry plant weight of 10.20 grams. The cob yield per hectare under the treatment of 25 tons/ha of cow dung is 17.09 tons/ha.

Fulfilling the nutritional needs of plants and using solid organic fertilizers requires liquid organic fertilizers. One of the liquid organic fertilizers that can increase sweet corn yields is from banana stems because they contain the nutrients needed by sweet corn plants. Sweet corn plants need to use it, which contains the nutrients C, N, P, and K, which greatly help the growth and yield of sweet corn plants. In addition, liquid organic fertilizers can provide nutrients according to plant needs, and their administration can be more evenly distributed, and their concentration can be adjusted according to plant needs. Liquid organic fertilizers from banana stems can also be easily made, and the raw materials can be found in the surrounding environment.

According to (Harahap et al., 2020) Banana weevils contain carbohydrates (66%), protein, water and important minerals, banana weevils have starch content of 45.4% and protein content of 4.35%, banana stumps contain microbes that decompose organic materials including Bacillus sp., Aeromonas sp., and Aspergillus nigger. The content of EM4 that helps the fermentation process is fermentation bacteria such as Lactobacillus, Actinomycetes, phosphate-solubilizing bacteria, and yeast. Liquid organic fertilizer is used in this service as a fermentation solution derived from banana stump waste.

Based on previous research conducted by (Persada, 2021), the results of the study showed that banana corm poc with a dose of 300 ml/liter of water produced an average corm diameter of 23.69 mm and an average sweet corn weight of 303.80 grams per plant. From the discussion above, the author wants to research The Effect of Providing Cow Manure and Banana Stem pith on the Growth and Production of Sweet Corn Plants (Zea mays Saccharata Sturt).

2. LITERATURE REVIEW

The Role of Cow Manure in Corn

The use of organic fertilizer is one solution to the scarcity of fertilizers. Besides providing nutrients for plants, organic fertilizers can also improve soil structure. One source of organic soil material that is quite widely available is cow manure, which is a complete fertilizer that contains macro and micro nutrients. Physically, cow manure can improve soil structure so that aeration in the soil is better, and can also improve the soil's ability to store water. Chemically, cow manure can increase cation exchange capacity so that nutrients in the soil are readily available, prevent nutrient loss due to the washing process, and contain growth hormones that can stimulate plant growth (Setiono & Azwarta, 2020). Cow manure contains 0.46% N, 0.83% P2O5, and 0.30% K2O (Kurniawan et al., 2017).

Manure consists of solid and liquid excrement from ruminant cattle and poultry. Due to its poor nutrient level, manure's benefits do not stem from its nutritional value. Manure offers advantages by enhancing humus content, improving soil structure, and promoting the longevity of degrading microbes (Zulkarnain, 2009). "Hot fertilizer" refers to a type of fertilizer characterized by its volatility, resulting from the incomplete decomposition of organic matter, which transforms into gas. Hot manure consists of equine, caprine, and ovine excrement. This is due to the presence of several nitrogen compounds in liquid horse dung that facilitate rapid bacterial proliferation. This explains the frequent presence of ammonia gas in equine stables. Hot manure is appropriate for clay soils. Cold manure is manure that decomposes gradually, preventing the generation of heat. Cow, buffalo, pig, and poultry excrement are classified as cold manure. This fertilizer acts gradually. Consequently, it is very suitable for usage as the primary fertilizer (Hidayat and Darwin, 2008).

POC Banana Stem

Liquid organic fertilizer is a type of non-solid liquid fertilizer that is easily dissolved in the soil and carries important elements for soil fertility. Because of its liquid form, plants can easily control the absorption of the required fertilizer composition if the soil has more fertilizer. In fertilization, liquid organic fertilizer is clearly more even; the concentration of fertilizer will not collect in one place, 100% even (Anonymous, 2009). Organic soil materials comprise all layers of plants and animal remains. Organic materials improve soil drainage and air circulation, especially in dense soil. Soil temperature will be more stable with good air circulation and a relatively high water content (Murbandono, 1998). A multitude of investigations on cow urine has revealed that it includes growth stimulants applicable as growth regulators. Indole acetic acid (IAA) is identified as a growth stimulant, and additional research indicates that cow urine also enhances vegetative development in maize plants. Furthermore, the unique scent of bovine urine can safeguard plants against numerous pests (Kurniawan et al., 2017).

Banana stumps are rich in nutrients so that farmers can use banana stumps as liquid organic fertilizer. Some banana stumps have water, fiber, minerals, potassium, phosphorus, and others. Harvested banana stumps can take starch and cellulose, 5-10% starch and 63% cellulose. Banana stumps also have microbes that can fertilize the soil and accelerate composting (Persada, 2021). In addition, liquid organic fertilizers can provide nutrients according to plant needs, their administration can be more evenly distributed, and their concentration can be adjusted according to plant needs. Liquid organic fertilizer from banana stumps can also be easily made, and the raw materials can be found in the surrounding environment. According to Suhastyo (2011), banana stems contain the following nutrients: Carbohydrates 76.57%, Water 18.97%, Fat 2.11%,

3. RESEARCH METHODS

This study used a Factorial Randomized Block Design (RAK) with two treatment factors. The first factor is cow manure consisting of 4 levels, namely K0 = Without cow manure treatment (control), K1 = 1.5 kg / Plot (15 / ton/ha), K2 = 2 kg / Plot (20 tons/ha) K2 = 3 kg / Plot (30 tons/ha). The second factor is liquid organic fertilizer consisting of 3 levels, namely P1 = 250 ml / L water/plot, P2 = 300 ml / L water/plot, P3 = 350 ml / L water/plot. Data analysis was done using variance analysis and Duncan's test. The observational modifier of this study wasthe number of leaves, the weight of cobs without husks per plot, and the weight of cobs without husks per sample.

4. RESULT AND DISCUSSION

RESULT

1. Number of leaves

Observational data regarding the quantity of Sweet Corn leaves at 2, 3, 4, and 5 MST. The variance analysis indicated that the cow dung treatment had a significant impact on the amount of sweet corn leaves at 4 MST. The Liquid Organic Fertilizer treatment and the interaction between Cow Manure and Liquid Organic Fertilizer had no significant effect across all observation ages. Table 1 displays the average quantity of Sweet Corn leaves resulting from the Cow Manure and Liquid Organic Fertilizer treatments.

The table below shows that the highest number of leaves due to Cow Manure treatment at 2 MST was in the K0 treatment, followed by K2, K3, and K1 treatments; the highest number of leaves due to Cow Manure treatment at 3 MST was in the K0 treatment, followed by K3, K1, and K2 treatments. The highest number of leaves due to Cow Manure treatment at 4 MST was in the K3 treatment, followed by K2, K0, and K1 treatments. The highest number of leaves due to Cow Manure treatment at 5 MST was in the K3 treatment, significantly different from the K2, K1, and K0 treatments.

Table 1. Average Number of Sweet Corn Leaves at Ages 2, 3, 4, and 5 MST Effects of Cow Manure and Liquid Organic Fertilizer Treatment

Treatment	Number of Leaves (Shells)			
	2 MST	3 MST	4 MST	5 MST
K0	2.76	6.78	10.68	15.44c
K1	2.62	6.58	10.47	16.10b
K2	2.74	6.24	10.97	16.93b
K3	2.67	5.68	11.30	18.70a
P1	2.70	6.33	10.46	16.00
P2	2.75	6.48	10.93	17.03
P3	2.65	6.15	11.18	17.34
K0P1	2.60	6.93	11.00	15.23
K0P2	2.93	7.27	10.57	15.43
K0P3	2.76	6.13	10.47	15.66
K1P1	2.73	5.93	10.53	16.57
K1P2	2.80	7.13	9.93	15.03
K1P3	2.33	6.67	10.93	16.70
K2P1	2.77	6.20	9.47	14.40
K2P2	2.53	6.07	11.57	18.00
K2P3	2.93	6.47	11.87	18.39
K3P1	2.70	6.23	10.83	17.80
K3P2	2.73	5.47	11.63	19.67
K3P3	2.57	5.33	11.43	18.62

Description: Numbers followed by the same letter in the same column mean they are not significantly different in the Duncan test at the 5% level.

Table 1 also shows that the highest number of leaves due to Liquid Organic Fertilizer Treatment at 2 MST is in the P2 treatment, followed by the P1 and P3 treatments. The highest number of leaves due to Liquid Organic Fertilizer treatment at 3 MST is in the P2 treatment, followed by P1 and P3 treatments. The highest number of leaves due to Liquid Organic Fertilizer Treatment at 4 MST is in the P2 treatment, followed by P1 and P3 treatments. Liquid Organic Fertilizer treatment at 5 MST is in the P3 treatment, followed by P2 and P1 treatments. The interaction of the two treatments on the average number of leaves was obtained in K3P2, followed by K3P3, K2P3, K2P2, K3P1, K1P3, K1P1, K0P3, K0P2, K0P1, K1P2, and K2P1. The relationship between Cow Manure treatment and the number of leaves at 5 MST can be seen in Figure 1.

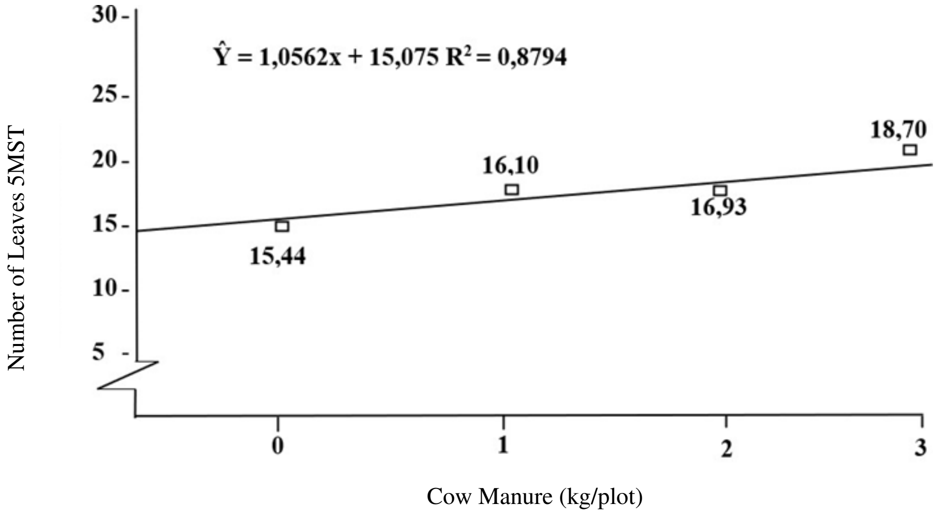

Figure 1: Graph of the Number of Sweet Corn Leaves Due to Cow Manure Treatment

Figure 1 shows that cow manure significantly affects the number of sweet corn leaves, which is indicated by the treatment where the more cow manure is used, the more the number of leaves increases.

2. Weight of the Tuna Without Husk per plot

The analysis of variance for the weight of cob without husk per plot of MST sweet corn indicated that the treatments of cow manure fertilizer, liquid organic fertilizer, and the interaction between cow manure and liquid organic fertilizer did not significantly affect the weight of cob without husk per plot. The mean weight of cob without husk per plot for the cow manure and liquid organic fertilizer treatment is presented in Table 2.

Table 2 Average Weight of Cobs Without Husks per Sweet Corn Plot Due to Cow Manure and Liquid Organic Fertilizer Treatments

	Liquid organic fertilizer			
Cow's Nest	P1	P2	P3	Average
K0	2.16	2.08	2.29	2.18d
K1	2.3	2.32	2.46	2.36c
K2	2.43	2.46	2.5	2.46b
K3	2.65	2.66	2.46	2.59
Average	2.39	2.38	2.43	

Description: Numbers followed by the same letter in the same column mean they are not significantly different in the Duncan test at the 5% level.

Table 2 shows that plants with K treatment 3 have a higher Weight of Corn Without Husk per plot, significantly different from the treatments K2, K1, and K0. The effect of Liquid Organic Fertilizer treatment on the Weight of Corn Without Husk per plot obtained the highest average in the P3 treatment, followed by the P1 and P2 treatments. The interaction of the two treatments on the Weight of Corn Without Husk per plot was highest in K3P2, followed by K3P1, K2P3, K1P3, K2P2, K3P3, K2P1, K1P2, K1P1, K0P3, K0P1, and K0P2. The relationship between the Cow Manure treatment and the weight of corn without husk per plot can be seen in Figure 2

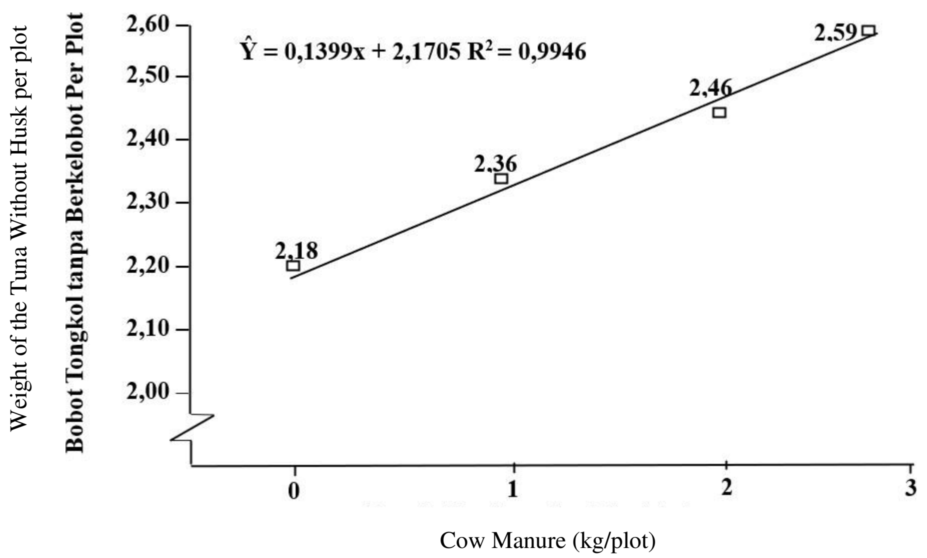

Figure 2: Graph of the weight of cobs without husks per plot of Sweet Corn Due to Cow Manure Treatment

Figure 2 shows that cow manure significantly affects the weight of corn cobs without husks per plot. The results of the study showed that the higher the dose of cow manure, the higher the weight of corn cobs without husks per plot.

3. Weight of Corn Without Husk per sample (gr)

Data on the weight of husked cobs per Sweet Corn sample and its analysis of variance are provided in Appendices 34 to 35. The variance analysis results indicate that the cow dung treatment significantly influences the weight of dehusked cobs. The Liquid Organic Fertilizer treatment and the interaction between Cow Manure and Liquid Organic Fertilizer do not significantly affect the weight of cobs without husks per sample. Table 3 presents the average weight of cobs devoid of husks per sample resulting from the Cow Manure and Liquid Organic Fertilizer treatments.

Table 3 Average weight of cobs without husks per sample of sweet corn (g) due to cow manure and liquid organic fertilizer

	Liquid organic fertilizer			
Cow's Nest	P1	P2	P3	Average
K0	311.77	311.43	312.10	311.77c
K1	313.50	314.58	312.91	313.66b
K2	316.56	315.23	319.17	316.99b
K3	318.90	324.07	319.83	320.93a
Average	315.18	316.33	316.00	

Table 3 shows that plants with K3 have a higher weight of corn cobs without husks per plot, significantly different from treatments K2, K1, and K0. The effect of Liquid Organic Fertilizer treatment on the weight of corn cobs without husks per sample obtained the highest average weight of corn cobs without husks per sample in treatment P2, followed by treatments P3 and P1. The interaction of the twotreatment obtained averagehighest in K treatment3P2followed by K3P3, K2P3, K3P1, K2P1, K2P2, K1P2, K1P1,K1P3,K0P3K0P1and K0P2.

The relationship between Cow Manure Fertilizer treatment and the weight of corn cobs without husks per sample can be seen in Figure 3.

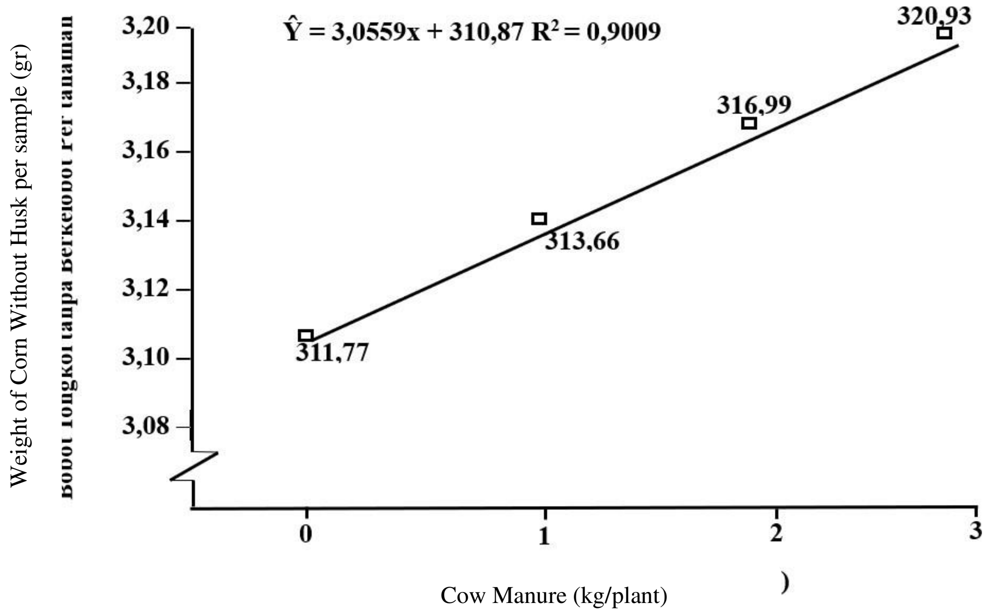

Figure 3: Graph of the weight of cobs without husks per Sweet Corn plant due to Cow Manure Treatment

Figure 3 shows that cow manure significantly affects the weight of the cob without husk per plant. The study's results showed that the higher the dose of cow manure, the heavier the weight of the cob without husk per sweet corn plant.

Discussion

1. **The Effect of Cow Manure on the Growth and Production of Sweet Corn**

The analysis of variance test showed that the Cow Manure treatment significantly increased the number of leaves at the age of 5 MST, the weight of the cob without husk per sample, and the weight of the cob without husk per plot.

The analysis of variance test findings indicated that the application of cow manure significantly influenced the increase in leaf count at 5 weeks after planting (MST), the weight of cobs devoid of husks per sample, and the weight of cobs devoid of husks per plot in sweet corn plants.

Cow manure, rich in organic matter and essential nutrients such as nitrogen, phosphorus, and potassium, has been shown to increase the vegetative growth and yield of corn plants. According to research conducted by (Evanita et al., 2023), the application of cow manure significantly increased the number of leaves in sweet corn at the age of 5 MST, the highest number of leaves was found in the K3 treatment (3 kg/plot) with an average number of leaves of 18.70 strands and the lowest number of leaves was found in the K0 treatment (control) with an average of 15.44 strands. This is due to the high nitrogen content in cow manure, which encourages leaf growth and increases the photosynthetic capacity of plants (Hidayati et al., 2021). In addition to increasing the number of leaves, this study also showed that the weight of cobs without husks per sample and per plot increased significantly with the application of cow manure.

The results of the study showed that the weight of the corn cobs without husks per plant with the highest weight was in the K3 treatment (3 kg/plot), with an average weight of 320.93 g, and the lowest weight was in the K0 treatment (control), with an average weight of 311.77 g. Dini Wahyuni , in her research in 2022, found that the use of cow manure increased the availability of nutrients in the soil, which supported the formation of larger and heavier cobs. The weight of the corn cobs without husks per sample increased because cow manure increased the activity of soil microorganisms, which helped decompose organic matter and increase overall soil fertility (Cahyanto et al., 2022).

The results of the study showed that the treatment of cow manure had a significant effect on the weight of the cob without husk per plot with the heaviest weight in the K3 treatment (3 Kg/plot) with an average weight of 2.59 g and the lowest weight in the K0 treatment (control) with an average weight of 2.18 g. Furthermore, Andi Pratama (2023) also reported that the weight of the cob without husk per plot showed a significant increase with the application of cow manure. Pratama noted that cow manure provides essential nutrients and improves soil structure, allowing plant roots to develop better and increasing nutrient absorption efficiency. This increase in cob weight is an important indicator of increased yields, which benefits sweet corn farmers (Amazihono et al., 2022).

(Khan et al., 2021) added that cow manure positively affects the growth and yield of sweet corn, especially on the number of leaves, weight of cobs without husks per sample, and weight of cobs without husks per plot. This significant effect is due to the nutrient content rich in macro and micro nutrients, including nitrogen, phosphorus, potassium, calcium, magnesium, and sulfur. In addition, cow manure also plays a role in improving soil structure, increasing aeration, and increasing soil water holding capacity, which supports better root development. The organic matter in this fertilizer stimulates the activity of soil microorganisms, helps decompose organic matter, and releases nutrients gradually. Cow manure also increases the cation exchange capacity of the soil, allowing the soil to retain more nutrients and make them available to plants. The long-term effects of this fertilizer provide sustainable benefits to soil fertility and plant growth. These factors contribute to increased leaf number through better vegetative growth, increased cob weight through optimal seed formation and filling, and increased yield per plot due to better overall plant growth and development.

Further research shows that the use of cow manure not only contributes to increased leaf number and cob weight and positively impacts soil quality and overall plant health. According to research by (Salawati et al., 2021), the application of cow manure increases the organic matter content in the soil, which plays an important role in maintaining soil moisture and increasing the soil's ability to store and release nutrients as needed by plants. (Salawati et al., 2021)noted that soil treated with cow manure showed a significant increase in microbiological activity, which helps in the decomposition of organic matter and the release of nutrients that plants can absorb.

In addition, research by (Putri, 2023), found that cow manure helps improve soil structure, increasing aeration and water penetration, which is essential for healthy root growth. (Putri, 2023) noted that corn plants treated with cow manure had better and wider root systems, allowing the plants to absorb more nutrients and water. This increases vegetative growth and supports the formation of larger and heavier cobs, which ultimately increases overall yields(Su'ud & Lestari, 2018). Furthermore, research by (Sulistyowati & Yunita, 2017) showed that cow manure also helps reduce plant stress due to unfavorable environmental conditions.

(Suyanto, 2023) noted that the organic matter content in cow manure helps increase the cation exchange capacity of the soil, allowing plants to more efficiently absorb nutrients even in water or nutrient deficiency conditions. These results indicate that using cow manure increases crop yields under normal conditions and helps plants survive and remain productive in less than ideal environmental conditions.

These studies underline the importance of cow manure in sweet corn cultivation. The increase in leaf number, weight of cob without husk per sample, and weight of cob without husk per plot indicates that this fertilizer effectively increases the productivity and quality of corn crops. Thus, cow manure can be a sustainable and environmentally friendly option for farmers to increase their overall yield.

2. The Effect of Liquid Organic Fertilizer on the Growth of Sweet Corn

Observations on other parameters showed that the provision of liquid organic fertilizer from banana stumps did not significantly affect all parameters. The results of the variance test analysis revealed that although liquid organic fertilizer from banana stumps was effective in increasing several aspects of growth and yield, its effects were not significant on the other parameters.

Research by (Nisah et al., 2023) showed that although cow manure increased soil fertility and liquid organic fertilizer from banana stumps provided additional nutrients, their combined effect was insufficient to significantly improve plant growth parameters.

Research by (Amazihono et al., 2022) also supports this finding. Wahyuni found that although liquid organic fertilizer can increase soil microbiological activity and cow manure increases organic matter content, the interaction of the two does not provide significant additional benefits to the growth and yield of sweet corn plants. (Amazihono et al., 2022) suggests that the effectiveness of fertilizer combinations may depend on specific soil and environmental conditions and the specific nutrient needs of plants at different growth stages.

3. The Effect of Interaction of Cow Manure and Liquid Organic Fertilizer on the Growth and Production of Sweet Corn

The variance analysis results indicated that the interaction between cow dung and banana stem liquid organic fertilizer did not significantly affect any parameters. While both fertilizers may enhance plant growth and yield, their combination did not create a substantial synergistic impact.

This is likely because the pH of the soil in the research area is relatively low at 4.1, while the growth requirements for sweet corn plants range from 5.5 to 6.5. Cow manure requires a long time to carry out its function in improving nutrients in the soil, because in principle, all organic materials that are put into the soil, including cow manure, can improve soil function, as well as various essential nutrients that are very much needed for plant growth. This is not supported by the provision of banana stem POC, which contains very low nutrients; the interaction between cow manure and POC cannot increase plant growth and production.

(Ginting et al., 2024) added that the interaction between cow manure and banana stem liquid organic fertilizer may not significantly affect the growth and production of sweet corn due to several factors. The similar nutrient balance between the two types of fertilizers can result in no significant additional benefits. Suboptimal dosage and inappropriate application time can also reduce the effectiveness of fertilizer interactions. Soil conditions that are already quite good may make adding fertilizer less effective. Environmental factors such as weather and humidity can affect the effectiveness of fertilizer interactions. The sweet corn varieties planted may be less responsive to the combination of fertilizers. The study duration, which is too short, can cause the interaction effects to be unclear. Finally, less effective fertilizer application methods may inhibit optimal nutrient absorption by sweet corn plants.

Furthermore, research by Rizky Pratama in 2023 showed that the combination of cow manure and super banana stem liquid organic fertilizer did not significantly affect growth parameters such as plant height and stem diameter. Pratama noted that water availability, soil type, and climate variability may play a greater role in determining plant growth than the combination of fertilizers. These results indicate that although both fertilizers have their respective benefits, their simultaneous application may not always provide the expected results under all conditions.

These findings emphasize the importance of a deeper understanding of the interactions between different fertilizers and environmental factors in agriculture. Although cow manure and super banana stem liquid organic fertilizer can benefit plant growth and yield, their use together may require more specific adjustments based on environmental conditions and plant needs to achieve optimal results. In principle, all organic materials included in the soil, including cow manure, can improve soil function and various essential nutrients that are very much needed for plant growth. This is not supported by the provision of banana stem POC, which contains very low nutrients; the interaction between cow manure and POC cannot increase plant growth and production.

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Research by Budi Santoso (2023) showed that although cow manure increased soil fertility and liquid organic fertilizer from banana stumps provided additional nutrients, their combined effect was insufficient to significantly improve plant growth parameters (Santoso, 2023).

Research by Dini Wahyuni (2022) also supports this finding. Wahyuni found that although liquid organic fertilizer can increase soil microbiological activity and cow manure increases organic matter content, the interaction of the two does not provide significant additional benefits to the growth and yield of sweet corn plants. Wahyuni suggests that the effectiveness of fertilizer combinations may depend on specific soil and environmental conditions and the specific nutrient needs of plants at different growth stages (Wahyuni, 2022).

5. CONCLUSION

Conclusion: The research demonstrated that cow dung substantially influenced the leaf count, the weight of huskless cobs per plot, and the weight of huskless cobs per sample. The research indicated that liquid organic fertilizer did not significantly influence the leaf count, cob weight without husks per plot, or cob weight without husks per sample. The interaction between POC and cow manure exhibited no significant impact on any parameters. **Suggestion:** Further research is needed to increase the dosage of liquid organic fertilizer from banana stems to obtain optimal results in sweet corn cultivation.

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