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Influence of Planting Spacing and Compost Application Rate on Corn (*Zea mays* L) Growth and Production

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ABSTACT

This study investigated the effects of planting distance and compost fertilizer application rates on corn growth and yield. A Randomized Complete Block Design with three levels of planting distance (70 x 10 cm, 70 x 20 cm, and 70 x 30 cm) and three levels of compost fertilizer (0, 5, and 10 tons/ha) was employed. Results showed that planting distance of 70 x 20 cm maximized leaf number, seed weight per plot, and seed yield per hectare. The application of 10 tons/ha of cow manure compost significantly increased plant height, ear diameter, and seed weight per ear. However, no significant interaction was observed between planting distance and compost fertilizer application rates on corn growth and yield.

INTRODUCTION

Corn (*Zea mays* L.) has been cultivated in Central America (Southern Mexico) for approximately 8,000 to 10,000 years. Archaeological excavations have unearthed small corncobs dating back around 7,000 years. According to several botanists, teosinte, the ancestral plant of corn, is a wild plant native to the Balsas River Valley in southern Mexico. Genetic, anthropological, and archaeological evidence indicates that Central America is the origin of corn, from which it has spread and been cultivated worldwide (M & Kadekoh, 2023).

Corn is the second largest source of carbohydrates after rice and plays a significant role in agriculture. In some regions of Indonesia, corn has become a staple food substitute for rice. Beyond human consumption, corn is also used as animal feed and as a raw material for industries. It is an important source of protein for the population.

South Sulawesi province is one of the national corn production centers in Indonesia. South Sulawesi's corn production ranks among the highest nationally, alongside East Java and Central Java. Several districts in South Sulawesi are major corn-producing areas, including Gowa, Takalar, Bantaeng, Bulukumba, Bone, Jeneponto, Wajo, and Pinrang. One strategy to increase corn production is through adjusting the plant population per hectare or planting distance, which is a crucial factor in achieving high yields. Additionally, the application of compost fertilizer is another important factor (Kartika, 2018).

Compost is an organic fertilizer derived from plant residues and animal manure that has undergone decomposition. The composting process can be carried out aerobically or anaerobically. The advantages of compost include being environmentally friendly, generating additional income for farmers, and improving soil fertility by mitigating the physical degradation caused by excessive use of inorganic fertilizers.

This research aims to determine the effects of planting distance on corn growth and yield, to investigate the effects of compost fertilizer application rates on corn growth and yield, and to explore the interaction between planting distance and compost fertilizer application rates on corn growth and yield (Pangaribuan et al., 2017).

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MATERIALS AND METHODS

The tools used in this research included a hoe, measuring tape, caliper, dibble, camera, and writing instruments. The materials used were compost fertilizer, Harapan variety corn seeds, and NPK Phoska as a basal fertilizer. This research was conducted in Biringkanaya Sub-district, Sudiang Raya Village, Makassar City, South Sulawesi Province. The research period was from March to June 2023. This experimental research employed a Randomized Complete Block Design (RCBD) in a 2-factor factorial pattern. The factors were: compost fertilizer dose (P) with three levels (P0 = control, P1 = 5 tons/ha, P2 = 10 tons/ha) and planting distance (J) with three levels (J1 = 70 x 10 cm, J2 = 70 x 20 cm, J3 = 70 x 30 cm).

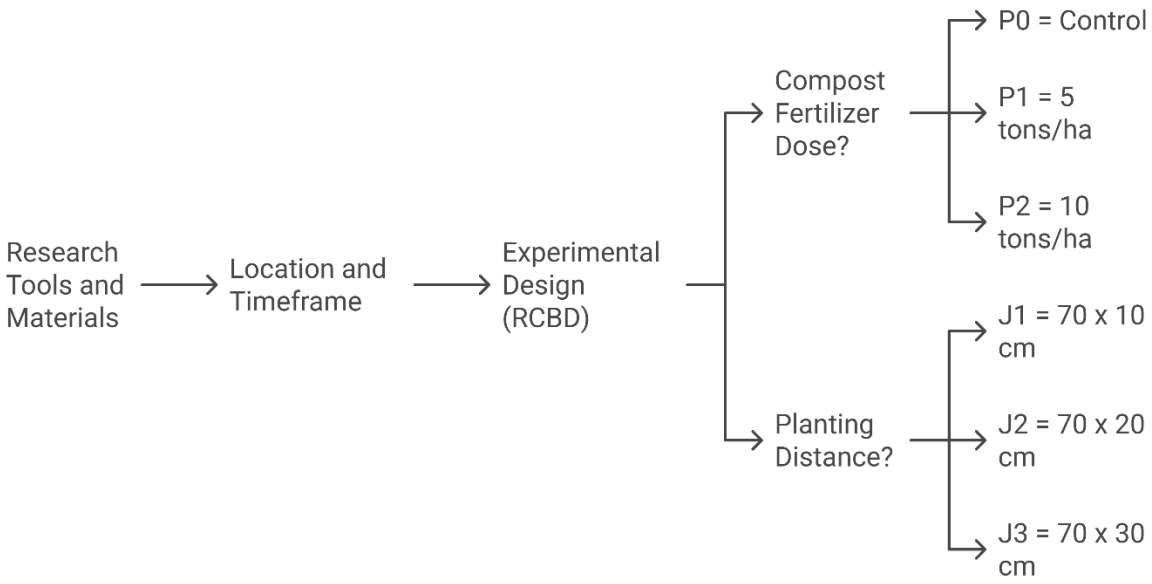

Figure 1. Research flow

RESULTS AND DISCUSSION

1. Plant Height (cm)

Data on plant height and the results of the analysis of variance are shown in the table below. The analysis revealed that compost fertilizer had a highly significant impact on plant height, but planting distance and its interaction did not significantly affect plant height.

Table 1. Mean Corn Plant Height for Various Planting Distances and Compost Fertilizer Rates.

Treatment	Planting Distances			Mean	DMRT 0.05
	70 x 10 (J1)	70 x 20 (J2)	70 x 30 (J3)		
0 (P0)	95.75	97.58	97.75	97.03^{c}	12.2
5 ton/ha (P1)	107.98	109.91	106.58	108.16^{b}	
10 ton/ha (P2)	144.33	144.58	140.42	143.11^{a}	

Note: Numbers with different letters (a, b, c) mean that the results are significantly different according to the DMRT test.

The Honestly Significant Difference (DMRT) test at a 0.05 significance level revealed that the application of 10 tons/ha of compost fertilizer (P2) resulted in a significantly higher plant height of 143.11 cm, compared to the control treatment (P0) and the application of 5 tons/ha of compost fertilizer (P1). These findings are in line with previous research indicating that the use of compost can significantly enhance plant growth. Organic fertilizers have a significant impact on seedling growth, including plant height (Hasfiah & Apriani, 2022). The application of water hyacinth compost yielded the best results in terms of plant growth parameters, supporting the notion that higher fertilizer doses can promote plant growth (Maharani, 2022).

The application of higher doses of compost fertilizer, such as 10 tons/ha, can increase nutrient availability in the soil, contributing to better plant growth. Compost application can improve

the growth and yield of sweet corn, suggesting that the interaction between fertilizer type and dose is crucial for optimal results (Susiani et al., 2023). Additionally, appropriate compost application can increase plant height and other growth parameters (Fathurrahman et al., 2023).

The application of organic fertilizers, including compost, can significantly enhance plant growth (Rahhutami et al., 2021). This indicates that the use of compost in the right amount not only increases plant height but can also affect other growth parameters such as leaf number and stem diameter. Compost application can improve soil chemical properties and enhance plant growth (Nasution et al., 2024).

2. Number of Leaves (Helai)

The data of leaf count observations and their analysis of variance are presented in the table below. The analysis of variance showed that the planting distance treatment had a very significant effect, while the compost fertilizer dose and its interaction did not have a significant effect on the number of leaves.

Table 2. Average number of corn leaves at different planting distances and compost fertilizer doses.

Treatment	Planting Distances			DMRT
	70 x 10 (J1)	70 x 20 (J2)	70 x 30 (J3)	0.05
0 (P0)	8.33	9.58	8.00	0.85
5 ton/ha (P1)	8.83	8.67	8.50	
10 ton/ha (P2)	8.83	10.67	8.42	
Mean	8.66[b]	9.89[a]	8.39[b]	

Note: Numbers with different letters (a, b, c) mean that the results are significantly different according to the DMRT test.

The 0.05 DMRT test results in Table 2 revealed that the 70 x 20 cm planting distance (J2) yielded the highest average leaf number (9.89), significantly differing from both the 70 x 10 cm (J1) and 70 x 30 cm (J3) planting distances.

Compost fertilizer, rich in nutrients, enhances soil fertility and positively impacts plant growth, including flowering time (Mali et al., 2020). Furthermore, different compost types can interact to significantly influence plant growth (Sari et al., 2023), suggesting that compost not only provides nutrients but also affects flowering.

Wider planting distances, like the 70 x 20 cm in treatment P2J2, optimize plant growth by providing ample sunlight, water, and nutrients, hastening flowering. Conversely, the closer planting distance (70 x 10 cm) in treatment P1J1 can lead to increased competition among plants for resources, delaying flowering. This aligns with previous research showing that high plant density can hinder growth and yield (Raditya et al., 2017). Consequently, optimal planting distance is crucial for maximizing crop yield.

3. 50% Flowering Age (Days)

The results of the analysis of variance revealed that there were no significant differences in the 50% flowering age of male and female plants when considering the effects of planting distance, compost fertilizer dosage, and their interaction.

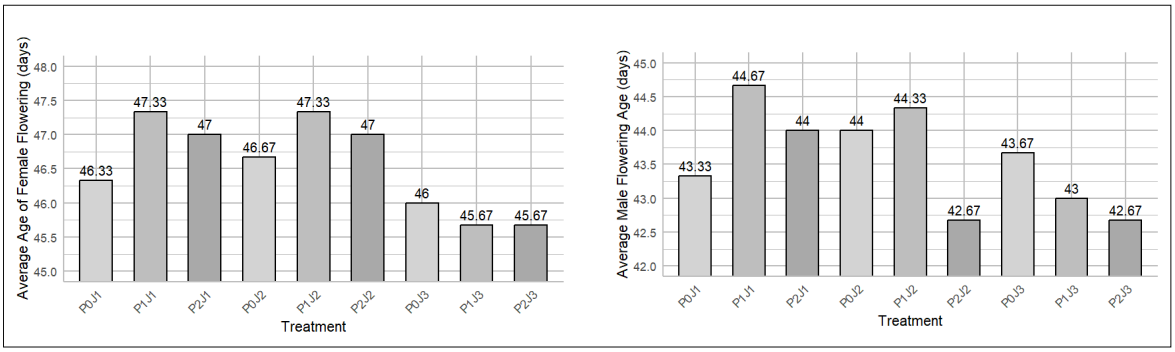

Figure 2. Mean age at 50% flowering for both male and female plants across various planting distances and compost fertilizer applications.

Figure 2 demonstrates that the earliest average flowering age for male plants was observed under the treatment of 10 tons/ha compost fertilizer and a planting distance of 70 x 20 cm (P2J2), specifically at 42.67 days. Conversely, the latest flowering age for male plants was recorded under the no-compost treatment with a planting distance of 70 x 10 cm (P1J1), with a mean of 44.67 days. For female plants, the earliest flowering age was achieved under the same treatment of 10 tons/ha

compost fertilizer and a planting distance of 70 x 20 cm (P2J2) at 45.67 days. The latest flowering age for females was found in plants without compost fertilizer and a planting distance of 70 x 10 cm (P1J1), as well as those treated with 5 tons/ha compost fertilizer and a planting distance of 70 x 20 cm, with a mean of 47.33 days Compost fertilizer plays a crucial role in enhancing soil fertility and nutrient availability for plants. The utilization of plant residues as compost can improve land quality and promote sustainable agricultural systems (Wulandari et al., 2023). Moreover, the processing of post-harvest residues into organic fertilizer contributes to plant growth (Nurwidiyani et al., 2021). The application of sufficient compost, as exemplified in treatment P2J2, can provide the necessary nutrients for plants to accelerate growth and flowering.

The selection of appropriate fertilizer and optimal planting distance can significantly enhance crop yield (As-Siddiqi et al., 2023). The combination of compost fertilizer and optimal planting distance can expedite female flower initiation. The findings indicate that the appropriate application of compost fertilizer and optimal planting distance can significantly influence the flowering age of female plants. Further research is needed to delve deeper into the mechanisms underlying this influence and to determine the most effective compost dosage and optimal planting distance for various plant species.

Compost is renowned for its ability to enhance plant growth and yield by providing essential nutrients. The application of compost can stimulate plant growth, including flowering age (Mali et al., 2020). Additionally, an appropriate compost dosage can accelerate plant growth (Raksun et al., 2020). In this context, treatment P2J2, which employed 10 tons/ha of compost, proved to be more effective than treatment P1J1, which did not utilize compost.

Planting distance also plays a pivotal role in plant growth. Wider planting distances can provide ample space for plants to develop, potentially accelerating flowering age (Jailani & Almukarramah, 2022). In this case, a planting distance of 70 x 20 cm in treatment P2J2 offered an advantage in terms of growth compared to a planting distance of 70 x 10 cm in treatment P1J1. The combination of optimal compost fertilizer and planting distance can enhance plant growth efficiency, expediting flowering. The use of organic fertilizers such as compost can improve both the quality and quantity of agricultural yields (Arman et al., 2020).

4. Corn cob length (cm)

Analysis of variance of cob length data revealed that planting distance, compost fertilizer dosage, and their interaction did not have a significant effect on cob length

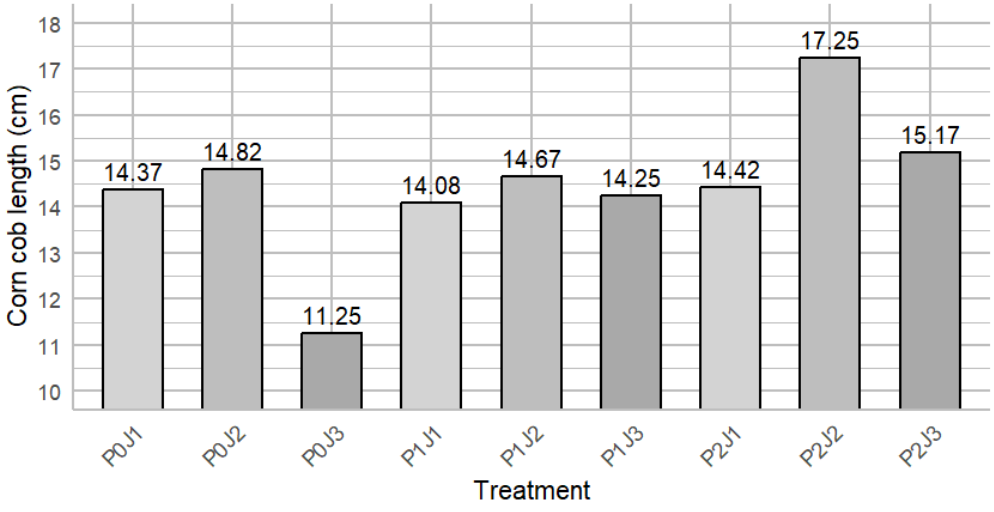

Figure 2. Mean cob length (cm) across various planting distances and compost fertilizer applications.

Based on Figure 2, the highest average cob length was observed under the treatment of 10 tons/ha compost fertilizer and a planting distance of 70 x 20 cm (P2J2), measuring 17.25 cm. Conversely, the shortest cob length was found in plants without compost fertilizer and a planting distance of 70 x 30 cm (P0J3), with a mean of 11.25 cm.

The application of organic fertilizers, including compost, can significantly enhance plant growth and yield (Djadi et al., 2021). Sufficient compost application, as in treatment P2J2, provides the necessary nutrients for plants to support optimal growth, including cob development. Proper

planting arrangement can improve land use efficiency and crop yield (Julianto et al., 2023). The optimal planting distance, as in treatment P2J2, allows plants to receive adequate sunlight and nutrients, contributing to better cob growth.

Wider planting distances can increase cob length and seed weight in maize plants (Yupita et al., 2022). Treatment P2J2, with a planting distance of 70 x 20 cm, provided ample space for plants to grow without excessive competition, thus supporting longer cob growth. Conversely, treatment P0J3 with a closer planting distance (70 x 30 cm) can lead to higher competition among plants, which can hinder growth and reduce cob length.

The interaction between planting distance and fertilizer type can significantly influence plant growth and yield (Farda et al., 2020). This emphasizes the importance of combining compost application with optimal planting distance to achieve maximum results. Thus, the results of this study demonstrate that the appropriate use of compost fertilizer and suitable planting distance can significantly increase cob length in plants.

5. Weight Per Cob (g)

Based on the analysis of variance, compost fertilizer dosage had a highly significant effect on cob weight, while planting distance and their interaction did not show any significant influence.

Table 3. Mean Cob Weight of Corn under Different Planting Distances and Compost Fertilizer Dosages.

Treatment	Planting Distances			Mean	DMRT 0.05
	70 x 10 (J1)	70 x 20 (J2)	70 x 30 (J3)		
0 (P0)	62.17	60.17	61.77	61.37^{c}	3.80
5 ton/ha (P1)	62.75	63.67	60.67	62.36^{b}	
10 ton/ha (P2)	82.50	85.50	82.00	83.33^{a}	

Note: Numbers with different letters (a, b, c) mean that the results are significantly different according to the DMRT test.

The DMRT test at the 0.05 level in Table 3 revealed that the highest average cob weight was obtained under the 10 ton/ha compost fertilizer treatment (P2), with a mean of 83.33. This value differed significantly from the 5 ton/ha compost treatment (P1) and the no-compost treatment (P0).

The application of higher doses of compost fertilizer, as in treatment P2, provided more abundant and balanced nutrients for the plants, contributing to increased cob weight. Increasing the fertilizer dose can enhance nutrient availability in the soil, which directly impacts crop yield (Ernawati, 2024).

Treatment P2, with a higher compost fertilizer dose, provided sufficient space for plant growth, reducing competition among plants and supporting optimal growth. Proper planting spacing can influence plant growth and yield (Sendy et al., 2024). The appropriate application of fertilizers can significantly improve crop yield (Auliah et al., 2023).

Treatments P1 and P0, with lower compost fertilizer doses or no compost at all, resulted in lower cob weight. The lack of sufficient nutrients required for optimal growth can hinder the formation of heavier cobs. Inadequate fertilization can lead to lower crop yields (Iswar et al., 2019).

6. Seed Yield Per Plot (kg)

Based on the analysis of variance, both compost fertilizer dosage and planting distance had a highly significant effect on seed weight per plot, while their interaction did not show any significant influence.

Table 4. Mean Seed Weight per Plot of Corn under Different Planting Distances and Compost Fertilizer Dosages.

Treatment	Planting Distances			Mean	DMRT 0.05
	70 x10 (J1)	70 x 20 (J2)	70 x 30 (J3)		
0 (P0)	1.54	1.76	1.74	1.68^{b}	0.15
5 ton/ha (P1)	1.72	1.99	1.78	1.83^{b}	
10 ton/ha (P2)	1.82	2.15	2.08	2.02^{a}	
Mean	1.69^{b}	1.97^{a}	1.87^{a}		
DMRT 0.05	0.15				

Note: Numbers with different letters (a, b, c) mean that the results are significantly different according to the DMRT test.

DMRT test at the 0.05 level in Table 5 showed that the highest average seed weight per plot was obtained under the 10 ton/ha compost fertilizer treatment (P2), with a mean of 2.02. This value

differed significantly from the 5 ton/ha compost treatment (P1) and the no-compost treatment (P0). The highest average planting distance was observed at 70 x 20 cm (J2), with a mean of 1.97, which was not significantly different from 70 x 30 cm (J3) but was significantly different from 70 x 10 cm (J1) with a mean of 1.69 cm.

The application of higher doses of compost fertilizer, as in treatment P2, significantly increased seed weight per plot. Sufficient compost application can enhance nutrient availability in the soil, contributing to better plant growth and yield (Nasution et al., 2024). Compost serves as an important source of nutrients for plants, thus increasing seed weight. The use of organic materials in the form of compost can improve soil physical and chemical properties, leading to increased crop productivity (Husein et al., 2023).

Regarding planting distance, treatment J2 with a planting distance of 70 x 20 cm showed better results compared to closer planting distances (70 x 10 cm). Proper planting spacing can influence plant growth by providing sufficient space for plants to develop, thereby increasing access to sunlight and nutrients (Auliah et al., 2023). Wider planting distances, such as in treatment J2, allow plants to grow more optimally, contributing to increased seed weight.

Conversely, closer planting distances (J1) can lead to higher competition among plants, which can hinder growth and reduce seed weight. High plant density can reduce crop yield due to competition for resources (Firmansyah et al., 2022).

7. Seed Yield per Hectare (tons)

Based on the analysis of variance, both compost fertilizer dosage and planting distance had a highly significant effect on seed yield per hectare, while their interaction did not show any significant influence.

Table 5. Mean Seed Yield per Hectare of Corn under Different Planting Distances and Compost Fertilizer Dosages.

Treatment	Planting Distances			Mean	DMRT 0.05
	70 x 10 **(J1)**	70 x 20 **(J2)**	70 x 30 **(J3)**		
0 (P0)	7.11	8.13	8.03	7.76[b]	0.72
5 ton/ha (P1)	7.95	9.21	8.24	8.47[b]	
10 ton/ha (P2)	8.41	9.95	9.64	9.33[a]	
Mean	7.82[b]	9.10[a]	8.64[a]		
DMRT 0.05	0.72				

Note: Numbers with different letters (a, b, c) mean that the results are significantly different according to the DMRT test.

DMRT test at the 0.05 level in Table 6 showed that the application of 10 tons/ha compost fertilizer (P2) resulted in the highest average seed yield per hectare at 9.33 tons/ha, which was significantly different from the 5 tons/ha compost treatment (P1) and the no-compost treatment (P0). Meanwhile, a planting distance of 70 x 20 cm (J2) yielded the highest average of 9.10 tons/ha, which was not significantly different from 70 x 30 cm (J3) but was significantly different from 70 x 10 cm (J1).

Application of organic fertilizer, such as compost, can enhance plant growth and yield, including seed weight. Compost serves as an important source of nutrients for plants, thereby increasing seed yield. The use of organic fertilizers can improve soil quality and increase agricultural productivity (Setiawan et al., 2024).

Regarding planting distance, a spacing of 70 x 20 cm (J2) yielded better results compared to closer spacing (70 x 10 cm). Proper planting spacing can influence plant growth by providing sufficient space for plants to develop, thereby increasing access to sunlight and nutrients (Laurin et al., 2024). Conversely, closer planting distances (J1) can lead to higher competition among plants, which can hinder growth and reduce seed yield. High plant density can reduce crop yield due to competition for resources (Kusumastuti et al., 2022).

CONCLUSIONS

Based on the research findings, a planting distance of 70 x 20 cm (J2) significantly increased the number of leaves (9.89), seed weight per plot (1.97 kg), and seed yield per hectare (9.10 tons). The application of 10 tons/ha cow manure compost (P2) resulted in a higher plant height (143.11 cm), cob diameter (3.95 cm), cob weight (83.33 g), seed weight per cob (61.84 g), seed weight per plot (2.02 kg), and seed yield per hectare (9.33 tons). There was no significant interaction between compost dosage

and planting distance on maize growth.

REFERENCES

Arman, A., Safuan, L. O., & Hadini, H. (2020). The Effect of Bio-Organic Fertilizers and Cultivars on the Growth and Production of Upland Rice (*Oryza sativa* L.) from North Buton. *Berkala Penelitian Agronomi*, *8*(2), 81. https://doi.org/10.33772/bpa.v8i2.14941

As-Siddiqi, M. H., Auliasari, K., & Prasetya, R. P. (2023). Development of a Fertilizer Recommendation System for Oil Palm Plants Using the AHP (Analytical Hierarchy Process) Method. *Jati (Jurnal Mahasiswa Teknik Informatika)*, *6*(2), 957–964. https://doi.org/10.36040/jati.v6i2.5407

Auliah, Muh. R., Makmur, M., & Haeba, H. (2023). Morphophysiological Test and Yield of Shallots (*Allium ascalonicum* L.) Applied with Fermented Robusta-Arabica Coffee Husk Waste from Mamasa through Leaf Reduction in Early Vegetative Stages. *AGROVITAL : Jurnal Ilmu Pertanian*, *8*(2), 205. https://doi.org/10.35329/agrovital.v8i1.3908

Djadi, K., Larekeng, Y., & Setiawan, W. (2021). The Effect of Planting Distance and Supratan Liquid Fertilizer Concentration on the Growth of Patchouli (Pogostemon cablin Benth). *Jurnal Ilmiah Mahasiswa Fakultas Pertanian*, *1*(3), 102–110. https://doi.org/10.52045/jimfp.v1i3.218

Ernawati, E. (2024). The Effect of Chicken Manure and NPK Fertilizer on NPK Availability and Corn Yield in Ultisol Soil. *Jurnal Sains Pertanian Equator*, *13*(2), 753. https://doi.org/10.26418/jspe.v13i2.75396

Farda, F. T., Wijaya, A. K., Liman, L., Muhtarudin, M., Putri, D., & Hasanah, M. (2020). The Effect of Different Varieties and Planting Distances on Nutrient Content of Corn Forage. *Jurnal Ilmiah Peternakan Terpadu*, *8*(2), 83. https://doi.org/10.23960/jipt.v8i2.p83-90

Fathurrahman, F., Rivaldo, A., Maizar, M., & Zahrah, S. (2023). Growth Response of Aloe Vera in Peat Media at Various Embio Fertilizer Concentrations and Corn Compost Doses. *Jurnal Agrotek Tropika*, *11*(3), 521. https://doi.org/10.23960/jat.v11i3.6691

Firmansyah, W., Setyorini, T., & Suryanti, S. (2022). Growth Response of Three Oil Palm Seedling Varieties at Early Nursery to Nano Silica Fertilizer Under Drought Stress Conditions. *Agrivet*, *28*(1), 9. https://doi.org/10.31315/agrivet.v28i1.6825

Hasfiah, H., & Apriani, N. (2022). The Effect of Different Types of Organic Fertilizers on the Growth of Red Ginger (*Zingiber officinale* Rosc.) Seedlings. *Media Agribisnis*, *6*(2), 164–173. https://doi.org/10.35326/agribisnis.v6i2.2763

Husein, M. F., Mindari, W., & Santoso, S. B. (2023). The Impact of Organic Material and Sand Application on the Physical Properties of Vertisol Soil in Bojonegoro. *Agro Bali : Agricultural Journal*, *6*(2), 435–445. https://doi.org/10.37637/ab.v6i2.1176

Iswar, I., Rahmawati, M., & Hayati, M. (2019). The Effect of Compost and KCl Fertilizer Dosage on the Growth and Yield of Taro Plants (*Colocasia Esculenta* L. Schott Var. Antiquorum). *Jurnal Ilmiah Mahasiswa Pertanian*, *4*(1), 129–138. https://doi.org/10.17969/jimfp.v4i1.10322

Jailani, J., & Almukarramah, A. (2022). The Effectiveness of Manure Application on the Growth Response of Spinach Plants (*Amaranthus tricolor* L.). *Jurnal Pembelajaran Dan Sains (JPS)*, *1*(3). https://doi.org/10.32672/jps.v1i3.131

Julianto, N., Widaryanto, E., & Ariffin, A. (2023). Land-Use Efficiency through Intercropping Patterns of Shallots (*Allium ascalonicum* L.) and Chili Peppers (*Capsicum annuum* L.). *Agro Bali : Agricultural Journal*, *6*(2), 350–360. https://doi.org/10.37637/ab.v6i2.1286

Kartika, T. (2018). The Effect of Spacing on the Growth and Production of Non-Hybrid Corn (*Zea mays* L.) on the Land of Integrated Agro Technology Center (ATP). *Sainmatika: Jurnal Ilmiah Matematika Dan Ilmu Pengetahuan Alam*, *15*(2), 129. https://doi.org/10.31851/sainmatika.v15i2.2378

Kusumastuti, A., Indrawati, W., Supriyanto, & Kurniawan, A. (2022). Diversity of Soil Mesofauna and Soil Microorganism Activity in Patchouli Vegetation with Various Biochar and NPK Fertilizer Doses. *Agriprima Journal of Applied Agricultural Sciences*, *6*(2). https://doi.org/10.25047/agriprima.v6i2.488

Laurin, C., Liman, L., Erwanto, E., & Muhtarudin, M. (2024). The Effect of Various Types of Soil Amendments on the Quality of Pakchong Grass on Ultisol Soil. *Jurnal Riset Dan Inovasi Peternakan (Journal of Research and Innovation of Animals)*, *8*(3), 500–506. https://doi.org/10.23960/jrip.2024.8.3.500-506

M, M., & Kadekoh, I. (2023). Yield Components and Yield of Sweet Corn (*Zea mays* Saccharata Sturt) under Different Types of Manure and Leaf Pruning. *AGROTEKBIS : E-JURNAL ILMU PERTANIAN*, *11*(4), 1057–1067. https://doi.org/10.22487/agrotekbis.v11i4.1829

Maharani, L. (2022). The Effectiveness of Water Hyacinth Compost (*Eichornia crassipes*) on the Productivity of Cayenne Pepper in Situbondo Regency (*Capsicum frutescens* L.). *BIO-CONS : Jurnal Biologi Dan Konservasi*, *3*(2), 55–62. https://doi.org/10.31537/biocons.v3i2.624

Mali, W. S., Napitupulu, M., & Yahya, Z. (2020). The Effect of Compost and NPK Phonska Fertilizer on the Growth and Yield of Cucumber Plants (*Cucumis sativus* L.) Harmony Variety. *Agrifor*, *19*(2), 303. https://doi.org/10.31293/af.v19i2.4787

Nasution, H., Suryanto, S., & Emanauli, E. (2024). Application of Oil Palm Bunch Compost to Improve Several Chemical Properties of Ex-Mining Soil on Jambon and Sengon Plants. *Mutiara: Multidiciplinary Scientifict Journal*, *2*(4), 212–221. https://doi.org/10.57185/mutiara.v2i4.178

Nurwidiyani, R., Triawan, D. A., Ghufira, G., & Ratnawati, D. (2021). Post-Harvest Waste Processing into Liquid Organic Fertilizer and Compost in the Akur Farmers Group, Rejang Lebong Regency. *Dharma Raflesia : Jurnal Ilmiah Pengembangan Dan Penerapan IPTEKS*, *19*(2), 399–408. https://doi.org/10.33369/dr.v19i2.17814

Pangaribuan, D. H., Ginting, Y. C., Saputra, L. P., & Fitri, H. (2017). Application of Liquid Organic Fertilizer and Inorganic Fertilizer on the Growth, Production, and Post-Harvest Quality of Sweet Corn (*Zea mays* var. saccharata Sturt). *Jurnal Hortikultura Indonesia*, *8*(1), 59–67. https://doi.org/10.29244/jhi.8.1.59-67

Raditya, J., Purbajanti, E. D., & Slamet, W. (2017). Growth and Production of Okra (*Abelmoschus esculentus* L.) with Different Fertilizer Levels and Plant Spacing. *Journal of Agro Complex*, *1*(2), 49. https://doi.org/10.14710/joac.1.2.49-56

Rahhutami, R., Handini, A. S., & Astutik, D. (2021). Growth Response of Pak Choi to Humic Acid and Trichoderma in Oil Palm Frond Planting Media. *Kultivasi*, *20*(2). https://doi.org/10.24198/kultivasi.v20i2.32601

Raksun, A., Zulkifli, L., & Mahrus, M. (2020). The Effect of Compost Dosage and Application Time on the Growth of Water Spinach. *Jurnal Pijar Mipa*, *15*(2), 171–176. https://doi.org/10.29303/jpm.v15i2.1516

Sari, A., Nurkomar, I., & Buchori, D. (2023). Comparison of Spodoptera frugiperda parasitoid performance under laboratory conditions. *IOP Conference Series: Earth and Environmental Science*, *1220*(1), 12031. https://doi.org/10.1088/1755-1315/1220/1/012031

Sendy, T., Hadijah, S., & Nurjani, N. (2024). The Effect of Chicken Manure and NPK Fertilizer on the Growth and Yield of Tomatoes in Acid Sulfate Land under a Water-Saturated Cultivation System. *Jurnal Sains Pertanian Equator*, *13*(2), 600. https://doi.org/10.26418/jspe.v13i2.77601

Setiawan, K., Hendriyanto, M., Sungkono, S., Rieswanto, D., Ardian, A., & Hadi, M. S. (2024). Growth and Production of Two Cassava Clones (*Manihot esculenta Crantz*) Affected by Cattle Manure Application. *Jurnal Agrotek Tropika*, *12*(2), 431. https://doi.org/10.23960/jat.v12i2.6170

Susiani, C. T., Zahrah, S., & Sabli, T. E. (2023). Growth and Production Response of Sweet Corn (*Zea mays* saccharata Sturt) with the Application of Oil Palm Male Flower Compost and Liquid Waste Tofu (LWT). *Ekoagrotrop*, *1*(1), 15–24. https://doi.org/10.25299/ekoagrotrop.2023.v1i1.12860

Wulandari, C., Syaifurrahman, M. A., Wulandani, T., & Malini, H. (2023). Farmers' Awareness Efforts to Improve Land Quality through Agricultural Waste Utilization for Sustainable Shallot Farming Systems. *Jurnal Pengabdian, Riset, Kreativitas, Inovasi, Dan Teknologi Tepat Guna*, *1*(2), 142–150. https://doi.org/10.22146/parikesit.v1i2.9533

Yupita, M., Musaad, I., Mawikere, N. L., Suparno, A., Purbokurniawan, Prabawardani, S., & Noya, A. I. (2022). The Effect of Corn Spacing in Intercropping with Peanuts on Three Corn Genotypes in Waibu District, Jayapura Regency. *Cassowary*, *5*(2), 165–172. https://doi.org/10.30862/casssowary.cs.v5.i2.143