

Article

The Effect Of Administering Liquid Organic Fertilizer Doses For Petai Cina On The Growth Of Water Spinach And Kailan Vegetables

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Abstract

Background: Food availability is related to the sustainability of agriculture in drylands. Practical efforts to improve soil quality are through the application of organic fertilizer. **Objectives:** The purpose of this study was to determine the effect of liquid fertilizer doses of Chinese Petai on the growth of Kale and Kailan vegetables. This study was conducted in July 2024–October 2025 on the land of Nusa Cendana University in the Food Ecology Project area. **Method:** This study is a parametric study with a Complete Random Design (CRD) design consisting of four treatments with five replications. The sample of this study involved two types of plants, namely kale and kailan vegetables. Data were analyzed using ANOVA, then Honest Real Difference (HSD) analysis followed by Duncan Multiple Range Test (DMRT) at a significance level of 5%. **Results:** The results of the analysis showed that the distribution of POC Chinese Petai has a very significant effect on the growth and development of Kale and Kailan. All plant growth parameters, leaf width and number of leaves showed a significant increase. Treatment P2: 10 tablespoons of POC (10 ml) / 5 L of water has the best effect on stem height, leaf width and number of Kale and Kailan leaves significantly different from treatment P0: Control (water), P1: 5 tablespoons of POC (5 ml) / 5 L of water, P3: 15 tablespoons (15 ml) / 5 L of water. **Conclusion:** POC Petai china is expected to be an alternative in limited organic fertilizer to support family and community food security factors.

Keywords: *Liquid Organic Fertilizer, Chinese Petai, spinach, Kailan, Growth*

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1. Introduction

National food security is closely related to agricultural development policies that aim to support food availability, especially from domestic production. In other words, efforts to achieve food security and stability (through domestic production) are essentially the same as efforts to increase national food production capacity through agricultural development and other related supporting policies. There are several significant obstacles in achieving food security, including the ongoing conversion of agricultural land to non-agricultural land and a decrease in soil quality and fertility (soil fatigue). These obstacles should be a driver to increase efficiency and optimize the use of land resources (Sumastuti, 2011).

The Central Statistics Agency (BPS) in 2023 explained that the agricultural sector is still the backbone of the Indonesian economy, with a contribution of 13.5% to the Gross Domestic Product (GDP) and absorbing more than 30% of the national workforce. However, the contribution in this sector tends to decline due to issues such as low added value of agricultural products and difficulties in market access for smallholders. On the other hand, food imports are increasing, which indicates a problem in national food security (Kurniadi, Y U., 2020).

The Ministry of Agriculture's Strategic Plan 2020-2024, sets priorities to support economic growth through the agricultural sector, including increasing productivity, diversification, and modernizing agriculture. The ideal condition is to achieve sustainable and independent food security, where the agricultural sector is able to meet domestic food needs adequately and with quality, thereby reducing dependence on food imports. To achieve this condition, strong policy support, advanced agricultural technology, and sustainable natural resource management are needed (Kurniadi, Y U., 2020).

Food availability is closely related to food security and sustainability of farming in dry land, especially in food-insecure areas. East Nusa Tenggara Province (NTT) is one of the priority areas in handling poverty and food insecurity. NTT has a high risk of recurrent droughts, thus affecting the productivity of food crops and other agriculture. Dryland farming in NTT faces great social, economic, and ecological pressures, making it difficult for farmers to adjust their agricultural practices (Riptanti, 2021).

Data from the Central Statistics Agency of East Nusa Tenggara (BPS, 2022) explains that the area of use of rice fields and dry land that can be used for agricultural activities in NTT covers an area of 4,721,582 Km. Inherently the fertility of dryland in NTT is very low, characterized by low soil organic matter content, poor soil aggregate, especially on sloping/hilly lands, sensitive to the phenomenon of land degradation, especially due to erosion, the main nutrient content (N, P, and K) is relatively low². (Matheus et al., 2017).

The agricultural sector plays an important role for the people in East Nusa Tenggara Province (NTT). However, its development has received less attention because it is considered to be a mere economic support. One of the main challenges to achieving food security through the agricultural sector is land degradation which due to excessive use of fertilizers and pesticides and unsustainable agricultural practices will further worsen soil conditions (Kurniadi, Y U., 2020).

Efforts to increase the resilience of dryland agroecosystems can be carried out by manipulating the biophysical conditions of the land, such as improving soil quality, improving crop systems, applying rain harvesting technology combined with cultivation technology, and improving economic infrastructure. Practical efforts that can be made to improve soil quality are through amelioration (soil improvement materials). Soil amelioration can be done in various ways ranging from the application of organic fertilizers such as manure, compost and biochar from agricultural waste (Matheus et al., 2017).

Liquid Organic Fertilizer (POC) is made through the fermentation process of organic materials such as lamtoro, tofu waste, livestock manure, straw, rice washing water, charcoal, and rice husks. POCs contain organic matter that provides nutrients to plants through gradual decomposition, resulting in simple organic matter that is easily absorbed by plants. Liquid fertilizer is more effective and efficient when applied to leaves, flowers, and plant stems than to planting media. POC can serve as a growth stimulant, especially when plants begin to sprout or undergo a change from the vegetative to generative phase, to stimulate fruit and seed growth (Sitanggang et al., 2022)

The type of plant that is often used as a material in making organic fertilizer comes from legume plants. Legume plants, such as Chinese Petai or Lamtoro, are often used as ingredients for making organic fertilizers because they are easily degradable and rich in nutrients needed by plants. The content of N, P, and K in legume plants is relatively higher than other types of plants, and micronutrients in addition to containing nutrients, also

contain microorganisms. so it is very good for spurring plant growth (Rizqika & Hasrizat, 2022). Chinese petai plants can be used as a source of energy, have nutrients such as protein, carbohydrates, phosphorus, vitamin A, iron, and especially vitamin C.

The use of Chinese petai as a liquid organic fertilizer has long been used in the world of agriculture, because this legume plant has a relatively high content of N, P, K than other types of plants, this fertilizer is also easily decomposed so that the provision of nutrients in the soil is faster (Rizqika & Hasrizat, 2022), Therefore, the researcher feels the need to conduct a study on the Effect of Dosing Chinese Petai Liquid Organic Fertilizer on the Growth of Kale and Kailan Vegetables, focusing on the best dosage treatment or composition of use. The purpose of the study was to analyze the effect of dosing Petai chinese liquid fertilizer (*Leucaena leucocephala*) on the growth of water spinach (*Ipomoea reptans Poir*) and Kailan (*Brassica oleracea L*).

2. Materials and Methods

2.1 Study Design and Setting

This type of research is a Parametric study with a Complete Random Design (RAL) design consisting of four treatments with five replications. Linear model for complete random design(RAL) (Hasdar et al., 2021), are as follows: $Y_{ij} = \mu + \alpha_i + \epsilon_{ij}$

2.2 Population and Sampling

The sample of this study involved two types of plants, namely: water spinach vegetables (*Ipomoea reptans Poir*) and Kailan vegetables (*Brassica oleraceae L*). Each type of plant in the study was divided into four different treatment groups with each treatment repeated five times. The P0 group (Control) without the treatment of giving Chinese petai extract, was only given water. Group P1 treated Chinese petai extract at a dose of 5 tablespoons (5 ml) per 5 liters of water. Group P2 treatment of Chinese petai extract at a dose of 10 tablespoons (10 ml) per 5 liters of water. Group P3 Chinese petai extract treatment at a dose of 15 tablespoons (15 ml) per 5 liters of water.

2.3 Data Collection

The data collected in this study data from the measurement of plant growth parameters, namely plant height, leaf width and number of leaves.

2.4 Variables and Operational Definitions

In this study, the independent variables are Chinese Petai Liquid Organic Fertilizer (1 kg of mashed Chinese petai leaves mixed with 3 liters of water, 5 tablespoons of salt and 1 tablespoon of micin stored in a clean container fermented for 7 days) and the dependent variable of Water spinach vegetables (Water spinach, leaf dicot plants resemble the heart of the liver with pointed tips and a harvest age of 28 days after planting), Kailan vegetables (a type of vegetable in the cabbage-cabbage family), have thick leaves, similar to Caisim, which are long and wide with a flat surface of the type of vegetable that can be produced all year round. Where the independent variable will be connected with the dependent variable to see whether there is a significant relationship between the independent variable and the dependent variable.

2.5 Data Analysis

The observed data obtained are then analyzed using *Analysis of Variance* (ANOVA) to determine whether there are significant differences in plant growth parameters due to the treatment given. If the ANOVA results show a real effect, the Honest Real Difference (BNJ) analysis will be followed by the *Duncan Multiple Range Test* (DMRT) at a significance level of 5% to identify the mean difference between treatment groups.

2.6 Ethical Considerations

This research has gone through an ethical feasibility test and has been declared feasible in terms of research ethics by the research ethics committee through an ethics feasibility letter dated October 14, 2025, with the number: 005030/KEPK FKM UNDANA/2025 which is based on 7 (seven) WHO Standards and Guidelines 2011, with reference to the fulfillment of the CIOMS 2016 Guidelines.

3. Results

3.1. The effect of administering Liquid Organic Fertilizer (POC) doses Chinese Petai on the growth of water spinach.

Height of water spinach stems

Table 1. High Stem Vegetable water spinach

High Stem Vegetable water spinach				
Treatment	n	Subset		
		1	2	
Duncana,b	.00	5	16.7500A	
	1.00	5	16.8500 A	
	3.00	5	17.5500 A	
	2.00	5		19.9500b
Sig.			.240	1.000

The results of ANOVA's analysis obtained a P value or significance of 0.000 which is smaller than Pvalue 0.05 ($P < 0.05$). The results of the analysis showed that the treatment of giving a dose of Chinese POC Petai 5ml-15 ml had a very significant effect on the height of the water spinach vegetable stems. The results of the further test obtained by Duncan obtained the P2 treatment with a dose of 10 tablespoons (10 ml) per 5 liters of water significantly showed a higher or optimal average growth of the stem height with an average value of 19.9500, compared to the average growth of P0, P1 and P3 treatments. The average value of the same P0, P1 and P3 treatments showed no real difference between the three treatments (Table 1).

Leaf width of water spinach vegetable

Table 2. Leaf width of water spinach vegetable

Leaf Width of water spinach Vegetable				
Treatment	n	Subset		
		1	2	
Duncana,b	.00	5	2.4100 A	
	1.00	5	2.4800 to	
	3.00	5	2.6360 A	
	2.00	5		3.1760b
Sig.			.356	1.000

The results of the analysis showed that the treatment of giving a dose of POC Petai china had a significant effect on the development of water spinach leaf width, this was shown by a P value or significance of 0.015 which was smaller than 0.05 ($P < 0.05$). The results of Duncan's follow-up test analysis showed that the P2 treatment group with a dose of 10 tablespoons (10 ml) per 5 liters of water showed a very real influence on the development of water spinach leaf width, shown with a higher average value (3.1760) than the P0, P1 and P3 treatment groups (Table 2).

Number of water spinach Vegetable Leaves

Table 3. Number of water spinach Vegetable Leaves

Number of Leaves of water spinach Vegetables				
Treatment	N	Subset		
		1	2	
Duncana,b	.00	5	6.2500 to	
	3.00	5	6.3000 A	
	1.00	5	6.5000 A	
	2.00	5		7.7000b
Sig.			.457	1.000

Based on the results of Anova's analysis, a P value or significance of 0.01 was obtained that was less than 0.05 ($P < 0.05$), which means that based on the treatment of giving 5ml -15 ml Chinese Petai POC there was a very significant effect on the increase in the number of water spinach leaves. The results of the Duncan follow-up test showed that the P2 treatment group with a dose of 10 tablespoons (10 ml) per 5 liters of water had an average value (7.7000) increase in the number of leaves that was higher than the P0, P1 and P3 treatment groups which had almost the same average value (Table 3).

3.2. The effect of administering Liquid Organic Fertilizer (POC) doses Chinese Petai on the growth of Kailan.

Height of vegetable stems Kailan.

Table 4. Height of vegetable stems Kailan

High Stem Vegetables Kailan				
	Treatment	n	Subset	
			1	2
Duncan,a,b	3.00	5	17.9740 ^A	
	.00	5	19.1520 ^A	
	1.00	5	19.3940 ^{to}	
	2.00	5		22.2040 ^b
	Sig.		.166	

The results of Anova's analysis obtained a P value or significance of 0.02 which is smaller than the Pvalue of 0.05 ($P < 0.05$), where it can be concluded that the treatment of giving a dose of Chinese Petai POC 5ml, 10ml and 15ml has a very significant effect on the tall growth of Kailan plant stems. Based on the results of the follow-up test, the P2 treatment with a dose of 10 tablespoons (10 ml) per 5 liters of water significantly showed a higher or optimal average growth of stem height with an average value of 22.2040, compared to the lower average growth of P0, P1 and P3 treatments (Table 4).

Leaf width of vegetables Kailan

Table 5. Leaf width of vegetables Kailan

Vegetable Leaf Width Kailan				
	Treatment	n	Subset	
			1	2
Duncan,a,b	.00	5	9.6680 ^A	
	3.00	5	9.6900 ^A	
	1.00	5	9.8140 ^A	
	2.00	5		11.2360 ^b
	Sig.		.655	

The results of the analysis showed that the treatment of giving doses of 5ml, 10 ml and 15 m of Chinese Petai POC had a significant effect on the development of Kailan leaf width, this was shown by a P value or significance of 0.000 which was smaller than 0.05 ($P < 0.05$). The results of Duncan's follow-up test analysis showed that there was a difference in the effect of the development of Kailan leaf width on each treatment group. The P2 treatment group with a dose of 10 tablespoons (10 ml) per 5 liters of water showed the most significant effect on the development of Kailan leaf width with a higher average value (11.2360) (Table 5).

Number of vegetable leaves Kailan

Table 6. Number of Vegetable Leaves Kailan

Number of Vegetables leaves Kailan				
	Treatment	n	Subset	
			1	2
Duncan,a,b	.00	5	15.3280 ^A	
	1.00	5	15.5340 ^A	
	3.00	5	16.2920 ^A	
	2.00	5		21.0100 ^b
	Sig.		.072	

The results of Anova's analysis showed a P value or significance of 0.000 less than 0.05 ($P < 0.05$), which means that the treatment of giving a dose of 5ml, 10 ml and 15 ml of Chinese Petai POC had a very significant effect on the increase in the number of Kailan vegetable leaves. The results of Duncan's follow-up test analysis showed that the P2 treatment group with a dose of 10 tablespoons (10 ml) per 5 liters of water had an average value (21.0100) of higher leaf increase than the P0, P1 and P3 treatment groups which had lower average values and had the same average value so that there was no real difference between the three treatments (Table 6).

4. Discussion

Stem height Water spinach:

The high growth of Water spinach plant stems increased in the P2 treatment at a dose of 10 tablespoons (50 ml) per five liters of water, this shows that the dosage given is in accordance with the needs of the Water spinach plant so that it can stimulate the growth of Water spinach plants. This is because by giving Chinese Petai MOL, nutrients can be available to plants so that propagation, increase in size and number of cells in plants take place optimally (Kurniawati, 2018).

The increase in plant height indicates the vegetative growth activity of a plant. Nitrogen is one of the elements needed by plants in the growth process. Nitrogen plays a role in the formation of plant cells, tissues and organs. In addition, the increase in plant height is also influenced by the presence of phosphorus. Phosphorus plays a role in helping the development of young roots, namely the roots can strengthen the establishment of plants and can increase the absorption of nutrients needed by plants (Tuapattinaya and Tutupoly, 2014).

These results are also relevant to the research of Tiara, Ratih and Aulawi (2019) on the application of Lamtoro leaf liquid fertilizer on the growth and yield of tomato plants, where the application of Lamtoro leaf POC with a concentration of 10% showed the best effect on the height of tomato plants in contrast to the POC concentration treatment, namely 0%, 20% and 30% which showed a poor response. From these results, it can also be concluded that the high concentration of POC of Chinese Petai leaves is not directly proportional to the high growth of the plant.

According to (Sabrina, 2022) The administration of POC can help increase the availability and uptake of nutrients that are indispensable for the formation of organic compounds such as, Nitrogen which plays a role in the formation of proteins which are the main components of protoplasm as metabolic centers that trigger cell division, lengthening, and cell differentiation that support overall plant growth, including leaf count and leaf area.

Stem height Kailan :

The P0, P1 and P3 treatment groups had the same average crop growth values, indicating no real difference between the three treatments. Meanwhile, the P2 treatment group (10 ml) showed better plant growth where increased plant height growth can be seen. The increase in plant height occurs due to division and extension of cells dominated at the tips of plant shoots which are influenced by organic matter, especially NPK elements. Nitrogen plays a role in the formation of proteins and the formation of plant cells. Phosphorus plays a role in cell division for stem elongation. Potassium stimulates plant growth points to strengthen stems (Fitriansah, 2019). According to Aidah et al. (2020), plants need macro and micro nutrients to support growth. Macronutrients consist of nitrogen, phosphorus, potassium, calcium, magnesium, and sulfur that plant tissues need in the amount of 0.1%. Micronutrients consist of boron, chlorine, copper, iron, manganese, molybdenum, nickel, and zinc required by plant tissues in the amount of 0.01%

Research conducted by Natalia (2021) The Effect of the Combination of Inorganic Fertilizer and Liquid Organic Fertilizer (Poc) Doses of Lamtoro Leaves on Growth and

Yield of Kailan showed that the dose of liquid fertilizer of lamtoro leaves of 250 ml/plant without using inorganic fertilizers produced the highest plant height. This is because lamtoro leaf liquid fertilizer is easier to absorb by plants and with the intensity of the application time that often makes the availability of nutrients always available.

The results of this study are in line with the research with the research of Decy, Erlita and Iwan (2022) on lamtoro leaf liquid fertilizer and quail manure on Kailan growth and production, where the results of statistical analysis show that the application of liquid organic fertilizer of Chinese Petai leaves in C2 treatment shows the average value (23.78 cm) of the highest growth of Kailan plants and is very noticeable from the C0 treatment, C1 and C3. The results mean that the high concentration of POC of Chinese Petai leaves has no effect on the high growth of Kailan plants.

Leaf Width Water spinach:

The P2 treatment group with a dose of 10 tablespoons (50 ml) per 5 liters of water showed the most significant effect on the development of Water spinach leaf width compared to the P0, P1 and P3 treatment groups which were lower, where the three treatment groups had no significant differences with the same mean value.

These results are in line with Sabrina's (2022) research on the Effect of Concentration and Time Interval of Application of Lamtoro Leaf Liquid Organic Fertilizer (*Leucaena Leucocephala* L.) On the Growth of Lettuce (*Lactuca Sativa* L.) shows that the difference in the treatment of giving POC Petai china has a significant effect on the leaf width of lettuce plants. Among the four treatments P0 (0%), P1 (5%), P2 (10%), and P3 (15%), the P3 treatment with a concentration of 15% had the best leaf width with an average value of 9.23 cm.

According to Falahuddin et al. (2016), the good development of leaf width shows that the needs of the elements N, K, and Mg in plants have been met and play a role in the formation of chlorophyll which increases photosynthesis and carbohydrate formation. Carbohydrates help the formation of proteins that can increase protoplasm as a component of the cell, thus supporting the process of cell division that affects the increase in leaf width.

Research by Wijaya et al. (2015), ideal leaf growth is also influenced by the application of fertilizer that is carried out at appropriate levels. Increased concentration supports an increase in the level of nutrients that plants can utilize, thus encouraging the running of ideal metabolic processes. However, concentration needs to be adjusted to needs, because plants have limitations in absorbing nutrients. If the concentration is very low, the plant faces a lack of nutrients that results in non-optimal growth as a result, the plant is dwarfed and leaves are small in size. If the level is too high, the plant experiences toxicity which results in stress and disruption of metabolic processes which causes a decrease in growth yield (Rosmawati et al., 2021).

Leaf Width Kailan :

The P2 treatment group with a dose of 10 tablespoons (10 ml) per 5 liters of water showed the most significant effect on the development of Kailan leaf width, with a higher average value of 11.2360 compared to the P0, P1 and P3 treatment groups which were lower, where the three P0, P1 and P3 treatment groups had the same average value, showing no significant difference between the three treatments. Plants that have wider leaves can absorb sunlight effectively so that they can produce more photosynthates because they can do photosynthesis well (Simanullang, 2019).

This result is in line with the research of Decy, Erlita and Iwan (2022) on lamtoro leaf liquid fertilizer and quail manure on Kailan growth and production, the results of the study show that the application of Chinese petai liquid organic fertilizer has a real effect on the leaf area where the results of statistical analysis show that the C2 treatment has an average value (84.89 cm²) of the widest leaf area and is very different from the C0 treatment, C1 and C3.

Based on these results, this study is in line with the research of Glen, I Gusti, and I Nyoman on the Effect of Lamtoro and NASA Leaf Liquid Organic Fertilizer on Pakcoy Plant Growth and Yield, showing that the treatment of giving POC of Chinese Petai leaves has a real effect on the leaf area of pakcoy plants with the results of statistical tests showing that the P1 treatment of Chinese Petai leaves has an average value of 39.38 cm².

One of the nutrients that affects the leaf area of the pakcoy plant is nitrogen (N). Chlorophyll helps in the process of photosynthesis which then the results of photosynthesis will be overhauled through the process of respiration. This is in line with the opinion of Hakim et al. in Hidayat (2013) that nitrogen (N) is indispensable for the production of proteins used to form cells and chlorophyll. Energy will be produced through the respiration process which will then be used by the cell for cell division so that the leaves can grow longer and wider

Number of Leaves Water spinach:

There was a significant difference between treatment groups where the P2 treatment group had the best or significant effect on the growth of Water spinach, this was shown by the increase in the number of Water spinach leaves.

Organic matter can regulate various soil properties, as a buffer for the supply of nutrients for plants, affecting soil structure (Rizki et al., 2015). The quality of organic matter has an important effect on the speed of the decomposition process and mineralization of organic matter so that it can be subsequently absorbed by plants. Nitrogen is the main nutrient needed for plant growth. In general, nitrogen nutrients are needed by plants in the vegetative growth of plants such as leaves, stems, and roots. Nitrogen nutrients are absorbed by plants in the form of ammonium ions (NH₄⁺) or nitrate ions (NO₃⁻).

These results are in line with research (Kurniawati, 2018) about increasing the growth and yield of land Water spinach plants by applying the MOL of Chinese Petai leaves to FMD soil, which shows that the treatment of MOL of Chinese Petai leaves has a very real effect on the average number of leaves at the level of 0.01 with the application of 200 cc of MOL of Chinese Petai leaves to produce the most number of leaves with an average of 8.60 leaves. The application of 200 cc Chinese Petai Leaf MOL produces the highest plant growth and yield due to the content of microorganisms that can ferment organic matter so that it produces compounds that can be absorbed directly by plants. (Kurniawati, 2018).

These results are relevant to the research of Asri, Rahmi and Khoiron (2017) on the effect of Chinese petai liquid organic fertilizer on the growth of Caisim plants and their contribution to high school biology learning, which showed an increase in the number of leaves of caisim plants in the P1 treatment with a concentration of 10% POC of Chinese petai leaves while the P2 (20%), P3 (30%), P4 (40%) and P0 0% (Control) treatments showed an average lower number of leaf additions. This result means that the high concentration of Chinese Petai POC treatment is not directly proportional to the increase in the number of leaves of the Caisim plant. The increase in the number of Caisim leaves in P1 is due to the elements of nitrogen and magnesium contained in Chinese petai leaves can increase the number of leaves of the Caisim plant.

Number of Leaves Kailan :

The P2 treatment group with a dose of 10 tablespoons (10 ml) per 5 liters of water had an average value of 21,0100 higher leaf count increases than the P0, P1 and P3 treatment groups with the lowest P0 treatment. This shows that there are significant differences between treatment groups where the P2 treatment group has the best or significant effect on the increase in the number of Kailan leaves.

The N element contained in lamtoro leaf liquid organic fertilizer encourages the growth of organs related to photosynthesis, namely leaves, nitrogen can accelerate growth and provide greater yields to encourage the growth of vegetation such as leaves, stems, roots, which have an important role in Fisabilillah plants (2023). Potassium (K) acts as an

activator of various enzymes that are essential in photosynthesis and respiration reactions as well as for enzymes involved in the synthesis of proteins and starches. In plants, element P is an important constituent element of adenosine triphosphate (ATP) which directly plays a role in the process of storing and transferring energy related to the plant metabolic process and plays a role in increasing yield components.

This result is relevant to the research conducted by Decy, Erlita and Iwan (2022) on lamtoro leaf liquid fertilizer and quail manure on the growth and production of Kailan there is a different effect of the application of Chinese Petai POC on the increase in the number of leaves, from the results of statistical analysis, it is known that the C3 treatment (8.69 sheets) shows the highest number of leaves treated, C2 (8.20 sheets), C1 (8.13 sheets) are different from the real and C0 (7.80 sheets).

This result is relevant to the research of Natalia (2021) The Effect of the Combination of Inorganic Fertilizer and Liquid Organic Fertilizer (Poc) Lamtoro Leaves on Growth and Yield Kailan shows that the dose of liquid fertilizer of lamtoro leaves of 250 ml/plant without adding inorganic fertilizer produces the highest number of leaves. This is due to the fact that Liquid Organic Fertilizer is more absorbed by plants. The nutrients contained can be easily absorbed and utilized by plants. Liquid Organic Fertilizer can also improve the living conditions of organisms in the soil. Soil organisms play an important role in maintaining soil fertility and in the cycle of carbon, nitrogen, phosphorus, and sulfur (Susilawati, et al. 2013). The application of liquid fertilizer results in the availability of nutrients.

5. Conclusions

Based on the results of the study, the effect of the dosage of Petai Chinese liquid organic fertilizer on the growth of Water spinach and Kailan vegetables, it can be concluded that several things: The administration of the dosage of Petai Chinese Liquid Organic Fertilizer has a real effect on the growth of Water spinach and Kailan vegetables. The administration of a dose of Chinese Petai Liquid Organic Fertilizer at a P2 treatment dose of 10 tablespoons (10 ml) per five liters of water has a very noticeable effect on the height of Water spinach vegetable stems. The administration of a dose of petai china liquid organic fertilizer at a P2 dose of 10 tablespoons (10 ml) per five liters of water had a very noticeable effect on the number of leaves and leaf width of Water spinach vegetables. The administration of the dose of Chinese Petai Liquid Organic Fertilizer at P2 treatment at a dose of 10 tablespoons (10 ml) per five liters of water had a very noticeable effect on the height of Kailan vegetable stems. The administration of a dose of petai china liquid organic fertilizer in P2 treatment at a dose of 10 tablespoons (10 ml) per five liters of water had a very noticeable effect on the number of leaves and leaf width of Kailan vegetables.

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7. Conflicts of Interest

“The authors declare no conflict of interest.”

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