Synergy of application fertilizer leaves and organic growth regulatory for growth and production potential of eggplant plants (Solanum melongena L.)

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Abstract Eggplants (Solanum melongena L.) is a vegetable that people like. Provision of nutrients through leaves and organic hormones which are sustainable materials are expected to increase the productivity potential of eggplant plants. This is caused by the synergy of the application of leaf fertilizer and plant growth hormone. The study was conducted at the Krian District Counselling Centre using a polybag with Factorial Complete Randomized Design repeated three times. Factor I: Leaf Fertility Concentration with 4 treatment levels (G0 = 0g/l water; G1 = 1 g/l water; G2 = 2 g/l water; and G3 = 3 g/l water). Factor II: ZPT concentrations with 4 levels of treatment (Z0 = 0 cc/l water; Z1 = 1 cc/l water; G2 = 2 cc/l water; and G3 = 3 cc/l water). There is a synergy between the application of leaf fertilizer and ZPT on fruit quality with the best application in leaf fertilizer concentrations of 1cc/l and ZPT 2cc/l, where the potential diameter of the fruit increases by 15% and the length of the fruit increases by 28%. The highest potential for vegetative growth is in the application of 1g / l leaf fertilizer where the potential for production increases with 1g/l fertilizer application and 2cc/l hormone administration. The application of leaf fertilizer and hormones gives an increase in yield compared to control where the application of leaf fertilizer increases the potential for growth by 16% and increases the fruit production potential by 66%. In addition, the application of the 2 cc/l hormone can increase growth potential by 6% and increase fruit production potential by 69%.

Keywords: Leaf fertilizer, Growth hormone, Vegetative and generative growth, Eggplant plants

1. Introduction

Eggplant (Solanum melongena L.) is a vegetable plant in Indonesia. Eggplant is loved by people both as fresh vegetables and processed into various types of cuisine. Eggplant commodity is quite potential to be developed as a diversity of nutritious vegetable ingredients for the population. The development of eggplant production on infertile land in the rainy season is a problem that needs to be followed up in order to get maximum production [1].

The use of leaf fertilizer and growth regulators is expected to increase eggplant (Solanum melongena L.) production on infertile land especially in the rainy season. The use of leaf fertilizer is more effective and can be absorbed more quickly, because it is directly absorbed by the leaves through the stomata. The use of leaf fertilizer can be more efficient both in dosage and application dosages and does not cause excessive fertilizer residues in the soil. Fertilizing through the leaves is done because
the nutrients are often leaching so that the productivity of eggplant plants is less than optimal. Giving the right concentration of leaf fertilizer to the needs of eggplant plants will increase the productivity of eggplant plant [2,3].

The use of growth regulators is also able to increase plant growth and yield. ZPT contains auxin, gibberellins and cytokines that are able to encourage growth and extension of plant parts (roots and stems), stimulate flowering and normalize the growth of stunted plants. The formation of certain organs of the plant is strongly influenced by the use of certain regulatory substances with the right concentration [4].

Eggplant production decreased, one of which can be caused by the number of flowers that fall and the failure of flowers to become fruit. The use of growth regulators (ZPT) can stimulate or stimulate flowering, can reduce the loss of flowers and fruit, and normalize the growth of dwarf plants [5].

The synergy of fertilizer application and Growth Regulatory Substances in eggplant plants is expected to increase the growth potential and production of eggplant plants. Nutrients that are available in sufficient quantities through the leaves can synergize with growth regulators in growth and eggplant (Solanum melongena L.) production. The response of plants to the treatment of leaf fertilizer and growth regulators will be seen from the morphology of plant growth both vegetative and generative growth [6].

Based on the description above, research on the use of leaf fertilizer and growth regulators (ZPT) in eggplant plants. Keep in mind the concentration of leaf fertilizers and the concentration of hormones that regulate growth hormone is right to support increased growth potential and eggplant (Solanum melongena L) plant production.

2. Methods

2.1. Place and time of research
The study was conducted in the counselling garden area of Krian District, Sidoarjo Regency, which is located at an altitude of 0-120 meters above sea level, and has an average temperature of 24-33 °C. The time of the research in May 2019.

2.2. Tools and materials
The tools used in this study were garden tools, polybags with a capacity of 0.5 kg, polybags with a capacity of 5 kg, volume 1 liter hand sprayer, analytical scales and callipers, rulers, measuring cups, beaker glass, paranets, wood, cameras and stationery.

The materials used in this research were Antaboga-1 eggplant seed varieties, soil planting media, manure, Mutiara 16:16:16 NPK fertilizer, agristick adhesives, D-leaf gandasil fertilizer and hormonic ZPT (contains auxins, gibberellins and cytokinins, contains macro and micro nutrients and humic acid). Pest control using Furadan and Decis insecticides, and the fungicide used is Dithane M-45.

2.3. Research methods
Complete Random Design (CRD) and repeated 3 times. The first factor is the concentration of Gandasil D leaf fertilizer and the second factor is the concentration of the hormonic ZPT which are

| Factor 1: Gandasil D fertilizer concentration | Factor 2: Hormonic ZPT concentration |
|---------------------------------------------|--------------------------------------|
| Go: control                                 | Zo: control                          |
| G1: 1 g/ liter water                        | Z1: 1 cc/ liter water                |
| G2: 2 g/ liter water                        | Z2: 2 cc/ liter water                |
| G3: 3 g/ liter water                        | Z3: 3 cc/ liter water                |

The data obtained were analyzed by the F test. To test the difference in mean values between treatment levels, it was continued with the Honestly Significant Difference test at the 5% level (HSD
Vegetative variables observed included plant height (cm), number of leaves, and number of flowers.

3. Result and Discussion

3.1. Characteristics of vegetative growth

3.1.1. Plant height (cm).

The results of the analysis of variance showed that the combination treatment of fertilizer concentration and hormone concentration did not significantly affect the height of the eggplant plant. The average height of eggplants in Table 1.

**Table 1.** Average Plant Height (cm) in the Treatment of Fertilizer Concentration and Hormone Concentration at All Observation Ages.

| Treatment                      | 14 days | 28 days | 42 days | 56 days | 70 days |
|--------------------------------|---------|---------|---------|---------|---------|
| Gandasil D Fertilizer concentration |         |         |         |         |         |
| G0 (without treatment)         | 10,13 a | 19,94 a | 35,03 a | 58,06 a | 66,39 a |
| G1 (1 gr/liter)                | 11,21 b | 26,44 c | 43,46 b | 64,29 c | 77,12 b |
| G2 (2 gr/liter)                | 11,82 b | 24,36 b | 43,35 b | 61,08 bc| 73,94 b |
| G3 (3 gr/liter)                | 9,96 a  | 21,11 a | 44,91 b | 58,85 ab| 68,80 a |
| HSD 5%                         |         | 1,08    |         | 3,26    | 3,90    |
| Hormonic ZPT Concentration     |         |         |         |         |         |
| Z0 (without treatment)         | 10,65   | 22,58   | 39,48   | 58,23 a | 69,29 a |
| Z1 (1 cc/liter)                | 11,12   | 23,33   | 41,48   | 62,40 b | 73,62 b |
| Z2 (2 cc/liter)                | 11,19   | 23,31   | 42,89   | 61,95 b | 73,72 b |
| Z3 (3 cc/liter)                | 10,16   | 22,64   | 42,53   | 59,69 ab| 69,51 a |
| HSD 5%                         | nr      | nr      | nr      | 3,26    | 3,90    |

Note: The numbers accompanied by the same letter in the same column mean that they are not significantly different in the HSD test p = 0.05; nr = not real; days = Days after Planting

Table 1 shows the average plant height at the age of plants 14-70 DAP. The treatment of fertilizer concentration produced the highest height of eggplant, namely the treatment of G1 (1 gr/liter of water) at all ages (14-70 HST) while the lowest plant height at the treatment of G0 (without treatment) 66.13 cm. This is presumably because at these concentrations the nutrients supplied are available in optimal and balanced quantities. The contents of the Gandasil D fertilizer are nitrogen (N): 20%; phosphate (P2O5): 15%; potassium (K2O) 15%; and magnesium (MgSO4) 1%. Nitrogen is needed in a lot in plant growth, because nitrogen plays an important role in the vegetative phase of plants. High nutrient content of N and balanced fertilization can stimulate the growth process of eggplant plants [1]. Vegetative growth really needs Nitrogen, because Nitrogen is needed for the formation of chlorophyll, synthesis of amino acids, proteins, and nucleic acids [2]. The potassium nutrient influences the vegetative growth of plants, plays a role in the division and development of plant cells.

Table 1 shows that at the age of 70 DAP the highest eggplant plant height was treatment Z2, while the lowest plant height at treatment Z0 (without treatment) 69.29 cm. This is because young plants will be able to absorb nutrients in small amounts in line with the age of the plant, the absorption rate of plant nutrients will increase if age increases according to its life cycle. With increasing age of eggplant plants, the need for nutrients, especially Nitrogen (N) is also higher [7]. Quality of life of plants also depends on the adequacy of nutrients from the environment and the ability of leaves to absorb nutrients in supporting the vegetative phase of plants [8].
3.1.2. **Number of leaves.**

The treatment of fertilizer concentration has a very significant effect on the number of leaves of eggplant. Hormone concentration treatment did not significantly affect the number of eggplant plant leaves at all plant ages. The average number of leaves due to the treatment of fertilizer concentration and hormone concentration is shown in Table 2.

**Table 2.** Average Number of Leaves (Strands) in the Treatment of Fertilizer Concentration and Hormone Concentration at All Observation Ages.

| Treatment                      | 14 days | 28 days | 42 days | 56 days | 70 days |
|--------------------------------|---------|---------|---------|---------|---------|
| Gandasil D Fertilizer concentration          |         |         |         |         |         |
| G0 (without treatment)                           | 5,50    | 9,00 a  | 13,50 a | 21,39 a | 30,97 a |
| G1 (1 gr/liter)                             | 5,86    | 11,03 c | 16,72 b | 24,14 b | 36,00 b |
| G2 (2 gr/liter)                             | 5,69    | 9,33 ab | 16,28 b | 22,92 ab| 34,89 b |
| G3 (3 gr/liter)                             | 5,86    | 10,03 b | 16,58 b | 24,08 ab| 34,61 b |
| HSD 5%                                       | Nr      | 0,91    | 1,31    | 1,99    | 2,52    |
| Hormonic ZPT Concentration                   |         |         |         |         |         |
| Z0 (without treatment)                        | 5,81    | 9,33    | 15,19   | 22,11   | 32,47   |
| Z1 (1 cc/liter)                               | 5,58    | 9,83    | 15,36   | 22,75   | 34,78   |
| Z2 (2 cc/liter)                               | 5,89    | 10,14   | 16,39   | 23,94   | 34,86   |
| Z3 (3 cc/liter)                               | 5,64    | 10,08   | 16,14   | 23,72   | 34,36   |
| HSD 5%                                       | nr      | nr      | nr      | nr      | nr      |

Note: The numbers accompanied by the same letter in the same column mean that they are not significantly different in the HSD test \( p = 0.05 \); nr = not real; days = Days after Planting

Table 2 shows the treatment of fertilizer concentration which produced the highest number of leaves in G1 while the lowest number of leaves in the G0 treatment. This is presumably because the high N nutrients can stimulate the growth process of eggplant plants. The most important element of leaf growth and development is the Nitrogen [3]. High levels of N elements generally produce more and bigger leaves.

Table 2 shows the treatment of hormone concentrations resulting in insignificant differences in the number of leaves at all plant ages. The method of application through the leaves is more influenced by environmental factors, so that the administration of hormonic ZPT in plants with uncontrolled environmental conditions can cause hormonal administration to be suboptimal and inhibit the absorption performance of hormones given to plants (inhibitors) [9].

3.2. **Characteristics of generative growth**

3.2.1. **Number of flowers.**

Treatments such as fertilizer concentration and hormone concentration have a very significant effect on the number of eggplant plants. The average number of flowers due to various treatments of fertilizer concentration and hormone concentration are in Table 3.

Table 3 shows the kinds of fertilizer concentration treatments showed the highest number of flowers, namely G2 treatment but not significantly different from G1 and G3 treatments while the lowest number of flowers was G0 treatment. This is because the nutrients, especially Phosphorus (P) obtained from D fertilizer can affect the flowering process or fructification in plants. The P element can influence in stimulating the process of pollination, fruit formation and ripening. Towards the
formation of flower plants need a lot of phosphorus for the formation of flowers and fruit, so that the flowers and fruit that are formed are bigger and better [8].

Table 3. The Average Number of Flowers in the Treatment of Fertilizer Concentration and Hormone Concentration

| Treatment                        | Number of Flowers |
|----------------------------------|-------------------|
| Gandasil D Fertilizer Concentration |                   |
| G0 (without treatment)           | 7,00 a            |
| G1 (1 gr/liter)                  | 9,50 b            |
| G2 (2 gr/liter)                  | 10,08 b           |
| G3 (3 gr/liter)                  | 9,33 b            |
| HSD 5%                           | 1,10              |
| Hormonic ZPT Concentration       |                   |
| Z0 (without treatment)           | 7,17 a            |
| Z1 (1 cc/liter)                  | 9,00 b            |
| Z2 (2 cc/liter)                  | 9,50 bc           |
| Z3 (3 cc/liter)                  | 10,25 c           |
| HSD 5%                           | 1,10              |

Note: The numbers accompanied by the same letters in the same column and treatment means that they are not significantly different in the HSD test p = 0.05

Hormone concentration treatment showed the highest amount of interest is Z3 treatment but not significantly different from Z2 and Z1 treatments while the lowest amount of interest was Z0 treatment. This is because hormonal growth regulators contain complete growth regulators, namely: Auxin, Gibberellins and Cytokines. Giving hormonic ZPT in plants is thought to increase auxin through the formation of proteolytic enzymes that free tryptophan compounds as auxin precursors [10]. The increase in auxin content inhibits the process of flower abscission which further inhibits the formation of the flower abscess zone thus preventing the flower from falling prematurely. The use of growth regulators can affect the formation of tissue of various organs and plant organ systems including stimulating the development of roots, shoots, increasing plant physiology and increasing the process of nutrient absorption and preventing the occurrence of deciduous flowers [11].

3.2.2. Percentage of fruit set (%).

In the treatment of fertilizer concentration does not affect the percentage of fruit-set and hormone concentration significantly affect the fruit-set percentage of eggplant plants. The average percentage of fruit-set due to the treatment of fertilizer concentration and hormone concentration is shown in Table 4.

Table 4 shows the results of the fruit-set percentage between 71.42% - 80.38. The lowest percentage of fruit-set is in treatment Z0. Fruit-set is the ratio between the number of fruit formed by the thumb and the total number of flowers in the plant. The size depends on these two factors. The amount of fruit is closely related to the amount of flowers formed by the plant itself. The P element can influence in stimulating the process of pollination, fruit formation and ripening. Other than that as a constituent of fats and proteins and functions for the transport of energy resulting from metabolism in plants. The time of discharge of flowers in plants is strongly influenced by the element of phosphorus that is able to be absorbed by plants [12]. The function of P for plants is as a builder and bound in organic compounds, as a builder substance P scattered in the body of the plant, plant body parts related to generative breeding, such as flower and fruit formation, so in the process of flower formation requires a lot of phosphorus. Towards the formation of flower plants need a lot of phosphorus for the formation of flowers and fruit, so that the flowers and fruit that are formed are bigger and better [2].

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Table 4. Average Fruitset Percentage (%) in Treatment of Fertilizer Concentration and Hormone Concentration

| Treatment | Percentage of Fruit-set |
|-----------|-------------------------|
| **Gandasil D Fertilizer Concentration** | |
| G0 (without treatment) | 71.42 |
| G1 (1 gr/liter) | 78.94 |
| G2 (2 gr/liter) | 76.88 |
| G3 (3 gr/liter) | 80.38 |
| **HSD 5%** | **Nr** |
| **Hormonic ZPT Concentration** | |
| Z0 (without treatment) | 68.61 a |
| Z1 (1 cc/liter) | 77.78 b |
| Z2 (2 cc/liter) | 79.94 b |
| Z3 (3 cc/liter) | 81.27 b |
| **HSD 5%** | **6.42** |

Note: The numbers accompanied by the same letter in the same column mean that they are not significantly different in the HSD test p = 0.05; nr = not real

3.2.3. Number of fruits per harvest period.
Fertilizer concentration treatment did not significantly affect the number of fruits in the harvest period I, while harvest II, III, IV, and V significantly affected the number of fruit plants. In the treatment of hormone ZPT concentration significantly affected the number of fruits in the harvest period I to V (table 5).

Table 5. Average Number of Fruits per Harvest in Fertilizer Concentration Treatment and Hormone Concentration in All Harvest Periods

| Treatment | Number of Fruits |
|-----------|------------------|
| **Gandasil D Fertilizer concentration** | |
| G0 (without treatment) | 0.67 0.75 a 1.17 a 1.25 a 1.17 a 5.00 a |
| G1 (1 gr/liter) | 1.17 1.25 ab 1.67 ab 1.83 b 1.58 ab 7.50 b |
| G2 (2 gr/liter) | 1.25 1.42 b 1.75 b 1.67 ab 1.67 b 7.75 b |
| G3 (3 gr/liter) | 1.08 1.42 b 1.67 ab 1.67 ab 1.67 b 7.50 b |
| **HSD 5%** | **Nr 0.53 0.48 0.53 0.45 1.41** |
| **Hormonic ZPT Concentration** | |
| Z0 (without treatment) | 0.58 a 0.75 a 1.17 a 1.25 a 1.17 a 4.92 a |
| Z1 (1 cc/liter) | 1.08 ab 1.33 b 1.67 b 1.42 a 1.50 ab 7.00 b |
| Z2 (2 cc/liter) | 1.17 ab 1.33 b 1.67 b 1.67 ab 1.67 b 7.50 b |
| Z3 (3 cc/liter) | 1.33 b 1.42 b 1.83 b 2.00 b 1.75 b 8.33 b |
| **HSD 5%** | **0.69 0.53 0.48 0.53 0.45 1.41** |

Note: The numbers accompanied by the same letter in the same column mean that they are not significantly different in the HSD test p = 0.05; nr = not real

The treatment of fertilizer concentration did not provide a significant increase in the concentration of 2g / l and 3 g / l compared to the 1g / l treatment. The addition of hormone ZPT concentrations in all harvest periods resulted in a number of fruits that were not significantly different from treatments Z1 and Z2 but significantly different from treatments Z0. The results showed that the higher
percentage of fruit-set in plants caused an increase in the number of fruits per harvest period and the total number of fruits per plant. The higher the value of the fruit-set percentage, the greater is directly proportional to the number of fruits in the plant. The ZPT has been able to stimulate growth due to an increase in plant physiology.

3.2.4. Fruit diameter (cm) and fruit length (cm).
The average fruit diameter due to combination treatment of fertilizer concentration and hormone concentration can be seen in Table 6. Average fruit length due to combination treatment of kinds of fertilizer concentration and kinds of hormone concentration can be seen in Table 7.

Table 6. Average Diameter of Fruits (cm) in Combination of Treatments of Kinds of Concentration of Gandasil D Fertilizer and Types of Concentration of Hormonic ZPT

| Gandasil D Fertilizer | Fruit Diameter (cm) | Hormonic ZPT |
|-----------------------|---------------------|--------------|
|                       | Z0 (without treatment) | Z1 (1cc / liter water) | Z2 (2cc / liter water) | Z3 (3cc / liter water) |
| G0 (without treatment) | 3.86 a              | 4.02 a         | 4.00 a               | 4.04 a               |
| G1 (1 gr/liter water)  | 3.90 a              | 4.42 bc        | 4.54 c               | 4.10 ab              |
| G2 (2 gr/liter water)  | 4.07 ab             | 4.11 ab        | 4.19 abc             | 4.08 ab              |
| G3 (3 gr/liter water)  | 3.93 a              | 4.08 ab        | 4.00 a               | 3.99 a               |

Note: The numbers accompanied by the same letters in the same column and treatment means that they are not significantly different in the HSD test p = 0.05

Table 7. Average Fruit Length (cm) in Combined Treatment of Kinds of Concentration of D Fertilizer and Types of Concentration of Hormonic ZPT

| Gandasil D Fertilizer | Fruit Length (cm) | Hormonic ZPT |
|-----------------------|-------------------|--------------|
|                       | Z0 (without treatment) | Z1 (1cc / liter water) | Z2 (2cc / liter water) | Z3 (3cc / liter water) |
| G0 (without treatment) | 14.84 a            | 16.18 ab      | 17.11 abc            | 17.17 abc            |
| G1 (1 gr/liter water)  | 16.33 ab           | 17.87 bc      | 19.08 c              | 17.01 abc            |
| G2 (2 gr/liter water)  | 16.73 ab           | 18.34 bc      | 17.09 abc            | 17.10 abc            |
| G3 (3 gr/liter water)  | 16.44 ab           | 17.58 bc      | 17.01 abc            | 17.20 bc             |

HSDJ 5% 2.32

Note: The numbers accompanied by the same letters in the same column and treatment means that they are not significantly different in the HSD test p = 0.05

Tables 6 and 7 show that the combination of fertilizer concentration and hormone concentration increases fruit diameter and length. Increasing hormone concentrations at all fertilization levels can increase fruit length and fruit diameter. The availability of nutrients sprayed through the leaves will form a chlorophyll-forming cofactor so that the leaves become greener and can be absorbed by the sun optimally through the leaves to carry out the process of photosynthesis and produce high photosynthetic, so that production components such as fruit diameter and fruit length are also high.

Increased photosynthesis process will produce a large amount of carbohydrates, then assimilate is stored in the storage network, including in fruit, which causes the production component to increase [6]. High cytokine content in ZPT can affect cell division regulation, cell lengthening, increase the chances of seed formation and regulate flower and fruit growth [4]. Cytokines also function in the formation of organs and delay leaf aging in various types of plants. Cytokines can slow leaf aging by
maintaining the integrity of the tonoplast membrane, so that the process of photosynthesis in eggplant leaves is not interrupted which results in the flow of photosynthesis to continue to run well and will increase yield components such as fruit diameter and eggplant fruit length [8].

3.2.5. Total fruit weight per plant (g).
The treatment of fertilizer concentration and hormonal ZPT concentration each significantly affected the total fruit weight per eggplant plant. The average total fruit weight per plant due to the treatment of the concentration of Gandasil D fertilizer and the types of ZPT concentration are shown in Table 8.

| Treatment                        | Total Fruit Weight (g) |
|----------------------------------|------------------------|
| Gandasil D Fertilizer Concentration |                        |
| G0 (without treatment)          | 618,10 a               |
| G1 (1 gr/liter)                 | 1030,09 b              |
| G2 (2 gr/liter)                 | 933,88 b               |
| G3 (3 gr/liter)                 | 925,75 b               |
| HSD 5%                           | 175,01                 |
| Hormonic ZPT Concentration       |                        |
| Z0 (without treatment)          | 599,83 a               |
| Z1 (1 cc/liter)                 | 924,12 b               |
| Z2 (2 cc/liter)                 | 1018,27 b              |
| Z3 (3 cc/liter)                 | 942,45 b               |
| HSD 5%                           | 175,01                 |

Note: The numbers accompanied by the same letters in the same column and treatment means that they are not significantly different in the HSD test p = 0.05

The application of fertilizers and hormones results in an increase in total fruit weight but not significantly different in treatment concentrations of 2g/l and 3g/l. Adequate nutrients in plants are very important for the production of cultivated plants. The generative phase is related to the vegetative phase, which means that whether or not the generative phase depends on the vegetative phase of the plant. The adequacy of plant nutrients such as nitrogen, phosphate and potassium derived from Gandasil D fertilizers given during the growth period, have an impact on the fertilization of eggplant plants. Plants that have good vegetative growth will have good production growth as long as there is a balanced fertilization of nitrogen, phosphorus and potassium for tissue strengthening [13]. While the element K contained in the fertilizer expedites the entry of CO2 through the stomata. In addition to nutrients and water, CO2 is needed by plants as material in the process of photosynthesis. The more CO2 that is able to be absorbed by plants, the photosynthetic yield will also increase. The results of photosynthetic will be transplanted to all parts of the plant including the fruit, so that the weight of the fruit can increase. The elements of K function in the process of photosynthesis by accelerating CO2 entry through stomata, photosynthetic transport, water and sugar, and in protein and sugar synthesis [14]. This means that if the growth parameters show good results, the production parameters will be good too.

Hormonic ZPT influences cell division, cell extension, cell enlargement which causes an increase in overall plant growth. An increase in fruit total weight as a measure of the effect of cytokines on the stimulation of cell division and cytokines can increase the formation of chloroplasts in the leaves [5]. Cytokines are able to slow down leaf aging by maintaining the integrity of the tonoplast membrane, so that the plant's photosynthesis process is not interrupted which results in the continuous flow of photosynthetic and will increase yield components such as total mass dry weight, total amount, total length, total amount, and total weight [15]. This means that the hormone ZPT treatment with a
concentration of 1 cc / liter of water (Z1) is the optimal concentration for eggplant plants to increase production components such as fruit diameter, fruit length, and total weight of eggplant plants.

4. Conclusion
Based on the results and discussion it can be concluded that:

a. Synergy of leaf fertilizer and Growth Regulatory Substances is more apparent in the effect on the morphology of eggplant fruit quality, namely on the diameter of the fruit and the length of the fruit. Potential fruit diameter increased by 15% and fruit length increased by 28% in the treatment of Leaf Fertilizer concentration of 1cc / liter and ZPT 2cc / liter (G1Z2)

b. The best growth potential and eggplant production in the application of leaf fertilizer concentration of 1 g / liter of water. Application of dun fertilizer increases growth potential by 16% and increases fruit production potential by 66%

c. Hormone application of 2 cc / liter of water can increase growth potential by 6% and increase fruit production potential by 69%.

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