



Effect of Application of Several Organic Fertilizers on the Growth and Yield of Tobacco (*Nicotiana Tabacum* L.)

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ABSTRACT

Tobacco (*Nicotiana Tabacum* L.) is an agricultural commodity that is widely cultivated by the community. The decline in productivity is due to the uncontrolled use of chemical fertilizers and chemical pesticides, resulting in the degradation of organic matter. To deal with the problem can use Liquid Organic Fertilizer according to the dose for tobacco plants. The purpose of this study was to determine the effect of Liquid Organic Fertilizer treatment of shallot skin waste, banana stem waste, banana peel waste, and coconut coir waste on the growth and yield of tobacco plants. The study used a 1-factor Completely Randomised Design (CRD), with 5 levels, namely P0: Without Liquid Organic Fertilizer (Control), P1: Liquid Organic Fertilizer of shallot skin waste dose (300 ml/plant), P2: Banana stem waste Liquid Organic Fertilizer dose (300 ml/plant), P3: Banana peel waste Liquid Organic Fertilizer dose (300 ml/plant), P4: Liquid Organic Fertilizer of coconut fiber waste dose (300 ml/plant). The research variables observed included plant height, number of leaves, leaf length, leaf width, stem diameter, root length, root volume, wet weight of leaf production, and dry weight of leaf production. The effect of Liquid Organic Fertilizer application had a very significant effect on the variables of plant height, leaf length, leaf width, root length, leaf wet weight, and leaf dry weight. Coconut coir Liquid Organic Fertilizer treatment (P4) has a tendency to produce the best tobacco plant growth.

INTRODUCTION

Tobacco (*Nicotiana Tabacum L*) is an agricultural commodity that is widely cultivated and developed by the community. The tobacco commodity is very beneficial for the Indonesian economy. Indonesia is one of the 10 largest countries that supply tobacco, with a contribution of 145,00 tonnes or 2.3% of the world's tobacco needs. In addition to increasing farmers' income, tobacco plants also contribute to state revenue in the form of customs duties (Nurhidayati et al., 2019). Tobacco is the raw material used in making cigarettes. There are several types of tobacco cultivated, both by the people and companies in Indonesia, such as Voor-Oogst tobacco and Na-Oogst tobacco.

Based on data from the Central Statistics Agency (2022), it is known that tobacco production in Jember Regency has decreased from 2016 to 2019. The decline is due to the lack of agricultural land productivity caused by the monoculture farming system applied by farmers, such as the excessive use of inorganic fertilisers and chemical pesticides. In tobacco cultivation, many farmers still use chemical fertilisers such as NPK, ZA, Urea, and SP-36, coupled with the use of uncontrolled chemical pesticides can result in reduced organic matter content in the soil. Reduced organic matter content can affect the growth and development of tobacco plants. Efforts to increase productivity and reduce the presence of pests and diseases in tobacco plants, namely by reducing the use of chemical fertilisers and pesticides (Priambodo et al., 2019).

Fertilisation is the only way that can be tried in fulfilling the availability of soil nutrients needed by plants, with fertilisation plants can grow optimally and produce optimally. Organic fertiliser is a fertiliser that comes from various natural fertiliser-making materials such as animal manure, animal body parts, plants that are rich in minerals and good for soil fertilisation. Based on its form, organic fertiliser can be divided into two, namely liquid and solid. Liquid organic fertiliser is a solution that contains one or more carriers of elements needed by plants that are easily soluble (Leovini, 2012). The advantage of liquid organic fertiliser is its ability to provide nutrients according to the needs of plants. Liquid organic fertiliser has several benefits including encouraging and increasing the formation of leaf chlorophyll so as to increase the photosynthetic ability of plants and the absorption of nitrogen from the air, can increase plant vigour so that plants become sturdy and strong, increase plant resistance to drought, stimulate the growth of production branches, increase the formation of flowers and ovules, reduce the fall of flowers and ovules (Putra and Ratnawati, 2019). Liquid organic fertiliser will be able to overcome nutrient deficiencies more quickly, when compared to solid fertiliser. This is supported by its liquid form so that it is easily absorbed by soil and plants (Putra and Ratnawati, 2019).

According to (Rahayu, et al, 2015) The skin of shallot bulbs contains food reserves containing flavonols from the flavonoid group that have antioxidants, isoflavones, catechins, and chalcones, Potassium (K), Magnesium (Mg), Phosphorus (P), and Iron (Fe) and other compounds such as polyphenols, saponins, terpenoids and alkaloids (Hayati, et al, 2022). In addition, the growth regulators contained in shallot skin have a role similar to Indole Acetic

Acid (IAA). Indole Acetic Acid is the most active auxin in various plants and plays an important role in promoting optimal growth.

According to (Yulianty, et al, 2022) Liquid Organic Fertiliser banana peel contains macro elements C, N, Pt, and K, each of which functions for the growth and development of fruits, stems, banana peel waste also contains micro elements Ca, Mg, Na, Za which can function for plant growth to grow optimally so that it has an impact on the maximum amount of production.

Banana stem is an organic material that has several nutrients both macro and micro, the elements contained in banana stem are all Ca, carbohydrate protein and water. In addition, banana stems also contain macro nutrients N, P and K, and contain chemical content in the form of carbohydrates that can spur microorganisms in the soil (Bahtiar, 2016).

Nutrients that are needed by plants such as potassium (K), besides that there are also other elements such as calcium (Ca), magnesium (Mg), sodium (Na) and phosphorus (P) contained in coconut fibre. According to (Mahendra, 2020) the main effect of Coconut Coir Liquid Organic Fertilizer affects plant height, number of leaves, harvest age, number of fruits per plant, fruit length per plant, fruit weight per plant, fruit production per plot, and the number of remaining fruits.

Based on the problems that have been described, research is needed related to the effect of giving some Liquid Organic Fertilizer on the growth and yield of tobacco plants. The results of this study are expected to be able to provide recommendations for farmers regarding the use of Liquid Organic Fertilizer that is appropriate for tobacco plants. The utilisation of shallot waste, banana stem waste, banana peel waste, and coconut husk waste can reduce production costs for farmers, and can reduce environmental pollution.

METHODS

Location and Time

The research was conducted in the green house of Cumedak village, Sumberjambe sub-district. The research was conducted from January 2024 to June 2024.

Tools and Materials

Tools and Materials used include Tools such as a hoe, timba, scales, measuring cups, rulers, meters, sprayers, vernier, oven, and stationery. Materials: Kasturi tobacco seeds; soil; sand; pot tray; polybag, EM4; shallot skin; banana stem; banana peel; coconut fiber; brown sugar; and rice washing water.

Method of Collecting Data

The experimental design used a completely randomised design (CRD) consisting of 5 treatments (Liquid Organic Fertilizer of shallot skin waste, Liquid Organic Fertilizer of banana stem waste, Liquid Organic Fertilizer of banana peel waste, Liquid Organic Fertilizer of coconut fibre waste) with each treatment repeated as many as 5 replicates. The research

variables observed included plant height, number of leaves, leaf length, leaf width, stem diameter, root length, root volume, wet weight of leaf production, and dry weight of leaf production. The research procedures undertaken include:

Production of Liquid Organic Fertilizers

Making shallot skin liquid organic fertilizers by fermentation, prepare ½ kg of shallot skin, prepare 100 grams of brown sugar that has been mashed then mix brown sugar with 5 litres of rice washing water stirred until evenly distributed, after that enter the starter (decomposer) EM4 with a dose of 100 ml stir again until evenly mixed. Put the onion skins into the container, put the solution of rice washing water, brown sugar and EM4 that has been made before until it is evenly distributed throughout the onion skins, stir and squeeze so that the juice comes out. Close the container and do burial for at least 12 days (Rinzani, et al. 2020).

Making banana stem waste liquid organic fertilizers by fermentation, banana stems that have been chopped into small pieces of 1 kg are mixed with 3 litres of rice washing water, 100-150 ml of EM4 and 100 grams of brown sugar which are then stirred until evenly distributed and fermented for 12 days. The longer and the more volume of EM4 used, the higher the value of N, P, K obtained (Marina, et al. 2019).

Making banana peel waste liquid organic fertilizers by smoothing ½ kg of banana peel mixed with water, brown sugar, EM4 with a ratio of 5 litres of water: 100 grams of brown sugar: EM4 200 ml which was then stirred until evenly distributed and fermented for 21 days. The longer and the more volume of EM4 used, the higher the N, P, and K values obtained (Nova, 2017).

Making coconut coir waste liquid organic fertilizers by preparing ½ kg of coconut coir cleaned from the outer skin. Dissolve 200 grams of brown sugar with 10 litres of water. Mix 200 ml of EM4 with the brown sugar solution, pour the solution into a container containing coconut fibre and stir until evenly distributed. Let stand for 15 days, if the soaking water has changed colour to blackish yellow, then the liquid organic fertiliser is ready to use (Hidayat, 2021).

Seedling Preparation

Kasturi tobacco seeds are planted in tray pots with soil as the planting medium. Each tray pot is planted with 3 seeds and then watered. Seedling care is carried out for 40-45 days until the seedlings are ready to be transferred to polybags (Barbara et al., 2022).

Planting Media Preparation

The planting media container used is a polybag measuring 50 x 50 cm. the planting media that has been provided is mixed in a ratio of 5: 2. Planting media filling is a mixture of soil and sand (Barbara et al., 2022).

Seedling Planting

Seedlings to be planted are selected first and only normal seedlings are selected to be planted in polybags. Seedlings that will be planted are seedlings that are 45 days old. Tobacco seedlings in the tray pot are removed along with the soil, this serves to minimise stress on the plant. then the seedlings are planted in polybags with 1 seedling per polybag (Barbara et al., 2022).

Treatment

Application of shallot skin waste, banana stem waste, banana peel waste, and coconut coir waste liquid organic fertilizer is done once a week, namely when the plants are 1 week old after planting by sprinkling between plants and done after watering with the aim of preventing the washing process. The treatment was given at a dose of 300 ml/plant (Barbara et al., 2022).

Maintenance

Maintenance includes watering, weeding, pest and disease control, and harvesting (Rahim, et al 2021 and Winata & Zainul, 2020). The observed Research Variables include:

Plant Height (cm)

Measurement of tobacco plant height was measured from the base of the stem of the tobacco plant to the growing point of the plant. measurements were taken once a week from planting to the beginning of harvest using a meter (Tripatmasari et al., 2010).

Number of Leaves (strands)

Measurement of the number of leaves of tobacco plants is calculated on leaves that have opened perfectly. Leaf counting is done once a week from moving to polybags until the beginning of harvest (Tripatmasari et al., 2010).

Leaf Length (cm)

Measurement of tobacco leaf length by measuring using a ruler at the base of the leaf to the tip of the production leaf. Measurements are made every time harvesting (metik) using a ruler (Febrian et al., 2012).

Leaf Width (cm)

Measurement of tobacco leaf width using a ruler in the middle of the leaf. Leaf width measurements were taken during the last day of observation using a ruler (Febrian et al., 2012).

Stem Diameter (mm)

Measurement of tobacco stem diameter is measured at the part close to the base of the plant stem. measurement of stem diameter is done once a week since moving to the polybag until the beginning of harvest (Febrian et al., 2012).

Root Length (cm)

Measurement of root length of tobacco plants is measured from the beginning of rooting to the end of the longest root. Measurement of root length is done at the end of the harvest period using a ruler (Winata and Zainul, 2020).

Root Volume (cm)

Measurement of the root volume of tobacco plants is measured from the top of the root by immersing it in a measuring cup. Measurement of root volume is carried out at the end of the harvest period using a measuring cup (Winata and Zainul, 2020).

Wet weight of production leaves (gram)

The wet weight of the leaves was weighed with analytical scales, by weighing the fresh and newly harvested/picked leaves (Tripatmasari et al., 2010).

Dry weight of production leaves (grams)

Leaf dry weight was weighed when the tobacco was harvested and dried in an oven at 60°C for 3 days. Leaf dry weight was weighed using analytical scales (Tripatmasari et al., 2010).

Data Analysis

Data were analysed using analysis of variance. If there is a significant difference, Duncan's multiple range test is conducted at the 5% real level.

RESULTS AND DISCUSSIONS

The results in Figure 1 have the best average value in coconut fibre liquid organic fertilizer with a value of 47.50. Coconut fibre liquid organic fertilizer treatment is the best treatment because tobacco plants given liquid organic fertilizer get the necessary nutrients, namely N, P, K contained in coconut fibre liquid organic fertilizer. This is in line with the research of Dermiyanti (2015), which states that coconut fibre liquid organic fertilizer contains Nitrogen nutrients of 1.3%, P₂O₅ of 0.8%, K₂O of 4.0% and a C/N ratio of 9-11%. Meanwhile, in research (Hidayat, 2021), coconut fibre liquid organic fertilizer contains Nitrogen nutrients of 74.7 ppm, P₂O₅ of 605 ppm, K₂O of 2069 ppm and an Mg ratio of 128 ppm. Potassium is useful in increasing plant growth in meristem tissues. Nutrients and microorganisms provided through the application of coconut husk liquid organic fertilizer solution can increase the amount of microorganism activity in the soil which makes the breakdown of organic matter into complex compounds to increase tobacco growth (Nursayuti, 2023).

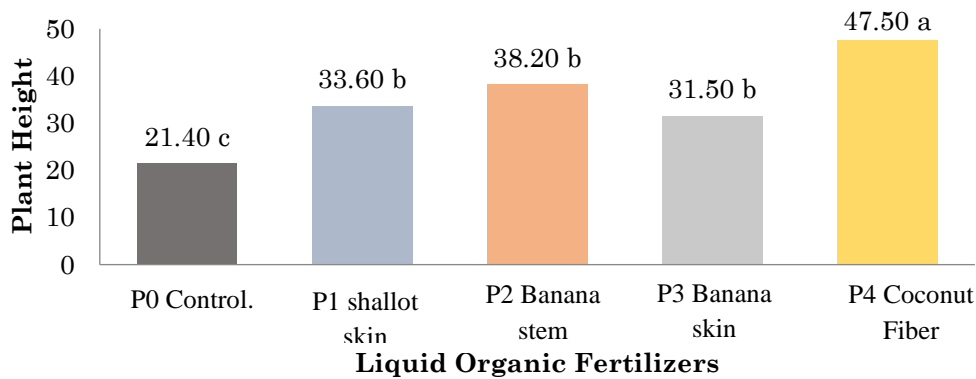


Fig. 1. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on plant height

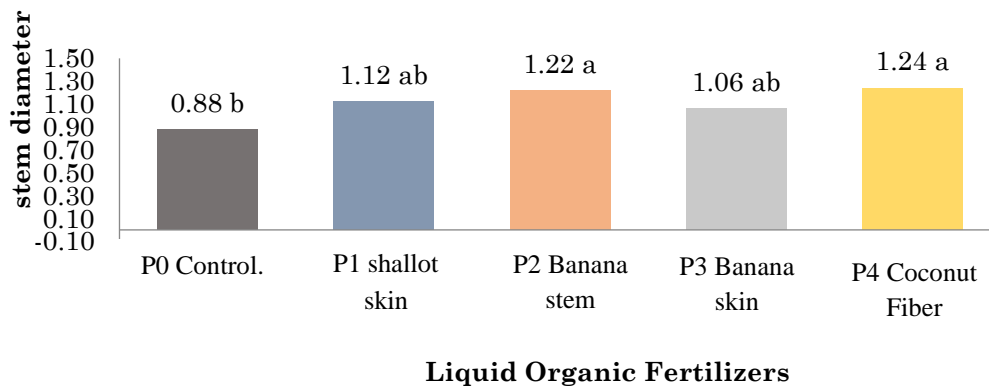


Fig. 2. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on stem diameter

Figure 2 shows that the treatment of coconut fibre liquid organic fertilizer (P4) gave the highest stem diameter of 1.24 mm which was not significantly different from the banana stem liquid organic fertilizer treatment (P2), but significantly different from the treatment without liquid organic fertilizer /control (P0), shallot skin liquid organic fertilizer (P1), and banana peel liquid organic fertilizer (P3). So to get the best stem diameter, it is better to use one of the banana stem liquid organic fertilizer (P2) or coconut husk liquid organic fertilizer (P4).

The nitrogen nutrient content contained in coconut coir liquid organic fertilizer is useful in helping stimulate vegetative growth such as the formation of leaf green substances through the synthesis of amino acids and proteins in plant organs. The element P obtained by plants from the application of coconut husk liquid organic fertilizer plays a role in transferring metabolic products in plants which further stimulates root length, plant cell division, enlarges flowering cell tissue and fertilisation. While potassium plays a role in increasing the process of photosynthesis, transporting the results of assimilation, enzymes, minerals and also water, it

also increases plant resistance to disease (Susi et al., 2018). Banana stem liquid organic fertilizer has an important role in helping the photosynthesis process, because banana stems have S which helps the chlorophyll synthesis process. So that it can increase photosynthetic activity which results in energy and glucose later used by plants in growth (Nurjannah, 2022). Banana stem liquid organic fertilizer also contains N and P which play a role in the formation and growth of the number of leaves. According to Laginda, (2017) said that the element N plays a role in the growth of stem and leaf organs. According to Julia (2023) states that banana stem liquid organic fertilizer can increase stem diameter. Banana stem liquid organic fertilizer has gibberellin and cytokinin hormones that play a role in cell division so that it can increase the volume of plant stems.

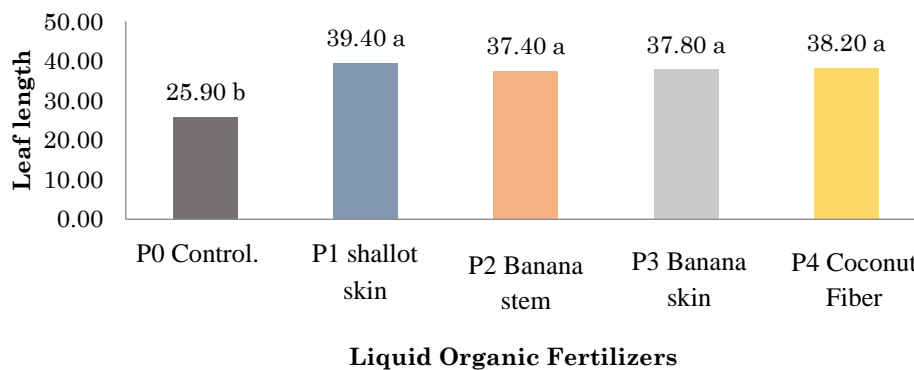


Fig. 3. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on Leaf Length

Figure 3 shows that the treatment of shallot skin liquid organic fertilizer (P1) gave the highest leaf length of 39.40 cm which was not significantly different from the treatment of banana stem liquid organic fertilizer (P2), banana peel liquid organic fertilizer (P3), and coconut husk liquid organic fertilizer (P4) which were 37.40 cm, 37.80 cm, and 38.20 cm respectively. However, it is significantly different from the treatment without liquid organic fertilizer /control (P0) which is 25.90 cm. So that the recommendations given to get the best leaf length, it is better to use coconut husk liquid organic fertilizer (P4) which has a high nitrogen content.

Shallots contain growth regulators that have a role similar to indole acetic acid (IAA). Shallot extract spurs growth involved in root formation, cell elongation and plant tissue enlargement. According to Banu, (2020) Shallots contain flavonol group food reserves from flavonoids that have antioxidants, isoflavone, catechins, potassium (K), Magnesium (Mg), Phosphorus (P) and iron (Fe). So that the potential to be used as liquid organic fertiliser is very potential in plant growth. Banana stem liquid organic fertilizer also contains N and P which play a role in the formation and growth of the number of leaves. According to Laginda, (2017) said that the element N plays a role in the growth of stem and leaf organs. Coconut coir liquid organic fertilizer gives the best results in the observation parameter of leaf width. In the growth and development of tobacco plants, nitrogen nutrients are the most important

element. Due to the tobacco commodity, the harvested part is the leaves. To support the increase in leaf length and leaf width requires sufficient nitrogen. In line with (Purnomo et al, 2023) the provision of nitrogen in sufficient quantities can optimise leaf growth and development.

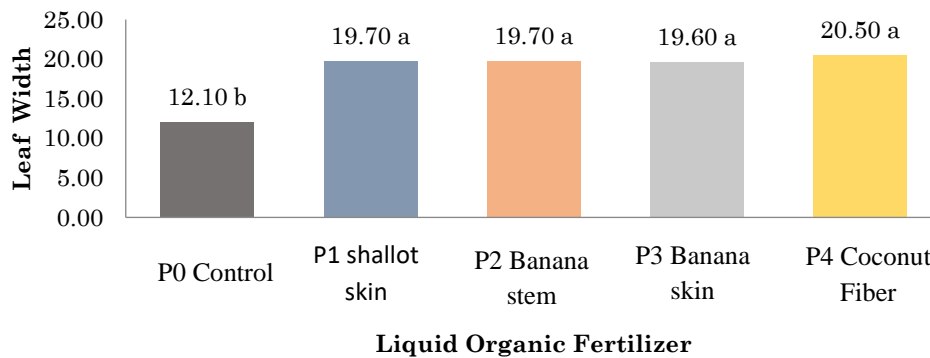


Fig. 4. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on Leaf Width

Figure 4 shows that the treatment of coconut fibre liquid organic fertilizer (P4) gave the highest leaf width of 20.50 cm which was not significantly different from the treatment of shallot skin liquid organic fertilizer (P1), banana stem liquid organic fertilizer (P2), and banana peel liquid organic fertilizer (P3) which were 19.70 cm, 19.70 cm, and 19.60 cm respectively. However, it is significantly different from the treatment without liquid organic fertilizer/control (P0) which is 12.10 cm. So that the recommendations given to get the best leaf width, it is better to use coconut husk liquid organic fertilizer (P4) which has a high organic C / N content.

Shallots contain growth regulators that have a role similar to indole acetic acid (IAA). Shallot extract spurs growth involved in root formation, cell elongation and plant tissue enlargement. According to Banu, (2020) Shallots contain flavonol group food reserves from flavonoids that have antioxidants, isoflavone, catechins, potassium (K), Magnesium (Mg), Phosphorus (P) and iron (Fe). So that the potential to be used as liquid organic fertiliser is very potential in plant growth. Banana stem liquid organic fertilizer also contains N and P which play a role in the formation and growth of the number of leaves. According to Laginda, (2017) said that the element N plays a role in the growth of stem and leaf organs. Coconut coir liquid organic fertilizer gives the best results in the observation parameter of leaf width. In the growth and development of tobacco plants, nitrogen nutrients are the most important element. Due to the tobacco commodity, the harvested part is the leaves. To support the increase in leaf length and leaf width requires sufficient nitrogen. In line with (Purnomo et al, 2023) the provision of nitrogen in sufficient quantities can optimise leaf growth and development.

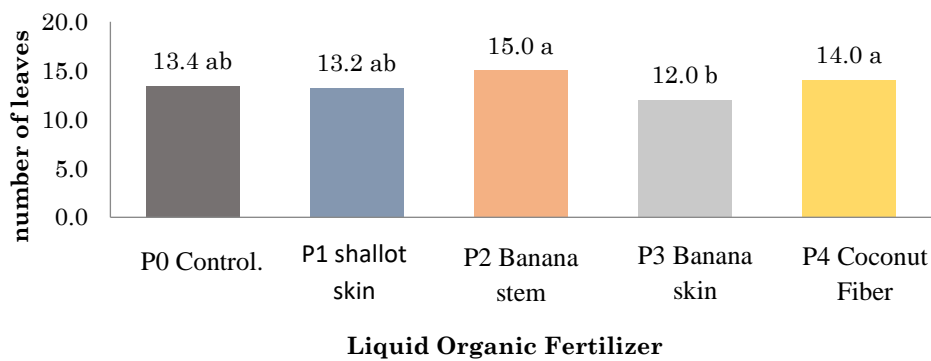


Fig. 5. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on number of leaf

Figure 5 shows that the treatment of banana stem liquid organic fertilizer (P2) gives the highest number of leaves which is 15.00 which is not significantly different from the coconut husk liquid organic fertilizer treatment (P4), but significantly different from the treatment without liquid organic fertilizer / control (P0), shallot skin liquid organic fertilizer (P1), and banana peel liquid organic fertilizer (P3). So to get the best plant height, it is better to use one of the banana stem liquid organic fertilizer (P2) or coconut husk liquid organic fertilizer (P4).

Banana stem liquid organic fertilizer also contains N and P which play a role in the formation and growth of the number of leaves. According to Laginda, (2017) said that the element N plays a role in the growth of stem and leaf organs. Coconut coir liquid organic fertilizer gives the best results in the observation parameter of leaf width. In the growth and development of tobacco plants, nitrogen nutrients are the most important element. Due to the tobacco commodity, the harvested part is the leaves. To support the increase in leaf length and leaf width requires sufficient nitrogen. In line with (Purnomo et al, 2023) the provision of nitrogen in sufficient quantities can optimise leaf growth and development.

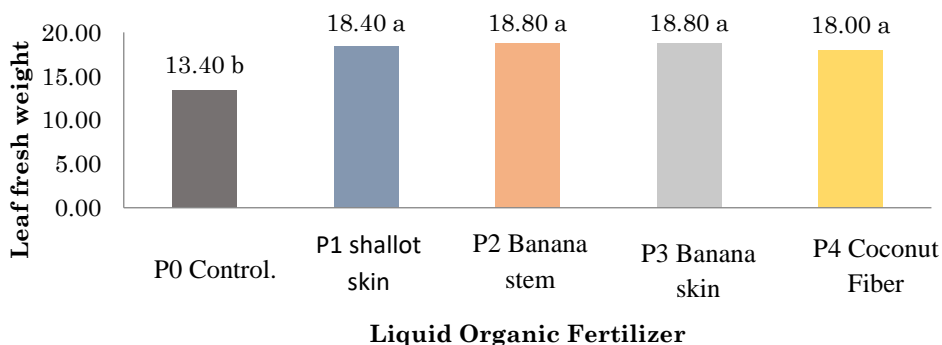


Fig. 6. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on Leaf fresh weight

Figure 6 shows that the treatment of banana stem liquid organic fertilizer (P2) and banana peel liquid organic fertilizer (P3) gave the highest leaf wet weight of 18.80 grams which was not significantly different from the treatment of shallot skin liquid organic fertilizer (P1) and coconut husk liquid organic fertilizer (P4), but significantly different from the treatment without liquid organic fertilizer / control (P0). So, according to the recommendations given to get the best plant wet weight, it is better to use coconut fiber liquid organic fertilizer (P4), which has a high nitrogen content.

In Figure 6, the treatment of shallot skin liquid organic fertilizer, banana stems, banana peels and coconut fibers affects the wet weight of the leaves compared to the control. Coconut fiber liquid organic fertilizer has the element N, namely the nitrogen of the green substance of plant leaves, which means that the N content provided by coconut fiber liquid organic fertilizer affects the fresh weight of the leaves. In line with Humaida (2021), the element Nitrogen plays an important role in the formation of green leaves which play a role in the photosynthesis process. Photosynthesis produces carbohydrates in plants, so the availability of nitrogen affects plant biomass. Nitrogen is the main nutrient that plays an important role in plant growth, namely as a constituent of proteins that make greener fresh and accelerate photosynthesis (Fauziah et al., 2018). Shallots contain flavonol group food reserves from flavonoids that have antioxidants, isoflavones, catechins, potassium (K), Magnesium (Mg), Phosphorus (P) and iron (Fe). So that the potential to be used as liquid organic fertilizer is very potential in plant growth. In addition, according to Hayati (2022) that shallot liquid organic fertilizer contains auxins and gibberellins in accelerating root growth. According to Haryadi, (2021) states that the application of shallot extract has an effect on the growth of root length, shoot length. Banana stem liquid organic fertilizer has an important role in helping the photosynthesis process, because banana stems have S which helps the chlorophyll synthesis process. So that it can increase photosynthetic activity which results in energy and glucose later used by plants in growth (Nurjannah, 2022). Banana stem liquid organic fertilizer also contains N and P which play a role in the formation and growth of the number of leaves. According to Laginda, (2017) said that the element N plays a role in the growth of stem and leaf organs.

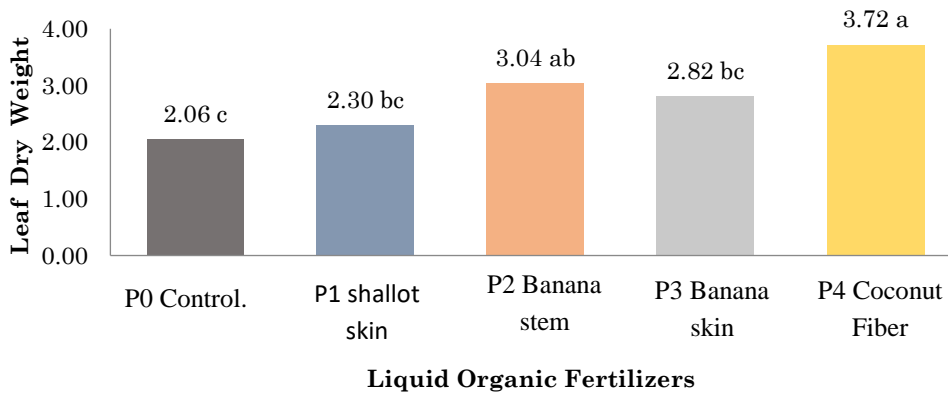


Fig. 7. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on Leaf dry weight

Figure 7 shows that the treatment of coconut fiber liquid organic fertilizer (P4) gives the highest leaf dry weight of 3.72 grams which is significantly different from the liquid organic fertilizer treatment without liquid organic fertilizer / control (P0), shallot skin (P1), banana stem liquid organic fertilizer (P2), and banana peel liquid organic fertilizer (P3). So to get the best plant height, it is better to use coconut fiber liquid organic fertilizer (P4).

Coconut fiber liquid organic fertilizer provides the highest rate of photosynthesis, because the rate of photosynthesis affects the dry weight of plants. The higher the rate of photosynthesis in plants, the higher the dry weight of the leaves. The rate of photosynthesis process is influenced by the green leaves of the plant, which means that the N content provided by coir liquid organic fertilizer is the highest when compared to other treatments. In line with (Humaida, 2021), the element Nitrogen plays an important role in the formation of green leaves which play a role in the photosynthesis process. Photosynthesis produces carbohydrates in plants, so the availability of nitrogen affects the dry weight of plants. Nitrogen is the main nutrient that plays an important role in plant growth, namely as a constituent of proteins that make greener fresh and accelerate photosynthesis (Fauziah et al., 2018).

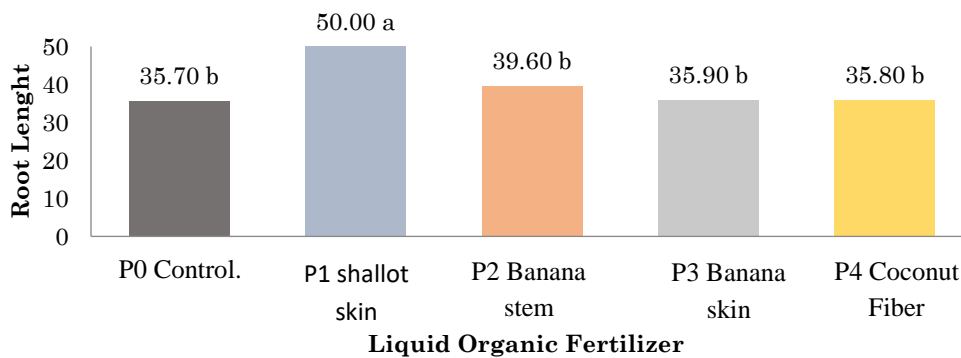


Fig. 8. The results of Duncan's multiple range test at the 5% level of the effect of Liquid Organic Fertilizers on Root Length

Figure 8 shows that the treatment of shallot skin liquid organic fertilizer (P1) gives the highest root length of 50.00 cm which is significantly different from the treatment without liquid organic fertilizer/ control (P0), banana stem liquid organic fertilizer (P2), banana peel liquid organic fertilizer (P3), and coconut fiber liquid organic fertilizer (P4). So that the recommendations given to get the best root length, it is better to use shallot skin liquid organic fertilizer (P1).

Shallots contain growth regulators that have a role similar to indole acetic acid (IAA). Shallot extract spurs growth involved in root formation, cell elongation and plant tissue enlargement. According to Banu, (2020) Shallots contain flavonol group food reserves from flavonoids that have antioxidants, isoflavone, catechins, potassium (K), Magnesium (Mg), Phosphorus (P) and iron (Fe). So that the potential to be used as liquid organic fertilizer is very potential in plant growth. In addition, according to Hayati (2022) that shallot liquid organic fertilizer contains auxins and gibberellins in accelerating root growth. According to Haryadi, (2021) states that the application of shallot extract has an effect on root length growth. Supported by research by Dalimunthe, (2017) that the treatment of shallot extract has an effect on plant height, an increase in the number of leaves, and stem diameter. Dewi and Susilarto's research, (2018) states that shallots can have a significant effect on root length in tin plants.

CONCLUSIONS

Based on the results of the research that has been done, it can be concluded that the effect of liquid organic fertilizer treatment has a very significantly different effect on the observation variables. The effect of liquid organic fertilizer treatment has a significantly different effect on the stem diameter variable and the number of leaves of tobacco. While the effect of Liquid Organic Fertilizer (POC) treatment is not significantly different from the root volume variable. The treatment of coconut fiber liquid organic fertilizer (P4) has a tendency to produce the best growth. It is needed to determine the best doses of coconut fiber liquid organic fertilizer for tobacco plants in the future research.

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