4. Artikel SINTA 3 Genap 2023-2024

My Files

My Files

TURNITIN.to Situs Cek Plagiasi & Ai

Document Details

Submission ID

trn:oid:::13381:90942424

Submission Date

Apr 12, 2025, 9:22 PM GMT+7

Download Date

Apr 12, 2025, 10:25 PM GMT+7

File Name

4. Artikel SINTA 3 Genap 2023-2024.pdf

File Size

352.5 KB

13 Pages

7,178 Words

35,929 Characters

13% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography

Match Groups

- **69** Not Cited or Quoted 12%
  Matches with neither in-text citation nor quotation marks
- **3** Missing Quotations 0%
  Matches that are still very similar to source material
- **3** Missing Citation 1%
  Matches that have quotation marks, but no in-text citation
- **0** Cited and Quoted 0%
  Matches with in-text citation present, but no quotation marks

Top Sources

9% Internet sources
8% Publications
9% Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Match Groups

- **69** Not Cited or Quoted 12%
  Matches with neither in-text citation nor quotation marks
- **3** Missing Quotations 0%
  Matches that are still very similar to source material
- **3** Missing Citation 1%
  Matches that have quotation marks, but no in-text citation
- **0** Cited and Quoted 0%
  Matches with in-text citation present, but no quotation marks

Top Sources

9% Internet sources
8% Publications
9% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	Submitted works	Universitas PGRI Semarang on 2024-12-27 — 1%
2	Internet	repository.uir.ac.id — 1%
3	Internet	ijsra.net — <1%
4	Internet	www.ejournal.uniks.ac.id — <1%
5	Internet	ijoms.internationaljournallabs.com — <1%
6	Publication	Wendelinus Sai Mali, Mairisi Napitupulu, Zuhdi Yahya. "PENGARUH PEMBERIAN P... — <1%
7	Publication	Sindi Amelia, Alzaber Alzaber, Shalawati Shalawati. "Assistance in Developing Nu... — <1%
8	Internet	jlsuboptimal.unsri.ac.id — <1%
9	Internet	ejournal.cria.or.id — <1%
10	Submitted works	Bellevue Public School on 2022-03-18 — <1%

11 Internet
diglosiaunmul.com <1%

12 Internet
thisvsthat.io <1%

13 Submitted works
Universitas Hasanuddin on 2021-05-27 <1%

14 Publication
G P Budi, T Pribadi, S N Fitri, M A Biky. "The effectiveness of weed extract with diff... <1%

15 Submitted works
Sriwijaya University on 2020-01-03 <1%

16 Internet
core.ac.uk <1%

17 Internet
repository.ung.ac.id <1%

18 Publication
F. Amijee, P. B. Tinker, D. P. Stribley. "Effects of phosphorus on the morphology of... <1%

19 Submitted works
Central Philippines State University - Main Campus on 2024-09-24 <1%

20 Publication
Widodo Widodo, Marlin Marlin, Nancy B. Sitio. "Response of Shallots of Batu Ijo V... <1%

21 Publication
Sultoniyah Sultoniyah, Ambar Pratiwi. "Pengaruh pupuk organik cair limbah ikan ... <1%

22 Internet
ejurnal.univamedan.ac.id <1%

23 Internet
repository.umi.ac.id <1%

24 Internet
www.grafiati.com <1%

25 Submitted works
Universitas Muria Kudus on 2019-09-04 <1%

26 Internet
iaeme.com <1%

27 Publication
Muslimin, Muh Taufik, Muh Thamrin, Andi Faisal Suddin. "Financial analysis of re... <1%

28 Submitted works
University of Liverpool on 2023-12-03 <1%

29 Internet
garuda.kemdikbud.go.id <1%

30 Internet
jtam.ulm.ac.id <1%

31 Internet
www.scribd.com <1%

32 Submitted works
Universitas Jember on 2023-04-06 <1%

33 Submitted works
Universitas Jenderal Soedirman on 2018-04-05 <1%

34 Internet
journal.ugm.ac.id <1%

35 Internet
www.botanikks.com <1%

36 Publication
A Prasetia, R Kusumah, M L Resubun, R Amin. "The effect of a combination of org... <1%

37 Publication
Ali Ikhwan, Erny Ishartati, Ferdian Enggar Pamungkas, Muhammad Rafi Raidians... <1%

38 Submitted works
Assumption College on 2024-10-25 <1%

39 Publication

Deva Trisfiana Amaliya, Rahmad Jumadi, Wiharyanti Nur Lailiyah. "APLIKASI PEM... <1%

40 Publication

L Sitinjak, E Purba. " Response to growth and production of green beans (L.) in v... <1%

41 Publication

Sri Ambardini, Nur Arfa Yanti, Jendri Mamangkey, Elvina Yustika Arsyat, Ardiansy... <1%

42 Submitted works

Syiah Kuala University on 2019-03-12 <1%

43 Internet

ajarcde-safe-network.org <1%

44 Internet

ibn.idsi.md <1%

45 Internet

mdpi-res.com <1%

46 Internet

primordia.wisnuwardhana.ac.id <1%

47 Internet

www.coffeescience.ufla.br <1%

48 Publication

Irwan, Muyassir, Helmi. "Increased yield and nutrient uptake of several rice line... <1%

49 Submitted works

Universitas Muria Kudus on 2019-09-13 <1%

50 Publication

Markus Sinaga, Mangardi Mangardi, Nikodemus Husein. "UJI PERTUMBUHAN DA... <1%

51 Submitted works

LL DIKTI IX Turnitin Consortium Part IV on 2021-06-08 <1%

DOI :https://doi.org/10.36378/juatika.v6i2.3580
JUATIKA
JURNAL AGRONOMI TANAMAN TROPIKA
VOL. 6 NO. 2 May 2024
eissn 2656-1727
pissn 2684-785X
Hal : 254 – 266

The Application of Liquid Organic Fertilizer from Banana Peels and NPK Phonska on Purple Eggplants (*Solanum melongena* L.) Production

Salmita Salman*, T. Edy Sabli, Sri Mulyani and Muhammad Alfiqri
Universitas Islam Riau
Jl. Kaharuddin Nst No.113, Simpang Tiga, Kec. Bukit Raya,
Kota Pekanbaru, Riau, Indonesia
*Email: salmitasalman@agr.uir.ac.id

ABSTRACT

The study aimed to investigate the impact of the interaction and the main effects of POC from Banana Peel and NPK Phonska on the growth and yield of purple eggplant (Solanum melongena L) plants. A Factorial, Completely Randomized Design was employed, comprising two factors. The first factor involved the concentration of POC from Banana Peel with 4 treatment levels of 9. 159. 309. 450 ml per liter of water, while the second factor was the dose of NPK Phonska with 4 treatment levels of 9. 6.3. 12.6. 18.9 g per plant, resulting in 16 treatment combinations. Each treatment was replicated thrice, yielding a total of 48 experimental units. The parameters under scrutiny included flowering age, harvest age, number of fruits per plant, weight per plant, length, and number of remaining fruits. Data analysis was conducted through analysis of variance followed by an honest significant difference test (HSD) at a 5% significance level. The findings indicated that the interaction between POC from Banana Peel and NPK Phonska significantly influenced flowering age, harvest age, number of fruits per plant, and fruit weight per plant. The optimal treatment was a combination of POC from Banana Peel at 450 ml/l water and NPK Phonska at 18.9 g per plant. Furthermore, the main effect of the POC from Banana Peel dose significantly impacted all observed parameters, with the best treatment being POC from Banana Peel at 450 ml/l water. Similarly, the main effect of NPK Phonska significantly affected all observation parameters, with the most effective treatment being a dose of NPK Phonska at 18.9 g per plant.

Keywords: *purple eggplant, liquid organic fertilizer, banana peel, NPK phonska, production*

1. INTRODUCTION

Purple eggplant, scientifically known as Solanum melongena L., is a highly favored vegetable for its delicious taste, whether cooked or raw. The affordability of eggplant prices makes it accessible to individuals from all walks of life, thereby creating vast opportunities for both the market and farmers (Hartoyo dan Anwar, 2018; Herwindo, 2014). According to data from the Central Statistics Agency, there was a significant increase in production in 2018. it was attributed to a larger land area dedicated to cultivation. However, in the years 2019-2021. there was a decline in both land area and production. The decrease in purple eggplant production in Riau Province can be attributed to various factors, including inadequate cultivation techniques and the improper selection of fertilizers that could enhance soil fertility.

Efforts to enhance the production of purple eggplant plants can be achieved by addressing the macro and micro nutrient requirements through appropriate fertilization. One way to supplement the plants with essential nutrients is by using liquid organic fertilizer (POC). Liquid organic fertilizer (POC) is a form of organic fertilizer that can be easily dissolved in the soil, delivering crucial elements for soil fertility. Ruarita et al. (2017) state that liquid organic fertilizer can supply nutrients following the plants' specific needs due to its fluid nature. Consequently, in cases of excess fertilizer application, the plants can effectively regulate the absorption of the necessary nutrient composition.

Banana peels, a byproduct of banana consumption, constitute a significant amount of waste, accounting for approximately one-third of the total weight of unpeeled bananas. Given the widespread consumption of bananas in communities, this waste volume can be substantial. However, if banana peel waste is processed correctly, it has the potential to mitigate organic pollution in the environment and enhance the economic value of waste. According to Budianto (2022), banana peels that have undergone processing to become liquid organic fertilizer contain essential macronutrients, including nitrogen (N) at a concentration of 1.34%, phosphorus (P) at 0.05%, and potassium (K) at 1.47%. Additionally, they also contain micronutrients such as zinc (Zn). Various studies have explored the application of banana peel liquid organic fertilizer (POC) in cultivating Solanaceae plants, such as eggplants. For instance, Adrian dan Yetti (2017) conducted research demonstrating the positive impact of applying 300 ml/L of banana peel liquid organic fertilizer (POC) on the growth and yield of chilli plants. This concentration was the most effective in promoting plant height, fruit diameter, harvest age, fruit quantity, and fresh fruit weight. Similarly, Lalla and Sriwidayanti (2018) conducted a study on tomato plants and found that the application of liquid organic fertilizer derived from banana peels resulted in significant improvements in plant height, fruit quantity, and fruit weight across the first, second, and third harvests. The optimal dose for this effect was 350 ml/L.

According to a study conducted by Mali et al. (2020), applying NPK phonska fertilizer at a dose of 300 kg/ha, along with organic fertilization, significantly impacted various aspects of fruit production. This yield included fruit length, diameter, number of fruits per plant, and overall fruit production per plant. However, the same fertilizer did not significantly affect the plants' length at 20 and 40 days after planting and the flowering age of cucumber plants. The application of NPK phonska fertilizer was done simultaneously during the planting process. NPK phonska fertilizer is composed of primary macro elements such as Nitrogen (N), Phosphorus (P), and Potassium (K), along with the secondary macro element Sulfur (S). The composition of this fertilizer includes 15% Nitrogen, 15% Phosphorus, 15% Potassium, and 10% Sulfur. It also contains micronutrients with a 0.1% Zinc (Zn) content (Azizah, 2019). The

combination of organic fertilization and the application of NPK phonska fertilizer is expected to enhance plant growth and ultimately lead to higher yields in significant quantities.

2. MATERIAL AND METHODS

The study was conducted in the experimental garden of the Faculty of Agriculture, Riau Islamic University. The garden is situated at Jalan Kaharuddin Nasution, Km 113. Perhentian Marpoyan, Air Dingin Village, Bukit Raya District, Pekanbaru City. The precise coordinates of the research site are 0°26'54.6" N, 101°27'38.5" E. The research spanned over 4 months, specifically from June to October 2023.

Various materials were utilized for this study. These included F1 Mustang purple eggplant seeds, POC fertilizer derived from banana peels, NPK phonska fertilizer, zinc plate, raffia rope, paint, and furadan 3G. In addition to the materials, various tools were employed during the research. These tools encompassed hoes, buckets, watering cans, meters, hand sprayers, digital scales, cameras, and stationeries.

The study employed a Completely Randomized Design (CRD) Factorial involving two factors. The first factor was the dose of POC fertilizer derived from banana peels (P), which consisted of four treatment levels: 9. 159. 309. and 450 ml/L. The second factor was the NPK Phonska Fertilizer (N) dose, which also consisted of four treatment levels: 9. 6.3. 12.6. and 18.9 grams/plant. As a result, a total of 16 treatment combinations were obtained. Each treatment combination was replicated three times, resulting in 48 experimental units. Each experimental unit comprised four plants, with two being used as samples. Therefore, the study involved a total of 192 plants. The observation data obtained from each treatment were subjected to statistical analysis. If the calculated F-value exceeded the critical F-value from the table, further analysis was conducted using the BNJ (Honestly Real Difference) test at a 5% signi ficance level

.

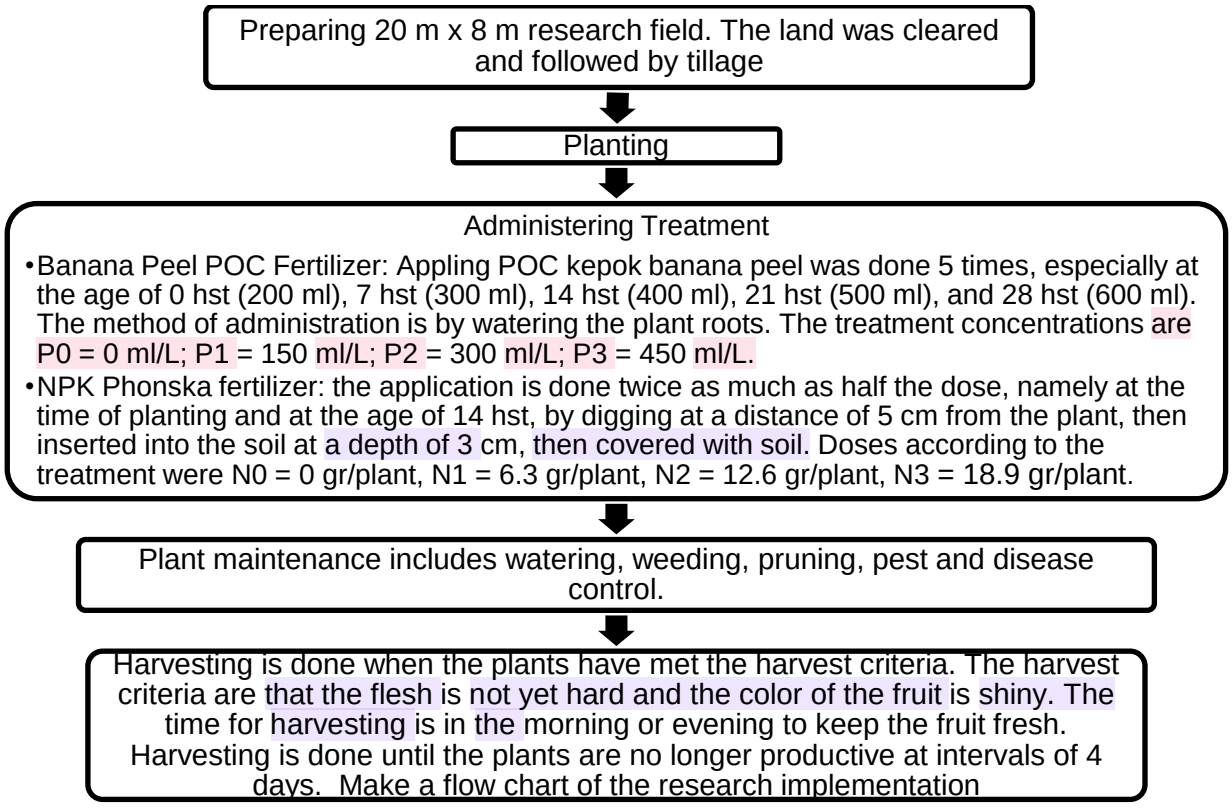

Figure 1. Flow diagram of research implementation

3. RESULT AND DISCUSSION

1. Flowering Age (HST)

After conducting a variance analysis on the observations of flowering age, considering the application of liquid organic fertilizer derived from banana peel and NPK phonska, it was found that the combination of these fertilizers had a notable impact on the flowering age of purple eggplant plants. The Honestly Significant Difference Test (HSD) outcomes, examined at a significance level of 5%, are presented in Table 1.

Table 1. Average flowering age (HST) of purple eggplant plants using Banana Peel POC and NPK Phonska treatments.

Banana Peel POC (ml/l water)	NPK Phonska (g/plant)				Mean
	0 (N0)	6.3 (N1)	12.6 (N2)	18.9 (N3)	
0 (P0)	45.50±9.00 j	45.00±9.17 ij	44.17±9.17 hij	44.00±9.00 hij	44.67 d
150 (P1)	43.50±9.00 hij	43.17±9.33 hij	42.50±9.17 ghi	42.00±9.17 gh	42.79 c
300 (P2)	43.00±9.00 hij	37.67±9.17 ef	36.00±9.17 de	33.33± 9.00 bc	37.50 b
450 (P3)	49.00±9.17 fg	34.33±9.00 cd	31.33±9.17 ab	29,83±9.17 a	33.88 a
Average	43.00 d	49.00 c	38.50 b	37.29 a	
CC = 2.17 % BNJ MN= 2.60 BNJ M & N = 9.95					

The figures in the columns and rows followed by the same lowercase letters are not significantly different according to the BNJ test at the 5% level.

The results presented in Table 1 indicate that the combination of banana peel liquid organic fertilizer and NPK phonska significantly impacts the flowering age of purple eggplant plants. The most effective treatment was observed in the P3N3 treatment (450 ml/water banana peel liquid organic fertilizer and 18.9 g/plant NPK phonska), resulting in an average flowering age of 29.83 days. This result was not significantly different from the P3N2 treatment, which had an average flowering age of 31.33 days. On the other hand, the longest flowering age was recorded in the P0N0 treatment (no dose), with an average of 45.50 days. This was not significantly different from treatments with average flowering ages of 45.09. 44.17. 44.09. 43.59. 43.17. 42.59. 42.09. 43.09. and 40.00 days, but this was significantly different from the remaining treatments.

According to the findings regarding the flowering age of the Lezata F1 variety of purple eggplant plant at 32 days old, it was observed that the most rapid growth occurred 29 days after planting when banana peel POC and Phonska NPK were provided. This result contrasts with the results of Pulungan (2021), who found that with the application of POC at a concentration of 50 ml/l and organic NPK at 22.5 g/plant, the flowering age was 30.67 days after planting, indicating a quicker flowering age in the current study. Similarly, Nazari et al. (2023) research revealed that the treatment with a banana peel POC concentration of 250 ml/L resulted in the fastest flowering age at 30 days after planting.

The accelerated blooming period observed in the P3N3 treatment resulted from applying liquid organic fertilizer derived from banana peels. This fertilizer contains essential nutrients, including N (0.02%), P (0.02%), and K (0.04%), which are highly beneficial for plant growth. Furthermore, by supplementing the banana peel fertilizer with NPK phonska fertilizer, the purple eggplant plants were able to fulfill their nutrient requirements, specifically N (15%), P (15%), and K (15%). These vital nutrients, particularly nitrogen, phosphorus, and potassium, play a crucial role in expediting the flowering and fruiting processes in plants.

Banana peel POC fertilizer contains nutrients that plants need. However, the amount of nutrients in banana peel POC is not too high, and it has been able to meet the nutritional needs of purple eggplant plants so that the growth process is not disturbed. The flowering process in purple eggplant

plants is influenced by the P element absorbed by plants, and the flowering and fertilization process is strongly influenced by the P element (Damanik, 2021).

The utilization of NPK phonska fertilizer proves to be highly beneficial for purple eggplant plants' vegetative and generative stages. This result is primarily because NPK phonska fertilizer contains a high concentration of phosphorus (P) nutrients, which plants efficiently absorb. As a result, there is no excess or deficiency of this essential element, making it an ideal choice for accelerating the flowering process. The onset of flowering is closely linked to the availability of nutrients, particularly phosphorus (P), as it plays a crucial role in stimulating plants to enter the generative phase. In a study conducted by Fitrianti et al. (2018), it was found that the application of NPK Phonska at a rate of 15 g per plant significantly influenced the age at which purple eggplants started flowering. The flowering age was observed to be faster, with a duration of only 21 days. It is important to note that the speed of the flowering process is influenced by various factors, including genetic and environmental factors such as irradiation period, light intensity, and temperature (Manurung, 2021).

2. Harvest Age (HST)

After variance analysis, the observation results of the harvest age in purple eggplant plants show that the interaction effect of liquid organic fertilizer from banana peel and NPK Phonska significantly influences the harvest age of purple eggplant plants. The Honest Significant Difference (HSD) test at a 5% significance level can be seen in Table 2.

Table 2. Average harvest age (HST) of purple eggplant plants with Banana Peel POC and NPK Phonska treatment

Banana Peel POC (ml/l water)	NPK Phonska (g/plant)				Mean
	0 (N0)	6.30 (N1)	12.60 (N2)	18.90 (N3)	
0 (P0)	67.66±9.17 h	67.33±9.44 gh	66.66±9.17 gh	66.33±9.33 gh	67.00 d
150 (P1)	65.16±9.76 fg	64.00±9.50 f	64.00±9.60 f	63.33±9.44 ef	64.12 c
300 (P2)	63.00±9.50 ef	61.50±9.50 de	69.33± 9.67 cd	58.50±9.29 bc	69.83 b
450 (P3)	57.50±9.00 ab	57.33±9.44 ab	56.83±9.33 ab	55.33± 9.17 a	56.75 a
Average	63.33 c	62.54 bc	61.95b	69.87 a	
CC = 1.20 % BNJ MN= 2.24 BNJ M & N = 9.82					

The figures in the columns and rows followed by the same lowercase letters are not significantly different according to the BNJ test at the 5% level.

The results presented in Table 2 indicate that the combined application of liquid organic fertilizer derived from banana peel and NPK phonska significantly influences the harvest age of purple eggplant plants. The most effective treatment is observed in the P3N3 combination (liquid organic fertilizer of banana peel 450 ml/l water and NPK phonska 18.9 g/plant) with an average harvest age of 55.33 days. However, there is no significant difference between the P3N2 treatment, which has an average harvest age of 56.83 days. On the other hand, the least effective treatment is the P0N0 combination, with an average harvest age of 67.66 days. The P0N1. P0N2. and P0N3 treatments do not show significant differences compared to other treatments.

The accelerated harvest age observed in the P3N3 treatment can be attributed to providing essential phosphorus (P) elements from the liquid organic fertilizer derived from the banana peel, which is crucial for purple eggplant plants during the generative phase. Plants require adequate P nutrients to promote root development and overall growth. The application of banana peel organic fertilizer can fulfill the nutrient requirements of plants, particularly

phosphorus and potassium, which are essential for the flowering stage of purple eggplant plants.

As described, the Lezata F1 variety of purple eggplant plants has a harvest age of 50 hst. However, in this study, the fastest harvest age was observed in the P3N3 treatment, which took 55.33 hst. This result indicates that the harvest age of the Lezata F1 variety is slower than what was initially described. Comparing these findings with the research conducted by Kurniawan (2022), it is evident that the fastest harvest age for purple eggplant plants was achieved with a treatment involving a dose of 3 kg/plot of ketapang leaf compost and 90 g/plot of organic NPK, which took 44.33 hst. This yield is in contrast to the results of this study, where the harvest age was 55.33 hst. The disparity can be attributed to the high levels of rainfall during this study, as indicated by the BMKG data in 2023, which recorded rainfall of 100-150 mm. This excessive rainfall led to nutrient deficiencies in the plants, resulting in symptoms such as yellowing leaves as early as 42 hst.

Rainfall plays a crucial role in the growth and production process of plants. High rainfall can harm plants and damage muddy land, which is unfavourable for their growth. Additionally, the variation in harvest age is influenced by the nutrient requirements to support the growth of purple eggplant plants. These nutrients can be obtained through fertilization or from the conditions of the planting medium. The quality of the planting medium significantly impacts the growth process of plants, as the nutrient content in the medium can either facilitate or hinder the growth of purple eggplant plants. Abiyoga (2022) supports this notion, stating that PMK soil has low nutrient requirements due to nutrient leaching and erosion. Low soil fertility poses a challenge for plant growth.

To address this issue, providing organic fertilizer is a practical approach to improve and enhance soil with very low fertility. The use of organic fertilizers reduces reliance on inorganic fertilizers and offers various benefits to plants. According to Marziah et al. (2020), organic fertilizers provide macro and micronutrients, enhance soil texture and structure, and improve water absorption in the soil.

Nutrients play a crucial role in supporting the growth of purple eggplant plants, with phosphate (P) being a critical element that influences both generative and vegetative phases, particularly in the seed formation process. Phosphate is abundant in seeds and aids in energy transfer and cell development throughout the plant's life cycle. It facilitates essential physiological processes such as metabolism, photosynthesis, assimilation, and respiration, ultimately impacting the quality and quantity of plants (Budianto, 2022).

The application of inorganic fertilizers can enhance soil chemical properties, with NPK phonska fertilizers containing nitrogen (N), phosphorus (P), and potassium (K) being beneficial for increasing eggplant yields. These results align with Hariyanto's (2020) assertion that combining organic and inorganic fertilizers can effectively meet plant nutritional requirements while improving soil fertility.

In this study, the quickest harvest age was 55.33 days, faster than Fitrianti et al.'s (2018) research, with an average harvest age of 67.56. NPK phonska containing the same amount of N, P, and K nutrients can satisfy the nutrient needs for the growth of purple eggplants. Increasing nutrient requirements can enhance plant growth and accelerate fruit maturation (Syadikin, 2021).

3. Quantity of fruits per plant

After analysing variance, the observation results of the fruit yield in purple eggplant plants indicate that both the interaction and main effects of applying banana peel bio-organic compost (POC) and NPK phonska

significantly influence the fruit yield in the cultivation. The Honest Significant Difference (HSD) test results at a 5% significance level can be seen in Table 3.

Table 3. Average number of fruits per plant with the application of Kepok Banana Peel POC and NPK Phonska

Banana Peel POC (ml/l water)	NPK Phonska (g/plant)				Mean
	0 (N0)	6.30 (N1)	12.60(N2)	18.90 (N3)	
0 (P0)	3.00±9.00 h	3.16±9.17 h	3.33±9.33 gh	3.66±9.17 fgh	3.29 d
150 (P1)	3.33±9.17 gh	3.50± 9.00 gh	3.83±9.17 fgh	4.33±9.33 fg	3.75 c
300 (P2)	4.33±9.33 fg	4.66±9.17 ef	5.50±9.29 de	6.16±9.33 cd	5.16 b
450 (P3)	6.50±9.00 cd	7.16±9.17 bc	8.00±9.00 ab	8.66±9.17 a	7.58 a
Average	4.29 c	4.62 c	5.16 b	5.70 a	
	CC = 7.44 %	BNJ MN= 1.11	BNJ M & N = 9.40		

The figures in the columns and rows followed by the same lowercase letters are not significantly different according to the BNJ test at the 5% level.

Table 3 presents data indicating a significant correlation between the application of banana peel POC and NPK phonska on the fruit yield per plant in purple eggplants. The treatment combination P3N3 exhibited the highest average fruit yield of 8.66, significantly different from the other treatments. Conversely, the lowest fruit yield was observed in the P0N0 treatment combination, producing only 3.00 fruits. This disparity can be attributed to the ability of banana peel POC to enhance soil fertility and provide adequate nutrients to the plants, resulting in a higher fruit yield.

The Lezata F1 variety of purple eggplants is reported to yield 25-30 fruits per plant. However, the findings of this study indicate a lower fruit yield of 8.66 fruits per plant. Compared to Saputri's (2021) research, the highest treatment involving Taspu fertilizer at a rate of 225 g/plant yielded 9.04 fruits per plant. On the other hand, Nazari's (2023) research revealed that applying 500ml/L banana peel POC yielded the highest number of fruits, with a count of 3.6. Hasibuan's (2023) study, which employed 6 kg/plot chicken manure and 13.5 grams/plot phosphate fertilizer, yielded 19.23 fruits per plant. The low fruit yield observed in this study can be attributed to the influence of the planting media, specifically the PMK soil, which exhibited a shallow nutrient content.

The soil content analysis outcomes after applying banana peel POC fertilizer and NPK phonska revealed that the nutrient levels in the planting medium were as follows: pH: 6.56. Organic C: 0.56%, K: 0.22%, Mg: 0.77%, Ca: 4.09%, Na: 0.02%, P2O5: 106ppm. Conversely, the soil content analysis results before the treatment indicated that the nutrient levels in the planting medium were N: 0.02%, P: 0.06%, and K: 0.110%. As per the Soil Research Center (2016), the key indicators of optimal soil fertility for plants include adequate nutrient levels, optimal soil pH, with N: 0.435%, P2O5: 0.485%, K2O: 0.328%, pH H2O: 0.751 being the recommended values. Nutrient content is a crucial criterion for suitable soil fertility, enhancing plant productivity. Moreover, fertile soil is characterized by good drainage, proper soil structure, and appropriate water availability.

The quantity of fruits yielded is contingent upon various factors within plants, including nutrient requirements, environmental conditions, and the planting medium. The planting medium is pivotal in plant growth, with the soil composition paramount. Specifically, using PMK soil as a planting medium poses challenges due to its low nutrient content, acidic nature, and low pH levels, which can impede the growth of purple eggplant plants experiencing nutrient deficiencies.

Sianturi (2019) states that plants require significant element P for their growth and development, especially during the generative phase, such as when producing flowers and seeds. Older leaves that appear shiny, reddish, and yellow in the leaf edges, branches, and stems can identify a phosphorus deficiency. On the other hand, potassium plays a crucial role in forming proteins, carbohydrates, and enzyme activators and enhancing resistance against diseases, ultimately leading to increased fruit production.

The nutrient levels in banana peel POC are relatively lower than those in inorganic fertilizers. Providing organic nutrients in higher doses can impact the nutrient requirements of initially low-level soils (Budianto, 2022). To achieve optimal production results, it is essential to provide fertilizer in the right amount that fulfills the plants' needs, avoiding excessive and insufficient amounts. This proper administration can result in an optimal yield of fruits.

N, P, and K in NPK Phonska fertilizer play a crucial role in plant growth, aiding fruit formation. Suherman et al. (2018) suggest that fruit formation is influenced by the essential nutrients N, P, and K. The process of fruit formation is influenced by nutrients used in photosynthesis, which contribute to synthesising carbohydrates, fats, proteins, minerals, and vitamins that are translocated to the fruit. In this study, the highest fruit yield was 8.66. slightly lower than Saputri's (2021) research using 30 grams of organic NPK per plant, resulting in 9.04 fruits. This lower yield is primarily attributed to the planting medium, PMK soil, which has low nutrient content.

As Syadikin (2021) indicated, nitrogen plays a vital role as a fertilizer in enhancing vegetative phase growth in plants (plants grown in nitrogen-sufficient soil tend to be greener) and aiding in protein formation. Phosphorus deficiency inhibits plant growth, leading to weakness and stunted growth. Potassium, which plays a role in sugar and starch formation, protein synthesis, enzymatic reaction catalyst, and meristematic tissue growth, also enhances disease resistance and overall plant yield.

4. Fruit Weight per Plant

After being analysed for variance, observations on the fruit weight of purple eggplant crops indicate that the interaction effect, primarily the banana peel organic compost (POC) and NPK Phonska, significantly influences the fruit weight of purple eggplant crops. Further Honest Significant Difference (HSD) testing at a 5% significance level is detailed in Table 4.

Table 4. Average fruit weight per plant with Banana Peel POC and NPK Phonska treatment (g)

Banana Peel POC (ml/l water)	NPK Phonska (g/plant)				Mean
	0 (N0)	6.30 (N1)	12.60(N2)	18.90(N3)	
0 (P0)	153.88±4.50 k	179.60±6.60 jk	183.30±3.23 ijk	191.91±6.01 ijk	174.92 d
150 (P1)	199,88±11.77 ij	219,05± 9,05 i	272.68±3.77 h	295.21±2.44 gh	246.70 c
300 (P2)	314.61±2.61 fg	323.15±8.93 fg	341.76±14.10ef	379,73±7.43 de	339,81 b
450 (P3)	409.63±4.15 cd	437.73±12.24 bc	479.81±5.64 ab	506.43±7.40 a	453.90 a
Average	267.25 d	287.63 c	317.14 b	343.32 a	
CC = 4.38 %		BNJ MN= 49.30	BNJ M & N = 14.72		

The figures in the columns and rows followed by the same lowercase letters are not significantly different according to the BNJ test at the 5% level.

According to the data presented in Table 4, the combination of giving banana peel POC and NPK phonska fertilizer significantly impacts the fruit weight per plant. The most effective treatment is providing banana peel POC at a concentration of 450 ml/l water and NPK phonska fertilizer at a rate of 18.9 g/plant (P3N3). This treatment resulted in a fruit weight per plant of 506.43 g, which

is not significantly different from the P3N2 treatment but substantially different from the other treatments. On the other hand, the lowest fruit weight per plant was observed in the combination of banana peel POC and NPK phonska fertilizer without any specific treatment, with a weight of 153.88 g/plant.

The significant increase in fruit weight per plant in the P3N3 treatment can be attributed to the plants' effective absorption of banana peel POC and NPK phonska fertilizer. When administered appropriately, these substances facilitate fruit formation, producing more fruits. As a more significant number of fruits are made, the overall weight of the fruits also increases.

The combination of banana peel POC treatment (P3N3) resulted in a significant increase in the weight of the fruit produced. This treatment involved combining banana peel POC with NPK phonska fertilizer, which positively impacted the growth of purple eggplant plants. The plants effectively utilized the phosphate element in the NPK phonska fertilizer, ensuring the necessary nutrients were available for proper metabolic processes and optimal plant growth. As a result, the production of high-quality fruits was achieved.

When the results of the P3N3 treatment were converted to hectares, the yield obtained was 12.057.591 kg/ha or approximately 12.05 tons/ha. In comparison, the Lezata F1 variety of purple eggplant plants had a significantly lower production rate of approximately 36.6 tons/ha. Another study conducted by Pulungan (2021) demonstrated that by applying a vegetable POC concentration treatment of 50 ml/l and an organic NPK fertilizer dose of 22.5 g/plant, a production rate of 37.41 tons/ha was achieved. It is important to note that the low production rate observed in this study could be attributed to the poor quality of the PMK soil, which is classified as infertile and lacks essential nutrients. Additionally, the PMK soil has high Al, Fe, and Mn solubility, further contributing to its low productivity.

5. Fruit Length (cm)

The observational results on the length parameter of purple eggplant fruits following variance analysis indicate no significant interaction effect; however, the main effects of banana peel organic compost (POC) and NPK Phonska significantly influence fruit length. The average observational results of fruit length after conducting further Honestly Significant Difference (HSD) tests at a 5% significance level are presented in Table 5.

Table 5. Average fruit length with Banana Peel POC and NPK Phonska treatment (cm)

Banana Peel POC (ml/l water)	NPK Phonska (g/plant)				Mean
	0 (N0)	6.30 (N1)	12.60 (N2)	18.90 (N3)	
0 (P0)	19.71±9.26	11.91±9.15	11.98±9.16	12.55±9.08	11.79 d
150 (P1)	12.41±9.09	13.03±9.43	13.13±9.57	13.95±9.20	13.13 c
300 (P2)	13.10±9.24	13.85±9.31	15.08±9.36	15.71±9.32	14.43 b
450 (P3)	15.48±9.34	16.60±9.08	17.23±9.14	18.16±9.13	16.87 a
Average	12.92 c	13.85 b	14.35 b	15.09 a	
CC = 3.41 %		BNJ MN= 1.45		BNJ M & N = 9.52	

The figures in the columns and rows followed by the same lowercase letters are not significantly different according to the BNJ test at the 5% level.

According to the data presented in Table 5. The main effect of banana peel POC significantly impacts the fruit length parameter. The most effective treatment is found in the P3 treatment combination, which measures 16.87 cm and is notably different from the other treatments. On the other hand, the shortest fruit length is observed in the P0 treatment, measuring 11.79 cm. Comparing these results to the

description of the purple eggplant plant, it is noted that the Lezata F1 variety typically has a length of 24 cm, indicating that the findings of this study are lower than expected. However, when compared to Alfina (2020), it is revealed that the application of bokashi containing 56.25 g/polybag of cow rumen results in a length of 16.79 cm, while the use of organic NPK fertilizer treatment of 75 g/polybag produces a height of 16.71 cm.

The length of the purple eggplant fruit is influenced by the assimilation of the photosynthesis process stored in the eggplant plant. The content of nitrogen (N) and potassium (K) in banana peel POC plays a crucial role in the photosynthesis process. This result aligns with Pangestuti (2020), stating that nitrogen (N) in plants contributes to the formation of chlorophyll, which is vital for the photosynthesis process and the synthesis of proteins, fats, and other organic compounds.

The P element facilitates protein formation by enhancing protein synthesis from the N element. This process enables the production of new cells for fruit development in purple eggplant plants, explicitly influencing the length of the fruit. Kholifah and Maghfoer (2019) state that the N element serves as the primary component of protein, underscoring its significance in protein synthesis.

The fruit length directly contributes to the size of the purple eggplant fruit. By providing a balanced supply of nutrients such as N, P, and K through NPK phonska fertilizer, the metabolic process in plants can be optimized, thereby impacting the fruit's size and, subsequently, its length.

6. Residual Fruit Quantity

After the application of banana peel POC and NPK phonska, the analysis of residual fruit numbers on purple eggplant plants revealed that while the interaction between the two treatments did not significantly impact the main effect, it did show a considerable influence on the fruit count. The outcomes of the Honest Real Difference Test (BNJ) at a 5% significance level are presented in Table 6.

Table 6. Average number of fruit remaining with Banana Peel POC and NPK Phonska treatment (fruit)

Banana Peel POC (ml/l water)	NPK Phonska (g/plant)				Mean
	0 (N0)	6.30 (N1)	12.60 (N2)	18.90 (N3)	
0 (P0)	1.00±0.00	1.33±0.17	1.33±0.17	1.50±0.00	1.29 d
150 (P1)	1.50±0.00	1.66±0.33	1.83± 0.17	2.16± 0.17	1.79 c
300 (P2)	2.00±0.00	2.16± 0.17	2.16±0.17	2.50±0.00	2.20 b
450 (P3)	2.33±0.17	2.50±0.00	2.83±0.17	3.33±0.17	2.75 a
Average	1.70 c	1.91 bc	2.04 b	2.37 a	
CC = 12.94 %		BNJ MN= 0.78		BNJ M & N = 0.28	

The figures in the columns and rows followed by the same lowercase letters are not significantly different according to the BNJ test at the 5% level.

Table 6 indicates that the primary influence of banana peel organic compound (POC) significantly impacts the remaining fruit quantity of purple eggplant plants. The most effective treatment is P3 (banana peel organic compound 450 ml/l water) with 2.75 fruits. However, treatment P3 significantly differs from the other treatments. On the other hand, the least amount of remaining fruit is observed in treatment P0. which is 1.29 fruits.

According to Damanik (2021), nitrogen, phosphorus, and potassium are essential for plants, especially concerning the generative phase that enhances plant metabolism, leading to better absorption of important nutrients. The data in Table 6 shows that the primary influence of NPK Phonska significantly affects the remaining fruits, with the highest number found in treatment N3 (NPK Phonska 18.9 g/plant) at 2.37 fruits substantially different from other treatments.

Meanwhile, the lowest number of remaining fruits is found in treatment N0. which is 1.70 fruits significantly different from other treatments. This is because the application of NPK Phonska provides sufficient nutrient requirements, thus meeting the nutrient needs of eggplant plants to carry out growth and development processes in the generative phase. This aligns with Sinuraya's (2020) statement, which emphasizes the importance of nutrients in plants. When provided in sufficient amounts, the benefits of micronutrients such as N, P, and K can influence plant growth in both vegetative and generative phases. Phosphorus nutrient dramatically aids in the growth and development of plants, playing a crucial role in both vegetative and generative phases. This enables plants to carry out metabolic processes, photosynthesis, assimilation, and respiration, all of which are essential physiological processes that determine the quality and quantity of seeds. The highest number of remaining fruits in this study is 2.75 fruits, with the application of 18.9 grams of NPK Phonska per plant, lower than the study by Saputri (2021), which used 30 grams of organic NPK per plant, resulting in 3.29 fruits.

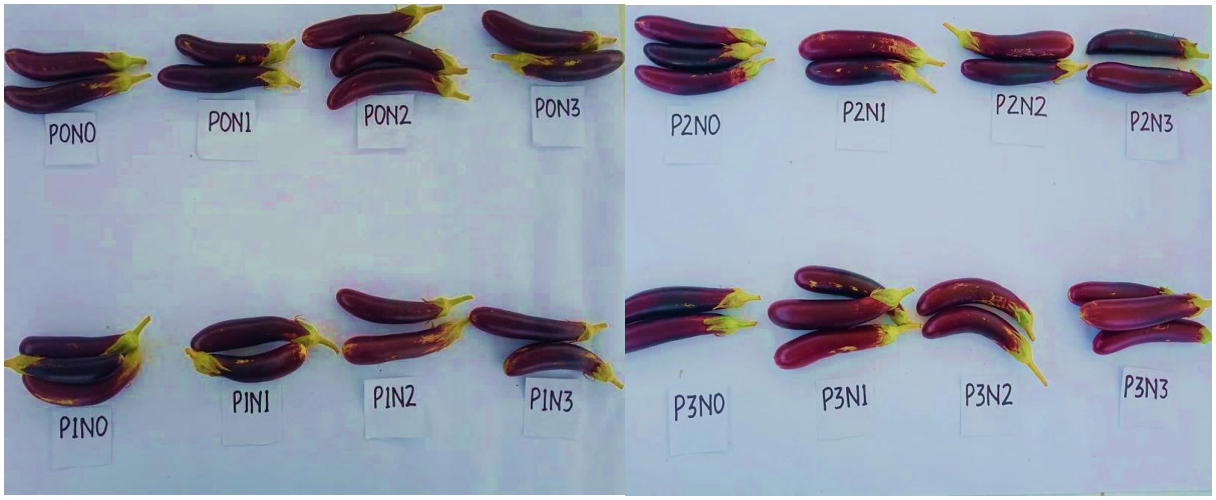

Figure 2. Comparison of purple eggplant yield per treatment in the second harvest

4. CONCLUSION

Based on the research findings, the following conclusions can be drawn:

1. The interaction between banana peel organic liquid fertilizer (POC) and NPK Phonska significantly affects the flowering period, harvesting time, fruit yield per plant, and fruit weight per plant. The optimal treatment involves a concentration of 450 ml/liter of water for Banana Peel POC and a dose of 18.9 g per plant for NPK Phonska.
2. The main factor affecting all observed parameters is the concentration of Banana Peel POC, with the most effective treatment being 450 ml/liter of water.
3. The main impact of NPK Phonska fertilizer dosage significantly influences all observed parameters, with the best treatment involving a dose of 18.9 g per plant.

ACKNOWLEDGEMENTS

We express our gratitude to the Directorate of Research and Community Service (DPPM) of the Islamic University of Riau for funding this research project with contract number 578/KONTRAK/P-PT/DPPM-UIR/06-2023

REFERENCES

Abiyoga, S. (2022). *Pengaruh Aplikasi Kompos Limbah Akasia dan Pupuk NPK 16:16:16 Terhadap*

Pertumbuhan Serta Hasil Tanaman Tomat (*Solanum lycopersicum* L.). Skripsi. Universitas Islam Riau.

Adrian Edo, dan Husna Yetti. (2017). Pengaruh Pemberian Urea, TSP, KCl dan Pupuk Organik Cair (Poc) Kulit Pisang Terhadap Pertumbuhan dan Produksi Tanaman Cabai Merah Keriting (*Capsicum annum* L.). *JOM FAPERTA*, *4*(1), 1–9.

Azizah, N. (2019). *Pengaruh Pemberian Pupuk Kandang Sapi dan Pupuk NPK Phonska Terhadap Pertumbuhan dan Produksi Okra (Abelmoschus esculentus L.Moenc)*. Skripsi. Universitas Islam Riau.

Budianto, A. (2022). *Pengaruh Pupuk Organik Cair Kulit Pisang Kepok dan NPK 16:16:16 terhadap Pertumbuhan Serta Produksi Tanaman Cabai Merah Keriting (Capsicum annum L.)* Skripsi. Universitas Islam Riau.

Damanik, D. A. (2021). *Pengaruh Dosis Dan Frekuensi Apikasi POC Kulit Pisang Kepok Terhadap Pertumbuhan Dan Produksi Tanaman Tomat (Solanum lycopesicum*). Skripsi. Universitas Islam Riau

Fitrianti, Masdar, dan Putri, A. (2018). Respon Pertumbuhan Dan Produksi Tanaman Terung (Solanum melongena). *Journal Agrovital*, *3*(2), 60–64. http://dx.doi.org/10.35329/agrovital.v3i2.207

Hariyanto, Y, P. (2020). Pertumbuhan dan Hasil Rosella (Hibiscus sabdariffa L.) Pada Pemberian Pupuk Urea Dan Limbah Cair Tahu. Skripsi. UIN SUSKA Riau.

Hartoyo, R. dan D. A. (2018). Pengaruh Sistem Tanam Single Row Double Row dan Dosis NPK Mutiara Terhadap Pertumbuhan Serta Produksi Terong Ungu (*Solanum melongena* L.) Varietas Antaboga-1. *Jurnal Ilmiah Hijau Cendekia*, *3*(1), 64–72.

Hasibuan, H. (2023). Growth Response and Production Of Eggplant (Solanum melongena L) with Dosage Test of Chicken Manure and Phospath Fertilizer. *Jurnal Agronomi Tanaman Tropika (Juatika),* 5(1). https://doi.org/10.36378/juatika.v5i1.2684

Herwindo, R. (2014). Kajian Jenis Kemasan dan Simulasi Pengangkutan Terhadap Mutu Fisik Buah Terung (*Solanum melongena* L.). Skripsi. Institut Pertanian Bogor.

Kurniawan, A. (2022). *Pengaruh Kompos Daun Ketapang dan Pupuk Organik Dalam Meningkatkan Pertumbuhan Serta Produksi Tanaman Terung Ungu (Solanum melongena L.)*. Skripsi. Universitas Islam Riau

Lalla, M. S. 2018. Pertumbuhan dan Produksi Tanaman Tomat (Lycopersicum esculentum mill.) Pada Berbagai Dosis Pupuk Organik Cair Kulit Pisang. Jurnal Primordia, 14(1): 1–5.

Mali, W. S., Napitupulu, M., dan Yahya, Z. (2020). Pengaruh Pemberian Pupuk Kompos Dan Pupuk NPK Phonska Terhadap Pertumbuhan dan Hasil Tanaman Mentimun (*Cucumis Sativus* L) Varietas Harmony. *AGRIFOR*, *19*(2), 303. https://doi.org/10.31293/af.v19i2.4787

Manurung, S. (2021). *Aplikasi Pupuk Organik Cair Kulit Pisang Kepok dan Pupuk Kotoran Ayam Terhadap Pertumbuhan Dan Produksi Terung Putih (Solanum melongena L.)*. Skripsi. Universitas Islam Riau.

Marziah, A., Nurhayati, N., & Nurahmi, E. (2020). Respon Pertumbuhan Bibit Kopi Arabika (*Coffea arabica* L.) Varietas Ateng Keumala akibat Pemberian Pupuk Organik Cair Buah-buahan dan Dosis Pupuk

Fosfor. *Jurnal Ilmiah Mahasiswa Pertanian*, *4*(4), 11–20. https://doi.org/10.17969/jimfp.v4i4.12871

Nazari, A. P. D., Susylowati, S., dan Putri, S. E. (2023). Growth and Yield of Purple Eggplant (*Solanum melongena* L.) with the Application of Liquid Organic Fertilizer of Banana Peel. *Jurnal Agroekoteknologi Tropika Lembab*, *5*(2), 92–99. http://dx.doi.org/10.35941/jatl.5.2.2023.9963.92-99

Pulungan, L. A. B. (2021). Uji Jenis POC dan Pupuk NPK Organik Terhadap Pertumbuhan Serta Produksi Tanaman Terung Ungu (Solanum melongena L.). Skripsi. Universitas Islam Riau.

Ruarita K, R., Hanan, R., dan W.A, A. (2017). Respon Pertumbuhan dan Hasil Tanaman Jagung Manis (*Zea mays saccharata* Sturt.) Akibat Pemberian Berbagai Dosis Ruarita Pupuk Organik Cair. *Jurnal TriAgro*, *2*(1). https://doi.org/10.36767/triagro.v2i1.419

Saputri, N. (2021). *Pengaruh Pupuk Kompos Taspu dan NPK Organik Terhadap Pertumbuhan Serta Produksi Tanaman Terung Ungu* (*Solanum melongena* L.). Skripsi. Universitas Islam Riau

Sinuraya, Boy Candra. (2020). *Pengaruh Bokasi Bunga Jantan Kelapa Sawit Dan Pupuk Npk Phonska Plus Terhadap Pertumbuhan Dan Produksi Tanaman Pare (Momordica charantia* L*)*. Skripsi. Universitas Islam Riau.

Sianturi, D. (2019). *Pengaruh Pemberian Pupuk Kascing dan NPK Mutiara 16: 16: 16 Terhadap Pertumbuhan Serta Produksi Terung Gelatik (Solanum Melongena L)*. Skripsi. Universitas Islam Riau.

Syadikin, A. (2021). *Pengaruh Kotoran Walet dan Pupuk NPK Phonska Terhadap Pertumbuhan Serta Produksi Tanaman Okra (Abelmoschus Esculentus* L Moench). Skripsi. Universitas Islam Riau.