

## DAFTAR PUSTAKA

- Abel, C. (2011). *Effects of Phosphate Solubilizing Bacteria on the Growth , Photosynthesis , and Nutrient Uptake of*. 1–10.
- Agung, J. O. M., Syahdan, K., & Semhas, S. (2024). *pengaruh macam bahan organik dan frekuensi penyiraman terhadap pertumbuhan bibit kelapa sawit (Elaeis guineensis Jacq.) di pre nursery*. 2(September), 1–12.
- Charitsabita, R., Dwi Purbajanti, E., & Wisnu Widjajanto, D. (2019). Respon Pertumbuhan dan Hasil Tanaman Pakcoy (*Brassica rapa* L.) secara Hidroponik dengan Berbagai Jenis Media Tanam dan Aerasi Berbeda Response of growth and production of pakcoy (*Brassica rapa* L.) through hydroponic system with different types of planting. *Jurnal Pertanian Tropik*, 6(2), 270–278. <https://jurnal.usu.ac.id/index.php/Tropik>
- Chen, X., Yang, C., Palta, J. A., Li, Y., & Fan, X. (2022). An *Enterobacter cloacae* strain NG-33 that can solubilize phosphate and promote maize growth. *Frontiers in Microbiology*, 13(November), 1–13. <https://doi.org/10.3389/fmicb.2022.1047313>
- Darmawanto, D., Parwati, W. D. U., & Soebroto, S. P. (2025). Pengaruh Arang Sekam dan Konsentrasi Eco-Enzim Buah terhadap Pertumbuhan Bibit Kelapa Sawit di Pre-Nursery. *AGROISTA : Jurnal Agroteknologi*, 8(2), 113–119. <https://doi.org/10.55180/agi.v8i2.1479>
- Dewi Tiara, Rahmadina, & Idami Zahratul. (2024). Pengaruh Pemberian Pupuk Photosynthetic Bacteria (PSB) Terhadap Pertumbuhan Vegetatif Tanaman Terong Ungu (*Solanum melongena* L.) Varietas Yuvita F1. *Best Journal (Biology Education Science & Techonology)*, 7(1), 169–5.
- Febriani, L., Gunawan, G., & Gafur, A. (2021). Review: Pengaruh Jenis Media Tanam Terhadap Pertumbuhan Tanaman. In *Bioeksperimen: Jurnal Penelitian Biologi* (Vol. 7, Nomor 2, hal. 93–104). <https://doi.org/10.23917/bioeksperimen.v7i2.10902>
- Fiqri, M., Putra, H., & Syahputra, E. (2025). *Pengaruh Pupuk Photosynthetic Bacteria dan NPK terhadap Pertumbuhan dan Hasil Tanaman Bawang Daun pada Media Gambut The Effect Of Photosynthetic Bacteria Fertilizer and Npk on the Growth and Yield of Spring Onion in Peat Media*. 1(1), 1–14.
- Harahap, A. A., Hariyadi, Junaedi, A., & Prasetyo, L. B. (2025). Growth Promotion of Oil Palm Seedlings (*Elaeis guineensis* Jacq.) with Slow-Release Fertilizer Application. *Journal of Tropical Crop Science*, 12(1), 254–260. <https://doi.org/10.29244/jtcs.12.01.254-260>
- Herwati, A., Haenir, N., & others. (2022). Pengaruh Media Tanam dan Pemanfaatan Pupuk Organik Cair dari Air Cucian Beras terhadap

- Pertumbuhan Tanaman Seledri (*Apium graveolus* L.). *Jurnal Agrotan*, 9(1), 29–32.
- Juliyanti, J., Setiawan, B., Kurniawan, T., & Fitry Ramanda, R. (2022). Pengaruh Pengaplikasian Photosynthetic Bacteria Terhadap Pertumbuhan Bibit Kopi Robusta (*Coffea canephora*) DI MEDIA TANAH ULTISOL. *Journal of Agro Plantation (JAP)*, 3(2), 314–324. <https://doi.org/10.58466/jap.v3i2.1686>
- Kuntardina, A., Septiana, W., & Putri, Q. W. (2022). Pembuatan Cocopeat Sebagai Media Tanam Dalam Upaya Peningkatan Nilai Sabut Kelapa. *Jurnal Pengabdian Kepada Masyarakat*, 6(1), 145–154. <http://ejurnal.ikipgribojonegoro.ac.id/index.php/J-ABDIPAMAS>
- Lee, S.-K., Lur, H.-S., Chi-Te Liu, dan, Penelitian Bioteknologi Pertanian, P., Sinica, A., & Akademisi, J. (2021). *mikroorganisme Tinjauan Dari Lab ke Pertanian: Menjelaskan Peran Menguntungkan Bakteri Fotosintetik dalam Pertanian Berkelanjutan*. <https://doi.org/10.3390/microorganism9122453>
- Maeda, I. (2022). *Potential of Phototrophic Purple Nonsulfur Bacteria to Fix Nitrogen in Rice Fields*.
- Maryani, A. T., Saputra, S. I., & Salim, H. (2025). Pengaruh Pemberian Cocopeat dan NPKMg (15:15:6:4) Terhadap Pertumbuhan Bibit Kelapa Sawit Di Pembibitan Utama. *Jurnal Agroecotania : Publikasi Nasional Ilmu Budidaya Pertanian*, 7(2), 1–13. <https://doi.org/10.22437/agroecotania.v7i2.41308>
- Miyasaka, H. (2023). Special Issue “Biotechnological Application of Photosynthetic Bacteria.” *Microorganisms*, 11(3), 22–24. <https://doi.org/10.3390/microorganisms11030619>
- Najihah, T. S., Ibrahim, M. H., Zain, N. A. M., Nulit, R., & Wahab, P. E. M. (2020). Activity of the oil palm seedlings exposed to a different rate of potassium fertilizer under water stress condition. *AIMS Environmental Science*, 7(1), 46–68. <https://doi.org/10.3934/environsci.2020004>
- Paramisparam, P., Ahmed, O. H., Omar, L., Ch’ng, H. Y., Johan, P. D., & Hamidi, N. H. (2021). Co-application of charcoal and wood ash to improve potassium availability in tropical mineral acid soils. *Agronomy*, 11(10), 1–30. <https://doi.org/10.3390/agronomy11102081>
- Rina, S. (2025). Enrichment: Journal of Multidisciplinary Research and Development Post-Acclimatization Kepok Bung Banana Plants. *Journal of Multidisciplinary Research and Development*, 2(12), 1–7.
- Rinaldy, M. (2024). Effect of Planting Media Composition and Concentration of Vegetable Waste Liquid Organic Fertilizer on the Growth of Oil Palm Seedlings (*Elaeis Guineensis* Jacq) in the Main Nursery. *International*

- Journal of Life Science and Agriculture Research*, 03(05), 375–381.  
<https://doi.org/10.55677/ijlsar/v03i5y2024-07>
- Shafira, W., Akbar, A. A., & Saziati, O. (2021). Penggunaan Cocopeat Sebagai Pengganti Topsoil Dalam Upaya Perbaikan Kualitas Lingkungan di Lahan Pascatambang di Desa Toba, Kabupaten Sanggau. *Jurnal Ilmu Lingkungan*, 19(2), 432–443. <https://doi.org/10.14710/jil.19.2.432-443>
- Siahaan, M., Wagino, W., & Tarigan, L. J. (2023). Kajian Pemupukan Kelapa Sawit (*Elaeis guineensis* Jacq) Menggunakan Metode Semi Mechanical Manuring (SMM). *Jurnal Agro Estate*, 7(1), 18–32. <https://doi.org/10.47199/jae.v7i1.150>
- Surniwati, Karneta, R., & Meihana. (2023). Pertumbuhan Bibit Karet (*Hevea Brasiliensis* Muell.Arg) Klon Pb 260 Pada Berbagai Komposisi Media Tanam Dan Jenis Bahan Organik Di Polybag. *Jurnal Agriwana*, 1(1), 32–34. <https://ojs.stipersriwigama.ac.id/index.php/agriwana/article/view/17/6>
- Suryanto, T., & Wachjar, A. (2015). The Growth of Oil Palm (*Elaeis guineensis* Jacq.) Seedlings at Various Media and Containers in Double Stage Nursery. *Asian Journal of Applied Sciences*, 03(05), 2321–0893. [www.ajouronline.com](http://www.ajouronline.com)
- Wang, Y., Peng, S., Hua, Q., Qiu, C., Wu, P., Liu, X., & Lin, X. (2021). The Long-Term Effects of Using Phosphate-Solubilizing Bacteria and Photosynthetic Bacteria as Biofertilizers on Peanut Yield and Soil Bacteria Community. *Frontiers in Microbiology*, 12. <https://doi.org/10.3389/fmicb.2021.693535>
- Wijitkosum, S., & Jiwnok, P. (2020). Applying Rice Husk Biochar for Carbon Sequestration in Building-Integrated Agriculture for Sustainable Urban Agriculture. *Mat Int*, 2020(4), 477–0490. <https://doi.org/10.33263/Materials24.477490>
- Yosias, V. Y., Nurchayati, Y., & Setiari, D. N. (2021). Penggunaan Media Tanah, Pasir, dan Pupuk Kandang bagi Perkecambahan dan Pertumbuhan Bibit Cabai Merah (*Capsicum annum* L.). *Agricultural Research*, 10.
- Yudia, M. (2023). Pengaruh Komposisi Media Tanam Arang Sekam Terhadap Pertumbuhan Bibit Kelapa Sawit (*Elaeis guineensis* Jacq.) Varietas DxP Yangambi Pada Pre Nursery. *JURNAL AGROPLASMA*, 2(6), 2817–2828.
- Yusuf, M. (2022). Pertumbuhan Bibit Kelapa Sawit (*Elaeis guineensis* Jacq) Fase Pre Nursery Menggunakan Ekstraks Daun *Muccuna Bracteata*. *Jurnal Ilmiah Mahasiswa Agroekoteknologi*, 1(2), 34. <https://doi.org/10.29103/jimatek.v1i2.8463>

## LAMPIRAN

Lampiran 1. Hasil sidik ragam pengaruh jenis media tanam dan konsentrasi pupuk PSB terhadap tinggi tanaman, pertambahan tinggi tanaman dan diameter batang tanaman.

- a. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap pertambahan tinggi bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat       | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|----------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 777.646 <sup>a</sup> | 51,843         | 1,529 <sup>ns</sup> | 0,153 |
| Jenis Media                 | 3             | 207,563              | 69,188         | 2,041 <sup>ns</sup> | 0,311 |
| Konsentrasi PSB             | 3             | 126,229              | 42,076         | 1,241 <sup>ns</sup> | 0,128 |
| Jenis Media*Konsentrasi PSB | 9             | 443,854              | 49,317         | 1,455 <sup>ns</sup> | 0,207 |
| Error                       | 32            | 1084,667             | 33,896         |                     |       |
| Total                       | 48            | 125185,000           |                |                     |       |

- b. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap pertambahan tinggi bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat      | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|---------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 67.313 <sup>a</sup> | 4,488          | 2,367 <sup>*</sup>  | 0,020 |
| Jenis Media                 | 3             | 49,229              | 16,410         | 8,656 <sup>*</sup>  | 0,000 |
| Konsentrasi PSB             | 3             | 5,063               | 1,688          | 0,890 <sup>ns</sup> | 0,457 |
| Jenis Media*Konsentrasi PSB | 9             | 13,021              | 1,447          | 0,763 <sup>ns</sup> | 0,650 |
| Error                       | 32            | 60,667              | 1,896          |                     |       |
| Total                       | 48            | 4789,000            |                |                     |       |

1. Post hoc pertambahan tinggi tanaman bibit kelapa sawit

| Jenis Media                    | N  | Subset |         |       |
|--------------------------------|----|--------|---------|-------|
|                                |    | r      | q       | p     |
| D2 (Tanah dan Cocopeat 50%)    | 12 | 8,4167 |         |       |
| D3 (Tanah dan Pasir 50%)       | 12 |        | 9,66667 |       |
| D0 (Tanah (Kontrol))           | 12 |        | 10,0833 |       |
| D1 (Tanah dan Arang Sekam 50%) | 12 |        |         | 11,25 |
| Sig.                           |    | 1,000  | 0,464   | 1,000 |

Lampiran 2. Hasil sidik ragam pengaruh jenis media tanam dan konsentrasi pupuk PSB terhadap diameter batang dan pertambahan diameter batang

- a. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap diameter batang bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat      | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|---------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 88.503 <sup>a</sup> | 5,900          | 1,537 <sup>ns</sup> | 0,150 |
| Jenis Media                 | 3             | 22,300              | 7,433          | 1,936 <sup>*</sup>  | 0,017 |
| Konsentrasi PSB             | 3             | 44,980              | 14,993         | 3,905 <sup>ns</sup> | 0,114 |
| Jenis Media*Konsentrasi PSB | 9             | 21,223              | 2,358          | 0,614 <sup>ns</sup> | 0,776 |
| Error                       | 32            | 122,873             | 3,840          |                     |       |
| Total                       | 48            | 11289,140           |                |                     |       |

1. Post hoc Jenis media diameter batang bibit kelapa sawit

| Jenis Media                    | N  | Subset  |         |
|--------------------------------|----|---------|---------|
|                                |    | q       | p       |
| D2 (Tanah dan Cocopeat 50%)    | 12 | 13,7750 |         |
| D3 (Tanah dan Pasir 50%)       | 12 | 14,8250 | 14,825  |
| D0 (Tanah (Kontrol))           | 12 |         | 15,9917 |
| D1 (Tanah dan arang sekam 50%) | 12 |         | 16,1750 |
| Sig.                           |    | 0,199   | 0,120   |

- b. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap pertambahan diameter batang bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat      | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|---------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 19.719 <sup>a</sup> | 1,315          | 0,878 <sup>ns</sup> | 0,593 |
| Jenis Media                 | 3             | 4,902               | 1,634          | 1,091 <sup>ns</sup> | 0,186 |
| Konsentrasi PSB             | 3             | 7,662               | 2,554          | 1,705 <sup>ns</sup> | 0,367 |
| Jenis Media*Konsentrasi PSB | 9             | 7,154               | 0,795          | 0,531 <sup>ns</sup> | 0,841 |
| Error                       | 32            | 47,940              | 1,498          |                     |       |
| Total                       | 48            | 560,460             |                |                     |       |

Lampiran 3. Hasil sidik ragam pengaruh jenis media tanam dan konsentrasi pupuk PSB terhadap jumlah daun dan pertambahan jumlah daun.

- a. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap jumlah daun bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat     | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|--------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 6.333 <sup>a</sup> | 0,422          | 0,881 <sup>ns</sup> | 0,590 |
| Jenis Media                 | 3             | 4,167              | 1,389          | 2,899 <sup>ns</sup> | 0,950 |
| Konsentrasi PSB             | 3             | 0,167              | 0,056          | 0,116 <sup>*</sup>  | 0,050 |
| Jenis Media*Konsentrasi PSB | 9             | 2,000              | 0,222          | 0,464 <sup>ns</sup> | 0,888 |
| Error                       | 32            | 15,333             | 0,479          |                     |       |
| Total                       | 48            | 3422,000           |                |                     |       |

- b. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap pertambahan jumlah daun bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat     | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|--------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 4.583 <sup>a</sup> | 0,306          | 0,587 <sup>ns</sup> | 0,863 |
| Jenis Media                 | 3             | 1,417              | 0,472          | 0,907 <sup>ns</sup> | 0,449 |
| Konsentrasi PSB             | 3             | 1,083              | 0,361          | 0,693 <sup>ns</sup> | 0,563 |
| Jenis Media*Konsentrasi PSB | 9             | 2,083              | 0,231          | 0,444 <sup>ns</sup> | 0,900 |
| Error                       | 32            | 16,667             | 0,521          |                     |       |
| Total                       | 48            | 82,000             |                |                     |       |

1. Post hoc Jumlah daun bibit kelapa sawit main nursery

| Konsentrasi Pupuk    | N  | Subset |        |
|----------------------|----|--------|--------|
|                      |    | b      | a      |
| P2 (Pupuk PSB 20 ML) | 12 | 8,1667 |        |
| P3 (Pupuk PSB 25 ML) | 12 | 8,2500 |        |
| P0 (Pupuk PSB 10 ML) | 12 | 8,3333 |        |
| P1 (Pupuk PSB 15 ML) | 12 |        | 8,9167 |
| Sig.                 |    | 0,584  | 1,000  |

Lampiran 4. Hasil sidik ragam pengaruh jenis media tanam dan konsentrasi pupuk PSB terhadap luas daun, dan post hoc test uji lanjut luas daun

- a. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap luas daun bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat         | Kuadrat Tengah | F. Hitung | Sig.  |
|-----------------------------|---------------|------------------------|----------------|-----------|-------|
| Perlakuan                   | 15            | 40235.035 <sup>a</sup> | 2682,336       | 4,340*    | 0,000 |
| Jenis Media                 | 3             | 13015,833              | 4338,611       | 7,020*    | 0,001 |
| Konsentrasi PSB             | 3             | 14138,770              | 4712,923       | 7,626*    | 0,001 |
| Jenis Media*Konsentrasi PSB | 9             | 13080,432              | 1453,381       | 2,352*    | 0,036 |
| Error                       | 32            | 19776,871              | 618,027        |           |       |
| Total                       | 48            | 1405589,220            |                |           |       |

1. Post hoc test uji lanjut luas daun.

| Jenismedia x<br>KonsentrasiPSB | N | Subset for alpha = 0.05 |          |          |          |          |
|--------------------------------|---|-------------------------|----------|----------|----------|----------|
|                                |   | e                       | d        | c        | b        | a        |
| D0P1                           | 3 | 99,0160                 |          |          |          |          |
| D2P2                           | 3 | 138,1470                | 138,1470 |          |          |          |
| D2P1                           | 3 | 140,5413                | 140,5413 | 140,5413 |          |          |
| D2P0                           | 3 |                         | 145,4467 | 145,4467 | 145,4467 |          |
| D3P1                           | 3 |                         | 147,8113 | 147,8113 | 147,8113 |          |
| D1P1                           | 3 |                         | 168,1707 | 168,1707 | 168,1707 |          |
| D3P0                           | 3 |                         | 168,4713 | 168,4713 | 168,4713 |          |
| D0P3                           | 3 |                         | 168,9313 | 168,9313 | 168,9313 |          |
| D0P0                           | 3 |                         | 170,9000 | 170,9000 | 170,9000 |          |
| D3P2                           | 3 |                         | 174,0280 | 174,0280 | 174,0280 |          |
| D3P3                           | 3 |                         | 177,4217 | 177,4217 | 177,4217 |          |
| D0P2                           | 3 |                         | 181,5957 | 181,5957 | 181,5957 |          |
| D1P3                           | 3 |                         | 181,6063 | 181,6063 | 181,6063 |          |
| D2P3                           | 3 |                         |          | 188,7320 | 188,7320 |          |
| D1P0                           | 3 |                         |          |          | 192,5327 |          |
| D1P2                           | 3 |                         |          |          |          | 235,5307 |
| Sig.                           |   | 0,061                   | 0,080    | 0,053    | 0,058    | 1,000    |

Lampiran 5. Hasil sidik ragam pengaruh jenis media tanam dan konsentrasi pupuk PSB terhadap berat segar tajuk, berat kering tajuk, dan berat segar akar.

- a. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap berat segar tajuk bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat        | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|-----------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 2899,803 <sup>a</sup> | 193,320        | 1,345 <sup>ns</sup> | 0,234 |
| Jenis Media                 | 3             | 1021,252              | 340,417        | 2,368 <sup>ns</sup> | 0,089 |
| Konsentrasi PSB             | 3             | 716,544               | 238,848        | 1,662 <sup>ns</sup> | 0,195 |
| Jenis Media*Konsentrasi PSB | 9             | 1162,006              | 129,112        | 0,898 <sup>ns</sup> | 0,538 |
| Error                       | 32            | 4599,346              | 143,730        |                     |       |
| Total                       | 48            | 101797,9              |                |                     |       |

- b. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap berat kering tajuk bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat       | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|----------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 513,130 <sup>a</sup> | 34,209         | 1,876 <sup>ns</sup> | 0,066 |
| Jenis Media                 | 3             | 261,471              | 87,157         | 4,778 <sup>*</sup>  | 0,007 |
| Konsentrasi PSB             | 3             | 91,447               | 30,482         | 1,671 <sup>ns</sup> | 0,193 |
| Jenis Media*Konsentrasi PSB | 9             | 160,213              | 17,801         | 0,976 <sup>ns</sup> | 0,478 |
| Error                       | 32            | 583,665              | 18,240         |                     |       |
| Total                       | 48            | 13266,680            |                |                     |       |

#### 1. Post Hoc Jenis media berat kering tajuk

| Jenis Media                    | N  | Subset  |         |
|--------------------------------|----|---------|---------|
|                                |    | q       | p       |
| D2 (Tanah dan Copeat 50%)      | 12 | 12,8917 |         |
| D3 (Tanah dan Pasir (50%))     | 12 | 15,5083 |         |
| D0 (Tanah ( Kontrol))          | 12 | 15,8442 |         |
| D1 (Tanah dan Arang sekam 50%) | 12 |         | 19,4475 |
| Sig.                           |    | 0,119   | 1,000   |

Lampiran 6. Hasil sidik ragam pengaruh jenis media tanam dan konsentrasi pupuk PSB terhadap berat segar akar, berat kering akar, dan volume akar.

- a. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap berat segar akar bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat        | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|-----------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 2569.245 <sup>a</sup> | 171,283        | 1,235 <sup>ns</sup> | 0,298 |
| Jenis Media                 | 3             | 416,448               | 138,816        | 1,001 <sup>ns</sup> | 0,405 |
| Konsentrasi PSB             | 3             | 367,256               | 122,419        | 0,883 <sup>ns</sup> | 0,460 |
| Jenis Media*Konsentrasi PSB | 9             | 1785,541              | 198,393        | 1,431 <sup>ns</sup> | 0,217 |
| Error                       | 32            | 4437,615              | 138,675        |                     |       |
| Total                       | 48            | 34759,599             |                |                     |       |

- b. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap berat kering akar bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat       | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|----------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 252.147 <sup>a</sup> | 16,810         | 1,051 <sup>ns</sup> | 0,434 |
| Jenis Media                 | 3             | 57,219               | 19,073         | 1,193 <sup>ns</sup> | 0,328 |
| Konsentrasi PSB             | 3             | 4,007                | 1,336          | 0,084 <sup>ns</sup> | 0,969 |
| Jenis Media*Konsentrasi PSB | 9             | 190,921              | 21,213         | 1,327 <sup>ns</sup> | 0,262 |
| Error                       | 32            | 511,641              | 15,989         |                     |       |
| Total                       | 48            | 3251,099             |                |                     |       |

- c. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap Volume akar bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat        | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|-----------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 3564.583 <sup>a</sup> | 237,639        | 1,009 <sup>ns</sup> | 0,470 |
| Jenis Media                 | 3             | 206,250               | 68,750         | 0,292 <sup>ns</sup> | 0,831 |
| Konsentrasi PSB             | 3             | 222,917               | 74,306         | 0,316 <sup>ns</sup> | 0,814 |
| Jenis Media*Konsentrasi PSB | 9             | 3135,417              | 348,380        | 1,480 <sup>ns</sup> | 0,198 |
| Error                       | 32            | 7533,333              | 235,417        |                     |       |
| Total                       | 48            | 53700,000             |                |                     |       |

Lampiran 7. Hasil sidik ragam pengaruh jenis media tanam dan konsentrasi pupuk PSB terhadap panjang akar

- a. Sidik ragam pengaruh Jenis media tanam dan konsentrasi pupuk PSB terhadap Panjang akar bibit kelapa sawit di *main nursery*

| Sumber variasi              | Derajat bebas | Jumlah Kuadrat       | Kuadrat Tengah | F. Hitung           | Sig.  |
|-----------------------------|---------------|----------------------|----------------|---------------------|-------|
| Perlakuan                   | 15            | 991.479 <sup>a</sup> | 66,099         | 0,526 <sup>ns</sup> | 0,907 |
| Jenis Media                 | 3             | 321,563              | 107,188        | 0,853 <sup>ns</sup> | 0,476 |
| Konsentrasi PSB             | 3             | 211,896              | 70,632         | 0,562 <sup>ns</sup> | 0,644 |
| Jenis Media*Konsentrasi PSB | 9             | 458,021              | 50,891         | 0,405 <sup>ns</sup> | 0,923 |
| Error                       | 32            | 4023,333             | 125,729        |                     |       |
| Total                       | 48            | 102485,000           |                |                     |       |

Lampiran 8. Matrik Perlakuan

| Media tanam            | Pupuk PSB | Ulangan 1 | Ulangan 2 | Ulangan 3 |
|------------------------|-----------|-----------|-----------|-----------|
| Tanah                  | 10 ml/l   | D0P0U1    | D0P0U2    | D0P0U3    |
|                        | 15 ml/l   | D0P1U1    | D0P1U2    | D0P1U3    |
|                        | 20 ml/l   | D0P2U1    | D0P2U2    | D0P2U3    |
|                        | 25 ml/l   | D0P3U1    | D0P3U2    | D0P3U3    |
| Tanah Arang sekam(1:1) | 10 ml/l   | D1P0U1    | D1P0U2    | D1P0U3    |
|                        | 15 ml/l   | D1P1U1    | D1P1U2    | D1P1U3    |
|                        | 20 ml/l   | D1P2U1    | D1P2U2    | D1P2U3    |
|                        | 25 ml/l   | D1P3U1    | D1P3U2    | D1P3U3    |
| Tanah Cocopeat (1:1)   | 10 ml/l   | D2P0U1    | D2P0U2    | D2P0U3    |
|                        | 15 ml/l   | D2P1U1    | D2P1U2    | D2P1U3    |
|                        | 20 ml/l   | D2P2U1    | D2P2U2    | D2P2U3    |
|                        | 25 ml/l   | D2P3U1    | D2P3U2    | D2P3U3    |
| Tanah Pasir (1:1)      | 10 ml/l   | D3P0U1    | D3P0U2    | D3P0U3    |
|                        | 15 ml/l   | D3P1U1    | D3P1U2    | D3P1U3    |
|                        | 20 ml/l   | D3P2U1    | D3P2U2    | D3P2U3    |
|                        | 25 ml/l   | D3P3U1    | D3P3U2    | D3P3U3    |

Keterangan :

P0 : Pupuk PSB 10 ml/l      D0 : Tanah      U1 : Ulangan 1

P1 : Pupuk PSB 15 ml/l      D1 : Tanah:Arang sekam      U2 : Ulangan 2

P2 : Pupuk PSB 20 ml/l      D2 : Tanah: Cocopeat      U3 : Ulangan 3

P3 : Pupuk PSB 25 ml/l      D3 : Tanah: Pasir

# Layout Penelitian

|        |        |        |
|--------|--------|--------|
| D0P0U1 | D0P0U2 | D0P0U3 |
| D1P3U1 | D3P0U2 | D2P2U3 |
| D3P0U1 | D0P3U2 | D3P3U3 |
| D2P3U1 | D3P1U2 | D2P2U3 |
| D3P3U1 | D1P1U2 | D1P1U3 |
| D0P2U1 | D2P2U2 | D2P2U3 |
| D2P1U1 | D2P3U2 | D0P2U3 |
| D1P2U1 | D2P0U2 | D1P1U3 |
| D0P3U1 | D1P3U2 | D0P1U3 |
| D1P1U1 | D2P1U2 | D2P2U3 |
| D1P0U1 | D1P0U2 | D3P3U3 |
| D3P2U1 | D0P1U2 | D3P3U3 |
| D2P0U1 | D1P2U2 | D0P3U3 |
| D0P1U1 | D3P3U2 | D1P1U3 |
| D3P1U1 | D0P2U2 | D1P1U3 |
| D2P2U1 | D3P2U2 | D3P3U3 |

Warna Ulangan :

|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

## Lampiran 9. Proses penyiapan penelitian (Dokumentasi Penelitian)

Media pasir



Media Arang sekam



Media cocopeat



Pengukuran Volume 1:1



Proses penyiapan media



Pemindahan bibit ke  
*Main Nursery*



Lampiran 10. Proses pengaplikasian PSB, pengamatan dan panen (Dokumentasi Penelitian)

Pengacakan setelah pindah tanam



Melakukan pengamatan per 2 minggu



Pemberian konsentrasi pupuk PSB



Pengaplikasian pupuk PSB 1 minggu sekali



Foto sebelum panen



Foto setelah panen



Pembersihan tanaman dari media



Pembersihan lanjutan menggunakan air



Pengukuran panjang akar



## Lampiran 11. Proses Pengovenan dan uji luas daun (Dokumentasi Penelitian)

Pengukuran volume akar



Pengukuran berat segar tajuk



Pengukuran berat segar akar



Pengovenan



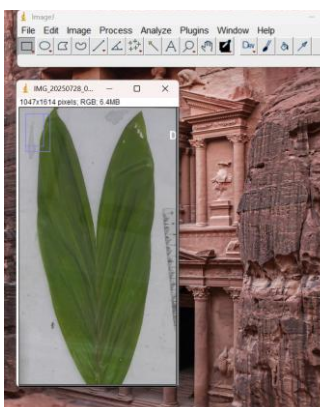
Pengukuran berat kering tajuk



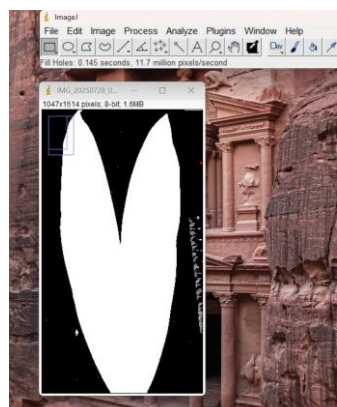
Pengukuran berat kering akar



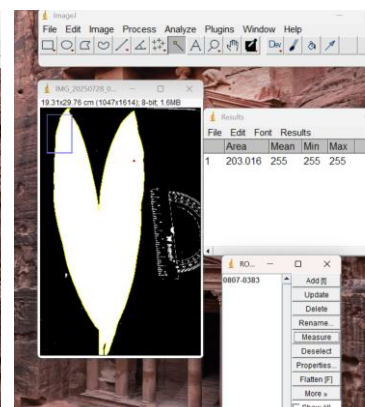
Data mentah Image J



Data jadi Image J



Hasil dari pengukuran image J



Lampiran 12. Standar pertumbuhan bibit kelapa sawit *main nursery* varietas PPKS.



**STANDAR PERTUMBUHAN  
BIBIT KELAPA SAWIT**

| Umur (bulan) | Jumlah Pelepah | Tinggi Bibit (cm) | Diameter Batang (cm) |
|--------------|----------------|-------------------|----------------------|
| 3            | 3,5            | 20,0              | 1,3                  |
| 4            | 4,5            | 25,0              | 1,5                  |
| 5            | 5,5            | 32,0              | 1,7                  |
| 6            | 8,5            | 35,9              | 1,8                  |
| 7            | 10,5           | 52,2              | 2,7                  |
| 8            | 11,5           | 64,3              | 3,6                  |
| 9            | 13,5           | 88,3              | 4,5                  |