



LAPORAN HASIL PENELITIAN

“ Pembuatan Pupuk Organik Cair (POC) Berbahan Dasar Daun Kirinyuh Dengan Penambahan Tepung Tulang Ayam Dengan Menggunakan Bioaktivator EM4 “

DAFTAR PUSTAKA

- Angitha Ajay, R. K. M. et al. (2010). I Nternational J Ournal of. *Journal Of Energy*, 1(3), 427–446.
http://ijee.ieefoundation.org/vol2/public_html/ijeeindex/vol2/issue4/IJEE_03_v2n4.pdf
- Astutik, D., Rahhutami, R., Handini, A. S., & Sutopo, A. (2020). The Utilization of Effective Microorganism 4 (EM4) on Growth of Oil Palm Seedling in Pre Nursery. *International Journal of Multi Discipline Science (IJ-MDS)*, 3(2), 39.
<https://doi.org/10.26737/ij-mds.v3i2.2117>
- Boru, M. (2025). *Review of Organic Fertilizer and Its Role in Organic Farming*. 10(2), 31–37.
- Breza, L. C., & Grandy, A. S. (2025). Organic amendments tighten nitrogen cycling in agricultural soils: a meta-analysis on gross nitrogen flux. *Frontiers in Agronomy*, 7(February), 1–12. <https://doi.org/10.3389/fagro.2025.1472749>
- Cansu, Ü., & Boran, G. (2020). Optimization of a multi-step procedure for isolation of chicken bone collagen. *Korean Journal for Food Science of Animal Resources*, 35(4), 431–440. <https://doi.org/10.5851/kosfa.2015.35.4.431>
- Daniarsih, A., Amrilah, M. S., Putra, D. R. N., Hilman, R., & Ardiansyah, I. (2024). Innovation of Mycoparasites *Trichoderma harzianum* as a Catalyst in the Manufacture of Biofertilizers and Biopesticides in Anthracnose of Chili Plants. *BIO Web of Conferences*, 117, 1–13. <https://doi.org/10.1051/bioconf/202411701038>
- Dionisia Hariani Nada , Faustina De Yesu Prisila Abi, A. N. (2025). *Pengaruh Waktu dan Metode Fermentasi Terhadap Kandungan C, N, P, K dalam Pupuk Organik Cair dari Limbah Air Kelapa Tua, Limbah Buah-Buahan dan Molase*. 8(1), 54–64.
- Fajobi, M. O., Lasode, O. A., Adeleke, A. A., Ikubanni, P. P., & Balogun, A. O. (2022). Investigation of physicochemical characteristics of selected lignocellulose biomass. *Scientific Reports*, 12(1), 1–14. <https://doi.org/10.1038/s41598-022-07061-2>
- Fira Syafira, Santi Diana Putri, Resti Fevria, M. L. (2026). *Dinamika Mikroba dan Perubahan NPK Selama Fermentasi POC Kotoran Kambing*. 13(1), 101–109.
- Hoffman, O., Tautges, N., & Scow, K. (2021). *Evaluating costs and benefits of organic-approved liquid injectable fertilizers to improve nutrient uptake and yields in tomato*. July.
- Khan, A. M., Usmani, M. A., Yasmeen, K., Ahmed, M. N., Obaid, M., Naz, S. A., Pervaiz, S., Chan, M. W. H., Khan, A., & Aslam, S. (2023). Conversion of waste animal bones to biofertilizer and adsorbent for wastewater treatment: An innovative approach to develop zero-waste technology. *Research Square*, 1–28.
- Kurniawan, E., Dewi, R., & Jannah, R. (2022). Pemanfaatan Limbah Cair Industri Kelapa Sawit Sebagai Pupuk Organik Cair Dengan Penambahan Serat Tandan Kosong Kelapa Sawit. *Jurnal Teknologi Kimia Unimal*, 11(1), 76. <https://doi.org/10.29103/jtku.v11i1.7251>
- Lie, C. K., Mullik, M. L., Dami Dato, T. O., & Oematan, G. (2024). Pengaruh Lama Waktu Biofermentasi *Chromolaena odorata* dengan Penambahan Sumber Karbon Gula Lontar Cair terhadap Kandungan Selulosa, Lignin, Asam Pitat, Kadar Nitrit dan Saponin. *Animal Agricultura*, 2(1), 472–487.



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- <https://doi.org/10.59891/animacultura.v2i1.66>
- Meriatna, M., Suryati, S., & Fahri, A. (2019). Pengaruh Waktu Fermentasi dan Volume Bio Aktivator EM4 (Effective Microorganisme) pada Pembuatan Pupuk Organik Cair (POC) dari Limbah Buah-Buahan. *Jurnal Teknologi Kimia Unimal*, 7(1), 13. <https://doi.org/10.29103/jtku.v7i1.1172>
- Nirmala Afiah, D., Uthari, E., Widyabudiningsih, D., & Jayanti, R. D. (2021). Pembuatan dan Pengujian Pupuk Organik Cair (POC) dari Limbah Pasar dengan Menggunakan Bioaktivator EM4. *Fullerene Journal Of Chemistry*, 6(2), 89–95. <https://doi.org/10.37033/fjc.v6i2.325>
- Nugroho, B., Mildaryani, W., & Dewi, S. H. C. (2019). Potential of Siam Weed (*Chromolaena odorata* L.) as Compost Material for Organic Shallot Cultivation. *Jurnal Agronomi Indonesia (Indonesian Journal of Agronomy)*, 47(2), 180–187.
- Ogundare, S K., Olajide, K. and Ayodele, F. G. J. (2019). Effect of Siam Weed (*Chromolaena Odorata* L.) Residues, Phosphorus Fertilizer and Manure Application Time on Soil Properties, Growth and Root Yield of Sweet Potato in Acidic Soil. *Global Journal of Agricultural Research*, 7(2), 11–20.
- Okwunodulu, I. N., Daniel, M. C., Ndife, J., & Okwunodulu, F. U. (2022). Calcium and phosphorous insight of local chicken , broiler and old layer bones and their ratios for optimal bone health and development. *Food Chemistry Advances*, 1(July), 100122. <https://doi.org/10.1016/j.focha.2022.100122>
- Olawale, F., Olofinisan, K., & Iwaloye, O. (2022). Biological activities of *Chromolaena odorata*: A mechanistic review. *South African Journal of Botany*, 144, 44–57. <https://doi.org/10.1016/j.sajb.2021.09.001>
- Puspitasari, Y., Suriyanti, S., & Nontji, M. (2022). Lama Fermentasi Dan Volume Effective Microorganism-4 (Em4) Dalam Pembuatan Pupuk Organik Padat Berbahan Dasar Serbuk Gergaji Kayu Dan Kotoran Ayam. *AGrotekMAS Jurnal Indonesia: Jurnal Ilmu Peranian*, 3(2), 124–135. <https://doi.org/10.33096/agrotekmas.v3i2.254>
- Safari, A. A., Hidayati, Y. A., & Setiawati, M. R. (2023). Pengaruh Rasio C/N Campuran Feses Sapi Perah dan Daun Kirinyuh terhadap Kualitas POC (Pupuk Organik Cair). *Jurnal Teknologi Hasil Peternakan*, 4(1), 52–61. <https://doi.org/10.24198/jthp.v4i1.45739>
- Said, M. I., Mustabi, J., Razzaq, A., Tawaha, A., Sirajuddin, S. N., Azizah, N., & Al-assaf, R. (2024). *Effect-of-Differences-in-Bioactivators-and-Fermentation-Time-on-the-Properties-of-Liquid-Organic-Fertilizers-Based-on-Local-Rabbits-Urine-Waste_2024_Polskie-Towarzystwo-Inzynierii-Ekologicznej-PTIE.pdf*. 25(8), 264–275.
- Satrio Wicaksono, D., Putri, P. I. A., Nisrina Hastri, A., Noviantikasari, D., Muflihati, I., Suhendriani, S., Nurdyansyah, F., Muliani Dwi Ujianti, R., & Umiyati, R. (2022). Perbandingan Sifat Mie Instan, Mie Kering, dan Mie Basah yang Disubstitusi dengan Tepung Tulang Ayam. *Journal of Food and Culinary*, 5(2), 76–89. <https://doi.org/10.12928/jfc.v5i2.7476>
- Sebonela, L. K., & Elephant, D. E. (2024). *Eggshells Improve Soil pH and P Availability in Sandy Loam and Sandy Clay Loamy Soil*. 1–16.



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- St, A. (2023). *Effect of Fertilization with Meat and Bone Meal on the Production of Biofuel Obtained from Corn Grain*.
- Sun, X., Tian, X., Jia, M., Hu, X., Zhang, C., & Zhao, L. (2026). Phosphate-solubilizing bacteria: a review of diversity, mechanisms, and applications in sustainable agriculture. *Frontiers in Microbiology*, 17(March). <https://doi.org/10.3389/fmicb.2026.1778470>
- Veronika, N. (2018). Pengaruh Aplikasi Pupuk EM4 Komersil Dan EM4 Kulturasasi Pada Pertumbuhan Tanaman Sawit. *Jurnal Sains Dan Ilmu Terapan*, 1(1), 1–4. <https://doi.org/10.59061/jsit.v1i1.110>
- Widyabudiningsih, D., Rinaldi, K., Firdaus, F. M., Fauzi, R. R., & Hulupi, M. (2025). EM4 Effect on Macronutrients and Microbial Growth in Liquid Organic Fertilizer from Cibogo Market Waste. *Fluida*, 18(1), 23–30. <https://doi.org/10.35313/fluida.v18i1.6050>
- Wulandari, L., & Umam, K. (2023). Potensi Ekstrak Daun Kirinyuh (*Chromolaena odorata*) dalam Menghambat Bakteri Patogen (*E. sakazakii*, *S. typhi*, dan *L. monocytogenes*). *Jurnal Ilmiah Biosaintropis (Bioscience-Tropic)*, 8(2), 18–31. <https://doi.org/10.33474/e-jbst.v8i2.497>
- Yanti, S., Ibrahim, I., & Kurniawan, E. (2022). *PEMBUATAN PUPUK ORGANIK CAIR DARI LIMBAH SAYURAN DENGAN MENGGUNAKAN BIOAKTIVATOR EM4* Susi Yanti, Ishak Ibrahim*, Masrullita, Eddy Kurniawan, Muhammad. 2(November), 267–279.
- Yuwan Marthyn Ziliwu, & Natalia Kristiani Lase. (2025). Peran Mikroorganisme dalam Proses Degradasi Bahan Organik. *Hidroponik: Jurnal Ilmu Pertanian Dan Teknologi Dalam Ilmu Tanaman*, 2(1), 132–141. <https://doi.org/10.62951/hidroponik.v2i1.235>