

## DAFTAR PUSTAKA

- Abdu, N., Abdullahi, A.A. & Abdulkadir, A. 2016. Heavy metals and soil microbes. *Environ Chem Lett* 15, 65–84.
- Afriani, H.Husni, M.Kadir (2023). *Growth and Production Response of Five Hybrid Maize Varieties to Application of Different Fertilizer Packages.pdf*. (n.d.). *Jurnal Penelitian Pertanian Terapan* Vol 1(1) 2023.
- Agung, M., & GF, H. S. MR, & Mardina, P.(2013). Ekstraksi Silika Dari Abu Sekam Padi Dengan Pelarut KOH. *Jurnal Konversi UNLAM*, 2(1), 28-31.
- Abdu, N., Abdullahi, A. A., & Abdulkadir, A. (2017). Heavy metals and soil microbes. *Environmental Chemistry Letters*, 15(1), 65–84. <https://doi.org/10.1007/s10311-016-0587-x>
- Ali, M., & Mindari, W. (2016). Effect of humic acid on soil chemical and physical characteristics of embankment. *MATEC Web of Conferences*, 58. <https://doi.org/10.1051/mateconf/20165801028>
- Alsaeedi, F. A. (2019). *Potentiating stem cell-derived hepatocyte function*. *May*.
- Amaral, J. H., Rezende, V. B., Quintana, S. M., Gerlach, R. F., Barbosa, F., & Tanus-Santos, J. E. (2010). The relationship between blood and serum lead levels in peripartum women and their respective umbilical cords. *Basic and Clinical Pharmacology and Toxicology*, 107(6), 971–975. <https://doi.org/10.1111/j.1742-7843.2010.00616.x>
- Andersson, K. O., Tighe, M. K., Guppy, C. N., Milham, P. J., McLaren, T. I., Scheffe, C. R., Lombi, E., Lisle, L. M., & Klysubun, W. (2019). Transformation of Calcium Phosphates in Alkaline Vertisols by Acidified Incubation. *Environmental Science and Technology*, 53(17), 10131–10138. <https://doi.org/10.1021/acs.est.9b01565>.
- Andri Lukmansyah, Ainin Niswati, Henrie Buchari, dan Abdul Kadir Salam. (2020). Pengaruh Asam Humat Dan Pemupukan P Terhadap Respirasi Tanah Pada Pertanaman Jagung Di Tanah Ultisols. *J. Agrotek Tropika*. Vol. 8, No. 3: 527-535.
- Bolan, N., Kunhikrishnan, A., Thangarajan, R., Kumpiene, J., Park, J., Makino, T., Kirkham, M. B., & Scheckel, K. (2014). Remediation of heavy metal(loid)s contaminated soils - To mobilize or to immobilize? *Journal of Hazardous Materials*, 266, 141–166. <https://doi.org/10.1016/j.jhazmat.2013.12.018>
- Cao, J., Zhao, P., Wang, D., Zhao, Y., Wang, Z., & Zhong, N. (2023). Effects of a Nanonetwork-Structured Soil Conditioner on Microbial Community Structure. *Biology*, 12(5). <https://doi.org/10.3390/biology12050668>
- Caroline, J., & Moa, G. A. (2015). Fitoremediasi logam timbal (Pb) (*Echinodorus palaefolius*) pada industri peleburan tembaga dan kuningan. *Seminar Nasional Sains Dan Teknologi Terapan III*, 10(3), 733–744.

- Chen, Y., Jia, Z., Liu, K., Tian, X., Wang, S., Wang, S., Li, X., Zhao, H., & Shar, A. G. (2017). Response of Exogenous Zinc Availability and Transformation to Maize Straw as Affected by Soil Organic Matter. *Soil Science Society of America Journal*, 81(4), 814–827. <https://doi.org/10.2136/sssaj2016.11.0374>
- Cotrufo, M. F., Soong, J. L., Horton, A. J., Campbell, E. E., Haddix, M. L., Wall, D. H., & Parton, W. J. (2015). Formation of soil organic matter via biochemical and physical pathways of litter mass loss. *Nature Geoscience*, 8(10), 776–779. <https://doi.org/10.1038/ngeo2520>
- Dipayana, G. A., Cahyadi, A., & Nurjani, E. (2014). Analisis trend kejadian kekeringan di sebagian wilayah Povinsi DI Yogyakarta dan dampak el-nino terhadapnya. *Seminar Nasional Geografi*, 5.
- Erika Alina Puteri, Yayuk Nurmiaty & Agustiansyah. (2014). Pengaruh Aplikasi Fosfor Dan Silika Terhadap Pertumbuhan Dan Hasil Tanaman Kedelai (Glycine Max [L.] Merrill.) . J. Agrotek Tropika. ISSN 2337-4993 : Pengaruh Aplikasi Fosfor dan Silika 241 Vol. 2, No. 2: 241-245, Mei 2014.
- Greger, M., Landberg, T., & Vaculík, M. (2018). Silicon influences soil availability and accumulation of mineral nutrients in various plant species. *Plants*, 7(2), 1–16. <https://doi.org/10.3390/plants7020041>
- Hadi, M., Razali, R., & Fauzi, F. (2014). Pemetaan Status Unsur Hara Fosfor Dan Kalium Di Perkebunan Nanas (Ananas Comosus L. Merr) Rakyat Desa Panribuan Kecamatan Dolok Silau Kabupaten Simalungun. *Jurnal Agroekoteknologi Universitas Sumatera Utara*, 2(2), 427–439.
- Haynes, R. J., & Zhou, Y. F. (2020). Silicate sorption and desorption by a Si-deficient soil – Effects of pH and period of contact. *Geoderma*, 365, 114204. <https://doi.org/10.1016/J.GEODERMA.2020.114204>
- Ismillayli, N., Kamali, S. R., Hamdiani, S., & Hermanto, D. (2019). Interaksi Asam Humat Dengan Larutan Urea, SP36 dan KCl dan Pengaruhnya Terhadap Efisiensi Pemupukan. *Jurnal Pijar Mipa*, 14(1), 77–81. <https://doi.org/10.29303/jpm.v14i1.815>
- Khaled, H., & Fawy, H. (2011). Effect of different Levels of humic acids on the nutrient content, plant growth, and soil properties under conditions of salinity. *Soil and Water Research*, 6(1), 21–29. <https://doi.org/10.17221/4/2010-swr>
- Kristanto, B. A. (2018). Aplikasi Silika Untuk Pengelolaan Kesuburan Tanah Dan Peningkatan Produktivitas Padi Secara Berkelanjutan Budi. In Seminar Nasional Lingkungan, Ketahanan Dan Keamanan Pangan “Optimalisasi Potensi Lingkungan Untuk Mewujudkan Ketahanan dan Keamanan Pangan” (Vol. 53, Issue 9). <https://pasca.uns.ac.id/s2ilmulingkungan/wp-content/uploads/sites/25/2018/05/PROSIDING-SEMNAS-FINISH-2018.pdf>
- Li, S., Li, M., Zheng, H., Xiong, X., Deng, H., Shi, Y., & Xia, D. (2023). Enhancement of peroxy monosulfate activation by humic acid-modified sludge biochar: Role of singlet oxygen and electron transfer pathway. *Chemosphere*, 329, 138690. <https://doi.org/10.1016/J.CHEMOSPHERE.2023.138690>

- Luo, G., Sun, B., Li, L., Li, M., Liu, M., Zhu, Y., Guo, S., Ling, N., & Shen, Q. (2019). Understanding how long-term organic amendments increase soil phosphatase activities: Insight into phoD- and phoC-harboring functional microbial populations. *Soil Biology and Biochemistry*, *139*, 107632. <https://doi.org/10.1016/j.soilbio.2019.107632>
- Mao, X., Van Zwieten, L., Zhang, M., Qiu, Z., Yao, Y., & Wang, H. (2020). Soil parent material controls organic matter stocks and retention patterns in subtropical China. *Journal of Soils and Sediments*, *20*(5), 2426–2438. <https://doi.org/10.1007/s11368-020-02578-3>
- Moenandar, S. (Siswanto), Mahardika, M. Y. (Mochammad), & Maulidi, L. A. (Lestariyanto). (2017). Pupuk Kalium Silika dengan Proses Kalsinasi Berbasis Batuan Trass. *Jurnal Teknik Kimia UPN Veteran Jatim*, *11*(2), 493414. <https://www.neliti.com/publications/493414/>
- Mushtaq, A., Jamil, N., Rizwan, S., Mandokhel, F., Riaz, M., Hornyak, G. L., Najam Malghani, M., & Naeem Shahwani, M. (2018). Engineered Silica Nanoparticles and silica nanoparticles containing Controlled Release Fertilizer for drought and saline areas. *IOP Conference Series: Materials Science and Engineering*, *414*(1). <https://doi.org/10.1088/1757-899X/414/1/012029>
- Nardi, S., Muscolo, A., Vaccaro, S., Baiano, S., Spaccini, R., & Piccolo, A. (2007). Relationship between molecular characteristics of soil humic fractions and glycolytic pathway and krebs cycle in maize seedlings. *Soil Biology and Biochemistry*, *39*(12), 3138–3146. <https://doi.org/10.1016/J.SOILBIO.2007.07.006>.
- Ningsari, O. (2017). Frekuensi Aplikasi dan Konsentrasi Ekstrak Abu Sekam Berpelarut Asap Cair sebagai Pupuk Silikon terhadap Pertumbuhan Tanaman Padi. In Karya Tulis Ilmiah. Program Studi DIII Keperawatan. Fakultas Keperawatan. Universitas Sumatera Utara. Medan. <http://repository.unimus.ac.id/411/>
- Nuraini, Y., & Zahro, A. (2020). Pengaruh Aplikasi Asam Humat Dan Pupuk Npk Phonska 15-15-15 Terhadap Serapan Nitrogen Dan Pertumbuhan Tanaman Padi Serta Residu Nitrogen Di Lahan Sawah. *Jurnal Tanah Dan Sumberdaya Lahan*, *7*(2), 195–200. <https://doi.org/10.21776/ub.jtsl.2020.007.2.2>
- Olaetxea, M., Mora, V., Bacaicoa, E., Baigorri, R., Garnica, M., Fuentes, M., Zamarreño, A. M., Spíchal, L., & García-Mina, J. M. (2019). Root ABA and H<sup>+</sup>-ATPase are key players in the root and shoot growth-promoting action of humic acids. *Plant Direct*, *3*(10), 1–12. <https://doi.org/10.1002/pld3.175>
- Pittarello, M., Busato, J. G., Carletti, P., Sodr , F. F., & Dobbss, L. B. (2019). Dissolved humic substances supplied as potential enhancers of Cu, Cd, and Pb adsorption by two different mangrove sediments. *Journal of Soils and Sediments*, *19*(3), 1554–1565. <https://doi.org/10.1007/s11368-018-2158-1>
- Rosariastuti, R., Barokah, U., Purwanto, P., & Supriyadi, S. (2018). Phytoremediation of Pb contaminated paddy field using combination of *Agrobacterium* sp. I3, compost and ramie (*Boehmeria nivea*). *Journal of*

- Degraded and Mining Lands Management*, 5(4), 1381–1388.  
<https://doi.org/10.15243/jdmlm.2018.054.1381>
- Shahid, M. K., Phearom, S., & Choi, Y.-G. (2020). Packed Bed Column for Adsorption of Arsenic on Mixed-Valent Iron [Fe(II)-Fe(III)] Oxide Synthesized from Industrial Waste. *Journal of Hazardous, Toxic, and Radioactive Waste*, 24(2), 1–8. [https://doi.org/10.1061/\(asce\)hz.2153-5515.0000488](https://doi.org/10.1061/(asce)hz.2153-5515.0000488)
- Shaila, G., Tauhid, A., & Tustiyani, I. (2019). Pengaruh Dosis Urea Dan Pupuk Organik Cair Asam Humat Terhadap Pertumbuhan Dan Hasil Tanaman Jagung Manis. *Agritrop : Jurnal Ilmu-Ilmu Pertanian (Journal of Agricultural Science)*, 17(1), 35. <https://doi.org/10.32528/agritrop.v17i1.2185>
- Siam, H. S., Abd El-Moez, M. R., Abou Zeid, S. T., & Holah, S. S. (2019). Effect of silicon addition to different fertilizer on the yield, Cu and Zn content of rice plants (*Oryza sativa* L.). *Plant Archives*, 19(2001), 2219–2225.
- Siswanto, B., & Widowati, W. (2017). Pengaruh Pemberian Pupuk Petroganik Dan Kompos Pada Vertisol Bekas Galian Pembuatan Batu Bata Terhadap Serapan N Serta Pertumbuhan Tanaman Jagung. *Buana Sains*, 17(1), 95. <https://doi.org/10.33366/bs.v17i1.582>
- Soeswanto, B., & Lintang, N. (2016). Pemanfaatan limbah abu sekam padi menjadi natrium silikat. *Fluida*, VII(1), 18–22. bambang.soeswanto@yahoo.com%5Cn niniklintang@yahoo.com
- Suganda, H., Setyorini, D., Kusnandi, H., Saripin, I., & Kurnia, U. (2002). Kelestarian Lahan Sawah Evaluation of The Pollution of Liquid Wastes Textile. *Prosiding Seminar Nasional Dan Konversi Lahan Pertanian*, 203–221.
- Sulastri, S., & Kristianingrum, S. (2010). Berbagai Macam Senyawa Silika : Sintesis, Karakterisasi dan Pemanfaatan. In *Prosiding Seminar Nasional Penelitian, Pendidikan dan Penerapan MIPA* (pp. 211–216).
- Supriyo, A., R.Dirgahayuningsih, & S.Minarsih. (2013). Study Of Human Materials to Increase The Efficiency Of Npk Fertilizing On Palm Oil Seeds In Soil Sulfate. *Agritech*, XV(2), 87–104.
- Suryanto, A., & Refianto. (2019). Analisis Pengaruh Penerapan Good Corporate Governance Terhadap Kinerja Keuangan. *Jurnal Bina Manajemen*, 8(1), 1–33.
- Susanti, R., Mustikaningtyas, D., & Sasi, F. A. (2014). Analisis Kadar Logam Berat pada Sungai di Jawa Tengah. *Sainteknol*, 12(1), 35–40.
- Tan, H. W., Pang, Y. L., Lim, S., & Chong, W. C. (2023). A state-of-the-art of phytoremediation approach for sustainable management of heavy metals recovery. *Environmental Technology and Innovation*, 30, 103043. <https://doi.org/10.1016/j.eti.2023.103043>.

- Umaternate, G. R., Abidjulu, J., & Wuntu, A. D. (2014). Uji Metode Olsen dan Bray dalam Menganalisis Kandungan Fosfat Tersedia pada Tanah Sawah di Desa Konarom Barat Kecamatan Dumoga Utara. *Jurnal MIPA*, 3(1), 6. <https://doi.org/10.35799/jm.3.1.2014.3898>
- Violante, A. (2013). Elucidating Mechanisms of Competitive Sorption at the Mineral/Water Interface. *Advances in Agronomy*, 118, 111–176. <https://doi.org/10.1016/B978-0-12-405942-9.00003-7>
- Wang, Z., Luo, P., Zha, X., Xu, C., Kang, S., Zhou, M., Nover, D., & Wang, Y. (2022). Overview assessment of risk evaluation and treatment technologies for heavy metal pollution of water and soil. *Journal of Cleaner Production*, 379, 134043. <https://doi.org/10.1016/J.JCLEPRO.2022.134043>
- Wen, H., Liang, W., & Lee, C. C. (2023). China's progress toward sustainable development in pursuit of carbon neutrality: Regional differences and dynamic evolution. *Environmental Impact Assessment Review*, 98, 106959. <https://doi.org/10.1016/J.EIAR.2022.106959>
- Widowati, T., Nuriyanah, N., Nurjanah, L., Lekatompessy, S. J. R., & Simarmata, R. (2022). Pengaruh Bahan Baku Kompos terhadap Pertumbuhan dan Produksi Cabai Merah Keriting (*Capsicum annum* L.). *Jurnal Ilmu Lingkungan*, 20(3), 665–671. <https://doi.org/10.14710/jil.20.3.665-671>
- Wu, Y., Li, S., & Chen, G. (2020). Impact of Humic Acids on Phosphorus Retention and Transport. *Journal of Soil Science and Plant Nutrition*, 20(4), 2431–2439. <https://doi.org/10.1007/S42729-020-00308-9>
- Yang, X., Chen, X., & Yang, X. (2019). Effect of organic matter on phosphorus adsorption and desorption in a black soil from Northeast China. *Soil and Tillage Research*, 187(October 2017), 85–91. <https://doi.org/10.1016/j.still.2018.11.016>
- Zhang, S., Su, J., Ali, A., Zheng, Z., & Sun, Y. (2021). Enhanced denitrification performance of strain YSF15 by different molecular weight of humic acid: Mechanism based on the biological products and activity. *Bioresource Technology*, 325, 124709. <https://doi.org/10.1016/J.BIORTECH.2021.124709>
- Zhao, Y., Hao, Y., Cheng, K., Wang, L., Dong, W., Liu, Z., & Yang, F. (2024). Artificial humic acid mediated migration of phosphorus in soil: Experiment and modelling. *CATENA*, 238, 107896. <https://doi.org/10.1016/J.CATENA.2024.107896>