

DAFTAR PUSTAKA

- Aisah, R. (2023). Pemanfaatan Kompos dan Biochar untuk Meningkatkan Pertumbuhan Rumput Gajah pada Tanah Tercemar Limbah Oli Bekas. In *Fakultas Pertanian, Universitas Lampung* (Vol. 7, Nomor 2).
- Alaboudi, K. A., Ahmed, B., & Brodie, G. (2019). Effect of biochar on Pb, Cd and Cr availability and maize growth in artificial contaminated soil. *Annals of Agricultural Sciences*, 64(1), 95–102. <https://doi.org/10.1016/j.aosas.2019.04.002>
- Ali, H., Khan, E., & Anwar, M. (2013). Chemosphere Phytoremediation of heavy metals — Concepts and applications. *Chemosphere*, 91(7), 869–881. <https://doi.org/10.1016/j.chemosphere.2013.01.075>
- Álvarez-Mateos, P., Alés-Álvarez, F. J., & García-Martín, J. F. (2019). Phytoremediation of highly contaminated mining soils by *Jatropha curcas* L. and production of catalytic carbons from the generated biomass. *Journal of Environmental Management*, 231(July 2018), 886–895. <https://doi.org/10.1016/j.jenvman.2018.10.052>
- Amri, K., & Adifa, F. (2025). Peran Fitoremediasi dalam Pemulihan Tanah Tercemar Logam Berat: Tinjauan Mekanisme dan Aplikasi. *Jurnal Greenation Ilmu Teknik*, 3(2), 58–65. <https://doi.org/10.38035/jgit.v3i2.309>
- Anindita, P. R., Wahyuni, K. I., Agustin, I. N., & Setyowati, H. (2022). Artikel Penelitian The Evaluation of Giving Communication, Information, Education (CIE) to The Patient Satisfaction Public Health Center Taman Sidoarjo). *J-PhAM Journal of Pharmaceutical Care Anwar Medika*, 4(2), 31–38.
- Anugroho, F., Kurniati, E., & Effendi, B. A. P. (2020). Potensi Fitoremediasi Tanah Tercemar Timbal (Pb) Dengan Penambahan EDTA Menggunakan Rumput Raja (*Pennisetum purpureoides*) Potential of Phytoremediation of Lead Contaminated Soil (Pb) With EDTA Addition Using King Grass (*Pennisetum purpureoides*). *Jurnal Sumberdaya Alam dan Lingkungan*, 1, 1–8.
- Arunkumar, B. R., Thippeshappa, G. N., & Bhogi, B. H. (2020). Effect of Levels of Coconut Shell Biochar and Farm Yard Manure on Soil Properties under Upland Rice Cultivation. *International Research Journal of Pure and Applied Chemistry*, 21(11), 18–35. <https://doi.org/10.9734/irjpac/2020/v21i1130221>
- Asadi, H., Ghorbani, M., Rezaei-Rashti, M., Abrishamkesh, S., Amirahmadi, E., Chengrong, C., & Gorji, M. (2021). Application of Rice Husk Biochar for Achieving Sustainable Agriculture and Environment. *Rice Science*, 28(4), 325–343. <https://doi.org/10.1016/j.rsci.2021.05.004>
- Astuti, A. M. (2016). *Buku Statistika Penelitian*. [https://repository.uinmataram.ac.id/3231/1/Buku Statistika Penelitian.pdf](https://repository.uinmataram.ac.id/3231/1/Buku%20Statistika%20Penelitian.pdf)
- Beesley, L., Moreno-jiménez, E., & Gomez-eyles, J. L. (2010). *Effects of biochar and greenwaste compost amendments on mobility , bioavailability and*

- toxicity of inorganic and organic contaminants in a multi-element polluted soil*. 158, 2282–2287. <https://doi.org/10.1016/j.envpol.2010.02.003>
- Behera, S. K., Srivastava, P., Tripathi, R., Singh, J. P., & Singh, N. (2010). Evaluation of plant performance of *Jatropha curcas* L. under different agro-practices for optimizing biomass – A case study. *Biomass and Bioenergy*, 34(1), 30–41. <https://doi.org/10.1016/j.biombioe.2009.09.008>
- Bogusz, A., Oleszczuk, P., & Dobrowolski, R. (2019). Adsorption and desorption of heavy metals by the sewage sludge and biochar-amended soil. *Environmental Geochemistry and Health*, 41(4), 1663–1674. <https://doi.org/10.1007/s10653-017-0036-1>
- Buntu, R. S. (2020). *Fitoremediasi Tanah Tercemar Logam Timbal (Pb) dan Cadmium (Cd) dengan Vetiveria Zizanioides pada Media Tanah Berkompos* (Nomor Cd). Universitas Hasanuddin.
- Chen, J., Duan, Q., Ji, C., Liu, J., & Wang, Z. (2024). Heliyon Modified coconut shell biochars (MCSBCs): Fabrication and their adsorptions for Pb (II) ☆. *Journal Heliyon*, 10(11), e32422. <https://doi.org/10.1016/j.heliyon.2024.e32422>
- Chukwuemeka, O. D., & Chidozie, O. V. (2023). Appraisal of Heavy Metal Concentration in the Plants and Soils at Onitsha, Anambra State, Southeastern, Nigeria. *Journal of Environment and Earth Science*, 13(4), 74–84. <https://doi.org/10.7176/JEES/13-4-06>
- Deka, D., Patwa, D., Nair, A. M., & Ravi, K. (2024). Influence of biochar amendment on removal of heavy metal from soils using phytoremediation by *Catharanthus roseus* L. and *Chrysopogon zizanioides* L. *Environmental Science and Pollution Research*, 31(40), 53552–53569. <https://doi.org/10.1007/s11356-024-34734-4>
- Dewi, S. S., Ermina, R., Kasih, V. A., & Hefiana, F. (2023). Analisis Penerapan Metode One Way Anova Menggunakan Alat Statistik Spss. *Jurnal Riset Akuntansi Soedirman*, 2(2), 121–132. <https://doi.org/10.32424/1.jras.2023.2.2.10815>
- Fauzi, R., Saragih, G. S., Fauzi, R., Hidayat, M. Y., & Hindratmo, B. (2021). Lead Concentration in The Soil Around a Used Battery Recycling Site in Tangerang Regency , Indonesia Lead Concentration in The Soil Around a Used Battery Recycling Site in Tangerang Regency , Indonesia. *Makara Journal of Science*, 25(4). <https://doi.org/10.7454/mss.v25i4.1281>
- Febrianti, N., Ilham, M., Hazzah, N. A., Andriana, A., Erwing, Irfandi, R., Rijal, S., & Ruslang. (2023). Fitoremediasi Tanaman Jarak Pagar (*Jatropha Curcas*) Pada Tanah Tercemar Logam Berat Timbal (Pb) Dari Limbah Batubara. *BIOEDUSAINS: Jurnal Pendidikan Biologi dan Sains*, 6(1), 149–200. <https://doi.org/https://doi.org/10.31539/bioedusains.v6i1.4155>
- Fellet, G., Marchiol, L., Delle Vedove, G., & Peressotti, A. (2011). Application of

- biochar on mine tailings: Effects and perspectives for land reclamation. *Chemosphere*, 83(9), 1262–1267.
<https://doi.org/10.1016/j.chemosphere.2011.03.053>
- Fika, H. H., Elystia, S., & Sasmita, A. (2021). Pengolahan Tanah Tercemar Logam Berat Pb dan Cd Menggunakan Biochar Sekam Padi dengan Variasi Ukuran Partikel. *Jurnal Sains Teknologi & Lingkungan*, 7(1), 59–68.
<https://doi.org/10.29303/jstl.v7i1.215>
- Ghassemi-golezani, K., & Farhangi-abriz, S. (2022). Rhizosphere Improving plant available water holding capacity of soil by solid and chemically modified biochars. *Rhizosphere*, 21(December 2021), 5–8.
- Habibah, D. A. T. (2019). *Uji Kekerabatan Pada Pertumbuhan Awal 32 Genotipe Tanaman Jarak Pagar (Jatropha Curcas L.) Hasil Persilangan Berdasarkan Karakter Morfologi*. Universitas Muhammadiyah Malang.
- Hamzah, A., & Priyadarshini, R. (2019). *Remediasi Tanah Tercemar Logam Berat*. UNITRI Press.
- Handayani, L. (2022). Fitoremediasi Tanah Tercemar Logam Berat Besi (Fe) Menggunakan Tanaman Jarak Pagar (*Jatropha curcas*). In *Skripsi. Fakultas Sains dan Teknologi UIN Ar-Raniry Banda Aceh*. <https://repository.ar-raniry.ac.id/id/eprint/22378/>
- Hardiani, H. (2009). Potensi Tanaman Dalammengakumulasi Logam Cu Padamedia Tanah Terkontaminasi Limbah Padat Industri Kertas. *Jurnal BS*, 44(1), 27–40.
- Haryanti, D., & Budianta, D. (2013). *Potensi Beberapa Jenis Tanaman Hias sebagai Fitoremediasi Logam Timbal (Pb) dalam Tanah*. 16(April), 52–58.
- Herlambang, S., Gomareuzzaman, m, & Wibowo, a w d. (2020). Biochar salah satu alternatif untuk perbaikan lahan dan lingkungan. In *Lembaga Penelitian dan Pengabdian kepada MasyarakatUPN Veteran Yogyakarta*.
- Herman, W., & Resigia, E. (2018). Pemanfaatan Biochar Sekam Padi dan Kompos Jerami Padi terhadap Pertumbuhan dan Produksi Padi pada Tanah Ordo Ultisol. *Jurnal Ilmiah Pertanian*, 15(1), 42–50.
<https://doi.org/10.31849/jip.v15i1.1487>
- Hidayat, B., & Pramuga, A. (2024). Teknik Produksi Biochar. *Jurnal Agroteknologi*, 12(3), 1–11. <https://talenta.usu.ac.id/joa/article/view/15789>
- Hidayat, B., Rauf, A., Sabrina, T., & Jamil, A. (2021). Increasing Productivity of the Lead Contaminated Paddy Soil By Using Husk Biochar and Azolla in Dagang Kelambir Village Tj. Morawa Indonesia. *Russian Journal of Agricultural and Socio-Economic Sciences*, 110(2), 125–132.
<https://doi.org/10.18551/rjoas.2021-02.15>
- Hindarwati, Y., Purbalisa, W., & Sukarjo, S. (2020). Identifikasi dan Informasi Teknologi Penanggulangan Logam Berat pada Lokasi Pengembangan Padi

Organik di Kabupaten Batang. *Jurnal Presipitasi : Media Komunikasi dan Pengembangan Teknik Lingkungan*, 17(2), 113–120.
<https://doi.org/10.14710/presipitasi.v17i2.113-120>

- Kafle, A., Timilsina, A., Gautam, A., Adhikari, K., Bhattarai, A., & Aryal, N. (2022). Phytoremediation: Mechanisms, plant selection and enhancement by natural and synthetic agents. *Environmental Advances*, 8(November 2021), 100203. <https://doi.org/10.1016/j.envadv.2022.100203>
- Khoirul Alim, M., & Brahma Arianto, D. (2023). Analisis Korelasi Antara Faktor Ekonomi Dan Distribusi Penduduk Di Jawa Timur Tahun 2020 Menggunakan Metode Korelasi Pearson. *Kohesi: Jurnal Multidisiplin Saintek*, 1(4), 20–30.
- Lat, D. C., Yusof, D. A. M., Yasin, M. H., Noor, S. N. A. M., Rahman, N. S. A., & Razali, R. (2023). *Effect of Soil Contamination on Human Health and Environment with Preventive Measures : A Review*. 3(1), 142–151.
- Lee, M., Hee, J., & Woo, J. (2019). Comparison of the lead and copper adsorption capacities of plant source materials and their biochars. *Journal of Environmental Management*, 236(January), 118–124.
<https://doi.org/10.1016/j.jenvman.2019.01.100>
- Lehmann, J., & Joseph, S. (2015). *Biochar for Environmental Management Biochar*. Routledge.
- Liu, H., Xu, F., Xie, Y., Wang, C., Zhang, A., Li, L., & Xu, H. (2018). Effect of modified coconut shell biochar on availability of heavy metals and biochemical characteristics of soil in multiple heavy metals contaminated soil. *Science of the Total Environment*, 645, 702–709.
<https://doi.org/10.1016/j.scitotenv.2018.07.115>
- Maceiras, R., Perez-Rial, L., Alfonsin, V., Feijoo, J., & Lopez, I. (2024). Biochar Amendments and Phytoremediation: A Combined Approach for Effective Lead Removal in Shooting Range Soils. *Toxics*, 12(7).
<https://doi.org/10.3390/toxics12070520>
- Mardinata, Z. (2013). Mengolah Data Penelitian Menggunakan Program SAS. *Rajawali Pers. Pekanbaru*, 1–151.
- Masocha, B. L., & Dikinya, O. (2022). The Role of Poultry Litter and Its Biochar on Soil Fertility and *Jatropha curcas* L. Growth on Sandy-Loam Soil. *Applied Sciences (Switzerland)*, 12(23). <https://doi.org/10.3390/app122312294>
- Meilianto, W. D., Indrasari, W., & Budi, E. (2022). Karakterisasi Sensor Suhu dan Kelembapan Tanah untuk Aplikasi Sistem Pengukuran Kualitas Tanah. *Prosiding Seminar Nasional Fisika (E-Journal) SNF2022*, X, 117–122.
- Mishra, P., Ali, S., Kumar, R., & Shekhar, S. (2025). Global lead contamination in soils, sediments, and aqueous environments: Exposure, toxicity, and remediation. *Journal of Trace Elements and Minerals*, 14(July), 100259.
<https://doi.org/10.1016/j.jtemin.2025.100259>

- Mohamed, A. A. A., Dardiry, M. H. O., & Samad, A. (2019). *Exposure to Lead (Pb) Induced Changes in the Metabolite Content , Antioxidant Activity and Growth of Jatropha curcas (L .)*.
- Muadifah, A. (2019). *Pengendalian Pencemaran Ligkungan* (I. L. Tarigan (ed.)). Media Nusa Creative.
- Nafila, A., Prijatna, D., & Herwanto, T. (2018). Analisis Struktur dan Fungsional Greenhouse (Studi Kasus Kebun Percobaan dan Rumah Kaca Fakultas Pertanian, Universitas Padjajaran). *Jurnal Teknotan*, 12(1).
- Narayanan, M., & Ma, Y. (2022). Influences of Biochar on Bioremediation/Phytoremediation Potential of Metal-Contaminated Soils. *Frontiers in Microbiology*, 13(June), 1–11. <https://doi.org/10.3389/fmicb.2022.929730>
- Ngadisih, N., Tanjung, J. C., & Lestari, P. (2024). Review Artikel: Peranan Aplikasi Biochar sebagai Agen Perbaikan Kualitas Tanah untuk Meningkatkan Produktivitas Pertanian. *Jurnal Teknologi Lingkungan Lahan Basah*, 12(1), 263. <https://doi.org/10.26418/jtlb.v12i1.74276>
- Nurindriana, F. M., & Wicaksono, K. S. (2022). Pemanfaatan Biochar Dan Kompos Black Soldier Fly Pada Fitoremediasi Tanah Tercemar Timbal Dan Pengaruhnya Terhadap Pertumbuhan Serta Hasil Tanaman Sawi (Brassica juncea L.). *Jurnal Tanah dan Sumberdaya Lahan*, 9(2), 297–309. <https://doi.org/10.21776/ub.jtsl.2022.009.2.10>
- Pamba, R. M., Poirier, V., & Ndoutoumou, P. N. (2024). Growing *Jatropha curcas* L . Improves the Chemical Characteristics of Degraded Tropical Soils. *Journal od Forest*, 15(1709), 1–12.
- Parmana, I. D. (2023). *Analisis Kadar Logam Timbal (Pb) Dan Tembaga (Cu) Dalam Tomat (Solanum Lycopersicum L.) Di Daerah Industri Pabrik Dengan Destruksi Basah Tertutup (Refluks) Secara Spektroskopi Serapan Atom (SSA)* (Vol. 2, Nomor 4). Skripsi Universitas Islam Negeri Maulana Malik Ibrahim.
- Prof. Ir. Eko Handayanto, MSc., P., Dr.Ir. Yulia Nuraini, M., Dr. Nurul Muddasrisma, SP., M., Dr. Ir. Netty Syam, M., & Amrullah Fiqri, SP., M. (2017). *Fioremediasi dan Phytomining Logam Berat Pencemar Tanah*. Tim UB Press.
- Putra, A., Fitri, W. E., & Febria, F. A. (2023). Toksisitas Logam Timbal Terhadap Kesehatan Dan Lingkungan. *Jurnal Kesehatan Medika Sainika*, 14(1), 158–174. <https://doi.org/http://dx.doi.org/10.30633/jkms.v14i1.1890>
- Putra, A. R., Iswanto, A. H., Nuryawan, A., Darmawan, S., Madyaratri, E. W., Fatriasari, W., Hua, L. S., Antov, P., Manurung, H., & Pendi, A. P. A. S. H. (2024). Characteristics of Biopellets Manufactured from Various Lignocellulosic Feedstocks as Alternative Renewable Energy Sources. *Journal of Renewable Materials*, 12(6), 1103–1123.

<https://doi.org/10.32604/jrm.2024.051077>

- Putri Oktariani, Suwardi, Hermanu Widjaja, Dyah Tjahyandari Suryaningtyas, & Aulya Putri. (2024). Remediation Technology for Heavy Metal-Contaminated Soil on Copper Post- Mining Land Reclamation. *Jurnal Pengelolaan Lingkungan Pertambangan*, 1(1), 44–54.
<https://doi.org/10.70191/jplp.v1i1.54692>
- Rasyid, R. A., Cools, N. A., & Mardiah, M. (2021). Study Remediasi Tanah Tercemar Oleh Aktivitas Industri. *Jurnal Chemurgy*, 5(1), 1.
<https://doi.org/10.30872/cmg.v5i1.5300>
- Sa, I., & Farsang, A. (2023). Plastic contamination in agricultural soils : a review. *Environmental Sciences Europe*, 35. <https://doi.org/10.1186/s12302-023-00720-9>
- Saleh, T. W., Istifadah, N., & Hartati, S. (2023). Pemanfaatan Limbah Padi dan Buah Kelapa untuk Meningkatkan Pertumbuhan dan Hasil Tanaman Bawang Merah. *Agrikultura*, 34(1), 133.
<https://doi.org/10.24198/agrikultura.v34i1.44952>
- Salim, E., Leka, K., Fitri, Y., Wahyuni, S., & Simamora, E. (2023). Overview Metode Fitoremediasi dalam Pengelolaan Tanah Tercemar Merkuri (Hg) pada Lahan Bekas Tambang Overview of Phytoremediation Methods in Management of Mercury (Hg) Contaminated Soil on Ex-Mining Land. *CHEMVIRO: Jurnal Kimia dan Ilmu Lingkungan*, 2(1), 107–112.
- Samar, Y. S., Mariwy, A., & Manuhutu, J. B. (2019). Fitoremediasi Merkuri (Hg) Menggunakan Tanaman Kacang Kalopo (Calopogonium mucunoides). *Jurnal Science Map J*, 1(2), 93–98.
- Sani, S., D., Mohamed, M., Abubakar, M.H, K., R.W, A., A.K, H., I.A, A., Garba, M. ., & Abdullahi, N. (2022). Phytoremediation of Heavy Metals Contaminated Agricultural Soil Planted to *Jatropha curcas*. *International Journal of Energy and Environmental Research*, 10(3), 14–32.
- Septiadi A., & Ramadhani W. K. (2020). Penerapan Metode Anova untuk Analisis Rata-rata Produksi Donat, Burger, dan Croissant pada Toko Roti Animo Bakery. *Bulletin of Applied Industrial Engineering Theory* , 1(2), 60–64.
- Serrano, M. F., López, J. E., Henao, N., & Saldarriaga, J. F. (2023). Phosphorus-Loaded Biochar-Assisted Phytoremediation to Immobilize Cadmium, Chromium, and Lead in Soils. *ACS Omega*.
<https://doi.org/10.1021/acsomega.3c07433>
- Sharma, P., & Dubey, R. S. (2005). Lead Toxicity in Plants. *Toxic Metals in Plants*, 17(1), 35–52.
- Shi, J., Fan, X., Tsang, D. C. W., Wang, F., Shen, Z., Hou, D., & Alessi, D. S. (2019). Chemosphere Removal of lead by rice husk biochars produced at different temperatures and implications for their environmental utilizations.

Chemosphere, 235, 825–831.

<https://doi.org/10.1016/j.chemosphere.2019.06.237>

- Siaka, I. M., Nurcahyani, H., & Manuaba, I. B. P. (2019). Spesiasi dan Bioavalabilitas Pb dan Cu dalam Tanah Pertanian Organik di Bedugul serta Kandungan Logam Totalnya dalam Sayur Brokoli. *Journal of Chemistry*, 145–152.
- Singh, D., Jibril, N. K., Muhammad, A., Malik, A. I., & Osesua, B. A. (2022). Phytoremediation Potential of *Jatropha curcas* and *Cassia occidentalis* on Selected Heavy Metals in The Soil. *Journal of Agricultural Policy*, 5(1), 33–49. <https://doi.org/10.47941/jap.864>
- Sukono, G. A. B., Hikmawan, F. R., Evitasari, E., & Satriawan, D. (2020). Mekanisme Fitoremediasi: Review. *Jurnal Pengendalian Pencemaran Lingkungan (JPPL)*, 2(2), 40–47. <https://doi.org/10.35970/jppl.v2i2.360>
- Supriatna, Siahaan, S., & Restiaty, I. (2021). Pencemaran Tanah Oleh Pestisida Di Perkebunan Sayur Kelurahan Eka Jaya Kecamatan Jambi Selatan Kota Jambi (Studi Keberadaan Jamur Makroza dan Cacing Tanah). *Jurnal Ilmiah Universitas Batanghari Jambi*, 21(1), 460. <https://doi.org/10.33087/jiubj.v21i1.1348>
- Surahmaida, & Mangkoedihardjo, S. (2017). Uji Kemampuan Tanaman Jarak Pagar (*Jatropha curcas*) Dalam Meremediasi Tanah Tercemar Logam Berat Kadmium (Cd). *Journal Pharmasci (Journal of Pharmacy and Science)*, 2(2), 30–34. <https://doi.org/10.53342/pharmasci.v2i2.78>
- Tewari. (2009). *Jatropha & Bio-Diesel*. Ocean Books (P) Ltd. https://books.google.co.id/books?id=_fjvES8jCWYC&printsec=frontcover&hl=id#v=onepage&q&f=false
- Valdés-rodríguez, O. A., Sánchez-sánchez, O., Pérez-vázquez, A., Caplan, J. S., & Danjon, F. (2013). *Jatropha curcas* L . Root Structure and Growth in Diverse Soils. *The Scientific World Journal*, 2013, 1–9. <https://doi.org/http://dx.doi.org/10.1155/2013/827295>
- Verma, S., Verma, P., Bag, A. G., & Changade, N. M. (2024). Reviewing Soil Contaminant Remediation Techniques. *International Journal of Environment and Climate Change*, 14(5), 115–134. <https://doi.org/10.9734/ijecc/2024/v14i54175>
- Wahab, N., Amin, I. I., & Prasetya, D. (2024). Analisis Kadar Au, Ag, Pb, Zn Dalam Sampel Tanah Dengan Metode Atomic Absorption Spectroscopy Analysis of Au, Ag, Pb, Zn Levels in Soil Samples Using the Atomic Absorption Spectroscopy Method. *Jurnal Sains dan Teknologi*, 4(1), 24–32. <https://journal.utsmakassar.ac.id/index.php/JSThttps://journal.utsmakassar.ac.id/index.php/JST>
- Wahdani, A., Yaqin, K., Rukminasari, N., . S., . N., Inaku, D. F., & Fachruddin, L. (2020). Konsentrasi Mikroplastik Pada Kerang Manila Venerupis

- Philippinarum Di Perairan Maccini Baji, Kecamatan Labakkang, Kabupaten Pangkajene Kepulauan, Sulawesi Selatan. *Maspari Journal : Marine Science Research*, 12(2), 1–14. <https://doi.org/10.56064/maspari.v12i2.12809>
- Wani, A. L., Ara, A., & Usmani, J. A. (2015). Lead toxicity : a review. *Toxicology*, 8(2), 55–64. <https://doi.org/10.1515/intox-2015-0009>
- Wendysaka, I. (2017). *Perbandingan Taraf Nyata Antara uji BNT dan Uji Duncan dalam Uji Lanjut pada Data Rancangan Acak Kelompok*. Skripsi Universitas Brawijaya.
- Widia Gusti, Noni Noviana, Rita Sartika, Lia Anggraini, Andika Pradipta, & Henny Johan. (2022). Studi Pencemaran Tanah Sebagai Bahan Pengayaan Topik Teknologi Ramah Lingkungan untuk Siswa SMP. *Jurnal Pendidikan Mipa*, 12(4), 1252–1258. <https://doi.org/10.37630/jpm.v12i4.783>
- Xiao, J., Li, X., Cao, Y., & Chen, G. (2023). Does micro/nano biochar always good to phytoremediation? A case study from multiple metals contaminated acidic soil using *Salix jiangsuensis* “172.” *Carbon Research*, 2(1). <https://doi.org/10.1007/s44246-023-00053-5>
- Yakub, M. i., Oyinlola, E. Y., & Abdullahi, A. A. (2024). *Heavy metal uptake and phytoremediation potential of Jatropha curcas Linn in contaminated*. 20(1), 211–225.
- Yamada, M., Malambane, G., Yamada, S., & Suharsono, S. (2018). Differential physiological responses and tolerance to potentially toxic elements in biodiesel tree *Jatropha curcas*. *Scientific Reports*, January, 1–10. <https://doi.org/10.1038/s41598-018-20188-5>
- Yin, C., Pang, X., Chen, K., Gong, R., Xu, G., & Wang, X. (2012). The water adaptability of *Jatropha curcas* is Modulated by Soil Nitrogen Availability. *Biomass and Bioenergy*, 47, 71–81. <https://doi.org/10.1016/j.biombioe.2012.09.062>
- Yopi, I. K., Santana, T., Gde, P., Julyantoro, S., Putu, N., & Wijayanti, P. (2018). *Akumulasi Logam Berat Seng (Zn) pada Akar dan Daun Lamun Enhalus acoroides di Perairan Pantai Sanur , Bali*. 56, 47–56.
- Yu, Y., He, J., Sun, J., Pei, Z., Wu, Q., & Yu, R. (2023). Capacity and Mechanisms of Pb (II) and Cd (II) Sorption on Five Plant-Based Biochars. *Sustainability*, 15(7627).