

DAFTAR PUSTAKA

- ABIS Online – Advanced Bacterial Identification Software Sorescu, I., & Stoica, C. (2021). Online Advanced Bacterial Identification Software, an Original Tool for Phenotypic Bacterial Identification. *Romanian Biotechnological Letters*, 26(6), 3047–3053.
- Abd-Alla, M. H., Al-Amri, S. M., & El-Enany, A. W. E. (2023). Enhancing Rhizobium–Legume Symbiosis and Reducing Nitrogen Fertilizer Use are Potential Options for Mitigating Climate Change. *Agriculture*, 13(11), 2092.
- Adam, G., & Duncan, H. (2001). Development of a Sensitive and Rapid Method for The Measurement of Total Microbial Activity Using Fluorescein Diacetate (FDA) in a Range of Soils. *Soil Biology and Biochemistry*, 33, 943–951.
- Adriantama, Suriyanti, & Nontji, M. (2021). Isolasi Dan Identifikasi Morfologi Serta Uji Pelarutan Fosfat Terhadap Bakteri Rhizosfer Tanaman Kedelai (*Glycine max* L.). *Jurnal AgrotekMas*, 2(1), 24–32.
- Agus, C., Wulandari, D., Primananda, E., Hendryan, A., & Harianja, V. (2017). The Role Of Soil Amendment On Tropical Post Tin Mining Area In Bangka Island Indonesia For Dignified And Sustainable Environment And Life. In *IOP Conference Series: Earth and Environmental Science*, 83(01).
- Aisah, S., Sriwulan, S., & Purnomo, E. (2022). Populasi Bakteri Pelarut Fosfat Pada Rhizosfer Tanaman Kayu Putih (*Melaleuca cajuputi*) Lahan Reklamasi Pasca Tambang Kapur PT Semen Indonesia (Persero) Tbk. Pabrik Tuban. *Prosiding SNasPPM*, 7(1), 832-836.
- Akimbekov, N. S., Digel, I., Tastambek, K. T., Marat, A. K., Turaliyeva, M. A., & Kaiyrmanova, G. K. (2022). Biotechnology Of Microorganisms From Coal Environments: From Environmental Remediation To Energy Production. *Biology*, 11(9), 1306.
- Akinola, S. A., Ayangbenro, A. S., & Babalola, O. O. (2021). Metagenomic Insight into The Community Structure of Maize-Rhizosphere Bacteria as Predicted by Different Environmental Factors and Their Functioning within Plant Proximity. *Microorganisms*, 9(7), 1419.
- Alomari, S., Hasan, R., Al-Najim, N., & Saadi, A. (2024). Nitrogen-Fixing Bacteria And Their Applications In The Environment: A Review. *International Journal of Medical Body Health Research*, 5, 178–187.

- Amelia, R., & Guskarnali. (2020). Geostatistical modeling of Cassiterite in Merawang District, Bangka Regency. In *IOP Conference Series: Earth and Environmental Science*, 599(1), 012062.
- Amir, M., Dewi, S., & Abna, I. M. (2022). Isolasi dan Analisis Antimikroba dari Kapang Endofit Tanaman Kayu Putih (*Melaleuca leucadendron* Linn). *Arch Pharm*, 4.
- Andriyanto, M., Dalimunthe, C. I., & Sembiring, Y. R. V. (2017). Pemanfaatan Bangun-bangun (*Coleus amboinicus*) di Gawangan TBM Karet untuk Pengendalian Jamur Akar Putih dan Kesuburan Tanah. *Warta Perkaratan*, 36(2), 137-146.
- Aryaldi, R., Saida, S., & Nontji, M. (2021). Identifikasi Morfologi Dan Uji Pelarut Fosfat Bakteri Rhizosfer Tanaman Kacang Tunggak (*Vigna unguiculata* L.). *AGrotekMAS Jurnal Indonesia: Jurnal Ilmu Peranian* , 2 (1), 1-10.
- Asril, M., Lestari, W., Basuki, B., Sanjaya, M. F., Firgiyanto, R., Manguntungi, B., ... & Kunusa, W. R. (2023). *Mikroorganisme Pelarut Fosfat pada Pertanian Berkelanjutan*. Yayasan Kita Menulis.
- Avirasdy, R. A., Nursiwi, A., Sari, A. M., Zaman, M. Z., & Sanjaya, A. P. (2022). Kinetics Study of Bacterial Cellulose Production by *Acetobacter xylinum* FNCC 0001 with Variation of Carbon Sources. *E3S Web of Conferences*, 344, 1-12.
- A'yun, S. Q., Ika A., N. (2023). Optimasi Aktivitas Antibakteri Metabolit Sekunder dari Bakteri Endofit Asal Tanaman Ciplukan (*Physalis angulata* L.). *Prosiding Seminar Nasional Penelitian dan Pengabdian Kepada Masyarakat LPPM Universitas 'Aisyiyah Yogyakarta*, 1: 328-337.
- Barney, B. M. (2020). Aerobic Nitrogen-Fixing Bacteria for Hydrogen and Ammonium Production: Current State and Perspectives. *Applied Microbiology and Biotechnology*, 104(6), 2557–2569.
- Bautista-Cruz, A., Aquino-Bolaños, T., Hernández-Canseco, J., & Quiñones-Aguilar, E. E. (2024). Cellulolytic Aerobic Bacteria Isolated from Agricultural and Forest Soils: an overview. *Biology*, 13(2), 102.
- Bate, F., Amekan, Y., Pushkin, D. O., Chong, J. P., & Bees, M. (2023). Emergent Lag Phase in Flux-Regulation Models of Bacterial Growth: F. Bate et al. *Bulletin of Mathematical Biology*, 85(9), 84.
- Bellenger, J. P., Darnajoux, R., Zhang, X., & Kraepiel, A. M. L. (2020). Biological Nitrogen Fixation by Alternative Nitrogenases in Terrestrial Ecosystems: a Review. *Biogeochemistry*, 149(2): 149–172.

- Bilyera, N., Zhang, X., Duddek, P., Fan, L., Banfield, C. C., Schlüter, S., ... & Razavi, B. S. (2021). Maize Genotype-Specific Exudation Strategies: an Adaptive Mechanism to Increase Microbial Activity in the Rhizosphere. *Soil Biology and Biochemistry*, 162, 108426.
- Breed, R. S., Murray, E. G. D., & Smith, N. R. (Eds.). (1957). *Bergey's Manual of Determinative Bacteriology* (7th ed.). The Williams & Wilkins Company.
- Budianto, T. H., & Hartoko, A. (2024). Analysis Of Heavy Metal Content Of Mn, Cu, Fe, Zn, Pb In Agricultural Irrigation Water And Soil After Tin Mining. In *IOP Conference Series: Earth and Environmental Science* 1419(1), 012004.
- Chung, Y. R., Lee, J. E., Aslam, Z., Chung, E. J., Lee, K. H., Kang, B. H., ... & Chang, W. S. (2025). Unusual Morphological Changes of A Novel Wrinkled Bacterium Isolated from The Rice Rhizosphere Under Nutrient Stress. *Life*, 15(9), 1337.
- Chusniasih, D., Suryanti, E., & Safitri, E. (2023). Isolasi dan Uji Aktivitas Selulolitik Bakteri Asal Limbah Bagas. *Indonesian Journal of Agricultural Sciences/Jurnal Ilmu Pertanian Indonesia*, 28(3).
- da Silva, G. O. A., Southam, G., & Gagen, E. J. (2022). Accelerating Soil Aggregate Formation: a Review on Microbial Processes as the Critical Step in a Post-Mining Rehabilitation Context. *Soil Research*, 61(3), 209–223.
- De Andrade, S. A. L., Borghi, A. A., De Oliveira, V. H., Gouveia, L. D. M., Martins, A. P. I., & Mazzafera, P. (2022). Phosphorus Shortage Induces an Increase in Root Exudation in Fifteen Eucalypts Species. *Agronomy*, 12(9), 2041.
- Tulu Degefu, T. D., Wolde-Meskel, E., Zikie Ataro, Z. A., Asnake Fikre, A. F., Tilahun Amede, T. A., & Chris Ojiewo, C. O. (2018). Groundnut (*Arachis hypogaea* L.) and Cowpea (*Vigna unguiculata* L. Walp) Growing in Ethiopia are Nodulated by Diverse Rhizobia.
- Dini, I. R., Wawan, Hapsah, & Devi, R. (2020). Eksplorasi dan Karakterisasi Bakteri *Rhizobium* Asal Tanaman *Mucuna Bracteata* di Tanah Gambut. *Jurnal Agroekotek*, 12(1), 1–12.
- Eddy, N. O., Udofia, I., Okey, E., Odiongenyi, A., & Udofia, P. (2019). Physicochemical, Spectroscopic and Rheological Characterization of *Anacardium occidentale* Gum Exudates. *Adv Res*, 19, 1-15.

- Etesami, H., & Glick, B. R. (2024). Bacterial Indole-3-Acetic Acid: A Key Regulator for Plant Growth, Plant-Microbe Interactions, and Agricultural Adaptive Resilience. *Microbiological Research*, 281, 127602.
- Fahde, S., Boughribil, S., Sijilmassi, B., & Amri, A. (2023). Rhizobia: A Promising Source of Plant Growth-Promoting Molecules and Their Non-Legume Interactions: Examining Applications and Mechanisms. *Agriculture*, 13(7), 1279.
- Fanni, A., Satjapradja, O., & Setyaningsih, L. (2022). Potensi Kesesuaian Jenis Tanaman Pada Areal Lahan Pascatambang Timah (Studi Kasus Di Kecamatan Sungai Selan Kabupaten Bangka Tengah Provinsi Bangka Belitung). *Jurnal Nusa Sylva*, 22(1), 6-16.
- Feng, Y., Tian, B., Xiong, J., Lin, G., Cheng, L., Zhang, T., ... & Li, X. (2024). Exploring IAA Biosynthesis and Plant Growth Promotion Mechanism for Tomato Root Endophytes With Incomplete IAA Synthesis Pathways. *Chemical and Biological Technologies in Agriculture*, 11(1), 187.
- Fitriana, N., & Asri, M. T. (2022). Aktivitas Proteolitik pada Enzim Protease dari Bakteri Rhizosphere Tanaman Kedelai (*Glycine max* L.) di Trenggalek. *LenteraBio: Berkala Ilmiah Biologi*, 11(1), 144–152.
- Fulyani, F. E., Sriwulan, S., & Purnomo, E. (2022). Kelimpahan Bakteri Tanah pada Rhizosfer Tanaman Kayu Putih (*Melaleuca cajuputi*) pada Lahan Pasca Tambang PT Semen Indonesia (Persero) Tbk. Pabrik Tuban. *Prosiding SNasPPM*, 7(1), 837-840.
- Gao, M., Li, M., Wang, S., & Lu, X. (2024). Land Degradation Affects Soil Microbial Properties, Organic Matter Composition, And Maize Yield. *Agronomy*, 14(7), 1348.
- Ghazy, N., and El-Nahrawy, S. (2021). Siderophore Production by *Bacillus subtilis* MF497446 and *Pseudomonas koreensis* MG209738 and Their Efficacy in Controlling *Cephalosporium maydis* in Maize Plant. *Arch. Microbiol.* 203, 1195–1209
- Glickmann, E., & Dessaux, Y. (1995). A Critical Examination of the Specificity of the Salkowski Reagent for Indolic Compounds Produced by Phytopathogenic Bacteria. *Applied and Environmental Microbiology*, 61(2), 793–796.
- Gordon, S. A., & Weber, R. P. (1951). Colorimetric Estimation of Indole Acetic Acid. *Plant Physiology*, 26(1), 192–195.

- Gultom, I., Maroeto, M., & Arifin, M. (2022). Kajian Degradasi Lahan Akibat Kegiatan Pertambangan untuk Pengembalian Fungsi Lahan. *Jurnal Agrium*, 19(1), 36–46.
- Hadioetomo, R. S. (1993). *Mikrobiologi Dasar Dalam Praktek Teknik Dan Prosedur Dasar Laboratorium*. PT Gramedia Pustaka.
- Haerani, N., Elkawakib, S., Burhanuddin, R., & Feranita H. (2021). Isolation and characterization of N-fixing and IAA producing rhizobacteria from two rice field agro-ecosystems in South Sulawesi, Indonesia. *Biodiversitas: Journal of Biological Diversity*, 22(5).
- Hajoeningtjas, O. D. (2023). Potensi Mikroorganisme Lokal pada Reklamasi Lahan Terdegradasi sebagai Pendukung Terwujudnya Ketahanan Pangan Nasional. *Proceedings Series on Physical & Formal Sciences*, 5.
- Hamid, I., Priatna, S. J., & Hermawan, A. (2017). Karakteristik Beberapa Sifat Fisika Dan Kimia Tanah Pada Lahan Bekas Tambang Timah. *Jurnal Penelitian Sains*, 19(1), 23–31.
- Han, R., Zhang, Q., & Xu, Z. (2023). Responses of Soil Organic Carbon Cycle to Land Degradation by Isotopically Tracing in a Typical Karst Area, Southwest China. *PeerJ*, 11, e15249.
- Haryadi, D., Darwance, D., & Salfutra, R. D. (2018). Implementasi Tanggung Jawab Reklamasi Pertambangan Timah di Pulau Belitung. *PROGRESIF: Jurnal Hukum*, 12(2).
- Hasan, A., Tabassum, B., Hashim, M., & Khan, N. (2024). Role of Plant Growth Promoting Rhizobacteria (PGPR) as a Plant Growth Enhancer for Sustainable Agriculture: A review. *Bacteria*, 3(2), 59-75.
- Hemmat-Jou, M. H., Safari-Sinegani, A. A., Che, R., Mirzaie-Asl, A., Tahmourespour, A., and Tahmasbian, I. (2021). Toxic Trace Element Resistance Genes and Systems Identified using the Shotgun Metagenomics Approach in an Iranian Mine Soil. *Environ. Sci. Pollut. Res.* 28, 4845–4856.
- Herdiantoro, D., Setiawati, M. R., & Simarmata, T. (2022). Reaksi Hipersensitif Daun Tembakau oleh Isolat Bakteri Pelarut Kalium pada Praformulasi Pupuk Hayati. *Soilrens*, 20(2), 72-77.
- Holt JG, Krieg NR, Sneath PHA, Staley JT, Williams ST. (1994). *Bergey's Manual of Determinative Bacteriology Ninth Edition*. Lippincott Williams & Wilkins.

- Hutabarat, I. E. R., Suprpto, S., Priatna, P., Maryono, M., & RudiYansah, R. (2023). Potensi Deposit Wolfram di Indonesia: Studi Kasus Toboali-Bangka Selatan. *Jurnal Teknologi Mineral dan Batubara*, 19(2), 2.
- Idan, S., Lamusu, D., & Lasamadi, R. D. (2024). Analisis Bakteri Rhizosfer pada Tanah Kebun Cabai di Desa Kalolos: Analysis of Rhizosphere Bacteria in Chili Garden Soil in Kalolos Village. *Babasal Agromu Journal*, 2(2), 149-154.
- Idris, A.D., Bello, A.B., Hussaini, I.M., Umar, U.A., Abdulrahim, U. (2024). Soil Microbial Enzymes and Applications. In: Aransiola, S.A., Atta, H.I., Maddela, N.R. (eds) *Soil Microbiome in Green Technology Sustainability*. Springer, Cham.
- Imran,; Ortas, Ibrahim. (2025). Mechanism in Soil Health Improvement with Soil Microbial Actions and Its Role in Potential Agriculture. *Communications in Soil Science and Plant Analysis*, 56 (13).
- Iskandar, J., Inonu, I. I., & Ratna Santi, S. P. (2020). Perbaikan Lahan Tailing Pasir Pascatambang Timah dengan Kompos Tandan Kosong Kelapa Sawit untuk Budidaya Lada Perdu (*Piper nigrum* L.).
- Isnananiarti, UN, Ekyastuti, W., & Ekamawanti, HA (2018). Sukseksi Vegetasi Pada Lahan Bekas Penambangan Emas Rakyat di Kecamatan Monterado Kabupaten Bengkayang. *Jurnal Hutan Lestari* , 5 (4), 952-961.
- Joshi, S.; Gangola, S.; Bhandari, G.; Bhandari, N.S.; Nainwal, D.; Rani, A.; Malik, S.; Slama, P. (2023). Rhizospheric Bacteria: The Key To Sustainable Heavy Metal Detoxification Strategies. *Front. Microbiol*, 14, 1229828.
- Kawaka F. (2022). Characterization Of Symbiotic And Nitrogen Fixing Bacteria. *AMB Express*;12(1),19.
- Kebede, E., Amsalu, B., Argaw, A., & Tamiru, S. (2022). Nodulation Potential and Phenotypic Diversity of Rhizobia Nodulating Cowpea Isolated from Major Growing Areas of Ethiopia. *Agrosystems, Geosciences & Environment*, 5(4), e20308.
- Kementerian Energi dan Sumber Daya Mineral Republik Indonesia. (2025). *Minerba One Data Indonesia (MODI)*. Direktorat Jenderal Mineral dan Batubara. Diakses pada 13 Agustus 2025 dari <https://modi.esdm.go.id>.
- Keputusan Menteri Pertanian Nomor 261 Tahun 2019. *Persyaratan Teknis Minimal Pupuk Organik, Pupuk Hayati, dan Pembenh Tanah*. Kementerian Pertanian Republik Indonesia.

- Kesel, S., Von, B. B., Falcón, G. C., Götz, A., Lieleg, O., Opitz, M. (2017). Matrix Composition Determines the Dimensions of: *Bacillus subtilis* NCIB 3610 Biofilm Colonies Grown on LB Agar. *Royal Society of Chemistry*, 7(51): 31886 – 31898.
- Khairani, N., Siregar, A., & Lubis, M. (2019). Peran Mikroorganisme Tanah dalam Memperbaiki Sifat Fisik dan Kimia Tanah pada Lahan Terdegradasi. *Jurnal Agroekoteknologi Tropika*, 8(1), 45–52.
- Krol, E., Schäper, S., & Becker, A. (2020). Cyclic di-GMP Signaling Controlling The Free-Living Lifestyle of Alpha-Proteobacterial Rhizobia. *Biological Chemistry*, 401(12), 1335-1348.
- Kumar, V., Menon, S., Agarwal, H., and Gopalakrishnan, D. (2017). Characterization and Optimization of Bacterium Isolated from Soil Samples for the Production of Siderophores. *Resource-Efficient Technol.* 3, 434–439.
- Kurniawan, A., Asep, A., P., Suci, P., Andi, K., Dwi, F., Liza, J., K., Yustiana, D., Euis, A., Abu, B., S. (2018). Bakteri Selulolitik pada Kayu Lapuk Di Mangrove Sungailiat, Bangka, dan TukakSadai, Bangka Selatan, *Prosiding Seminar Nasional Lingkungan Lahan Basah*, 3(1), 301-305.
- Larasati, E. D., Rukmi, M. I., Kusdiyantini, E., & Ginting, R. C. B. (2018). Isolasi Dan Identifikasi Bakteri Pelarut Fosfat Dari Tanah Gambut. *Bioma: Berkala Ilmiah Biologi*, 20(1), 1-8.
- Lengkong, S. C., Siahaan, P., & Tangapo, A. M. (2022). Analisis karakteristik dan Uji Bioaktivitas Bakteri Rizosfer PGPR (*Plant Growth Promoting Rhizobacteria*) Isolat Kalasey. *Jurnal Bios Logos*, 12(2), 104-113.
- Li, X., Ding, Y., Okoye, C. O., Geng, X., Jiang, H., Wang, Y., ... & Sun, J. (2024). Performance of Halo-Alkali-Tolerant Endophytic Bacteria on Hybrid Pennisetum and Bacterial Community under Varying Soil Conditions. *Microorganisms*, 12(6), 1062.
- Liang, J.L., Liu, J.; Jia, P., Yang, T.T., Zeng, Q.W., Zhang, S.C., Liao, B., Shu, W.S., Li, J.T. (2020). Novel Phosphate-Solubilizing Bacteria Enhance Soil Phosphorus Cycling Following Ecological Restoration of Land Degraded by Mining. *ISME J*, 14, 1600–1613.
- Liddicoat, C., Weinstein, P., Bissett, A., & Mills, J. G. (2022). Soil Microbiome as An Early Indicator of Ecological Restoration Success. *Ecological Indicators*, 135, 108–117.

- Lin, Q., Li, M., Wang, Y., Xu, Z., & Li, L. (2022). Root Exudates and Chemotactic Strains Mediate Bacterial Community Assembly in the Rhizosphere Soil of *Casuarina equisetifolia* L. *Frontiers in Plant Science*, 13, 988442.
- Lin, P. & Baiyan, C. (2023). Phosphate-Solubilizing Bacteria: Advances in Their Physiology, Molecular Mechanisms and Microbial Community Effects. *Microorganisms*, 11(12), 2904.
- Liu, L., Ma, L., Zhu, M., Liu, B., Liu, X., & Shi, Y. (2023). Rhizosphere Microbial Community Assembly and Association Networks Strongly Differ Based on Vegetation Type at a Local Environment Scale. *Frontiers in microbiology*, 14, 1129471.
- Lorrai, R., & Ferrari, S. (2021). Host Cell Wall Damage during Pathogen Infection: Mechanisms of Perception and Role in Plant-Pathogen Interactions. *Plants*, 10(2), 399.
- Marwah, S., Toto Poernomo, A., & Hendradi, E. (2023). Study of Growth Curve of *Lactobacillus plantarum* FNCC 0026 and its Antibacterial Activity. *Pharmacy and Pharmaceutical Science Journal*, 10(1), 38-43.
- Mongabay. (2022, Desember 27). *Tambang timah dan masa depan generasi muda Bangka Belitung*. Mongabay Indonesia. <https://www.mongabay.co.id/2022/12/27/tambang-timah-dan-masa-depan-generasi-muda-bangka-belitung/>
- Möller, A., Schütte, P., Saragi, A., Ichsan, N., & Franken, G. (2024, November). Pilot Reclamation of a Tin Mining Area Using Biochar on Bangka Island, Indonesia. In *Mine Closure 2024: Proceedings of the 17th International Conference on Mine Closure* (pp. 473-484).
- Mulyani, S., Zahrah, S., & Sulhaswardi, S. (2021). Analisis Kandungan Unsur Hara dan Total Mikroba Tanah Bekas Penambangan Emas Tanpa Izin (Peti) dari Beberapa Kecamatan Kabupaten Kuantan Singingi. *Jurnal Agroteknologi*, 11(2), 67-74.
- Naveena, L., M. (2024). Plant Growth-Promoting Traits of *Bacillus* and Related Genera. In *Applications of Bacillus and Bacillus Derived Genera in Agriculture, Biotechnology and Beyond* (pp. 55-69). Springer Nature Singapore.
- Nayak, S., & Mishra, C. S. K. (2024). Sustainable Strategies for Metal Mining Solid Waste Management through Vermitechnology. In *Sustainable Management of Mining Waste and Tailings* (pp. 289-300). CRC Press.

- Ni'matuzahroh, Affandi, M., Ramadhan, R., Supriyanto, A., Nurhariyati, T., Geraldi, A., Setiawan, J., ... & Clement, C. (2025). Diversity of *Vachellia nilotica* Rhizosphere Bacteria in The Savanna of Baluran National Park, Indonesia and Their Potential for Hydrolytic Enzyme Production. *Biodiversitas: Journal of Biological Diversity*, 26(4).
- Nittaya, P., Tanasupawat, S. (2023). *The Rhizosphere: Microbial Cpmunity Structure and Plant-Microbe Ecology*. Nova Science Publishers, Inc.
- Nofiyanti, S. S., & Rahayu, Y. S. (2023). Isolasi Bakteri Endofit Akar Tanaman Bawang Merah (*Allium cepa* L.) sebagai Penghasil Hormon Indole-3-Acetic Acid (IAA). *LenteraBio: Berkala Ilmiah Biologi*, 12(2), 162-171.
- Novalia, Eddy, N., Ratna, S., Eka, S. (2022). Karakter Bakteri *Azotobacter* dan *Azospirillum* dari Rizosfer Tanaman Lada di Lahan Bekas Tambang Timah. *Jurnal Bios Logos Vol*, 12(1).
- Nugraha, F., Akbar, A. A., & Jumiati, J. (2024). The Use of The Biopore Technique to Improve Soil Quality and The Growth of Beach *Casuarina* Plants on The Reclaimed Former Tin Mine Land in Bangka Belitung Islands. *Journal of Degraded and Mining Lands Management*, 11(3), 5849-5863.
- Nurkanto, A., & Agusta, A. (2016). Identifikasi Molekular Dan Karakterisasi Morfo-Fisiologi Actinomycetes Penghasil Senyawa Antimikroba. *Jurnal Biologi Indonesia*, 11(2).
- Ogie, T. B., Mukatemun, D., James, B. K. 2023. Pengaruh Pemberian Plant Growth Promoting Rhizobakteria (PGPR) Terhadap Pertumbuhan Tanaman Sawi (*Brassica juncea* L.). *Jurnal Agroekoteknologi Terapan*, 5(1), 13-19.
- Oktafiyanto, M. F., & Rangkuti, E. E. (2022). Eksplorasi Agens Hayati Potensial Dari Tanaman Karuk (*Piper sarmentosum*). *Jurnal Agro Wiralodra*, 5(1), 28-35.
- Oleńska, E., Małek, W., Swiecicka, I., Wójcik, M., Thijs, S., & Vangronsveld, J. (2025). Bacteria Under Metal Stress—Molecular Mechanisms of Metal Tolerance. *International Journal of Molecular Sciences*, 26(12), 5716.
- Oschmann-Kadenbach, A. M., Christoph S., Leonard B., Carsten S., Katharina K., Mardjan A., Astrid L. (2024). Impact of *Mycobacteroides abscessus* Colony Morphology on Biofilm Formation and Antimicrobial Resistance. *International Journal of Medical Microbiology*, 314, 1-12.
- Pang, Z., Mao, X., Zhou, S., Yu, S., Liu, G., Lu, C., ... & Xu, P. (2023). Microbiota-Mediated Nitrogen Fixation and Microhabitat Homeostasis in Aerial Root-Mucilage. *Microbiome*, 11(1), 85.

- Pantigoso, H. A., Manter, D. K., Fonte, S. J., & Vivanco, J. M. (2023). Root Exudate-Derived Compounds Stimulate The Phosphorus Solubilizing Ability of Bacteria. *Scientific reports*, 13(1), 4050.
- Patle, P. N., Navnage, N. P., & Barange, P. K. (2018). Fluorescein Diacetate (FDA): Measure of Total Microbial Activity and as Indicator of Soil Quality. *Int. J. Curr. Microbiol. Appl. Sci*, 7, 2103-2107.
- Pelczar MJ, Chan ESC. (1986). *Dasar- Dasar Mikrobiologi*. UI Press, Jakarta.
- Pemerintah Provinsi Kepulauan Bangka Belitung. (2024). *Dokumen Informasi Kinerja Pengelolaan Lingkungan Hidup Daerah (IKPLHD) Provinsi Kepulauan Bangka Belitung Tahun 2024*. Dinas Lingkungan Hidup dan Kehutanan Provinsi Kepulauan Bangka Belitung.
- Pollack, R., Findlay, L., Mondschein, W., & Modesto, R. (2016). *Laboratory Exercises in Microbiology*. Wiley.
- Poria V, Dębiec-Andrzejewska K, Fiodor A, Lyzohub M, Ajijah N, Singh S, Pranaw K. 2022. Plant Growth-Promoting Bacteria (PGPB) Integrated Phytotechnology: A Sustainable Approach for Remediation of Marginal Lands. *Frontiers in Plant Science*. 13, 1–20.
- Putri, A. F. J., Valensia, M. V., Purnama, R., & Manik, J. D. N. (2023). Dampak Kerusakan Lingkungan Biotik, Abiotik, dan Sosial Budaya Akibat Pertambangan Timah Ilegal di Kecamatan Mentok. *SENTRI: Jurnal Riset Ilmiah*, 2(10), Article 10.
- Qu, C., Yang, S., Mortimer, M., Zhang, M., Chen, J., Wu, Y., ... & Huang, Q. (2022). Functional Group Diversity for The Adsorption of Lead (Pb) to Bacterial Cells and Extracellular Polymeric Substances. *Environmental Pollution*, 295, 118651.
- Rachman, L. M., Baskoro, D. P. T., & Bayu, H. H. (2019). The Effect of Tin Mining on Soil Damage in Pedindang Sub-Watershed, Central Bangka Regency. *IOP Conference Series: Earth and Environmental Science*, 399, 012026.
- Raharjo, A. P., & Isnawati, I. (2022). Isolasi dan Karakterisasi Bakteri Selulolitik pada Pakan Fermentasi Eceng Gondok, Tongkol Jagung, dan Bekatul Padi. *LenteraBio: Berkala Ilmiah Biologi*, 11(1), 44-51.
- Rani IM, Lestari RL, Rahmayani DE, Asan M, Astriani M. 2017. Uji Bakteri Pelarut Fosfat Dan Penghasil IAA Pada Mol Buah Bintaro (*Cerbera manghas* L.). *Jurnal Florea*, 4, 11-17.

- Risna, Y. K., Sri-Harimurti, S. H., Wihandoyo, W., & Widodo, W. (2022). Kurva Pertumbuhan Isolat Bakteri Asam Laktat dari Saluran Pencernaan Itik Lokal Asal Aceh. *Jurnal Peternakan Indonesia (Indonesian Journal of Animal Science)*, 24(1), 1-7.
- Roller, B. R., Hellerschmied, C., Wu, Y., Miettinen, T. P., Gomez, A. L., Manalis, S. R., & Polz, M. F. (2023). Single-Cell Mass Distributions Reveal Simple Rules For Achieving Steady-State Growth. *MBio*, 14(5), e01585-23.
- Romadloni, M. Y., Wibowo, F. A. C., Wahidiah, T., & Pradipta, A. (2024). Isolasi Bakteri Perlarut Fosfat (BPF) pada Hutan Produksi di Kawasan Hutan dengan Tujuan Khusus (KHDTK) Pujon Hill UMM, Kabupaten Malang. *Berita Biologi*, 23(1), 91-102.
- Rosa, E., Sufardi, S., Syafruddin, S., & Rusdi, M. (2023). Bioremediation of Ex-Mining Soil with the Biocompost in the Incubation Experiments. *Applied and Environmental Soil Science*, (1), 4129909.
- Roy, R., Samanta, S., Pandit, S., Naaz, T., Banerjee, S., Rawat, J. M., ... & Saha, R. P. (2024). An Overview of Bacteria-Mediated Heavy Metal Bioremediation Strategies. *Applied Biochemistry and Biotechnology*, 196(3), 1712-1751.
- Rukmini, A.R., Putra, A. (2017). Reklamasi lahan pasca tambang timah dengan pupuk organik dan mikroorganisme lokal. *Jurnal Rekayasa Lingkungan*, 17(2).
- Saifuddin, M., Osman, N., Idris, R. M, Halim, A. (2016). The Effects of Pre-Aluminum Treatment on Morphology and Physiology of Potential Acidic Slope Plants. *Kuwait Journal of Science*.
- Santoso K. Rahmawati, Rafdinal. (2019). Ekplorasi Bakteri Penambat Nitrogen Dari Tanah Hutan Mangrove Sengai Peniti, Kabupaten Mepawah. *Jurnal Probiont*. 8 (1) : 52-58.
- Saputri, K. E., Idiawati, N., Sari, M., & Sofiana, J. (2021). Isolation and Characterization Nitrogen-Fixing Bacteria from Mangrove Rhizosphere in Kuala Singkawang. *Jurnal Laut Khatulistiwa*, 4(2), 2614-8005.
- Sari, E., Nugroho, A. P., Retnaningrum, E., & Prijambada, I. D. (2023). Literature review and Experiment: Diversity of Bacteria in Forest, Revegetated Post-Mining Land, and Active Tin Mining with a Metagenomic Approach. *Indonesian Journal of Science and Technology*, 8(1), 19-48.
- Sazykin, I., Khmelevtsova, L., Azhogina, T., & Sazykina, M. (2023). Heavy Metals Influence on the Bacterial Community of Soils: A Review. *Agriculture*, 13(3), 653.

- Schwyn, B., and Neilands, J. B. (1987). Universal Chemical Assay for the Detection and Determination of Siderophores. *Anal. Biochem.* 160, 47–56.
- Sembiring, A. (2019). Isolasi dan Uji Aktivitas Bakteri Penghasil Selulase Asal Tanah Kandang Sapi. *Biosel Biology Science and Education*, 8(1), 21-28.
- Singh, D., Ghosh, P., Kumar, J., & Kumar, A. (2019). Plant Growth-Promoting Rhizobacteria (PGPRs): Functions and Benefits. In *Microbial interventions in Agriculture and Environment: Volume 2: Rhizosphere, Microbiome and Agro-ecology* (pp. 205-227). Singapore: Springer Singapore.
- Siti, P., Ismed, I., & Euis, A. (2019). Biofertilizer Application Influence in Dynamics of Microorganisms Abundance on Tin Mined Area planted Pepper Plant (*Piper nigrum* L.). *Jurnal Ilmu Tanah dan Lingkungan*, 21(2), 51-57.
- Sodiq, A.H., M.R. Setiawati, D.A. Santosa, dan D. Widayat. (2019). Potensi Mikroba Asal Mikroorganisme Lokal dalam Meningkatkan Perkecambahan Benih Paprika. *Jur. Agroekotek*, 11 (2): 214-226.
- Srivastava, P., Sahgal, M., Sharma, K., Enshasy, H. A. E., Gafur, A., Alfarraj, S., ... & Sayyed, R. Z. (2022). Optimization and Identification of Siderophores Produced by *Pseudomonas monteilii* Strain MN759447 and Its Antagonism Toward Fungi Associated with Mortality in Dalbergia Sissoo Plantation Forests. *Frontiers in Plant Science*, 13, 984522.
- Subari, B. D. E., Maryani, E., & Arifin, D. N. (2021). Potential Utilization of Quartz Sand and Kaolin from Tin Mine Tailings for Whitewares. *Mining of Mineral Deposits*, 15(3), 1–6.
- Sukarman, & Gani, R. A. (2017). Lahan bekas tambang timah di Pulau Bangka dan Belitung, Indonesia dan kesesuaiannya untuk komoditas pertanian. *Jurnal Tanah dan Iklim*, 41(2), 101–114.
- Sukarman, S., Gani, R. A., & Asmarhansyah, A. (2020). Tin Mining Process and Its Effects on Soils in Bangka Belitung Islands Province, Indonesia. *SAINS TANAH-Journal of Soil Science and Agroclimatology*, 17(2), 180-189.
- Suryanti, E., Nabilla, A. Y., Prastya, M. E., & Sari, D. A. (2024). Isolasi dan Karakterisasi Bakteri *Rhizobium* asal Bintil Akar Tanaman Kacang Tanah (*Arachis hypogaea*) dan Koro Rawe (*Mucuna bracteata*). *Jurnal Sumberdaya Hayati*, 10(4), 175-182.
- Suwardi, and Octaviana Randrikasari. 2024. Technology for Reclaiming Post-Mining Tin Lands Through the Application of Soil Ameliorant and Plant

Selection: A Case Study of The Bangka Belitung Islands. *Journal of Mining Environment Management*, 1(1), 29-43.

Tandiono, J., Thamrin, H., & Warningsih, T. (2024). Change of Population and Characteristics of Non-Symbiotic Bacteria in Tropical Peat soil by Application of Soil Ameliorant and Nitrogen Fertilizer. *Research Article Advances in Agriculture, Horticulture and Entomology AAHE-208 ISSN 2690-1900*.

Tang, D.X., & Gao, Y. (2023). Advances On The Strategies Of Soil Phosphate Solubilizing Microorganisms To Promote Plant Phosphorus Uptake. *Acta Ecologica Sinica*, 43(11), 4390-4399.

Tang, Y., Li, M., Xu, D., Huang, J., & Sun, J. (2018). Application Potential of Aerobic Denitrifiers Coupled With a Biostimulant for Nitrogen Removal from Urban River Sediment. *Environmental Science and Pollution Research*, 25(6), 5980-5993.

Tao, J., Wang, S., Liao, T., & Luo, H. (2021). Evolutionary Origin and Ecological Implication of A Unique Nif Island in Free-Living *Bradyrhizobium* Lineages. *The ISME Journal*, 15(11), 3195-3206.

Terrazas-López, M., Aitken, V., Zeczycki, T. N., & Koculi, E. (2025). Phase-Specific Antibiotic Resistance Mechanisms in an *Escherichia coli* B Strain. *bioRxiv*.

Thomas-Barry, G., Martin, C. S., Ramsubhag, A., Eudoxie, G., & Miller, J. R. (2024). Multi-trait Efficiency and Interactivity of Bacterial Consortia Used to Enhance Plant Performance Under Water Stress Conditions. *Microbiological Research*, 281, 127610.

Triyaswati, D. (2025). Pewarnaan Membantu dalam Pengamatan Morfologi, Bentuk. *Bakteriologi Klinik*, 59.

Utami, R. D., Wahyuningsih, N. E., & Budiyo, B. (2020). Kemampuan Hidrogen Peroksida dan Formaldehid dalam Menurunkan Bakteri *Pseudomonas aeruginosa* pada Limbah Jarum Suntik di RS X Kota Semarang. *Media Kesehatan Masyarakat Indonesia*, 19(1), 68-76.

Vestimarta, A., W., dan Irdawati. (2024). Profil Kurva Pertumbuhan Bakteri Termofilik Isolat Bakteri SSA-8 dari Sumber Air Panas Sapan Sungai Aro. *Jurnal Pendidikan Tambusai*, 8(2), 15802-15807.

Volk, W.A. and M.F. Wheeler. 1993. *Mikrobiologi Dasar*. Jakarta: Penerbit Erlangga. 23-41.

- Wang, H., Liu, R., You, M. P., Barbetti, M. J., and Chen, Y. (2021). Pathogen Biocontrol using Plant Growth-Promoting Bacteria (PGPR): Role of Bacterial Diversity. *Microorganisms* 9, 1988.
- Wang, Z., Deng, G., Hu, C., Hou, X., Zhang, X., Fan, Z., ... & Peng, M. (2025). Microbial Diversity and Community Assembly in Heavy Metal-Contaminated Soils: Insights from Selenium-Impacted Mining Areas. *Frontiers in Microbiology*, 16, 1561678.
- Wen, P., Feng, S. W., Liang, J. L., Jia, P., Liao, B., Shu, W. S., ... & Yi, X. (2024). Heavy Metal Pollution in Farmland Soils Surrounding Mining Areas in China and The Response of Soil Microbial Communities. *Soil Security*, 17, 100173.
- Wessels, M. R. (2019). Capsular Polysaccharide of Group A *Streptococcus*. In *Gram-Positive Pathogens* (pp. 45-54). Wiley.
- Widyati, E. (2017). Memahami Komunikasi Tumbuhan-Tanah dalam Areal Rhizosfir untuk Optimasi Pengelolaan Lahan. *Jurnal Sumberdaya Lahan*, 11(1), 33-42.
- Wilkerson, A., & Olapade, O. A. (2020). Relationships Between Organic Matter Contents and Bacterial Hydrolytic Enzyme Activities in Soils: Comparisons Between Seasons. *Current microbiology*, 77(12), 3937-3944.
- Wisanggeni, G. A., Mendes, J., Muflihayati, M., Maulita, F., Istiqomah, I., Tanzil, A. I., ... & Kalay, A. M. (2026). *Fitopatologi untuk Pertanian Berkelanjutan*. CV. Edu Akademi.
- YIN, L. S., NEE, Y. S., HOW, K. S., & CHIENG, S. (2022). Perbandingan Penghasilan Siderofor daripada *Bacillus aryabhatai*, *Bacillus megaterium* dan *Bacillus cereus*. *Sains Malaysiana*, 51(9), 3069-3079.
- Zadel, U., Nesme, J., Michalke, B., Vestergaard, G., Plaza, G.A., Schroder, P., et al., 2020. Changes Induced by Heavy Metals in The Plant-Associated Microbiome of Miscanthus X Giganteus. *Sci. Total Environ.* 711, 134433.
- Zang, X., Li, K., Yun, T., Rashed, A. A., Melebari, D. M., Ding, Z., ... & Wei, C. (2025). Comparison Between Tropical Legumes and Natural Grasses in Improving Tropical Rainforest Soil Health: A Case Study in Guava (*Psidium Guajava* L.) Orchards. *BMC Plant Biology*, 25(1), 378.
- Zhang, C., Li, M., Zhang, S., Qi, Z., Huang, J., & Sun, J. (2022). An Improved Method Of Fluorescein Diacetate Determination for Assessing The Effects of Pollutants on Microbial Activity in Urban River Sediments. *Journal of Soils and Sediments*, 22(10), 2792-2801.

- Zhang, S., Luo, Y., Zhang, K., Song, Z., Ling, L., Yu, X., ... & Zhao, J. (2024). *Methylobacterium amylolyticum* sp. nov. and *Methylobacterium ligniniphilum* sp. nov., Isolated from Soil. *International Journal of Systematic and Evolutionary Microbiology*, 74(7), 006457.
- Zhao, X., Sun, Y., Huang, J., Wang, H., & Tang, D. (2020). Effects Of Soil Heavy Metal Pollution on Microbial Activities and Community Diversity in Different Land Use Types in Mining Areas. *Environmental Science and Pollution Research*, 27(16), 20215-20226.
- Zheng TianTian, Z. T., Liang Chao, L. C., Xie HongTu, X. H., Zhao JinSong, Z. J., Yan EnRong, Y. E., Zhou XuHui, Z. X., & Bao XueLian, B. X. (2019). Rhizosphere Effects on Soil Microbial Community Structure and Enzyme Activity in a Successional Subtropical Forest. 95, 1-11.
- Zhu, S., Mao, H., Yang, X., Zhao, W., Sheng, L., Sun, S., & Du, X. (2025). Resilience Mechanisms of Rhizosphere Microorganisms in Lead-Zinc Tailings: Metagenomic Insights into Heavy Metal Resistance. *Ecotoxicology and Environmental Safety*, 292, 117956.