

DAFTAR PUSTAKA

- Afifudin, A.F.M., Agustina, E., Firdhausi, N.F. & Irawanto, R., 2022. Respon Tanaman Daun Tombak (*Sagittaria lancifolia*) dalam Cekaman Logam Berat Tembaga (Cu). *Jurnal Al-Azhar Indonesia Seri Sains dan Teknologi*, 7(2):87-93.
<https://doi.org/10.19184/BST.V9I3.26667>.
- Al-Saadi, S.A.A.M., Al-Asaadi, W.M. & Al-Waheeb, A.N.H., 2013. The Effect of Some Heavy Metals Accumulation on Physiological and Anatomical Characteristic of Some Potamogeton. *L. plant. J Ecol Environ Sci*, 4(1):100-108.
<https://doi.org/10.3390/plants10040635>
- Angulo-Bejarano, P.I., Puente-Rivera, J. and Cruz-Ortega, R., 2021. Metal and metalloid toxicity in plants: An overview on molecular aspects. *Plants*, 10(4):635-653.
<https://doi.org/10.3390/plants10040635>
- Barus, W.A., Munar, A., Sofia, I. & Lubis, E., 2021. Kontribusi Asam Salisilat untuk Ketahanan Cekaman Salinitas pada Tanaman. *Jurnal Penelitian Bidang Ilmu Pertanian*, 19(2):9-19.
- Bercu, R., Popoviciu, D.R. & Bavaru, A., 2017. Histoanatomical aspects of *Echinodorus ozelot* (Barth) Dessau (*Alismataceae*) vegetative organs. *Annals of the Romanian Society for Cell Biology*, 21(3):1-6.
<https://doi.org/10.ANN/RSCB-2017-0011:RSCB>
- Bornette, G. & Puijalon, S., 2011. Response of aquatic plants to abiotic factors: a review. *Aquatic Sciences*, 73:1-14.
<https://doi.org/10.1007/s00027-010-0162-7>
- Carrasco-Gil, S., Siebner, H., LeDuc, D.L., Webb, S.M., Millán, R., Andrews, J.C. & Hernández, L.E., 2013. Mercury localization and speciation in plants grown hydroponically or in a natural environment. *Environmental Science & Technology*, 47(7):3082-3090.
<https://doi.org/10.1021/es303310t>
- Chen, J. & Yang, Z.M., 2012. Mercury toxicity, molecular response and tolerance in higher plants. *Biometals*, 25: 847-857.
<https://doi.org/10.1007/s10534-012-9560-8>
- Collin, R.M., 2008. *Battleground: Environment*. Greenwood Publishing Group, USA.
- Croce, R. & Van Amerongen, H., 2014. Natural strategies for photosynthetic light harvesting. *Nature Chemical Biology*, 10(7): 492-501.
<https://doi.org/10.1038/nchembio.1555>
- Danouche, M., el Ghachtouli, N., & el Arroussi, H. 2021. Phycoremediation mechanisms of heavy metals using living green microalgae: physicochemical and molecular approaches for enhancing selectivity and removal capacity. *Heliyon*, 7: 1-11.
<https://doi.org/10.1016/j.heliyon.2021.e07609>
- Dusenge, M.E., Duarte, A.G. & Way, D.A., 2019. Plant carbon metabolism and climate change: elevated CO₂ and temperature impacts on photosynthesis, photorespiration and respiration. *New Phytologist*, 221(1): 32-49.
<https://doi.org/10.1111/nph.15283>

- El-Shabasy, A., 2021. Effect of heavy metals in the cement dust pollution on morphological and anatomical characteristics of *Cenchrus ciliaris* L. *Saudi Journal of Biological Sciences*, 28(1):1069-1079.
<https://doi.org/10.1016/j.sjbs.2020.11.015>
- Emamverdian, A., Ding, Y., Mokhberdoran, F. & Xie, Y., 2015. Heavy metal stress and some mechanisms of plant defense response. *The Scientific World Journal*, 4(2):1-18.
<https://doi.org/10.1155/2015/756120>
- Evangelista, F. and Hasan, Z., 2021. Effectiveness of rough horsetail plant (*Equisetum hyemale*) and Mexican sword plant (*Echinodorus paleifolius*) as a phytoremediation agent in reducing cadmium metal (Cd) in the upper Citarum River segment of Dayeuhkolot. *International Journal of Fisheries and Aquatic Studies*, 9(2):285-290.
<https://doi.org/10.22271/fish.2021.v9.i2d.2466>
- Fauziah, A., Bengen, D.G., Kawaroe, M., Effendi, H. & Krisanti, M., 2019. Hubungan antara Ketersediaan Cahaya Matahari dan Konsentrasi Pigmen Fotosintetik di Perairan Selat Bali. *Jurnal Ilmu dan Teknologi Kelautan Tropis*, 11(1):37-48.
<http://dx.doi.org/10.29244/jitkt.v11i1.23108>
- Gan, P., Liu, F., Li, R., Wang, S. & Luo, J., 2019. Chloroplasts beyond energy capture and carbon fixation: tuning of photosynthesis in response to chilling stress. *International Journal of Molecular Sciences*, 20(20):1-15.
<https://doi.org/10.3390/ijms20205046>
- Ghughe, S.A., Nikalje, G.C., Kadam, U.S., Suprasanna, P. & Hong, J.C., 2023. Comprehensive mechanisms of heavy metal toxicity in plants, detoxification, and remediation. *Journal of Hazardous Materials*, 450:131-149.
<https://doi.org/10.1016/j.jhazmat.2023.131039>
- Gross, M., 2011. Mercury. In: Goldstein, S., Naglieri, J.A. (eds) *Encyclopedia of Child Behavior and Development*. Springer: Boston, MA.
- Gworek, B., Dmuchowski, W. and Baczewska-Dąbrowska, A.H., 2020. Mercury in the terrestrial environment: A review. *Environmental Sciences Europe*, 32(1):1-19.
https://doi.org/10.1007/978-0-387-79061-9_1767
- Guo, A., Hu, Y., Shi, M., Wang, H., Wu, Y. & Wang, Y., 2020. Effects of iron deficiency and exogenous sucrose on the intermediates of chlorophyll biosynthesis in *Malus halliana*. *PloS One*, 15(5):1-13.
<https://doi.org/10.1371/journal.pone.0232694>
- Hamid, N.B.B., Masiri, B., Kaamin, M.B.M., Abd Kadir, A.B., Bakar, S.K.B.A. & Ibrahim, N.H.B., 2015. Research on the effectiveness of an aquatic plant (*Utricularia aurea*) for fish preservation. *J. Civil Engg. Res*, 5:1-5.
<https://doi.org/10.5923/c.jce.201501.01>
- Hamim, H., Mutyandini, A., Sulistyaningsih, Y.C., Putra, H.F., Saprudin, D. & Setyaningsih, L., 2019. Effect of mercury on growth, anatomy and physiology of four non-edible oil-producing species. *Asian Journal of Plant Sciences*, 18(4):164-174.
<https://doi.org/10.3923/ajps.2019.164.174>
- Handajani, H., Adhywirawan, G., Andriawan, S., Prasetyo, D. & Mavuso, B.R.,

2021. Evaluation of Efficiency of *Aquarius palifolius* (JF Macbr.) Involved in the *Clarias gariepinus* (Burchell, 1822) Culture for Water Quality Recovery and Fish Growth Support. *Jordan Journal of Biological Sciences. All rights reserved*, 14(5):959-964.
<https://doi.org/10.1016/B978-0-12-819487-4.00006-9>.
- Hu, L. & Yang, L., 2019. Time to fight: molecular mechanisms of age-related resistance. *Phytopathology*, 109(9): 1500-1508.
<https://doi.org/10.1094/PHYTO-11-18-0443-RVW>
- Hwang, B.G., Ryu, J. and Lee, S.J., 2016. Vulnerability of protoxilem and metaxilem vessels to embolisms and radial refilling in a vascular bundle of maize leaves. *Frontiers in Plant Science*, 7:941-951.
<https://doi.org/10.3389/fpls.2016.00941>
- Kadir, A., Abdullah, S.R.S., Othman, B.A., Hasan, H.A., Othman, A.R., Imron, M.F., Ismail, N.I. & Kurniawan, S.B., 2020. Dual function of *Lemna minor* and *Azolla pinnata* as phytoremediator for Palm Oil Mill Effluent and as feedstock. *Chemosphere*, 259:1-13.
<https://doi.org/10.1016/j.chemosphere.2020.127468>
- 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*, 8:1-18.
<https://doi.org/10.1016/j.envadv.2022.100203>
- Kaijser, W., Kosten, S. & Hering, D., 2019. Salinity tolerance of aquatic plants indicated by monitoring data from the Netherlands. *Aquatic Botany*, 158: 103-129.
<https://doi.org/10.1016/j.aquabot.2019.103129>
- Khan, M.K., Pandey, A., Hamurcu, M., Gupta, O.P. and Gezgin, S. 2023. *Abiotic Stresses in Wheat: Unfolding the Challenges*. Elsevier: UK.
- Khatiwada, B., Hasan, M. T., Sun, A., Kamath, K. S., Mirzaei, M., Sunna, A., & Nevalainen, H. 2020. Probing the role of the chloroplasts in heavy metal tolerance and accumulation in *Euglena gracilis*. *Microorganisms*, 8(1): 1-18.
<https://doi.org/10.3390/microorganisms8010115>
- Kumari, S., Amit, Jamwal, R., Mishra, N., & Singh, D. K. 2020. Recent developments in environmental mercury bioremediation and its toxic. *Environmental Nanotechnology, Monitoring & Management*, 13: 1-14.
<https://doi.org/10.1016/j.enmm.2020.100283>
- Loshinta, M., Sutanto, H.B. and Prihatmo, G., 2020. Pengaruh Kedalaman Rhizofert Tanaman Melati Air (*Echinodorus palifolius*) Terhadap Kuantitas Oksigen Terlarut Pada Sistem Sub Surface Vertical Flow Constructed Wetland. *JuSiTik: Jurnal Sistem dan Teknologi Informasi Komunikasi*, 4(2):70-76.
<https://doi.org/10.32524/saintek.v4i2.157>
- Ma, Y., Wang, G., Wang, Y., Dai, W. & Luan, Y., 2021. Mercury uptake and transport by plants in aquatic environments: a meta-analysis. *Applied Sciences*, 11(19): 8829.
<https://doi.org/10.3390/app11198829>
- Maas, E.V., 2019. *CRC Handbook of Plant Science in Agriculture Volume II*. CRC Press, Boca Raton.

- Mariwy, A., Finarti, F. & Sunarti, S., 2022. Potensi Tanaman Kirinyuh (*Chromolaena Odorata* L) dalam Merememediasi Tanah Tercemar Merkuri. *Molluca Journal of Chemistry Education (MJoCE)*, 12(1):33-45.
<https://doi.org/10.30598/MJoCEvol12iss1pp33-45>
- Marklund, S. & Marklund, G., 1974. Involvement of the superoxide anion radical in the autoxidation of pyrogallol and a convenient assay for superoxide dismutase. *European Journal of Biochemistry*, 47(3):469-474.
<https://doi.org/10.1111/j.1432-1033.1974.tb03714.x>
- Marrugo-Negrete, J., Durango-Hernández, J., Pinedo-Hernández, J., Olivero-Verbel, J. & Díez, S., 2015. Phytoremediation of mercury contaminated soils by *Jatropha curcas*. *Chemosphere*, 127:58-63.
<https://doi.org/10.1016/j.chemosphere.2014.12.073>
- Moore, C.E., Meacham-Hensold, K., Lemonnier, P., Slattery, R.A., Benjamin, C., Bernacchi, C.J., Lawson, T. & Cavanagh, A.P., 2021. The effect of increasing temperature on crop photosynthesis: from enzymes to ecosystems. *Journal of Experimental Botany*, 72(8): 822-2844.
<https://doi.org/10.1093/jxb/erab090>
- Muslim, A. 2020. *Merkuri dan Keberadaannya*. Banda Aceh: Syiah Kuala University Press. P:5.
- Natsir, N.A., Selanno, D.A., Tupan, C.I. & Male, Y.T., 2020. Analisis kandungan merkuri (Hg) dan kadar klorofil lamun *Enhalus acoroides* di perairan Marlosso dan Nametek Kabupaten Buru Provinsi Maluku. *BIOSEL (Biology Science and Education): Jurnal Penelitian Science dan Pendidikan*, 9(1):89-100.
- Nugraha, A.H., Nurasihkin, N. & Karlina, I., 2022. Struktur Anatomi dan Kandungan Klorofil pada Lamun Jenis *Enhalus acoroides* di Pesisir Timur Pulau Bintan dan Pulau Dompok, Kepulauan Riau. *OLDI (Oseanologi dan Limnologi di Indonesia)*, 7(1):23-32.
<https://doi.org/10.14203/oldi.2022.v7i1.368>
- Navvab, M. 2011. Plant Lighting Aspects for Plant Growth in Controlled Environments. *Commission Internationale de L'eclairage*, 1(1): 430-440.
- Nur, F. & Slamet, I., 2020. The phytoremediation of *Aquarius palifolius* (Water Jasmine) in reducing BOD and COD of liquid waste-Batik Industry" X" in Pekalongan. *GSC Biological and Pharmaceutical Sciences*, 12(3):215-222.
<http://dx.doi.org/10.30574/gscbps.2020.12.3.0303>
- Pang, Y.L., Quek, Y.Y., Lim, S. & Shuit, S.H., 2023. Review on Phytoremediation Potential of Floating Aquatic Plants for Heavy Metals: A Promising Approach. *Sustainability*, 15(2):1-23.
<https://doi.org/10.3390/su15021290>
- Pandey, A.K., Zorić, L., Sun, T., Karanović, D., Fang, P., Borišev, M., Wu, X., Luković, J. and Xu, P., 2022. The anatomical basis of heavy metal responses in legumes and their impact on plant–rhizosphere interactions. *Plants*, 11(19):1-21.
<https://doi.org/10.3390/plants11192554>
- Pandey, S. N. 2009. *Plant Anatomy and Embryology*. Vikas Publishing House Pvt

Limited: India.

- Perangin-Angin, Y., Purwaningrum, Y., Asbur, Y., Rahayu, M.S. & Nurhayati, N., 2019. Pemanfaatan kandungan metabolit sekunder yanag dihasilkan tanaman pada cekaman biotik. *Agriland: Jurnal Ilmu Pertanian*, 7(1): 39-47
- Pongenda, R.C., Napitupulu, M. & Walanda, D.K., 2015. Biocharcoal dari biji salak (*Salacca edulis*) sebagai adsorben terhadap kromium. *Jurnal Akademika Kimia*, 4(2): 84-90.
- Prasetya, A., Prihutami, P., Warisaura, A. D., Fahrurrozi, M. & Murti Petrus, H. T. B. 2020. Characteristic of Hg removal using zeolite adsorption and *Aquarius palifolius* phytoremediation in subsurface flow constructed wetland (SSF-CW) model. *Journal of Environmental Chemical Engineering*, 8(3).1-8.
<https://doi.org/10.1016/j.jece.2020.103781>
- Rahmaisyanti, A., Hidayati, Y.A. & Pratama, A., 2022. Pengaruh Kuantitas Tanaman Melati Air (*Echinodorus palifolius*) sebagai Fitoremediator Limbah Cair Penyamakan Kulit Proses Tanning. *Jurnal Teknologi Hasil Peternakan*, 3(2):73-82.
<https://doi.org/10.24198/jthp.v3i2.41943>
- Raj, D. & Maiti, S. K. 2019. Sources , toxicity , and remediation of mercury : an essence review. *Environmental Monitoring and Assessment*, 191(566):1-22.
<https://doi.org/10.1007/s10661-019-7743-2>
- Rio, L.A.D., Corpas, F.J., López-Huertas, E. & Palma, J.M. 2018. Plant superoxide dismutases: function under abiotic stress conditions. In Antioxidants and antioxidant enzymes in higher plants. *Springer, Cham*, 1-26.
https://doi.org/10.1007/978-3-319-75088-0_1
- Rosalina, D., Herawati, E.Y., Musa, M., Sofarini, D. & Risjani, Y., 2019. Anatomical changes in the roots, rhizomes and leaves of seagrass (*Cymodocea serrulata*) in response to lead. *Biodiversitas Journal of Biological Diversity*, 20(9):2583-2588.
<https://doi.org/10.13057/biodiv/d200921>
- Rucińska-Sobkowiak, R., 2016. Water relations in plants subjected to heavy metal stresses. *Acta Physiologiae Plantarum*, 38:1-13.
<https://doi.org/10.1007/s11738-016-2277-5>
- Saengwilai, P., Meeinkuirt, W., Phusantisampan, T. and Pichtel, J., 2020. Immobilization of cadmium in contaminated soil using organic amendments and its effects on rice growth performance. *Exposure and Health*, 12:295-306.
<https://doi.org/10.1007/s12403-019-00312-0>
- Saturday, A. 2018. Mercury and its Associated Impacts on Environment and Human Health. *J Environ Health Sci*, 4(2): 37- 43.
<https://doi.org/10.15436/2378https://doi.org/10.15436/2378-6841.18.19066841.18.1906>
- Shahid, M., Khalid, S., Abbas, G., Shahid, N., Nadeem, M., Sabir, M., Aslam, M. & Dumat, C., 2015a. *Heavy metal stress and crop productivity*. Springer cham: Malaysia.
<https://doi.org/10.1007/978-3-319-23162-4>
- Shahid, M., Khalid, S., Bibi, I., Bundschuh, J., Niazi, N.K. & Dumat, C.,

- 2020b. A critical review of mercury speciation, bioavailability, toxicity and detoxification in soil-plant environment: Ecotoxicology and health risk assessment. *Science of the Total Environment*, 711:1-48.
<https://doi.org/10.1016/j.scitotenv.2019.134749>
- Sihotang, T., 2021. Pengaruh Cekaman Salinitas terhadap Pertumbuhan Tanaman Semusim. *Fruitset Sains: Jurnal Pertanian Agroteknologi*, 9(2):45-51.
<https://doi.org/10.35335/fruitset.v9i2.1813>
- Squire, G., 2005. *Handbook of Photosynthesis*. Boca Raton, FL, USA: CRC Press.
- Stephenie, S., Chang, Y.P., Gnanasekaran, A., Esa, N.M. & Gnanaraj, C. 2020. An insight on superoxide dismutase (SOD) from plants for mammalian health enhancement. *Journal of Functional Foods*, 68:1-10.
<https://doi.org/10.1016/j.jff.2020.103917>
- Sucahyo, S. & Kasmiyati, S., 2018. Respon Enzim Antioksidatif *Sonchus oleraceus* terhadap Cekaman Krom pada Media Tanam Berbeda. *Jurnal Biologi Indonesia*, 14(1):51-59.
<https://doi.org/10.14203/jbi.v14i1.3661>
- Suswati, A.C.S.P. & Wibisono, G., 2013. Pengolahan Limbah Domestik dengan Teknologi Taman Tanaman Air (*Constructed Wetlands*). *The Indonesian Green Technology Journal*, 2(2):70-77.
- Sutikno. 2018. *Buku Praktikum Mikroteknik Tumbuhan*. UGM Press:Yogyakarta.
- Ulumudin, M.M. & Purnomo, T., 2022. Analisis Kandungan Logam Berat Timbal (Pb) pada Tumbuhan Papyrus (*Cyperus papyrus* L.) di Sungai Wangi Pasuruan. *LenteraBio: Berkala Ilmiah Biologi*, 11(2): 273-283.
<https://doi.org/10.26740/lenterabio.v11n2.p273-283>
- Wu, S., Wang, Y., Zhang, J., Gong, X., Zhang, Z., Sun, J., Chen, X. & Wang, Y., 2021. Exogenous melatonin improves physiological characteristics and promotes growth of strawberry seedlings under cadmium stress. *Horticultural Plant Journal*, 7(1):13-22.
<https://doi.org/10.1016/j.hpj.2020.06.002>
- Xiao, Y., Zhao, P., Yang, Y. & Li, M. 2018. Ecotoxicity evaluation of natural suspended particles using the microalga, *Xiaona gracilis*. *Chemosphere*, 206:802–808.
<https://doi.org/10.1016/j.chemosphere.2018.05.061>
- Yadav, S.K., 2010a. Heavy metals toxicity in plants: an overview on the role of glutathione and phytochelatins in heavy metal stress tolerance of plants. *South African Journal of Botany*, 76(2):167-179.
<https://doi.org/10.1016/j.sajb.2009.10.007>
- Yadav, V., Arif, N., Kováč, J., Singh, V.P., Tripathi, D.K., Chauhan, D.K. & Vaculík, M., 2021. Structural modifications of plant organs and tissues by metals and metalloids in the environment: A review. *Plant Physiology and Biochemistry*, 159:100-112.
<https://doi.org/10.1016/j.plaphy.2020.11.047>
- Yan, A., Wang, Y., Tan, S.N., Mohd Yusof, M.L., Ghosh, S. & Chen, Z., 2020. Phytoremediation: a promising approach for revegetation of heavy metal-polluted land. *Frontiers in Plant Science*, 11:359-274.
<https://doi.org/10.3389/fpls.2020.00359>
- Yáñez-Espinosa, L., Briones-Gallardo, R., Flores, J. & Álvarez del Castillo, E., 2020. Effect of heavy metals on seed germination and seedling

development of stenophylla collected on the slope of a mine tailing dump.

International Journal of Phytoremediation, 22(14)1448-1461.

<https://doi.org/10.1080/15226514.2020.1781782>