

DAFTAR PUSTAKA

- Ahmed, K., Saqib, A. I., Naseem, A. R., Qadir, G., Nawaz, M. Q., Khalid, M., Warraich, I. A., & Arif, M. (2020). Use of Hyacinth compost in salt-affected soils. *Pakistan Journal of Agricultural Research*, 33(4). <https://doi.org/10.17582/journal.pjar/2020/33.4.720.728>
- Aji, D. R., & Cahyadi, M. N. (2015). Analisa karakteristik kecepatan angin dan tinggi gelombang menggunakan data satelit Altimetri (Studi kasus: Laut Jawa). *Geoid*, 11(1), 75. <https://doi.org/10.12962/j24423998.v11i1.1102>
- Akter, S., Yasmeen, R., Ahmed, H., Sarker, M., & Rahman, M. (2015). Salinity tolerance of some elite rice breeding lines at reproductive stage. *Bangladesh Rice Journal*, 18(1–2), 33–37. <https://doi.org/10.3329/brj.v18i1-2.22998>
- Alhasnawi, A. N. (2019). Role of proline in plant stress tolerance: A mini review. *Research on Crops*, 20(1), 223–229. <https://doi.org/10.31830/2348-7542.2019.032>
- Ali, M. A., Sattar, M. A., Islam, M. N., & Inubushi, K. (2014). Integrated effects of organic, inorganic and biological amendments on methane emission, soil quality and rice productivity in irrigated paddy ecosystem of Bangladesh: Field study of two consecutive rice growing seasons. *Plant and Soil*, 378(1–2), 239–252. <https://doi.org/10.1007/s11104-014-2023-y>
- Ardón, M., Helton, A. M., & Bernhardt, E. S. (2018). Salinity effects on greenhouse gas emissions from wetland soils are contingent upon hydrologic setting: a microcosm experiment. *Biogeochemistry*, 140(2), 217–232. <https://doi.org/10.1007/s10533-018-0486-2>
- Arifiani, F. N., Kurniasih, B., & Rohlan, R. (2018). *Pengaruh bahan organik terhadap pertumbuhan dan hasil padi (*Oryza sativa* L.) tercekam salinitas* (Vol. 7, Issue 3).
- Bano, A., & Fatima, M. (2009). Salt tolerance in Zea mays (L). following inoculation with rhizobium and pseudomonas. *Biology and Fertility of Soils*, 45(4), 405–413. <https://doi.org/10.1007/s00374-008-0344-9>
- Baruah, K. K., Gogoi, B., & Gogoi, P. (2010). Plant physiological and soil characteristics associated with methane and nitrous oxide emission from rice paddy. *Physiology and Molecular Biology of Plants*, 16(1), 79–91. <https://doi.org/10.1007/s12298-010-0010-1>
- Bayabil, H. K., Li, Y., Tong, Z., & Gao, B. (2021). Potential management practices of saltwater intrusion impacts on soil health and water quality: A review. *Journal of Water and Climate Change*, 12(5), 1327–1343. <https://doi.org/10.2166/wcc.2020.013>
- Bernstein, N. (2019). Plants and salt: plant response and adaptations to salinity. In *Model Ecosystems in Extreme Environments*. Elsevier Inc. <https://doi.org/10.1016/b978-0-12-812742-1.00005-2>



- Bhattacharyya, P., Dash, P. K., Swain, C. K., Padhy, S. R., Roy, K. S., Neogi, S., Berliner, J., Adak, T., Pokhare, S. S., Baig, M. J., & Mohapatra, T. (2019). Mechanism of plant mediated methane emission in tropical lowland rice. *Science of the Total Environment*, 651, 84–92. <https://doi.org/10.1016/j.scitotenv.2018.09.141>
- BPS-Statistic of Demak. (2022). Demak dalam angka 2022. In *BPS Kabupaten Demak*.
- Byrt, C. S., Munns, R., Burton, R. A., Gilliam, M., & Wege, S. (2018). Root cell wall solutions for crop plants in saline soils. *Plant Science*, 269(September 2017), 47–55. <https://doi.org/10.1016/j.plantsci.2017.12.012>
- Cedeño, Á., Olmo, M., Cedeño, G., Lucas, M., Saldarriaga, V., & Villar, R. (2024). Effects of different biochar types on the growth and functional traits of rice (*Oryza sativa* L.). *Journal of Ecological Engineering*, 25(3), 282–290. <https://doi.org/10.12911/22998993/182868>
- Cha-um, S., Pokasombat, Y., & Kirdmanee, C. (2014). *Remediation of salt-affected soil by gypsum and farmyard manure – Importance for the production of Jasmine rice*. April 2011.
- Chang, J., Cheong, B. E., Natera, S., & Roessner, U. (2019). Morphological and metabolic responses to salt stress of rice (*Oryza sativa* L.) cultivars which differ in salinity tolerance. In *Plant Physiology and Biochemistry*. Elsevier. <https://doi.org/10.1016/j.plaphy.2019.10.017>
- Chernousenko, G. I., Khitrov, N. B., & Pankova, E. I. (2023). Magnesium in saline gypsum-bearing soils of Russia. *Eurasian Soil Science*, 56(7), 854–867. <https://doi.org/10.1134/S1064229323600537>
- Chu, L., Zhang, Y., Qian, L., Zhu, D., & Sun, H. (2020). Influence of biochar on nitrogen use efficiency and root morphology of rice-seedling in two contrasting paddy soils. *Phyton*, 89(4), 1035–1042. <https://doi.org/10.32604/phyton.2020.014506>
- Chun, J. A., Lim, C., Kim, D., & Kim, J. S. (2018). Assessing impacts of climate change and sea-level rise on seawater intrusion in a coastal aquifer. *Water (Switzerland)*, 10(4), 1–11. <https://doi.org/10.3390/w10040357>
- Coca, L. I. R., García González, M. T., Gil Unday, Z., Jiménez Hernández, J., Rodríguez Jáuregui, M. M., & Fernández Cancio, Y. (2023). Effects of sodium salinity on rice (*Oryza sativa* L.) cultivation: a Review. *Sustainability (Switzerland)*, 15(3), 1–18. <https://doi.org/10.3390/su15031804>
- Dąbkowska-Naskręć, H., & Bartkowiak, A. (2018). Magnesium status in soils under the impact of the soda industry. *Journal of Elementology*, 23(1), 299–308.

<https://doi.org/10.5601/jelem.2017.22.1.1419>

- Dajic, Z. (2006). *Physiology and molecular biology of stress tolerance. Chapter 3: salt stress*. Springer.
- Dam, T. H. T., Amjath-Babu, T. S., Zander, P., & Müller, K. (2019). Paddy in saline water: analysing variety-specific effects of saline water intrusion on the technical efficiency of rice production in Vietnam. *Outlook on Agriculture*, 48(3), 237–245. <https://doi.org/10.1177/0030727019850841>
- Danindra, D., Setiawan, R. P. A., Desrial, Solahudin, M., Astika, I. W., & Widodo, S. (2022). Mapping of soil EC in relation with selected chemical properties of soil. *IOP Conference Series: Earth and Environmental Science*, 1038(1). <https://doi.org/10.1088/1755-1315/1038/1/012050>
- Darmanto, D., & Cahyadi, A. (2013). Kajian intrusi air laut melalui sungai di pesisir Kabupaten Demak Jawa Tengah. *Majalah Geografi Indonesia*, 27(1), 1–10. <https://doi.org/10.22146/mgi.13431>
- Dasgupta, S., Hossain, M. M., Huq, M., & Wheeler, D. (2018). Climate change, salinization and high-yield rice production in coastal Bangladesh. *Agricultural and Resource Economics Review*, 47(1), 66–89. <https://doi.org/10.1017/age.2017.14>
- Datta, A., Yeluripati, J. B., Nayak, D. R., Mahata, K. R., Santra, S. C., & Adhya, T. K. (2013). Seasonal variation of methane flux from coastal saline rice field with the application of different organic manures. *Atmospheric Environment*, 66, 114–122. <https://doi.org/10.1016/j.atmosenv.2012.06.008>
- Deshmukh, Y., & Khare, P. (2017). Effect of salinity stress on growth parameters and metabolites of medical plants: A review. In *Soil Salinity Management in Agriculture: Technological Advances and Applications* (pp. 197–234). <https://doi.org/10.1201/9781315365992>
- Dong, D., Feng, Q., McGrouther, K., Yang, M., Wang, H., & Wu, W. (2015). Effects of biochar amendment on rice growth and nitrogen retention in a waterlogged paddy field. *Journal of Soils and Sediments*, 15(1), 153–162. <https://doi.org/10.1007/s11368-014-0984-3>
- El-Naggar, A., Lee, S. S., Rinklebe, J., Farooq, M., Song, H., Sarmah, A. K., Zimmerman, A. R., Ahmad, M., Shaheen, S. M., & Ok, Y. S. (2019). Biochar application to low fertility soils: a review of current status, and future prospects. *Geoderma*, 337(September 2018), 536–554. <https://doi.org/10.1016/j.geoderma.2018.09.034>
- El Moukhtari, A., Cabassa-Hourton, C., Farissi, M., & Savouré, A. (2020). How does proline treatment promote salt stress tolerance during crop plant development? *Frontiers in Plant Science*, 11(July), 1–16. <https://doi.org/10.3389/fpls.2020.01127>



- Eviati, & Sulaeman. (2009). Analisis kimia tanah, tanaman, air dan pupuk. In *News.Ge*.
- Eviati, Sulaeman, Herawaty, L., Anggria, L., Usman, Tantika, H. E., Prihantini, R., & Wuningrum, P. (2023). Analisis kimia tanah, tanaman, air, dan pupuk. In *Kementrian Pertanian Republik Indonesia*. <https://tanahpupuk.bsip.pertanian.go.id>
- FAO. (2018). Handbook for saline soil management. In *Published by the Food and Agriculture Organization of the United Nations and Lomonosov Moscow State University*. <http://www.fao.org/3/i7318en/I7318EN.pdf>
- Farooq, M., Asif, S., Jang, Y. H., Park, J. R., Zhao, D. D., Kim, E. G., & Kim, K. M. (2022). Effect of Different Salts on Nutrients Uptake, Gene Expression, Antioxidant, and Growth Pattern of Selected Rice Genotypes. *Frontiers in Plant Science*, 13(June), 1–16. <https://doi.org/10.3389/fpls.2022.895282>
- Febriarta, E., & Widyastuti, M. (2020). Kajian kualitas air tanah aampak intrusi di sebagian pesisir Kabupaten Tuban. *Jurnal Geografi: Media Informasi Pengembangan Dan Profesi Kegeografian*, 17(2), 39–48. <https://doi.org/10.15294/jg.v17i2.24143>
- Gharaibeh, M. A., Rusan, M. J., Eltaif, N. I., & Shunnar, O. F. (2014). Reclamation of highly calcareous saline-sodic soil using low quality water and phosphogypsum. *Applied Water Science*, 4(3), 223–230. <https://doi.org/10.1007/s13201-014-0189-3>
- Gu, W., Wang, Y., Feng, Z., Wu, D., Zhang, H., Yuan, H., Sun, Y., Xiu, L., Chen, W., & Zhang, W. (2022). Long-term effects of biochar application with reduced chemical fertilizer on paddy soil properties and Japonica rice production system. *Frontiers in Environmental Science*, 10(June), 1–13. <https://doi.org/10.3389/fenvs.2022.902752>
- Gu, X., Weng, S., Li, Y., & Zhou, X. (2022). Effects of Water and Fertilizer Management Practices on Methane Emissions from Paddy Soils: Synthesis and Perspective. *International Journal of Environmental Research and Public Health*, 19(12). <https://doi.org/10.3390/ijerph19127324>
- Gupta, A., Tiwari, R. K., Shukla, R., Singh, A. N., & Sahu, P. K. (2023). Salinity alleviator bacteria in rice (*Oryza sativa* L.), their colonization efficacy, and synergism with melatonin. *Frontiers in Plant Science*, 13(January), 1–16. <https://doi.org/10.3389/fpls.2022.1060287>
- Ha, L. T. T., An, N. T., Ha, N. T., Zhou, M., Brüggemann, N., & Cong, V. H. (2023). Greenhouse gas emissions from agricultural land use in the coastal area of Red River Delta. *International Journal of Environmental Science and Technology*, 0123456789. <https://doi.org/10.1007/s13762-023-04847-3>
- Hafidh, A. A., Saptomo, S. K., & Arif, C. (2018). Sebaran intrusi air laut di Kabupaten Indramayu, Jawa Barat. *Jurnal Teknik Sipil Dan Lingkungan*, 3(2), 69–76.

<https://doi.org/10.29244/jsil.3.2.69-76>

- Hailegnaw, N. S., Mercl, F., Pračke, K., Száková, J., & Tlustoš, P. (2019). Mutual relationships of biochar and soil pH, CEC, and exchangeable base cations in a model laboratory experiment. *Journal of Soils and Sediments*, 19(5), 2405–2416.
<https://doi.org/10.1007/s11368-019-02264-z>
- Hariadi, Y. C., Nurhayati, A. Y., Soeparjono, S., & Arif, I. (2015). Screening six varieties of rice (*Oryzasativa*) for salinity tolerance. *Procedia Environmental Sciences*, 28, 78–87.
<https://doi.org/10.1016/j.proenv.2015.07.012>
- Hasan, R., & Miyake, H. (2017). Salinity stress alters nutrient uptake and causes the damage of root and leaf anatomy in maize. *KnE Life Sciences*, 3(4), 219.
<https://doi.org/10.18502/kl.v3i4.708>
- Hazelton, P., & Murphy, B. (2019). Interpreting Soil Test Results. *Interpreting Soil Test Results*.
<https://doi.org/10.1071/9781486303977>
- Hazman, M., Hause, B., Eiche, E., Nick, P., & Riemann, M. (2015). Increased tolerance to salt stress in OPDA-deficient rice ALLENE OXIDE CYCLASE mutants is linked to an increased ROS-scavenging activity. *Journal of Experimental Botany*, 66(11), 3339–3352.
<https://doi.org/10.1093/jxb/erv142>
- He, K., He, G., Wang, C., Zhang, H., Xu, Y., Wang, S., Kong, Y., Zhou, G., & Hu, R. (2020). Biochar amendment ameliorates soil properties and promotes *Miscanthus* growth in a coastal saline-alkali soil. *Applied Soil Ecology*, 155(October 2019), 103674.
<https://doi.org/10.1016/j.apsoil.2020.103674>
- Hendri, J., & Saidi, B. B. (2020). Pengaruh ameliorasi lahan yang terkena intrusi air laut terhadap pertumbuhan dan produksi padi. *Prosiding Seminar Nasional Lahan Suboptimal Ke-8 Ke-8 Tahun 2020, Palembang 20 Oktober 2020 "Komoditas Sumber Pangan Untuk Meningkatkan Kualitas Kesehatan Di Era Pandemi Covid -19,"* 978–979.
- Hoo, K. Y., Shim, I. S., Kobayashi, K., & Usui, K. (1999). Relationship between Na Content in Several or K / Na Ratio in Shoots and Salt Tolerance Gramineous Plants. *J. Weed Sci. Tech*, 44(4), 293–299.
- Houmani, H., Palma, J. M., & Corpas, F. J. (2023). High salinity stimulates the adaptive response to potassium deficiency through the antioxidant and the NADPH-generating systems in the roots and leaves of the halophyte *Cakile maritima*. *Journal of Plant Growth Regulation*, 42(10), 6286–6306. <https://doi.org/10.1007/s00344-022-10819-7>
- Hu, J., Bettembourg, M., Xue, L., Hu, R., Schnürer, A., Sun, C., Jin, Y., & Sundström, J. F. (2024). A low-methane rice with high-yield potential realized via optimized carbon

- partitioning. *Science of the Total Environment*, 920(January).
<https://doi.org/10.1016/j.scitotenv.2024.170980>
- Huang, J., Zhu, C., Kong, Y., Cao, X., Zhu, L., Zhang, Y., Ning, Y., Tian, W., Zhang, H., Yu, Y., & Zhang, J. (2022). Biochar Application Alleviated Rice Salt Stress via Modifying Soil Properties and Regulating Soil Bacterial Abundance and Community Structure. *Agronomy*, 12(2). <https://doi.org/10.3390/agronomy12020409>
- Huang, M., Yin, X., Chen, J., & Cao, F. (2021). Biochar application mitigates the effect of heat stress on rice (*Oryza sativa* L.) by regulating the root-zone environment. *Frontiers in Plant Science*, 12(August). <https://doi.org/10.3389/fpls.2021.711725>
- Husen, E., Surono, Pratiwi, E., & Widowati, L. R. (2022). Metode analisis biologi tanah edisi 2. In *Balai Penelitian Tanah* (Vol. 3, Issue February).
- Hussain, M., Ahmad, S., Hussain, S., Lal, R., Ul-Allah, S., & Nawaz, A. (2018). Rice in saline soils: physiology, biochemistry, genetics, and management. In *Advances in Agronomy* (1st ed., Vol. 148). Elsevier Inc. <https://doi.org/10.1016/bs.agron.2017.11.002>
- Hussain, S., Cao, X., Zhong, C., Zhu, L., Khaskheli, M. A., Fiaz, S., Zhang, J., & Jin, Q. (2018). Sodium chloride stress during early growth stages altered physiological and growth characteristics of rice. *Chilean Journal of Agricultural Research*, 78(2), 183–197. <https://doi.org/10.4067/S0718-58392018000200183>
- Ibrahim, M., Mahmoud, E., & Ibrahim, D. (2020). Assessing the impact of water treatment residuals and rice straw compost on soil physical properties and wheat yield in saline sodic Soil. *Communications in Soil Science and Plant Analysis*, 51(18), 2388–2397. <https://doi.org/10.1080/00103624.2020.1836206>
- IPCC. (2019). IPCC special report on the ocean and cryosphere in a changing climate. *Intergovernmental Panel on Climate Change*, undefined. <https://www.ipcc.ch/srocc/chapter/summary-for-policymakers/>
- Iqbal, T. (2018). Rice straw amendment ameliorates harmful effect of salinity and increases nitrogen availability in a saline paddy soil. *Journal of the Saudi Society of Agricultural Sciences*, 17(4), 445–453. <https://doi.org/10.1016/j.jssas.2016.11.002>
- Islam, F., Farooq, M. A., Gill, R. A., Wang, J., Yang, C., Ali, B., Wang, G. X., & Zhou, W. (2017). 2,4-D attenuates salinity-induced toxicity by mediating anatomical changes, antioxidant capacity and cation transporters in the roots of rice cultivars. *Scientific Reports*, 7(1), 1–23. <https://doi.org/10.1038/s41598-017-09708-x>
- Islam, M. M., Faruqe, M. H., Rana, M. S., Akter, M., & Karim, M. A. (2018). Screening of rice (*Oryza sativa* L.) genotypes at reproductive stage for their tolerance to salinity. *The*

- Agriculturists*, 16(1), 65–77. <https://doi.org/10.3329/agric.v16i1.37535>
- Islam, S. F. ul, Sander, B. O., Quilty, J. R., de Neergaard, A., van Groenigen, J. W., & Jensen, L. S. (2020). Mitigation of greenhouse gas emissions and reduced irrigation water use in rice production through water-saving irrigation scheduling, reduced tillage and fertiliser application strategies. *Science of the Total Environment*, 739, 140215. <https://doi.org/10.1016/j.scitotenv.2020.140215>
- Islam, S. M. M., Gaihre, Y. K., Islam, M. R., Khatun, A., & Islam, A. (2022). Integrated Plant Nutrient Systems Improve Rice Yields without Affecting Greenhouse Gas Emissions from Lowland Rice Cultivation. *Sustainability (Switzerland)*, 14(18). <https://doi.org/10.3390/su141811338>
- Ismawan, M. F., Budi Sanjoto, T., & Setyaningsih Jurusan Geografi, W. (2016). Kajian intrusi air laut dan dampaknya terhadap masyarakat di pesisir kota Tegal. In *Geo Image* (Vol. 5, Issue 1). <http://journal.unnes.ac.id/sju/index.php/geoimage>
- Jin, F., Piao, J., Miao, S., Che, W., Li, X., Li, X., Shiraiwa, T., Tanaka, T., Taniyoshi, K., Hua, S., & Lan, Y. (2024). Long-term effects of biochar one-off application on soil physicochemical properties, salt concentration, nutrient availability, enzyme activity, and rice yield of highly saline-alkali paddy soils: based on a 6-year field experiment. *Biochar*, 6(1). <https://doi.org/10.1007/s42773-024-00332-3>
- Kargas, G., Londra, P. A., Koka, D., & Sgoubopoulou, A. (2023). Relationships between saturated paste and 1:1 or 1:5 soil/water extract sodium adsorption ratios. *Irrigation and Drainage*, 72(2), 503–514. <https://doi.org/10.1002/ird.2775>
- Karimi, A., Moezzi, A., Chorom, M., & Enayatizamir, N. (2019). Chemical fractions and availability of Zn in a calcareous soil in response to biochar amendments. *Journal of Soil Science and Plant Nutrition*, 19(4), 851–864. <https://doi.org/10.1007/s42729-019-00084-1>
- Kartika, A. G. D., Septian, H., Nuzula, N. I., & Pratiwi, W. S. W. (2023). Potassium and calcium content in Padelegan water which is used as the raw water for making salt. *IOP Conference Series: Earth and Environmental Science*, 1250(1), 0–9. <https://doi.org/10.1088/1755-1315/1250/1/012010>
- Kartikawati, R., Ariani, M., Wihardjaka, A., & Setyanto, P. (2017). Characteristic of Rice Variety for Low Greenhouse Gases (Ghgs) Emission in Facing the Challenges of Climate Change and National Food Security. *Proceedings of PERIPI. Bogor. Indonesia*, 55–60.
- Kato, Y., Collard, B. C. Y., Septiningsih, E. M., & Ismail, A. M. (2019). Increasing flooding tolerance in rice: Combining tolerance of submergence and of stagnant flooding. *Annals of Botany*, 124(7), 1199–1209. <https://doi.org/10.1093/aob/mcz118>



- Khalifa, T., Elbagory, M., & Omara, A. E. D. (2021). Salt stress amelioration in maize plants through phosphogypsum application and bacterial inoculation. *Plants*, *10*(10), 1–23. <https://doi.org/10.3390/plants10102024>
- Khan, M. A., Asaf, S., Khan, A. L., Adhikari, A., Jan, R., Ali, S., Imran, M., Kim, K. M., & Lee, I. J. (2019). Halotolerant rhizobacterial strains mitigate the adverse effects of NaCl stress in soybean seedlings. *BioMed Research International*, *2019*. <https://doi.org/10.1155/2019/9530963>
- Khan, S. K., Iqbal, J., & Saeed, M. (2014). Comparative study of agronomic traits of different rice varieties grown under saline and normal conditions. *Journal of Animal and Plant Sciences*, *24*(2), 634–642.
- Khatun, L., Ali, M. A., Sumon, M. H., Islam, M. B., & Khatun, F. (2021). Mitigation Rice Yield Scaled Methane Emission and Soil Salinity Stress with Feasible Soil Amendments. *Journal of Agricultural Chemistry and Environment*, *10*(01), 16–36. <https://doi.org/10.4236/jacen.2021.101002>
- Kim, W. J., Bui, L. T., Chun, J. B., McClung, A. M., & Barnaby, J. Y. (2018). Correlation between methane (CH₄) emissions and root aerenchyma of rice varieties. *Plant Breeding and Biotechnology*, *6*(4), 381–390. <https://doi.org/10.9787/PBB.2018.6.4.381>
- Kim, Y. J., Choo, B. K., & Cho, J. Y. (2017). Effect of gypsum and rice straw compost application on improvements of soil quality during desalination of reclaimed coastal tideland soils: Ten years of long-term experiments. *Catena*, *156*(March), 131–138. <https://doi.org/10.1016/j.catena.2017.04.008>
- Koc, Y. E., Aycan, M., & Mitsui, T. (2024). Self-defense mechanism in rice to salinity: proline. *J*, *7*(1), 103–115. <https://doi.org/10.3390/j7010006>
- Kooyers, N. J. (2015). The evolution of drought escape and avoidance in natural herbaceous populations. *Plant Science*, *234*, 155–162. <https://doi.org/10.1016/j.plantsci.2015.02.012>
- Krishnamurthy, S. L., Lokeshkumar, B. M., Rathor, S., Warraich, A. S., Yadav, S., Gautam, R. K., Singh, R. K., & Sharma, P. C. (2022). *Development of Salt-Tolerant Rice Varieties to Enhancing Productivity in Salt-Affected Environments*. 30. <https://doi.org/10.3390/environsciproc2022016030>
- Kuanar, S. R., Ray, A., Sethi, S. K., Chattopadhyay, K., & Sarkar, R. K. (2017). Physiological Basis of Stagnant Flooding Tolerance in Rice. *Rice Science*, *24*(2), 73–84. <https://doi.org/10.1016/j.rsci.2016.08.008>
- Kumawat, C., Kumar, A., Parshad, J., Sharma, S. S., Patra, A., Dogra, P., Yadav, G. K., Dadhich, S. K., Verma, R., & Kumawat, G. L. (2022). Microbial diversity and adaptation

- under salt-affected soils: a review. *Sustainability (Switzerland)*, 14(15), 1–24.
<https://doi.org/10.3390/su14159280>
- Kurniasih, B., Greenway, H., & Colmer, T. D. (2013). Tolerance of submerged germinating rice to 50-200mM NaCl in aerated solution. *Physiologia Plantarum*, 149(2), 222–233.
<https://doi.org/10.1111/ppl.12029>
- Kwon, Y., Lee, J. Y., Choi, J., Lee, S. M., Kim, D., Cha, J. K., Park, H., Kang, J. W., Kim, T. H., Chae, H. G., Kabange, N. R., Oh, K. W., Kim, P. J., Kwak, Y. S., Lee, J. H., & Ryu, C. M. (2023). Loss-of-function gs3 allele decreases methane emissions and increases grain yield in rice. *Nature Climate Change*, 13(12), 1329–1333. <https://doi.org/10.1038/s41558-023-01872-5>
- Lakitan, B., Alberto, A., Lindiana, L., Kartika, K., Herlinda, S., & Kurnianingsih, A. (2018). The benefits of biochar on rice growth and yield in tropical riparian wetland, South Sumatra, Indonesia. *Chiang Mai University Journal of Natural Sciences*, 17(2), 111–126.
<https://doi.org/10.12982/CMUJNS.2018.0009>
- Lamb, W. F., Wiedmann, T., Pongratz, J., Andrew, R., Crippa, M., Olivier, J. G. J., Wiedenhofer, D., Mattioli, G., Khourdajie, A. Al, House, J., Pachauri, S., Figueroa, M., Saheb, Y., Slade, R., Hubacek, K., Sun, L., Ribeiro, S. K., Khennas, S., De La Rue Du Can, S., ... Minx, J. (2021). A review of trends and drivers of greenhouse gas emissions by sector from 1990 to 2018. *Environmental Research Letters*, 16(7). <https://doi.org/10.1088/1748-9326/abee4e>
- Lee, J. H., Lee, J. Y., Kang, Y. G., Kim, J. H., & Oh, T. K. (2023). Evaluating methane emissions from rice paddies: a study on the cultivar and transplanting date. *Science of the Total Environment*, 902(July), 166174. <https://doi.org/10.1016/j.scitotenv.2023.166174>
- Lee, J. M., Jeong, H. C., Gwon, H. S., Lee, H. S., Park, H. R., Kim, G. S., Park, D. G., & Lee, S. II. (2023). Effects of biochar on methane emissions and crop yields in East Asian paddy fields: a regional scale meta-analysis. *Sustainability (Switzerland)*, 15(12), 19–21.
<https://doi.org/10.3390/su15129200>
- Leogrande, R., Vitti, C., Leogrande, R., & Vitti, C. (2018). Use of organic amendments to reclaim saline and sodic soils : a review soils : a review. *Arid Land Research and Management*, 0(0), 1–21. <https://doi.org/10.1080/15324982.2018.1498038>
- Li, R., Li, M., Ashraf, U., Liu, S., & Zhang, J. (2019). Exploring the relationships between yield and yield-related traits for rice varieties released in china from 1978 to 2017. *Frontiers in Plant Science*, 10(May). <https://doi.org/10.3389/fpls.2019.00543>
- Li, X., Yao, T., Huang, X., Li, X., Li, P., Du, S., Wang, W., Miao, S., Wang, D., Jin, F., & Shao, X.

- (2022). Biochar increase rice yield by improving root morphological and root physiological functions in heavily saline-sodic paddy soil of Northeast China. *Bioresources*, 17(1), 1241–1256.
- Li, X., & Zhang, W. S. (2008). Salt-avoidance tropism in *Arabidopsis thaliana*. *Plant Signaling and Behavior*, 3(5), 351–353. <https://doi.org/10.4161/psb.3.5.5371>
- Li, Y., Ai, Z., Mu, Y., Zhao, T., Zhang, Y., Li, L., Huang, Z., Nie, L., & Khan, M. N. (2023). Rice yield penalty and quality deterioration is associated with failure of nitrogen uptake from greening to panicle initiation stage under salinity. *Frontiers in Plant Science*, 14(March), 1–18. <https://doi.org/10.3389/fpls.2023.1120755>
- Li, Z., Zhou, T., Zhu, K., Wang, W., Zhang, W., Zhang, H., Liu, L., Zhang, Z., Wang, Z., Wang, B., Xu, D., Gu, J., & Yang, J. (2023). Effects of Salt Stress on Grain Yield and Quality Parameters in Rice Cultivars with Differing Salt Tolerance. *Plants*, 12(18). <https://doi.org/10.3390/plants12183243>
- Ligate, E. J., Martin Kitila, M., Chen, C., & Wu, C. (2017). Impacts of salt water intrusion on maize (*Zea mays*) and rice (*Oryza sativa*) production under climate change scenarios in Bagamoyo District-Tanzania. *Universal Journal of Agricultural Research*, 5(2), 148–158. <https://doi.org/10.13189/ujar.2017.050210>
- Linh, D. T. T., Khoi, C. M., Ritz, K., Van Sinh, N., Phuong, N. T. K., My, H. M. T., Linh, T. B., Minh, D. D., Linh, T. T., & Toyota, K. (2023). Effects of Rice Husk Biochar and Compost Amendments on Soil Phosphorus Fractions, Enzyme Activities and Rice Yields in Salt-Affected Acid Soils in the Mekong Delta, Viet Nam. *Agronomy*, 13(6). <https://doi.org/10.3390/agronomy13061593>
- Mahi, H. El, Hormaeche, J. P., Luca, A. De, Villalta, I., Espartero, J., Arjona, F. G., Fernández, J. L., Bundó, M., Mendoza, I., Mieulet, D., Lalanne, E., Lee, S. Y., Yun, D. J., Guiderdoni, E., Aguilar, M., Leidi, E. O., Pardo, J. M., & Quintero, F. J. (2019). A critical role of sodium flux via the plasma membrane na^+/h^+ exchanger *sos1* in the salt tolerance of rice. *Plant Physiology*, 180(2), 1046–1065. <https://doi.org/10.1104/pp.19.00324>
- Mahmoodabadi, M., & Heydarpour, E. (2014). Sequestration of organic carbon influenced by the application of straw residue and farmyard manure in two different soils. *International Agrophysics*, 28(2), 169–176. <https://doi.org/10.2478/intag-2014-0005>
- 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>



- Maucieri, C., Zhang, Y., McDaniel, M. D., Borin, M., & Adams, M. A. (2017). Short-term effects of biochar and salinity on soil greenhouse gas emissions from a semi-arid Australian soil after re-wetting. *Geoderma*, 307(August), 267–276.
<https://doi.org/10.1016/j.geoderma.2017.07.028>
- Miller, J. (2016). Soil pH affects nutrient availability. *University of Maryland Extension, December*, 1–5.
- Mimura, N. (2013). Sea-level rise caused by climate change and its implications for society. In *Proceedings of the Japan Academy Series B: Physical and Biological Sciences* (Vol. 89, Issue 7, pp. 281–301). Japan Academy. <https://doi.org/10.2183/pjab.89.281>
- Minamikawa, K., Tokida, T., Sudo, S., Padre, A., & Yagi, K. (2015). *Guidelines for Measuring CH₄ and N₂O Emissions from Rice Paddies by a Manually Operated Closed Chamber Method*.
- Minarsih, S., Karyaningsih, S., Samijan, Supriyo, A., Hindarwati, Y., Husna, N., & Winarto, B. (2021a). Effect of ameliorant on growth and yield of rice at tidal paddy field. *Indonesian Journal of Agricultural Science*, 22(2), 85–91.
<https://doi.org/10.21082/IJAS.V22N2.2021.P85-91>
- Minarsih, S., Karyaningsih, S., Samijan, Supriyo, A., Hindarwati, Y., Husna, N., & Winarto, B. (2021b). Effect of Ameliorant on Growth and Yield of Rice At Tidal Paddy Field. *Indonesian Journal of Agricultural Science*, 22(2), 85–91.
<https://doi.org/10.21082/IJAS.V22N2.2021.P85-91>
- Mokrani, S., Nabti, E. H., & Cruz, C. (2020). Current advances in plant growth promoting bacteria alleviating salt stress for sustainable agriculture. *Applied Sciences (Switzerland)*, 10(20), 1–27. <https://doi.org/10.3390/app10207025>
- Mondal, M. M. ., Puteh, A. B., & Razzaque, A. H. . (2015). Salinity Stress Effect on Ion Uptake and Yield Attributes in Rice. *Glob. J. Plant Ecophysiology*, 5(1), 1–4.
<http://www.lifesciencesite.comonline>
- Moore, W. S., & Joye, S. B. (2021). Saltwater intrusion and submarine groundwater discharge: acceleration of biogeochemical reactions in changing coastal aquifers. *Frontiers in Earth Science*, 9(April), 1–14. <https://doi.org/10.3389/feart.2021.600710>
- Mulyani, A., Nursyamsi, D., & Syakir, M. (2020). Strategi Pemanfaatan Sumberdaya Lahan untuk Pencapaian Swasembada Beras Berkelanjutan. *Jurnal Sumberdaya Lahan*, 11(1), 11.
<https://doi.org/10.21082/jsdl.v11n1.2017.11-22>
- Munns, R., & Tester, M. (2008). Mechanisms of salinity tolerance. *Annual Review of Plant Biology*, 59, 651–681. <https://doi.org/10.1146/annurev.arplant.59.032607.092911>



- Nakamura, C., Takenaka, S., Nitta, M., Yamamoto, M., Kawazoe, T., Ono, S., Takenaka, M., Inoue, K., & Kawai, S. (2021). High sensitivity of roots to salt stress as revealed by novel tip bioassay in wheat seedlings. *Biotechnology and Biotechnological Equipment*, 35(1), 246–254. <https://doi.org/10.1080/13102818.2020.1852890>
- Narjary, B., Sheoran, P., Jat, H. S., Joshi, P. K., Chinchmalatpure, A. R., & Yadav, G. (2018). *Effect of Rice straw compost and mineral fertilizers on yield and nutrient*. 9(1), 10–16.
- Nemer, N., El Beyrouthy, M., Lahoud, C., Mnif, W., Bashour, I., & Kawar, N. (2014). Microbial and physico-chemical changes in tomato juice subjected to pulsed electric field treatment. *African Journal of Agricultural Research*, 6(30), 6348–6353. <https://doi.org/10.5897/A>
- Nguyen, B. T., Trinh, N. N., & Bach, Q. V. (2020). Methane emissions and associated microbial activities from paddy salt-affected soil as influenced by biochar and cow manure addition. *Applied Soil Ecology*, 152(July 2019), 103531. <https://doi.org/10.1016/j.apsoil.2020.103531>
- Niamat, B., Naveed, M., Ahmad, Z., Yaseen, M., Ditta, A., Mustafa, A., Rafique, M., Bibi, R., Sun, N., & Xu, M. (2019). Calcium-enriched animal manure alleviates the adverse effects of salt stress on growth, physiology and nutrients homeostasis of zea mays L. *Plants*, 8(11), 1–17. <https://doi.org/10.3390/plants8110480>
- Nur, A. A., Soegianto, A., Sugiharto, A. N., & Nafisah, N. (2024). Evaluasi toleransi salinitas beberapa genotipe padi (*Oryza sativa* L) menggunakan nilai indeks. *Agro Bali: Agricultural Journal*, 7(1), 179–193. <https://doi.org/10.37637/ab.v7i1.1499>
- Olsson, L., Ye, S., Yu, X., Wei, M., Krauss, K. W., & Brix, H. (2015). Factors influencing CO₂ and CH₄ emissions from coastal wetlands in the Liaohe Delta, Northeast China. *Biogeosciences*, 12(16), 4965–4977. <https://doi.org/10.5194/bg-12-4965-2015>
- Omisun, T., Sahoo, S., Saha, B., & Panda, S. K. (2018). Relative salinity tolerance of rice cultivars native to North East India: a physiological, biochemical and molecular perspective. *Protoplasma*, 255(1), 193–202. <https://doi.org/10.1007/s00709-017-1142-8>
- Othaman, N. N. C., Isa, M. N., Ismail, R. C., & Ahmad, M. I. (2020). *Factors that affect soil electrical conductivity (EC) based system for smart farming application*. 020055.
- Pandey, A., Mai, V. T., Vu, D. Q., Bui, T. P. L., Mai, T. L. A., Jensen, L. S., & de Neergaard, A. (2014). Organic matter and water management strategies to reduce methane and nitrous oxide emissions from rice paddies in Vietnam. *Agriculture, Ecosystems and Environment*, 196, 137–146. <https://doi.org/10.1016/j.agee.2014.06.010>
- Parkash, V., & Singh, S. (2020). Potential of biochar application to mitigate salinity stress in eggplant. *HortScience*, 55(12), 1946–1955. <https://doi.org/10.21273/HORTSCI15398-20>



- Phan, L. T. H., & Kamoshita, A. (2020). Salinity intrusion reduces grain yield in coastal paddy fields: case study in two estuaries in the Red River Delta, Vietnam. *Paddy and Water Environment*, 18(2), 399–416. <https://doi.org/10.1007/s10333-020-00790-y>
- Phuong, N. T. K., Khoi, C. M., Ritz, K., Linh, T. B., Minh, D. D., Duc, T. A., Sinh, N. Van, Linh, T. T., & Toyota, K. (2020). Influence of rice husk biochar and compost amendments on salt contents and hydraulic properties of soil and rice yield in salt-affected fields. *Agronomy*, 10(8). <https://doi.org/10.3390/agronomy10081101>
- Ponce, K. S., Guo, L., Leng, Y., Meng, L., & Ye, G. (2021). *Advances in sensing , response and regulation mechanism of salt tolerance in rice*.
- Pranata, M., & Kurniasih, B. (2019). *Pengaruh pemberian pupuk kompos jerami padi terhadap pertumbuhan dan hasil padi (Oryza sativa L.) pada kondisi salin* (Vol. 8, Issue 2).
- Prasertsuk, S., & Wijitkosum, S. (2020). Biochar Application for Rice Cultivation in Salt-Affected Soils. *Research Square*, 105, 1–17. <https://doi.org/10.21203/rs.3.rs-81012/v1>
- Prisco, J. T., Gomes-Filho, E., & Miranda, R. S. (2016). Physiology and biochemistry of plants growing under salt stress. *Manejo Da Salinidade Na Agricultura: Estudos Básicos e Aplicados, December 2016*, 163–180.
- Puvanitha, S., & Mahendran, S. (2017). Effect of salinity on plant height, shoot and root dry weight of selected rice cultivars. *Scholars Journal of Agriculture and Veterinary Sciences*, 4(4), 126–131. <https://doi.org/10.36347/sjavs.2017.v04i04.001>
- Qin, H., Li, Y., & Huang, R. (2020). Advances and challenges in the breeding of salt-tolerant. *International Journal of Molecular Sciences*, 21(8385), 1–15. <https://doi.org/doi:10.3390/ijms21218385>
- Rad, H. E., Aref, F., & Rezaei, M. (2012). Rice growth and yield components respond to changes in water salinity stress. *World Applied Sciences Journal*, 20(7), 997–1007. <https://doi.org/10.5829/idosi.wasj.2012.20.07.157>
- Radanielson, A. M., Angeles, O., Li, T., Ismail, A. M., & Gaydon, D. S. (2018). Describing the physiological responses of different rice genotypes to salt stress using sigmoid and piecewise linear functions. *Field Crops Research*, 220, 46–56. <https://doi.org/10.1016/j.fcr.2017.05.001>
- Rahman, A., Nahar, K., Hasanuzzaman, M., & Fujita, M. (2016). Calcium supplementation improves Na⁺/K⁺ ratio, antioxidant defense and glyoxalase systems in salt-stressed rice seedlings. *Frontiers in Plant Science*, 7(MAY2016), 1–16. <https://doi.org/10.3389/fpls.2016.00609>
- Rajendran, S., Park, H., Kim, J., Park, S. J., Shin, D., Lee, J. H., Song, Y. H., Paek, N. C., & Kim,

- C. M. (2024). Methane emission from rice fields: necessity for molecular approach for mitigation. *Rice Science*, 31(2), 159–178. <https://doi.org/10.1016/j.rsci.2023.10.003>
- Razzaq, A., Ali, A., Safdar, L. Bin, Zafar, M. M., Rui, Y., Shakeel, A., Shaukat, A., Ashraf, M., Gong, W., & Yuan, Y. (2020). Salt stress induces physiochemical alterations in rice grain composition and quality. In *Journal of Food Science* (Vol. 85, Issue 1, pp. 14–20). Blackwell Publishing Inc. <https://doi.org/10.1111/1750-3841.14983>
- Rezaie, N., Razzaghi, F., & Sepaskhah, A. R. (2019). Different Levels of Irrigation Water Salinity and Biochar Influence on Faba Bean Yield, Water Productivity, and Ions Uptake. *Communications in Soil Science and Plant Analysis*, 50(5), 611–626. <https://doi.org/10.1080/00103624.2019.1574809>
- Robin, A. H. K., Matthew, C., Uddin, M. J., & Bayazid, K. N. (2016). Salinity-induced reduction in root surface area and changes in major root and shoot traits at the phytomer level in wheat. *Journal of Experimental Botany*, 67(12), 3719–3729. <https://doi.org/10.1093/jxb/erw064>
- Robins, L., Crimp, S., Monica van Wensveen, R. G. A., R. Michael Bourke, James Butler, Michaela Cosijn, F. D., Aparna Lal, John F. McCarthy, Andrew McWilliam, A. S. M. P., & Nicholas Thomson, P. W. and M. W. (2020). *COVID-19 and foodsystems in the Indo-Pacific: an assessment of vulnerabilities, impacts and opportunities for action* (Issue 29).
- Romano-Armada, N., Yañez-yazlle, M. F., Irazusta, V. P., Rajal, V. B., & Moraga, N. B. (2020). Potential of bioremediation and PGP traits in streptomyces as strategies for bio-reclamation of salt-affected soils for agriculture. *Pathogens*, 9(2). <https://doi.org/10.3390/pathogens9020117>
- Rumanti, I. A., Hairmansis, A., Nugraha, Y., Nafisah, Susanto, U., Wardana, P., Subandiono, R. E., Zaini, Z., Sembiring, H., Khan, N. I., Singh, R. K., Johnson, D. E., Stuart, A. M., & Kato, Y. (2018). Development of tolerant rice varieties for stress-prone ecosystems in the coastal deltas of Indonesia. *Field Crops Research*, 223, 75–82. <https://doi.org/10.1016/j.fcr.2018.04.006>
- Rumanti, I. A., Sitaresmi, T., & Nugraha, Y. (2020). Rice tolerance variation to long-term stagnant flooding and germination ability under an-aerobic environment. *IOP Conference Series: Earth and Environmental Science*, 423(1). <https://doi.org/10.1088/1755-1315/423/1/012048>
- Saifullah, Dahlawi, S., Naeem, A., Rengel, Z., & Naidu, R. (2018). Biochar application for the remediation of salt-affected soils: Challenges and opportunities. *Science of the Total Environment*, 625, 320–335. <https://doi.org/10.1016/j.scitotenv.2017.12.257>



- Saini, S., Kaur, N., & Pati, P. K. (2018). Reactive oxygen species dynamics in roots of salt sensitive and salt tolerant cultivars of rice. *Analytical Biochemistry*, 550(February), 99–108. <https://doi.org/10.1016/j.ab.2018.04.019>
- Sao, S., Praise, S., & Watanabe, T. (2023). Effect of flood duration on water extractable dissolved organic matter in flood plain soils: A laboratory investigation. *Geoderma*, 432(February), 116392. <https://doi.org/10.1016/j.geoderma.2023.116392>
- Schneider, P., & Asch, F. (2020). Rice production and food security in Asian Mega deltas—a review on characteristics, vulnerabilities and agricultural adaptation options to cope with climate change. *Journal of Agronomy and Crop Science*, 206(4), 491–503. <https://doi.org/10.1111/jac.12415>
- Seifikalhor, M., Aliniaiefard, S., Shomali, A., Azad, N., Hassani, B., Lastochkina, O., & Li, T. (2019). Calcium signaling and salt tolerance are diversely entwined in plants. *Plant Signaling and Behavior*, 14(11). <https://doi.org/10.1080/15592324.2019.1665455>
- Sembiring, H., Subekti, N. A., Erythrina, Nugraha, D., Priatmojo, B., & Stuart, A. M. (2020). Yield gap management under seawater intrusion areas of Indonesia to improve rice productivity and resilience to climate change. *Agriculture (Switzerland)*, 10(1), 1–14. <https://doi.org/10.3390/agriculture10010001>
- Sen, T. T. H., Nhi, T. P., & Shen, T. T. (2017). Salinity effect at seedling and flowering stages of some rice lines and varieties (*Oryza sativa* L.). *Journal of Agricultural Science and Technology A*, 7(10), 32–39. <https://doi.org/10.17265/2161-6256/2017.10.005s>
- Sharma, P., Jha, A. B., Dubey, R. S., & Pessarakli, M. (2012). Reactive oxygen species, oxidative damage, and antioxidative defense mechanism in plants under stressful conditions. *Journal of Botany*, 2012, 1–26. <https://doi.org/10.1155/2012/217037>
- Sheng, R. T. C., Huang, Y. H., Chan, P. C., Bhat, S. A., Wu, Y. C., & Huang, N. F. (2022). Rice growth stage classification via RF-based machine learning and image processing. *Agriculture (Switzerland)*, 12(12), 1–23. <https://doi.org/10.3390/agriculture12122137>
- Sheoran, P., Basak, N., Kumar, A., Yadav, R. K., Singh, R., Sharma, R., Kumar, S., Singh, R. K., & Sharma, P. C. (2021). Ameliorants and salt tolerant varieties improve rice-wheat production in soils undergoing sodification with alkali water irrigation in Indo-Gangetic Plains of India. *Agricultural Water Management*, 243(August 2020), 106492. <https://doi.org/10.1016/j.agwat.2020.106492>
- Singh, Y. P., Mishra, V. K., Singh, S., Sharma, D. K., Singh, D., Singh, U. S., Singh, R. K., Haefele, S. M., & Ismail, A. M. (2016). Productivity of sodic soils can be enhanced through the use of salt tolerant rice varieties and proper agronomic practices. *Field Crops Research*, 190,

82–90. <https://doi.org/10.1016/j.fcr.2016.02.007>

- Singh Yadav, S. P., Bhandari, S., Bhatta, D., Poudel, A., Bhattarai, S., Yadav, P., Ghimire, N., Paudel, P., Paudel, P., Shrestha, J., & Oli, B. (2023). Biochar application: a sustainable approach to improve soil health. *Journal of Agriculture and Food Research*, 11(December 2022), 100498. <https://doi.org/10.1016/j.jafr.2023.100498>
- Solis, C. A., Yong, M. T., Vinarao, R., Jena, K., Holford, P., Shabala, L., Zhou, M., Shabala, S., & Chen, Z. H. (2020). Back to the wild: on a quest for donors toward salinity tolerant rice. *Frontiers in Plant Science*, 11(March), 1–14. <https://doi.org/10.3389/fpls.2020.00323>
- Son, J. K., Shin, W. T., Lee, S. H., Ryu, J. H., & Cho, J. Y. (2017). Reclamation of a coastal reclaimed tidal land soil by gypsum and rice straw. *Archives of Agronomy and Soil Science*, 63(6), 761–770. <https://doi.org/10.1080/03650340.2016.1241393>
- Sripinyowanich, S., Klomsakul, P., Boonburapong, B., Bangyeekhun, T., Asami, T., Gu, H., Buaboocha, T., & Chadchawan, S. (2013). Exogenous ABA induces salt tolerance in indica rice (*Oryza sativa* L.): The role of OsP5CS1 and OsP5CR gene expression during salt stress. *Environmental and Experimental Botany*, 86, 94–105. <https://doi.org/10.1016/j.envexpbot.2010.01.009>
- Srivastava, A. K., Shankar, A., Chandran, A. K. N., Sharma, M., Jung, K. H., Suprasanna, P., & Pandey, G. K. (2020). Emerging concepts of potassium homeostasis in plants. *Journal of Experimental Botany*, 71(2), 608–619. <https://doi.org/10.1093/jxb/erz458>
- Statistik, B. P. (2024). *Kabupaten Demak dalam angka 2024* (B. K. Demak (ed.)).
- Subekti, N. A., Sembiring, H., Erythrina, Nugraha, D., Priatmojo, B., & Nafisah. (2020). Yield of different rice cultivars at two levels of soil salinity under seawater intrusion in West Java, Indonesia. *Biodiversitas*, 21(1), 14–20. <https://doi.org/10.13057/biodiv/d210103>
- Suhartono, E., Purwanto, & Suripin. (2013). Faktor penyebab intrusi air laut terhadap air tanah pada akuifer dalam di kota Semarang. *Wahana Teknik Sipil*, 18(2), 76–87.
- Sun, M., Zhang, H., Dong, J., Gao, F., Li, X., & Zhang, R. (2018). A comparison of CH₄ emissions from coastal and inland rice paddy soils in China. *Catena*, 170(April 2017), 365–373. <https://doi.org/10.1016/j.catena.2018.06.035>
- Supparattanapan, S., Saenjan, P., Quantin, C., Maeght, J. L., & Grünberger, O. (2009). Salinity and organic amendment effects on methane emission from a rain-fed saline paddy field. *Soil Science and Plant Nutrition*, 55(1), 142–149. <https://doi.org/10.1111/j.1747-0765.2008.00330.x>
- Tabassum, R., Tahjib-Ul-Arif, M., Hasanuzzaman, M., Sohag, A. A. M., Islam, M. S., Shafi, S. M. S. H., Islam, M. M., & Hassan, L. (2021). Screening salt-tolerant rice at the seedling and

- reproductive stages: An effective and reliable approach. *Environmental and Experimental Botany*, 192(June), 104629. <https://doi.org/10.1016/j.envexpbot.2021.104629>
- Takakai, F., Kominami, Y., Ohno, S., & Nagata, O. (2020). Effect of the long-term application of organic matter on soil carbon accumulation and GHG emissions from a rice paddy field in a cool-temperate region, Japan. -I. Comparison of rice straw and rice straw compost - . *Soil Science and Plant Nutrition*, 66(1), 84–95. <https://doi.org/10.1080/00380768.2019.1609335>
- Taolin, R. I. C. O., Impron, I., Hidayati, R., & Budianto, B. (2017). Profil cuaca dan parameter nisbah Bowen di areal persawahan Kabupaten Indramayu saat periode kering musim tanam II. *Savana Cendana*, 2(01), 15–18. <https://doi.org/10.32938/sc.v2i01.80>
- Thamrin, M., Suprihanto, Hasmi, I., Ardhiyanti, S. D., Suhartini, Nugroho, N., Wening, R. H., Pramudyawardani, E. F., Nafisah, Usyati, N., Hikmah, Z. M., Handoko, D. D., & Norvyani, M. (2023). *Deskripsi varietas unggul*.
- Thi Nhung, T., Le Vo, P., Van Nghi, V., & Quoc Bang, H. (2019). Salt intrusion adaptation measures for sustainable agricultural development under climate change effects: A case of Ca Mau Peninsula, Vietnam. *Climate Risk Management*, 23, 88–100. <https://doi.org/10.1016/j.crm.2018.12.002>
- Trihatmoko, E., Wiguna, Husein, S., Sanjoto, B. T., Juhadi, Hariyadi, Widada, S., Josanova, David, M., Mukhlas, A. B., & Taqy, M. (2020). Penelitian pendahuluan (preliminary research) intrusi air laut di Desa Sriwulan, Demak, Indonesia. *Indonesian Journal of Oceanography*, 02(04).
- Trinugroho, M. W., Bhatta, B., & Babur, M. (2020). The seawater intrusion under dam failure in the Cimanuk River Estuary, Indonesia. *Regional Studies in Marine Science*, 36(March), 101267. <https://doi.org/10.1016/j.rsma.2020.101267>
- Tully, K., Gedan, K., Epanchin-Niell, R., Strong, A., Bernhardt, E. S., Bendor, T., Mitchell, M., Kominoski, J., Jordan, T. E., Neubauer, S. C., & Weston, N. B. (2019). The invisible flood: the chemistry, ecology, and social implications of coastal saltwater intrusion. *BioScience*, 69(5), 368–378. <https://doi.org/10.1093/biosci/biz027>
- Vázquez-Glaría, A., Eichler-Löbermann, B., Loiret, F. G., Ortega, E., & Kavka, M. (2021). Root-system architectures of two cuban rice cultivars with salt stress at early development stages. *Plants*, 10(6), 1–19. <https://doi.org/10.3390/plants10061194>
- Wakeel, A. (2013). Potassium-sodium interactions in soil and plant under saline-sodic conditions. *Journal of Plant Nutrition and Soil Science*, 176(3), 344–354. <https://doi.org/10.1002/jpln.201200417>



- Wang, D., Gao, Y., Sun, S., Lu, X., Li, Q., Li, L., Wang, K., & Liu, J. (2022). Effects of salt stress on the antioxidant activity and malondialdehyde, solution protein, proline, and chlorophyll contents of three *Malus* species. *Life*, *12*(11). <https://doi.org/10.3390/life12111929>
- Wang, H., Zheng, C., Ning, S., Cao, C., Li, K., Dang, H., Wu, Y., & Zhang, J. (2023). Impacts of long-term saline water irrigation on soil properties and crop yields under maize-wheat crop rotation. *Agricultural Water Management*, *286*(May), 108383. <https://doi.org/10.1016/j.agwat.2023.108383>
- Wang, S., Luo, S., Zhou, X., Chang, C., Tian, L., Li, X., Yu, H., Gao, Q., & Tian, C. (2019). Soil ameliorants alter physicochemical properties and fungal communities in saline-sodic soils of Northeast China. *Archives of Agronomy and Soil Science*, *65*(8), 1147–1159. <https://doi.org/10.1080/03650340.2018.1555707>
- Wang, X., Ding, J., Han, L., Tan, J., Ge, X., & Nan, Q. (2024). Biochar addition reduces salinity in salt-affected soils with no impact on soil pH: A meta-analysis. *Geoderma*, *443*(May 2023), 116845. <https://doi.org/10.1016/j.geoderma.2024.116845>
- Wati, H. S., Rayhana, E., & Pratikno, B. (2020). Studi intrusi air laut di Tegal - Jawa Tengah menggunakan isotop stabil Oksigen-18 (^{18}O) dan Deuterium (^2H). *Jurnal Ilmiah Aplikasi Isotop Dan Radiasi*, *16*(1), 23–30.
- White, E., & Kaplan, D. (2017). Restore or retreat? saltwater intrusion and water management in coastal wetlands. *Ecosystem Health and Sustainability*, *3*(1), 1–18. <https://doi.org/10.1002/ehs2.1258>
- Wijitkosum, S. (2020). Applying Rice Husk Biochar to Revitalise Saline Sodic Soil in Khorat Plateau Area-A Case Study for Food Security Purposes. In *Biochar Applications in Agriculture and Environment Management* (Issue April, pp. 1–272). <https://doi.org/10.1007/978-3-030-40997-5>
- Win, E. P., Win, K. K., Bellingrath-Kimura, S. D., & Oo, A. Z. (2021). Influence of rice varieties, organic manure and water management on greenhouse gas emissions from paddy rice soils. *PLoS ONE*, *16*(6 June), 1–22. <https://doi.org/10.1371/journal.pone.0253755>
- Wu, S., He, H., Inthapanya, X., Yang, C., Lu, L., Zeng, G., & Han, Z. (2017). Role of biochar on composting of organic wastes and remediation of contaminated soils—a review. *Environmental Science and Pollution Research*, *24*(20), 16560–16577. <https://doi.org/10.1007/s11356-017-9168-1>
- Xu, Y., Bu, W., Xu, Y., Fei, H., Zhu, Y., Ahmad, I., Nimir, N. E. A., Zhou, G., & Zhu, G. (2024). Effects of salt stress on physiological and agronomic traits of rice genotypes with contrasting salt tolerance. *Plants*, *13*(8). <https://doi.org/10.3390/plants13081157>



- Yahya, K. E., Jia, Z., Luo, W., YuanChun, H., & Ame, M. A. (2022). Enhancing salt leaching efficiency of saline-sodic coastal soil by rice straw and gypsum amendments in Jianguo coastal area. *Ain Shams Engineering Journal*, 13(5), 101721. <https://doi.org/10.1016/j.asej.2022.101721>
- Yin, D., Li, H., Wang, H., Guo, X., Wang, Z., Lv, Y., Ding, G., Jin, L., & Lan, Y. (2021). Impact of different biochars on microbial community structure in the rhizospheric soil of rice grown in albic soil. *Molecules*, 26(16). <https://doi.org/10.3390/molecules26164783>
- Yuan, Y., Liu, Q., Zheng, H., Li, M., Liu, Y., Wang, X., Peng, Y., Luo, X., Li, F., Li, X., & Xing, B. (2023). Biochar as a sustainable tool for improving the health of salt-affected soils. *Soil and Environmental Health*, 1(3), 100033. <https://doi.org/10.1016/j.seh.2023.100033>
- Zayed, B. ., Saleem, A. E. azeem K., & Ali, O. A. . (2014). Physiological characteristic of Egyptian salt tolerant rice varieties under different salinity levels. *Life Science Journal*, 1(11(10)), 1364–1372. <https://doi.org/10.7537/marlsj111014.199.Key>
- Zhang, J., Bai, Z., Huang, J., Hussain, S., Zhao, F., Zhu, C., Zhu, L., Cao, X., & Jin, Q. (2019). Biochar alleviated the salt stress of induced saline paddy soil and improved the biochemical characteristics of rice seedlings differing in salt tolerance. *Soil and Tillage Research*, 195(March), 104372. <https://doi.org/10.1016/j.still.2019.104372>
- Zhang, J., & Shen, J. L. (2022). Effects of biochar on soil microbial diversity and community structure in clay soil. *Annals of Microbiology*, 72(1), 1–14. <https://doi.org/10.1186/s13213-022-01689-1>
- Zhang, R., Wang, Y., Hussain, S., Yang, S., Li, R., Liu, S., Chen, Y., Wei, H., Dai, Q., & Hou, H. (2022). Study on the effect of salt stress on yield and grain quality among different rice varieties. *Frontiers in Plant Science*, 13(May), 1–14. <https://doi.org/10.3389/fpls.2022.918460>
- Zhang, X., Zuo, Y., Wang, T., & Han, Q. (2024). *Salinity effects on soil structure and hydraulic properties : implications for pedotransfer functions in coastal areas.*
- Zhang, Y., Fang, J., Wu, X., & Dong, L. (2018). Na + /K + balance and transport regulatory mechanisms in weedy and cultivated rice (*Oryza sativa* L.) under salt stress. *BMC Plant Biology*, 18(1), 1–14. <https://doi.org/10.1186/s12870-018-1586-9>
- Zhang, Y., Wang, W., Yuan, W., Zhang, R., & Xi, X. (2021). Cattle manure application and combined straw mulching enhance maize (*Zea mays* L.) growth and water use for rain-fed cropping system of coastal saline soils. *Agriculture (Switzerland)*, 11(8). <https://doi.org/10.3390/agriculture11080745>
- Zhao, D., Gao, S., Zhang, X., Zhang, Z., Zheng, H., Rong, K., Zhao, W., & Khan, S. A. (2021).



- Impact of saline stress on the uptake of various macro and micronutrients and their associations with plant biomass and root traits in wheat. *Plant, Soil and Environment*, 67(2), 61–70. <https://doi.org/10.17221/467/2020-PSE>
- Zheng, H., Fu, Z., Zhong, J., & Long, W. (2018). Low methane emission in rice cultivars with high radial oxygen loss. *Plant and Soil*, 431(1–2), 119–128. <https://doi.org/10.1007/s11104-018-3747-x>
- Zheng, H., Wang, X., Chen, L., Wang, Z., Xia, Y., Zhang, Y., Wang, H., Luo, X., & Xing, B. (2018). Enhanced growth of halophyte plants in biochar-amended coastal soil: roles of nutrient availability and rhizosphere microbial modulation. *Plant Cell and Environment*, 41(3), 517–532. <https://doi.org/10.1111/pce.12944>
- Zhu, H., Yang, J., Yao, R., Wang, X., Xie, W., Zhu, W., Liu, X., Cao, Y., & Tao, J. (2020). Interactive effects of soil amendments (biochar and gypsum) and salinity on ammonia volatilization in coastal saline soil. *Catena*, 190(71), 104527. <https://doi.org/10.1016/j.catena.2020.104527>