

## PUSTAKA ACUAN

- Ahmed, M., Qadeer, U., Ahmed, Z.I., and Hassan, F. 2016. Improvement of Wheat (*Triticum aestivum*) Drought Tolerance by Seed Priming with Silicon. *Archives of Agronomy and Soil Science*, 62(3): 299-315.
- Akmalia, H.A. 2021. Adaptasi Anatomis Tumbuhan Terhadap Perbedaan Stress Lingkungan. *STIGMA: Jurnal Matematika dan Ilmu Pengetahuan Alam Unipa*, 14(01): 18-27.
- Ali, L.G., Nulit, R., Ibrahim, M.H., and Yien, C.Y.S. 2021. Efficacy of KNO<sub>3</sub>, SiO<sub>2</sub>, and SA Priming for Improving Emergence, Seedling Growth and Antioxidant Enzymes of Rice (*Oryza sativa*), under Drought. *Nature*, 11(3864):1-11.
- Al-Mudaris, M.A. 1998. Notes on Various Parameters Recording the Speed of Seed Germination. *Der Tropenlandwirt*, 99. pp: 147-54.
- Alves, R.C., Nicolau, M.C.M., Checchlo, M.V., Junior, G.S.S., Oliveira, F.A., Prado, R.M., and Gratao, P.L. 2019. Salt Stress Alleviation by Seed Priming with Silicon in Lettuce Seedlings: an Approach based on Enhancing Antioxidant Responses. *Bragantia*, 79(1): 19-29.
- Aslanpour, M., Baneh, H.D., Tehranifar, A., and Shoor, M. 2019. Effect of Water Stress on Growth Traits of Roots and Shoots (Fresh and Dry Weights, and Amount of Water) of the White Seedless Grape). *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, 10(2): 169-181.
- Avila, R.G., Magalhaes, P.C., Silva, E.M., Junior, C.S.G., Lana, U.G.P., Alvarenga, A.A., and Souza, T.C. 2019. Silicon Supplementation Improves Tolerance to Water Deviciency in Sorghum Plants by Increasing Root System Growth and Improving Photosynthesis. *Springer*, 12:2545-2554.
- Bates, L. S., R. P. Waldren and I. D. Teare. 1973. Rapid Determination of Free Proline For Water-Stress Studies. *Plant and Soil*. 39(1): 205-207.
- Bijanzadeh, E., Naderi, R. and Barati, V. 2018. Influence of Silicon Priming on Seedling Growth, Root Xylem Anatomy and Ion Accumulation of Barley (*Hordeum vulgare* L.) under Drought Stress. *Journal of Plant Process and Function*, 7(25): 9-16.
- Biju, S., Fuentes, S., and Gupta, D. 2017. Silicon Improves Seed Germination and Alleviates Drought Stress in Lentil Crops by Regulating Osmolytes, Hydrolytic Enzymes and Antioxidant Defense System. *Plant Physiology and Biochemistry*, 119: 250-264.
- BPS. 2022. Luas Panen dan Produksi Padi di Indonesia 2021. <https://www.bps.go.id/website/images/Luas-Panen-dan-Produksi-Padi-2021--Angka-Tetap--ind.jpg> diakses pada tanggal 5 Oktober 2022.
- Chen, W., Yao, X., Cai, K. and Chen, J. 2011. Silicon Alleviates Drought Stress of Rice Plants by Improving Plant Water Status, Photosynthesis and Mineral Nutrient Absorption. *Biological Trace Element Research*, 142(1): 67-76.
- Coskun, D. Britto, D.T., Huynh, W.Q., and Kronzucker, H.J. 2016. The Role of Silicon in Higher Plants under Salinity and Drought Stress. *Frontiers in Plant Science*, 7: 1-7.
- Dama, H., Aisyah, S.I. and Dewi, A.K. 2020. Respon Kerapatan Stomata dan Kandungan Klorofil Padi (*Oryza sativa* L.) Mutan terhadap Toleransi Kekeringan. *Jurnal Ilmiah Aplikasi Isotop dan Radiasi*, 16:1-6.
- Dar, M.H., Waza, S.A., Shukla, S., Zaidi, N.W., Nayak, S., Hossain, M., Kumar, A., Ismail, A.M., and Singh, U.S. 2020. Drought Tolerant Rice for Ensuring Food Security in Eastern India. *MDPI*, 12(2214): 1-17.

- Dien, D.C., Yamakawa, T., Mochizuki, T., and Htwe, A.Z. 2017. Dry Weight Accumulation, Root Plasticity, and Stomatal Conductance in Rice (*Oryza sativa* L.) Varieties under Drought Stress and Re-Watering Conditions. *American Journal of Plant Sciences*, 8: 3189-3206.
- Ebeed, H.T., Hassan, N.M. and Ahmed, H.S. 2023. Silicon-Mediated Improvement of Drought Tolerance in Two Wheat Genotypes. *Egyptian Journal of Botany*, 63(2): 563-580.
- Emam, M.M. Khattab, H.E., Helal, N.M., and Deraz, A.E. 2014. Effect of Selenium and Silicon on Yield Quality of Rice Plant Grown under Drought Stress. *Australian Journal of Crop Science*, 8(4): 596-605
- Farman, M., Nawaz, F., Majeed, S., Javeed, H.M.R., Ahsan, M., Ahmad, K.S., Aurangzaib, M., Bukhari, M.A., Shehzad, M.A., and Hussain, M.B. 2021 . Silicon Seed Priming Combined with Foliar Spray of Sulfur Regulates Photosynthetic and Antioxidant Systems to Confer Drought Tolerance in Maize (*Zea mays* L.). *Springer*, 14: 7901-7917.
- Fleck, A.T., Nye, T., Repenning, C., Stahl, F., Zahn, M., and Schenk, M.K. 2011 . Silicon Enhances Suberization and Lignification in Roots of Rice (*Oryza sativa*). *Journal of Experimental Botany*, 62(6): 2001-2011.
- Finch-Savage, W.E., and Bassel, G.W. 2016. Seed Vigour and Crop Establishment: Extending Performance Beyond Adaptation. *Journal of Experimental Botany*, 67(3): 567-591.
- Frew, A., Weston, L.A., Reynolds, O.L., and Gurr, G.M. 2018. The Role of Silicon in Plant Biology: A Paradigm Shift in Research Approach. *Annals of Botany*, 121: 1265-1273.
- Ghouri, F., Ali, Z., Naeem, M., Ul-Allah, S., Babar, M., Baloch, F.S., Chattah, W.S., and Shahid, M.Q. 2022. Effects of Silicon and Selenium in Alleviation of Drought Stress in Rice. *Silicon*, 14(10): 5453–5461.
- Hakim, M.S., Dewanti, P., Hartatik, S., Slameto, dan Handoyo, T. 2020. Efek Pemberian Potassium terhadap *Recovery* Tanaman Padi (*Oryza sativa* L.) setelah Cekaman Kekeringan. *Jurnal Ilmu Dasar*, 21(2): 115-122.
- Harborne, J.B. 1987. *Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis*. Second Ed. Springer Science & Business Media. New York. pp. 217.
- Haryanti, S. 2010. Jumlah dan Distribusi Stomata pada Daun Beberapa Spesies Tanaman Dikotil dan Monokotil. *Buletin Anatomi dan Fisiologi*, 18 (2): 21-28.
- Hameed, A., Farooq, T., Hameed, A., and Sheikh, M.A. 2021. Silicon-Mediated Priming Induces Acclimation to Mild Water-Deficit Stress by Altering Physio-Biochemical Attributes in Wheat Plants. *Frontier*, 12(625541): 1- 13.
- Hazman, M. and Brown, K.M. 2018. Progressive Drought Alters Architectural and Anatomical Traits of Rice Roots. *Springer*, 11(1): 1-16.
- Hernandez-Apaolaza, L. 2022. Priming with Silicon: A Review of a Promising Tool to Improve Micronutrient Deficiency Symptoms. *Frontier Plant Science*, 13(840770): 1-12.
- Kader, M.A. 2005. A Comparison of Seed Germination Calculation Formulae and the Associated Interpretation of Resulting Data. *Journal & Proceedings of The Royal Society of New South Wales*, 138: 65-75.
- Keyvan, S. 2010. The Effects of Drought Stress on Yield, Relative Water Content, Proline, Soluble Carbohydrates and Chlorophyll of Bread Wheat Cultivars. *Journal of Animal & Plant Sciences*, 8(3): 1051-1060.
- Kim, Y. Chung, Y.S., Lee, E., Tripathi, P., Heo, S., and Kim, K. 2020. Root Response to Drought Stress in Rice (*Oryza sativa* L.). *International Journal of Molecular*

*Sciences*, 21(4): 1-22.

- Koentjoro, Y., Sukendah, Purwanto, E., and Purnomo, D.2020. Stomatal Behaviour of Soybean under Drought Stress with Silicon Application. *Annals of Agri-Bio Research*, 25(1): 103-109.
- Kusumardani, H.D., Yuwono, T., and Rachmawati, D.2022. Growth and Physiological Attributes of Rice by the Inoculation of Osmotolerant Rhizobacteria (*Enterobacter flavescens*) under Drought Condition. *Journal of Tropical Biodiversity and Biotechnology*, 7(2): 1-16.
- Kuswanto, H., Puspa, A.W., Ahmad, I.S., and Hibatullah, F.2021. Drought Analysis in East Nusa Tenggara (Indonesia) Using Regional Frequency Analysis. *Hindawi*, 2021: 1-10.
- Latifa, A. dan Rachmawati, D. 2020. Pengaruh Osmopriming Benih terhadap Pertumbuhan dan dan Morfofisiologi Tanaman Kangkung Darat (*Ipomoea reptans* Poir) pada Cekaman Kekeringan. *Jurnal Agronomi Indonesia*, 48(2): 165-172.
- Li, R., Sun, Y., Wang, H., and Wang, H. 2022 . Advances in Understanding Silicon Transporters and the Benefits to Silicon-Associated Disease Resistance in Plants. *Applied Sciences*, 12(7): 1-16.
- Mackill, D.J., and Khush, G..S.2018. IR64: a High-quality and High-yielding Mega Variety. *Springer*, 11(18):1-11.
- Maisura, Chozin, M.A., Lubis, I., Junaedi, A., and Ehara, H.2014. Some Physiological Character Responses of Rice under Drought Conditions in a Paddy System. *Journal of ISSAAS*, 20(1): 104-114.
- Makarim, A.K., dan Suhartatik, E. 2009. *Morfologi dan Fisiologi Tanaman Padi*. Balai Besar Penelitian Tanaman Padi, Subang. Hal 296.
- Mangena, P.2021. Analysis of Correlation between Seed Vigour, Germination and Multiple Shoot Reduction in Soybean (*Glycine max* L. Merr.). *Heliyon*, 7(9):1-8.
- Miftahudin, Putri, R.E., and Tatik, C. 2020 . Vegetatif Morphophysiological Responses of Four Rice Cultivars to Drought Stress. *BIODIVERSITAS*, 21(8): 3727-3734.
- Mostajeran, A., and Rahimi-Eichi, V. 2008. Drought Stress Effects on Root Anatomical Characteristics of Rice Cultivars (*Oryza sativa* L.). *Pakistan Journal of Biological Sciences*, 11(18): 2173-2183.
- Mullan, D. and Pietragalla, J. 2011. Leaf Relative Water Content, in A.Pask, J. Pietragalla, D. Mullan and M. Reynolds (eds). *Physiological Breeding II: A Field Guide to Wheat Phenotyping*. CIMMYT. Mexico, pp. 25-26.
- Melandri, G. AbdElgawad, H., Flokova, K., Jamar, D.C., Asard, H., Beemster, G.T.S., Ruyter-Spira, C., and Bouwmeester, H.J. 2021. Drought Tolerance in Selected Aerobic and Upland Rice Varieties is Driven by Different Metabolic and Antioxidative Responses. *Planta*, 254 (1): 1-16.
- Norman, P.E., Danquah, A., Asfaw, A., Tongoona, P.B., Danquah, E.Y., and Asiedu, R. 2021. Seed Viability, Seedling Growth and Yield in White Guinea Yam. *Agronomy*, 11(2): 1-10.
- Nurmalasari, I.R. 2018. Kandungan Asam Amino Prolin Dua Varietas Tanaman Padi Hitam pada Kondisi Cekaman Kekeringan. *Gontor Agrotech Science Journal*, 4(1): 29-43.
- Oktaviani, F., Sari, I.N., Handoyo, T., Siswoyo, T.A., dan Ubaidillah, M. 2021. Pengaruh Cekaman Kekeringan terhadap Ekspresi Gen Ketahanan *OSCAT* dan *OSAPX1* pada Padi Toleran Kekeringan. *Jurnal Bioteknologi dan Biosains Indonesia*, 8(2): 276-285.
- Ouji, A., El-Bok, S., Mouelhi, M., Younes, M.B., and Kharrat, M. 2015. 'Effect of Salinity Stress on Germination of Five Tunisian Lentil (*Lens culinaris* L.) Genotypes.

- European Scientific Journal*, 11(21): 63-75.
- Ouyang, W., Yin, X., Yang, J., and Struik, P.C. 2020. Do Shoot Anatomical Characteristics Allow Rice to Grow Well under Water Deficit?. *Journal of Agronomy and Crop Science*: 1-14.
- Panda, D., Mishra, S.S. and Behera, P.K. 2021. Drought Tolerance in Rice: Focus on Recent Mechanisms and Approaches. *Rice Science*, 28(2): 119–132.
- Pang, Z., Tayyab, M., Islam, W., Tarin, M.W.K., Sarfaraz, R., Naveed, H., Zaman, S., Zhang, B., Yuan, Z., and Zhang, H. 2019. Silicon Mediated Improvement in Tolerance of Economically Important Crops Under Drought Stress. *Applied Ecology and Environmental Research*, 17(3): 6151-6170.
- Pitaloka, M.K., Caine, R.S., Hepworth, C., Harrison, E.L., Sloan, J., Chutteang, C., Punthong, C., Nongngok, R., Toojinda, T., Ruengphayak, S., Arikrit, S., Gray, J.E., and Vanavichit, A. 2022. Induced Genetic Variations in Stomatal Density and Size Strongly Affects Water Use Efficiency and Responses to Drought Stresses. *Frontiers in Plant Science*, 13: 1-12.
- Parveen, A., Liu, W., Hussain, S., Asghar, J., Perveen, S., and Xiong, Y. 2019. Silicon Priming Regulates Morpho-Physiological Growth and Oxidative Metabolism in Maize under Drought Stress. *MDPI*, 8(431): 1-14.
- Pena-Guerrero, M.D., Nauditt, A., Munoz-Robles, C., Ribbe, L., and Meza, F. 2020. Drought Impacts on Water Quality and Potential Implications for Agricultural Production in the Maipo River Basin. *Hydrological Sciences Journal*, 65(6): 1005-1021.
- Quintana, Y.G., Crespo, Y.A., Decker, M.D., and Castelo, M.C. 2023. Seed Viability, Germination and Seedling Quality Patterns of Three Forest Species for Restoration in Amazonian Conditions. *Enfoque UTE*, 14(1): 18-32.
- Rebouillat, J., Dievart, A., Verdeil, J.L., Escoute, J., Giese, G., Breitler, J.C., Gantet, P., Espeout, S., Guiderdoni, G., Perin, C. 2009. Molecular Genetics of Rice Root Development. *Springer*, 2(1): 15–34.
- Rembang, J.H.W., Rauf, A.W., dan Sondakh, J.O.M. 2018. Karakter Morfologi Padi Sawah Lokal di Lahan Petani Sulawesi Utara. *Buletin Plasma Nutfah*, 24(1): 1-8.
- Rosawanti, P., Ghulamahdi, M. and Khumaida, N. 2015. Respon Anatomi dan Fisiologi Akar Kedelai terhadap Cekaman Kekeringan. *Jurnal Agronomi Indonesia*, 43(3): 186-192.
- Salsinha, Y.C.F., Indradewa, D., Purwestri, Y.A., Rachmawati, D. 2020. Selection of Drought-Tolerant Rice Cultivars from East Nusa Tenggara, Indonesia during Vegetative Stage. *BIODIVERSITAS*, 21( 1): 170-178.
- Seleiman, M.F., Al-Suhaibani, N., Ali, N., Akmal, M., Alotaibi, M., Refay, Y., Dindaroglu, T., Abdul-Wajid, H.H., and Battaglia, M.L. 2021. Drought Stress Impacts on Plants and Different Approaches to Alleviate Its Adverse Effects. *Plants*, 10(2): 1-25.
- Shanthi, N., Al-Huqail, A.A., Perveen, K., Vaidya, G., Bhaskar, K., Khan, F., and Alfagham, A.T. 2023. Drought Stress Alleviation through Nutrient Management in *Cyamopsis tetragonoloba* L. *Journal of King Saud University - Science*, 35(7): 1-9.
- Seal, P., Das, P., and Biswas, A.K. 2018. Versatile Potentiality of Silicon Mitigation of Biotic and Abiotik Stresses in Plants: A Review. *American Journal of Plant Sciences*, 9: 1433-1454.
- Setyaningsih, T. 2015. Respon Fisiologis dan Anatomis Padi (*Oryza sativa* L.) 'Cempo Merah' terhadap Pemberian Kalsium Silikat pada Ketersediaan Air Berbeda. *Master Thesis*. Universitas Gadjah Mada, Yogyakarta.

- Siangliw, J.L., Thunnom, B., Natividad, M.A., Quintana, M.R., Chebotarov, D., McNally, K.L., Lynch, J.P., Brown, K.M., and Henry, A. 2022. Response of Southeast Asian Rice Root Architecture and Anatomy Phenotypes to Drought Stress. *Frontiers in Plant Science*, 13: 1-18.
- Sirisuntorlak, N., Ullah, H., Sonjaroon, W., Arirob, W., Anusontpornperm, S., and Datta, A. 2021. Effect of Seed Priming with Silicon on Growth, Yield, and Nutrient Uptake of Maize Under Water-Deficit Stress. *Journal of Plant Nutrition*, 44(13): 1869-1885.
- Subantoro, R., Wahyuningsih, S., dan Prabowo, R. 2008. Pemuliaan Tanaman Padi (*Oryza sativa* L.) Varietas Lokal Menjadi Varietas Lokal yang Unggul. *MEDIAGRO*, 4(2): 62-74.
- Suhaimi S. 2017. Pengaruh Kadar Timbal (Pb) terhadap Kerapatan Stomata dan Kandungan Klorofil pada Glodokan (*Polyalthia Longifolia* Sonn) sebagai Peneduh Kota Di Langsa. *Journal of Islamic Science and Technology*, 3 (1): 1-16.
- Sujinah, S., dan Jamil, A. 2016. Mekanisme Respon Tanaman Padi terhadap Cekaman Kekeringan dan Varietas Toleran. *Iptek Tanaman Pangan*, 11(1): 1-8.
- Sukkaew, E., Amkha, S., Inboonchoy, T., and Mala, T. 2016. Utilization of Silicon Fertilizer Application on Pepper Seedling Production. *Modern Applied Science*, 10(11): 264-272.
- Sutikno. 2018. *Practical Guidience: Plant Microtechnics (BIO 30603)*. Faculty of Biology-Universitas Gadjah Mada. Yogyakarta.
- Swapna, S., and K.S. Shylaraj. 2017. Screening for Osmotik Stress Responses in Rice Varieties under Drought Condition. *Rice Science* 24(5) : 253-263.
- Ullah, H. Luc, P.D., Gautam, A., and Datta, A. 2018. Growth, Yield and Silicon Uptake of Rice (*Oryza sativa*) as Influenced by Dose and Timing of Silicon Application under Water-Deficit Stress. *Archives of Agronomy and Soil Science*, 64(3): 318–330.
- Vijay, D., and Roy, B. 2013. Rice( *Oryza sativa* L.) in Bidhan, R., Basu, A.K., and Mandal. A.B. *Breeding Biotechnology and Seed Production of Field Crops*. New India Publishing Agency, India.pp.71.
- Wiranto, A.S.P., Ningtyas, N.S., Rachmawati, R.D., Rahmatullah, R., and Sukirno, S. 2022. Diversity of Insect Based on Growth Stages of Rice (*Oryza sativa* L. ‘IR 64’) at High Altitude in Kepurun Village, Manisrenggo Sub-district, Klaten District, Central Java. *Advances in Biological Science Research*, 22: 102-110.
- Wang, M. , Wang, R., Mur, L.A.J., Ruan, J., Shen, Q., and Guo, S. 2021. Functions of Silicon in Plant Drought Stress Responses. *Horticulture Research*, 8(1) 1-13.
- Yuanasari, B.S., Kendarini, N., dan Saptadi, D. 2015 Peningkatan Viabilitas Benih Kedelai Hitam (*Glycine max* L. Merr) melalui Invigorasi Conditioning. *Jurnal Produksi Tanaman*, 3(6): 518-527.
- Zagoto, A.D.P., and Violita, V. 2019. Leaf Anatomical Modification in Drought of Rice Varieties (*Oryza sativa* L.). *EKSAKTA*, 20(2): 42-52.