UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Abdullah, B., S. Tjokrowidjojo., dan Sularjo. 2008. Perkembangan dan Prospek Perakitan Padi Tipe Baru di Indonesia. Jurnal Litbang Pertanian. 27(1): 1-9.

Ammara, H., Zulfiqar, A., Saleem, A., Sardar, R., Zulfiqar, U., Raza, M. A. S., ... & Alqahtani, M. D. 2026. Zinc-regulated growth, chlorophyll, and antioxidant activity drive biofortification in rice varieties. BioMetals, 39(1): 375-388.

Amist, N., Khare, S., Azim, Z., & Singh, N. B. 2025. Mechanisms of zinc in the soil-plant interphase: role and regulation. In *Zinc in Plants* (pp. 41-58). Academic Press.

Ariyanti, S. D., Nabila, U., & Rahmawati, L. 2024. Pemenuhan Kebutuhan Produksi Beras Nasional Dalam Meningkatkan Kesejahteraan Masyarakat Menurut Perspektif Ekonomi Islam. Maro: Jurnal Ekonomi Syariah dan Bisnis, 7(1): 82-93.

Alloway, B. J. 2008. Zinc in soils and crop nutrition. International Zinc Association and International Fertilizer Industry Association. Brussels and Paris.

Balakrishnan, K., Gepalakrishnan, S., & Natarajaratnam, N. 1985. Influence of zinc on growth, dry matter production, nutrient uptake and yield in certain rice varieties. Madras Agricultural Journal. 72(1): 25–30.

Broadley, M. R., White, P. J., Hammond, J. P., Zelko, I., & Lux, A. 2007. Zinc in plants. New phytologist. 173(4): 677-702.

Chen, J., Zhu, X., Xie, J., Deng, G., Tu, T., Guan, X., ... & Peng, C. 2021. Reducing nitrogen application with dense planting increases nitrogen use efficiency by maintaining root growth in a double-rice cropping system. The Crop Journal. 9(4): 805-815.

Dobermann, A. 2000. Rice: Nutrient disorders & nutrient management. Int. Rice Res. Singapore.

Defsro, J. M., Ginting, C., & Wirianata, H. 2024. Pengaruh dosis unsur N dan waktu panen pada hasil dan kualitas tanaman selada. Jurnal Online Mahasiswa (JOM). 2(3): 1082–1088.

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Fageria, N. K., & Baligar, V. C. 2005. Nutrient availability and response of rice cultivars to nutrients application on lowland soil. Journal of Plant Nutrition. 28(8): 1303-1316.

Fageria, N. K., Carvalho, M. C. S., & Dos Santos, F. C. 2014. Root growth of upland rice genotypes as influenced by nitrogen fertilization. Journal of plant nutrition. 37(1): 95-106.

Fageria, N. K., Santos, A. D., & Cutrim, V. D. A. 2008. Dry matter and yield of lowland rice genotypes as influence by nitrogen fertilization. Journal of Plant Nutrition. 31(4): 788-795.

Fan, J.-B., Zhang, Y.-L., Turner, D., Duan, Y.-H., Wang, D.-S., & Shen, Q.-R. 2010. Root physiological and morphological characteristics of two rice cultivars with different nitrogen-use efficiency. Pedosphere. 20(4): 446–455.

Farid, I. M., El-Shinawy, R., Elhussiny, O., Abbas, H., Abbas, M. H., & Bassouny, M. A. 2023. Phosphorus and Micronutrient Interactions in soil and their Impacts on Maize Growth. Egyptian Journal of Soil Science, 63(3): 405-416.

Ganti, N. W. S. L. S., Ginting, S., & Leomo, S. 2023. Pengaruh pemberian pupuk organik terhadap sifat kimia tanah masam dan hasil tanaman jagung (*Zea mays* L.). Berkala Penelitian Agronomi, 11(1): 24-34.

Hafeez, R., T. Aziz, M. Farooq, A. Wakeel, Z. Rengel. 2012. Zinc Nutrition In Rice Production Systems: A Review. J. Plant Soil. 361: 203-226.

Hasyyati, N. A., Nurmi, N., & Ilahude, Z. 2023. Analisis kandungan unsur hara mikro (Mn, Fe, Zn), C-organik dan kadar air pada lahan jagung (*Zea mays* L.) di Kecamatan Tabongo Kabupaten Gorontalo. Jurnal Lahan Pertanian Tropis (JLPT), 2(2): 104-109.

Herniwati, H., & Nappu, M. B. 2018. Analisis Efisiensi Penggunaan Pupuk Nitrogen (N) Tanaman Padi Sawah Pada Tanah Inceptisols: Analysis Of Nitrogen Fertilizer Use Efficiency On Rice In Irrigated Land Of South Sulawesi. Jurnal Agrisistem, 14(1): 55-64.

Hirasawa, T., Ozawa, S., & Ishihara, K. 1998. Effects of cloudiness and environmental factors on canopy photosynthesis and light interception in rice. Japanese Journal of Crop Science. 67(3): 340-347.

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Hulu, Y., Zebua, H. P., Gulo, D., Harefa, W. W., Hia, S. A., & Mendrofa, S. J. 2026. Pengaruh Pemupukan Nitrogen Terhadap Laju Fotosintesis, Kandungan Klorofil, Dan Pertumbuhan Tanaman Jagung (*Zea Mays* L.). Jurnal Ilmu Agroteknologi Indonesia, 2(1): 52-58.

Janardhan, S., Rani, I. U., & Rani, P. P. 2022. Effect of Zinc and Iron Fertilization on Soil Nutrient Status of Direct Sown Rice. International Journal of Plant & Soil Science. 34(11): 1-5.

Ji, C., Li, J., Jiang, C., Zhang, L., Shi, L., Xu, F., & Cai, H. 2022. Zinc and nitrogen synergistic act on root-to-shoot translocation and preferential distribution in rice. Journal of advanced research. 35: 187-198.

Khattak, W. A., Anas, M., Farid, A., Kahraman, N. D., Keskin, N. C., & Fahad, S. 2026. Micronutrients trace elements' chemistry and soil uptake. In *Sustainable Soil Chemistry and Plant Nutrition* (pp. 173-194). Elsevier.

Khush, G. S. 2001. Green revolution: the way forward. Nature Reviews Genetics. 2(10): 815-822.

Krishnan, P., & Nayak, S. K. 2000. Biomass partitioning and yield components of individual tillers of rice (*Oryza sativa*) at different nitrogen levels. Indian J. Agric. Sci. 70(3): 143-145.

Krishnan, P., Swain, P., & Nayak, S. K. 1998. Effect of nitrogen levels on pattern of incremental biomass partitioning in rice (*Oryza sativa*) at different growth stages. Indian Journal of Agricultural Science. 68: 189-193.

Kumar, L., Meena, N. L., & Singh, U. 2016. Zinc transporter: mechanism for improving Zn availability. Biofortification of food crops, 129-146.

Lai, J. K., & Lin, W. S. 2021. Real-time detection of rice growth phase transition for panicle nitrogen application timing assessment. Agronomy. 11(12): 2465.

Li, H., Hu, B., & Chu, C. 2017. Nitrogen use efficiency in crops: lessons from Arabidopsis and rice. Journal of experimental botany, 68(10): 2477-2488.

Liu, Z. L., Su, J. K., Meng, J. R., Li, P. F., Song, J. M., Zhang, H. N., ... & Peng, X. L. 2022. Effect of increasing zinc application on rice nitrogen metabolism and dry matter accumulation under low temperature stress. Journal of Plant Nutrition and Fertilizers. 28(1): 15-22.

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Luta, D. A., Sitepu, S. M. B., & Arbani, N. R. 2025. Penggunaan Pupuk Terpadu Pembibitan Padi Dalam Pendekatan Ramah Lingkungan. Jurnal Multidisiplin Dehasen (MUDE), 4(4): 1247-1252.

Mansyur, N. I., Pudjiwati, E. H., & Murtilaksono, A. 2021. Pupuk dan pemupukan. Syiah Kuala University Press.

Mao, D., Meng, Y., & Zhang, X. 2023. Magnesium Functions in Plant Growth, Homeostasis, and Response to Stresses. International Journal of Molecular Sciences, 24(11): 9425.

Mae, T. 1997. Physiological nitrogen efficiency in rice: nitrogen utilization, photosynthesis, and yield potential. Plant and soil. 196(2): 201-210.

Maqbool, S., Hassan, M. A., Xia, X., York, L. M., Rasheed, A., & He, Z. 2022. Root system architecture in cereals: progress, challenges and perspective. The Plant Journal. 110(1): 23-42.

Murchie, E. H., Yang, J., Hubbart, S., Horton, P., & Peng, S. 2002. Acclimation of rice photosynthesis to irradiance under field conditions. Plant Physiology. 130(4): 1999–2010.

Mustafa, G., Ehsanullah, N. Akbar, S.A. Qaisrani, A.Iqbal, Haroon, Z. Khan, K. Jabran, A.M. Chattha, R.Trethowa, T. Chattha, B. Manzoor. 2011. Effect Of Zinc Application On Growth And Yield Of Rice (*Oryza sativa* L.) Int. J. Agro Vet. Med. Sci. 5: 530-535.

Nanda, A. K., & Wissuwa, M. 2016. Rapid crown root development confers tolerance to zinc deficiency in rice. Frontiers in plant science. 7: 428.

Narayan, O. P., Kumar, P., Yadav, B., Dua, M., & Johri, A. K. 2023. Sulfur nutrition and its role in plant growth and development. Plant Signaling & Behavior, 18(1): 2030082.

Nikmah, K., & Musni, M. 2019. Peningkatan kemampuan serapan nitrogen (N) tanaman padi (*Oryza sativa* L.) melalui mutasi gen secara kimiawi. Agritrop: Jurnal Ilmu-Ilmu Pertanian (Journal of Agricultural Science), 17(1): 1-20.

Nuruzzaman, M., Yamamoto, Y., Nitta, Y., Yoshida, T., & Miyazaki, A. 2000. Varietal differences in tillering ability of fourteen japonica and indica rice varieties. Soil Science and Plant Nutrition. 46(2): 381–391.

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Oh-e, I., Saitoh, K., & Kuroda, T. 2007. Effects of high temperature on growth, yield and dry-matter production of rice grown in the paddy field. Plant Production Science. 10(4): 412–422.

Pan, S., Liu, H., Mo, Z., Patterson, B., Duan, M., Tian, H., ... & Tang, X. 2016. Effects of nitrogen and shading on root morphologies, nutrient accumulation, and photosynthetic parameters in different rice genotypes. Scientific Reports. 6(1): 32148.

Pandey, S. N., & Abid, M. 2023. Zinc Biofortification: Role of ZIP Family Transporters in the Uptake of Zinc from the Soil up to the Grains. In Mineral Biofortification in Crop Plants for Ensuring Food Security (pp. 105-120). Singapore: Springer Nature Singapore.

Paramacanti, P. N. 2023. Pengaruh konsentrasi pupuk organik cair Tithonia diversifolia terhadap pertumbuhan dan produksi tanaman sawi (*Brassica juncea* L.). Proceedings Series on Physical & Formal Sciences, 5: 152–160.

Peng, S., Cassman, K. G., Virmani, S. S., Sheehy, J., & Khush, G. S. 1999. Yield potential trends of tropical rice since the release of IR8. Crop Science. 39(6): 1552-1559.

Perez, C. M., Juliano, B. O., & Liboon, S. P. 2019. Nitrogen fertilization and cell division dynamics in rice vegetative meristems. Journal of Plant Nutrition. 42(5): 450-462.

Poshtmasari, H. K., Pirdashti, H., Nasiri, M., & Bahmanyar, M. A. 2007. Study the effect of nitrogen fertilizer management on dry matter remobilization of three cultivars of rice (*Oryza sativa* L.). Pakistan Journal of Biological Sciences: PJBS. 10(19): 3425-3429.

Poorter, H., Bühler, J., van Dusschoten, D., Climent, J., & Postma, J. A. 2012. Pot size matters: a meta-analysis of the effects of rooting volume on plant growth. Functional Plant Biology. 39(11): 839-850.

Purba, T., Situmeang, R., & Rohman, H. F. 2021. Pemupukan dan Teknologi Pemupukan. In Angewandte Chemie International Edition, 6(11): 951–952.

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Rahmawan, I. S., Arifin, A. Z., & Sulistyawati, S. 2019. Pengaruh pemupukan kalium (K) terhadap pertumbuhan dan hasil kubis (*Brassica oleraceae* var. capitata, L.). Jurnal Agroteknologi Merdeka Pasuruan. 3(1): 407048.

Rose, T. J., Impa, S. M., Rose, M. T., Pariasca-Tanaka, J., Mori, A., Heuer, S., ... & Wissuwa, M. 2013. Enhancing phosphorus and zinc acquisition efficiency in rice: a critical review of root traits and their potential utility in rice breeding. Annals of botany. 112(2): 331-345.

Sadeghzadeh, B. 2013. A review of zinc nutrition and plant breeding. J. Soil Sci. Plant Nutr. 13: 905-927.

Saitoh, K., Yonetani, K., Murota, T., & Kuroda, T. 2002. Effects of flag leaves and panicles on light interception and canopy photosynthesis in high-yielding rice cultivars. Plant Production Science. 5(4): 275–280.

Setyorini, T., Hartati, R. M., & Damanik, A. L. 2020. Pertumbuhan bibit kelapa sawit di pre nursery dengan pemberian pupuk organik cair (kulit pisang) dan pupuk NPK. Agritrop: Jurnal Ilmu-Ilmu Pertanian (Journal of Agricultural Science). 18(1): 98-106.

Slewinski, T. L. 2012. Non-structural carbohydrate partitioning in grass stems: a target to increase yield stability, stress tolerance, and biofuel production. Journal of experimental botany. 63(13): 4647-4670.

Stone, L. F., & Steinmetz, S. 1979. Nitrogen fertilization on the leaf area index of two rice cultivars under upland conditions. Pesquisa Agropecuária Brasileira. 14(1): 25–28.

Subrahmanyam, D., Subhash, A. R., & Rathore, V. S. 2006. Influence of light intensity on photosynthesis, leaf senescence, and yield in rice cultivars. Photosynthetica. 44(4): 580-584.

Sui, B., Feng, X., Tian, G., Hu, X., Shen, Q., & Guo, S. 2013. Optimizing nitrogen supply increases rice yield and nitrogen use efficiency by regulating yield formation factors. *Field Crops Research, 150*, 99-107.

Suranto, S., A.T. Syahidah., dan E. Mahadjoeno. 2018. Variation of morphology, anatomy and nutrition contents of local cultivar mentik rice based on the altitudes at Ngawi District, East Java, Indonesia. Biodiversitas Journal of Biological Diversity. 19(2): 602–609.

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Tando, E. 2019. Upaya efisiensi dan peningkatan ketersediaan nitrogen dalam tanah serta serapan nitrogen pada tanaman padi sawah (*Oryza sativa* L.). Buana Sains, 18(2): 171-180.

Taylaran, R. D., Adachi, S., Ookawa, T., Usuda, H., & Hirasawa, T. 2011. Hydraulic conductance as well as nitrogen accumulation plays a role in the higher rate of leaf photosynthesis of the most productive variety of rice in Japan. Journal of Experimental Botany. 62(11): 4067-4077.

Thakur, A.K., S. Rath., D.U. Patil., dan A. Kumar. 2011. Effects on rice plant morphology and physiology of water and associated management practices of the system of rice intensification and their implications for crop performance. Paddy and Water Environment. 9: 261–278.

Thor, K. 2019. Calcium—nutrient and messenger. Frontiers in plant science, 10: 440.

Tuiwong, P., Lordkaew, S., Veeradittakit, J., Jamjod, S., & Prom-U-Thai, C. 2022. Efficacy of nitrogen and zinc application at different growth stages on yield, grain zinc, and nitrogen concentration in rice. Agronomy. 12(9): 2093.

Verstraeten, W. W., Veroustraete, F., & Feyen, J. 2008. Assessment of evapotranspiration and soil moisture content across different scales of observation. Sensors. 8(1): 70-117.

Wang, W., Cui, K., Hu, Q., Wu, C., Li, G., Huang, J., & Peng, S. 2021. Response of spikelet water status to high temperature and its relationship with heat tolerance in rice. The Crop Journal. 9(6): 1344–1356.

Wang, Y., Ren, T., Lu, J., Cong, R., Li, X., & others. 2016. Heterogeneity in rice tillers yield associated with tillers formation and nitrogen fertilizer. Agronomy Journal. 108(4): 1717–1725.

Wang, Z., Zhang, F., Xiao, F., Tao, Y., Liu, Z., Li, G., ... & Ding, Y. 2018. Contribution of mineral nutrients from source to sink organs in rice under different nitrogen fertilization. Plant Growth Regulation. 86(2): 159-167.

Widyaningtias, R., D. Damanhuri., dan A.T. Rakhmi. 2020. Karakterisasi morfografi 41 aksesi padi lokal Kabupaten Brebes. Vegetalika. 9(2): 399–413.

Wirayuda, B., & Koesriharti. 2020. Pengaruh Pemberian Pupuk Organik dan Pupuk Anorganik terhadap Pertumbuhan dan Hasil Tanaman Jagung Manis (*Zea mays saccharata* L .). Jurnal Produksi Tanaman, 8(1): 201–209.

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Wuli, R. N., Loda, W., & Noy, J. A. 2023. Pengaruh Jarak Tanam Pada Sistem Jajar Legowo Terhadap Produktivitas Padi Varietas Inpari 30 di Desa Pape Kecamatan Bajawa Kabupaten Ngada. Jurnal Pertanian Unggul. 2(2): 1-9.

Xin, W., Zhang, L., Gao, J., Zhang, W., Yi, J., Zhen, X., ... & Zhao, X. 2021. Adaptation mechanism of roots to low and high nitrogen revealed by proteomic analysis. Rice. 14(1): 5.

Xu, G. W., Song, K. J., Lu, D. K., Wang, H. Z., & Chen, M. C. 2019. Influence of water management and nitrogen application on rice root and shoot traits. Agronomy Journal. 111(5): 2232-2244.

Yoneyama, T., Tanno, F., Tatsumi, J., & Mae, T. 2016. Whole-plant dynamic system of nitrogen use for vegetative growth and grain filling in rice plants (*Oryza sativa* L.) as revealed through the production of 350 grains from a germinated seed over 150 days: a review and synthesis. Frontiers in plant science. 7: 1151.

Yoshida, H., Horie, T., Katsura, K., & Shiraiwa, T. 2007. A model explaining genotypic and environmental variation in leaf area development of rice based on biomass growth and leaf N accumulation. Field Crops Research. 102(3): 228-238.

Yue, K., Fornara, D. A., Li, W., Ni, X., Peng, Y., Liao, S., ... & Yang, Y. 2021. Nitrogen addition affects plant biomass allocation but not allometric relationships among different organs across the globe. Journal of Plant Ecology. 14(3): 361-371.

Yusuf, A. G., Al-Yahya, F. A., Saleh, A. A., & Abdel-Ghany, A. M. 2025. Optimizing greenhouse microclimate for plant pathology: challenges and cooling solutions for pathogen control in arid regions. Frontiers in Plant Science. 16: 1492760.

Zhao, Y., Yin, Z., Wang, X., Jiang, C., Aslam, M. M., Gao, F., ... & Li, Z. 2021. Genetic basis and network underlying synergistic roots and shoots biomass accumulation revealed by genome-wide association studies in rice. Scientific Reports. 11(1): 13769.

Zuo, H., Yin, S. X., Li, Y. M., Wang, T. M., Zhu, Z. X., & Chen, Y. D. 2021. Guo Q Q. Research progress on physiological and molecular mechanism of nitrogen

UNIVERSITAS
GADJAH MADA
Pengaruh Pemberian Nitrogen Dan Seng Terhadap Pertumbuhan Dan Hasil Padi (Oryza sativa L.) Varietas Gamagora 7
Falih Hilmi Muhammad Arief, Prof. Dr. Ir. Taryono, M.Sc.; Ir. Supriyanta, M.P.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

absorption and utilization of ryegrass. Chinese Journal of Grassland, 43(4): 96-106.