

## DAFTAR PUSTAKA

- Abao Jr, E. B., K.F. Bronson, R. Wassman dan U. Singh. 2000. Simultaneous records of methane and nitrous oxide emission in rice-based cropping systems under rainfed conditions. *Nutrient Cycling in Agroecosystems* 58:131-139.
- Abdulrachman, S., H. Sembiring dan Suyamto. 2009. Pemupukan Tanaman Padi. Balai Besar Penelitian Tanaman Padi.
- Agusta, H., E. Santoso., Dulbari., D. Guntoro dan S. Zaman. 2022. Continuous Heavy Rainfall and Wind Velocity During Flowering Affect Rice Production. *AGRIVITA Journal of Agricultural Science* 44(2): 290-302.
- Agustiani, N., Sujinah dan I. A. Rumanti. 2019. Variabel Kritis Morfofisiologi Tanaman Padi pada Kondisi Cekaman Rendaman. *Prosiding Balai Besar Tanaman Padi*: 12 Hal.
- Ahmed W., H. Jing., L. Kailou., S. Ali., H. Tianfu., S. Geng., C. Jin., M. Qaswar., D. Jiangxue., S. Mahmood., A. A. Maitlo., Z. H. Khan., H. Zhang dan D-Y. Chen. 2021. Impacts of long-term inorganic and organic fertilization on phosphorus adsorption and desorption characteristics in red paddies in southern China. *PLoS ONE* 16(1): e0246428. <https://doi.org/10.1371/journal.pone.0246428>
- Aksani, D., D. Budianta dan A. Hermawan. 2018. Determination of Site-specific NPK Fertilizer Rates for Rice Grown on Tidal Lowland. *J Trop Soils* 23 (1): 19-25.
- Alam, Md A., J. Huang., M. N Khan., N.A. Daba., L. Zhang., Z. Shen., J. Li., L. Liu., T.Han., N.G. Hayatu., Md. A. Rahaman dan H. Zhang. 2023. Effects of long-term organic and inorganic fertilization on greenhouse gas emissions and soil nutrient stoichiometry in a rice–rice–fallow cropping system. *Agriculture. Ecosystems and Environment* 357: 108695.
- Alavan, A., R. Hayati dan E. Hayati. 2015. Pengaruh Pemupukan Terhadap Pertumbuhan Beberapa Varietas Padi Gogo (*Oryza Sativa* L.). *J. Floratek* 10: 61 – 68.
- Andriani, V. 2017. Pertumbuhan Dan Kadar Klorofil Tanaman Pakcoy (*Brassica rapa* L.) terhadap Cekaman NaCl. *Stigma* 10 (2):58-67.
- Anisuzzaman, M., M. Y. Rafii., N. Md. Jaafar., S.I. Ramlee., M. F Ikbal dan Md. A. Haque. 2021. Effect of Organic and Inorganic Fertilizer on the Growth and Yield Components of Traditional and Improved Rice (*Oryza sativa* L.) Genotypes in Malaysia. *Agronomy* 11(9). 1830. <https://doi.org/10.3390/agronomy11091830>.
- Apriyani, S., S. Wahyuni., E.S. Harsanti., H. Zu'amah. R. Kartikawati dan M.T. Sutriadi. 2021. Effect of inorganic fertilizer and farmyard manure to available P. growth and rice yield in rainfed lowland Central Java. *IOP Conf. Series: Earth and Environmental Science* 648(2021) 012190. doi:10.1088/1755-1315/648/1/012190.
- Arabia, T. 2014. Pengelolaan Tanah Sawah. Banda Aceh: Fakultas Pertanian Universitas Syiah kuala
- Arsana, IGK Dana., S. Yahya., A.P. Lontoh dan H Pane. 2003. Hubungan Antara Penggenangan Dini dan Potensial Redoks. Produksi Etilen dan Pengaruhnya terhadap Pertumbuhan dan Hasil Padi (*Oryza sativa*) Sistem Tabela. *Bul. Agron* 31 (2): 37-41.

- Atman., B. Bakrie dan R. Indrasti. 2018. Effect of Cow Manure Dosages as Organic Fertilizer on the Productivity of Organic Rice in West Sumatra, Indonesia, *International Journal of Environment, Agriculture and Biotechnology (IJEAB)* 3 (2): 506-511.
- Ayu, L., D. Indradewa dan E. Ambarwati. 2012. Pertumbuhan, Hasil dan Kualitas Pucuk Teh (*Camellia sinensis* (L) Kuntze) Di Berbagai Tinggi Tempat. *Vegetalika* 1 (4): 79-89.
- Babu, Y. J., Nayak, D. R dan Adhya, T. K. 2006. Potassium application reduces methane emission from flooded field planted to rice. *Biol. Fert. Soil* 42 (6). 532e541.
- Bachtiar, B. 2019. Hubungan Antar Sifat-Sifat Tanah Di Bawah Tegakan Lamtoro Gung (*Leucaena leucocephala* Lam De Witt.). *BIOMA: JURNAL BIOLOGI MAKASSAR* 4(2): 173-182.
- Balai Penelitian Tanah. 2012. Petunjuk Teknis Edisi 2 : Analisis Kimia Tanah, Tanaman, Air, dan Pupuk. Badan Penelitian dan Pengembangan Pertanian. Kementerian Pertanian. 234 hal.
- Baruah, A dan Baruah, K. K. 2015. Organic Manures and Crop Residues as Fertilizer Substitutes: Impact on Nitrous Oxide Emission, Plant Growth and Grain Yield in Pre-Monsoon Rice Cropping System. *J Environ Prot.* 06: 755 - 770.
- Bernaui, A., A. Nadhira dan M. Hartati. 2022. Utilization of Several Types of Fertilizer to Reduce the Percentage of Attack of the White Rice Stem Borer (*Scirpophaga innotata* Walk.) in 10 Inpari Varieties. *International Journal of Research and Review* 9(12): 392-396.
- Bharali, A., Baruah, K., Baruah, S.G dan Bhattacharyya, P. 2018. Impacts of integrated nutrient management on methane emission, global warming potential and carbon storage capacity in rice grown in a northeast India soil. *Environ. Sci. Pollut. Res* 25 (6): 5889–5901. <https://doi.org/10.1007/s11356-017-0879-0>.
- Bhavani, S., K. C. Shaker., G. Jayasree., B. Padmaja dan G. K. Reddy. 2017. Effects Of LongTerm Application of Inorganic and Organic Fertility Fertilizers On SoilStatus And Yield Of Rice. *Bull. Env. Pharmacol. Life Sci.* 6 (2): 471-474.
- Bu, Rong-Yan., M. Li., S. Han., W-L Cheng., H. Wang., Z-X. Sun., S. Tang dan J. Wu. 2021. Comprehensive effects of combined application of organic and inorganic fertilizer on yield, greenhouse gas emissions, and soil nutrient in double-cropping rice systems. *Ying Yong Sheng Tai Xue Bao* 32(1):145-153. doi: 10.13287/j.1001-9332.202101.023.
- Buntoro, B. H., R. Rogomulyo dan S. Trisnowati. 2014. Pengaruh Takaran Pupuk Kandang dan Intensitas Cahaya terhadap Pertumbuhan dan Hasil Temu Putih (*Curcuma zedoaria* L.). *J. Vegetalika* 3 (4): 29-39.
- Chau, L. M dan K. L Heong. 2005. Effects Of Organic Fertilizers On Insect Pest And Diseases Of Rice. *Omonrice* 13: 26-33.
- Conrad, R., Klose, M., Claus, P. 2000. Phosphate inhibits acetotrophic methanogenesis on rice roots. *Appl. Environ. Microbiol.* 66, 828e831.
- Conrad, R. 2007. Microbial ecology of methanogens and methanotrophs. *Adv. Agron.* 96: 1–63.

- Caine, R.S, X. Yin., J. Sloan., E.L Harrison., U. Mohammed., T. Fulton., A.K. Biswal., J. Dionora., C.C. Chater., R.A. Coe., A. Bandyopadhyay., E.H. Murchie., R. Swarup., W.P. Quick dan J.E Gray. 2019. Rice with reduced stomatal density conserves water and has improved drought tolerance under future climate conditions. *New Phytologist* 221:371–384doi: 10.1111/nph.15344.
- Casson, S dan Gray, JE. 2008, Influence of environmental factors on stomatal development. *New Phytol* 178 (1): 9 – 23. doi:<https://doi.org/10.1111/j.1469-8137.2007.02351.x>.
- Cui, X., Y. Zhang., J. Gao., F. Peng dan P. Gao. 2018. Long-term combined application of manure and chemical fertilizer sustained higher nutrient status and rhizospheric bacterial diversity in reddish paddy soil of Central South China. *SciEntIfcRePortS8:16554*. DOI:10.1038/s41598-018-34685-0.
- Darmawan, A. R. B. 2015. Pengaruh Macam Dan Takaran Pupuk Kandang Terhadap Pertumbuhan Adas (*Foeniculum vulgare* Mill.) *ZIRAA'AH* 40 (3): 175 - 183.
- Datta, A., T. Adhya dan S.C. Santra. 2013. Effect of inorganic fertilizers (N,P,K) on methane emission from tropical rice field of India. *Atmospheric Environment* (1967) 66. DOI: 10.1016/j.atmosenv.2012.09.001.
- Das, S dan Adhya, T. K. 2014. Effect of combine application of organic manure and inorganic fertilizer on methane and nitrous oxide emissions from a tropical flooded soil planted to rice. *Geoderma*, 213: 185—192.
- De Datta, S.K. 1981. *Principle and Practice of Rice Production*. New York. John Willey and Sons. Singapore. 618p.
- De Visscher, A dan Van Cleemput, O. 2003. Induction of enhanced CH<sub>4</sub> oxidation in soils: NH<sub>4</sub> p inhibition patterns. *Soil Biol. Biochem.* 35, 907e913.
- Dhaliwal, S.S., V. Sharma., A.K. Shukla., R.K. Gupta., V. Verma., M. Kaur., S.K. Behera dan B. Singh. 2023. Residual Effect of Organic and Inorganic Fertilizers on Growth, Yield and Nutrient Uptake in Wheat under a Basmati Rice–Wheat Cropping System in North-Western India. *Agriculture* 2023. 13, 556. <https://doi.org/10.3390/agriculture13030556>.
- Dobermann, A dan T. Fairhust. 2000. *Rice: Nutrient Disorder and Nutrient Management*. Makati: International Rice Research Institute. 191p.
- Dwidjoseputro, D. 1992. *Pengantar Fisiologi Tumbuhan*. Cetakan Keenam. PT Gramedia. Jakarta.
- Dwidjoseputro. 1994. *Dasar-Dasar Mikrobiologi*. Jakarta: Djambatan.
- Edmeades, C. Douglas. 2003. The longterm effects of manures and fertilizers on soil productivity and quality: a review. *Nutrient Cycling in Agroecosystems*. 66:165-180.
- Eggleston, Simon. 2006. IPCC Guidelines for National Greenhouse Gas Inventories, Hayama, Japan: Institute for Global Environmental Strategies: 20 hal. <https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.
- Elert, E. 2014. Rice by the numbers: A good grain. *Nature* 514 (7524): S50–S51.
- Fageria, N.K. 1976. Critical P, K, Ca dan Mg contents in the tops of rice and peanut land. *Plant and Soil* 45 (2): 421-431.

- Fagi, A.M. dan J. Sri Adiningsih. 1989. Peningkatan efisiensi pupuk nitrogen pada padi sawah irigasi dan tadahhujan. Prosiding Lokakarya Nasional Efisiensi Penggunaan Pupuk, Cipayung 21 November 1988. P.19 - 33.
- Fidiyawati, E., E. Latifah., A. Krismawati., D. Sihombing., D. Setyorini., A. Bakar dan Sugiono. 2022. Effectivity of inorganic fertilizer NPK (15-15-6) to growth and yield of lowland rice (*Oryza sativa* L.) on alfisol soil. IOP Conf. Series: Earth and Environmental Science 980 (2022) 012014. doi:10.1088/1755-1315/980/1/012014.
- Franzluebbers, A. J., Wright. S. F. dan Stuedemann. J. A. 2000. Soil aggregation and glomalin under pastures in the Southern Piedmont USA. *Soil Sci. Soc. Am. J.* 64 : 1018 – 1026.
- Frei M., Razzak MA., Hossain MM., Oehme M., Dewan S dan Becker K. 2007. Methane emissions and related physicochemical soil and water parameters in rice–fish systems in Bangladesh. *Agriculture, Ecosystems and Environment.* 120: 391 – 398.
- Gao, P., Z. Tuo., L. Xing-yu., C. Xin-wei., L. Yao-xiong., F. Peng-fei., L. Shi-ping., H. Jing., G. Ju-Sheng., Z. Zhen-hua dan Z. Hua-min. 2023. Improvement of soil fertility and rice yield after long-term application of cow manure combined with inorganic fertilizers. *Journal of Integrative Agriculture.* 22(7): 2221 – 2232.
- Gardner, F.P. R.B. Pearce dan R.L. Mitchell. 1991. *Physiology of Crop Plant (Fisiologi Tanaman Budidaya, alih bahasa D.H. Goenadi)*. Gadjah Mada University Press. Yogyakarta.
- Gebremedhin, A. R dan G. Tesfay. 2015. Evaluating the Effects of Integrated Use of Organic and Inorganic Fertilizers on Socioeconomic Performance of Upland Rice (*Oryza Sativa* L.) in Tselemti Wereda of North-Western Tigray, Ethiopia. *Journal of Biology, Agriculture and Healthcare* 5(7): 39 - 51.
- Ginting, C. 2010. Kajian Biologis Tanaman Selada dalam Berbagai Kondisi Lingkungan pada Sistem Hidroponik. *AGRIPLUS*, 20(2): 107 - 113.
- Goldsworthy dan Fisher. 1992. *Fisiologi Tanaman Budidaya Tropic (Terjemahan dari The Physiology of Tropical Fields Crops oleh Tohari)*. Gadjah mada Univercity Press. Yogyakarta.
- Guo, J. X. Hu., L. Goo., K. Xie., N. Ling. Q. Shen., S. Hu dan S. Guo. 2017. The rice production practices of high yield and high nitrogen use efficiency in Jiangsu, *China. Sci. Rep.* 7: 2101.
- Hamanishi, E. T., B. R. Thomas dan M. M Campbell. 2012. Drought induces alterations in the stomatal development program in populus. *J Exp Bot* 63(13):4959–4971. doi:10.1093/jxb/ers177.
- Hansen, S. and L. R. Bakken. 1993. N<sub>2</sub>O, CO<sub>2</sub> and O<sub>2</sub> concentrations in soil air influenced by organic and inorganic fertilizers and soil compaction. *J. Agric. Sci.* 7:1 - 10.
- Hanum, Chairani. 2008. *Teknik Budidaya Tanaman Jilid 2 untuk SMK*. Direktorat Pembinaan Sekolah Menengah Kejuruan Direktorat Jenderal Manajemen Pendidikan Dasar dan Menengah Departemen Pendidikan Nasional. 280 hal.
- Hartatik, W., Husnain dan L. R. Widowati. 2015. Peranan Pupuk Organik dalam Peningkatan Produktivitas Tanah dan Tanaman. *Jurnal Sumberdaya Lahan* 9 (2): 107 – 120.

- Haque, M. Md., J.C. Biswa., M.R. Islam., A. Islam dan M.S. Kabir. 2019. Effect of long-term chemical and organic fertilization on rice productivity, nutrient use efficiency, and balance under a rice-fallow-rice system. *Journal Of Plant Nutrition*. DOI:10.1080/01904167.2019.1659338
- Hasan, M. M., Hasan, M. M., Teixeira da Silva J. A dan Li, X. 2016. Regulation of phosphorus uptake and utilization: transitioning from current knowledge to practical strategies. *Cell Mol Biol Lett* 21:7.
- Hasibuan, A. S. Z. 2015. Pemanfaatan Bahan Organik dalam Perbaikan Beberapa Sifat Tanah Pasir Pantai Selatan Kulon Progo. *Planta Tropika Journal of Agro Science* 3 (1): 31-40.
- Hatta, M and Sulakhudin. 2016. Site specific fertilization for lowland rice production in West Kalimantan. *J Soil Sci Agroclimat* 13: 1 - 8.
- Hidema, J., Makino, A., Kurita, Y. Mae, T. Ohjima, K, 1992. Changes in the Level of Chlorophyll and Light-harvesting Chlorophyll a/b Protein PS II in Rice Leaves Agent Under Different Irradiances from Full Expansion Through Senescense. *Plant Cell Physiol*. 33 (8): 1209 - 1214.
- Hong-qian, H., L Xiu-mei., L. Guang-rong., L. Zu-zhang., L. Yi-ren., H. Yong-lan., J. Jian-hua., S. Cai-hong., W. Fu-quan. 2011. Effect of Long-Term Located Organic-Inorganic Fertilizer Application on Rice Yield and Soil Fertility in Red Soil Area of China. *Scientia Agricultura Sinica* 44 (3): 516 - 523.
- Hirai, GI., Nakayama, N., Hirano, T., Chiyo, H., Minato, N., Tanaka, O. 1989. Studies on the effect of relative humidity of atmosphere on growth and physiology of rice plants, VI, Effect of ambient humidity on dry matter production and nitrogen absorption at various temperatures. *Japanese J Crop Sci*. 58 (3): 368 - 373.
- Hou, Q., Ni, Y. M., Huang, S., Zuo, T., Wang, J., Ni, W. Z. 2023. Effects of substituting chemical fertilizers with manure on rice yield and soil labile nitrogen in paddy fields of China: A meta-analysis. *Pedosphere*. 33 (1): 172–184.
- Hong-qian, H., L. Xiu-mei., L. Guang-rong., L. Zu-zhang., L. Yi-ren., H. Yong-lan., J. Jian-hua., S. Cai-hong., W. Fu-quan. 2011. Effect of Long-Term Located Organic-Inorganic Fertilizer Application on Rice Yield and Soil Fertility in Red Soil Area of China, *Scientia Agricultura Sinica* 44 (3): 516 – 523.
- Hu, M. C., Wade, A. J., Shen, W. S., Zhong. Z. F., Qiu, C. W., Lin, X. G. 2023. Effects of organic fertilizers produced by different production processes on nitrous oxide and methane emissions from double-cropped rice fields. *Pedosphere*. 33.
- Husnain., A. Kasno dan S. Rochayati. 2016. Pengelolaan Hara dan Teknologi Pemupukan Mendukung Swasembada Pangan di Indonesia. *Jurnal Sumberdaya Lahan* 10 (1): 25 – 36.
- IAEA. 1992. Manual on measurement of methane and nitrous oxide emission from agriculturalall AEA-TECDOC-674 (Vienna: IAEA) pp 91.
- Idris, A., A.C. Linatoc dan M. F. B.A. Bakar. 2019. Effect Of Light Intensity On The Photosynthesis and Stomatal Density Of Selected Plant species Of Gunung Ledang, Johor. *Malays. Appl. Biol* 48 (3): 133–140.
- Iqbal, A., L. H., I. Ali., S. Ullah., A. Khan., A. Khan., K. Akhtar., S. Wei., Q. Zhao., J. Zhang dan L. Jiang. 2020. Manure combined with chemical fertilizer increases rice productivity by improving soil health, post-anthesis biomass yield, and



nitrogen metabolism. PLoS ONE 15 (10): e0238934.  
<https://doi.org/10.1371/journal.pone.0238934>.

- Iqbal, A., H. Xie., L. He., S. Ahmad., I. Hussain., H. Raza., A. Khan., S. Wei., Z. Quan., K. Wu., I. Ali., L. Jiang. 2021. Partial substitution of organic nitrogen with synthetic nitrogen enhances rice yield, grain starch metabolism and related genes expression under the dual cropping system. *Saudi J. Biol. Sci.* 28 (2): 1283 – 1296.
- Iqbal, A., L. He., I. Ali., S. Ullah., A. Khan., K. Akhtar., S. Wei., S. Fahad., R. Khan dan L. Jiang. 2021. Co-incorporation of manure and inorganic fertilizer improves leaf physiological traits, rice production and soil functionality in a paddy field. *Scientific Reports* 11:10048. <https://doi.org/10.1038/s41598-021-89246-9>.
- Jamilah. 2017. Peluang Budidaya Tanaman Padi Sebagai Penyedia Beras Dan Pakan Ternak Menunjang Kedaulatan Pangan. DEEPUBLISH. Yogyakarta. 84 hal.
- Jawang, U. K. 2021. Penilaian Status Kesuburan dan Pengelolaan Tanah Sawah Tadah Hujan di Desa Umbu Pabal Selatan, Kecamatan Umbu Ratu Nggay Barat. *Jurnal Ilmu Pertanian Indonesia (JIPI)* 26 (3): 421 – 427.
- Jayaweera, G. R. dan Mikkelsen, D.S. 1991. Assessment of ammonia volatilization from flooded soil systems. *Advances in Agronomy* 45: 303 – 353.
- Jiang, M., K. Guo., J. Wang., Y. Wu., X. Shen dan L. Huang. 2023. Current status and prospects of rice canopy temperature research. *Food Energy Secur.* 2023 : 12:e424.
- Jinwen, L., Y. Jingping., F. Pinpin., S. Junlan., L. Dongsheng., Ge. Changsui dan C. Wenye. 2009. Responses of rice leaf thickness, SPAD readings and chlorophyll a/b ratios to different nitrogen supply rates in paddy field. *Field Crops Research* 114 (3): 426 – 432.
- Jonharnas dan S.H. Sitindaon. 2017. Peran Lahan Sawah Tadah Hujan terhadap Ketahanan Pangan Nasional Di Kabupaten Deli Serdang, Sumatera Utara. *Jurnal Agroteknologi* 7 (2): 15 – 20
- Johnson, J. M. F., A. J. Franzluebbers., S. L. Weyers dan D. C. Reicosky. 2007. Agricultural opportunities to mitigate greenhouse gas emissions. *Environmental Pollution* 150: 107–124.
- Jonizar dan S. Martini. 2016. Analisis Ketersediaan Air Sawah Tadah Hujan di Desa Mulia Sari Kecamatan Muara Telang Kabupaten Banyuasin.
- Juraimi, A. S., Saiful, M. A. H., Begum, M., Anuar, A. R. dan Azmi, M. 2009. Influence of flooding intensity and duration on rice growth and yield. *Pertanika J. Trop. Agric. Sci.* 32 (2): 195 – 208.
- Kadida, B., G. R. Sadimantara., Suaib, L. O., Safuan dan Muhidin. 2017. The Effect of Organic Fertilizer in the Increasing of Local Upland Rice Production on Marginal Land in North Buton Indonesia. *Biosciences Biotechnology Research Asia* 14 (3): 1051 - 1054.
- Kalala, A. M., N. A. Amuri dan J. M. R. Semoka. 2016. Response of Rice to Phosphorus and Potassium Fertilization Based on Nutrient Critical Levels in Plants and Soils of Kilombero Valley. *Advances in Research* 7 (5): 1 – 12.

- Kartikawati, R., E. Yulianingsih., S. Wahyuni dan A. Wihardjaka. 2017. Strategi Budidaya Padi untuk Mendukung Ketahanan Pangan di Lahan Sawah Tadah Hujan dalam Menghadapi Perubahan Iklim. *Prodising Seminar Nasional Fakultas Pertanian UNS* 1(1) : 103 - 108.
- Kasno, A., Rostaman, T dan Setyorini, D. 2016. Peningkatan produktivitas lahan sawah tadah hujan dengan pemupukan hara N, P, dan K dan penggunaan padi varietas unggul. *Jurnal Tanah dan Iklim*. 40 (2): 147 – 157.
- Kasno, A., D. Setyorini dan I. W. Suastika. 2020. Pengelolaan Hara Terpadu pada Lahan Sawah Tadah Hujan sebagai Upaya Peningkatan Produksi Beras Nasional. *Jurnal Sumberdaya Lahan* 14 (1): 15 – 24.
- Kastono, D. 2005. Tanggapan Pertumbuhan Dan Hasil Kedelai Hitam Terhadap Penggunaan Pupuk Organik Dan Biopestisida Gulma Siam (*Chromolaena odorata*). *Ilmu Pertanian* 12 (2): 103 – 116,
- Katkar, R. N., Kharche. V. K., Sonune. B. A., Wanjari. R. H dan Singh. M. 2012. Long term effect of nutrient management on soil quality and sustainable productivity under sorghum wheat cropping system in Vertisol of Akola. Maharashtra. *Agropedology* 22: 103 - 14.
- Kaysar, M. S., U. K. Sarker., S. Monira., M. A. Hossain., U. Somaddar., G. Saha., S. S. F. Hossain., N. Mokarroma., A. K. Chaki., M. S. U. Bhuiya dan M. R. Uddin. 2022. Optimum Nitrogen Application Acclimatizes Root Morpho-Physiological Traits and Yield Potential in Rice under Subtropical Conditions. *Life* (12): 2051. <https://doi.org/10.3390/life12122051>.
- Kaysar, M. S., U. K. Sarker., S. Monira., M. A. Hossain., U. Somaddar., G. Saha., A. K. Chaki., N. Mokarroma., A.K. Chaki., A. Hashem., E. F Abd. Allah dan M. R. Uddin. 2023. Variations in Root Morphology and Yield among Rice Varieties in Response to Potassium under Subtropical Conditions. *Sustainability* (15): 8589. <https://doi.org/10.3390/su15118589>.
- Kearn, E. V dan S. M. Assmann. 1993. The guard cells environment connection. *Plant Physiology*. 102: 711 – 715.
- Khan, A. 2017. Nitrogen translocation efficiency in wheat depends on N sources and tillage practices, Doing More with Less, In *Proceedings of the 18th Australian Agronomy Conference 2017*. Ballarat. Victoria. Australia, 24–28 September 2017. Australian Society of Agronomy Inc.
- Kim, Gil Won., Hyo Suk Gwon., Seung TakJeong., Hyun Young Hwang and Pil Joo Kim. 2016. Different responses of nitrogen fertilization on methane emission in rice plant included and excluded soils during cropping season. *Agriculture Ecosystems and Environment* 230: 162 – 168.
- Kim, G W., P. J. Kim., M. I. Khan dan S-J Lee. 2021. Effect of Rice Planting on Nitrous Oxide (N<sub>2</sub>O) Emission under Different Levels of Nitrogen Fertilization. *Agronomy* 11: 217. <https://doi.org/10.3390/agronomy11020217>.
- Kitamura, R., C. Sugiyaman., K. Yasuda., A. Nagatake., Y. Yuan., J. Du., N. Yamaki., K. Taira., M. Kawai dan R. Hatano. 2021. Effects of Three Types of OrganicFertilizers on Greenhouse GasEmissions in a Grassland on Andosolin Southern Hokkaido, Japan. *Front. Sustain. Food Syst.* 5: 649613. doi: 10.3389/fsufs.2021.649613.

- Klemedtsson, L., B. H. Svensson dan T. Rosswall. 1988. Relationship between soil moisture content and nitrous oxide production during nitrification and denitrification. *Biol. Fertil. Soils* 6: 106 - 111.
- Kumar, V., Kumar, T., Gupta, P. K., Singh, R. V., Singh, R. A. dan Singh, S. B. 2012. Effect of puddling and organic sources of nutrients on productivity of rice-wheat cropping system in lowlands. *Annals Plant Soil Res.* 14: 95 – 100.
- Kumar, R., A. Singh., R. B. Yadav., A. Kumar., S. Kumar., UP. Shahi dan A. P. Singh. 2017. Growth, development and yield response of rice (*Oryza sativa* L.) as influenced by efficient nitrogen management under subtropical climatic condition. *Journal of Pharmacognosy and Phytochemistry* SP1: 791 – 797.
- Kumar, K. A., Swain, D. K. dan Bhadoria, P. B. S. 2018. Split application of organic nutrient improved productivity, nutritional quality and economics of rice-chickpea cropping system in lateritic soil. *Field Crops Res.* 223: 125 – 136.
- Lakitan, B. 1997. *Dasar-dasar Klimatologi*. PT RajaGrafindo Persada. Jakarta.
- Lal, R. 2006. Enhancing crop yield in the developing countries through restoration of the soil organic Carbon Pool in Agriculture Land. *Land Degradation and development* : 197 – 209.
- Latare, A. M., Kumar, O., Singh, S.K., Gupta, A. 2014. Direct and residual effect of sewage sludge on yield, heavy metals content and soil fertility under rice-wheat system. *Ecol. Eng.* 69: 17 – 24.
- Lawenga, F. F., U, Hasanah dan D, Widjajanto. 2015. Pengaruh Pemberian Pupuk Organik Terhadap Sifat Fisika Tanah Dan Hasil tanaman Tomat (*Lycopersicum Esculentum* Mill.) Di Desa Bulupountu Kecamatan Sigi Biromaru Kabupaten Sigi. *e-J. Agrotekbis* 3 (5): 564 – 570.
- Lazcano, C., X. Zhu-Barker dan C. Decock. 2021. Effects of Organic Fertilizers on the Soil Microorganisms Responsible for N<sub>2</sub>O Emissions: A Review. *Microorganisms* 9: 983.
- Leszczynska, D dan Marlina, J. K. 2011. Effect of organic matter from various sources on yield and quality of plant on soils contaminated with heavy metals. *J. Ecol. Chem. Engineering* 18: 501 – 507.
- Li, B.B., Wu, L. F. 2018. Soil greenhouse gases emission in response to the C/N. *J. Agro-Environ. Sci.* 37: 2067 – 2078.
- Li, G. H., Zhou, J. X., Zhang, J. F., Yang, J.C. 2020. Decreasing net global warming potential through partial substitution of urea with manure and slow-release fertilizer in a double-rice system. *J. Plant Nutr. Fertil.* 26: 1017 – 1024.
- Liao, B., T. Cai., X. Wu., Y. Luo., P. Liao., B. Zhang., Y. Zhang., G. Wei., R. Hui., Y. Luo dan Y. Cui. 2023. A combination of organic fertilizers partially substitution with alternate wet and dry irrigation could further reduce greenhouse gases emission in rice field. *Journal of Environmental Management* 344: 118372.
- Lichtenthaler H. K dan F. Babani. 2022. Contents of photosynthetic pigments and ratios of chlorophyll a/b and chlorophylls to carotenoids (a+b)/(x+c) in C<sub>4</sub> plants as compared to C<sub>3</sub> plants. *PHOTOSYNTHETICA* 60 (1): 3 – 9.



- Linguist, B. A., Adviento-Borbe, M. A., Pittelkow, C. M., van Kessel, C. dan Van Groenigen, K. J. 2012. Fertilizer management practices and greenhouse gas emissions from rice systems: A quantitative review and analysis. *Field Crops Res* 135: 10 – 21.
- Liu, Q. F dan Xu, S. Q. 2018. Response of fuorescence parameters and photosynthetic traits of rice to diferent nitrogen application under suficient irrigation. *J. Irrigat Drainage* 37: 6 – 12.
- Liu, K. C., Wang, X. D., Zhao. X., Zhang. H. L. 2022. Technical effects and influencing factors of main methane emission management practices in China's paddy fields. *J. Jilin Agric. Univ.* 44: 61 – 70.
- Lokha, J., D. Purnomo., B. Sudarmanto dan V. T. Irianto. 2021. Pengaruh pupuk kascing terhadap produksi pakchoy (*Brassica rapa* L.) pada KRPL KWT Melati, Kota Malang. *AgriHumanis: Journal of Agricultural and Human Resource Development Studied* 2 (1): 47 – 54.
- Ma, Tengfei., X. He., S. Chan., Y. Li., Q. Huang., C. Xue dan Q. Shen. 2022. Long-Term Organic–Inorganic Fertilization Regimes Alter Bacterial and Fungal Communities and Rice Yields in Paddy Soil. *Front. Microbiol.* 13: 890712. doi: 10.3389/fmicb.2022.890712.
- Magdoff, F. R., dan J. F. Amadon. 1980. Yield trends and soil chemical changes resulting from N and manure application to continuous corn. *Agronomy Journal* 72: 161 – 164 *dalam* Magdoff. F dan H. van Es. 2000, *Building Soils for Better Crops* 2nd edition. Sustainable Agriculture Network handbook series; bk. 4. 240 hal.
- Magdoff, F. R. dan R. J. Villamil. Jr. 1977. The Potential of Champlain Valley Clay Soils for Waste Disposal. Proceedings of the Lake Champlain Environmental Conference, Chazy. NY. July 15, 1976, *dalam* Magdoff. F dan H. van Es. 2000. *Building Soils for Better Crops* 2nd edition. Sustainable Agriculture Network handbook series; bk. 4. 240 hal.
- Magdoff. F dan H. van Es, 2000. *Building Soils for Better Crops* 2nd edition. Sustainable Agriculture Network handbook series; bk. 4. 240 hal.
- Maisura., M. A. Chozin., I Lubis., A. Junaedi dan H. Ehara. 2015. Laju Asimilasi Bersih dan Laju Tumbuh Relatif Varietas Padi Toleran Kekeringan Pada Sistem Sawah. *Jurnal Agrium* 12 (1): 10 – 15.
- Majumdar D. 2003. Methane and nitrous oxide emission from irrigated rice fields: Proposed mitigation strategies. *Current Science* 84(10): 1317 – 1326.
- Makarim. A. K. 2009. Aplikasi Ekofisiologi dalam Sistem Produksi Padi Berkelanjutan. *Jurnal Pengembangan Inovasi Pertanian* 2 (1): 14 - 34.
- Malviya, P., V. S. Suraywanshi dan U. B. Upadhyaya. 2018. Studies on Effect of Various Proportions of Vermicompost and Fertilizers on Physiological Parameters, Growth, Yield and Yield Components of Scented Rice. *Int. J. Curr. Microbiol. App. Sci* 7(11): 1587 – 1593.
- Mapegau. 2007. Pengaruh Pupuk Nitrogen terhadap Pertumbuhan dan Hasil Tanaman Kacang Hijau, Fakultas Pertanian Jambi. <https://media.neliti.com>.
- Marlina, A. dan Satriawaniqb, H. 2014. Pengaruh olah tanah dan pemberian pupuk kandang terhadap sifat fisik tanah dan produksi tanaman jagung. *Lentera: Jurnal Ilmiah Sains dan Teknologi* 14 : 146250.

- Marschner P. 2012. Marschner's mineral nutrition of higher plants. 3rd edn. Elsevier. Oxford Academic Press.
- Marwanto, M., Nasiroh., B. G. Mucitro dan M. Handajaningsih. 2018. Growth Effects of Combined Application of Cow Manure and Inorganic Nitrogen Fertilizer on Growth, Yield and Nitrogen Uptake of Black Rice. *Akta Agrosia* 21 (2): 55 – 60.
- Meen, A. L., Pandey, R. N., Kumar, D., Dotaniya, M. L., Sharma, V. K., Singh, G. 2020. Impact of 12-Year-Long Rice based Organic Farming on Soil Quality in Terms of Soil Physical Properties, Available Micronutrients and Rice yield in a Typic Ustochrept Soil of India. *Communications in Soil Science and Plant Analysis*: 1 - 18.
- Minami, K. dan S. Fukushi. 1984. Methods for measuring N<sub>2</sub>O flux from water surface and N<sub>2</sub>O dissolved in water from agricultural land. *Soil Sci. Plant Nutr.* 30 (4) : 495 – 502.
- Minamikawa, K., Tokida, T., Sudo, S., Padre, A dan Yagi, K. 2015. Guidelines for measuring CH<sub>4</sub> and N<sub>2</sub>O emissions from rice paddies by a manually operated closed chamber method, *Scientific reports* (Vol, 235). National Institute for Agro-Environmental Sciences. Tsukuba. Japan. <https://doi.org/10.1016/j.agee.2016.10.011>.
- Moe, K., A. Z. Htwe., T. T Phong Thu., Y. Kajihara dan T. Yamakawa. 2019. Effects on NPK Status, Growth, Dry Matter and Yield of Rice (*Oryza sativa*) by Organic Fertilizers Applied in Field Condition. *Agriculture* 9: 109 doi:10.3390/agriculture9050109.
- Mouldenbauer, K., P. Counce dan J. Hardke. 2018. Rice Growth and Development in Arkansas Rice Production Handbook. 12p.
- Muhuria, L., K. N. Tyas., N. Khumaida., Trikoesoemaningtyas dan D. Sopandie. 2006. Adaptasi Tanaman Kedelai Terhadap Intensitas Cahaya Rendah: Karakter Daun untuk Efisiensi Penangkapan Cahaya. *Bul. Agron* 34 (3) :133 – 140.
- Mulyani, N. S., M. E. Suryadi., S. Dwiningsih dan Haryanto. 2001. Dinamika Hara Nitrogen pada Tanah Sawah. *Jurnal Tanah dan Iklim* 19: 14 - 25.
- Mulyani, O., E. Hidayat Salim., A. Yuniarti., Y. Machfud., A. Sandrawati dan Marisa P. D. 2017, Studi perubahan unsur kalium akibat pemupukan dan pengaruhnya terhadap hasil tanaman, *Jurnal Ilmiah Lingkungan Tanah Pertanian* 15 (1).
- Mulyadi, T., M. nurcholis dan Partoyo. 2020. Beberapa Sifat Kimia Tanah Sawah Atas Penggunaan Pupuk Organik Dengan Kurun Waktu Berbeda Di Sayegan, Sleman. *Jurnal Tanah dan Air (Soil and Water Journal)* 17 (2): 74 – 91.
- Mungara, E., Indradewa, D dan Rogomulyo, R. 2013. Analisis Pertumbuhan dan Hasil Padi Sawah (*Oryza sativa* L.) pada Sistem Pertanian Konvensional, Transisi Organik, dan Organik. *Vegetalika* 2(3): 1 – 12.
- Murnita dan Y. A. Taher. 2021. Dampak Pupuk Organik Dan Anorganik Terhadap Perubahan Sifat Kimia Tanah Dan Produksi Tanaman Padi (*Oriza sativa* L.). *MENARA Ilmu* XV (2): 67 – 76.
- Myint, A. K., T. Yamakawa., T. Zenmyo., H. T. B. Thao., dan P. S. Sar. 2011. Effects of Organic-Manure Application on Growth, Grain Yield, and Nitrogen, Phosphorus, and Potassium Recoveries of Rice Variety Manawthuka in Paddy Soils of Differing Fertility. *Communications in Soil Science and Plant Analysis* 42: 457 – 474. DOI:10.1080/00103624.2011.542223.

- Nayak, D R., Babu, Y. J., Datta, A., Adhya, T. K. 2007. Methane oxidation in an intensively cropped tropical rice field soil under long-term application of organic and mineral fertilizers. *J. Environ. Qual* 36: 1577 – 1584.
- Nguyen, G., Rothstein, S., Spangenberg, G., Kant, S. 2015. Role of microRNAs involved in plant response to nitrogen and phosphorous limiting conditions. *Front Plant Sci* 6: 629.
- Nippon Koei, Co., Ltd. and Associates. 2006. Panduan Budidaya Padi Hemat Air System of Rice Intensification (SRI). Departemen Pekerjaan Umum RI. DISIMP. JBIC. Jakarta.
- Nugroho, S. A., Taufika., Ika L Novenda. 2021. Analisis Kandungan Klorofil *Colocasia esculenta*, *Theobroma cacao*, *Carica papaya*, *Dieffenbachia* sp, dan *Codiaeum variegatum*. *BIOMA: Jurnal Biologi dan Pembelajaran Biologi* 6 (2): 131 – 143.
- Nurmegawati,, Iskandar dan Sudarsono, 2019, Effects Of Bottom Ash And Cow Manure Compost On Chemical Properties Of Soil At New-Established Rice Field, *Sains Tanah – Journal of Soil Science and Agroclimatology*, 16(1) : 1-12
- Oo, A. N., P. Banteng., A. Polthanee dan V. Trelo-Ges. 2010. The Effect of Different Fertilizer Managemen Strategis on Growth and Yield of Upland Black Glutinous Rice and Soil Property. *Asian journal of Plant Sciences* 9 (7): 414 - 422.
- Oo, A. Z., Nguyen, L., Win, K. T., Cadisch, G dan Bellingrath-Kimura, S. D. 2013. Toposequential variation in methane emissions from double-cropping paddy rice in Northwest Vietnam. *Geoderma* 209– 210 :41–49.
- Padmanabha, I. G., I. D. M. Arthagama dan I. N. Dibia. 2014. Pengaruh Dosis Pupuk Organik dan Anorganik terhadap Hasil Padi (*Oriza sativa* L.) dan Sifat Kimia Tanah pada Inceptisol Kerambitan Tabanan. *E-Jurnal Agroekoteknologi Tropika* 3 (1): 41 – 50.
- Pandey, S. N dan Sinha, B.X. 1979. *Plant Physiology*. New Delhi: Vikas Publishing House FVT Ltd.
- Pane, H., Sutisna, N. E., Dizon M., Mortimer A. M. 2000. *Weed Communities of Gogorancah Rice and Reflections of Management*, P 269-287 In *Charactrizinand Understanding Rainfed Environments*. Tuong *et al.*, (Eds). IRRI. Los Banos. Philippines,
- Paramasiva, I., P. Rajasekhar., P. N. Harathi dan U. Vineetha. 2020. Incidence of insect pests of rice as affected by organic and inorganic fertilizers. *Journal of Entomology and Zoology Studies* 2020 8 (4): 638 - 641.
- Peretyazhko, T. dan Sposito, G. 2005. Iron (III) reduction and phosphorous solubilization in humid tropical forest soils. *Geochim. Cosmochim. Acta* 69: 3643 – 3652.
- Pierzynski, G. M., J. T. Sims dan G. F. Vance. 2000. *Soil and Environmental Quality*. Second Edition. CRC Press, Boca Raton. London.
- Pinatih., Dewa, K. A. S. R., Tati, B. K., Ketut, D. S. 2015. Evaluasi Status Kesuburan Tanah Pada Lahan Pertanian Di Kecamatan Denpasar Selatan. *E Jurnal Agroekoteknologi Tropika* 4 (4): 282 – 292.
- Pitaloka, M. K., R. S. Caine., C. Hepworth., E.L. Harrison., J. Sloan., C. Chutteang., C. Phuntong., R. Nongnok., T. Toojinda., S. Ruengpayak., S. Ariket., J. E. Gray

- dan A. Vanavichit. 2021. Induced Genetic Variations in Stomatal Density and Size of Rice Strongly Affect Water-Use Efficiency, Drought Tolerance, and Responses to Abiotic Stresses. Research Square. <https://doi.org/10.21203/rs.3.rs-655388/v1>.
- Ponnamperuma, F. N. 1985. Straw as a source of nutrients for wetland rice, In Organic Matter and Rice. International Rice Research Institute. Los Banos. Philippines. pp 311 – 328.
- Porcar-Castell, A., Z. Malenovsky., T. Magney., S. V. Wittenberghe., B. Fernández-Marín., F. Maignan., Y. Zhang., K. Maseyk., J. Atherton., L. P. Albert., T. M. Robson., F. Zhao., J-I. Gracia-Plazaola., I. Ensminger., P.A. Rajewicz., S. Grebe., M. Tikkanen., J. R. Kellner., J. A. Ihalainen., U. Rascher dan B. Logan. 2021. Chlorophyll a fluorescence illuminates a path connecting plant molecular biology to Earth-system science. Nature Plants 7(8): 998 – 1009.
- Prasetyo, B. H., J. S. Adiningsih., K. Subagyono dan R. D. M. Simanungkalit. 2004. Mineralogi, Kimia, Fisika, Dan Biologi Tanah Sawah, Dalam: Tanah Sawah dan Teknologi Pengolahannya, Pusat Penelitian dan Pengembangan Tanah Agroklimat. Badan Penelitian dan Pengembangan Pertanian. Bogor.
- Pratama, A. J. dan A. N. Laily. 2015,. Analisis Kandungan Klorofil Gendasuli (*Hedychium gardnerianum* Shephard ex Ker-Gawl) pada Tiga Daerah Perkembangan Daun yang Berbeda. Prodising KPSDA 1(1): 216 – 219.
- Purbajanti, E. D., Slamet, W., Fuskhah, E dan Rosyida. 2019. Effects of organic and inorganic fertilizers on growth, activity of nitrate reductase and chlorophyll contents of peanuts (*Arachis hypogaea* L.). Earth Environ. Sci. 250: 012048.
- Puspa Lorina, M. D., Sitawati, S dan Wicaksono, K. P. 2015. Studi sistem tumpangsari brokoli (*Brassica oleracea* L.) dan bawang prei (*Allium porrum* L.) pada berbagai jarak tanam. Jurnal produksi tanaman 3 (7): 565 - 573.
- Putri, F. M., S. W. A Suedy dan S. Darmanti. 2017. Pengaruh Pupuk Nanosilika Terhadap Jumlah Stomata, Kandungan Klorofil dan Pertumbuhan Padi Hitam (*Oryza sativa* L, cv, *japonica*). Buletin Anatomi dan Fisiologi 2(1): 72 – 79.
- Putri, N. D., E. D. Hastuti dan Budihastuti. 2017. Pengaruh Pemberian Limbah Kopi terhadap Pertumbuhan Tanaman Selada (*Lactuca sativa* L.). Jurnal Biologi 6 (4): 41 - 50.
- Qian, H. H., L. X. Mei., L. G. Rong., L. Z. Zhang., L. Y. Ren., H. Y. Lan., J. J. Hua., S. C. Hong., W. F. Quan. 2011. Effect of long-term located organic-inorganic fertilizer application on rice yield and soil fertility in red soil area of China. Sci. Agri. Sin. 44: 516 – 523.
- Rani, S dan Sukumarim, P. 2013. Root growth, nutrient uptake a2nd yield of medicinal rice njavara under different establishment techniques and nutrient sources. Am. J. Plant Sci. 4: 1568 - 1573.
- Ragel, P., Raddatz, N., Leidi, E. O., Quintero, F. J dan Pardo, J. M. 2019. Regulation of K+ nutrition in plants. Front Plant Sci 10: 281.
- Rahmah, A. 2014. Pengaruh Pupuk Organik Cair Berbahan Dasar Limbah Sawi Putih (*Brassica Chinensis* L.) Terhadap Pertumbuhan Tanaman Jagung Manis (*Zea mays* L. var. *saccharata*). Laporan Penelitian. Universitas Diponegoro. Semarang.

- Ram, S., V. Singh dan P. Sirari. 2016. Effects of 41 Years of Application of Inorganic Fertilizers and Farm Yard Manure on Crop Yields, Soil Quality, and Sustainable Yield Index under a Rice-Wheat Cropping System on Mollisols of North India. *Communications In Soil Science and Plant Analysis* 47 (2): 179 – 193. <http://dx.doi.org/10.1080/00103624.2015.1109653>.
- Ramadhana, D. D., D. Donantho dan R. Rachel. 2019. Penilaian Status Kesuburan Tanah pada Lahan Pascatambang di Areal PT. Trubaindo Coal Mining Kabupaten Kutai Barat. *Jurnal Agroekoteknologi Tropika Lembab* 2 (1): 24 – 28.
- Ratnawati., Alfandi., dan I. Sungkawa. 2019. Respon Pertumbuhan Tanaman Dan Hasil Beberapa Varietas Padi Sawah Tadah Hujan (*Oryza Sativa* L.) Akibat Penerapan Teknologi. *Jurnal AGROSWAGATI* 7 (2): 111 - 121.
- Reswita, Z., A. Noli dan R. Rahayu. 2022. Effect Of Giving Frass *Hermetia Illucen* L. On Soil Physical Chemical Properties, Chlorophyll Content And Yield Of Upland Rice (*Oryza Sativa* L.) On Ultisol Soil. *Eduvest -Journal of Universal Studies* 2 (2): 335 - 346.
- Robarge, W. P. 1999. *Environmental Soil and Water Chemistry: Principles and Applications.* Soil Sci. doi: 10.1097/00010694-199908000- 00008.
- Rosmarkam, A. dan Yuwono, N. W. 2002. *Ilmu Kesuburan Tanah*. Kanisius. Yogyakarta.
- Rostaman, T., L. Angria dan A. Kasno. 2003. Ketersediaan Hara P dan K Pada Lahan Sawah Dengan Penambahan Bahan Organik Pada Inceptisols. *Prosiding Seminar dan Kongres Nasional Himpunan Ilmu Tanah Indonesia (HITI) X*, Buku 1: 116-124. Jurusan Ilmu tanah Fakultas Pertanian UNS Bekerjasama dengan Himpunan Ilmu Tanah Indonesia (HITI).
- Rozen, N dan M. Kasim. 2018. *Teknik Budidaya Tanaman Padi Metode SRI (The System of Rice Intensification)*. Rajawali Pers. Depok. 296 hal.
- Santoso, A. A., S. Apriyani., H. Zu'amah dan E. Suprptomo. 2021. Pengaruh Pupuk Kandang Sapi terhadap Pertumbuhan, Hasil dan Serangan Hama Penyakit pada Tanaman Padi Varietas Inpari 24. *Prosiding Seminar Nasional Hasil Pertanian XI*: 197 – 201.
- Sari, A. N., Muliana., Yusra., Khusrizal dan H. Akbar. 2022. Evaluasi Status Kesuburan Tanah Sawah Tadah Hujan dan Irigasi di Kecamatan Nisam Kabupaten Aceh Utara. *Jurnal Ilmiah Mahasiswa Agroekoteknologi* 1 (2): 49-57. ISSN: 2962 - 0155 (online) DOI: 10.29103/jimatek.v1i2.8467
- Sarker, U. K., Md. R. Uddin., Md. A. R. Sarkar., Md. A. Salam dan A. K. Hasan. 2017. Influence of organic and inorganic nitrogen on the growth and yield of irrigated rice. *Asian Australas J. Biosci, Biotechnol* 2(1): 9-23
- Sarwoto, A., A. Ratnaningrum dan I. I. Triyanti. 2021. *Indikator Pertanian Kabupaten Pati 2021*. BPS Kabupaten Pati. 107 hal.
- Sayekti, R. S., D. Prajitno dan D. Indradewa. 2018. Pengaruh Takaran Pupuk Kandang dan Kompos terhadap Pertumbuhan Daun Kangkung (*Ipomea reptans*) Akuaponik. *Agrinova: Journal of Agriculture Inovation* 1(1): 015 – 022.
- Setiawan, Y., Liyantono., Fatikhunnada, A., Permatasari, P. A. dan Aulia, M. R. 2016. Dynamics pattern analysis of paddy fields in Indonesia for developing a near real-time monitoring system using modis satellite images. *Procedia*



Environmental Sciences 33: 108–116. <https://doi.org/10.1016/j.proenv.2016.03.062>.

- Setyanto, P. 2006. Varietas padi rendah emisi gas rumah kaca. Penelitian dan Pengembangan Pertanian 28 (4).
- Shabala, S dan Pottosin, I .2014. Regulation of potassium transport in plants under hostile conditions: implications for abiotic and biotic stress tolerance. *Physiol Plant* 151: 257 – 279. <https://doi.org/10.1111/ppl.12165>
- Shambhavi, S. Rakesh Kumar., S. P. Sharma., G. Verma., R. P. Sharma dan Sanjay K. Sharma. 2017. Long-term effect of inorganic fertilizers and amendments on productivity and root dynamics under maize-wheat intensive cropping in an acid Alfisol. *Journal of Applied and Natural Science* 9 (4): 2004 -2012.
- Sharma, S. P. dan Subehia, S. K. 2003. Effect of 25 years of fertilizer use on maize-wheat yields and quality of an acidic soil in the Western Himalayas. *Exp. Agric.* 39: 55 - 64.
- Sharma, M., Mishra, B dan Singh, R. 2007. Longterm effect of fertilizer and manure on physical and chemical properties of a Mollisol. *J. Ind. Soc. Soil Sci.* 55: 523 – 624.
- Shengling, Y., H. Xingcheng., L. Yu., L. Yanling., Z. Yarong., Z. Yan., Z. Wen'an dan J. Taiming. 2022. Effects of long-term organic and inorganic fertilizer application on growth, dry matter accumulation and yield of rice[J]. *Acta Agriculturae Zhejiangensis* 34 (9): 1815 – 1825.
- Shrestha, J., M. Kandel., S. Subedi dan K. K. Shah. 2020. Role of Nutrients In Rice (*Oryza Sativa* L.): A Review. *Agrica* 53 - 62. Doi:10.5958/2394-448x.2020.00008.5.
- Siavoshi, M., A. Nasiri dan S. L. Laware. 2011. Effect of Organic Fertilizer on Growth and Yield Components in Rice (*Oryza sativa* L.). *Journal of Agricultural Science* 3 (3): 217 - 224.
- Siregar H. 1987. *Budidaya Tanaman Padi di Indonesia*. Sastra Hudaya. Jakarta. 319 hal.
- Sirowal, Abishek., F. Neese dan D. A. Pantazis. 2021. Chlorophyll excitation energies and structural stability of the CP47 antenna of photosystem II: a case study in the first-principles simulation of light-harvesting complexes. *Chemical Science* 12 (12): 4463 – 4476.
- Siwanto, T., Sugiyanta dan M. Melati. 2015. Peran Pupuk Organik dalam Peningkatan Efisiensi Pupuk Anorganik pada Padi Sawah (*Oryza sativa* L.). *J. Agron. Indonesia* 43 (1): 8 – 14.
- Snyder, C. S., T. W. Bruulsema., T. L. Jensen dan P. E. Fixen. 2009. Review of greenhouse gas emissions from crop production systems and fertilizer management effects. *Agriculture, Ecosystems and Environment* 133: 247 - 266.
- Sohail, M. I., A. A. Qadir., M. Farhan., F. Akmal., H. I. Khalid., M. Naveed., M. Amin., U. Riaz dan K. Asif. 2020, *Nutritional Management in Rice: Recent Advances for Sustainable Production*. Austin Publishing Group: 32 – 60.
- Stevenson, F. J. 1994. *Humus Chemistry Genesis, Composition, Reaction*. John Wiley and Sons. New York.

- Sudaryono. 2009. Tingkat Kesuburan tanah Ultisol pada Lahan Pertambangan Batu Bara Sangatta Kaltim. *Jurnal Teknologi Lingkungan* 10 (3): 337 – 346. <https://doi.org/10.29122/jtl.v10i3.1480>.
- Sumardi. 2007. Peningkatan Produksi Sawah Melalui Perbaikan Lingkungan Tumbuh Dalam Meningkatkan Hubungan Source-sink Tanaman pada Metode SRI (The System Rice Intensification). Disertasi. Ilmu – Ilmu Pertanian. Program Pasca Sarjana, Universitas Andalas. Padang.
- Sunarpi, H., A. Nikmatullah., A. L. Sunarwidhi., A. Jihadi., B. T. K. Ilhami., Y. Ambana., R. Rinaldi., A. Jupri., S. Widyaastuti dan E. S. Prasedya. 2021. Combination of inorganic and organic fertilizer in rice plants (*Oryza sativa*) in screen houses, IOP Conf, Series: Earth and Environmental Science 712: 012035. doi:10.1088/1755-1315/712/1/012035.
- Supartha, I. N. Y., Wijana, G. dan Andyana, G. M. 2012. Aplikasi jenis pupuk organik pada tanaman padi sistem pertanian organik. *E Jurnal Agroekoteknologi Tropika* 1 (2): 98 - 106.
- Suriadikarta, D. A dan R. D. M. Simanungkalit. 2006. Pupuk Organik dan Pupuk Hayati, Organic Fertilizer and Biofertilizer. Balai Besar Penelitian dan Pengembangan Sumberdaya Lahan Pertanian. Bogor. p 312.
- Sution dan Serom. 2019. Adaptasi Varietas Unggul Baru Dan Umur Semai Terhadap Produktivitas Padi Sawah Tadah Hujan Bukaak Baru. *Jurnal Pertanian Agros* 21 (2): 243 – 254.
- Syachroni, S. H. 2019. Kajian Beberapa Sifat Kimia Tanah Pada Tanah Sawah Di Berbagai Lokasi Di Kota Palembang. *SYLVA VIII – 2* : 60 – 65
- Tahir, R. M. , A. M. Noor-us-Sabah., A. M. G. Sarwar., I. Rasool dan I. R. Norka. 2019. Smart nutrition management of rice crop under climate change environment, In Y. Jia (Eds). *Protecting Rice Grains in The Post-Genomic Era*. pp 1 – 11. UK: IntechOpen Limited. DOI: <http://dx.doi.org/10.5772/intechopen.86094>.
- Taluta, H. E., H. L. Rampe dan M. J. Rumondor. 2017. Pengukuran Panjang dan Lebar Pori Stomata Daun Beberapa Varietas Tanaman Kacang Tanah (*Arachis hypogaea* L.). *JURNAL MIPA UNSRAT ONLINE* 6 (2): 1 - 5.
- Tando. E. 2018. Review: Upaya Efisiensi Dan Peningkatan Ketersediaan Nitrogen Dalam Tanah Serta Serapan Nitrogen Pada Tanaman Padi Sawah (*Oryza sativa* L.). *Buana Sains* 18 (2): 171 – 180.
- Terashima, I., Y. T. Hanba., Y. Tazoe., P. Vyas dan S. Yano. 2006. Irradiance and phenotype: comparative eco-development of sun and shade leaves in relation to photosynthetic CO<sub>2</sub> diffusion. *Journal of Experimental Botany* 57 (2): 343–354.
- Timsina, J., J. Wolf., N. Guilpart., L. G. J. van Bussel., P. Grassini., J. van Wart., A. Hossain., H. Rashid., S. Islam dan M. K. van Ittersum. 2018. Can Bangladesh produce enough cereals to meet future demand?. *Agricultural Systems* 163: 36 – 44. doi: [10.1016/j.agsy.2016.11.003](https://doi.org/10.1016/j.agsy.2016.11.003).
- Timilsina, A., F. Bizimana., B. Pandey., R. K. P. Yadav., W. Dong dan C. Hu. 2020. Nitrous Oxide Emissions from Paddies: Understanding the Role of Rice Plants. *Plants* 2020 9: 180. doi:10.3390/plants9020180.

- Toor, M. D., M. Adnan., F. ur Rahman., R. Tahir., M. S. Saeed., A. U. Khan dan V. Pareek. 2021. Nutrients and Their Importance in Agriculture Crop Production: A Review. *Ind. J. Pure App. Biosci.* 9 (1): 1 – 6.
- Triyono, A., Purwanto dan Budiyo. 2013. Efisiensi Penggunaan Pupuk –N Untuk Pengurangan Kehilangan Nitrat Pada Lahan Pertanian. *Prosiding Seminar Nasional Pengelolaan Sumber Daya Alam dan Lingkungan 2013*: 526 – 531.
- Traore, B., F. Samake., A. Babana dan M. Hang. 2017. Effects of different fertilizers on methane emission from paddy field of Zhejiang, China. *African Journal of Environmental Science and Technology* 11 (1): 89 – 93. DOI: 10.5897/AJEST2016.2189.
- Verma, K., Bindra, A. D., Singh, J., Negi, S. C., Datt, N., Rana, U dan Manuja, S. 2018. Effect of integrated nutrient management on growth, yield attributes and yield of maize and wheat in maize-wheat cropping system in mid hills of Himachal Pradesh. *Int. J. Pure Appl. Biosci.* 6: 282–301.
- Verchot, L., Hutabarat, L., Hairiah, K dan van Noordwijk, M. 2006. Nitrogen availability and soil N<sub>2</sub>O emissions following conversion of forests to coffee in southern Sumatra. *Glob. Biogeochem. Cycles.* 20: GB4008.
- Viandari, N. A., A. Wihardjaka., H. B. Pulunggono dan Suwardi. 2022. Sustainable Development Strategies of Rainfed Paddy Fields in Central Java, Indonesia: A Review. *Caraka Tani: Journal of Sustainable Agriculture* 37 (2): 275 – 288. DOI: <http://dx.doi.org/10.20961/carakatani.v37i2.58242>.
- Wahyudi, A., M. Zulqarnida dan S. Widodo. 2014. Aplikasi Pupuk Organik dan Anorganik dalam Budidaya Bawang Putih Varietas Lumbu Hijau. *Prosiding Seminar Nasional Pengembangan Teknologi Pertanian Politeknik Negeri Lampung 24 Mei 2014*: 237 - 243.
- Wahyuni, S., S. Rianto., U. Muanisah dan P. Setyanto. 2016. Pemanfaatan Pupuk Organik untuk Meningkatkan Populasi Bakteri dan Produksi Tanaman Padi Gogorancah. *Proceeding Biology Education Conference* 13 (1): 752 - 756.
- Wang, S., Liang, X., Chen, Y., Luo, Q., Liang, W., Li, S., Huang, C., Li, Z., Wan, L dan Li, W. 2012. Phosphorus loss potential and phosphatase activity under phosphorus fertilization in long-term paddy wetland agroecosystems. *Soil Sci. Soc. Am. J.* 76: 161 – 167.
- Wang, J., T. T. Xu., L. C. Yin., C. Han., H. Deng., Y. B. Jiang dan W. H. Zhong. 2018. Nitrate addition inhibited methanogenesis in paddy soils under long-term managements. *Plant Soil Environ* 64 (8): 393 – 399.
- Wang, Q., Jiong, W., Wen, Y. J., Zhang, Y., Zhang, N., Wang, Y. N., Bai, L. Y., Su, S. M dan Zeng, X. B. 2021. Alteration of soil-surface electrochemical properties by organic fertilization to reduce dissolved inorganic nitrogen leaching in paddy fields. *Soil and Tillage Research* 209: 104956.
- Watanabe, I dan P. A. Roger. 1985. Ecology of flooded rice fields, In *Wetland Soils: Characterization, Classification, and Utilization*. International Rice Research Institute, Los Banos, Philippines: 229 – 243.

- Wei, C. F.; Gao, M., Huang, Q., Che, F. C dan Yang, J. H. 2000. Effects of tillage-cropping systems on methane emissions from year-round flooded paddy field in southwest China. *Acta Pedol. Sin.* 37: 157 – 165.
- Widowati., Utomo, W. H., Guritno, B. dan Soehono, L. A. 2012. The Effect of biochar on the growth and N fertilizer requirement of maize (*Zea mays* L.) in green house experiment. *Journal of Agricultural Science* 4 (5): 255 – 262.
- Widyaswari, E., M. Santoso dan M. D. Maghfoer. 2017. Analisis Pertumbuhan Dua Varietas Tanaman Padi (*Oryza sativa* L.) pada Berbagai Perlakuan Pemupukan. *Jurnal Biotropika* 5 (3): 73 - 77.
- Wihardjaka, A. 2015. Mitigasi Emisi Gas Metana Melalui Pengelolaan Lahan Sawah. *J. Litbang Pert.* 34 (3): 95 – 104.
- Wihardjaka, A., A. Pramono dan M. T. Sutriady. 2020. Peningkatan Produktivitas Padi Sawah Tadah Hujan Melalui Penerapan Teknologi Adaptif Dampak Perubahan Iklim. *Jurnal Sumberdaya Lahan* 14 (1): 25 - 36.
- Wihardjaka, A dan E. S. Harsanti. 2021. Dukungan Pupuk Organik untuk Memperbaiki Kualitas Tanah pada Pengelolaan Padi Sawah Ramah Lingkungan. *PANGAN* 30(1): 53 – 64.
- Wijayanti, H. 2008. Pengaruh Pemberian Kompos Limbah Padat Tempe Terhadap Sifat Fisik, Kimia Tanah Dan Pertumbuhan Tanaman Jagung (*Zea Mays*) Serta Efisiensi Terhadap Pupuk Urea Pada EntisolWajak-Malang. Skripsi. Fakultas Pertanian Jurusan Tanah Program Studi Ilmu Tanah, Universitas Brawijaya, Malang.
- Willis, M. 2001. Hama dan Penyakit Utama Tanaman Padi di Lahan Pasang Surut. Monograf. Badan Litbang Pertanian. Balittra. Banjarbaru.
- Wiryanta, W dan Bernardinus, T. 2002. Bertanam Cabai Pada Musim Hujan. Agromedia Pustaka. Jakarta.
- Wei, C. F., Gao, M., Huang, Q., Che, F. C dan Yang, J. H. 2000. Effects of tillage-cropping systems on methane emissions from year-round flooded paddy field in southwest China. *Acta Pedol. Sin* 37: 157 – 165.
- Xia, S. M. 2018. Relationship Between Root Morphology and Physiology of Rice and Methane Emission from Paddy Field. Master's Thesis. Yangzhou University, Yangzhou. China.
- Yadav, S. K., D. K. Benbi dan R. Prasad. 2019. Effect of Continuous Application of Organic and Inorganic Sources of Nutrients on Chemical Properties of Soil. *Int. J. Curr. Microbiol. App. Sci* 8 (4): 2455 – 2463.
- Yao, Z., X. Zheng., H. Dong., R. Wang., B. Mei dan J. Zhu. 2012. A 3-year record of N<sub>2</sub>O and CH<sub>4</sub> emissions from a sandy loam paddy during rice seasons as affected by different nitrogen application rates. *Agriculture, Ecosystems and Environment* 152: 1 – 9.
- Yan Bu, Rong., M. Li., S. Han., W. L. Cheng., H. Wang., Z. X. Sun., S. Tang dan J. Wu, 2021. Comprehensive effects of combined application of organic and inorganic fertilizer on yield, greenhouse gas emissions, and soil nutrient in double-cropping rice systems. *Ying Yong Sheng Tai Xue Bao* 32 (1): 145 - 153. doi: 10.13287/j.1001-9332.202101.023.

- Yartiwi., A. Romeida dan S. P. Utama. 2018. Uji Adaptasi Varietas Unggul Baru Padi Sawah Untuk Optimalisasi Lahan Tadahan Hujan Berwawasan Lingkungan Di Kabupaten Seluma Provinsi Bengkulu. *Naturalis, Pengelolaan Sumber Daya Alam, Lingkungan* 7 (2): 91 - 97. <https://doi.org/10.31186/naturalis.7.2.6027>.
- Yoshida, S. 1981. *Fundamentals of rice crop science*. Int. Rice Res. Inst., Los Banos. The Philippines.
- Yoshida, S. 1983. *Productivity of Field Crops Under*. Los Banos. Laguna Philippines: 103 ± 127
- Yuan, J., Zhi-min, Sha., D. Hassani., Z. Zhao dan Lin-kui Cao. 2017. Assessing environmental impacts of organic and inorganic fertilizer on daily and seasonal Greenhouse Gases effluxes in rice field, *Atmospheric Environment* 155 : 119 – 128.
- Yuliana, N. W. dan M. Santoso. 2018. Pemberian Biourin sapi dan beberapa jenis pupuk organik pada pertumbuhan dan hasil padi (*Oryza sativa* L.). *Jurnal Produksi Tanaman* 6 (5): 855 - 860.
- Yunianti, I. F. 2021. *Emisi Gas Rumah Kaca Pada Sistem Usahatani Padi Sawah Tadahan Hujan Di Desa Sokopuluhan, Kecamatan Pucakwangi, Kabupaten Pati*. Thesis. Program Studi Ilmu Lingkungan. Sekolah Pascasarjana. Universitas Gadjah Mada. Yogyakarta: 121 hal.
- Yunianti, I. F., N. A. Viandari., Jumari., E. Suprptomo dan M. T. Sutriadi. 2022, Peningkatan Hasil Padi Melalui Penerapan Pengelolaan Hara Spesifik Lokasi di Lahan Sawah Tadahan Hujan. *Biota: Jurnal Ilmiah Ilmu-Ilmu Hayati* 7 (1): 11 - 18. DOI:10.24002/biota.v7i1.5425.
- Zang, Y., Wang, Y. Y., Su. S. L dan Li, C. S. 2011. Quantifying methane emissions from rice paddies in Northeast China by integrating remote sensing mapping with a biogeochemical model. *Biogeosciences* 8 (5): 1225 – 1235.
- Zewdie, I dan Y, Reta. 2021. Review on the role of soil macronutrient (NPK) on the improvement and yield and quality of agronomic crops. *Direct Res. J. Agric. Food Sci.* 9 (1): 7 – 11.
- Zhang, Y. Q., Deng, C. F., Luo, Z. Z., Niu, Y. N., Li, L. L., Cai, L. Q., Xie, J.H., Ma, X. 2020. Characterization of greenhouse gas emissions from the alfalfa field in Loess Plateau during different planting years. *Pratacultural Sci.* 37: 30 – 40.
- Zhang, Y., Y, Nie., Y, Lie., X. Huang., Y. Yang., H, Xiong., H, Zhu dan Y, Li. 2022. Characteristics of Greenhouse Gas Emissions from Yellow Paddy Soils under Long-Term Organic Fertilizer Application. *Sustainability* 14: 12574. <https://doi.org/10.3390/su141912574>.
- Zheng, M. Q., Liu, J., Jiang, P. K., Wu, J. S., Li, Y. F., Li, S.H. 2022. Effects of nitrogen fertilizer management on CH<sub>4</sub> and N<sub>2</sub>O emissions in paddy field. *Environ. Sci.* 43: 2171 – 2181.
- Zhou, M., Zhu, B., Bahl, K., Wang, T., Bergmann, J., Bruggeman, N., Wang, Z., Li. T., Kuang, F. 2012. Nitrate Leaching, Direct and Indirect Nitrous Oxide Fluxes from Sloping Cropland in The Purple Soil Area, Southwestern China. *Environmental Pollution* 162 : 361 – 368.