

## DAFTAR PUSTAKA

- Abdalla, M., Jones, M., Yeluripati, J., Smith, P., Burke, J., & Williams, M. (2010). Testing DayCent and DNDC model simulations of N<sub>2</sub>O fluxes and assessing the impacts of climate change on the gas flux and biomass production from a humid pasture. *Atmospheric Environment*, 44(25), 2961–2970.  
<https://doi.org/https://doi.org/10.1016/j.atmosenv.2010.05.018>
- Arif, C. (2013). *Optimizing water management in system of rice intensification paddy fields by field monitoring technology*.
- Arif, Chusnul, Setiawan, B. I., Widodo, S., Sipil, T., Darmaga, K. I. P. B., Mesin, T., & Darmaga, K. I. P. B. (2015). *Pengembangan Model Jaringan Saraf Tiruan Untuk Menduga Emisi Gas Rumah Kaca Dari Lahan Sawah Dengan Berbagai Rejim Air Development Of Artificial Neural Network To Predict Greenhouse Gas Emissions From Rice Fields With Different Water Regimes Oleh : 10(1)*, 1–10.
- Aulakh, M. S., Bodenbender, J., Wassmann, R., & Rennenberg, H. (2000). Methane transport capacity of rice plants. II. Variations among different rice cultivars and relationship with morphological characteristics. *Nutrient Cycling in Agroecosystems*, 58(1–3), 367–375. <https://doi.org/10.1023/A:1009839929441>
- Babu, Y. J., Li, C., Frolking, S., Nayak, D. R., & Adhya, T. K. (2006). Field validation of DNDC model for methane and nitrous oxide emissions from rice-based production systems of India. *Nutrient Cycling in Agroecosystems*, 74(2), 157–174. <https://doi.org/10.1007/s10705-005-6111-5>
- Balitbangtan. (2015a). *Pembuatan Mol Dari Bahan Baku Lokal*.  
<https://balittanah.litbang.pertanian.go.id/ind/dokumentasi/leaflet/juknis%20mol.pdf> [20 September 2020]
- Balitbangtan. (2015b). *Pengertian Pupuk - Balittanah*.  
<http://balittanah.litbang.pertanian.go.id/ind/index.php/en/berita-terbaru-topmenu-58/1059-> [20 September 2020]
- Balitbangtan. (2016). *Varietas Rendah Emisi Gas Rumah Kaca*.  
<https://balingtang.litbang.pertanian.go.id/ind/index.php/success-story/150-varietas-rendah-emisi-gas-rumah-kaca> [28 Agustus 2020]
- Balittanah. (2011). *M O L - Balittanah*.  
<https://balittanah.litbang.pertanian.go.id/ind/index.php/berita/1097-mol> [19 September 2020]
- BBPADI. (2015). *BBPADI - Pengertian Umum Varietas, Galur, Inbrida, dan Hibrida*. <https://bbpadi.litbang.pertanian.go.id/index.php/info-berita/info-teknologi/pengertian-umum-varietas-galur-inbrida-dan-hibrida> [24 Agustus 2020]
- BBPADI. (2019). *BBPADI - Top 10 Varietas Padi Tahun 2018*.  
<https://bbpadi.litbang.pertanian.go.id/index.php/top-varietas/top-10-varietas->

padi-tahun-2018 [27 Agustus 2020]

- Bossio, D. A., Horwath, W. R., Mutters, R. G., & van Kessel, C. (1999). Methane pool and flux dynamics in a rice field following straw incorporation. *Soil Biology and Biochemistry*, 31(9), 1313–1322.  
[https://doi.org/https://doi.org/10.1016/S0038-0717\(99\)00050-4](https://doi.org/https://doi.org/10.1016/S0038-0717(99)00050-4)
- BPTP. (2009). *Badan ketahanan pangan dan penyuluh pertanian aceh bekerja sama dengan balai pengkajian teknologi pertanian nad 2009*. 21 pp.
- Cai, Z., Shan, Y., Xu, H., Cai, Z., Shan, Y., & Xu, H. (2013). *Soil Science and Plant Nutrition Effects of nitrogen fertilization on CH<sub>4</sub> emissions from rice fields*. 0768.  
<https://doi.org/10.1111/j.1747-0765.2007.00153.x>
- Cai, Z., Xing, G., Yan, X., Xu, H., Tsuruta, H., Yagi, K., & Minami, K. (1997). Methane and nitrous oxide emissions from rice paddy fields as affected by nitrogen fertilisers and water management. *Annals of Operations Research*, 196, 7–14. <https://doi.org/10.1023/A>
- Conrad, R. (1999). Contribution of hydrogen to methane production and control of hydrogen concentrations in methanogenic soils and sediments. *FEMS Microbiology Ecology*, 28(3), 193–202. [https://doi.org/10.1016/S0168-6496\(98\)00086-5](https://doi.org/10.1016/S0168-6496(98)00086-5)
- Conrad, R. B. T.-A. in A. (2007). Microbial Ecology of Methanogens and Methanotrophs. In *Advances in Agronomy* (Vol. 96, pp. 1–63). Academic Press.  
[https://doi.org/https://doi.org/10.1016/S0065-2113\(07\)96005-8](https://doi.org/https://doi.org/10.1016/S0065-2113(07)96005-8)
- Das, K., & Baruah, K. K. (2008). *Association between contrasting methane emissions of two rice ( Oryza sativa L .) cultivars from the irrigated agroecosystem of northeast India and their growth and photosynthetic ch ... Association between contrasting methane emissions of two rice ( Oryz. July*.  
<https://doi.org/10.1007/s11738-008-0156-4>
- Denier Van Der Gon, H. A. C., & Neue, H. U. (1996). Oxidation of methane in the rhizosphere of rice plants. In *Biology and Fertility of Soils* (Vol. 22, Issue 4).  
<https://doi.org/10.1007/BF00334584>
- Devêvre, O. C., & Horwáth, W. R. (2000). Decomposition of rice straw and microbial carbon use efficiency under different soil temperatures and moistures. *Soil Biology and Biochemistry*, 32(11), 1773–1785.  
[https://doi.org/https://doi.org/10.1016/S0038-0717\(00\)00096-1](https://doi.org/https://doi.org/10.1016/S0038-0717(00)00096-1)
- Fahmi, A., Nuryani, S., Utami, H., & Radjagukguk, B. (2010). *PENGARUH INTERAKSI HARA NITROGEN DAN FOSFOR TERHADAP PERTUMBUHAN TANAMAN JAGUNG ( Zea Mays L ) [ The Effect of Interaction of Nitrogen and Phosphorus Nutrients on Maize ( Zea Mays L .) Grown In Regosol and Latosol Soils ]*. 10(September), 297–304.
- Ferry Yuniarti, I., Yulia ningrum, H., & Ariani, M. (2020). Pengaruh Pemberian Variasi Bahan Organik Terhadap Peningkatan Produksi Padi dan Penurunan Emisi Metana (CH<sub>4</sub>) di Lahan Sawah Tadah Hujan. *Jurnal Ecolab*, 14(2), 79–90. <https://doi.org/10.20886/jklh.2020.14.2.79-90>

- Giltrap, D. L., Li, C., & Saggar, S. (2010). DNDC: A process-based model of greenhouse gas fluxes from agricultural soils. *Agriculture, Ecosystems and Environment*, 136(3–4), 292–300. <https://doi.org/10.1016/j.agee.2009.06.014>
- HARADA, H., KOBAYASHI, H., & SHINDO, H. (2007). Reduction in greenhouse gas emissions by no-tilling rice cultivation in Hachirogata polder, northern Japan: Life-cycle inventory analysis. *Soil Science & Plant Nutrition*, 53(5), 668–677. <https://doi.org/https://doi.org/10.1111/j.1747-0765.2007.00174.x>
- Hartatik, W., Sulaiman, & Kasno, A. (1996). *Perubahan Sifat Kimia Tanah Dan Ameliorasi Sawah Bukaak Baru*. 53–75.
- Hasanah, N. A. I., Setiawan, B. I., Mizoguchi, M., Gary, R. S., Arif, C., & Widodo, S. (2017). *Triangle Graphs Development for Estimating Methane and Nitrous Oxide Gases Emission from the System of Rice Intensification ( SRI ) Research Article Triangle Graphs Development for Estimating Methane and Nitrous Oxide Gases Emission from the System of Ric. June*. <https://doi.org/10.3923/jest.2017.206.214>
- Holzappel-Pschorn, A., & Seiler, W. (1986). Methane emission during a cultivation period from an Italian rice paddy. *Journal of Geophysical Research: Atmospheres*, 91(D11), 11803–11814. <https://doi.org/https://doi.org/10.1029/JD091iD11p11803>
- Horie, T. (1993). Predicting the Effects of Climatic Variation and Elevated CO<sub>2</sub> on Rice Yield in Japan. *Journal of Agricultural Meteorology*, 48(5), 567–574. <https://doi.org/10.2480/agrmet.48.567>
- Horwath, W. (2011). Greenhouse Gas Emissions from Rice Cropping Systems. *ACS Symposium Series*, 1072, 67–89. <https://doi.org/10.1021/bk-2011-1072.ch005>
- IAEA-International Atomic Energy Agency 1992. (1992). Manual on measurement of methane. *Manual on Measurement OfMethane and Nitrous Oxide Emission from Agricultural*, 52.
- IRRI. (2015). *Title:Step to successful Rice production*. <http://knowledgebank.irri.org/images/docs/12-Steps-Required-for-Successful-Rice-Production.pdf> [19 Agustus 2020]
- IRRI. (2020). *International Rice Research Institute*. *Journal of Tropical Ecology*. <https://doi.org/10.1017/s0266467400004065>
- Jeffery, S., Verheijen, F. G. A., Kammann, C., & Abalos, D. (2017). Corrigendum to “Biochar effects on methane emissions from soils: A meta-analysis” [Soil Biol. Biochem. 101 (2016) 251–258](S0038071716301663)(10.1016/j.soilbio.2016.07.021). *Soil Biology and Biochemistry*, 105(December 2014), 253. <https://doi.org/10.1016/j.soilbio.2016.09.002>
- Katayanagi, N., Fumoto, T., Hayano, M., Takata, Y., Kuwagata, T., Shirato, Y., Sawano, S., Kajiura, M., Sudo, S., Ishigooka, Y., & Yagi, K. (2016). Development of a method for estimating total CH<sub>4</sub> emission from rice paddies in Japan using the DNDC-Rice model. *Science of The Total Environment*, 547, 429–440. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2015.12.149>

- Kludze, H. K., DeLaune, R. D., & Patrick Jr., W. H. (1993). Aerenchyma Formation and Methane and Oxygen Exchange in Rice. *Soil Science Society of America Journal*, 57(2), 386–391.  
<https://doi.org/https://doi.org/10.2136/sssaj1993.03615995005700020017x>
- Kumar, P., Husain, A., Singh, R. B., & Kumar, M. (2018). Impact of land cover change on land surface temperature: A case study of Spiti Valley. *Journal of Mountain Science*. <https://doi.org/10.1007/s11629-018-4902-9>
- Le Mer, J., & Roger, P. (2001). Production, oxidation, emission and consumption of methane by soils: A review. *European Journal of Soil Biology*, 37(1), 25–50.  
[https://doi.org/https://doi.org/10.1016/S1164-5563\(01\)01067-6](https://doi.org/https://doi.org/10.1016/S1164-5563(01)01067-6)
- Li, C., Frohling, S., & Frohling, T. A. (1992). A model of nitrous oxide evolution from soil driven by rainfall events: 2. Model applications. *Journal of Geophysical Research: Atmospheres*, 97(D9), 9777–9783.  
<https://doi.org/https://doi.org/10.1029/92JD00510>
- Li, C. S. (2000). Modeling trace gas emissions from agricultural ecosystems. In *Methane Emissions from Major Rice Ecosystems in Asia* (pp. 259–276).  
[https://doi.org/10.1007/978-94-010-0898-3\\_20](https://doi.org/10.1007/978-94-010-0898-3_20)
- Lou, Y., Mizuno, T., Kobayashi, K., Okada, M., Hasegawa, T., Hoque, M. M., & Inubushi, K. (2006). CH<sub>4</sub> production potential in a paddy soil exposed to atmospheric CO<sub>2</sub> enrichment. *Soil Science and Plant Nutrition*, 52(6), 769–773.  
<https://doi.org/10.1111/j.1747-0765.2006.00091.x>
- M.M Mukaka. (2012). Statistics Corner: A Guide to Appropriate Use of Correlation Coefficient. *Malawi Medical Journal*, 24(3), 69–71.  
<https://pubmed.ncbi.nlm.nih.gov/23638278/>
- Makarim, A. K., & Suhartatik, E. (2009). *Morfologi dan Fisiologi Tanaman Padi* (pp. 297–330).
- Neill, S. P., & Hashemi, M. R. (2018). Ocean Modelling for Resource Characterization. In *Fundamentals of Ocean Renewable Energy*.  
<https://doi.org/10.1016/b978-0-12-810448-4.00008-2>
- Neue, H.-U. (2009). Methane emission from rice fields: Wetland rice fields may make a major contribution to global warming. *Bioscience*, 43, 466–474.
- Nugroho, B. D. A., Toriyama, K., Kobayashi, K., Arif, C., Yokoyama, S., & Mizoguchi, M. (2018). Effect of intermittent irrigation following the system of rice intensification (SRI) on rice yield in a farmer's paddy fields in Indonesia. *Paddy and Water Environment*, 16(4), 715–723. <https://doi.org/10.1007/s10333-018-0663-x>
- Rahmat, A., Arif, C., & Chadirin, Y. (2018). *Estimasi Gas Rumah Kaca Pada Berbagai Macam Pengelolaan Air Menggunakan Model Denitrifikasi-Dekomposisi ( DNDC ) Greenhouse Gas Estimation In Various Water Management Using Denitrification-Decomposition Model ( DNDC ) Oleh : 11–20*.
- Rivera, A., Bravo, C., & Buob, G. (2017). Climate Change and Land Ice. In *International Encyclopedia of Geography: People, the Earth, Environment and*

- Technology*. <https://doi.org/10.1002/9781118786352.wbieg0538>
- Rochmah, H. F., & Sugiyanta. (2010). *Pengaruh Pupuk Organik Dan Anorganik Terhadap Pertumbuhan Dan Hasil Padi Sawah (Oryza sativa L.)*.
- Sass, R. L., Fisher, F. M., Wang, Y. B., Turner, F. T., & Jund, M. F. (1992). Methane emission from rice fields: The effect of floodwater management. *Global Biogeochemical Cycles*, 6(3), 249–262.  
<https://doi.org/https://doi.org/10.1029/92GB01674>
- Schmidt-Rohr, K., Mao, J.-D., & Olk, D. C. (2004). Nitrogen-bonded aromatics in soil organic matter and their implications for a yield decline in intensive rice cropping. *Proceedings of the National Academy of Sciences of the United States of America*, 101(17), 6351–6354. <https://doi.org/10.1073/pnas.0401349101>
- Schütz, H., Seiler, W., & Conrad, R. (1989). Processes involved in formation and emission of methane in rice paddies. *Biogeochemistry*, 7(1), 33–53.  
<https://doi.org/10.1007/BF00000896>
- Setiawan, B. I., Imansyah, A., Arif, C., Watanabe, T., Mizoguchi, M., & Kato, H. (2014). Sri paddy growth and ghg emissions at various groundwater levels. *Irrigation and Drainage*, 63(5), 612–620. <https://doi.org/10.1002/ird.1866>
- Sigren, L. K., Lewis, S. T., Fisher, F. M., & Sass, R. L. (1997). Effects of field drainage on soil parameters related to methane production and emission from rice paddies. *Global Biogeochemical Cycles*, 11(2), 151–162.  
<https://doi.org/10.1029/97GB00627>
- Smith, K. E., Runion, G. B., Prior, S. A., Rogers, H. H., & Torbert, H. A. (2010). *Effects of Elevated CO<sub>2</sub> and Agricultural Management on Flux of Greenhouse Gases From Soil*. 175(7), 349–356.
- Smith, P. (2010). *Methane and Climate Change*.
- Smith, P., Martino, D., Cai, Z., Gwary, D., Janzen, H., Kumar, P., McCarl, B., Ogle, S., O'Mara, F., Rice, C., Scholes, B., Sirotenko, O., Howden, M., McAllister, T., Pan, G., Romanenkov, V., Schneider, U., & Towprayoon, S. (2007). Policy and technological constraints to implementation of greenhouse gas mitigation options in agriculture. *Agriculture, Ecosystems and Environment*, 118(1–4), 6–28. <https://doi.org/10.1016/j.agee.2006.06.006>
- Stoop, W. A., Uphoff, N., & Kassam, A. (2002). A review of agricultural research issues raised by the system of rice intensification (SRI) from Madagascar: opportunities for improving farming systems for resource-poor farmers. *Agricultural Systems*, 71(3), 249–274.  
[https://doi.org/https://doi.org/10.1016/S0308-521X\(01\)00070-1](https://doi.org/https://doi.org/10.1016/S0308-521X(01)00070-1)
- Suhendi A. (2015). Menghitung Produksi Padi. In *Menghitung Produksi Padi* (Issue march).
- Suprihatno, B., Daradjat, A. A., Satoto, S., Setyono, A., Indrasari, S. D., Wardana, I. P., & Sembiring, H. (2010). *Deskripsi Varietas Padi 2018*.
- Sutton-Grier, A. E., & Megonigal, J. P. (2011). Plant species traits regulate methane production in freshwater wetland soils. *Soil Biology and Biochemistry*, 43(2), 413–420. <https://doi.org/10.1016/j.soilbio.2010.11.009>

- Thakur, A. K., Uphoff, N., & Antony, E. (2010). An assessment of physiological effects of system of rice intensification (SRI) practices compared with recommended rice cultivation practices in India. *Experimental Agriculture*, 46(1), 77–98. <https://doi.org/10.1017/S0014479709990548>
- Tong, C., Wang, W. Q., Zeng, C. S., & Marrs, R. (2010). Methane (CH<sub>4</sub>) emission from a tidal marsh in the Min River estuary, southeast China. *Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering*, 45(4), 506–516. <https://doi.org/10.1080/10934520903542261>
- Tyagi, L., Kumari, B., & Singh, S. N. (2010). Water management — A tool for methane mitigation from irrigated paddy fields. *Science of The Total Environment*, 408(5), 1085–1090. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2009.09.010>
- U.S. Environmental Protection Agency. (2017). Field Measurement of Oxidation-Reduction Potential (ORP). *SESD Operating Procedure, SESDPROC-1*, 22.
- Uphoff, N. (2015). *The System of Rice Intensification (SRI): Responses to Frequently Asked Questions*.
- USDA. (2018). Soil Electrical Conductivity. *Ohmic Heating in Food Processing*, 36–37. <https://doi.org/10.1201/b16605-8>
- Usman, U. (2012). Teknik Penetapan Nitrogen Total pada Contoh Tanah Secara Destilasi Titrimetri dan Kolorimetri Menggunakan Autoanalyzer. *Buletin Teknik Pertanian*, 17(1), 41–44.
- van der Gon, H. A. C. D., & Neue, H. U. (1995). Influence of organic matter incorporation on the methane emission from a wetland rice field. In *Global Biogeochemical Cycles* (Vol. 9, Issue 1). <https://doi.org/10.1029/94GB03197>
- Wang, Z. P., DeLaune, R. D., Masscheleyn, P. H., and Patrick, J. W. H. (1993). Soil Redox and pH Effects on Methane Production in a Flooded Rice Soil. *Soil Redox and PH Effects on Methane Production in a Flooded Rice Soil*, 382–385.
- Wang, B., Neue, H. U., & Samonte, H. P. (1997). The effect of controlled soil temperature on diel CH<sub>4</sub> emission variation. *Chemosphere*, 35(9), 2083–2092. [https://doi.org/https://doi.org/10.1016/S0045-6535\(97\)00257-9](https://doi.org/https://doi.org/10.1016/S0045-6535(97)00257-9)
- Wang, C., Lai, D. Y. F., Sardans, J., Wang, W., Zeng, C., & Peñuelas, J. (2017). Factors related with CH<sub>4</sub> and N<sub>2</sub>O emissions from a paddy field: Clues for management implications. *PLoS ONE*, 12(1), 1–23. <https://doi.org/10.1371/journal.pone.0169254>
- Wang, Z., Delaune, R. D., Lindau, C. W., & Patrick, W. H. (1992). Methane production from anaerobic soil amended with rice straw and nitrogen fertilizers. *Fertilizer Research*, 33(2), 115–121. <https://doi.org/10.1007/BF01051166>
- Wassmann, R., Neue, H. U., Bueno, C., Lantin, R. S., Alberto, M. C. R., Buendia, L. V., Bronson, K., Papen, H., & Rennenberg, H. (1998). Methane production capacities of different rice soils derived from inherent and exogenous substrates. *Plant and Soil*, 203(2), 227–237. <https://doi.org/10.1023/A:1004357411814>
- Wihardjaka, A. (2015). *Mitigation of Methane Emission Through Lowland*

*Management*. 34, 95–104.

Wihardjaka, A., Harsanti, E. S., Penelitian, B., & Pertanian, L. (2011). *Potensi Produksi Gas Metana Dari Tanah*. 5(2), 68–78.

Willmott, C. J. (1982). *Some Comments on the Evaluation of Model Performance*. 1309–1313.

Yang, N., Lü, F., He, P., & Shao, L. (2011). Response of methanotrophs and methane oxidation on ammonium application in landfill soils. *Applied Microbiology and Biotechnology*, 92(5), 1073–1082. <https://doi.org/10.1007/s00253-011-3389-x>

Zhang, Z., Zhang, S., Yang, J., & Zhang, J. (2008). Yield, grain quality and water use efficiency of rice under non-flooded mulching cultivation. *Field Crops Research*, 108(1), 71–81. <https://doi.org/10.1016/j.fcr.2008.03.004>

Zhao, Z., Cao, L., Deng, J., Sha, Z., Chu, C., Zhou, D., Wu, S., & Lv, W. (2020). Modeling CH<sub>4</sub> and N<sub>2</sub>O emission patterns and mitigation potential from paddy fields in Shanghai, China with the DNDC model. *Agricultural Systems*, 178(November 2019), 102743. <https://doi.org/10.1016/j.agry.2019.102743>

Zheng, X., Wang, M., Wang, Y., Shen, R., Li, J., Heyer, J., Koegel, M., Papen, H., Jin, J., & Li, L. (2000). Mitigation Options for Methane, Nitrous Oxide and Nitric Oxide Emissions from Agricultural Ecosystems. *Advances in Atmospheric Sciences*, 17(1), 83–92. <https://doi.org/10.1007/s00376-000-0045-2>