

DAFTAR PUSTAKA

- Adha, I., A. Kurniasih, H. Nugroho, P. Rachwibowo. 2018. Kajian analisis sesar di Perbukitan Jiwo Barat, Kecamatan Bayat, Kabupaten Klaten, Jawa Tengah. *Jurnal Geosains dan Teknologi* Vol. 1(1): 8 – 18.
- Aditio, M., J. Hutabarat, A. D. Haryanto, H. C. Widiatmoko. 2018. Persebaran sedimen permukaan dasar laut dan mineral logam di perairan Saumlaki dan sekitarnya, Kabupaten Maluku Tenggara Barat, Provinsi Maluku. *Padjajaran Geoscience Journal* Vol. 2(1): 15 – 26.
- Ajiboye, G. A., C. A. Oyetunji, S. A. Mesele, J. Talbot. 2019. The role of soil mineralogical characteristics in sustainable soil fertility management: a case study of some tropical alfisols in Nigeria. *Communications in Soil Science and Plant Analysis* Vol. 50 (3): 333 – 349.
- Aji, Y. T., H. Z. Hadibasyirm. 2024. Analisis Indeks Potensi Lahan (IPL) Sawah Dengan Pemanfaatan Sistem Informasi Geograis Di Kecamatan Bayat Kabupaten Klaten. Fakultas Geografi. Universitas Muhammadiyah Surakarta. Skripsi.
- Akbas, F., H. Gunal, N. Acir. (2017). Spatial variability of soil potassium and its relationship to land use and parent material. *Soil and Water Research* Vol. 12(4): 202 – 211.
- Akash, K., S. Michael, P. Nishant, B. Benjamin, S. Daniel, H. Christoph, N. Britta. 2025. Impact of clay coating on sandstone reservoir quality: a multiphase-field investigation by numerical simulation. *Petroleum Exploration and Development* Vol. 52(3): 715 – 730.
- Albuquerque, C. G., F. Gavelaki, H. B. Matera, A. C. V. Motta, S. A. Prior, T. M. Ercole, E. M. Araujo. 2024. Relationship between pH and base saturation associated with soil cation exchange capacity in soils of Mato Grosso do Sul, Brazil. *Soil and Plant Nutrition* Vol. 83: 1 – 11.
- Alnaimy, M. A., A. S. Elrys, M. Zelenakova, K. P. Urbanik, A. R. M. Merwad. 2023. The vital roles of parent material in driving soil substrates and heavy metals availability in arid alkaline regions: a case study from Egypt. *Water* Vol. 15(13): 1 – 20.
- Amare, H., H. Admase, T. Ewunetu. 2024. Influence of land – use types and topographic slopes on the physico – chemical characteristics of soils in Northwestern Ethiopia. *Frontiers in Soil Science Sec. Soil Biology, Ecosystems, and Biodeiversity* Vol. 4: 1 – 9.
- Aprilia, I. B., P. E. Sasongko, Siswanto. 2024. Aplikasi formulasi bahan pembenah tanah terhadap beberapa sifat kimia tanah berpasir dan produksi tanaman padi. *Jurnal Agrotropika* Vol. 23 (1): 89 – 98.
- Asdak, C. 2022. Hidrologi dan Pengelolaan Daerah Aliran Sungai Cetakan Kedelapan Edisi Revisi. Gadjah Mada University Press, Yogyakarta.
- Asrarudin, A., Y. I. Benggu, L. F. Ishaq, E. St. O. Nguru, M. Kasim, Y. R. Kana. 2022. Kajian sifat kimia tanah alfisol serta hasil tanaman tomat cherry akibat aplikasi bahan organik tanpa dibakar (kompos) dan bahan organik yang dibakar. *Jurnal Agrisa* Vol. 11(2): 66 – 82.
- Badan Pusat Statistik Kabupaten Klaten. 2020. Kecamatan Bayat dalam Angka. BPS Kabupaten Klaten, Klaten.
- Badan Pusat Statistik Kabupaten Klaten. 2023. Kecamatan Bayat dalam Angka. BPS Kabupaten Klaten, Klaten.
- Bagheri, M., B. Lothenbach, M. Shakoorioskooie, K. Scrivener. 2022. Effect of different ions on dissolution rates of silica and feldspars at high pH. *Cement and Concrete Research* Vol. 152: 1 – 24.

- Banu, M. R. F., B. Rani. 2025. Surface application of liming materials with biochar and organic amendments for subsoil acidity amelioration in the laterite soils. *Discover Soil* Vol. 2 (103): 1 - 16.
- Barrow, N. J., A. E. Hartemink. 2023. The effects of pH on nutrient availability depend on both soils and plants. *Plant Soil* Vol. 487: 21 – 37.
- Beckford, H. O., C. Chang, H. Ji. 2023. Elemental behavior during weathering and pedogenesis of clay-rich red soils developed in different lithologies in Java–Madura and Sulawesi in Indonesia. *Sustainability* Vol. 15(6): 1 – 28.
- Begna, M. 2020. Review on effect of toposequence on soil physicochemical properties. *Ethiopian Journal of Environmental Studies & Management* Vol. 13 (4): 452 – 464.
- Bell, M. J., M. D. Ransom, M. L. Thompson, P. Hinsinger, A. M. Florence, P. W. Moody, C. N. Guppy. 2021. Considering soil potassium pools with dissimilar plant availability. *Improving potassium recommendations for agricultural crops*, pp. 163–190. Springer.
- Bronto, S. 2010. Identifikasi gunung api purba pendul di Perbukitan Jiwo, Kecamatan Bayat, Kabupaten Klaten, Jawa Tengah. *Jurnal Geologi dan Sumberdaya Mineral* Vol. 20(1): 3 – 13.
- Bufebo, B., E. Elias, G. Agegnehu. 2021. Effects of landscape positions on soil physicochemical properties at Shenkolla Watershed, South Central Ethiopia. *Environmental Systems Research* Vol. 10 (14): 1 – 15.
- Buol, S. W., R. J. Southard, R. C. Graham, P. A. Mcdaniel. 2011. *Soil Genesis and Classification Sixth Edition*. Wiley – Blackwell: New Jersey.
- Cahyana, D., Y. Sulaeman, B. Barus, Darmawan, B. Mulyanto. 2023. Improving digital soil mapping in Bogor, Indonesia using parent material information. *Geoderma Regional* Vol. 33: 1 – 11.
- Certini, G., R. Scalenghe. 2023. The crucial interactions between climate and soil. *Journal Elsevier : Science of the Total Environment* Vol. 856: 1 – 12.
- Chaganti, N. V., S. W. Culman, C. Herms, C. D. Sprunger, C. Brock, A. L. Soto, D. Doohan. 2021. Base cation saturation ratios, soil health, and yield in organic field crops. *Agronomy Journal Wiley* Vol.113: 4190 – 4200.
- Chanan, M., F. A. C. Wibowo, A. L. Nidha. 2022. Keseimbangan hara makro tegakan jati (*Tectona grandis* L.f.) dengan metode DRIS. *Jurnal Penelitian Hutan Tanaman* Vol. 19(1): 1 – 9.
- Chang, Z., L. Tiang, F. Li, M. Wu, C. E. W. Steinberg, B. Pan, B. Xing. 2020. Organomineral complexes protect condensed organic matter as revealed by benzene-polycarboxylic acids. *Environmental Pollution* Vol. 260: 1 – 8.
- Chen, L., Y. Zhao, H. Bai, T. Wen, Z. Ai, S. Song. 2021. Effect of protonation and deprotonation reactions of clay on regulating pyrite flotation in the presence of clay. *Colloids and Surfaces A* Vol. 609: 1 – 9.
- Ciric, V., N. Prekop, S. Seremesic, B. Vojnov, B. Pejic, D. Radovanovic, D. Marinkovic. 2023. The implication of cation exchange capacity (CEC) assesment for soil quality management and improvement. *Agriculture & Forestry* Vol. 69 (4): 113 – 133.
- Colopietro, D. J., J. Pachon, A. Bacon. 2025. Investigating soil properties influencing the depth and degree of lessivage in Florida soils using a random forest modeling approach. *Geoderma Regional* Vol. 40: 1 – 14.
- Costa, A. C. S., I. G. S. Junior, L. C. Canton, L. G. Gill. R. Figueiredo. 2020. Contribution of the chemical and mineralogical properties of sandy-loam tropical soils to the cation exchange capacity. *Rev Bras Cienc Solo*: 1 - 17.
- Costa, C., F. Lia. 2022. Temporal variations of heavy metal sources in agricultural soils in Malta. *Applied Sciences* Vol. 12(6): 1 – 17.

- Dash, M., S. Thiyageshwari, D. Selvi, R. Anandham, K. Rajan, D. Maduraimuthu, S. K. Singh, J. Muthumani, S. Singh, B. Pramanick. 2023. Unravelling the release kinetics of exchangeable magnesium in acid soil of Nilgiris. *Sustainability* Vol. 15: 1 – 13.
- De Medeiros, P. S. C., P. C. do Nascimento, A. Vasconcellos In da, L. F. da Silva. 2020. Genesis and classification of soils from granitic hills in southern Brazil. *Journal of South American Earth Sciences* Vol. 98: 1 – 11.
- Dewi, W. S., P. Purwanto, S. S. Anisa, S. Hartati. 2024. Assessing soil fertility index under different forest land cover. *Journal of Soil Science and Agroclimatology* Vol. 21 (2): 179 – 190.
- EI – Hinnawi, E., S. D. Abayazeed, A. S. Khalil. 2021. Spheroidal weathering of basalt from Gebel Qatrani, Fayum Depression, Egypt. *Bulletin of the National Research Centre* Vol. 45(1): 1 – 11.
- Eviati, E., S. Sulaeman, L. Herawaty, L. Anggria, U. Usman, H. E. Tantika, R. Prihatini, P. Wuningrum. 2023. *Petunjuk Teknis Edisi 3: Analisis Kimia Tanah, Tanaman, Air, dan Pupuk*. Balai Pengujian Standar Instrumen Tanah dan Pupuk: Bogor.
- Fattah, M. K. A, E. S. Mohamed, E. M. Wagdi, S. A. Shahin, A. A. Aldosari, R. Lasaponara, M. A. Alnaimy. 2021. Quantitative Evaluation of Soil Quality Using Principal Component Analysis: The Case Study of EI – Fayoum Depression Egypt. *Sustainability* Vol. 13(4): 1 – 19.
- Ferreira, L. S., V. S. Oliveira, J. J. P. Marchiori, T. C. Ferreira, A. C. B. Bernabe, G. T. F. Boone, L. L. S. Pereira, E. Carrico. 2023. The nutrient magnesium in soil and plant: a review. *International Journal of Plant and Soil Science* Vol. 35(8): 136 – 144.
- Flores, J. P. M., L. A. Alves, L. G. O. Denardin, A. P. Martins, E. C. Bortoluzzi, A. V. In da, P. C. F. Carlvalho, T. Tiecher. 2021. Soil K forms and K budget in integrated crop-livestock systems in subtropical paddy fields. *Soil & Tillage Research* Vol. 213: 1 – 8.
- Freitas, V. S., D. V. Babos, W. N. Guedes, F. P. Silva, M. L. L. Tozo, C. A. Andrade, P. R. V. Boas, D. M. B. P. Milori, L. M. Neto. 2024. Soil organic matter dynamics and soil carbon stocks from tropical and sub-tropical areas under no-till: An on farm research. *Catena* Vol. 247(2024): 1 – 13.
- Hafiduddin, M., A. Nugrahini. 2023. Analisis mineral plagioklas untuk menemukan pembekuan lava daerah Kenalan, Kecamatan Borobudur, Kabupaten Magelang, Provinsi Jawa Tengah. Prosiding pada seminar nasional “Rekayasa Teknologi Industri dan Informasi XVIII”, Yogyakarta, 11 November 2023.
- Han, G. Z., L. M. Huang, X. G. Tang. 2019. Potassium supply capacity response to K-bearing mineral changes in Chinese purple paddy soil chronosequences. *Journal of Soils and Sediments* Vol. 19(3): 1190–1200.
- Han, T., D. Li, K. Liu, J. Huang, L. Zhang, S. Liu, A. Shah, L. Liu, G. Feng, H. Zhang. 2023. Soil potassium regulation by initial K level and acidification degree when subjected to liming: A meta-analysis and long-term field experiment. *Catena* Vol. 232: 1 – 9.
- Hanudin, E., P. A. Barus, M. Nurudin, S. N. H. Utami. 2025. Potassium fractionation and stock in clay soils: influence of geochemical and mineralogical properties in Yogyakarta Region, Indonesia. *Caraka Tani: Journal of Sustainable Agriculture* Vol. 40(2): 156 – 172.
- Harefa, D. F. C., M. Zebua. 2024. Peran kapasitas tukar kation dalam mempetahankan kesuburan tanah pada berbagai jenis tekstur tanah. *PENARIK: Jurnal Ilmu Pertanian dan Perikanan* Vol. 01(1): 165 – 170.

- Heidari, H., M. Arabi, T. Warziniack, S. C. Kao. 2020. Assessing shifts in regional hydroclimatic conditions of U.S River Basins in response to climate change over the 21st century. *Research Article of Earth's Future* Vol. 8 (10): 1 – 14.
- Horvath, D. G., J. C. A. Hanna, C. E. Newman, K. L. Mitchell, B. W. Stiles. 2016. The influence of subsurface flow on lake formation and north polar lake distribution on Titan. *Icarus* Vol. 277(2016): 103 – 124.
- Huang, W – S., C. S. Liang, H. Tsai, Z. Y. Hseu, S. T. Huang. 2023. Pedogenesis of fluvial soils related to geomorphic processes in Central Taiwan. *Land* Vol. 12 (535): 1 – 17.
- Jayadi, M., N. Juita, H. Wulansari. 2023. Analisis fosfor tanah pada lahan sawah irigasi dan sawah tadah hujan di Kecamatan Duampanua, Kabupaten Pinrang. *Jurnal Ecosolum* Vol. 11(2): 191 - 207.
- Jenny, H. 1994. *Factors of soil formation, A System of Quantitative Pedology*. Dover Publication, INC, New York.
- Kabala, C., S. Mantel, M. B. Dudek, M. Matuszak. 2025. Relationships between base saturation, effective base saturation and soil pH as the references for the development and verification of criteria for international soil classification. *Geoderma* Vol. 461: 1 - 12.
- Kautsar, V., K. Faizah, A. I. Uktoro. 2024. Soil color comparison using munsell color chart and calibrated smartphone camera. *Teknotan* Vol.18(1): 13 – 20.
- Kementerian Energi dan Sumber Daya Mineral Republik Indonesia. 2023. Keputusan Menteri Energi dan Sumber Daya Mineral Republik Indonesia Nomor 246.K/GL.01/Mem.G/2023 Tentang Penetapan Warisan Geologi (Geoheritage) Kabupaten Klaten Provinsi Jawa Tengah.
- Khalil, H. P. S. A., Md. S. Hossain, E. Rosamah, N. A. Azli, N. Saddon, Y. Davoudpora, Md. N. Islam, R. Dungani. 2015. The role of soil properties and it's interaction towards quality plant fiber: A review. *Journal of Renewable and Sustainable Energy Reviews* Vol. 43: 1006 - 1015.
- Khambalkar, P. A., S. Agrawal, S. S. Dhaliwal, S. S. Yadav, M. J. Sodarwati, A. Singh, I. R. Yadav, K. Yadav, Shivansh, D. Pasad, A. Singh, N. Afreen. 2025. Sustainable nutrient management balancing soil health and food security for future generations. *Applied Food Research* Vol. 5 (2): 1 - 9.
- Kubler, S., S. Rucina, D. Aßbichler, E. Eckmeier, G. King. 2021. Lithological and topographic impact on soil nutrient distributions in tectonic landscapes: implications for pleistocene human-landscape interactions in the southern Kenya Rift. *Frontiers in Earth Science* Vol. 9: 1 – 20.
- Kumar, S., R. C. Gupta, S. Shrivastava. 2017. Effective utilization of quartz sandstone mining waste: a technical note on its thermal resistance. *Journal of Cleaner Production* Vol. 140: 1129 – 1135.
- Kurniasih, A., I. Adha, H. Nugroho, P. Rachwibowo. 2018. Petrogenesis batuan metamorf di Perbukitan Jiwo Barat, Bayat, Klaten, Jawa Tengah. *Jurnal Geosains dan Teknologi* Vol. 1(1): 1 – 7.
- Li, S., L. Lu, Y. Gao, Y. Zhang, D. Shen. 2022. An analysis on the characteristics and influence factors of soil salinity in the wasteland of the Kashgar River Basin. *Sustainability* Vol. 14 (6): 1 – 15.
- Li, W., H. L. Lu, J. N. Nkoh, Z. Hong, R. Xu. 2022. Aluminum mobilization as influenced by soil organic matter during soil and mineral acidification: A constant pH study. *Geoderma* Vol. 418: 1 - 9
- Li, W., X. M. Liu, Y. Hu, F. Z. Teng, Y. Hu. 2021. Potassium isotopic fractionation during clay adsorption. *Geochimica et Cosmochimica Acta* Vol. 304: 160 – 177.

- Li, X., Y. Su, T. Ahmed, H. Ren, M. R. Javed, Y. Yao, Q. An, J. Yan, B. Li. 2021. Effects of different organic fertilizers on improving soil from newly reclaimed land to crop soil. *Agriculture* Vol. 11(6): 1 – 15.
- Li, X., Z. Li, W. Fu, F. Li. 2024. The influence of shallow groundwater on the physicochemical properties of field soil, crop yield, and groundwater. *Agriculture* Vol. 14 (3): 1 – 22.
- Lv, Xinmin, S. Huang, J. Wang, D. Han, J. Li, D. Guo, H. Zhu. 2023. Genome – wide identification of Mg²⁺ transporters and functional characteristics of DIMGT1 in *Dimocarpus longan*. *Frontiers in Plant Science*: 1 – 14.
- Maharani, N. 2024. Indeks pelapukan tanah pada berbagai jenis tanah yang berasal dari berbagai jenis batuan di sebelah Barat Sungai Dengkeng, Bayat, Klaten. Fakultas Pertanian. Universitas Gadjah Mada. Yogyakarta. Skripsi.
- Miyazawa, Y., H. Takahashi. 2020. Molecular mechanisms mediating root hydrotropism: what we have observed since the rediscovery of hydrotropism. *Journal of Plant Research* Vol. 133: 3 – 14.
- Muslim, R. Q., P. Kricella, M. M. Pratamaningsih, S. Purwanto, E. Suryani, S. Ritung. 2020. Characteristics of Inceptisols derived from basaltic andesite from several locations in volcanic landform. *Journal of Soil Science and Agroclimatology* Vol. 17(2): 115 – 121.
- Nesbitt, H. W., G. M. Young. 1982. Early Proterozoic climates and plate motions inferred from major elements chemistry of Lutites. *Nature* Vol. 299 : 715 – 717.
- Nguyen, L. T. T., K. A. Ortner, L. K. Tiemann, K. A. Renner, A. N. Kravchenko. 2022. Soil properties after one year of interseeded cover cropping in topographically diverse agricultural landscape. *Agriculture, Ecosystems, and Environment* Vol. 326: 1 – 12.
- Nobrega, G. N., X. L. Otero, D. J. Romero, H. M. Queiroz, D. Gorman, M. da S. C. C. Copertino, M. de C. Piccolo, dan T. O. Ferreira. 2023. Masked diversity and contrasting soil processes in tropical seagrass meadows: the control of environmental settings. *SOIL* 9: 189–208.
- Noviyanto, A., J. Sartohadi, B. H. Purwanto. 2020. The distribution of soil morphological characteristics for landslide-impacted Sumbing Volcano, Central Java – Indonesia. *Geoenvironmental Disasters* Vol. 7 (25): 1 – 19.
- Nugraha, S. 1993. Survei Tanah Semi Detil dengan Pendekatan Bentang Lahan di Kecamatan Bayat, Kabupaten Dati II Klaten, Jawa Tengah. Fakultas Geografi dan Ilmu Lingkungan. Universitas Gadjah Mada. Yogyakarta. Skripsi.
- Nuyah, N., R. Rahmaniar. 2016. Pemanfaatan pasir kuarsa sebagai bahan pengisi dalam pembuatan karpet karet. *Jurnal Dinamika Penelitian Industri* Vol. 27(2): 132 – 138.
- Ouriemmie, H., R. I. Zoghlami, E. Le Guyader, F. Mekki, Y. Suidi, A. Bennour, M. Moussa, M. Sbih, S. Saidi, X. Morvan, M. Ouessar. 2025. Addressing soil fertility challenges in arid agriculture: a two-year evaluation of combined soil organic amendments under saline irrigation. *Soil Systems* Vol. 9 (16): 1 – 18.
- Palihakkara, J., C. P. Anttanake, L. Burkitt, P. Jeyakumar. 2025. Phosphorus Release and Transformations in Contrasting Tropical Paddy Soils Under Fertiliser Application. *Journal of Soil Science and Plant Nutrition* Vol. 25: 4570 – 4587.
- Pikula, D., Z. Paukova, E. W. Gront, V. Simansky. 2025. The relationship between organic carbon and ca in the profile of luvisols: a case study of a long-term experiment in Pulawy, Poland. *Agriculture* Vol. 15 (6): 1 – 13.
- Pontoni, L., M. Race, E. D. Hullebusch, M. Fabbicino, G. Esposito, F. Pirozzi. 2019. Effect of sodium concentration on mobilization and fate of trace metals in standard OECD soil. *Journal of Environmental Pollution* Vol. 250: 839 - 848.

- Portela, E., F. Monteiro, M. Fonseca, M. M. Abreu. 2019. Effect of soil mineralogy on potassium fixation in soils developed on different parent material. *Geoderma* Vol. 343: 226 – 234.
- Prinandhika, G. M., S. Supriyadi, P. Purwanto, W. S. Dewi. 2023. Assessing soil quality and identifying key indicators in agroforestry systems in Sumberejo Village, Wonogiri Regency, Indonesia. *International Journal of Design & Nature and Ecodynamics* Vol. 18(4): 1003 – 1010.
- Putra, T. K., M. R. Afany, R. A. Widodo. 2020. Pengaruh bahan organik dan tanah vertisol sebagai pembenah tanah terhadap ketersediaan dan pelindian kalium di tanah regosol pasir pantai. *Jurnal Tanah dan Air* Vol. 17(1): 20 – 25.
- Putri, I. I., E. Nurjani. 2018. Persepsi dan adaptasi petani padi lahan kering di Klaten terhadap variabilitas curah hujan. *Jurnal Bumi Indonesia* Vol. 7(3): 1 – 12.
- Rahmawaty, R., M. H. Ismail, A. Rauf, R. Batubara, E. W. E. Sitorus, Z. Simamora, E. F. Ginting. 2023. Land characteristics and land suitability assessment for *Styrax* sp. in Humbang Hasundutan Regency, North Sumatra, Indonesia. *Heliyon* Vol. 9: 1 – 16.
- Ranesa, S. S. R. S. Tejowulan, P. Padusung. 2024. Efek kandungan bahan organik terhadap pertumbuhan dan hasil tanaman cabai pada kondisi stres air. *Journal of Soil Quality and Management* Vol. 1(1): 79 – 86.
- Ratnasari, N., B. Susilo. 2017. Kajian keterkaitan toponim dengan karakteristik wilayah di Kecamatan Bayat, Kabupaten Klaten, Provinsi Jawa Tengah. *Jurnal Bumi Indonesia* Vol. 6(3): 1 – 10.
- Räty, M., R. Keskinen, M. Y. Halla, J. Hyvönen, H. Soenne. 2021. Estimating cation exchange capacity and clay content from agricultural soil testing data. *Agricultural and Food Science* Vol. 30: 131 – 145.
- Rawal, A., S. Chakraborty, B. Li, K. Lewis, M. Godoy, L. Paulette, D. C. Weindorf. 2019. Determination of base saturation percentage in agricultural soils via portable X – Ray fluorescence spectrometer. *Geoderma* Vol. 338: 375 – 382.
- Rawat, J., P. Sanwal, J. Saxena. 2016. Potassium and its role in sustainable agriculture. *Potassium solubilizing microorganisms for sustainable agriculture* (pp. 235–253). Springer: New Dehli, India.
- Rice, A. M., N. Perdrial, V. Treto, A. W. D'amato, G. A. Smith, J. B. Richardson. 2024. Influence of parent material mineralogy on forest soil nutrient release rates across a nutrient richness gradient. *Geoderma* Vol. 451: 1 - 17.
- Rosset, T., L. Gandois, G. Le Roux, R. Teisserenc, P. D. Jimenez, T. Camboulive, S. Binet. 2019. Peatland contribution to stream organic carbon exports from a montane watershed. *Journal of Geophysical Research: Biogeosciences* Vol. 124: 3448 – 3464.
- Samodra, H. 2016. Batu pasir kuarsa wediwutah : asal kuarsa dan informasi keragaman geologi Formasi Wonosari, Kabupaten Gunung Kidul. *Jurnal Geologi dan Sumberdaya Mineral* Vol. 17(2): 73 – 84.
- Saentho, A., W. Wisawapipat, P. Lawangsa, S. Aramrak, N. Prakongkep, W. Klysubun, I. Christl. 2022. Speciation and pH- and particle size-dependent solubility of phosphorus in tropical sandy soils. *Geoderma* Vol. 408: 1 - 11.
- Sanz, J. P. M., A. S. Martin, I. V. Asenjo, J. R. Q. Nieto, C. G. Hucas, A. L. L. Lafuente. 2022. Comparison of soil quality indexes calculated by network and principal component analysis for carbonated soils under different uses. *Ecological* Vol. 143: 1 – 14.
- Sarah, S., A.B Baharuddin, B. Bustan. 2024. Sebaran nilai kapasitas tukar kation (ktk) dan kemasaman (pH) tanah di tanah vertisol Kecamatan Sakra Kabupaten Lombok Timur. *Journal of Soil Quality and Management* Vol. 3(1): 1 – 6.

- Scott, A., C. Oze, V. Shah, N. Yang, B. Shanks, C. Cheeseman, A. Marshall, M. Watson. 2021. Transformation of abundant magnesium silicate minerals for enhanced CO₂ sequestration. *Communications Earth and Environment* Vol. 2(25): 1 – 6.
- Scherer, S., K. Deckers, J. Dietel, M. Fuchs, J. Henkner, B. Hopfer, A. Junge, E. Kandeler, E. Lehdorff, P. Leinweber, J. Lomax, J. Miera, C. Poll, M. B. Toffolo, T. Knopf, T. Scholten, P. Kuhn. 2021. What's in a colloidal deposit? Perspectives from archaeopedology. *Journal of Catena* Vol. 198: 1 – 15.
- Senbayram, M., A. Gransee, V. Wahle, H. Thiel. 2015. Role of magnesium fertilisers in agriculture: plant–soil continuum. *Crop and Pasture Science* Vol. 66: 1219 – 1229.
- Shabtai, I. A., R. C. Wilhelm, S. A. Schweizer, C. Hoschen, D. H. Buckley, J. Lehmann. 2023. Calcium promotes persistent soil organic matter by altering microbial transformation of plant litter. *Nature Communications* Vol. 14(1): 1 – 13.
- Shaheen, S. M., D. S. Alessi, F. M. G. Tack, Y. S. Ok, K. H. Kim, J. P. Gustafsson, D. L. Sparks, J. Rinklebe. 2019. Redox chemistry of vanadium in soils and sediments: interactions with colloidal materials, mobilization, speciation, and relevant environmental implications- a review. *Advances in Colloid and Interface Science* Vol. 265: 1 – 13.
- Shi, C., P. Wang, G. Wang, T. Hu, Z. Ru, S. Feng. 2023. Responses of root characteristics and nitrogen absorption and assimilation to different pH gradients of winter wheat at seedling stage. *Plos One*: 1 - 18.
- Silva, S. H. G., D. Ribeiro, T. S. B. Dijair, F. M. Silva, A. F. S. Teixeira, R. Andrade, M. Mancini, L. R. G. Guilherme, N. Curi. 2023. Different quartz varieties characterized by proximal sensing and their relation to soil attributes. *Minerals* Vol. 13(4): 1 – 12.
- Sitchler, A. K. N., D. R. Cole, G. Rother, L. Jin, H. L. Buss, S. L. Brantley. 2013. Porosity and surface area evolution during weathering of two igneous rocks. *Geochimica et Cosmochimica Acta* Vol. 109: 400 – 413.
- Slessarev, E. W., Y. Lin, N. L. Bingham, J. E. Johnson, Y. Dai, J. P. Schimel, O.A. Chadwick. 2016. Water balance creates a threshold in soil pH at the global scale. *Nature* Vol. 540: 567 – 569.
- Soil Survey Staff. 2014. *Keys to Soil Taxonomy Twelfth Edition*. United States Department of Agriculture National Resources Conservation Service, USA.
- Solly, E. F., V. Weber., S. Zimmermann, L. Walthert, F. Hagedorn, M. W. I. Schmidt. 2020. A critical evaluation of the relationship between the effective cation exchange capacity and soil organic carbon content in Swiss forest soils. *Frontiers in Forest and Global Change* Vol. 3 (98): 1 – 12.
- Soumare, A., D. Sarr, A. G. Diédhiou. 2023. Potassium sources, microorganisms and plant nutrition: challenges and future research directions. *Pedosphere* Vol. 33(1): 105–115.
- Spinola, D., R. Portes, J. Fedenko, R. Lybrand, A. Dere, F. Biles, T. Trainor, M. E. Bowden, D. D'amore. 2022. Lithological controls on soil geochemistry and clay mineralogy across Spodosols in the coastal temperate rainforest of southeast Alaska. *Geoderma* Vol. 428: 1 – 21.
- Sukarman, S., S. Ritung, M. Anda, E. Suryani. 2017. *Pedoman Pengamatan Tanah di Lapangan*. Badan Penelitian dan Pengembangan Pertanian, Kementerian Pertanian, Jakarta.
- Sulaeman, Y., E. Maftuah, M. Noor, A. Hairani, S. Nurzakiah, M. Mukhlis, K. Anwar, A. Fahmi, M. Saleh, I. Khairullah, I. A. Rumanti, M. Alwi, A. Noor, R. D. Ningsih. 2024. Coastal acid – sulfate soils of Kalimantan, Indonesia, for food security: characteristics, management, and future directions. *Resources* Vol. 13: 1 – 26.

- Sutarto, J. Soesilo, B. T. Wibowo, H. Hamdalah. 2020. Atlas Batuan Pegunungan Jiwo Bayat, Kabupaten Klaten Jawa Tengah. LPPM Universitas Pembangunan Nasioal “Veteran” Yogyakarta, Yogyakarta.
- Swardana, A., F. N. Iman, J. Mutakin. 2023. Status unsur hara makro pada inceptisol yang ditanami pakcoy (*Brassica rapa* L.). *Jurnal Tanah dan Sumberdaya Lahan* Vol. 10(2): 231 – 235.
- Thalassinos, G., S. A. Petropoulos, A. Grammenou, V. Antoniadis. 2023. Potentially toxic elements: a review on their soil behavior and plant attenuation mechanisms against their toxicity. *Journal MDPI of Agriculture* Vol. 13(1684): 1 - 21.
- Tlili, A., I. Dridi, F. Mlaiki, C. Schillaci, S. Saia. 2024. Description of representative “in-situ” soil profiles in northwestern Tunisia. *Discover Soil* Vol. 2 (31): 1 – 21.
- Topa, D. C., S. Capsuna, A. E. Calistru, C. Ailincai. 2025. Sustainable practices for enhancing soil health and crop quality in modern agriculture: a review. *Agriculture* Vol. 15 (9): 1 – 38.
- Ulfa, N., Y. Yulnafatmawita, A. Rasyidin. 2024. Kajian sifat fisika tanah pada beberapa umur tanaman kelapa sawit (*Elaeis guineensis* Jacq.) rakyat di Nagari Ladang Panjang Kabupaten Pasaman, Sumatera Barat. *Jurnal Agrikultura* Vol. 35(2): 365 – 376.
- Umanailo, I., R. G. Risamasu, F. Puturuahu, M. Luhukay. 2025. Analisis perbandingan indeks kemiripan tanah pada toposekuens granit Gunung Sirimau di Kota Ambon. *Jurnal Pertanian Kepulauan: Vol.9(2): 106 – 117.*
- Vierra, E. J., H. Webb, G. H. Girty. 2018. Unravelling the development of a spheroidally weathered diorite-gabbro, Santa Margarita Ecological Reserve, Peninsular Ranges, Southern California, USA. *Catena* Vol. 163: 297–310.
- Vogel, S., K. Emmerich, I. Schroter, E. Bonecke, W. Schwanghart, J. Ruhlmann, E. Kramer, R. Gebbers. 2024. The effect of soil moisture content and soil texture on fast in situ pH measurements with two types of robust ion-selective electrodes. *SOIL* Vol. 10: 321 – 333.
- Wang, Y., M. Liu, Y. Chen, T. Zeng, X. Lu, B. Yang, Y. Wang, L. Zhang, X. Nie, F. Xiao, Z. Zhang, J. Sun. 2021. Plants and microbes mediate the shift on ecosystem multifunctionality from low to high patterns across alpine grasslands on the Tibetan Plateau. *Frontiers in Plant Science* Vol. 12: 1 – 11.
- Wanudara, W. P. 2024. Indeks pelapukan tanah pada berbagai jenis tanah yang berasal dari berbagai jenis batuan di sebelah Timur Sungai Dengkeng, Bayat, Klaten. Fakultas Pertanian. Universitas Gadjah Mada. Yogyakarta. Skripsi.
- Wei, H., J. Yang, Z. Liu, J. Zhang. 2022. Data integration analysis indicates that soil texture and ph greatly influence the acid buffering capacity of global surface soils. *Sustainability* Vol. 14: 1 - 11.
- Weil, R. R., N. C. Brady. 2017. Fifteenth Edition *The Nature and Properties of Soils*. Pearson Education: London.
- Wijono, S., S. Hardjowigeno, G. Soepardi, U. S. Wiradisasta. 1989. Perkembangan tanah berasal dari bahan induk sekis dan diorit pada suatu urutan lereng di daerah Bayat Klaten Jawa Tengah. Institut Pertanian Bogor. Tesis.
- Winarno, T., A. Kurniasih, J. Marin, I. A. Kusuma. 2017. Identifikasi jenis dan karakteristik lempung di Perbukitan Jiwo, Bayat, Klaten dan arahannya sebagai bahan galian industri. *Jurnal Teknik* Vol. 38(2): 65 – 70.
- Winarso, S., S. N. A. Putri, A. P. Kusuma. 2023. Efektivitas deteksi warna tanah secara cepat dengan software berbasis android. *Agroteknika* Vol. 6(2): 161 – 174.
- Xiong, J., Z. Liu, Y. Yan, J. Xu, D. Liu, W. Tan, X. Feng. 2022. Role of clay minerals in controlling phosphorus availability in a subtropical Alfisol. *Geoderma* Vol. 409: 1 – 10.



- Yadav, D.S., Jaiswal, B., Gautam, M., Agrawal, M. 2020. Soil Acidification and its Impact on Plants. In: Singh, P., Singh, S.K., Prasad, S.M. (eds) Plant Responses to Soil Pollution. Springer: Singapore.
- Yang, M., D. Zhou, H. Hang, S. Chen, H. Liu, J. Su, H. Lv, H. Jia, G. Zhao. 2024. Effects of balancing exchangeable cations ca, mg, and k on the growth of tomato seedlings (*Solanum lycopersicum* L.) based on increased soil cation exchange capacity. *Agronomy* Vol. 14(3): 1 – 13.
- Ye, C., G. Zheng, Y. Tao, Y. Xu, G. Chu, C. Xu, S. Chen, Y. Liu, X. Zhang, D. Wang. 2024. Effect of soil texture on soil nutrient status and rice nutrient absorption in Paddy soils. *Journal MDPI Agronomy* Vol. 14(1339): 1 – 17.
- Yost, J. L., dan A. E. Hartemink. 2019. Soil organic carbon in sandy soils: A review. *Advances in Agronomy* Vol. 158: 217–310
- Yunan, D., Q. Xianliang, W. Xiaochen. 2018. Study on cation exchange capacity of agricultural soils. *IOP Conf. Series: Materials Science and Engineering* Vol. 392 (2018): 1 – 5.
- Zeng, M., W. De vries, L. T. C. Bonten, Q. Zhu, T. Hao, X. Liu, M. Xu, X. Shi, F. Zhang, J. Shen. 2017. Model – based analysis of the long – term effects of fertilization management on cropland soil acidification. *Environmental Science Technology* Vol. 51 (7): 3843 – 3851.
- Zhang, J., X. Qu, X. Song, Y. Xiao, A. Wang, D. Li. 2023. Spatial variation in soil base saturation and exchangeable cations in tropical and subtropical China. *Agronomy* Vol. 13 (781): 1 – 18.
- Zhao, J., C. Li, C. Lu, L. Deng, G. Liu, M. Fan. 2022. Acidic condition accelerates cation release from purple rock in Southwestern China. *Scientific Reports* Vol. 12: 1 – 11.
- Zhu, J., Z. X. Sun. 2024. Estimation of cation exchange capacity for low-activity clay soil fractions using experimental data from South China. *Agronomy* Vol. 14 (11): 1 – 21.
- Zulfa, N. I., C. Bowo. 2023. Tekstur dan bahan organik tanah serta hubungannya dengan batas atterberg dan aktivitas liat. *Jurnal Tanah dan Sumberdaya Lahan* Vol 10(2): 327 - 334