Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Ahmad, A and Natalia, M. 2023. Atomatic scale modelling of organic matter in soil: adsorption of organic molecules and biopolymers on the hydroxylated Al2O3 surface. Philosophical Transactions A, 381 (20220254): 1-19.

Aina, O A., Agboola, K., Owoeye, M., and Ayodele, F G. 2019. Comparison between the bulk density of followed and continuously cultivated lands: a case study of Kogi State University Research Farm. East African Scholars Journal of Agriculture and Life Science, 2(8): 414-419.

Anggraini, C., Dasrizal, and Zuriyani, E. 2023. Analisis erodibilitas tanah di DAS Kampar Bagian Hilir Kabupaten Pelalawan. El-Jughrafiyah, 3(2):95-105.

Aoyama, M. 2015. Functional roles of soil organic matter. Humic Substances Research, 12: 21-28.

Ayoubi, S., Milikian, A., Mosaddeghi, M R Zeraatpisheh, M., and Zhao, S. 2022. Impacts of clay content and type of shear strength and splash erosion of clay-sand mixtures. Mineral, 12 (1339): 1-16.

Balai Penelitian Tanah. 2022. Sifat Fisik Tanah dan Metode Analisisnya. Balai Penelitian Tanah, Bogor.

Balai Pengujian Standar Instrumen Tanah dan Pupuk. 2023. Analisis Kimia Tanah, Tanaman, Air, dan Pupuk. Agrostandar, Bogor.

Baldock, J.A., and Skjemstad, J.O. 2000. Role of the soil matrix and minerals in protecting natural organic materials against biological attack. Organic Geochemistry, 31(7-8): 697-710.

Barron, V., and Torrent, J. 2013. Iron, manganese and aluminium oxides and oxyhydroxides. European Mineralogical Union Notes in Mineralogy, 14(9): 297-336.

Basile-Doelsch, I., Brun, T, Borschneck, D, Masion, A, Marol, C and Balesdent, J. 2009. Effect of landuse on organic matter stabilized in organomineral complexez: A study combining density fractionation, mineralogy and C. Geoderma, 151 (3): 77-86.

Berhe, A. A. 2012. Decomposition of organic substrates at eroding vs depositional landform positions. Plant Soil, 320: 261-280.

Berhe, A.A., Harden, J.W., Torn, M.S., Kleber, M., Burton, S.D., and Harte, J. 2012. Persistence of soil organic matter in eroding versus depositional landform positions. Journal of Geophysical Research, 117: 1-16.

Bian, H., Li, C., Zhu, J., Xu, L., Li, M., Zheng, S., and He, N. 2022. Soil moisture affects the rapid response of microbes to labile organic carbon addition. Frontiers in Ecology and Evolution, 10 (857185).

Carrizo, M E., Carlos, A A, Diego, C and Silvia, I. 2015. Aggregation agents and structural stability in soils with different texture and organic carbon contents. Scientia Agricola, 72 (1): 75-83.

Casals, P., Carrara, A., Gimeno, C., Lopez-Sangil, L., and Sanz, M J. 2009. Soil CO_2 efflux and extractable organic carbon fractions under simulated precipition events in a Mediterranean Dehesa. Soil Biology and Biochemistry, 41: 1915-1922.

Che, M., Gong, Y, Manjing, X, Chengfang, K, Chen, L, Shuqin, H and Jiangkun, Z. 2021. Effect of elevation and slope aspect on the distribution of the soil carbon associated with Al and fe mineral phases in alpine shrub-meadow soil. Science of The Total environment, 753, 141933.

UNIVERSITAS
GADJAH MADA
**Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo**
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Che, M., Gong, Y., Xu, M., Kang, C., Lv, Chen., He, S., and Zheng, J. 2020. Effects of elevation and slope aspect on distribution of the soil organic carbon associated with Al and Fe mineral phases in alpine shrub-meadow soil. Science of The Total Environment, 753 (141933): 1-9.

Chytry, M., Danihelka, J., Ermakov, N., Hajek, M., Hajkova, P., and Koci, M. 2007. Plant species richness in continental sourthern Siberia: effects of pH and climate in the context of the spesies pool hypotesis. Global Ecology and Biogeography, 16(5): 669-678.

Clarholm, M and Skyllberg, U. 2013. Translocation of metals by trees and fungi regulates pH, soil organic matter turnover and nitrogen availability in acidic forest soil. Soil Biology and Biochemistry, 63: 142-153.

Coward, E K., Thompson, A T., and Plante, A F. 2017. Iron-mediated mineralogical control of organic matter accumulation in tropical soils. Geoderma, 306: 206-216.

Cristensen, B T. 2001. Physical fractionation of soil and structural complexity in organic matter turnover. European Journal of Soil Science. 52 (3): 345-353.

Cutrofo, M F., Matthew, D W., Claudia, M B., Karolien, D and Eldor, P. 2013. The microbial efficiency-matrix stabilization (MEMS) framework integrates plant litter decomposition with soil organic matter stabilization: do labile plant inputs form stable soil organic matter. Global Change Biology, 19: 988-995.

Cutrofo, M.F., M.G. Ranalli, M.L. Haddix, J. Six, and E. Lugoto. 2019. Soil carbon storage informed by particulate and mineral-associated organic matter. Nature Geoscience, 12 (12): 989-994.

Du, Y., Ramirez, C E., and Jaffe, R. 2018. Fractionation of dissolved organic matter by co-precipitation with iron: effects of composition. Environmental Processes, 5: 5-21.

Dutta, A., Maity, A., and Bhattacharya, P. 2024. Understanding soil formation: a comprehensive analysis of concepts, pedogenic process, and factors. *In*: Sarkar, T. and Sengupta, S (Eds) Agriculture Re-imagined: Innovations and Strategies for Suistainable Growth. Bright Sky Publications, pp: 111-120.

Dwiyono, H. 2009. Mateorologi Klimatologi. Universitas Negeri Malang, Malang.

Egli, M., Mirabella, A., Sartori, G., Zanelli, R and Bischof, S. 2006. Effect of north and south exposure on weathering rates and clay mineral formation in Alpine soils. Catena, 67(3): 155-174.

El-Swaify, S.A. 1976. Changes in physical properties of soil clays due to precipitated aluminum and iron hydroxides: II. Colloidal interactions in the absence of drying. Soil Science Society of America Journal, 40(4): 516-520.

Erdel, E., Simsek, U and Kesimci, T G. 2023. Effects of fungi on soil organic carbon and soil enzyme activity under agricultural and pasture land of Eastern Turkiye. Sustainability, 15 (1765): 1-12.

Essington, M E. 2004. Soil and Water Chemistry: An Integrative Approach. 1st Edition. CRC Press, Boca Rotan.

Experimental evaluation of methods to quantify dissolved organic nitrogen (DON) and dissolved organic carbon (DOC) in soil. Soil Biology and Biochemistry, 38: 991-999.

Fauziah, I. 2024. Pedological factors, classification, physical-chemical properties, and management strategies of inceptisols in the boca formation of Temanggung, Central Java, Indonesia (Study: Horticultural Land Management). IOP Conference Series: Earth and Environmental Science, 1362(012054): 1-11.

Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Fissore, C., B.J. Dalzel. A.A. Berhe, M. Vougtle, M. Evan and A. Wu. 2017. Influence of topography on soil organic carbon dynamics in a Southern California grassland. Catena, 149: 140-149.

Goldberg, S. 1989. Interaction of aluminum and iron oxide and clay minerals and their effect on soil pphysical properties: A review. Communications in Soil Science and Plant Analysis, 20 (11-12): 1181-1207.

Gougherty, S. W., Bauer, J. E., and Pohlman, J. W. 2018. Exudation rates and δ13C signatures of tree root soluble organic carbon in a riparian forest. Biogeochemistry, 137(1): 235-252.

Handoko, T. 2024. Evakuasi Material Longsor Samigaluh Masih Berlangsung, Jalan Provinsi diberlakukan Buka Tutup. https://jogjapolitan.harianjogja.com/read/2024/11/19/514/1195379/evakuasi-material-longsor-samigaluh-masih-berlangsung-jalan-provinsi-diberlakukan-buka-tutup. Diakses pada 9 September 2025.

Hass, A dna Fine, P. 2010. Sequential selective extraction procedures for the study of heavy metals in soils, sediment, and waste material-a critical review. Critical Review in Environmental Science and Technology, 40 (5): 365-399.

Heckman, K., Lawence, C R. and Harden, J w. 2018. A sequential selective dissolution method to quantify storage and stability of organic carbon associated with Al and Fe hydroxide phases. Geoderma, 312: 24-35.

Husein, S., dan Srijono. 2010. Peta geomorfologi Daerah Istimewa Yogyakarta. Simposium Geologi Yogyakarta, Yogyakarta: 23 Maret 2020. Hal. 1-9.

Inagaki, T M., Angela, R P, Steffen, A S, Carsten, W M, Carmen, H, Michael, J Z, Lena, F K, Ingrid, K and Johanes L. 2023. Microscale spatial distribution and soil organic matter persistence in top and subsoil. Soil Biology and Biochemistry, 178 (10892).

Ingalis, A.E., Aller, R.C., Lee, C., and Wakeham, S.G. 2004. Organic matter diagnesis in shallow water carbonate sediments. Geochimica et Cosmochimica Acta, 68(21): 4363-4379.

Ismayana, A., Insrasti, N S., Maddu, A., dan Fredy, a. 2012. Faktor rasio c/n awal dan laju aerasi pada proses co-composting bagasse dan blotong. Jurnal Teknologi Industri Pertanian, 22(3): 173-179.

Isroi. 2008. Kompos. Balai Penelitian Bioteknologi Perkebunan Indonesia, Bogor.

Jaksic, S., Jordana, N, Stanko, M, Jovicam V, Milorad, Z, Veljko, P, Borislav, B, Savo, V, Gordana, D and Vedrana, K. 2021. Topographic position, land use and soil management effects on soil organic carbon (Vineyard Region of Nis, Serbia). Agronomy, 11(7).

Jiang, J., Wang, Y., Yu, M., Cao, N., and Yan, J. 2018. Soil organic matter is important for acid buffering and reducing aluminum leaching from acidic forest soils. Chemical geology, 501: 86-94.

Johnson, S B., Yoon, T H., Kocar, B D., and Brown, G E. 2004. Adsorption of organic matter at mineral/water interfaces 2. outer-sphere adsorption of maleate and implications for dissolution process. Langmuir, 20: 4996-5006.

Junet, A D., Basile-Doelsch, I., Borschneck, D., Masion, A., Legros, S., Marol, C., Balesdent, J., Templier, J., and Derenne, S. 2012. Characterisation of organic matter from organo-mineral complexes in an Andisol from Reunion Island. Journal of Analytical and Applied Pyrolysis, 99: 92-100.

Kabala, C., Musztyfaga, E., Galka, B., and Labunska, D. 2016. Conversion of soil ph 1:2.5 KCl and 1:2.5 H_2O to 1:5 H_2O: conclusions for soil management,

Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

environmental monitoring, and international soil databases. Polish Journal of Environmental Studies, 25 (2): 647-653.

Kaiser, K. and Guggenberger, G. 2003. Mineral surfaces and soil organic matter. Eoropean Journal of Soil Science, 54: 219-236.

Kaviya, N., Upadhayay, V K., Singh, J., Khan, A., Panwar, M., and Singh, A V. 2019. Role of microorganism in soil genesis and functions. *In*: Varma, A. and Choudharu, D K (Eds) Mycorrhizospher and Pedogenesis. Springer Singapore, pp: 25-52.

Kirk, G J D., Bellamy, P H., and Lark, R M. 20010. Changes in soil pH across England and Wales in response to decreased acid deposition. Global Change Biology, 16(11): 3111-3119.

Kogel-Knabner, I., Georg, G, Markus, K, Ellen, K, Karsten, K, Stefan, S, Karin, E and Peter, L. 2008. Organo-mineral associations in temperate soils: integrating biology, mineralogy, and organic matter chemistry. Journal of Plant Nutrition and Soil Science, 171(1): 61-82.

Kogel-knabner, I., guggenberger, G., Kleber, M., kandeler, E., Kalbitz, K., Scheu, S., Eusterhues, K., and Leinweber, P. 2008. Organo-mineral associations in temperete soils: integrating biology, mineralogy, and organic matter chemistry. Journal of Plant Nutrition and Soil Science, 171, 61-82.

Kopittke, P M., Ram, C D, Carmen, H, Cui, L, Neal, W M and Carsten, W M. 2020. Soil organic matter is stabilized by organo-mineral associations through two key processes: the role of the carbon to nitrogen ratio. Geoderma, 357 (113974).

Lawrence, C.R., Harden, J.W., Xu, X., Schulz, M.S., and Trumbore, S.E. 2015. Long-term controls on soil organic carbon with depth and time: A case study from the Cowlitz River Chronosequence, WA USA. Geoderma, 247-248: 73-87.

Li, J., Pei, J., Dijkstra, F A., Nie, M., and Pendall, E. 2021. Microbial carbon use efficiency, biomass residence time and temperature sensitivity across ecosystems and soil depths. Soil Biology and Biochemistry, 154 (108117).

Li, Xiaowen., Jian, Y, Chunzhao, C, Anssi, V V, Gunnhld, R, Changqing, L and Yihua, X. 2024. Effects of mineral adsorption on the molecular composition of soil dissolved organic matter: evidence from spectral analyses. Chemical Geology, 669 (122352).

Li, Y., S. Wang, and L. Jiang. 2015. Effects of land use on soil phosphorus fractions in the Dianchi Lake Watershed, China. PLOS ONE, 10 (5).

Lookman, R., Vandeweert, N., Merckx, R., Vlassak, K. 1995. Geostatistical assessment of the regional distribution of phosphate sorption capacity parameters (FeOX and AlOX) in northern Belgium. Geoderma, 66 (3-4): 285-296.

Lopez-Sangil, L and P. Povira. 2013. Sequential chemical extractions of the mineral-associated soil organic matter: An integrated approach for the fractionation or organo-mineral complexes. 62: 57-67.

Lutzow, V M., Kogel-Knabner, I., Ekschmitt, K., Marschner, B., Flessa, H., Guggenberger, G., and Matzner, B. 2006. Stabilization of organic matter in temperate soils: Mechanisms and their relevance under different soil conditions-A review. European Journal of Soil Science, 57: 426-445.

Mani, S., Agustin, M, Felipe, G, Jena, R and Raman, S. 2017. Soil properties and organic matter quality in relation to climate and vegetation in southern Indian tropical ecosystems. Soil Research, 56(1): 80-90.

Manning, P., Vries, F T., Tallowin, J R B., Smith, R., Mortimer, S r., Pilgrim, E S., Harrison, K A., Wright, D G., Quirk, H., Benson, J., Shipley, B., cornelissen, J H

UNIVERSITAS GADJAH MADA
Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak, Kulon Progo
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

C., Kattge, J., Bonisch, G., Wirth, C and Bardgett, R D. 2015. Simple measures of climate, soil properties, and plant traits predict national-scale grassland soil carbon stocks. Journal of Applied Ecology, 52 (5): 1188-1196.

Marschner, B., Kalbitz, K. 2003. Controls of bioavailability and biodegradability of dissolved organic matter in soil. Geoderma, 13;211-235.

Mathieu, J A., Hatte, C, Valesdent, J and Parent E. 2015. Deep soil carbon dynamics are driven more by soil type than by climate: a worldwide meta analysis of radiocarbon profiles. Global Change Biology, 21(11): 4278-4292.

McBride, M.B. 1994. Environmental Chemistry of Soils. Oxford University Press, Oxford.

McKeague, J A. 1966. An evaluation of 0,1 M pyrophosphate and pyrophosphate-sithionite in comparison with oxalate as extractants of the accumulation products in podzol and some other soils. Canadian Journal of Soil Science, 47: 95-100.

Miller, B A. 2014. Semantic calibration of digita terrain analysis scale. Cartography and Geographic Information Science, 41(2): 166-176.

Mkhonza, N.P., and Muchaonyerwa, P. 2025. Sugarcane cultivation reduces charcoal C and Al/Fe-bound OC in selected Ferrasols. Environmental Monitoring and Assessment, 197(491): 1-15.

Multazam, Z. 2023. Kajian nilai pH tanag pada berbagai toposekuen dan kelas lereng yang berbeda pada lahan perkebunan karet rakyat di Kecamatan Pelepat Hilir, Kabupaten Bungo, Jambi, Jurnal Riset Rumpun Ilmu Teknik, 2(2): 1-10.

Mulyaningsih, S. 2016. Volcanostratigraphic sequence of Kebo-Butak formation at Bayat geological field complex, Central java Province and Yogyakarta Special Province, Indonesia. Indonesian Journal on Geoscience, 3(2): 77-94.

Murphy, K., Klopatek, J M., and Klopatek, C C. 1998. Effects of litter quality and climate on decomposition along an elevation gradient. Ecological Application, 8(4): 1061-1071.

Nasir, K., Jayadi, M., and Ahmad, A. 2021. Minerals of parent material as an indicator of soil fertility. IOP Conference Series: Earth and Environmental Science, 807(042007): 1-7.

Ni, J., and Pignatello, J J. 2018. Charge-assisted hydrogen bonding as a cohesive force in soil organic matter: water solubility enhancement by addition of simple carboxylic acids. Environmental Science: Process & Impacts, 8: 1-9.

Ni, X., Liao, S., Tan, S., Peng, Y., and Wang, D. 2020. The vertical distribution and control of microbial necromass carbon in forest soil. Global Ecology Biogeography, 77(3): 1035-1047.

Nierop, K.G.J.J., Jansen, B., and Verstraten, J.M. 2002. Dissolved organic matter, aluminium and iron interactions: precipitation induced by metal/carbon ratio, pH and competition. Science of The Total Environment, 1-3: 201-211.

Niu, B., T. Lei, Q. Chen, M. Shao, Y. Xiaoqin, H. Hiao, Y. Yang, G. Guggenberger dan G. Zhang. 2023. pH: A core of interaction networks among soil organo-mineral fractions.

O'Brien, S. I., Jastrow, J. D., Grimley, D.A., and Gonzalez-Meler, M.A. 2015. Edaphic controls on soil organic carbon stocks in restored grasslands. Geoderma, 251: 117-123.

Oades, J M. 1988. The retention of organic-matter in soils. Biogeochemistry, 5 (1): 35-70.

Osman, K T. 2013. Soils: Principles, Properties, and Management. Springer, London.

Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Pagilla, K R and Center, L W. 1999. Laboratory studies on remediation of chromium-contaminated soils. Journal of Environmental Engineering, 125: 243-248.

Parjono, P., S. Anwar, K. Murtilaksono, and L.T. Indriyati. 2019. Fraksionasi fosfor pada profil tanah hutan, Wanatani, dan Tegalan di Jawa Barat. Jurnal Ilmu Pertanian Indonesia (JIPI), 24(4), 319–326.

Patra, H., Singh, H S., Ashaq, M., and Sahu, T K. 2024 Chemical properties of soil. *In*: Soil Science and Plant Nutrition. Global Publication House, pp: 108-126.

Philipp, L., Sunnemann, M., Schadler, M., Blagodatskaya, E., Tarkka, M., Eisenhauer, N., and Reitz, T. 2025. Soil depth shapes the microbial response to land use and climate change in agroecosystems. Applied Soil Ecology, 209(106025): 1-15.

Piotrowska-Dlugosz, A., Dlugosz, J., Gryta, A., and Frac, M. 2022. Responses of n-cycling enzyme activities and functional diversity of soil microorganisms to soil depth, pedogenic processes and cultivated plants. Agronomy, 12(264): 1-26.

Poirier, V., Isabelle, B, Jerome, B, Daniel, B, Joann, K W and Denis, A A. 2020. Organo-mineral interactions are more important for organic matter retention in subsoil than topsoil. Soil Systems, 4 (4): 1-19.

Poirire, V., Basile-Doelsch, I., Balesdent, J., Borschneck, D., Whalen, J K., and Angers, D A. 2020. Organo-mineral interactions are more important for organic matter retention in subsoil than topsoil. Soil Systems, 4 (4): 1-17.

Possinger, A.R., M.J. Zachman, A. Enders, B.D.A. Levin, D.A. Muller, L.F.Kourkoutis and J. Lechmann. 2020. Organo-organic and organo-mineral interfaces in soil at the nanometer scale. Nature Communications, 11(1): 1-12.

Pramuji dan Bastaman, M. 2009. Teknik analisis mineral tanah untuk menduga cadangan sumber hara. Buletin Teknik Pertanian, 14: 80-82.

Preusser, S., Marhan, S., Poll, C., and Kandeler, E. 2017. Microbial community response to changes in substrate avaibility and habitat conditions in a reciprocal subsoil transfer experiment. Soil Biology and Biochemistry, 105: 138-152.

Pribyl, D W. 2020. A critical review of the conventional SOC to SOM conversion factor. Geoderma, 156: 75-83.

Pries, C E H., Ryals, R., Zhu, B., Min, K., Cooper, A., Goldsmith, S., Pett-Ridge, J., Torn, M, and Berhe, A A. 2023. The deep soil organic carbon response to global change. Annual Review of Ecology, Evolution, and Systematics, 54: 375-401.

Priyono, D K., Sunarto., Sartohadi, J., dan Sudibyakto. 2011. Tiipologi pedogeomorfik longsor lahan di Pegunungan Menoreh Kabupaten Kulon Progo Daerah Istimewa Yogyakarta. Forum Geografi, 25 (1): 67-84.

Purwanto, B H., and Alam, S. 2022. Impact of intensive agricultural management on carbon and nitrogen dynamics in the humid tropics. Soil Science and Plant Nutrition, 66(1): 50-59.

Queiroz, H.M., Ying, S.C., Abernathy, M., Barcellos, D., Gabriel, F.A., Otero, X.L., Nobrego, G.N., Bernardino, A.F., and Ferreire, T.O. 2021. Manganese: The overlooked contaminant in the world largest mine tailings dam collapse. Environment International, 146 (106284): 1-14.

Rakesh, S., D. Sarkar, A.K. Sinha, S. Danish, P.M. Bhattacharya, P. Mukhopadhyay, S.H. Salmen, M.J. Ansari, and R. Datta. 2021. Soil organic carbon and labile and recalcitrant carbon fractions attributed by contrasting tillage and cropping systems in old and recent alluvial soils of subtropical eastern India. PLOS ONE, 16(12).

UNIVERSITAS
GADJAH MADA
**Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo**
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Ran, L., Xinxiao, Y., Qiangguo, C., Liying, S., Haiyan, F., Guodong, J., and Jijun, H. 2022. Soil erosion and deposition process of loess slopes in loess hilly and gully region. Buletin of Soil and Water Conservation, 42(2): 31-37.

Rasmussen, C., Southard, R J., and Horwath, W R. 2006. Mineral control of organic carbon mineralization in a range of temperate conifer forest soils. Global Change Biology, 12: 834-847.

Rijn, L C V. 2007. Unified view of sediment transport by currents and waves: initiation of motion, bed roughness and bed-load transport. Journal of Hydraulic Engineering, 133(6): 1-40.

Rinaldi, F B., Rachmawati, J., dan Erlin E. 2022. Pengaruh ketinggian tempat terhadap karakteristik uah kacang panjang. Quangga: Jurnal Pendidikan dan Biologi, 14(2): 159-163.

Robinson, S I., Eoin, J O, Beat, F, Marleena, H and Juha, M. 2022. Soil organic matter, rather than temperature, determines the structure and functioning of subarctic decomposer communities. Global Change Biology, 28: 3929-3943.

Rohith, A K. 2023. Soil organic matter dynamics: impacts on carbon sequestration. *In*: B.A. Stewart (Eds.) Advances in Soil Science. Elite Publishing House, p:108-126.

Rousk, J., Erland, B, Philip, C B, Christian, L L, Catherine, L, Gregory, J C, Rob, K and Noah, F. 2010. Soil bacterial and fungal communities across a pH gradient in an arable soil. The ISME Journal, 4: 1340-1351.

Rowley, M., Grand, S., Spangenherg, J E., and Verrecchia, E P. 2021. Evidence linkingg calcium to increased organomineral association in soil. Biogeochemistry, 153: 223-241.

Sainju, U M., Liptzin, D., and Jabro, J D. 2022. Relating soil physical properties to other soil properties and crop yield. Nature, 12(22025): 1-11.

Sari, R., Maryam., dan Yusmah, R A. 2023. Penentuan C-organik pad atanah untuk meningkatkan produktivitas tanaman dan keberlanjutan umur tanaman dengan metoda spektrofotometer uv-vis. Jurnal Teknologi Pertanian, 12(1): 11-19.

Sauzet, O., Cammas, C., Gilliot, J., and Montagne, D. 2023. Long-term quantification of the intensity of clay-sized partice transfers due to earthworm bioturbation and eluviation/illuviation in a cultivated luvisol. Geoderma, 429(116251):1-11.

Schaetzl, R J and Thompson, M L. 2015. Soils: Genesis and Geomorphology. Cambridge University Press, Inggris.

Schenk, H J. 2008. Soil depth. Plant rooting strategies and species niches New Phytologist, 178: 223-225.

Schneider, M.P.W., Scheel, T., Mikutta, R., Hees, P.V., Kaiser, K., and Kalbitz, K. 2010. Sorptive stabilization of organic matter by amorphous Al hydroxide. Geochimica et Cosmochimica, 74: 1606-1619.

Schreiner-McGraw, A P and Claire, B. 2023. Quantifying links between topsoil depth, plant water use and yield in dryland cropping systems. Field Crops Research, 290, 108569.

Setyorini, D., A. Hartono, and S. Anwar. 2010. Fraksionasi fosfor pada tanah sawah di Jawa Barat. Jurnal Ilmu Tanah dan Lingkungan, 12 (1): 1-10.

Sharma, S., P.K. Jain, and P.E. Soloman. 2023. Carbon storage potential of soil in diverse terrestrial ecosystems. Nature Environment and Pollution Technology, 22(4): 1809-1819.

UNIVERSITAS
GADJAH MADA
**Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo**
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Sineri, C N M., Krimadi, L N., Salim, I., Mandik, Y I., dan Rusmanta, Y B J. 2025. Pengaruh kadar air terhadap tingkat keasaman tanah Kampung Burmeso secara elektrometri. Journal Scientific of Mandalika, 6(6): 1533-1540.

Singh, A. and R.S. Rawat. 2021. Soil Degradation and Restoration. *In:* A. Kumar and B. Kumar (Eds.) Recent Trends in Biodiversity and Environmental Science. Anvil Books and Publishers, p: 199-221.

Singh, P.,, and Benbi, D K. 2018. Soil organic carbon pool changes in relation to slope position and land use in Indian lower Himalayas. Catena, 166: 171-180.

Six, J., R.T. Conant, E.A. Paul, and K. Paustian. 2012. Stabilization mechanism of soil organic matter: implications for C-saturation of soil. Plant and Soil, 241(2): 155-176.

Staudt, F., Mullarney, J C., Pilditch, C A., and Huhn, K. 2018. Effects of grain-size distribution and shape on sediment bed stability, near-bed flow and microstructrure. Earth Surface Process and Landform, 44(5): 1100-1116.

Stefanou, S., and Papazafeiriou, A.Z. 2013. Effects of iron and aluminum oxides and clay content on penetration resistance of five Greek soils. Eurasion Journal of Soil Science, 2: 122-130.

Su, Z., Zhang, J., and Nie, X. 2010. Effect of soil erosion on soil properties and crop yield on slopes in the Sichuan Basin, China. Pedospher, 20(6): 736-746.

Sudarshan, S., Niveditha, M P., Gunturi, A., Supriya, Chethan, B R T., and Chethan, K K B. 2024. Effects of intensive agricultural management practices on soil biodiversity and implications for ecosystem functioning: A review. International Journal of Research In Agronomy, 7(9): 166-169.

Vauzia, L., Susatya, A., dan Putranto, B A N. 2024. Struktur dan komposisi vegetasi kebun campuran agroforestri di Desa Manau Sembilan II Kecamatan Padang Guci Hulu Kabupaten Kaur Provinsi BengkuluSustainable. Journal of Global Forest and Environmental Science, 4 (1): 62-78.

Vejre, H., Callesen, I., Vesterdal, L., and Rauland-Rasmussen, R. Carbon and nitrogen in danish forest soil-contents and distribution determined by soil order. Soil Science Society of American Journal, 67(1): 335-343.

Vienastra, S. 2018. Geomorfologi dan morfometri daerah aliran sungai (DAS) Tinalah di Kabupaten Kulonprogo Daerah Istimewa Yogyakarta. Jurnal Teknologi Echnoscientia, 11(1): 21-28.

Violante, A., Maria, L L M abd Antonio, G C. 2017. Formation, properties and reactivity of coprecipitates and organomineral complexes in soil environments. Journal of Soil Science and Plant Nutrition, 17 (2): 319-340.

Wagai, R., Kajiura, M., and Asano, M. 2020. Iron and aluminum association with microbially processed organic matter via meso-density aggregate formation across soils: organo-metallic glue hypothesis. Soil, 6: 597-627.

Wagai, R., Mayer, L.M., Kitayama, K., and Shirato, Y. 2013. Association of organic matter with iron and aluminum across a range of soils determined via selective dissolution techniques coupled with dissolved nitrogen analysis. Biogeochemistry, 112: 95-109.

Wang, F., Tao, H., Shi, X., Bu, S., Bao, Z. and Zhang, D. 2024. Study on the sand reduction effect of slope vegetation combination in loess areas. Sustainability, 16(9132): 1-19.

UNIVERSITAS
GADJAH MADA
**Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo**
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Wang, X., Kyungsoo, Y, Adrian, A W, Jessica, G, Ronald, A and Arjun H. 2018. Soil organic carbon and mineral interactions on climatically different hillslopes. Geoderma, 322:71-80.

Wang, X., Xuexin, W, Peng, G, Qian, Y, Kun, C, Ning, L, Yueling, F, Xiumei, Z and Xiaori, H. 2021. Effects of different returning methods combined with decomposer on decomposition of organic components of straw and soil fertility. Scientist Report, 11 (15495): 1-10.

Wattek-Koekkoek, E J W., Buurman, P., Plicht, J V D., Wattel, E., and Breemen, N V. 2003. Mean residence time of soil organic matter associated with kaolinite and smectite. 54: 269-278.

Wiemeier, M., Urbanski, L., Hobley, E., Lang, B., Lutzow, M V., Marin-Spiotta, E., Wesemael, B V., Rabot, E., Lie, M., Garcia-Franco, N., Wollschlager, U., Vogel, H and Kogel-Knabner, I. 2019. Soil organic carbon storage as a key function of soils- A review of drivers and indicators at various scales. Geoderma, 333: 149-162.

Wiesmeier, M., Urbanski, L., Hobley, E., Lang, B., Lutzow, M V., Marin-Spiotta, E., Wesemael, B V., Rabot, E., Lie, M., Garcia-Franco, N., Wollschlager, U., Vogel, H. and Kogel-Knabner, I. 2019. Soil organic carbon storage as a key function of soils-A review of drivers and indicators at various scales. Gepderma, 333: 149-162.

Winsor, G W and Pollard, A G. 1956. Carbon-nitrogen relationship in soil-mineralization of carbon and nitrogen. Journal of the Science of Food and Agriculture, 7(9): 618-624.

Winterwer., J C., Kessel, T V., Maren, D S V., and Prooijen, B C V. 2021. Fine Sediment in Open Water. World Scientific, Singapore.

Woods, L E., and Schuman, G E. 1988. Cultivation and slope position effects on soil organic matter. Soil Science of America Journal, 52(5): 1371-1376.

Wu, Y., Penuelas, J., Deng, M., Pan, S., Zhang, X., Zhang, Z., and Liu, L. 2025. Elevational changes in vegetation and soil geochemistry drive thresholds in bulk carbon and its key fractions. Journal of Ecology, 113(8): 1985-1996.

Xie, E., X. Zhang, F. Lu, Y. P, J. Chen, and Y. Zhao. 2022. Integration of a process-based model into the digital soil mapping improves the space-time soil organic carbon modelling intensively. Geoderma, 409(115599): 1-12.

Xu, J., and Yuan, K. 1993. Dissolution and fractionation of calcium-bound and iron-and aluminum-bound humus in soils. Pedosphere, 3: 75-80.

Yuan, Z., Chao, F, Rong, Z, Feng-Min, L, Muhammad, M J and Ivan, A J. 2019. Topographic influences on soil properties and aboveground biomass in lucerne in a semi-arid environment. Geoderma, 244: 137-143.

Yvanes-Giuliani, Y A M., Waite, T D., and Collins, R N. 2014. Exchangable and secondary mineral reactive pools of aluminium in coastal lowland acid sulfate soils. Science of The Total Environment, 485-486: 232-240.

Zewde, T W., Jerome, R, Olivier, G, Emmanuel, D, Clement, L, Perrine, C and Isabelle, B. 2019. Soil organo-mineral associations formed by co-precipitation of Fe, Si, and Al in presence of organic ligands. Geochimica et Cosmochimica Acta, 160: 15-28.

Zhang, C., Liu, Z., Luo, M., Zhang, J., Shao, Y., Xu, D., and Ma, L. 2020. Comparison of the content of typica heavy metals in organic carbon associated with calcium and iron / Albonds in different functional areas in Beijing Urban Soil. IOP Conference Series: Earth and Environmental Science, 461 (012078): 1-7.

UNIVERSITAS
GADJAH MADA
**Sebaran Fraksi-fraksi Organomineral dalam Tanah di Berbagai Satuan Lereng pada Formasi Kebobutak,
Kulon Progo**
Septi Wulandari, Dr. Ir. Eko Hanudin, M.P., IPU, ASEAN Eng; Prof. Dr. Ir. Benito Heru Purwanto, M.P., M.Agr
Universitas Gadjah Mada, 2025 | Diunduh dari http://etd.repository.ugm.ac.id/

Zhang, R., Zhang, I., and Fu, X. 2017. Research on relationships between sediment yield and hydraulics parameters on slope. Journal of Soil and Water Conservation, 31(5): 81-86.

Zhang, S., Zhang, X., Huffman, T., Liu, X., and Yang, J. 2011. Influence of topography and land management on soil nutrient variability in Northeast China. Nutrient Cycling in Agroecosystems, 89: 427-438.

Zhang, Y., Wu, W., and Liu, H. 2019. Factors affecting vatiations of soil pH in different horizons in hilly regions. PLOS ONE, 14(6): 1-13.

Zhang, Z., Hai-Ruo, M, Zhi-Qi, Z and Cong-Qiang, L. 2024. Effect of small-scale topography on organic sulfur mineralization of subtropical soils. Chemical Geology, 660, 122158.

Zhou, S., T. Ke, S. Li, S. Deng, X. An, X. Ma, R.D. Philippis and L. Chen. 2020. Induced biological soil crusts and soil properties vary between slope aspect, slope gradient and plant canopy in the Lobq desert of China gradient and plant canopy in the Lobq desert of China. Catena, 190, 104559.

Zhou, T., Lv, Y., Xu, L., Zhou, Y., Mei, T., Li, Y., Yuan, N and Shi, Y. 2012. Topography and soil organic carbon in subtropical forests of China. Forest, 14(1023): 1-22.

Zhu, Q., Riley, W J., Tang, J., Collier, N., Hoffman, F M., Yang, X., Bisht, G. 2019. Representing nitrogen, phosphorus, and carbon interactions in the E3SM land model: development and global benchmarking. Journal of Advances in Modelling Earth Systems, 11(7): 2238-2258.

Zhu, X., Fang, X., Xiang, W., Chen, L., Ouyang, S., and Lei, P. 2023. Vegetation restoration drives dynamics of soil nitrogen content and availability in subtropics. Catena, 220(106720):1-14.

Zontang, Y., Tsutomo, O and Balwant, S. 2024. Effect of land use change on molecular composition and concentration of organic matter in an oxisol. 58(23): 10095-10107.

Zudhi, K. 2003. Topographic variation of soil nitrogen mineralization and microbial biomass in Japanese Cedar (*Cryptomeria japonica* D. Don) stands at Myoudani Watershed, Toyama, Japan. Soil Science and Plant Nutrition, 49(6): 843-851.