

DAFTAR PUSTAKA

- Afner, D.D.P., A. Aprisal, and Y. Yulnafatmawita. 2020. Indeks stabilitas agregat tanah pada perkebunan teh berbasis slope dan umur tanaman di Kecamatan Gunung Talang Kabupaten Solok. *J. Tanah dan Sumberd. Lahan* 8(1): 75–81. doi: 10.21776/ub.jtsl.2021.008.1.10.
- Ahmad, A., C. Lopuisa, A.M. Imran, and S. Baja. 2018. Soil physicochemical properties to evaluate soil degradation under different land use types in a high rainfall tropical region: A case study from South Sulawesi, Indonesia Soil physicochemical properties to evaluate soil degradation under different land. *Earth Environ. Sci.* 157: 1–6.
- Albuquerque, C.G., F. Gavelaki, H.B. Matera, A.C.V. Motta, S.A. Prior, T. M. Ercole, and E. M. Araujo. 2024. Relationship between pH and base saturation associated with soil cation exchange capacity in soils of Mato Grosso do Sul, Brazil. *Bragantia* 83: 1–11. doi: 10.1590/1678-4499.20230291.
- Alim, A.S., and R.S. Anggraini. 2020. Assessing land degradation as the impact of deforestation due to the expansion of oil palm plantation in Rokan Hulu, Riau. *Int. Conf. Green Agro-industry Bioeconomy* 733: 1–8. doi: 10.1088/1755-1315/733/1/012146.
- Amacher, M.C., K.P. O'Neill, and C.H. Perry. 2007. Soil vital signs: A new soil quality index (SQI) for assessing forest soil health. *USDA For. Serv. - Res. Pap. RMRS-RP* (65): 1–14.
- Amare, H., H. Admase, and T. Ewunetu. 2024. Influence of land-use types and topographic slopes on the physico-chemical characteristics of soils in Northwestern Ethiopia. *Front. Soil Sci.* 4: 1–9. doi: 10.3389/fsoil.2024.1463315.
- Anaba, B.D., M. Yemefack, M. Abossolo-Angue, G. Ntsomboh-Ntsefong, E.G. Bilong, G. F. N. Ebongue. 2020. Soil texture and watering impact on pot recovery of soil-stripped oil palm (*Elaeis guineensis* Jacq.) seedlings. *Heliyon* 6(10). doi: 10.1016/j.heliyon.2020.e05310.
- Andrews, S.S., C.B. Flora, J.P. Mitchell, and D.L. Karlen. 2003. Growers' perceptions and acceptance of soil quality indices. *Geoderma* 114(3–4): 187–213. doi: 10.1016/S0016-7061(03)00041-7.
- Andrews, S.S., D.L. Karlen, and C.A. Cambardella. 2004. The soil management assessment framework. *Soil Sci. Soc. Am. J.* 68: 1945–1962.
- Arimbawa, I.B., A.R. Saidy, F. Razie, J. Purnomo, Hermantoro, T. Suparyanto, B. Pardamean. 2024. Differences in Characteristic of Spodosols, Inceptisols, and Ultisols Towards Oil Palm Productivity. *Commun. Math. Biol. Neurosci.* 2024: 1–19. doi: 10.28919/cmbn/8678.
- Badan Pusat Statistik. 2024. Luas Tanaman Perkebunan Menurut Provinsi. <https://www.bps.go.id/id/statistics-table/2/MTMxIzI=/luas-tanaman-perkebunan-menurut-provinsi.html>.
- Balai Penelitian Tanah. 2022a. Sifat Fisik Tanah dan Metode Analisisnya.

Balai Penelitian Tanah. 2022b. Metode Analisis Biologi Tanah.

Balai Pengujian Standar Instrumen Tanah dan Pupuk. 2023. Analysis of Soil Chemistry, Plant, Water, and Fertilizer.

Bedolla-Rivera, H.I., M. de la L.X. Negrete-Rodríguez, F.P. Gámez-Vázquez, D. Álvarez-Bernal, and E. Conde-Barajas. 2023. Analyzing the impact of intensive agriculture on soil quality: a systematic review and global meta-analysis of quality indexes. *Agronomy* 13(8). doi: 10.3390/agronomy13082166.

Boafo, D.K., B. Kraisornpornson, S. Panphon, B.E. Owusu, and P.N. Amaniampong. 2020. Effect of organic soil amendments on soil quality in oil palm production. *Appl. Soil Ecol.* 147(January 2019). doi: 10.1016/j.apsoil.2019.09.008.

Cahyana, D., Y. Sulaeman, M. Anda, D.O. Saparina, and D. Subardja. 2021. Developing and testing soil correlation matrix to assess the spatial variation of soil resource in Indonesia. *IOP Conf. Ser. Earth Environ. Sci.* 757(1). doi: 10.1088/1755-1315/757/1/012040.

Carron, M.P., Q. Auriac, D. Snoeck, C. Villenave, E. Blanchart, F. Ribeyre, R. Marichal, M. Darminto, J. P. Caliman. 2015. Spatial heterogeneity of soil quality around mature oil palms receiving mineral fertilization. *Eur. J. Soil Biol.* 66: 24–31. doi: 10.1016/j.ejsobi.2014.11.005.

Ceddia, M.B., S.R. Vieira, A.L.O. Villela, L.S. Mota, L.H.C. dos Anjos, D. F. de Carvalho. 2009. Topography and spatial variability of soil physical properties. *Sci. Agric.* 66(3): 338–352.

Chukwu, E.D., B.T. Udoh, A.I. Afangide, and A.F. Osi. 2023. Evaluation of soil quality under oil palm cultivation in a coastal plain sands area of Akwa Ibom State Nigeria. *Soil Secur.* 10(February): 100087. doi: 10.1016/j.soisec.2023.100087.

Ćirić, V., N. Prekop, S. Šeremešić, B. Vojnov, B. Pejić, D. Radovanović, D. Marinković. 2023. The implication of cation exchange capacity (CEC) assessment for soil quality management and improvement. *Agric. For.* 69(4): 113–133. doi: 10.17707/AgricultForest.69.4.08.

Corstanje, R., T.G. Mercer, J.R. Rickson, L.K. Deeks, P. Newell-Price, I. Holman, C. Kechavansi, T. W. Waine. 2017. Physical soil quality indicators for monitoring British soils. *Solid Earth* 8(5): 1003–1016. doi: 10.5194/se-8-1003-2017.

Cui, J., J.M. Chao de la Barca, E. Lamade, and G. Tcherkez. 2021. Potassium nutrition in oil palm: The potential of metabolomics as a tool for precision agriculture. *Plants People Planet* 3(4): 350–354. doi: 10.1002/ppp3.10169.

Divband, L., and M. Saeidinia. 2026. Results in engineering Integrating entropy indexing and machine learning for enhanced soil quality monitoring in organic-amended soils. 29(2025): 108577.

Dulshan, T., S. Ariyaratna, M. Mujithaba, M. Najim, and H. Ammounh. 2025. Impacts of oil palm cultivation on spatial variations in soil properties in an oil palm cultivated land in Kalutara, Sri Lanka. *J. Soil Sci. Agroclimatol.* 22(2): 489–499. doi: <http://dx.doi.org/10.20961/stjssa.v22i2.107533>.

- Effendi, A.C., and B. Hermanto. 1998. Peta Geologi Lembar Bogor, Jawa.
- Ewunetu, T., Y.G. Selassie, and E. Molla. 2025. Soil properties under different land uses and slope gradients : Implications for sustainable land management in the Tach Karnuary watershed , Northwestern Ethiopia. (May). doi: 10.3389/fenvs.2025.1518068.
- Fageria, N.K., and A.S. Nascente. 2014. Management of soil acidity of South American soils for sustainable crop production. Elsevier.
- Fata, Y.A., B. Kuncahyo, and S.D. Tarigan. 2022. Characteristics and factors affecting surface and shallow landslides in West Java, Indonesia. *J. Degrad. Min. Lands Manag.* 10(1): 3849–3859. doi: 10.15243/jdmlm.
- Fathoni, M.A. 2025. Spatiotemporal analysis of land surface temperature and land cover change: Assessing the impact of urbanization and vegetation dynamics. *Spat. Rev. Sustain. Dev.* 2(1): 21–37. doi: <https://doi.org/10.61511/srsd.v2i1.2025.1752>.
- Food and Agriculture Organization (FAO). 2006. Climate Change in Remote Mountain Regions: A Throughfall-Exclusion Experiment to Simulate Monsoon Failure in the Himalayas. 4th ed. Rome.
- Food and Agriculture Organization (FAO). 2023. FAOSTAT Analytical Brief 96: Agricultural Production Statistics 2010-2023. : 1–16. <https://www.fao.org/faostat/en/#data/QCL>.
- Foong, S.Z.Y., C.K.M. Goh, C. V. Supramaniam, and D.K.S. Ng. 2019. Input–output optimisation model for sustainable oil palm plantation development. *Sustain. Prod. Consum.* 17: 31–46. doi: 10.1016/j.spc.2018.08.010.
- Garcia, F.O., and C.W. Rice. 1994. Microbial Biomass Dynamics in Tallgrass Prairie. *Soil Sci. Soc. Am. J.* 58(3): 816–823. doi: 10.2136/sssaj1994.03615995005800030026x.
- Goh, J. 1997. General Oil Palm Nutrition Nutrient Uptake. : 174–214.
- Goh, K.J., P.H.. Ng, and C.. Lee. 2009. Fertilizer Management and Productivity of Oil Palm in Malaysia.
- Goh, K.J., and S.B. Po. 2005. A comparative study on the selected personal and reproductive characteristics of rhythm users in Korea. *Proc. Most. Best Pract. Work. Crop Manag. Malaysian Oil Sci. Technol. Assoc.*: 1–37.
- Guo, W., and X. Xu. 2020. Changes in particle size distribution of suspended sediment affected by gravity erosion: a field study on steep loess slopes. *J Soils Sediments* 20: 1730–1741. doi: <https://doi.org/10.1007/s11368-019-02496-z>.
- Hanum, C., A. Rauf, D.A. Fazrin, and A.R. Habibi. 2016. Nitrogen, phosphor, and potassium level in soil and oil palm tree at various composition of plant species mixtures grown. *IOP Conf. Ser. Earth Environ. Sci.* 41(1). doi: 10.1088/1755-1315/41/1/012008.
- Harahap, F.S., R.F. Yana, and A. Harahap. 2019. Pengaruh penambahan berbagai komposisi bahan lrganik terhadap karakteristik hidroton sebagai media tanam. *J.*

- Pertan. Trop. 6(2): 180–189. doi: 10.32734/jpt.v7i2.
- Hazelton, P., and B. Murphy. 2007. Interpreting Soil Test Results: What do all the numbers mean? CSIRO publishing.
- He, S., B. Wei, H. Guo, H. Lin, R. Zhu, X. Zhang, S. He, Y. Sun, S. Zhou, A. Cai, Z. Wang, Z. Huang. 2026. Nitrogen fertilization induces greater loss of base cations and accumulation of exchangeable acids in acidic soils than in neutral soils. *Geoderma* 466(2025): 117669. doi: 10.1016/j.geoderma.2025.117669.
- Herdiansyah, G., M. Arifin, and A. Suriadikusumah. 2022. The pedogenesis of inceptisols on southeast toposequence of Mount Manglayang in West Java, Indonesia. *Indones. J. Geosci.* 9(2): 195–208. doi: 10.17014/ijog.9.2.195-208.
- Karlen, D.L., N.C. Wollenhaupt, D.C. Erbach, and E.C. Berry. 1994. Crop residue effects on soil quality following 10-years of no-till corn. *Soil Tillage Res.* 31: 149–167.
- Khormali, F., M. Ajami, S. Ayoubi, C. Srinivasarao, and S.P. Wani. 2009. Role of deforestation and hillslope position on soil quality attributes of loess-derived soils in Golestan province, Iran. *Agric. Ecosyst. Environ.* 134(3–4): 178–189. doi: 10.1016/j.agee.2009.06.017.
- Li, K., H. Lu, J. Nkoh, Z. Hong, and R. Xu. 2022. Aluminum mobilization as influenced by soil organic matter during soil and mineral acidification: A constant pH study. *Geoderma* 418: 115853. doi: 10.1016/j.geoderma.2022.115853.
- Liddle, K., T. Mcgonigle, and A. Koiter. 2020. Microbe biomass in relation to organic carbon and clay in soil. *Soil Syst.* 4: 1–10. doi: 10.3390/soilsystems4030041.
- Lin, H. 2011. Three principles of soil change and pedogenesis in time and space. *Soil Sci. Soc. Am. J.* 75(6): 2049–2070. doi: 10.2136/sssaj2011.0130.
- Lin, Z., Y. Li, C. Tang, Y. Luo, W. Fu, X. Cai, Y. Li, T. Yue, P. Jiang, S. Hu, S. X. Chang. 2018. Converting natural evergreen broadleaf forests to intensively managed moso bamboo plantations affects the pool size and stability of soil organic carbon and enzyme activities. *Biol. Fertil. Soils* 54(4): 467–480. doi: 10.1007/s00374-018-1275-8.
- Liyanagama, N.L., R.C.W.M.R.A. Nugawela, and D.P.S.T.G. Attanayaka. 2016. The impact of oil palm and rubber plantations to the microenvironment. *Proceedings of 15th Agricultural Research Symposium.* p. 537–541
- Lord, S., and J. Clay. 2006. Environmental impacts of oil palm – practical considerations in defining sustainability for impacts on the air, land, and water. *Int. Plant. Conf. High. Product. Effic. Pract. Sustain. Agric.*: 1–38.
- Mandal, D., S. Patra, N.K. Sharma, N.M. Alam, C. Jana, R. Lal. 2023. Impacts of soil erosion on soil quality and agricultural sustainability in the north-western Himalayan Region of India. *Sustainability* 15(6): 1–14. doi: 10.3390/su15065430.
- Mengiste, W. 2025. The effects of slope gradient and soil depth on soil physicochemical properties in the Achew small-scale irrigation area, Southwest Ethiopia. *PLoS One* 20(10): e0333894. doi: 10.1371/journal.pone.0333894.

- Merten, J., A. Röhl, T. Guillaume, A. Meijide, S. Tarigan, H. Agusta, C. Dislich, C. Dittrich, H. Faust, D. Gunawab, J. Hein, Hendrayanto, A. Knohl, Y. Kuzyakov, K. Wiegand, and D. Hölscher. 2016. Water scarcity and oil palm expansion: Social views and environmental processes. *Ecol. Soc.* 21(2). doi: 10.5751/ES-08214-210205.
- Mustofa, A., S.N.H. Utami, and B.H. Purwanto. 2024. Soil quality index in some cropping systems in plot 17 of Wanagama forest, Gunungkidul, Yogyakarta, Indonesia. *Sains Tanah* 21(1): 1–14. doi: 10.20961/stjssa.v21i1.65454.
- Nabiollahi, K., F. Golmohamadi, R. Taghizadeh-Mehrjardi, R. Kerry, and M. Davari. 2018. Assessing the effects of slope gradient and land use change on soil quality degradation through digital mapping of soil quality indices and soil loss rate. *Geoderma* 318(December 2017): 16–28. doi: 10.1016/j.geoderma.2017.12.024.
- Nelson, P.N., M. Banabas, D.R. Scotter, and M.J. Webb. 2006. Using soil water depletion to measure spatial distribution of root activity in oil palm (*Elaeis guineensis* Jacq.) plantations. *Plant Soil* 286: 109–121. doi: 10.1007/s11104-006-9030-6.
- Pardon, L., C. Bessou, N. Saint-Geours, B. Gabrielle, N. Khasanah, J. P. Caliman, and P. N. Nelson. 2016. Quantifying nitrogen losses in oil palm plantations: Models and challenges. *Biogeosciences* 13(19): 5433–5452. doi: 10.5194/bg-13-5433-2016.
- Perkebunan Nusantara. 2022. PTPN III (Persero) Umumkan Penggabungan Sub Holding PalmCo dan SupportingCo. <https://holding-perkebunan.com/ptpn-iii-persero-umumkan-penggabungan-sub-holding-palmco-dan-supportingco/>.
- Permanadewi, S., S. Maryanto, and J. Subandrio. 2017. Mineralogi dan geokimia tuf berumur tersier dan kuarter di Daerah Cibadak, Sukabumi, Jawa Barat. *J. Geol. dan Sumberd. Miner.* 18(4): 211–224. <https://jgsm.geologi.esdm.go.id/index.php/JGSM/article/view/295>.
- Pirker, J., A. Mosnier, F. Kraxner, P. Havlík, and M. Obersteiner. 2016. What are the limits to oil palm expansion? *Glob. Environ. Chang.* 40: 73–81. doi: 10.1016/j.gloenvcha.2016.06.007.
- Prawito, P., P. Wulandari, and B. Sulistyio. 2022. Biophysical properties of various ages oil palm plantation in Ultisols of Bengkulu. *IOP Conf. Ser. Earth Environ. Sci.* 974(1). doi: 10.1088/1755-1315/974/1/012026.
- PTPN1. 2025. Sejarah Regional. <https://ptpn1.co.id/regional/regional-2/>.
- Pulunggono, H.B., V.W. Kartika, D. Nadalia, L. Lathifah, and M. Zulfajrin. 2022. Evaluating the changes of Ultisol chemical properties and fertility characteristics due to animal manure amelioration. *J. Degrad. Min. Lands Manag.* 9(3): 3545–3560. doi: 10.15243/jdmlm.2022.093.3545.
- Pupathy, U.T., and N. Sundian. 2020. Key agronomic management factors for maximising oil palm (*Elaeis guineensis* Jacq.) yields on acid sulphate soils in Malaysia and Indonesia. *IOP Conf. Ser. Earth Environ. Sci.* 454(1). doi: 10.1088/1755-1315/454/1/012171.
- Qiu, Y., Q. Fu, Y. Yang, J. Zhao, J. Li, F. Yi, X. Fu, Y. Huang, Z. Tian, J. L. Heitman,

- Z. Yao, Z. Dai, Y. Qiu, and H. Chen. 2024. Soil and stone terraces offset the negative impacts of sloping cultivation on soil microbial diversity and functioning by protecting soil carbon. *J. Environ. Manage.* 369: 1–17. doi: 10.1016/j.jenvman.2024.122339.
- Rahmayuni, E., S. Anwar, B. Nugroho, and L.T. Indriyati. 2023. Characteristics of soil chemical properties associated with Inceptisols in various land use in Jasinga, Bogor. *J Trop Soils* 28(3): 89–97. doi: 10.5400/jts.2023.v28i3.89-97.
- Ringgih, D., M.L. Rayes, and S. R. Utami. 2018. Kajian perubahan sifat fisik dan kimia akibat penyawahan pada Andisol Sukabumi, Jawa Barat. *Agrovigor* 11(1): 21–27.
- Rong, Q., M. Yang, Y. Deng, M. Zhao, Y. Liao, Q. Tan, T. Pan, G. Yang, X. Yu, and Y. Huang. 2025. Influence of the root – soil complex on soil infiltration stages and their temporal changes in *Cunninghamia lanceolata* plantations. *Geoderma* 464: 117606. doi: <https://doi.org/10.1016/j.geoderma.2025.117606>.
- Rumpel, C., and I. Kögel-Knabner. 2011. Deep soil organic matter-a key but poorly understood component of terrestrial C cycle. *Plant Soil* 338(1): 143–158. doi: 10.1007/s11104-010-0391-5.
- Sahat, S., Z. Yusop, M. Askari, and A.D. Ziegler. 2016. Estimation of soil erosion rates in oil palm plantation with different land cover estimation of soil erosion rates in oil palm plantation with different land cover. *Mater. Sci. Eng.* 136: 1–9. doi: 10.1088/1757-899X/136/1/012086.
- Sara, D.S., G. Herdiansyah, A. Nuraini, A. Ismail, and E. Suminar. 2019. Evaluasi kesesuaian lahan untuk budidaya pisang di Jawa Barat selatan. *J. Agrol.* 8(2): 82–91.
- Schroth, G., L. Ferreira, R. Seixas, W. Geraldies, J.L. V Macêdo, and W. Zech. 1999. Subsoil accumulation of mineral nitrogen under polyculture and monoculture plantations, fallow and primary forest in a ferrallitic Amazonian upland soil. *Agric. Ecosyst. Environ.* 75: 109–120.
- Septiana, L.M., H. Indhira, and I.S. Banuwa. 2021. Efektivitas bahan pembenah tanah terhadap distribusi agregat di lahan kering masma pada pertanaman kedelai. *J. Agrotektropika* 9(2): 251–259.
- Septianti, S.P., and B.G. Adhiperdana. 2025. Geologi Daerah Cicantayan dan sekitarnya Kecamatan Cibadak, Kabupaten Sukabumi, Provinsi Jawa Barat. *Padjadjaran Geosci. J.* 9(1): 2241–2258.
- Sharma, P.P., S.C. Gupta, and G.R. Foster. 1995. Raindrop-induced soil detachment and sediment transport from interrill areas. *Soil Sci. Soc. Am. J.* 1: 727–734.
- Siang, C.S., S. Aishah, A. Wahid, C. Teh, and B. Sung. 2022. Standing biomass, dry-matter production, and nutrient demand on Tenera Oil Palm. *Agronomy* 12: 1–18. doi: <https://doi.org/10.3390/agronomy12020426>.
- Silalertruksa, T., S.H. Gheewala, P. Pongpat, P. Kaenchan, N. Permpool, N. Lecksiwilai, and R. Mungkung. 2017. Environmental sustainability of oil palm cultivation in different regions of Thailand: Greenhouse gases and water use impact. *J. Clean.*

Prod. 167: 1009–1019. doi: 10.1016/j.jclepro.2016.11.069.

- Siswanto, S.Y., A. Sandrawati, and M.S. Sule. 2020. Steepness and position of slope as important factors in determining soil water content and bulk Density at Pasirwangi, Garut, Indonesia. ICSAFS: 606–609.
- Supendi, A., E. Supriyono, K. Nirmala, Y.P. Hastuti, T. Budiardi, and Sukenda. 2022. Study of suitability location of eel (*Anguilla* sp.) culture in Sukabumi region, West Java province. 1033: 1–7. doi: 10.1088/1755-1315/1033/1/012015.
- Supriyadi. 2014. Impact of watershed restoration based agroforestry on soil quality in the sub-watershed Keduang, Wonogiri, Indonesia. J. Sustain. Dev. 7(6): 223–231. doi: 10.5539/jsd.v7n6p223.
- Sys, C. 1993. Land evaluation. L. Eval. doi: 10.4324/9781003680383_ch30.
- Teh, C.K., A.L. Ong, Q. Bin Kwong, S. Apparow, F.T. Chew, and S. Mayes, M. Mohamed, D. Appleton, and H. Kulaveerasingham. 2016. Genome-wide association study identifies three key loci for high mesocarp oil content in perennial crop oil palm. Sci. Rep. 6(December 2015): 1–7. doi: 10.1038/srep19075.
- Thompson-Morrison, H., F. Ariantiningih, S.M. Arief, S. Gaw, and B. Robinson. 2023. Nutrients and Contaminants in Soils of Current and Former Oil Palm Production Systems from Indonesia. Land 12(12): 1–19. doi: 10.3390/land12122144.
- Thoumazeau, A., R. Mettauer, H. Junedi, and V. Baron. 2024. Effects of fertilization practices and understory on soil health and oil palm performances in smallholdings : An Indonesian case study. 213: 103802. doi: 10.1016/j.agry.2023.103802.
- Tung, P.G.A., M.K. Yusoff, N.M. Majid, G. K. Joo, and G. H. Huang. 2009. Effect of N and K fertilizers on nutrient leaching and groundwater quality under mature oil palm in Sabah during the monsoon period. Am. J. Appl. Sci. 6(10): 1788–1799.
- Vasu, D., P. Tiwary, and P. Chandran. 2024. A novel and comprehensive soil quality index integrating soil morphological, physical, chemical, and biological properties. Soil Tillage Res. 244(July): 106246. doi: 10.1016/j.still.2024.106246.
- Wakhid, N., and T. Hirano. 2021. Contribution of CO₂ emission from litter decomposition in an oil palm plantation on tropical peatland. IOP Conf. Ser. Earth Environ. Sci. 648(1). doi: 10.1088/1755-1315/648/1/012133.
- Wander, M.M., G.L. Walter, T.M. Nissen, G.A. Bollero, S.S. Andrews, and D. A. Cavanaugh-Grant. 2002. based systems engineering: An introduction-Yakowitz Soil Quality: Science and Process. Am. J 59: 1709–1714.
- Wang, Y.Q., X.C. Zhan, J.L. Zhang, and S.J. Li. 2009. Spatial variability of soil organic carbon in a watershed on the Loess Plateau. Pedosphere 19(4): 486–495. doi: 10.1016/S1002-0160(09)60141-7.
- Woittiez, L.S., M.T. van Wijk, M. Slingerland, M. van Noordwijk, K.E. Giller. 2015. Analysis of Implementation of Best Management Practices in Oil Palm Plantations in Indonesia. Eur. J. Agron. 4(1): 247–254. <http://www.hindawi.com/journals/aag/2014/285387/%0Ahttp://dx.doi.org/10.1016/j.agry.2016.09.002%0Awww.savap.org.pk%0Awww.journals.savap.org.pk%0Ahtt>

[p://dx.doi.org/10.1016/j.still.2014.08.005](http://dx.doi.org/10.1016/j.still.2014.08.005) <http://www.jope.com.my/index.php/jopecommon/article/view/60>

- Wubie, M.A., and M. Assen. 2020. Effects of land cover changes and slope gradient on soil quality in the Gumara watershed , Lake Tana basin of North – West Ethiopia. *Model. Earth Syst. Environ.* 6(1): 85–97. doi: 10.1007/s40808-019-00660-5.
- Xiaojun, N., Z. Jianhui, and S. Zhengan. 2013. Dynamics of soil organic carbon and microbial biomass carbon in relation to water erosion and tillage erosion. *PLoS One* 8(5): 1–7. doi: 10.1371/journal.pone.0064059.
- Yasin, S., and Y. Yulnafatmawita. 2018. Effects of slope position on soil physico-chemical characteristics under oil palm plantation in wet tropical area, West Sumatra Indonesia. *Agrovita* 40(2017): 328–337.
- Yosephine, I. ovie, Z. Effendi, and D. Fitriana. 2025. Study of the productivity of oil palm plants (*Elaeis guineensis* Jacq.) on different topographies. *J. Tek. Pertan. Lampung (Journal Agric. Eng.* 14(4): 1349–1358. doi: 10.23960/jtepl.v14i4.1349-1358.
- Yuan, Y., D. Xiong, H. Wu, and S. Zhang. 2020. Spatial variation of soil physical properties and its relationship with plant biomass in degraded slopes in dry-hot valley region of Southwest China. : 2354–2366.
- Yusra, Y., K. Khusrizal, and F.A. Diannastiti. 2023. Soil chemical characteristics at three slope positions in the smallholder ' s *Piper nigrum* L . in Lhokseumawe City , Aceh Province Soil chemical characteristics at three slope positions in the smallholder ' s *Piper nigrum* L . in Lhokseumawe City , Aceh Pr. doi: 10.1088/1755-1315/497/1/012040.
- Zhang, S., L. Li, Z. Zhu, and P. Zhang. 2024a. Spatial Distribution and Relationship between Slope Micro-Topography Changes and Soil Aggregate Stability under Rainfall Conditions.
- Zhang, C., G. Liu, S. Xue, and G. Wang. 2016. Soil bacterial community dynamics reflect changes in plant community and soil properties during the secondary succession of abandoned farmland in the Loess Plateau. *Soil Biol. Biochem.* 97: 40–49. doi: 10.1016/j.soilbio.2016.02.013.
- Zhang, S., G. Zhao, J. Fan, M. Yang, and P. Tian. 2024b. Variations of soil infiltration in response to vegetation restoration and its influencing factors on the Loess Plateau. *J. Environ. Manage.* 372(3): 123356. doi: 10.1016/j.jenvman.2024.123356.
- Zhu, Y.J., and M.A. Shao. 2008. Spatial distribution of surface rock fragment on hill-slopes in a small catchment in wind-water erosion crisscross region of the loess plateau. *Sci. China, Ser. D Earth Sci.* 51(6): 862–870. doi: 10.1007/s11430-008-0056-x.