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DAFTAR PUSTAKA

Abu El Haija, K., Chiang, Y. W., dan Santos, R. M. 2024. On-Site Determination of Soil Organic Carbon Content: A Photocatalytic Approach. *Clean Technologies*, *6*(2), 784-801.

Agnita, T. C., dan Saharjo, B. H. 2011. Pendugaan potensi kandungan karbon pada tegakan jati (Tectona grandis LINN. F) di areal KPH Cianjur perum perhutani unit III Jawa Barat dan Banten. *Jurnal Ilmu Pertanian Indonesia*, *16*(3), 185-190.

Agvise Laboratories 2021. Soil Science Review: Organic Matter.

Agbeshie, A.A., dan Abugre, S. 2021. Soil properties and tree growth performance along a slope of a reclaimed land in the rain forest agroecological zone of Ghana. *Scientific African*, 13, e00951.

Apollo Mapping. 2025. *Buy 3-m PlanetScope satellite imagery*. Apollo Mapping.

Bannari, A., Morin, D., Bonn, F., dan Huete, A. R. 1995. A Review of Vegetation Indices. *Remote Sensing Reviews*, *13*(1–2), 95–120.

BAPPENAS. 2010. *Rancangan Strategi Nasional REDD+* (Revisi 18 November 2010). Badan Perencanaan Pembangunan Nasional

Barnes, E. M., Clarke, T. R., Richards, S. E., Colaizzi, P. D., Haberland, J., Kostrzewski, M., Waller, P., Choi, C., Riley, E., Thompson, T., Lascano, R. J., Li, H., dan Moran, M. S. 2000. Coincident Detection of Crop Water Stress, Nitrogen Status and Canopy Density Using Ground Based Multispectral Data. *Proceedings of the Fifth International Conference on Precision Agriculture*, Bloomington, MN, USA

Basri, E., dan Wahyudi, I. 2013. Sifat Dasar Kayu Jati Plus Perhutani dari Berbagai Umur dan Kaitannya dengan Sifat dan Kualitas Pengeringan. *Jurnal Penelitian Hasil Hutan*, *31*(2), 93-102.

Bombelli, A., Avitable, V., Balzter, H., Marchesini, L.B., Bernoux, M., Brady, M., Hall, R., Hansen, M., Henry, M., Herold, M., Janetos, A., Law, B.E., Manlay, R., Marklund, L.G., Olsson, H., Pandey, D., Saket, M., Schmullius, C., Sessa, R., Shimabukuro, Y.E., Valentini, R. dan Wulder, M. 2009. *Biomass Assessment of the Status of the Development of the Standards for the Terrestrial Essential Climate Variables*. Global Terrestrial Observing System, Rome.

Brown S. 1997. *Estimating Biomass and Biomass Change of Tropical Forests. A Primer*. USA: FAO Forestry Paper 134.

UNIVERSITAS
GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Cairns, M. A., Brown, S., Helmer, E. H., dan Baumgardner, G. A. 1997. Root Biomass Allocation in the World's Upland Forests. *Oecologia*, *111*(1), 1-11.

Chanan, M. 2012. Pendugaan Cadangan Karbon (C) Tersimpan di Atas Permukaan Tanah Pada Vegetasi Hutan Tanaman Jati (*Tectona Grandis* Linn. F) (Di RPH Sengguruh BKPH Sengguruh KPH Malang Perum Perhutani II Jawa Timur). *Jurnal Gamma*, *7*(2).

Chinembiri, T.S., Mutanga, O. and Dube, T., 2024. A Multi-source Data Approach to Carbon Stock Prediction Using Bayesian Hierarchical Geostatistical Models in Plantation Forest Ecosystems. *GIScience dan Remote Sensing*, *61*(1), p.2303868.

Congalton, R. G., dan Green, K. 2019. *Assessing the accuracy of remotely sensed data: principles and practices*. CRC press.

Danoedoro, P. 2012. *Pengantar Penginderaan Jauh Digital*. Yogyakarta: ANDI.

De Vos, B., Lettens, S., Muys, B., dan Deckers, J.A. 2007. Walkley-Black analysis of forest soil organic carbon: recovery, limitations and uncertainty. *Soil Use and Management*, 23(3), 221–229.

Dhillon, R. S., dan von Wuehlisch, G. 2013. Mitigation of global warming through renewable biomass. *Biomass and bioenergy*, *48*, 75-89.

ESA Earth Online. (2024). *PlanetScope overview*. European Space Agency.

Foody, G. M. 2002. Status of land cover classification accuracy assessment. *Remote Sensing of Environment*, 80(1), 185–201.

Gasparri, N.I., Grau, H.R. dan Manghi, E. 2010. Carbon Pools and Emissions from Deforestation in Extra-Tropical Forests of Northern Argentina Between 1900 and 2005. Ecosystems, 11(8): 1247–1261.

Gc, S., Kafle, G., Ayer, S., Khamcha, R., Poudel, S., Prabhakar, A., Bhusal, A., Lamichhane, P., Airee, J. and Sapkota, T., 2025. Landscape-Level Assessment of Topographic Influences on Organic Carbon Storage in Forests of Far Western Nepal. *Plant-Environment Interactions*, *6*(2), p.e70039

Gibbs, H. K., Brown, S., Niles, J. O., dan Foley, J. A. 2007. Monitoring and estimating tropical forest carbon stocks: making REDD a reality. *Environmental research letters*, *2*(4), 045023.

Gitelson, A. A., Kaufman, Y. J., dan Merzlyak, M. N. 1996. Use of A Green Channel in Remote Sensing of Global Vegetation from EOS-MODIS. *Remote Sensing of Environment*, *58*(3), 289–298

Hairiah, K., dan Rahayu, S. (2007). Pengukuran Karbon Tersimpan di Berbagai Macam Penggunaan Lahan. *World agroforestry centre. Bogor*, *77*.

UNIVERSITAS GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Hairiah, K. Ekadinata, A., Sari, R.R., dan Rahayu, S. 2011. *Pengukuran Cadangan Karbon: dari Tingkat Lahan ke Bentang Lahan, Petunjuk Praktis, Edisi Kedua*. Malang: Bogor, World Agroforestry Centre, ICRAF SEA Regional Office, University of Brawijaya (UB).

Heriansyah, I. 2005. Potensi Hutan Tanaman Industri Dalam Mensequester Karbon. *Jurnal Inovasi On Line*. Pusat Penelitian dan Pengembangan Hutan dan Koservasi Alam. Bogor.

Huete, A., Didan, K., Miura, T., Rodriguez, E. P., Gao, X., dan Ferreira, L. G. 2002. Overview of the radiometric and biophysical performance of the MODIS vegetation indices. *Remote sensing of environment*, *83*(1-2), 195-213.

Huete, A. R. 1988. A Soil-Adjusted Vegetation Index (SAVI). *Remote Sensing of Environment*, *25*(3), 295–309.

Hoogsteen, M. J., Lantinga, E. A., Bakker, E. J., Groot, J. C., dan Tittonell, P. A. 2015. Estimating soil organic carbon through loss on ignition: effects of ignition conditions and structural water loss. *European Journal of soil science*, *66*(2), 320-328.

Intergovernmental Panel on Climate Change. 2006. IPCC Guidelines for National Greenhouse Gas Inventories. Eggleston HS, Buendia L, Miwa K, Ngara T, Tanabe K, editors. Prepared by the National Greenhouse Gas Inventories Programme of the Intergovernmental Panel on Climate Change. Hayama: Institute for Global Environmental Strategies (IGES).

Intergovernmental Panel on Climate Change (IPCC). 2023. *Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press

Kaufman, Y. J., dan Tanré, D. 1992. Atmospherically Resistant Vegetation Index (ARVI) for EOS-MODIS. *IEEE Transactions on Geoscience and Remote Sensing*, *30*(2), 261–270.

Kementerian Lingkungan Hidup dan Kehutanan. 2015. *Buku kegiatan serapan dan emisi karbon*. Kementerian Lingkungan Hidup dan Kehutanan, Direktorat Jenderal Planologi Kehutanan dan Tata Lingkungan, Direktorat Inventarisasi dan Pemantauan Sumberdaya Hutan.

Kementerian Lingkungan Hidup dan Kehutanan. 2022. *Keputusan Menteri Lingkungan Hidup dan Kehutanan Nomor 168/MENLHK/PKTL/PLA.1/2022 tentang Rencana Operasional Indonesia's Forest and Other Land Use (FOLU) Net Sink 2030*. Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia.

UNIVERSITAS GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Kershaw Jr, J. A., Ducey, M. J., Beers, T. W., dan Husch, B. (2016). *Forest Mensuration*. John Wiley dan Sons.

Khaple, A. K., Devagiri, G. M., Veerabhadraswamy, N., Babu, S., dan Mishra, S. B. 2021. Vegetation Biomass and Carbon Stock Assessment Using Geospatial Approach. In *Forest Resources Resilience and Conflicts* (pp. 77-91). Elsevier.

Krisnawati, H., Adinugroho, W. C., Imanuddin, R., dan Hutabarat, S. (2014). *Pendugaan Biomassa Hutan untuk Perhitungan Emisi CO2 di Kalimantan Tengah: Pendekatan Komprehensif dalam Penentuan Faktor Emisi Karbon Hutan*. Bogor: Pusat Penelitian dan Pengembangan Konservasi dan Rehabilitasi, Badan Penelitian dan Pengembangan Kehutanan.

Jiang, Z., Huete, A. R., Didan, K., dan Miura, T. 2008. Development of a two-band enhanced vegetation index without a blue band. *Remote sensing of Environment*, *112*(10), 3833-3845.

Jordan, C. F. 1969. Derivation of Leaf-Area Index From Quality of Light On the Forest Floor. *Ecology*, *50*(4), 663–666.

Landis, J. R., dan Koch, G. G. 1977. The Measurement of Observer Agreement for Categorical Data. *Biometrics*, 159-174.

Legesse, F., Degefa, S., & Soromessa, T. 2024. Estimating Carbon Stock Using Vegetation Indices and Empirical Data in the Upper Awash River Basin. *Discover Environment*, *2*(1), 137.

Lillesand, T., Kiefer, R. W., dan Chipman, J. 2015. *Remote sensing and image interpretation*. John Wiley dan Sons.

Li, B., Liu, S., Liu, D., Fan, Z., Qu, Z., Yao, S., Su, X. dan Wang, L. (2025). Using Sentinel 2A and Landsat 8 imagery to assess changes in forest carbon storage. *Scientific Reports*, *15*(1), 37489.

Li, G. A., Yan, L., Chen, Z. H., dan Li, Y. 2017. Determination of organic carbon in soils and sediments in an automatic method. *Journal of Groundwater Science and Engineering Vol*, *5*(2).

Lihui, M., Xiaoli, L., Jie, C., Youke, W., dan Jingui, Y. 2021. Effects of slope aspect and rainfall on belowground deep fine root traits and aboveground tree height. *Frontiers in plant science*, *12*, 684468.

Lu, D. 2006. The Potential and Challenge of Remote Sensing-based Biomass Estimation. *International Journal of Remote Sensing*, 27(7), 1297–1328.

Luz, L. R., Giongo, V., Santos, A. M. D., Lopes, R. J. D. C., dan Júnior, C. D. L. 2022. Biomass and Vegetation Index by Remote Sensing in Different Caatinga Forest Areas. *Ciência Rural*, *52*, e20201104.

UNIVERSITAS GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
Riko Nagma Aulia Putra, Prof. Dr. Ir. Ris Hadi Purwanto, M.Agr.Sc., IPU. ; Dr. Drs. Ir. Senawi, M.P., IPU.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ma, S., He, F., Tian, D., Zou, D., Yan, Z., Yang, Y., ... dan Fang, J. 2018. Variations and determinants of carbon content in plants: a global synthesis. *Biogeosciences*, *15*(3), 693-702.

Manalu, G., Hadinoto, H., dan Ikhsani, H. 2023. Pendugaan Potensi Karbon Hutan Dengan Sistem Pengindraan Jauh. Wahana Forestra: Jurnal Kehutanan.

Marta, S. 2018. Planet imagery product specifications. *Planet Labs: San Francisco, CA, USA*, *91*, 170.

Mastur, A. K., Achmad, E., dan Simbolon, B. R. 2021. Pendugaan Biomassa Atas Permukaan di Kphp Unit X Tebo Timur: Above Ground Biomass Estimation at KPHP Unit X Tebo Timur. *Jurnal Silva Tropika*, *5*(1), 357-365.

Miao, Z., dan Li, C. 2007. *Biomass Estimates for Major Boreal Forest Species in West Central Canada*. Canadian Forest Service, Canadian Wood Fibre Centre, Alberta, Canada.

Malla, R., Neupane, P. R., dan Köhl, M. 2022. Modelling Soil Organic Carbon as a Function of Topography and Stand Variables. *Forests*, 13(9), 1391

Mishra, P. K., Kaushal, R., Islam, S., et al. 2025. Impact of Slope Gradient on Tree Biomass, Carbon Sequestration, and Ecological Functions in Rayagada District, Odisha, India. *Frontiers in Agronomy*, 7, 1692849

Muhsoni, F. F. 2015. Penginderaan jauh (remote sensing). *Madura: UTMPRESS*.

Mutanga, O., Masenyama, A., dan Sibanda, M. 2023. Spectral Saturation in the Remote Sensing of High-Density Vegetation Traits: A Systematic Review of Progress, Challenges, and Prospects. *ISPRS Journal of Photogrammetry and Remote Sensing*, *198*, 297-309.

Noer, M., dan Wibowo, A. 2024. Identifikasi Perubahan Tutupan Lahan Dengan Metode Klasifikasi Terbimbing Menggunakan Data Google Earth. *Jurnal Pendidikan Geografi Undiksha*, *12*(1), 32-41.

Pan, Y., Birdsey, R.A., Fang, J., Houghton, R., Kauppi, P.E., Kurz, W.A., Phillips, O.L., Shvidenko, A., Lewis, S.L., Canadell, J.G. and Ciais, P. 2011. A large and persistent carbon sink in the world's forests. *science*, *333*(6045), 988-993

Pandey, D., dan Brown, C. (2000). Teak: A global overview. *Unasylva*, *51*(201), 3–13.

Panumonwatee, G., Choosumrong, S., Pampasit, S., Premprasit, R., Nemoto, T., dan Raghavan, V. 2025. Machine Learning Technique for Carbon Sequestration Estimation of Mango Orchards Area Using Sentinel-2 Data. *Carbon Research*, *4*(1), 33.

UNIVERSITAS
GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Pearson, T. R.H., Brown, S.L., dan Birdsey, R.A. 2007. *Measurement guidelines for the sequestration of forest carbon* (Vol. 18). US Department of Agriculture, Forest Service, Northern Research Station

Pearson, R. L., dan Miller, L. D. 1972. Remote Mapping of Standing Crop Biomass for Estimation of the Productivity of the Shortgrass Prairie. *Proceedings of the 8th International Symposium on Remote Sensing of Environment* (pp. 1357–1381). Ann Arbor, MI: Environmental Research Institute of Michigan

Peraturan Pemerintah Republik Indonesia Nomor 7 Tahun 1990 tentang Hak Pengusahaan Hutan Tanaman Industri. Jakarta: Sekretariat Negara.

Petersson, H., Holm, S., Ståhl, G., Alger, D., Fridman, J., Lehtonen, A., Lundström, A., dan Mäkipää, R. 2012. Individual tree biomass equations or biomass expansion factors for assessment of carbon stock changes in living biomass–A comparative study. *Forest Ecology and Management*, *270*, 78-84.

Pettorelli, N., Vik, J. O., Mysterud, A., Gaillard, J. M., Tucker, C. J., dan Stenseth, N. C. 2005. Using the satellite-derived NDVI to assess ecological responses to environmental change. *Trends in ecology dan evolution*, *20*(9), 503-510.

Pirkko, S., dan Nyronen, T. 1990. *The Carbon Dioxide Emissions and Peat Production. International Conference on Peat Production and Use*. Jiväskylä. Finland. 1:150-157.

Planet. (2026). *PlanetScope*. Planet Labs PBC.

Planet Labs PBC. (2024). *Planet imagery product specifications*.

Pratama, R. 2019. Efek Rumah Kaca Terhadap Bumi. *Buletin utama teknik*, *14*(2), 120-126.

Pratama, T. D., Latifah, S., dan Patana, P. 2013. Pemetaan Potensi Simpanan Karbon Hutan Tanaman Industri Eucalyptus Grandis Di Hutan Tanaman Industri PT. Toba Pulp Lestari, Tbk., Sektor Aek Nauli. *Peronema Forestry Science Journal*, *2*(2), 168-173.

Qutbi, A. A., Sarjan, M., dan Sjah, T. 2024. Dampak Perubahan Iklim terhadap Keanekaragaman Hayati dan Kesehatan Lingkungan. *Lambda: Jurnal Ilmiah Pendidikan MIPA dan Aplikasinya*, *4*(2), 113-119.

Ramamoorthi, V., dan Meena, S. 2018) Quantification of Soil Organic Carbon-Comparison of Wet Oxidation and Dry Combustion Methods. *International Journal of Current Microbiology and Applied Sciences*, 7(10), 146–154.

UNIVERSITAS GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Ravindranath, N.H., Ostwald, M. 2008. *Carbon Inventory Methods: Handbook for Greenhouse Gas Inventory, Carbon Mitigation and Roundwood Production Projects*. Springer Science + Business Media B.V.

Resosudarmo, I. A. P., Atmadja, S., Ekaputri, A. D., Intarini, D. Y., Indriatmoko, Y., dan Astri, P. 2014. Does tenure security lead to REDD+ project effectiveness? Reflections from five emerging sites in Indonesia. *World Development*, *55*, 68-83.

Richardson, A. J., dan Wiegand, C. L. 1977. Distinguishing vegetation from soil background information. *Photogrammetric engineering and remote sensing*, *43*(12), 1541-1552.

Ricke, A., Jaya, G., dan Saleh, F. 2019. Perbandingan Model Transformasi Indeks Vegetasi Untuk Pemetaan Stok Karbon Di Kawasan PERKOTAAN. In *Seminar Nasional Teknologi Terapan Berbasis Kearifan Lokal* (Vol. 2, No. 1).

Rouse, J. W., Haas, R. H., Schell, J. A., dan Deering, D. W. 1974. Monitoring Vegetation Systems in the Great Plains with ERTS. In *Third NASA Earth Resources Technology Satellite Symposium, 1973* (Vol. 1, pp. 309-317)

Roy, D. P., Huang, H., Houborg, R., dan Martins, V. S. (2021). A Global Analysis of the Temporal Availability of PlanetScope High Spatial Resolution Multi-spectral Imagery. *Remote Sensing of Environment, 264*, 112586

Selamat, M. B., Siregar, V. P., Jaya, I., dan Hestirianoto, T. 2012. Evaluasi Akurasi Tematik Citra Satelit Quickbird dan Ikonos Untuk Pengadaan Peta Habitat Terumbu Karang Skala Besar. *Jurnal Ilmu Kelautan dan Perikanan*, 22(1), 20-28

Shrestha, R., Di, L., Eugene, G. Y., dan Kang, L. 2017. Regression model to estimate flood impact on corn yield using MODIS NDVI and USDA cropland data layer. *Journal of Integrative Agriculture*, *16*(2), 398-407.

Siregar, D. I., dan Asbi, A. M. 2020. Pemanfaatan Citra Landsat 8 Operational Land Imager (OLI) untuk klasifikasi tutupan lahan di Taman Nasional Gunung Merbabu. *Wahana Forestra: Jurnal Kehutanan*, *15*(2), 28-39.

Silleos, N.G., Alexandridis, T.K., Gitas, I.Z., Perakis, K. 2006. Vegetation Indices: Advances Made in Biomass Estimation and Vegetation Monitoring in the Last 30 Years. *Geocarto International*, 21:4, 21-28.

Silooy, L. C., Siahaya, W. A., dan Haumahu, J. P. 2023. Analysis of the level of Vegetation Density in the City of Ambon Based on NDVI Using Landsat 8 OLI Imagery.

UNIVERSITAS GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Sudomo, M. F. A., Hardiwinoto, S., Indrioko, S., Budiadi, Prehaten, D., dan Wibowo, A. (2021). Respon pertumbuhan tanaman Jati Plus Perhutani umur 11 tahun terhadap intensitas penjarangan dan tumpang sari (Studi kasus di BKPH Begal KPH Ngawi, Perhutani Jawa Timur). *Jurnal Pemuliaan Tanaman Hutan*, *15*(1), 13–23.

Sutaryo D. 2009. *Penghitungan Biomassa Sebuah Pengantar untuk Studi Karbon dan Perdagangan Karbon*. Bogor: Wetlands International Indonesia Programme

Telmo, C., dan Lousada, J. 2011. The explained variation by lignin and extractive contents on higher heating value of wood. *Biomass and Bioenergy*, 35(5), 1663–1667.

Uakarn, C., Chaokromthong, K., dan Sintao, N. 2021. *Sample Size Estimation using Yamane and Cochran and Krejcie and Morgan and Green Formulas and Cohen Statistical Power Analysis by G* Power and Comparisions", Apheit Vol. 10 No. 2 (2021): International Journal*.

US EPA 1996. Determining the Fraction of Organic Carbon. *EPA/540/R-96/018*.

Utomo, D.H. 2016. Morfologi Profil Tanah Vertisol di Kecamatan Kraton, Kabupaten Pasuruan. *Jurnal Pendidikan Geografi*, Th. 21 No. 2 Jun 2016: 47-57

Wai, P., Su, H., dan Li, M. 2022. Estimating Aboveground Biomass of Two Different Forest Types in Myanmar from Sentinel-2 Data with Machine Learning and Geostatistical Algorithms. *Remote Sensing*, *14*(9), 2146.

Walkley, A. dan Black, I.A. 1934. An Examination of the Degtjareff Method for Determining Soil Organic Matter, and a Proposed Modification of the Chromic Acid Titration Method. *Soil Science*, 37(1), 29–38.

Wang X., Wang J.., dan Zhang J. 2012. Comparisons of Three Methods for Organic and Inorganic Carbon in Calcareous Soils of Northwestern China.

Wahyuni, N.I. 2012. *Integrasi Penginderaan Jauh dalam Penghitungan Biomassa Hutan*. Balai Penelitian Kehutanan Manado, Manado

Wahyudi, J. 2016. Mitigasi Emisi Gas Rumah Kaca the Mitigation of Greenhouse Gases Emission. *Jurnal Litbang*, *12*(2), 104-112.

Wibowo, B.J., 2013. *Estimasi Kandungan Karbon Tegakan Jati (Tectona grandis) Melalui Analisis Data Digital Citra ALOS AVNIR -2 di KPH Telawa*. Fakultas Geografi UGM, Yogyakarta.

Widiyatno, Wibowo, A., Anisa, N. L., Novitasari, D., Rahmawati, R. B., Sunarta, S., Hardiwinoto, S., dan Tani, N. (2026). The Importance of Spacing and Thinning to Improve Productivity and Wood Properties of Clonal Teak Plantation. *Jurnal Sylva Lestari*, *14*(2), 411-425.

UNIVERSITAS
GADJAH MADA
Estimasi Simpanan Karbon Hutan Tanaman Jati Klon Berdasarkan Indeks Vegetasi Citra PlanetScope di KPH Ngawi Regional Jawa Timur
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Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Wijaya, A., Chrysolite, H., Ge, M., Wibowo, C. K., Pradana, A. L. M. O., Utami, A. F., dan Austin, K. 2017. How Can Indonesia Achieve Its Climate Change Mitigation Goal? An Analysis of Potential Emissions Reductions from Energy and Land-Use Policies. Jakarta: World Resources Institute (WRI) Indonesia.

Ye, Q., Yu, S., Liu, J., Zhao, Q., dan Zhao, Z. 2021. Aboveground Biomass Estimation of Black Locust Planted Forests with Aspect Variable Using Machine Learning Regression Algorithms. *Ecological Indicators*, *129*, 107948.

Zhang, X., Shen, H., Huang, T., Wu, Y., Guo, B., Liu, Z., ... dan Ou, G. (2024). Improved Random Forest Algorithms for Increasing the Accuracy of Forest Aboveground Biomass Estimation Using Sentinel-2 Imagery. *Ecological Indicators*, *159*, 111752.