

## DAFTAR PUSTAKA

- Aitkenhead MJ, Coull M, Towers W, Hudson G, Black HIJ. (2013). Prediction of soil characteristics and colour using data from the National Soils Inventory of Scotland. *Geoderma* 200-210; pp 99-107
- Alvarado A, Falla JL. (2004). Soil acidity saturation and liming on the growth of teak (*Tectona grandis* L.f.) planted in acid soils of Costa Rica. *Agronomia Costarricense*. 28:81–87.
- Anonim, (2016 a). Ngawi dalam angka (2015). Seksi integrasi pengolahan dan diseminasi statistik. BPS Kabupaten Ngawi
- Anonim, (2016 b). Blora dalam angka (2015). Seksi Integrasi Pengolahan dan Diseminasi Statistik. BPS Kabupaten Blora
- Appanah S, Turnbull JM. (1998). A review of dipterocarps: taxonomy, ecology and silviculture. Center for International Forestry Research Bogor, Indonesia.
- Assmann E. (1970). The principle of forest yield study; studies in the organic production, structure, increment and yield of forest stands. Pergamon Press. NSW Australia
- Atangana, A., Khasa, D., Chang, S., & Degrande, A. (2014). Tropical agroforestry. Springer Netherland.
- Baker, F. S., T. W. Daniel, dan J. A. Helms. (1979). Principles of silviculture. New York: McGraw Hill Inc. Book Co.
- Balandier P, De Montard FX, & Curt T. (2007). Root competition for water between trees and grass in a silvopastoral plot of 10year old *Prunus avium*. Ecological Basis of Agroforestry 43277\_C013 Page Proof page 253. DOI: 10.1201/9781420043365.ch13
- Bhargava, M. (2007). Structure, development and reproduction in flowering plants: shoot system (meristems, stem structure and anatomy, and secondary growth).
- Boley, JD, Drew AP, & Andrus RE. (2009). Effects of active pasture, teak (*Tectona grandis*) and mixed native plantations on soil chemistry in Costa Rica. *Forest Ecology and Management*, 257; 2254–2261
- Buckman, H.O., & Brady N. (1969). The nature and properties of soils. The Macmillan Company. New York. Diterjemahkan oleh Soegiman. 1982. Ilmu Tanah. Bharata Karya Aksara, Jakarta.

Budiadi, Widiyatno & Ishii, H. (2017). Response of a clonal teak plantation to thinning and pruning in Java, Indonesia. *Journal of Tropical Forest Science*, Vol. 29, No. 1 (January 2017), pp. 44-53

Chanan M, Hardiwinoto S, Agus C, Purwanto RH, Purwanta S. (2018). The identification of macro nutrient status of superior teak plantation (*Tectona grandis* Lin.F) by means of DRIS norms (Diagnosis and Recommendation Integrated System) in Indonesia. *Journal of Forest Science and Technology*. DOI: 10.1080/21580103.2018.1544935

Chang, SX., & Preston, CM. (2000). Understorey competition affects tree growth and fate of fertilizer-applied 15 N in a coastal British Columbia plantation forest: 6-year results, 1388, 1379–1388.

Crow TR, Dey DC, & Riemenschneider D. (2006). Forest productivity: producing goods and services for people. A Progress Report North Central Research Station Forest Productivity Integrated Research and Development Program. North Central Research Station U.S. Department of Agriculture - Forest Service

Damrongrak, I., Onthong, J., & Nilnond, C. (2015). Effect of fertilizer and dolomite applications on growth and yield of tapping rubber trees. *Songklanakarin Journal of Science and Technology*, 37(6), 643–650.

Davis, LS. & Johnson KN. (1987). Forest management. Third Edition. McGrawHill Book Company. New York.

Deswina, P., & Priadi, D. (2020). Development of Arrowroot (*Maranta arundinacea* L.) as functional food based of local resource. IOP Conf. Series: Earth and Environmental Science 439 (2020) 012041; doi:10.1088/1755-1315/439/1/012041.

Dhar B, Jha M, Suman S, & Singh K. (1992). Mineralogy and nutrient status of teak-growing soils. *J Indian Soc Soil Sci*. 40:156–161.

Djaafar, TF., Sarjiman, & Arlyna, BP. (2010). Development of arrowroot cultivation and processing technology to support food security. *Journal of Agricultural Research and Development* 29(1): 25-33.

Djurkri, & Purwoko SS. (2003). pengaruh naungan paronet terhadap sifat toleransi tanaman talas (*Colocasia esculenta* (L.) Schott). *Jurnal ilmu pertanian* Vol 10. No 2 2003: 17-25

Djurkri. (2016). Karakter tanaman dan produksi umbi talas sebagai tanaman sela di bawah tegakan karet. *Jurnal Biodiversitas* ISSN: 1412-033X Volume 7, Nomor 3 Juli 2006 Halaman: 256-259

- Drechsel, P., & Zech, W. (1994). DRIS evaluation of teak (*Tectona grandis* L. f.) mineral nutrition and effects of nutrition and site quality on teak growth in West Africa. *Forest Ecology and Management*, 70, 121–133.
- Ekawati S., Budiningsih, K., Sylviani, Suryandari, E., & Hakim I. (2015). Critical review study on forest management on the island of Java. *Policy brief*. Vol. 9 No. 1 pp 1-8.
- Elhassan, A. A. M., El-tilib, A. M. A., Ibrahim, H. S., Hashim, A. A., & Awadelkarim, A. H. (2011). Response of foster grapefruit (*Citrus paradisi* Macf.) to organic and inorganic fertilization in central Sudan. *Annals of Agricultural Sciences*, 56(1), 37–41. <https://doi.org/10.1016/j.aoas.2011.05.003>
- Elliot WJ, Page-Dumroese D, Robichaud PR. (1999). The effects of forest management on erosion and soil productivity. soil quality and erosion interaction. *The Soil and Water Conservation Society of America*. Keystone, Colorado July 7th, 1996
- Ewers BE, Oren R, & Sperry JS. (2000). Influence of nutrient versus water supply on hydraulic architecture and water balance in *Pinus Taeda*. *Journal of Plant, Cell and Environment* 2000 (23) 1055-1066.
- FAO. (1957). Report on teak growing under exotic conditions. FAO/TSC-57/3, FAO Rome
- FAO. (2002). Forest plantation productivity. Report based on the work of W.J. Libby and C. Palmberg-Lerche. *Forest Plantation Thematic Papers, Working Paper 3*. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished)
- Faridah E, Indrioko S, Tuharno. (2009). Tunas air: variasi kemunculan dan pengaruhnya terhadap pertumbuhan tanaman jati (*Tectona grandis*). *Jurnal Ilmu Kehutanan*. Vol 3 No 1. 23-34.
- Faridah, E dan Widiyatno. (2011). Laporan akhir tahun III: Uji Klon Jati. Fakultas Kehutanan UGM. Yogyakarta.
- Faridah E, Widiyatno, Primananda E. (2016). Pertumbuhan tanaman uji klon jati pada berbagai solum di Wanagama I, Gunung Kidul, Yogyakarta. *Proceeding Seminar Nasional Silvikultur ke IV*. 437-445.
- Feng, L., Raza, M.A., Li, Z., Chen, Y., Bin Khalid, M.A., Du, J., Liu, W., Wu, X., Song, C., Yu, L., Zhang, Z., Yuan, S., Yang, W., & Yang, F. (2018). The influence of light intensity and leaf movement on photosynthesis characteristics and carbon balance of soybean. *Frontier in Plant Science*. 2018; 9: 1952.

- Fernandez-Moya J, Murillo R, Portuguez E, Fallas JL, Rios V, Kottman F, Verjans JM, Mata R, Alvarado A. (2013). Nutrient concentration age dynamics of teak (*Tectona grandis* L.f.) plantations in Central America. Forest Systems 2013 22(1), 123-133
- Fernández-Moya, J., Alvarado, A., San Miguel-Ayanz, A., & Marchamalo-Sacristán, M. (2014). Forest nutrition and fertilization in teak (*Tectona grandis* L.f.) plantations in Central America. New Zealand Journal of Forestry Science, 44(Suppl 1), S6. <https://doi.org/10.1186/1179-5395-44-s1-s6>
- Fernandez-Moya, J., Alvarado, A., Mata, R., Thiele, H., Segura, S., Vaides E., & Marchamalo-sacristán, M. (2015). Soil fertility characterisation of teak (*Tectona grandis* L.f.) plantations in Central America, 423–432.
- Fettig CJ, Klepzig KD, Billings RF, Munson AS, Nebeker TE, Negro JF, & Nowak JT. (2007). The effectiveness of vegetation management practices for prevention and control of bark beetle infestations in coniferous forests of the western and southern United States. Forest Ecology and Management 238 (2007) 24–53.
- Filipovic, V., Radanovic, D., Markovic, T., Ugrenovic, V., Protic, R., Popovic, V., & Sikora, V. (2016). Productivity and tuber quality of *Helianthus tuberosus* L. cultivated on different soil types in Serbia. Romanian Biotechnological Letters. Vol. 21, No. 4, 2
- Fox, TR. (2000). Sustained productivity in intensively managed forest plantations. Forest Ecology and Management 138 (2000) 187-202
- Gao, L., Xu, H., Bi, H., Xi, W., Bao, B., Wang, X., & Chang, Y. (2013). Intercropping competition between apple trees and crops in agroforestry systems on the loess plateau of China. PLoS ONE, 8(7), 1–8. <https://doi.org/10.1371/journal.pone.0070739>
- Gomez KA & Gomez AA. (1983). Statistical procedures for agricultural research (second edition). John wiley and Sons
- Gommers, C.M., Visser, E.J., St Onge, K.R., Voesenek, L.A., & Pierik, R. (2013) Shade tolerance: when growing tall is not an option. Trends Plant Science 18:65–71. doi:10.1016/j.tplants
- Hardiwinoto S, Budiadi, Priyanto SD & Widiyatno. (2012). respon pertumbuhan semai jati (*Tectona grandis*) unggul dari stek pucuk dan okulasi terhadap pupuk organik di Wanagama. Laporan Akhir Penelitian DPP. Fakultas Kehutanan UGM. Yogyakarta.

- Hardiwinoto S, Sukirno, Widiyatno, dan Chanan M. (2013). Identifikasi faktor pembatas pertumbuhan jati unggul. Laporan Akhir Penelitian DPP. Fakultas Kehutanan UGM. Yogyakarta.
- Hardiyanto, E. B. (1991). Beberapa aspek genetik silvikultur intensif (Makalah Kursus Singkat Pemuliaan Pohon. Kerjasama UNIB-UGM 7 Januari-5 Februari 1991). Balai Produksi dan Pengujian Benih Sumatera Selatan. Departemen Kehutanan.
- Hardjodarsono, (1984). Jati. Cetakan ke-4. Yayasan Pembina Fakultas Kehutanan UGM, Yogyakarta
- Hartemink AE. (2003) Soil fertility decline in the tropics with case studies on plantations. CABI Publishing, England, 360 p.
- Hase, H., & Foelster, H. (1983). Impact of plantation forestry with teak (*Tectona grandis*) on the nutrient status of young alluvial soils in West Venezuela. Forest Ecology and Management, 6(1), 33–57. [https://doi.org/10.1016/0378-1127\(83\)90004-X](https://doi.org/10.1016/0378-1127(83)90004-X)
- Havlin, J., Beaton, J., Tisdale, S., & Nelson, W. (1999). Soil fertility and fertilizers, an introduction to nutrient management (6th ed.). New Jersey: Prentice Hall.
- Hebert F, Krause C, Plourde P, Achim A, Pregent G, & Menetrier J. (2016). Effect of tree spacing on tree level volume growth, morphology, and wood properties in a 25-Year-Old *Pinus banksiana* plantation in the Boreal Forest of Quebec. Forests 2016, 7, 276; doi:10.3390/f7110276
- Hermawati DT. (2016). Kajian ekonomi antara pola tanam monokultur dan tumpangsari tanaman jagung, kubis dan bayam. INOVASI, Volume XVIII, Nomor 1, Januari 2016. 66-71.
- Huang W, & Zou X. (2018). A new approach to evaluate site quality for reforestation programs. Forest Research Engineering International Journal.;2(4):189–190.
- Husin S. (2015). Kajian biaya pemupukan pada tanaman menghasilkan kelapa sawit (*Elaeis Guineensis* Jacq) Di Afdeling I Kebun Dolok Sinumbah PT. Perkebunan Nusantara IV. Sekolah Tinggi Ilmu Pertanian Agrobisnis Perkebunan Medan
- Idris, A., Linatoc, A.C., Aliyu, A.M., Muhammad, S.M., & Abu Bakar, M.F. (2018). Effect of light on the photosynthesis, pigment content and stomatal density of sun and shade leaves of *Vernonia Amygdalina*. International Journal of Engineering & Technology. 7 (430) pp 209-212. DOI: 10.14419/ijet.v7i4.30.22122
- Irundu, D., Arifat A., & Rahmania. (2018). Nilai ekonomi langsung berbagai sistem pengelolaan hutan rakyat di Desa Mirring, Kabupaten Polman, Sulawesi Barat.

Jurnal Hutan dan Masyarakat. Vol. 10(1): 185-191, ISSN: 1907-5316 ISSN online: 2613-9979 185

Jenny H. (1941). Factors of soil formation a system of quantitative pedology. Dover Publications, Inc. New York

Jenny, H. (1994). System of quantitative pedology. Dover Publication Inc, New York

Kaosa-ard A. (1989). Teak (*Tectona grandis* Linn. f) Its natural distribution and related factors. Nat. Hist. Bull. Siam Soc. 29: 55-74. 1989.

Kaosa-ard, A. (1998). Overview of problems in teak plantation establishment. In M. Kashio, & K. White, (Eds.), Teak for the Future (pp. 49-60). Bangkok: RAP Publication: 1998/5, FAO Regional Office for Asia and the Pacific.

Karen, A., Jorge, A., Varela-gámez, Y., Caldera-arellano, A. K., Zegbe, J. A., & Menacovarrubias, A. S. J. (2014). Irrigation in nopal influences the storage and packaging of tuna Resumen.

KEMENHUT. (2014). Produksi bibit jati unggul dari klon dan budidayanya. Kerjasama Badan Penelitian Dan Pengembangan Kehutanan Balai Besar Penelitian Bioteknologi Dan Pemuliaan Tanaman Hutan Dan Direktorat Jenderal Bina Usaha Kehutanan

Keogh RM. (1980). Teak provenances of the Caribbean, central America, Venezuela and Colombia. Proceedings from IUFRO Symposium on wood in the neotropics.

Keogh RM. (2000). The world of teak plantations. The International Forestry Review 2 (2), 123-125

Kingwell, R., Elliot, P., Cowman, S., Carter, C., & White, P. (2018). The Indonesian wheat market; its strategic importance to Australia. Technical report. Australian export grains Innovation Centre (AEGIC).

Kollert W, & Kleine M. (2017). The global teak study. Analysis, Evaluation and Future Potential of Teak Resources IUFRO World Series Volume 36. Vienna. 108 p.

Kozlowski TT, & Pallardy SG (1997). Growth control in woody plants. Academic Press, Inc. 525 B Street, Suite 1900, San Diego, California 92101-4495, USA

Kozlowski TT. (1968). Diurnal changes in diameter of fruits and tree stems on Montmorency cherry. Journal of Horticulture Science 43, 1-15

Kramer, P.J. & Kozlowski T. 1979. Physiology of woody plants. Academic Press, New York.



UNIVERSITAS  
GADJAH MADA

KAJIAN PRODUKTIVITAS LAHAN, KERAPATAN TEGAKAN, PEMUPUKAN DAN TANAMAN  
TUMPANGSARI PADA HUTAN JATI

BERGENETIK UNGGUL DI KPH NGAWI DAN KPH CEPU

DARYONO PREHATEN, Prof. Suryo Hardiwinoto; Prof. Mohammad Naiem; Dr. Haryono Supriyo

Universitas Gadjah Mada, 2021 | Diunduh dari <http://etd.repository.ugm.ac.id/>

- Kumar, B. M., Kumar, S. S., & Fisher, R. F. (1998). Intercropping teak with *Leucaena* increases tree growth and modifies soil characteristics. *Agroforestry Systems*, 42(1), 81–89. <https://doi.org/10.1023/A:1006199910985>
- Lewerissa E, & Tandisalla J. (2016). Inventarisasi jenis umbi-umbian di bawah tegakan agroforestri sebagai sumber pangan di Kabupaten Halmahera Utara. *Jurnal Uniera Volume 5, Nomor 2, Agustus 2016*
- Leyton L., & Yadav JSP. (1960). Effect of drainage on certain physical properties of a heavy clay soil. *Journal of Soil Science*, Vol. 11, No. 2
- LKPP (Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah). (2021). <https://ekatalog.lkpp.go.id/>
- Lockhart JA (1965). An analysis of irreversible plant cell elongation. *Journal of Theoretic Biology*. 8, 264-275
- Lopez, A., Calvache, L., & Hidrovo, A. (1989). Growth, yield and teak performance in silvopastoral system in the Lowland Western, 966.
- Manalu, APV. (2016). Kajian biaya pemupukan tanaman menghasilkan kelapa sawit (*Elaeis Guineensis* Jacq) Di Afdeeling II Kebun Sei Kopas Pt. Perkebunan Nusantara IV. Laporan Penelitian Tugas Akhir. Sekolah Tinggi Ilmu Pertanian Agrobisnis Perkebunan. Medan. Tidak dipublikasikan
- Marquez O. (1994). Mapping soils and evaluation of teak (*Tectona grandis*) plantations in unit II of the Ticoporo forest reserve. *Revista Forestal Venezolana*. 28:17–23
- Mawardi P. (2012). Kaya dari investasi jati barokah. PT AgroMediaPustaka, Jakarta.
- Medeiros RA, de Paiva HN, D'Ávila FS, & HG. (2018). Growth and yield of teak stands at different spacing. *Pesq. agropec. bras.*, Brasília, v.53, n.10, p.1109-1118, Oct. 2018 DOI: 10.1590/S0100-204X2018001000004
- Mengel, A., & Kirkby, E. (1978). Principle of plants nutrition. Berne, Switzerland: International Potash Institue.
- Menzel CM & Waite GK. (2005). Plant nutrition and fertilizing (chapter) in litchi and longan: Botany, Production and Uses CAB International.
- Miller HG.(1989). Internal and external cycling of nutrients in forest stands; biomass production by fast growing trees, 73-80. Kluwer Academic Publishers.

- Moya R, Perez LD, & Arce V. (2003). Wood density of *Tectona grandis* at two plantations spacing in Costa Rica. *Journal of Tropical Forest Product* 9 (1&2) 153-161
- Na'iem M., Indrioko S., Widiyatno, Prehaten D. (2017). Peranan teknologi silvikultur (SILIN) dan konservasi genetik dalam peningkatan produktivitas hutan jati rakyat di Pulau Jawa. Laporan Penelitian Berbasis Kompetensi. Universitas Gadjah Mada. Tidak dipublikasikan
- Nogueira, G.S., Leite, H.G., Reis, G.G., & Moreira, A.M. (2008). Influence of the initial spacing on the shape of the stem *Pinus taeda* trees. *Rev. Árvore* [online]. 2008, vol.32, n.5, pp.855-860. ISSN 1806-9088. <http://dx.doi.org/10.1590/S0100-67622008000500010>.
- Noor HM. (2003). Growth of teak (*Tectona grandis*) on lateritic soil at Mata Ayer Forest Reserve, Perlis. *J Trop For Sci.* 15:190–198.
- Nugroho AW, Junaidah, Azwar F, & Muara J. (2011). Pengaruh naungan dan asal benih terhadap daya hidup dan pertumbuhan ulin (T.et B.). *Jurnal Penelitian Hutan Tanaman* 280 Vol.8 No.5, Desember 2011, 279 - 286
- Oktafani, M.B., Supriyono, Budiaستuti, M.T.S., & Purnomo, D. (2018). Performance of arrowroot (*Marantha arundinacea*) in various light intensities. *IOP Conf. Series: Earth and Environmental Science* 142 (2018)
- Ola-Adams BA.(1990). Influence of spacing on growth and yield of *Tectona grandis* Linn. F. (teak) and *Terminalia superba* Engl. & Diels (afara)," *Journal of Tropical Forest Science*, vol. 2, no. 3, pp. 180–186.
- Pakpahan A, Irawan B, & Hendiarto. (1983). Keragaan tumpangsari hutan dalam peremajaan hutan jati dan penghasil pangan analisis kasus tumpangsari di KPH. Pusat Penelitian Agro Ekonomi, Badan Litbang, Deptan (laporan penelitian).
- Palanisamy, K., K Gireesan, V Nagarajan & M Hegde. (2009). Selection and clonal multiplication of superior trees of teak (*Tectona grandis*) and preliminary evaluation of clones. *Journal of Tropical Forest Science* 21(2): 168–174
- Park, A., & Wilson, E. R. (2007). Beautiful plantations: Can intensive silviculture help Canada to fulfill ecological and timber production objectives? *Forestry Chronicle*, 83(6), 825–839. <https://doi.org/10.5558/tfc83825-6>
- Pastur GM., Lencinas MV., Cellini JM. & Mundo I.(2007) Diameter growth: can live trees decrease?. *Forestry*, Vol. 80, No. 1, 2007. doi:10.1093/forestry/cpl047

- Patola, L.N.P., Supriyono & Pardjanto. (2017). Effect use biofertilizer and differences type soil on growth and yield arrowroot. *Journal of Soil Science and Agro climatology*, 14 (1), 2017, 29-35
- Perez D., & Kanninen M. (2005). Effect of thinning on stem form and wood characteristics of Teak (*Tectona grandis*) in a humid tropical site in Costa Rica. *Silva Fennica* 39(2). 217-225.
- [PPT] Pusat Penelitian Tanah. (1995). Petunjuk teknis evaluasi kesuburan tanah. Laporan Teknis No.14. Versi 1,0.1. REP II Project, CSAR, Bogor
- Pramono, A.A., Fauzi, M.A., Widyan, M., Heriansyah, I. & Roshetko, J.M. (2011) Managing smallholder teak plantations: field guide for farmers. CIFOR, Bogor, Indonesia
- Pratiwi & Lust N. (1994). Teak (*Tectona grandis* L.f.) forests in Java, Indonesia plantations, management and policy. *Silva Gandavensis* 59: 97-118
- Prehaten, D., Na'iem, M., & Hardiwinoto, S. (2018). Superior teak (*Tectona grandis*) clone forestry productivity at several plant spacing. Proceedings of the National Seminar on Biology and Biology Education: Research, Application, and Learning of Biology in Facing the Challenges of the 21st Century. p. 226 - 232.
- Pudjiono, S. (2014). Produksi bibit jati unggul (*Tectona grandis*) dari klon dan budidayanya. Kerjasama Badan Penelitian dan Pengembangan Kehutanan Balai Besar Penelitian Biotehnologi dan Pemuliaan Tanaman Hutan dengan Direktorat Jenderal Bina Usaha Kehutanan. IPB Press.
- Qodliyati, M., Supriyono & Nyoto, S. (2018). Influence of spacing and depth of planting to growth and yield of arrowroot (*Marantha arundinacea*). IOP Conf. Series: Earth and Environmental Science 142 (2018) 012035
- Rahmadwati, R., Sadono, R., & Supriyatno, N. (2016). Preliminary table perhutani stand for average dominant trees of jati plus in Saradan, Madiun, and Ngawi Forest Districts. *Jurnal Manajemen Hutan Tropika (Journal of Tropical Forest Management)*, 22(1).
- Rahmawati, W., Kusumastuti, Y.A., & Aryanti, N. (2012). Characterization of taro starch (*Colocasia esculenta* (L) Schoot) as an alternative source of industrial starch in Indonesia. *Journal of Chemical and Industrial Technology*. Vol.1 No.1. p.347-351
- Ranasinghe, H., & Amarakoon, J. (2012). Forest management and timber utilisation comparison of some physical and chemical properties of soils under different aged teak plantations in kadjuwatte with other sites having healthy growth of teak



in Mahaweli System, Sri Lanka. Proceedings of the International Forestry and Environment Symposium 2012 of the Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Sri Lanka., 2012.

Rezai, S., Etemadi, N., Nikbakht, A., Yousefi, M., & Majidi, M.M. (2018). effect of light intensity on leaf morphology, photosynthetic capacity, and chlorophyll content in sage (*Salvia officinalis* L.). Horticultural Science and Technology 36(1):46-57, 2018.

Rohadi D, Blyth M, Fauzi M A, Kusumowardhani N, Manalu P, Nuryartono N, Perdana A, Pramono A A, Roshetko J M, Sasono M J, Sumardamto P, & Widjani N (2012). Improving economic outcomes for smallholders growing teak in agroforestry systems in Indonesia. World Agroforestry center.

Rohman, Warsito SP, Purwanto RH & Supriyatno N. (2013). Normalitas Tegakan Berbasis Resiko Untuk Pengaturan Kelestarian Hasil Hutan Tanaman Jati Di Perum Perhutani. Jurnal Ilmu Kehutanan.Vol. 7 No.2 ; 81-92

Sadono R & Silalahi ML. (2010). Penentuan tingkat kompetisi tajuk tegakan jati hasil uji keturunan umur 11 tahun di KPH Ngawi. Jurnal Ilmu Kehutanan. Vol 4 No 2; 80-86

Sadono R & Umroni A. (2012). Penentuan indeks kepadatan tegakan sengon di hutan rakyat (Kecamatan Kranggan dan Pringsurat Kabupaten Temanggung). Jurnal Ilmu Kehutanan Volume VI No. 1. 53-60.

Saharjo BH & Putra ET. (2017). Pengendalian kebakaran hutan Di KPH Madiun Perum Perhutani Unit Ii Jawa Timur. Jurnal Silvikultur Tropika Vol. 08 No. 3, Desember 2017, Hal 183-190 ISSN: 2086-8227

Saleh N, Rahayuningsih St. A., Radjit BS, Ginting E, Harnowo D & Mejaya IMJ. (2015). Tanaman porang; pengenalan, budidaya dan pemanfaatannya. Pusat Penelitian dan Pengembangan Tanaman Pangan. Balai Penelitian dan Pengembangan Pertanian.

Salifu K. (2001). Site variables controlling teak (*Tectona grandis*) growth in the high forest zone of Ghana. J Trop For Sci. 13:99–108.

Salisbury, F.B., & C.W. Ross. (1995). Plant physiology. 5th ed. Wadsworth Publ. Co., Inc. Boulder, CO.

Scherer-Lorenzen, M., Bonilla, J. L., & Potvin, C. (2007). Tree species richness affects litter production and decomposition rates in a tropical biodiversity experiment. Oikos, 116(12), 2108–2124. <https://doi.org/10.1111/j.2007.0030-1299.16065.x>

- Schwinnig S, & Kelly CK. (2013). Plant competition temporal niches and implication to productivity and adaptability to climate changes in water-limited environments. *Functional ecology.* 27; 886-897.
- Sembiring, R.K. (1995). Analisis regresi. Penerbit ITB Bandung. Bandung
- Setyowati, N. (2012). Arrowroot propagation from harvested seeds using various dung fertilizers (Bogor: Biology Research Center LIPI) (Indonesian).
- Seviset S, Piromgran T, Saributtr U, Porncharoen R, Raerai K. & Charoensettasilp S. (2017). Mechanical property of 9 years old thinning of teak plantation in Thailand. *MATEC Web of Conferences* 95, 03004 (2017) DOI: 10.1051/matecconf/2017950
- Sharma, S., & Pande, P. (1989). Patterns of litter nutrient concentration in some plantation ecosystems, *Journal of Forest Ecology and Management*, 29, 151–163.
- Silva, R.S., Vendruscolo, D.G.S., Rocha, J.R.M., Chaves, A.G.S., Souza, H.S.& Motta, A.S. (2016). Performance silvicultural of *Tectona grandis* L.F. in different spacing in Caceres. *Forest and Environment*, v.23, p.397-405, 2016. DOI: 10.1590 / 2179-8087.143015
- Simon, H. (1995). Hutan jati dan kemakmuran. Aditya Media. Yogyakarta
- Simsek, S., & El, S.N. (2012). Production of resistant starch from taro (*Colocasia esculenta* L. Schott) corm and determination of its effects on health by in vitro methods. *Carbohydrate Polymers*. Volume 90, Issue 3, Pages 1204-1209
- Sivan P & Liyanage ADS. (1980). Breeding and evaluation of taro (*Colocasia Esculenta*) for The South Pacific Region. Research extension series/ Hawaii Institute of Tropical Agriculture and Human Resource.
- Suartha, N. (2016). Faktor-faktor yang memengaruhi tingginya laju pertumbuhan dan implementasi kebijakan penduduk Di Provinsi Bali. *Jurnal PIRAMIDA* Vol. XII No. 1: 1 – 7
- Suhartini, T., & Hadiatmi. (2011). Diversity of arrowroot (*Marantha arundinaceae* L.) morphological characters. *Germplasm Bulletin* Vol.17 No.1.
- Sumarlan, Sumardjo, Tjitarpranoto P, & Gani DS. (2012). Peningkatan kinerja petani sekitar hutan dalam penerapan sistem agroforestri di Pegunungan Kendeng Pati. *Jurnal Agro Ekonomi*. Volume 30 No. 1, Mei 2012: 25-39

- Supangat AB & Putra PB. (2010). Kajian infiltrasi tanah pada berbagai tegakan jati (*Tectona grandis* L.) Di Cepu, Jawa Tengah. *Jurnal Penelitian Hutan dan Konservasi Alam*. 7 (2): 149-159
- Supangat AB, Supriyo H, Sudira P & Poedjirahajoe E. (2013). Status kesuburan tanah di bawah tegakan *Eucalyptus Pellita* F. Muell: Studi Kasus Di HPHTI PT. Arara Abadi, Riau. *Jurnal Manusia Dan Lingkungan*, Vol. 20, No. 1 :22-34.
- Supriyo H & Prehaten D. (2014). Kandungan unsur hara dalam daun jati yang baru jatuh pada tapak yang berbeda. *Jurnal Ilmu Kehutanan*. Vol 2 No 2. 108-116.
- Supriyono, Putri RBA, & Wijayanti R. (2017). Analisis pertumbuhan garut (*Marantha arundinaceae*) pada beberapa tingkat naungan. *Agrosains* 19(1): 22-27, 2017; ISSN: 1411-5786
- Suryani E & Dariah A. (2012). Peningkatan produktivitas tanah melalui sistem agroforestri. *Jurnal Sumberdaya Lahan* Vol. 6 No. 2
- Suzuki R, Takeda S, & Thein HM. (2007). Chronosequence changes in soil properties of teak (*Tectona grandis*) Plantation in the Bago Mountains Myanmar. *Journal of Tropical Forest Science*; Oct 2007; 19, 4; ProQuest Research Library pg. 207
- Takahashi M, Hirai K, Limtong P, Leaungvutivirog C, Suksawang S, Panuthai S, Anusontpornperm S & Marod D. (2009). Soil respiration in different ages of teak plantations in Thailand. *JARQ* 43 (4), 337–343 (2009) <http://www.jircas.affrc.go.jp>
- Tisdale, S., Nelson, W., & Beaton, J. (1985). *Soil fertility and fertilizers*. London, UK: Collier Macmillan Publisher.
- Triwahyuningsih C. (2015). Menanamlah sebanyak-banyaknya klon. *Majalah BINA*. November 2015.
- Vaides-Lopez E, Alvarado-Hernandez A, Moya-Fernandez R. (2019). site characteristics that determine the growth and productivity of Teak (*Tectona Grandis* L. F.) of young plantations in Guatemala. *Agronomía Costarricense* 43(1): 135-148. ISSN:0377-9424
- Vidigal, SM., Lopes, IPC, Puiatti, M., Sediyama, MAN, & Ribeiro MRF. (2016). Yield performance of taro (*Colocasia esculenta* L.) cultivated with topdressing nitrogen rates at the Zona da Mata region of Minas Gerais. *Revista Ceres*, 63(6), 887–892. doi:10.1590/0034-737x201663060019. Basic. Appl. Sci. Res., 1(9) :1207-1213
- Wahyudi I, Sinaga DKD, Muhran, & Jasni LB. (2014). Pengaruh jarak tanam terhadap pertumbuhan pohon dan beberapa sifat fisis-mekanis kayu jati cepat tumbuh.

Jurnal Ilmu Pertanian Indonesia (JIPI), Desember 2014 Vol. 19 (3): 204 210 ISSN 0853 – 4217

Walkley, A. & Black IA. (1934). An examination of degtjareff method for determining soil organic matter and a proposed modification of the chromic acid titration method. *Soil Sci.* 37: 29-37.

Wangluk, S., Boonyawat, S., Diloksumpun, S., & Tongdeenok, P. (2013). Role of soil temperature and moisture on soil respiration in a teak plantation and mixed deciduous forest in Thailand, 25(3), 339–349.

Warto. (2017). Hutan jati berkalung besi: pengangkutan kayu jati di jawa pada akhir abad ke-19 dan awal abad ke-20. *SASDAYA*, Gadjah Mada Journal of Humanities, Vol. 1, No. 2, Mei 2017

Wasis B, Kusmana C, Suhendang E, & Sudarsono. (2006). Perbandingan kualitas tempat tumbuh antara rotasi pertama dan rotasi kedua pada hutan tanaman *Acacia mangium* Willd (Studi Kasus di HTI PT Musi Hutan Persada, Propinsi Sumatera Selatan). Disertasi S3 Program Studi Ilmu Pengetahuan Kehutanan, Sekolah Pasacasarjana IPB. Tidak dipublikasikan.

Watterson, KG. (1971). Growth of teak under different edaphic condition in Lancetilla Valley, Honduras. *Turrialba*. 21 (2): 222-225

Wehr JB, Blamey FPC, Smith TE, & Menzies NW. (2017). Growth and physiological responses of teak (*Tectona grandis* Linn. f.) clones to Ca, H and Al stresses in solution and acid soils. *New Forests* (2017) 48:137–152

Weiner, J., & Thomas, SC. (2017). The nature of tree growth and the " age-related decline in forest, 94(2), 374–376.

Widarjono, A. (2018). Analysis of rice imports in Indonesia: AIDS approach. *Journal of Economics, Business, and Accountancy Ventura* Vol. 21, No. 2, p 259 - 268

Widjajani BW, Wisnubroto EI, Sukresno & Utomo WH. (2011). The sustainability of teak forest management in Cepu, Central Java, Indonesia: A Soil Resources Point of View. *Basic. Appl. Sci. Res.*, 1(9) :1207-1213

[Www.builder.id/harga-kayu-jati-perhutani/](http://www.builder.id/harga-kayu-jati-perhutani/). Diakses tanggal 13 Desember (2020), pukul 17.45

Yahya AZ, Saaiffudin KA & Hashim MN. (2011). Growth response and yield of plantation grown teak (*tectona grandis*) after low thinning treatments at pagoh, Peninsular Malaysia. *Journal of Tropical Forest Science* 23(4): 453-459



- Yang, H., Klopotek, Y., Hajirezaei, M.R., Zerche, S., Franken, P., & Druge, U. (2019). Role of auxin homeostasis and response in nitrogen limitation and dark stimulation of adventitious root formation in petunia cuttings. *Annals of Botany* XX: 1–14.
- Yazid, N.S.M., Abdullah, N., Muhammad, N., & Matias-Peralta, H.M. (2018). Application of starch and starch-based products in food industry. *Journal of Science and Technology*, Vol. 10 No. 2 p. 144-174
- Yudianto, A.A., Fajriani, S., & Aini, N. (2015). Influence of plant spacing and pilled frequency on growth and yield of arrowroot plant (*Marantha arundinaceae* L.). *Journal of Plant Production*, Volume 3, Number 3, p. 172 - 181
- Yunanto AI, Supriyono & Nyoto S. (2017). Application of potassium fertilizer and teak leaves debris for arrowroot yield. *Agrotech Res J.* Vol 1. No 1. 2017: 41-45.
- Zahabu, E., Raphael, T., Chamshama, S.A.O., Iddi, S. & Malimbwi, R.E. (2015). Effect of spacing regimes on growth, yield, and wood properties of *Tectona grandis* at Longuza Forest Plantation, Tanzania. *International Journal of Forestry Research*, v.2015, art. ID469760, p.1-6, 2015. DOI: 10.1155/2015/469760
- Zervoudakis, G., Salahas, G., Kaspiris, G., & Konstantopoulou, E. (2012). Influence of light intensity on growth and physiological characteristics of common sage (*Salvia officinalis* L.). *Brazilian Archives of Biology and Technology* Vol.55, n. 1: pp.89-95
- Zhou Z, Liang K, Xu D, Zhang Y, Huang G, & Ma H. (2012). Effects of calcium, boron and nitrogen fertilization on the growth of teak (*Tectona grandis*) seedlings and chemical property of acidic soil substrate. *New Forests*, 43:231–243