

DAFTAR PUSTAKA

- Abidin, C., A. H. Ahmad, H. Salim & N. H. Hamid. 2014. Population dynamics of *Oryctes rhinoceros* in decomposing oil palm trunks in areas practising zero burning and partial burning. *J Oil Palm Res.* 26(2): 140–145.
- Alfarisi, A., T. Mandang & A. Sutejo. 2022. characteristics of oil palm stem mulch as soil conditioner at oil palm. IOP Conference Series: Earth and Environmental Science. 1038(1): 012064.
- Badan Pusat Statistik (BPS). 2021. Statistik kelapa sawit Indonesia 2021. In B. P. Statistik (Ed.), (pp. 139). Jakarta: BPS-Statistics Indonesia.
- Bakeri, S. A., R. Moslim, I. A. Ghani, M. M. M. Masri & J. Jalinas. 2023. Population dynamics of adult *Oryctes rhinoceros* and its developmental stages with *Oryctes Nudivir* infection in a zero burning replanting area. *Int J Trop Insect Sci*, 43(2): 591–600.
- Bedford, G. O. 1976. Observations on the biology and ecology of *Oryctes rhinoceros* and *Scapanes australis* (Coleoptera: Scarabaeidae: Dynastinae): pests of coconut palms in Melanesia. *Aust Entomol.* 15(3): 241–251.
- _____. 1980. Biology, ecology, and control of palm rhinoceros beetles. *Annual Review of Entomology*. Vol 25: 309-339.
- _____. 2014. Advances in the control of rhinoceros beetle, *Oryctes rhinoceros* in oil palm. *J Oil Palm Res.* 26(3): 183-194.
- Birkemoe, T., R. M. Jacobsen, A. Sverdrup-Thygeson, P. H. Biedermann & M. D. Ulyshen. 2018. Insect-fungus interactions in dead wood systems. In: Ulyshen, M. (eds) Saproxylic Insects. *Zoological Monographs*. Vol 1. Springer. Cham. https://doi.org/10.1007/978-3-319-75937-1_12
- Catley, A. 1969. The coconut rhinoceros beetle *Oryctes rhinoceros* (I)[coleoptera: Scarabaeidae: Dynastinae]. PANS Pest Articles & News Summaries, 15(1), 18-30.
- Dini, I. R., W. Wawan, H. Hapsoh & S. Sriwahyuni. 2018. Isolation and identification of cellulolytic and lignolytic bacteria from the gut *Oryctes rhinoceros* L. larvae decomposition of oil palm empty fruit bunches. *Indonesian Journal of Agricultural Research*. 1(2): 193-203.
- Division, I. P. A. 2022. Palm oil explorer indonesia: palm oil production. Retrieved from https://ipad.fas.usda.gov/cropexplorer/cropview/comm_chartview.aspx?fattributid=1&cropid=4243000&sel_year=2022&startrow=1&ftypeid=47®ionid=seasia&cntryid=IDN&nationalGraph=False, diakses: 25 Februari 2024.
- Eom, I.-Y., J.-H. Yu, C.-D Jung & K.-S. Hong. 2015. Efficient ethanol production from dried oil palm trunk treated by hydrothermolysis and subsequent enzymatic hydrolysis. *Biotechnol Biofuels Bioprod.* 8: 1-11.
- Erwinsyah, E. 2008. Improvement of oil palm wood properties using bioresin. Doctoral Dissertation. Technische Universität Dresden. Retrieved from

<http://webdoc.sub.gwdg.de/ebook/dissts/Dresden/Erwinsyah2008.pdf>, diakses: 24 Maret 2024.

- Fauzana, H. & U. Ustadi. 2020. Pertumbuhan larva kumbang tanduk (*Oryctes rhinoceros* L.) pada berbagai media tumbuh tanaman Famili Arecaceae. *J Entomol Indones*. 17(2): 89-96.
- Fauzana, H., R. Rustam, F. Puspita & R. Feronica. 2023. The dosage of biopesticide formulation of local *Metarhizium anisopliae* flour in compost (metankos) against *Oryctes rhinoceros* L. In IOP Conference Series: Earth and Environmental Science. Vol. 1160. No. 1. p.012046. IOP Publishing.
- Fauzana, H., R. Rustam, D. Salbiah & P. Aritonang. 2023. Kesesuaian bahan organik kompos sebagai tempat hidup larva kumbang tanduk (*Oryctes rhinoceros* Linnaeus) pada lahan sawit. *JPT: Jurnal Proteksi Tanaman (Journal of Plant Protection)*. 7(1): 11 – 21
- Fridayati, D., N. Alim & E. Rahmi, 2022. Struktur komunitas serangga dekomposer pada tanaman kelapa sawit pada fase pertumbuhan berbeda di pt. Mopoli raya rantau aceh tamiang. *Journal of Forestry and Environment*. 2(2). pp.47-57.
- Galante, E. & M. A. Marcos-Garcia. 2008. Decomposer insects. In J. L. Capinera (Ed.), *Encyclopedia of Entomology*. pp. 1158-1169. Dordrecht: Springer Netherlands.
- Han, C.-J., C.-H. Cheng, T.-F. Yeh, Y. Pauchet & M. Shelomi. 2024. Coconut rhinoceros beetle digestive symbiosis with potential plant cell wall degrading microbes. *NPJ Biofilms Microbiomes*. 10(1): 34.
- Hermawansyah, D., K. Kasam, F. M. Iresha & A. Rahmat. 2021. Analisis parameter fisik kompos menggunakan metode vermikompos pada bahan baku daun kering. *Open Science and Technology*. 1(1): 29–36.
- Hidayah, A. 2017. Efektivitas larva kumbang badak (*Oryctes rhinoceros* L.) sebagai dekomposer limbah tongkol jagung, ampas tebu dan (bagasse) dan sabut kelapa. Skripsi. Univeristas Muhammadiyah Yogyakarta: Yogyakarta. Retrieved from <http://repository.umy.ac.id/handle/123456789/15392>, diakses: 24 Februari 2024.
- Hinckley, A. D. 1973. Ecology of the coconut rhinoceros beetle, *Oryctes rhinoceros* (L.)(Coleoptera: Dynastidae). *Biotropica*. 111–116.
- Indriyanti, D. R., R. I. P. Putri, P. Widiyaningrum & L. Herlina. 2017. Density, viability conidia and symptoms of *Metarhizium anisopliae* infection on *Oryctes rhinoceros* larvae. In Journal of Physics: Conference Series. 824(1): 012058. IOP Publishing.
- InfoSawit. 2022. Hasil audit luas perkebunan sawit indonesia 16,8 juta ha. Info Sawit News Week. 9 (184). Edition 22- 28 Oktober 2022.
- Jacobsen, R. M., A. Sverdrup-Thygeson, H. Kauserud, S. Mundra & T. Birkemoe. 2018. Exclusion of invertebrates influences saprotrophic fungal community and wood decay rate in an experimental field study. *Funct Ecol*. 32(11): 2571–2582.
- Jamil, A. 2022. Peluang dan tantangan program peremajaan sawit rakyat. Universitas Medan Area. <https://doktor.pertanian.uma.ac.id/>, diakese: 20 Februari 2024.

- Kamarudin, N., Z. M. Isa, M. Abdullah & M. B. Wahid. 2001. Factors affecting development of *Oryctes rhinoceros* in some substrates commonly found in the oil palm environment. *J Oil Palm Res.* 13: 64-74.
- Kamarudin, N., M. B. Wahid & R. Moslim. 2005. Environmental factors affecting the population density of *Oryctes rhinoceros* in a zero-burn oil palm replant. *J Oil Palm Res.* 17: 53-63.
- Kamarudzaman, A., M. Hashim, A. Mohd & C. H. Teah. 1995. Zero burning-An environmentally friendly replanting technique. PORIM International Palm Oil Congress: Update and Vision (Agriculture). Kuala Lumpur.
- Kee, K.-K. 2004. Nutrient reserves and recycling from oil palm trunks at replanting. *Changes.* 32(5.4): 27-28.
- Khalid, H., Z. Zin & J. Anderson. 2000. Decomposition processes and nutrient release patterns of oil palm residues. *J Oil Palm Res.* 12(1): 46-63.
- Krishanti, N. P. R. A., Y. Tobimatsu, O. A. Afifi, D. Tarmadi, S. K. Himmi, T. Umezawa, & T. Yoshimura (2023). Effects of dietary variation on lignocellulose degradation and physiological properties of *Nicobium hirtum* larvae. *J. Wood Sc.* 69(1): 2.
- Laruna, M. A., E. A. Azman & R. Ismail. 2020. Effect of rhinoceros beetle (*Oryctes rhinoceros*) larvae compost and vermicompost on selected soil chemical properties. *World.* 7(2): 201-208.
- Manley, M., M. J. Melzer & H. Spafford. 2018. Oviposition preferences and behavior of wild-caught and laboratory-reared coconut rhinoceros beetle, *Oryctes rhinoceros* (Coleoptera: Scarabaeidae), in relation to substrate particle size. *Insects.* 9(4): 141.
- Marheni. 2012. Karakteristik bioekologi *Oryctes rhinoceros* (L.) pada pertanaman kelapa sawit. Disertasi. Yogyakarta: Universitas Gadjah Mada.
- Marshall, S. D., A. Moore, M. Vaqalo, A. Noble & T. A. Jackson. 2017. A new haplotype of the coconut rhinoceros beetle, *Oryctes rhinoceros*, has escaped biological control by *Oryctes rhinoceros* nudivirus and is invading Pacific Islands. *J Invertebr Pathol.* 149: 127-134.
- Meyer, H. J. & D. M. Norris. 1967. Vanillin and syringaldehyde as attractants for *Scolytus multistriatus* (Coleoptera: Scolytidae). *Ann Entomol Soc Am.* 60(4): 858-859. doi:10.1093/aesa/60.4.858
- Moore, A., D. C. Barahona, K. A. Lehman, D. D. Skabeikis, I. R. Iriarte, E. B. Jang & M. S. Siderhurst. 2017. Judas beetles: discovering cryptic breeding sites by radio-tracking coconut rhinoceros beetles, *Oryctes rhinoceros* (Coleoptera: Scarabaeidae). *Environ. Entomol.* 46(1): 92-99. <https://doi.org/10.1093/ee/nww152>
- Nadeau, P., M. Thibault, F. G. Horgan, J.-P. Michaud, F. Gandiaga, C. Comeau & G. Moreau. 2015. Decaying matters: Coleoptera involved in heterotrophic systems. *In Beetles: Biodiversity. Ecology and Role in the Environment.* p.123-174.
- Nasamsir, N., Y. Defitri & H. Suhermanto. 2017. Proses dekomposisi batang kelapa sawit (*Elaeis guineensis* Jacq.) metode replanting sisipan dan pencincangan. *J. media pertanian.* 2(2): 55-64.

- Nofrifaldi, Hariyadi, R. Widyastuti. 2019. Identifikasi dan potensi cendawan indigenous untuk pelapukan batang kelapa sawit di Bogor, Indonesia. *J. agron. Indones.* 47(3), 312–317.
- Ooi, L.-H., & H. Heriansyah. 2005. Palm pulverisation in sustainable oil palm replanting. *Plant Prod. Sci.* 8(3): 345-348.
- Parra Paz, A.S., N.S. Carrejo & C.H. Gómez Rodríguez. 2015. Effects of larval density and feeding rates on the bioconversion of vegetable waste using black soldier fly larvae *Hermetia illucens* (L.), (Diptera: Stratiomyidae). *Waste Biomass Valor.* 6: 1059–1065. <https://doi.org/10.1007/s12649-015-9418-8>
- Paudel, S., S. Mansfield, L. F. Villamizar, T. A. Jackson & S. D. Marshall. 2021. Can biological control overcome the threat from newly invasive coconut rhinoceros beetle populations (Coleoptera: Scarabaeidae)? A review. *Ann Entomol Soc Am.* 114(2): 247-256.
- PPKS. 2016. Teknik peremejaan tanaman kelapa sawit. Medan: Pusat Penelitian Kelapa Sawit.
- Pradipta, A. P., F.X. Wagiman & W. Witjaksono. 2020. The potency of collecting larvae of *Oryctes rhinoceros* L. (Coleoptera: Scarabaeidae) in the oil palm plantation. *Agrivita.* 42(1): 153-159.
- Pulingam, T., M. Lakshmanan, J.-A. Chuah, A. Surendran, I. Zainab-L, P. Foroozandeh & K. Sudesh. 2022. Oil palm trunk waste: Environmental impacts and management strategies. *Ind Crops Prod.* 189: 115827.
- Rahayu, G. A., D. Buchori, D. Hindayana & A. Rizali. 2017. Keanekaragaman dan peran fungsional serangga Ordo Coleoptera di area reklamasi pascatambang batubara di Berau, Kalimantan Timur. *J Entomol Indones.* 14(2): 196368.
- Rahayuwati, S., R. D. de Chenon & Sudharto. 2002. Sistem reproduksi betina *Oryctes rhinoceros* (Coleoptera:Scarabaeidae) dari berbagai populasi berbeda di perkebunan kelapa sawit. *J. Pen. Kelapa Sawit*, 10(1): 11–22.
- Rahmanulloh, A. & J. Osinski. 2023. Oilseeds and products annual. Retrieved from USDA: <https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Oilseeds%20and%20Products%20Annual%20Jakarta%20Indonesia%20ID2023-0005.pdf>, diakses: 17 Februari 2024
- Santi, I.S., E.N. Kristalisasi & K.R. Singh. 2021. Efektifitas orynet trap terhadap hasil tangkapan kumbang tanduk pada tanaman kelapa sawit belum menghasilkan. *Agroista: Jurnal Agroteknologi.* 5(2): 82-93.
- Santi, I.S., A. Prayoga, H. Setyawan & A.W. Atmaka. 2022. Implementation of integrated pest control to reduce rhino beetle (*Oryctes rhinoceros*) attacks in oil palm plantations. *Tropical Plantation Journal.* 1(2): 68-74.
- Sasauw, A. A., J. Manueke & D. Tarore. 2017. Populasi larva *Oryctes rhinoceros* (Coleoptera: Scarabaeidae) pada beberapa jenis media peneluran di perkebunan kelapa kecamatan Mapanget Kota Manado. *Cocos.* 8(2).
- Seibold, S., J. Müller, S. Allner, M. Willner, P. Baldrian, M. D. Ulyshen, R. Brandl, C. Bässler, J. Hagge & O. Mitesser. 2022. Quantifying wood decomposition by

insects and fungi using computed tomography scanning and machine learning. *Sci. Rep.* 12(1): 16150.

Seibold, S., W. Rammer, T. Hothorn, R. Seidl, M. D. Ulyshen, J. Lorz, M. W. Cadotte, D. B. Lindenmayer, Y. P. Adhikari & R. Aragón. 2021. The contribution of insects to global forest deadwood decomposition. *Nature*. 597(7874): 77–81.

Shafawati, S. N. & S. Siddiquee. 2013. Composting of oil palm fibres and *Trichoderma* spp. as the biological control agent: A review. *Int. biodeterior. Biodegrad.* 85: 243-253.

Statista. 2023. Production volume of palm oil in Indonesia from 2013 to 2022 (in million metric tons). Statista Research Department. <https://www.statista.com/statistics/706786/production-of-palm-oil-in-indonesia/#statisticContainer>, diakses: 23 Februari 2024.

Sujithra, M., M. Rajkumar, V. Hegde, P. Subramanian & G.P.P. Govindharaj. 2022. Nylon nets: a simple pest exclusion barrier technique to manage rhinoceros beetle menace in coconut plantations. *Int J Pest Manage.* pp.1-8.

Sun, Fang, J., J. Tomkinson & J. Bolton. 1999. Physicochemical and structural characterization of alkali soluble lignins from oil palm trunk and empty fruit-bunch fibers. *J. Agric. Food Chem.* 47(7): 2930-2936.

Tambunan I, T. D. 2022. Peremajaan Sawit Rakyat Kian Mendesak. Retrieved from <https://www.bpdp.or.id/peremajaan-sawit-rakyat-kian-mendesak>, diakses: 17 Desember 2025.

Taqwan, M. 2013. Decomposition rate of pulverized oil palm trunk mulch. Final Year Project: University of Putra Malaysia.

Tomimura, Y. 1992. Chemical characteristics and utilization of oil palm trunks. *Jarq.* 25: 283–288.

Trivana, L. & A. Y. Pradhana. 2017. Optimalisasi waktu pengomposan dan kualitas pupuk kandang dari kotoran kambing dan debu sabut kelapa dengan bioaktivator PROMI dan Orgadec. *Indonesian Journal of Veterinary Science.* 35(1): 136–144. <https://doi.org/10.22146/jsv.29301>.

Ulyshen, M. D. 2016. Wood decomposition as influenced by invertebrates. *Biol. Rev.* 91(1): 70–85.

Veronika, N., A. Dhora & S. Wahyuni. 2019. Pengolahan limbah batang sawit menjadi pupuk kompos dengan menggunakan dekomposer Mikroorganisme Lokal (MOL) Bonggol Pisang. *JTIP.* 29(2).

Wagiman, F. X., & A. Fariz. 2022. Potensi larva *Oryctes rhinoceros* (Coleoptera: Scarabaeidae) sebagai pengurai limbah batang kelapa sawit. Paper presented at the SEMNASHAS XII FAPERTA UGM. Yogyakarta

Widyantoro, A., S. Rahayu & Supriyono. 2017. Pengaruh biodekomposer terhadap nisbah C/N kompos batang kelapa sawit. Paper presented at the Prosiding Seminar Nasional “Kontribusi Pascasarjana dalam Memajukan Ipteks dengan Berpijak pada Karakter Kebangsaan”.

Yaherwandi, Y. & S. Efendi. 2020. Biologi pradewasa *Oryctes rhinoceros* L (Coleoptera: Scarabidae) pada dua jenis limbah organik kelapa sawit. Paper

presented at the Seminar Nasional Fakultas Pertanian UPN "Veteran" Yogyakarta, Yogyakarta.

Zou, J., M. W. Cadotte, C. Bässler, R. Brandl, P. Baldrian, W. Borken, E. Stengel, Y. Luo, J. Müller & S. Seibold. 2023. Wood decomposition is increased by insect diversity, selection effects, and interactions between insects and microbes. *Ecology*. 104(12): e4184.