



DAFTAR PUSTAKA

- Alouw J. C; M. L. A. Hosang; A. A. Lolong & J. S. Warokka. 2007. Hama *Oryctes rhinoceros*: Ekobiologi dan Pengendaliannya. Balai Penelitian Kelapa dan Palma lain. Prosiding Seminar Regional PHT Kelapa. Manado 27 November 2007, hal 147-160.
- Aw, K.M.S. & Hue, S.M. 2017. Mode of Infection of *Metarhizium* spp. Fungus and Their Potential as Biological Control Agents. Journal of Fungi (3): 1-2.
- Balai Besar Pengkajian dan Pengembangan Teknologi Pertanian (BBP2TP). 2012. Organisme Pengganggu Tanaman Utama Tanaman Kelapa Sawit. Medan.
- 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. J. Aust. Entomol. Soc. 15: 241–251.
- Bedford, G. O. 1980. Biology, ecology, and control of palm Rhinoceros Beetles. Annual Review of Entomology, 25(1), 309-339.
- Bedford, G. O. 2013. Long-term reduction in damage by rhinoceros beetle *O.rhinoceros* (L.) (Coleoptera: Scarabaeidae: Dynastinae) to coconut palms at *Oryctes* Nudivirus release sites on Viti Levu, Fiji. African Journal of Agricultural Research, 8(49):6422-6425.
- Bintang A.S., A. Wibowo & T. Harjaka. 2015. Keragaman genetik *Metarhizium anisopliae* dan virulensinya pada larva kumbang badak (*Oryctes rhinoceros*). Jurnal perlindungan tanaman Indonesia. 19(1):12-18.
- Boucias, D.G. & Pendland, J.C. 1998. Principles of Insect Pathology, Enthomopathogenic Fungi. Chapter 10. Kluwer Academic Publisher.
- Boucias, D.G., Pendland, J.C., Latge, J.P. 1988. Non-specific factors involved in the attachment of enthomopathogenic deuteromycetes to host insect cuticle. Applied and Environmental Microbiology. 54 : 1795-1805.
- Butt, T.M., Greenfield, B.P.J., Greig, C., Maffeis, T.G.G., Taylor, J.W.D. 2013. *Metarhizium anisopliae* Pathogenesis of Mosquito Larvae: A Verdict of Accidental Death. PLoS ONE.
- Catley, A. 1969. The coconut rhinoceros beetle *Oryctes rhinoceros* (L.) (Coleoptera : Scarabidae: Dynastinae). PANS. 15 : 18-30.



- Chitarra, G.S. 2003. Germination inhibitors of fungal spores: identification and mode of action. Ph.D. thesis Wageningen University, Wageningen, The Netherlands.
- Deacon, J. 2013. Fungal Spores, Spore Dormancy, and Spore Dispersal. *Fungal Biology*, 184–212.
- Dillon, R.J. & Charnley, A.K. 1991. The fate of fungal spores in the insect gut. In : The Fungal Spore and Disease Initiation in Plants and Animals, eds., G.T. Cole and H.C. Hoch. Plenum Press. 129-156.
- Direktorat Jenderal Perkebunan (Dirjenbun). 2019. Statistik Perkebunan Indonesia Komoditi Kelapa 2018–2020. Direktorat Jenderal Perkebunan, Departemen Pertanian. Jakarta.
- Driver, F., R.J. Milner, and J.W.H. Trueman. 2000. A taxonomic revision of *Metarhizium* based on a phylogenetic analysis of rDNA sequence data. *Mycological Research*. 104(2):134-150.
- Fauzana, H & Ustadi. 2020. Pertumbuhan larva kumbang tanduk (*Oryctes rhinoceros* L.) pada berbagai media tumbuh tanaman Famili Arecaceae. *Jurnal Entomologi Indonesia*. 17(2), 89.
- Ferron, p. 1978. Biological Control of Insect Pests by Entomopathogenic Fungi. *Annu.Rev. Entomol.* 23 : 409-442.
- Freimoser, F. M., S. Screen., S. Bagga, G. Hu, & R.J.St. Leger. 2003. Expressed Sequence Tag (EST) analysis of two subspecies of *M. anisopliae* reveal a plethora secreted protein with potential activity in insect. *Journal of Microbiology*, 149:239-247.
- Fuxa, J.R. 1987. Ecological considerations for the use of entomopathogens in IPM. *Annu. Rev. Entomol.* 32: 225-251.
- Gabriel, BP & Riyatno. 1989. *Metarhizium anisopliae* (Metch) Sor: Taksonomi,Patologi, Produksi dan Aplikasinya. Jakarta: Direktorat Perlindungan Tanaman Perkebunan, Departemen Pertanian.
- Greenfield, B.P., Lord, A.M., Dudley, E. & Butt, T.M. 2014. Conidia of the insect pathogenic fungus, *Metarhizium anisopliae*, fail to adhere to mosquito larval cuticle. *R. Soc. Open Sci.* (1) 140-193.
- Handayani, W.F, Jasmi & E.Safitri. 2014. Kepadatan populasi kumbang tanduk *Oryctes rhinoceros* L. (*Coleoptera : Scarabaeidae*) pada tanaman sawit di



Kanagarian Surantih Kecamatan Sutera Kabupaten Pesisir Selatan.
Pendidikan Biologi .(1): 1.

Harjaka, T & Suryanti. 2002. Kajian beberapa jamur entomopatogenetik pada ulat daun kubis hijau, *Plutella xylostella*. Jurnal Perlindungan Tanaman Indonesia 8: 94-99.

Harjaka, T. 2014. Bioekologi Lepidiota Stigma dan Pengendaliannya dengan *Metarhizium anisopliae*. Disertasi. Fakultas Pertania. Universitas Gadjah Mada

Hassouni, H., Ismaili-Alaoui, M., Lamrani, K., Perraud, G., Augur, C. 2007. Comparative Spore Germination Of Filamentous Fungi On Solid State Fermentation Under Different Culture Conditions. *Micologia Aplicada Internacional*. 7-14

Herlinda, S. 2010. Spore Density and Viability of Entomopathogenic Fungal Isolates from Indonesia, and Their Virulence against *Aphis gossypii* Glover (Homoptera: Aphididae). *Journal of Tropical Life Sciences Research*. 21(1) : 11-19.

Hosang, M. L. A. 2010. Ketahanan lapang empat aksesi kelapa genjah kopyor terhadap hama *Oryctes rhinoceros* di Kabupaten Pati, Jawa Tengah. *Balai Penelitian Tanaman Kelapa dan Palma Lain. Bulletin Palma* 32: 33-42.

Jugno, T. Q., Wahedd, H., Nawaz, H.B., Muhammad, S., Talha, N. 2018. Potential assessment of *Metarhizium anisopliae* and *Bacillus thuringiensis* against Brinjal insect pests *Amrasca biguttula* (Jassid) and *Aphis gossypii* (Aphid). *Journal of Entomology and Zoology Studies*. 6(2) : 32-36.

Kalshoven, L.G.E. 1981. *The Pest of Crop In Indonesia*. P.A. Van Der Laan. PT. Ichtia Baru Van Hoeve. Jakarta.

Lacey, L.A. 2012. *Manual of Techniques in Invertebrate Pathology*. 2th Edition. Academic Press. Washington, USA.

Lacey, C.M., Lacey, L.A., & Roberts, D.R. 1988. Route of Invasion and Histopathology of *Metarhizium anisopliae* in *Culex quinquefasciatus*. *Journal Invertebrate Pathology*. 52 : 108-118.

Lukman, A. 2009. Peran hormon dalam metamorfosis serangga. *Biospecies* 2: 42–45.



- Marheni. 2012. Karakteristik Bioekologi *Oryctes rhinoceros* L Pada Pertanaman Kelapa Sawit. Disertasi. Universitas Gadjah Mada. Yogyakarta.
- Mohan. 2006. Deskripsi dan Ekologi *Oryctes rhinoceros* L. Pada Pertanaman Kelapa Sawit. Jurnal Fakultas Pertanian. Universitas Sebelas Maret. Surakarta.
- Moslim, R., N. Kamarudin., A.B. Na., S.R.A. Ali & M.B.Wahid. 2007. Application Of Powder Formulation of *Metarhizium anisopliae* to Control *Oryctes rhinoceros* in Rotting Oil Palm Residues Under Leguminous Cover Crops. Journal of Oil Palm Research 19 : 319-331.
- Ortiz-Urquiza, A & N.O. Keyhani. 2013. Action on the Surface : Entomopathogenic Fungi Versus the Insect Cuticle. Insects 4 : 357-374.
- Pallipparambil, G. R. 2015. New Pest Respon (Coconut Rhinoceros Beetle). Washington: U.S. Departement of Agriculture Press.
- Pusat Penelitian Kelapa Sawit (PPKS). 2010. Pengendalian *Oryctes rhinoceros* L. yang Ramah Lingkungan Menggunakan Feromonas dan Metari. <http://pustaka-deptan.go.id> (diakses 3 Oktober 2020)
- Reyes-Villanueva, F., Garza-Hernandez, J.A., Garcia-Munguia, A.M., Tamez-Guerra, P.; Howard, A.F. & Rodriguez-Perez, M.A. 2011. Dissemination of *Metarhizium anisopliae* of low and high virulence by mating behavior in *Aedes aegypti*. Parasites Vectors 4 :1-7.
- Riostone, U. 2010. How Reaction Pesticide for pest in chicago. Clempson University. South Carolina.
- Robert, D.W. & Yendol, G.W. 1971. Use of Fungi for Microbial Control of Insect. Microbial Control of Insects and Mites. New York : Academic Press.
- Rustama, M. M., Melanie., & Irawan B. 2008. Patogenisitas Jamur Entomopatogen *Metarhizium anisopliae* Terhadap *Crocidolomia pavonana* Fab. Dalam Kegiatan Studi Pengendalian Hama Terpadu Tanaman Kubis Dengan Menggunakan Agensia Hayati. Laporan Penelitian. Universitas Padjadjaran. Jawa Barat.
- Sadakhatulla, S. & T.K. Ramachandran. 1990. A Novel Method to Control Rhinoceros Beetle, *Oryctes rhinoceros*L in Coconut. Indian Coconut Journal (Cochin) 21: 10-12.
- Sambiran, W.J & L.A. Hosang. 2007. Patogenitas *Metarhizium anisopliae* dari beberapa media air kelapa terhadap *Oryctes rhinoceros* L. Buletin Palma (32): 1-11.



- Santi, I. S., Sumaryo, B., & Wagiman, F. X. (2008). Pengaruh warna perangkap feromon terhadap hasil tangkapan imago *Oryctes rhinoceros* di perkebunan kelapa sawit. *Jurnal Perlindungan Tanaman Indonesia*, 14(2), 76-79.
- Santi, L., Silva, W.O.B., Pinto, A.F.M., Schrank, A., Vainstein, M.H. 2010. *Metarhizium anisopliae* host-pathogen interaction: Differential immunoproteomics reveals proteins involved in the infection process of arthropods. *Fungal Biology*. 114 : 312–319.
- Sardes, P. 2007. Uji efektifitas ekstrak daun mengkudu (*Morinda citrifolia*) terhadap *Plutella xylostella* L. (Lepidoptera; Plutellidae) di laboratorium. (Skripsi). Fakultas Pertanian Universitas Sumatera Utara.
- Sasauw, A., J. Manueke, & D. Tarore. 2017. Populasi Larva *Oryctes rhinoceros* (Coleoptera:Scarabaeidae) pada Beberapa Jenis Media Peneluran di Perkebunan Kelapa Kecamatan Mapanget Kota Manado. Universitas Sam Ratulangi. Manado.
- Siahaya, VG. 2014. Tingkat Kerusakan Tanaman Kelapa oleh Serangan Sexava nubila dan *Oryctes rhinoceros* di Kecamatan Kairatu, Kabupaten Seram Barat. *Jurnal Budidaya Pertanian* 10(2): 93-99.
- Siswanto, N & I.M. Trisawa. 2018. Uji Mutu dan Keefektifan *Metarhizium anisopliae* Isolat Kalimantan Tengah Terhadap *Oryctes rhinoceros* (Coleoptera: Scarabaeidae). *Buletin Palma*. 19 (2):79.
- Soetopo,D. 2004. Efficacy of selected *Beauveria bassiana* (Bals.) Vuill. isolates in combination with a resistant cotton variety (PSB-Ct 9) against the cotton bollworm, *Helicoverpa armigera* (Hübner) (Lepidoptera: Noctuidae) PhD diss., University of The Philippines Los Banos.
- St Leger, R.J. 1995. The role of cuticle-degrading proteases in fungal pathogenesis of insects. *Can. J. Bot.* 73 : S1119-S1125.
- St. Leger, R. J., and M. J. Bidochka. 1996. Insect-fungal interactions. In New directions in invertebrate immunology, eds. K. Soderhall, S. Iwanaga and G. R. Vasta, pp. 443–479. New Jersey: SOS Publications.
- Suryadi, Y & Kadir, T.S. 2007. Pengamatan infeksi jamur patogen serangga *Metarhizium anisopliae* (Metsch. Sorokin) pada wereng coklat. *Berita Biologi* 8 (6).



- Susanto, A., Utomo, C, Herawan, T & Sihombing, M. 2010. Pheromonal ability of octanoate acid in trapping *Oryctes rhinoceros* in oil palm plantation. International Oil Palm Conference, Indonsesian Oil Palm Research Institute (IOPRI). Yogyakarta, Indonesia 1-3 June 2010.
- Suwarso, D.L. 1997. Pertumbuhan jamur entopatogenetik (*Bauveria spp.*) pada beberapa macam media buatan Laporan Penelitian. Lembaga Penelitian Universitas Jember.
- Vega, F.E. & Blackweel, M. 2005. Insect-Fungal Associations Ecology and Evolution. Oxford University Press. New York.
- Villani, M.G., Allee, L.L., Diaz, A., Robbins, P.S. 1999. Adaptive Strategies of Edaphic Arthropods, Annu. Rev. Entomol. 44 : 233-256.
- Wesi, Jasmi., & A. Lusi. 2014. Kepadatan Populasi Kumbang Tanduk (*Oryctes rhinoceros L.*) pada Tanaman Kelapa Sawit di PTPN VI Unit Usaha Ophir Pasaman Barat. Jurnal Penelitian Kelapa Sawit. 15 (2) : 69-82.
- Wibowo, L., H. Sudarsono., A.M. Hairiri., N. Yasin & F.X. Susilo. 2018. Uji Virulensi Beberapa Isolat *Metarhizium sp.* terhadap Larva *Oryctes rhinoceros* L. Prosiding Seminar Nasional PEI "Serangga untuk Pertanian Berkelanjutan dan Kesehatan Lebih Baik".
- Witjaksono, W., Wijonarko, A., Harjaka, T., Harahap, I., & Sampurno, W. B. 2015. Tekanan *Metarhizium anisopliae* dan Feromon terhadap Populasi dan Tingkat Kerusakan oleh *Oryctes rhinoceros*. Jurnal Perlindungan Tanaman Indonesia, 19(2), 73-79.
- Zelazny, B. 1 977. *Oryctes rhinoceros* populations and behaviour influenced by a baculovirus. J. Invertebr. Pathol.29:210.